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AN ANNOTATED BIBLIOGRAPHY ON THE BIOLOGY AND FISHERY OF THE SKIPJACK TUNA, *KATSUWONUS PELAMIS*, OF THE PACIFIC OCEAN

BIBLIOGRAFIA ANOTADA SOBRE LA BIOLOGIA Y LA PESCA DEL BARRILETE, *KATSUWONUS PELAMIS*, DEL OCEANO PACIFICO

by—por

Witold L. Klawe and/y Makoto Peter Miyake

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AN ANNOTATED BIBLIOGRAPHY ON THE BIOLOGY AND FISHERY OF THE SKIPJACK TUNA, *KATSUWONUS PELAMIS*, OF THE PACIFIC OCEAN

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INTRODUCTION

The skipjack tuna, *Katsuwonus pelamis*, is an important resource of the tropical and subtropical waters of the world ocean. Fishermen of many countries exploit this resource; at the present time, the annual world catch is approximately 200 thousand metric tons. Many fishery experts believe that the skipjack is not being fully utilized while stocks of other tunas are being fished, in some areas, at levels exceeding their maximum sustainable yields. In addition to the importance of skipjack as a commercial fish and as a source of food, there is a small but expanding recreational fishery in some countries bordering the Pacific.

Skipjack tuna have been a source of food for many of the peoples of the Pacific region since ancient times, and have also enjoyed a prominent position in the culture of some of these peoples. In the area of present-day Japan, skipjack were fished during prehistoric times by the people of the Jomon culture, as shown by excavations in northeastern Honshu. The oldest written record of the Pacific skipjack dates back to about 712 A.D. and originates from Japan. Many Japanese written accounts attest that the skipjack tuna is deeply rooted in Japanese culture. The Japanese believed that the skipjack could bring good luck (in Japanese *katsuo* is a homophone of "victory fish"). It is therefore no surprise that this fish was highly esteemed by the ancient Japanese.

Some important developments in the history of the Japanese commercial fishing fleet are related to the skipjack fishery; e.g., the first motorized fishing vessel in Japan was a skipjack boat, and the present-day Japanese longline fleet developed directly from the skipjack fleet.

Skipjack have also played a significant cultural and religious role in the lives of the Polynesians, who have named the fish *atu* (or *aku*). Unfortunately, most of the information concerning this subject has been lost. Some early writings by explorers, missionaries, scientists, and others first contacting the Polynesian people give a glimpse of a fascinating story. The fragmentary reports of skipjack fishery rituals and the language related to that fishery as preserved in the form of various reports, diaries, and the dictionaries of native tongues, together with the exquisite skipjack hooks on museum shelves and legends such as that of Nihooleki from Hawaii, are reminders of the importance of skipjack to the ancient Polynesians. The skipjack hook of the Polynesian fishermen, usually referred to as a bonito hook or bonito spinner, is without counterpart in other regions of the world. Since it is believed to have evolved from hook-types of neolithic Japan, it is difficult to understand how such hooks reached the people of Polynesia.

The importance of skipjack tuna to the Indians of the Americas is difficult to ascertain. Skipjack bones found in faunal remains of southern California indicate that this fish entered at least occasionally into the diet of some of the Indians.

This bibliography provides a list of publications pertaining to the biology and fishery of the Pacific skipjack tuna. Papers concerned with food technology, food chemistry, radio-chemistry, and certain other subjects are excluded. The main sources for our publication have been the existing bibliographies of tunas, which are listed and indexed accordingly. In addition, reports of various marine laboratories and other scientific

organizations have been checked; these are too numerous to list. We are fairly confident that all major works pertaining to skipjack tuna in the Pacific, printed prior to the end of 1966, appear in this bibliography. Only reports considered to be in permanent form are included. Annotations are based on actual examination of each of the entries listed here. The annotations do not evaluate a paper but serve rather to give a more precise idea of its contents if not revealed by the title alone. If the title sufficed in this respect, no annotation was prepared. A relatively small number of works believed to contain information pertinent to our bibliography could not be examined, but a list of such papers is provided.

Entries are listed alphabetically by author and chronologically for each author. Works ascribed to "Anonymous" appear at the end of the list. Titles of papers in European languages have been left in their original form, while those in other languages have been translated. Names of various periodicals appearing in this bibliography have been abbreviated (with some slight deviations) according to the format of the World List of Scientific Periodicals 1900-1960 (three volumes published by Butterworth's of London in 1963). To facilitate the use of this bibliography, complete names of all periodicals quoted and their places of publication are given in the "List of Abbreviations and Translations of Periodical Titles." Also provided are English translations of the names of Japanese journals; the names in both languages are cross-indexed. Most of the journals bearing names in more than one language are listed and cross-indexed under each of the languages. Junior authors' names are listed, and each is cross-referenced to the respective senior author. Headings listed in the subject index were prepared on the assumption that this bibliography would be used primarily by: (i) biologists in general and ichthyologists in particular, and (ii) fishery biologists working in the field of either commercial or recreational fisheries. To facilitate the use of this bibliography for Spanish-speaking readers, alphabetically arranged lists of the headings of the subject index are provided in English and Spanish.

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BIBLIOGRAFIA ANOTADA SOBRE LA BIOLOGIA Y LA PESCA DEL BARRILETE, *KATSUWONUS PELAMIS*, DEL OCEANO PACIFICO

por

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INTRODUCCION

El atún barrilete, *Katsuwonus pelamis,* es un recurso importante de las aguas tropicales y subtropicales del océano mundial. Los pescadores de varios países explotan este recurso; actualmente, la captura mundial anual es aproximadamente de 200,000 toneladas métricas. Muchos expertos en la pesquería creen que el barrilete no es utilizado completamente, mientras los stocks de otros atunes son pescados en algunas áreas a niveles que exceden su rendimiento máximo sostenible. Además de la importancia del barrilete como pez comercial y como fuente de alimento, existe una pesquería pequeña recreativa que se está desarrollando en algunos países colindantes con el Pacífico.

El atún barrilete ha sido desde tiempos antiguos una fuente de alimentación para mucha gente en la región del Pacífico, y ha gozado de una posición preponderante en la cultura de algunos de esos pueblos. En el área que ocupa el Japón actualmente, el barrilete era pescado en tiempos prehistóricos por gente de la cultura Jomon, como lo demuestran las excavaciones al nordeste de Honshu. El registro escrito, más antiguo, que existe sobre el barrilete del Pacífico data aproximadamente del año 712 D.C. y es originario del Japón. Numerosos escritos japoneses confirman que el atún barrilete está profundamente arraigado en la cultura japonesa. Los japoneses creían que el barrilete podía traer buena suerte (en japonés *katsuo* es un homófono de "pez victoria"). Consecuentemente no es sorprendente que este pez fuera estimado altamente por los antiguos japoneses.

Algunos de los adelantos importantes en la historia de la flota comercial japonesa están relacionados con la pesca del barrilete; e.d., el primer barco pesquero japonés de

motor fue un barco empleado para la pesca de barrilete, y la flota palangrera japonesa actual se deriva directamente de la flota dedicada a la pesca de esta especie.

El barrilete también ha tomado parte significativa en la cultura y religión de la vida de los polinesios, quienes le han dado a este pez el nombre de *atu* (o *aku*). Desafortunadamente la mayoría de los informes acerca de este sujeto se han perdido. Algunos escritos anteriores de exploradores, misioneros, científicos y de otras personas que trataron por primera vez con la gente polinesia hacen vislumbrar una historia fascinante. Informes fragmentarios escritos sobre los rituales de pesca del barrilete y el lenguaje relacionado a esa pesca, se conservan en forma de varios informes, diarios y diccionarios de lenguas nativas, junto con anzuelos de barrilete delicadamente elaborados que se encuentran en los estantes de los museos, y leyendas como la de Nihooleki del Hawai, son recuerdos que representan la importancia que el barrilete tenía para los antiguos polinesios. Los anzuelos que usaban los pescadores polinesios en la pesca del barrilete, los cuáles comúnmente son denominados anzuelos de bonito o "curricán de bonito" (bonito spinner), no tienen igual en otras regiones del mundo. Es difícil comprender cómo tales anzuelos llegaron a manos de los polinesios, ya que se cree que provienen de los tipos de anzuelo del Japón neolítico.

Es difícil descubrir la importancia que tuvo para los indios de las Américas el atún barrilete. Huesos de barrilete encontrados en residuos fáunicos en California meridional indican que este pez entraba por lo menos ocasionalmente en la dieta de algunos de los indios.

Esta bibliografía suministra una lista de publicaciones correspondientes a la biología y pesquería del atún barrilete en el Pacífico. Estudios referentes a la tecnología alimenticia, química alimenticia, radioquímica y ciertos otros sujetos son excluídos. Las fuentes principales correspondientes a nuestra publicación han sido las bibliografías existentes sobre atunes, las cuales están enumeradas y catalogadas de acuerdo. Además, se han examinado los informes de varios laboratorios marítimos y los de otras organizaciones científicas; éstos son demasiado numerosos para enumerar. Estamos bastante seguros de que todos los trabajos principales correspondientes al atún barrilete del Pacífico, editados antes de terminar el año de 1966, aparecen en esta bibliografía. Se incluyen únicamente los informes que se consideran permanentes. Las anotaciones se basan en el examen actual de cada una de las entradas aquí referidas. Las anotaciones no evaluan un estudio, pero sirven más bien para dar una idea más precisa de su contenido si el título por sí mismo no lo explica. No se preparó ninguna anotación si el título a este respecto era suficiente. Un número relativamente pequeño de trabajos que se cree tengan información pertinente a nuestra bibliografía no pudo ser examinado, pero se suministra una lista de tales estudios.

Las entradas se enumeran alfabéticamente por autor y cronológicamente por cada autor. Los trabajos atribuidos al título "Anónimo" aparecen al final de la lista. Los títulos de los artículos en idiomas europeos se han dejado en su forma original, mientras aquellos en otros idiomas han sido traducidos. Los nombres de varias publicaciones que aparecen en esta bibliografía han sido abreviados (con algunas ligeras variaciones) de acuerdo al estilo del "World List of Scientific Periodicals 1900-1960" (tres volúmenes publicados por Butterworth de Londres en 1963). Para facilitar el empleo de esta bibliografía, los nombres completos de todas las publicaciones citadas y el lugar de su publicación, se dan en la "Lista de Abreviaciones y Traducciones de los Títulos Publicados." Además se facilitan traducciones en inglés de los nombres de revistas japonesas; los nombres en ambos idiomas tienen contrarreferencia. La mayoría de las revistas con nombres en más de un idioma se enumeran y tienen contrarreferencia bajo cada uno de los idiomas. Los nombres de los autores noveles se enumeran y se comprueba cada uno con el respectivo autor. Los encabezamientos enumerados en el índice de los sujetos fueron preparados con la consideración de que esta bibliografía sería usada en primer

lugar por: (i) biólogos en general e ictiólogos en particular, e (ii) biólogos pesqueros que trabajan en el campo ya sea de la pesca comercial o recreativa. Con el fin de facilitar el uso de esta bibliografía para los lectores de habla española, se suministra alfabéticamente en español e inglés la lista de los títulos del índice de los sujetos.

RECONOCIMIENTO

Tenemos el mayor gusto en reconocer la ayuda que nos fue ofrecida por numerosas personas e instituciones científicas de varias partes del mundo, por medio de la cual fue posible realizar nuestra compilación. La generosa colaboración recibida fue en sí misma verdaderamente compensatoria.

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ANNOTATED BIBLIOGRAPHICAL ENTRIES
ENTRADAS ANOTADAS DE LA BIBLIOGRAFIA

ABE, TOKIHARU

1939. A list of the fishes of the Palao Islands. Palao Trop. Biol. Stn Stud., 4 : 567.

AHLSTROM, ELBERT and ROBERT C. COUNTS

1958. Development and distribution of *Vinciguerria lucetia* and related species in the eastern Pacific. Fishery Bull., U. S. Fish Wildl. Serv., 58(139) : 363-412.

Vinciguerria an important forage fish.

AIKAWA, HIROAKI

1933. Fishing conditions of skipjack, tuna and saury along the Pacific coasts [in Japanese]. Suisan gakkai hō (Proc. Scient. Fishery Ass.), 5(4) : 354-369.

Seasonal and yearly change in fishing grounds near Japan 1920-1930; migratory and sedentary skipjack in relation to the area and season; catch by research boat analyzed by area and in relation to surface water temperature.

1937. Notes on the shoal of bonito along the Pacific coast of Japan [in Japanese with an English summary]. Bull. Jap. Soc. Scient. Fish., 6(1) : 13-21. Translation *In*: Spec. Scient. Rep. U. S. Fish. Wildl. Serv. (83) : 32-50.

Ages of skipjack in Japanese waters determined by annuli on the vertebrae centrum and by body length; migration routes of some races near Japan hypothesized based on age, length and weight data.

1941. Suisan shigengaku — Gyoguntai-gaku — (Fisheries biology — population dynamics—) [in Japanese]. Suisan-sha, Tokyo: 288 p.

Introductory textbook for population dynamics; many references to biology of skipjack.

1942. Umi no shigen (Marine resources) [in Japanese]. Kaiyō kagaku sōsho (Ocean science series), Tennen-sha, Tokyo: 118 p.

General outline of skipjack fishing near Japan; distribution, migration, age composition, distinction of sedentary and migratory skipjack; skipjack caught by longline in winter discussed.

1949. Suisan shigengaku sōron (An introduction to fisheries biology) [in Japanese]. Sangyō-tosho Co. Ltd., Tokyo: 545 p.

Textbook on fisheries biology and population dynamics covering all aspects of skipjack biology.

AIKAWA, HIROAKI and MASUO KATO

1938. Age determination of fish, I. [in Japanese with an English summary]. Bull. Jap. Soc. Scient. Fish., 7(2) : 79-88. (Pacific Oceanic Fishery Investigation Translation No. 8. *In:* Spec. Scient. Rep. U. S. Fish Wildl. Serv. [21] : 22 p.)

Ages of 20 skipjack determined by a study of vertebrae centrum; relation between body length and number of annuli discussed.

AKYÜZ, E. F.

1966. A guide to marks used for tunas and an inventory of tuna marking projects. FAO Fish. Circ. (101): 99 p.

ALVERSON, FRANKLIN G.

1959. Geographical distribution of yellowfin tuna and skipjack catches from the eastern tropical Pacific Ocean, by quarters of the year, 1952-1955 [in English and Spanish]. Bull. Inter-Am. Trop. Tuna Commn, 3(4) : 165-213.

Baitboat and purse-seine catches from logbook records; possible movements of skipjack discussed.

1960. Distribution of fishing effort and resulting tuna catches from the eastern

ALVERSON, FRANKLIN G., continued

tropical Pacific by quarters of the year, 1951-1958 [in English and Spanish]. Bull. Inter-Am. Trop. Tuna Commn, 4(6) : 319-446.

Geographical distribution of catches and catch-per-unit-of-effort by baitboats and purse-seiners from logbook records.

1961. Daylight surface occurrence of myctophid fishes off the coast of Central America. Pacif. Sci., 15(3) : 483.

K. pelamis feeding on *Benthosema pterota*.

1963(*1*). The food of yellowfin and skipjack tunas in the eastern tropical Pacific Ocean [in English and Spanish]. Bull. Inter-Am. Trop. Tuna Commn, 7(5) : 293-396.

Dietary study based on examination of stomachs of 2317 skipjack from various fishing areas of eastern Pacific; variation in diet related to areas and to size of the fish; incidence of empty stomachs.

1963(*2*). Distribution of fishing effort and resulting tuna catches from the eastern tropical Pacific Ocean, by quarters of the year, 1959-1962 [in English and Spanish]. Bull. Inter-Am. Trop. Tuna Commn, 8(6) : 317-379.

Geographical distribution of catches by purse-seiners and baitboats for years 1959-1962 by quarters of the year by one-degree areas; catch, effort, and catch-per-unit-of-effort data for five-degree areas of the eastern Pacific Ocean.

AMANO, K., H. TOZAWA and A. TAKASE

1956. Studies on the radioactivity in certain pelagic fish—IV. Separation and confirmation of radioiron in skipjack [in Japanese with an English summary]. Bull. Jap. Soc. Scient. Fish., 21(12) : 1261-1268.

Analysis of radio-active iron found in the oxalic acid-soluble components of liver and stomach ash from skipjack collected in the Bikini area.

AMANO, RYOHEI

1965. Tuna fishing by seine [in Japanese]. Tuna Data, Fish. Res. Lab., Tokai Univ. (42) : 13-19.

Review of California and Japanese purse-seine fishery; potential fishing grounds.

AMERICAN FISHERIES SOCIETY

1948. A list of common and scientific names of the better known fishes of the United States and Canada. Special Publication, American Fisheries Society, Ann Arbor, Mich., (1) : 45 p.

1960. A list of common and scientific names of fishes from the United States and Canada. Special Publication, American Fisheries Society, Ann Arbor, Mich., (2) : 102 p.

ANDERSON, A. W., W. H. STOLTING, *et al.*

1953. Survey of the domestic tuna industry. Spec. Scient. Rep. U.S. Fish Wildl. Serv., (104) : 436 p.

Distribution and description of adults; description of fishing industry.

ANGOT, MICHEL

1959. Tuna fishing investigation in the South Pacific. Q. Bull. S. Pacif. Commn, 9(4) : 48-53, 60-62.

Report on surveys carried out by the Institut Francais d'Océanie; fishing gear discussed.

1960. The utilization of marine resources in French Polynesia. Q. Bull. S. Pacif. Commn, 10(3) : 46-50.

Description of fishing methods.

ANRAKU, MORIYA and TSUYOSHI KAWASAKI

1966. On the abundance and its fluctuation of the skipjack and albacore migrating to the neighbouring seas of Japan. II. [in Japanese with an English summary]. Bull. Tōhoku Reg. Fish. Res. Lab., 26: 9-33.

Seasonal fluctuations in abundance of fish are compared by year and area; seasonal and geographical distribution of fish is discussed in relation to population size.

AUSTIN, THOMAS S.

1957. Summary, oceanographic and fishery data, Marquesas Islands area, August-September 1956 (EQUAPAC). Spec. Scient. Rep. U.S. Fish Wildl. Serv., (217) : 186 p.

Fishing survey.

AUSTIN, THOMAS S. and RICHARD A. BARKLEY

1962. Use of oceanographic monitoring stations in fishery research, p. 20 (Abstract). *In:* J. C. Marr (Ed.) Pacific Tuna Biology Conference—August 14-19, 1961—Honolulu, Hawaii. Spec. Scient. Rep. U.S. Fish Wildl. Serv., (415) : 45 p.

Predicting of catch based on oceanographic conditions.

AUSTIN, THOMAS S. and VERNON E. BROCK

1959. Meridional variations in some oceanographic and marine biological factors in the Central Pacific [in English and Russian]. Internation Oceanographic Congress—Preprints. American Association for the Advancement of Science, Washington, : 130-132.

BAESSLER, A.

1905. Fischen auf Tahiti. Z. Ethnol., 37 : 924-940.

Native fishery; fishing methods.

BAKER, ALAN N.

1966. Food of marlins from New Zealand waters. Copeia, (4) : 818-822.

Found in stomachs of two species of marlins.

BARKLEY, RICHARD A.

1963. Oceanography. *In* Wilvan G. van Campen (ed.), Progress in 1961-62, Circ. U.S. Fish Wildl. Serv., (163) : 3-8.

Technique for predicting relative level of annual catch in Hawaiian fishery.

BARNHART, PERCY

1936. Marine fishes of Southern California. University of California Press, Berkeley : 209 p.

Description and distribution.

BARRETT, IZADORE and ANNE ROBERTSON CONNOR

1962. Blood lactate in yellowfin tuna, *Neothunnus macropterus,* and skipjack, *Katsuwonus pelamis,* following capture and tagging [in English and Spanish]. Bull. Inter-Am. Trop. Tuna Commn, 6(6) : 231-280.

Changes in levels of blood lactate in fish following capture and/or tagging; blood lactate in exhausted fish; blood hemoglobin.

1964. Muscle glycogen and blood lactate in yellowfin tuna, *Thunnus albacares,* and skipjack, *Katsuwonus pelamis,* following capture and tagging [in English and Spanish]. Bull. Inter-Am. Trop. Tuna Commn, 9(4) : 217-268.

Changes in levels of blood lactate and muscle glycogen in fish following capture and/or tagging; blood lactate in exhausted fish; role of ambient temperature on levels of lactate and glycogen.

BARRETT, IZADORE and FRANK J. HESTER

1964. Body temperature of yellowfin and skipjack tunas in relation to sea surface temperature. Nature, 203(4940) : 96-97.

BATES, DONALD H., Jr.

1950. Tuna trolling in the Line Islands in the late spring of 1950. Fishery Leafl. Fish and Wildl. U.S., (351) : 32.

Trolling survey.

BELL, ROBERT R.

1964. A history of tuna age determinations. Marine Biological Association of India, Proceedings of the Symposium on Scombroid Fishes. Mandapam Camp, Part 2 : 693-706.

Review of six papers by various authors on age determination.

BERDEGUE A., JULIO

1956. Peces de importancia comercial en la costa nor-occidental de México. Comisión para el Fomento de la Piscicultura Rural, México: 345 p.

Description; fishery; distribution; commercial importance.

1960. Perspectivas de desarrollo de los recursos acuáticos (Pesca, piscicultura, utilización de vegetales) [in Spanish]. *In*: Mesas Redondas sobre Problemas Demográficos de México. Instituto Mexicano de Recursos Naturales Renovables, A.C. México, : 344-411.

Object of commercial fishery; catch statistics; fishing seasons.

BERNABEI, H.

1964. Bibliography. Proceedings of the world scientific meeting on the Biology of Tunas and Related Species, FAO Fish. Rep. 4(6) : 1853-2272.

BESDNOV, L. N.

1963. Kratkaya kharakteristika ikhtiofauny Tonkinskogo (severo-V'etnamskogo) zaliva [in Russian]. Vop. Ikhtiol., 3(27) : 222-234.

Component of ichthyofauna; Vietnamese name.

BINI, GIORGIO

1952. Osservazioni sulla fauna marina delle coste del Chile e del Perù con speciale riguardo alle specie ittiche in generale ed ai tonni in particolare [in Italian]. Boll. Pesca Piscic. Idrobiol., 7(1) : 11-60.

Occurrence off Chile and Peru; maximum size; environmental conditions.

1954. Le possibilità della pesca industriale del Pacifico peruviano [in Italian]. Boll. Pesca Piscic. Idrobiol., 8(1) : 5-36.

Distribution; size; methods of fishing.

BINI, GIORGIO and ENRICO TORTONESE

1955. Missione sperimentale di pesca nel Cile e nel Perú—pesci marini peruviani [in Italian]. Boll. Pesca Piscic. Idrobiol., 9(2) : 5-39.

Unusually large fish reported.

BLACKBURN, MAURICE

1956. Real and apparent changes in size of marine animal populations during the Australian fisheries investigations. J. Cons. Int. Explor. Mer, 21(3) : 284-295.

Temporary extension of distribution and range.

BLACKBURN, MAURICE, continued

1959(*1*). Scripps Tuna Oceanography Research (STOR) Program—Quarterly Progress Report No. 6. Univ. Calif., SIO Ref. (59-22) : 17 p.

Availability in relation to oceanographic conditions.

1959(*2*). Analysis of tuna availability in relation to oceanographic variables. *In*: Blackburn, M. (Ed.). Scripps Tuna Oceanography Research (STOR) Program—Quarterly Progress Report No. 7. Univ. Calif., SIO Ref. (59-31) : 4 and 8.

Comparison of tuna catches and zooplankton volumes off Baja California.

1959(*3*). Analysis of tuna availability in relation to oceanographic variables. *In*: Blackburn, M. (Ed.). Scripps Tuna Oceanography Research (STOR) Program—Quarterly Progress Report No. 9. Univ. Calif., SIO Ref. (59-76) : 3 and 4.

Tuna catches compared with abundance of zooplankton and micronekton.

1960(*1*). Analysis of tuna availability in relation to oceanographic variables. *In*: Blackburn, M. (Ed.). Scripps Tuna Oceanography Research (STOR) Program—Quarterly Progress Report No. 10. Univ. Calif., SIO Ref. (60-15) : 8-9.

Distribution correlated with temperature.

1960(*2*). Tuna ecology. *In*: M. Blackburn. Scripps Tuna Oceanography Research (STOR) Program—Final Report—June 21, 1957 - June 30, 1960. Univ. Calif., SIO Ref. (60-50) : 65-71.

Oceanographic conditions correlated with distribution and abundance.

1961. Tuna ecology. *In*: Blackburn, M. (Ed.). Scripps Tuna Oceanography Research (STOR) Program—Report for the year July 1, 1960 - June 30, 1961. Univ. Calif., SIO Ref. (61-26) : 29-33.

Correlation analysis of abundance and zooplankton and micronekton abundance, and surface temperature; food discussed.

1962(*1*). Tuna ecology. *In:* Blackburn *et al.* Tuna oceanography in the eastern tropical Pacific. Spec. Scient. Rep. U. S. Fish Wildl. Serv., (400) : 36-42.

Oceanographic conditions correlated with distribution and abundance.

1962(*2*). Distribution and abundance of eastern tropical Pacific tunas in relation to ocean properties and features, p. 21-22. (Abstract). *In*: J. C. Marr (Ed.). Pacific Tuna Biology Conference—August 14-19, 1961—Honolulu, Hawaii. Spec. Scient. Rep. U. S. Fish Wildl. Serv., (415) : 45 p.

Influence of oceanographic conditions on abundance; influence of islands.

1962(*3*). Tuna ecology. *In*: Blackburn, M. (Ed.). Scripps Tuna Oceanography Research (STOR) Program—Half-yearly progress report No. 1. Univ. Calif., SIO Ref. (62-14) (originally numbered as 62-50) : 16.

Influence of temperature on abundance in Gulf of Tehuantepec.

1962(*4*). Tuna ecology. *In:* Blackburn, M. (Ed.). Scripps Tuna Oceanography Research (STOR) Program—Report for the year July 1, 1961 - June 30, 1962. Univ. Calif., SIO Ref. (62-25) : 21-24.

Distribution and abundance in Gulf of Tehuantepec.

1963. Distribution and abundance of tuna related to wind and ocean conditions in the Gulf of Tehuantepec, Mexico [French and Spanish abstracts]. *In*: Rosa, H., Jr. (Ed.). Proceedings of the World Scientific Meeting on the Biology of Tunas and Related Species, FAO, Fish. Rep., 3(6) : 1557-1582.

1964. Tuna ecology (Micronekton: comparison with tuna stomach contents). *In*: Blackburn, M. (Ed.). Scripps Tuna Oceanography Research (STOR) Program—report for the year July 1, 1963 - June 30, 1964. Univ. Calif., SIO Ref. (64-10) (originally numbered as 64-6) : 27-29.

BLACKBURN, MAURICE, continued

1965(*1*). Oceanography and the ecology of tunas. *In*: Harold Barnes (Ed.). Oceanography and Marine Biology—an Annual Review, 3 : 299-322, George Allen & Unwin, London. (Summary Japanese translation by M. Uda, *In*: Bull. Jap. Soc. Fish. Oceanogr. [8] : 109-119.)

Review on effects of the environment on distribution and abundance.

1965(*2*). Tuna ecology (Total micronekton of the eastern tropical Pacific). *In*: Blackburn, M. (Ed.). Scripps Tuna Oceanography Research (STOR) Program—report of the half-year July 1, 1964 - December 31, 1964. Univ. Calif., SIO Ref. (65-4) : 14-16.

Relationship between micronekton and skipjack tuna.

1965(*3*). Micronekton of the eastern tropical Pacific. *In*: Blackburn, M. (Ed.). Scripps Tuna Oceanography Research (STOR) Program—report for the year July 1, 1964 - June 30, 1965. Univ. Calif., SIO Ref. (65-13) : 6 and 8.

Composition, distribution and abundance of micronekton in relation to skipjack.

1966. Distribution of tuna in relation to red crab, chlorophyll, and temperature. *In*: Blackburn, M. (Ed.). Scripps Tuna Oceanography Research (STOR) Program —report for the half-year July 1, 1965 - December 31, 1965. Univ. Calif., SIO Ref. (66-7) : 10-11b.

BLACKBURN, MAURICE and G. W. RAYNER

1951. Pelagic fishing experiments in Australian waters. Tech. Pap. Fish. Div. C. S. I. R. O., (1) : 7-8.

Live-bait fishing. *Sardinops neopilchardus* and *Trachurus declivis* used as bait.

BLACKBURN, MAURICE and J. A. TUBB

1950. Measures of abundance of certain pelagic fish in some South-Eastern Australian waters. Bull. Commonw. Scient. Ind. Res. Org., (1) : 1-71.

Katsuwonus abundant off south coast of New South Wales and north-east coast of Tasmania.

BLEEKER, P.

1851. Over eenige nieuwe geslachten en soorten van makreelachtige visschen van den Indischen Archipel [in Dutch]. Natuurw. Tijdschr. Ned.-Indië, 1 : 341-372.

Reported from Indonesian waters.

1854. Nieuwe nalezingen op de ichthyologie van Japan [in Dutch]. Verh. Batavia. Genoot. Kunst. Wet., 26 : 1-132.

Records of occurrence; synonomy; common names.

1856. Beschrijvingen van nieuwe en winig bekende vischsoorten van Amboina, verzameld op eene reis door den Molukschen Archipel, gedaan in het gevolg van den Gouverneur Generaal Duymaer van Twist, In September en October 1855 [in Dutch]. Act. Soc. Sci., Indo-Neerl.: 1-72 p.

Record of occurrence; remarks on abundance and distribution; description; common names.

1860(*1*). Zesde bijdrage tot de kennis der vischfauna van Japan [in Dutch]. Act. Soc. Sci. Indo-Neerl., 8 : 1-104.

Synonymy; distribution; common names.

1860(*2*). Achtste bijdrage tot de kennis der vischfauna van Sumatra. (Visschen van Benkoelen, Priaman, Tandjong, Palembang en Djambi) [in Dutch]. Act. Soc. Sci. Indo-Neerl., 8 : 1-88.

Occurrence reported.

BLEEKER, P., continued

1862. Sixieme memoire sur la faune ichthyologique de l'île de Batjan [in French]. Versl. Meded. K. Akad. Wet. Amst., 14 : 99-112.

Occurrence recorded.

1865. Enumération des espèces de poissons actuellement connues de l'île d'Amboine [in French]. Tijdschr. Ned. Dierk. Vereen., 2 : 270-297.

Occurrence recorded.

1879. Enumération des espèces de poissons actuellement connues du Japon et description de trois espèces inedites [in French]. Verh. K. Akad. Wet., 18 : 1-33.

Included in the check list.

BLUNT, C. E., Jr. and JAMES B. MESSERSMITH

1960. Tuna tagging in the eastern tropical Pacific, 1952-1959. Calif. Fish Game, 46(3) : 301-340.

Tagging techniques; recoveries of tagged fish; migration.

BONHAM, KELSHAW

1946. Measurements of some pelagic commercial fishes of Hawaii. Copeia, (2) : 81-84.

Measuring methods; size composition; length-weight relationship.

BORISOV, N. I.

1958. Rybnaya promyshlennost' Demokraticheskoi Respubliki V'etnama [in Russian]. Ryb. Khoz., 34(12) : 78-83. Translation: The fishing industry of North Vietnam. U. S. Joint Publication Research Service, (JPRS L-850-N): pagination unknown.

Caught with other tuna-like fishes; maximum size of commercially-caught fish.

BOURGOIS, FRANCOIS

1965. El Instituto Nacional de Pesca del Ecuador [in Spanish]. Cienc. Interam., 6(6) : 4-10.

Importance of Ecuadorian fishery; highlights of fishery biology; brief description of fishery.

BRANDHORST, WILHELM

1965. Die chilenische Fischerei und ihre weiteren Entwicklungsaussichten [in German]. Ber. Landw., 43(1) : 148-187.

Commercial importance; catch statistics.

BREDER, CHARLES M. and DONN ERIC ROSEN

1966. Modes of reproduction in fishes. Natural History Press, Garden City, New York, : 941p.

Spawning area and season.

BRIGGS, JOHN C.

1960. Fishes of worldwide (circumtropical) distribution. Copeia, (3) : 171-180.

Range.

BROADHEAD, GORDON C.

1958. Techniques used in the tagging of yellowfin and skipjack tunas in the eastern tropical Pacific Ocean during 1955-1957. Proc. Gulf Caribb. Fish. Inst., 11th Annual Session, Nov., 1958, 91-97 p.

Methods of tagging and tagging program of the IATTC.

BROADHEAD, GORDON C. and IZADORE BARRETT

1964. Some factors affecting the distribution and apparent abundance of yellowfin and skipjack tuna in the eastern Pacific Ocean [in English and Spanish]. Bull. Inter-Am. Trop. Tuna Commn, 8(8) : 417-473.

Distribution and apparent abundance in relation to sea surface temperature.

BROADHEAD, GORDON C. and ARTHUR R. MARSHALL

1960. New methods of purse seining for tuna in the eastern Pacific Ocean. Proc. Gulf Caribb. Fish. Inst., 13th Annual Session, Nov., 1960 : 67-73.

Changes in tuna fleet caused by technological improvements in handling of gear and fish.

BROADHEAD, GORDON C. and CRAIG J. ORANGE

1960. Species and size relationship within schools of yellowfin and skipjack tuna, as indicated by catches in the eastern tropical Pacific Ocean [in English and Spanish]. Bull. Inter-Am. Trop. Tuna Commn, 4(7) : 447-492.

Composition of schools caught by purse-seiners and baitboats examined as to species and size of fish from pure and mixed schools; also evaluated for different areas of eastern Pacific.

BROCK, VERNON E.

1949. A preliminary report on *Parathunnus sibi* in Hawaiian waters and a key to the tunas and tuna-like fishes of Hawaii. Pacif. Sci., 3(3) : 271-277.

Key to Hawaiian scombroids.

1954. Some aspects of the biology of the aku, *Katsuwonus pelamis,* in the Hawaiian Islands. Pacif. Sci., 8(1) : 94-104.

Size composition; growth; schooling; sexual maturity; sex ratio.

1959(*1*). The tuna resource in relation to oceanographic features. Circ. U.S. Fish Wildl Serv., (65) : 1-11.

Distribution of adults and young; oceanographic conditions correlated with distribution of adults.

1959(*2*). Tuna fishing methods and their application. Circ. U. S. Fish. Wildl. Serv., (65) : 12-16.

Selectivity of fishing gear; fishing areas.

1965. A review of the effects of the environment on the tuna. *In*: ICNAF Environmental Symposium, held in the Headquarters of FAO, Rome 1964. Spec. Publs Int. Commn NW. Atlant. Fish., (6) : 75-92. (Summary translation into Japanese by Uda, M. *In:* Bull. Jap. Soc. Fish. Oceanogr. (5) : 103-109.)

Seasonal distribution and migration correlated with currents and oceanographic conditions; population structure deduced from serological studies, tagging and size composition, and growth.

BROCK, V. E. and J. C. MARR

1960. Honolulu Biological Laboratory—Past (1949-1958), present (1959), future (1960). Circ. U. S. Fish. Wildl. Serv., (83) : 62 p.

Report of scientific activities; plans for the future.

BROCK, V. E. and R. H. RIFFENBURGH

1960. Fish schooling: a possible factor in reducing predation. J. Cons. Int. Explor. Mer, 25(3) : 307-317.

Schooling as protective device; mathematical analysis.

BROWN, ROBERT P. and KENNETH SHERMAN

1962. Oceanographic observations and skipjack distribution in the North Central Pacific, p. 22 (Abstract). *In:* J. C. Marr (Ed.). Pacific Tuna Biology Conference

BROWN, ROBERT P. and KENNETH SHERMAN, continued

—August 14-19, 1961—Honolulu, Hawaii. Spec. Scient. Rep. U. S. Fish Wildl. Serv., (415) : 45 p.

Report on monitoring oceanographic conditions and distribution of fish.

BUÑAG, DANIEL M.

1958. Spawning habits of some Philippine tuna based on diameter measurements of the ovarian ova. Philipp J. Fish., 4(2) : 145-177.

Sexual maturity; spawning.

BUREAU OF FISHERIES, MINISTRY OF AGRICULTURE AND FORESTRY

1939. Results of promotion of exploitation of new albacore fishing grounds in 1938 [in Japanese]. Bur. Fish. Min. Agr. & For., Tokyo, Feb. 1939 : 151 p.

Results of exploratory fishing for albacore in central Pacific by 11 longliners; data include skipjack catches and water temperature (pages 31-135).

1940. Results of promotion of exploitation of new albacore fishing grounds in 1939 [in Japanese]. Bur. Fish., Min. Agr. & For., Tokyo, Feb. 1940 : 170+ p.

Results of longline exploratory fishing for albacore in central Pacific by 11 vessels; data include skipjack catches and water temperature in detail.

BUTLER, CHARLES

1946. Vitamin A and D in fish livers and viscera. Comml. Fish. Rev., 8(4) : 13-19.

Vitamin A and D content of liver oil.

CABBAT, FELICITAO and BLUEBELL R. STANDAL

1964. The determination of the essential amino acid content of five Hawaii fish by column chromatography on ion-exchange resin. (Abstract). Proc. Hawaii. Acad. Sci. : 23-24.

Evaulation as a source of protein in human diet.

CALKINS, THOMAS P.

1961. Measures of population density and concentration of fishing effort for yellowfin and skipjack tuna in the eastern tropical Pacific Ocean, 1951-1959 [in English and Spanish]. Bull. Inter-Am. Trop. Tuna Commn, 6(3) : 69-152.

Quarterly variation in weighted and unweighted indices of density, and in index of concentration of effort.

1963. An examination of fluctuation in the "concentration index" of purse-seiners and baitboats in the fishery for tropical tunas in the eastern Pacific, 1951-1961 [in English and Spanish]. Bull. Inter-Am. Trop. Tuna Commn, 8(5) : 255-316.

Changes in distribution and amount of seiner effort in eastern Pacific tuna fishery; quarterly variations in indices of density and concentration; relationship between weighted and unweighted indices of density; relationship between number of exploited one-degree areas and indices of concentration and density; relationship between indices of density and concentration of baitboats and purse-seiners.

CANNON, RAYMOND

1956. How to fish the Pacific Coast—a manual for salt water fishermen. Lane Publishing Co., Menlo Park, California, 337 p.

Description; common names; habitat; sport fishing techniques.

CANNON, RAY *et al.*

1966. The Sea of Cortez. Lane Magazine and Book Co., Menlo Park, California : 284 p.

Brief description; common names; sport fishing techniques.

CHABOUIS, L. and F. CHABOUIS

n. d. Petite histoire naturelle de Établissements Français de l'Océanie [in French]. Vol. 2. Zoologie. Bussière, Saint-Amand-Montrod-Cher, France, : 137 p.

Brief description; common names; general biology.

CHAPMAN, WILBERT M.

1946. Observations on tuna-like fishes in the tropical Pacific. Calif. Fish Game 32(4) : 165-170.

Records of occurrence; exploratory fishing.

1954. El atún y el mar [in Spanish]. Pesca, Los Angeles, 5(6) : 348 and 351.

Brief summary of current systems of eastern Pacific Ocean; correlation of oceanographic conditions with occurrence of skipjack mentioned.

CHATWIN, BRUCE M.

1959. The relationship between length and weight of yellowfin tuna (*Neothunnus macropterus*) and skipjack tuna (*Katsuwonus pelamis*) from the eastern tropical Pacific Ocean [in English and Spanish]. Bull. Inter-Am. Trop. Tuna Commn, 3(7) : 305-352.

Length-weight relationship calculated for various areas of eastern Pacific.

CHEN, JOHNSON T. F.

1956. A synopsis of the vertebrates of Taiwan [in Chinese]. Kai ming Book Store, Taipei, Formosa, 619 p.

Keys; description.

CHU, YUEN-TEN *et al.*

1962. Nan hai yu lei chi (Synopsis of South Sea fishes) [in Chinese]. K'o sheh chu pan she Co. Published jointly by: Institute of Oceanography, Academia Sinica, Institute of Zoology, Academia Sinica, and Shanghai Fisheries College, 1148 p.

Description.

CHYUNG, MOON KI (CHUNG, M. K.)

1954. Korean fishes (Hankook ubo) [in Korean with an English summary]. Republic of Korea, Department of Commerce and Industry (Sang kong boo), Seoul, 517 p. + 56 p.

Classification; description.

1961. Illustrated encyclopedia, the fauna of Korea. (2) Fishes (Hankook dongmool dokam, Uryu) [in Korean]. Choongang dosu chooship hoisa (Central Publishing Company), Seoul, : 861 p.

Description; classification.

CLEAVER, FRED C. and BELL M. SHIMADA

1950. Japanese skipjack (*Katsuwonus pelamis*) fishing methods. Comml Fish. Rev., 12(11) : 1-27.

History; biology; general account of fishery.

CLEMENS, HAROLD B.

1956. Rearing larval scombroid fishes in shipboard aquaria. Calif. Fish Game, 42(1) : 69-79.

Ripe female caught while trolling.

CLEMENS, HAROLD B. and PHIL M. ROEDEL

1964. Tagging experiments on tuna and mackerel in the eastern Pacific. Marine Biological Association of India, Proceeding of the Symposium on Scombroid Fishes, Mandapam Camp, Part 2 : 769-784.

Historical sketch; description of methods and results; conclusions on migration.

CLEMENS, W. A. and G. V. WILBY

1946. Fishes of the Pacific Coast of Canada. Bull. Fish. Res. Bd Can., 68 : 1-368.

One record from British Columbia; distribution; description.

1949. Fishes of the Pacific Coast of Canada (Revised). Bull. Fish. Res. Bd Can., 68 : 1-368.

See Clemens and Wilby 1946.

1961. Fishes of the Pacific Coast of Canada (Second edition). Bull. Fish. Res. Bd Can., 68 : 1-443.

Description; two records from British Columbia; distribution; food.

CLOTHIER, CHARLES R.

1950. A key to some Southern California fishes based on vertebral characters. Fish Bull., Sacramento, (79) : 83 p.

Osteology; meristics.

COBB, JOHN N.

1905(*1*). The commercial fisheries of the Hawaiian Islands in 1903. Rep. U.S. Bur. Fish., 1904 : 435-512.

Catch statistics; common names.

1905(*2*). The commercial fisheries of the Hawaiian Islands. Bull. U.S. Fish Commn, 23, Part 2, Section 3 : 715-765.

Fishing methods and fishing gear; wholesale trade, amount and value; catch statistics.

1919. The canning of fishery products—showing the history of the art of canning; the methods followed with each species, and suggestions for canning unutilized species; where, when and how they are obtained; together with other information of much value to canners. Miller Freeman, Seattle, 217 p.

Object of commercial fishery off Hawaii.

COLLETTE, BRUCE B.

1966. The genera of scombrid fishes. Abstract *In*: Biological studies of tunas and sharks in the Pacific Ocean. Proc. Pacif. Sci. Congr., 7 : 17.

Phylogenetic position.

COLLETTE, BRUCE B. and ROBERT H. GIBBS, Jr.

1963. A preliminary review of the fishes of the family Scombridae. *In*: Rosa, H., Jr. (Ed.) Proceedings of the World Scientific Meeting on the Biology of Tunas and Related Species. FAO Fish. Rep., 1(6) : 23-32 (French and Spanish abstracts, 3[6] : 977-978).

Classification.

1965. Skipjack tuna *Katsuwonus pelamis*. *In*: McClane, A. J. (Ed.) McClane's Standard Fishing Encyclopedia. Holt, Rinehart and Winston, New York, : 799-800.

General description; distribution; use as food; commercial importance.

COMMISSION TO POPULARIZE THE KNOWLEDGE OF FISHING GROUNDS

1958. Current report of fishing conditions for albacore, skipjack and saury for 1958 [in Japanese]. (Issued every five days and later combined into one volume). Gyo-

COMMISSION TO POPULARIZE THE KNOWLEDGE OF FISHING GROUNDS, continued

kyō sokuhō (Curr. Rep. Fish. Cond.). (1) to (46) : without pagination.

Fishing conditions in relation to currents and water temperature on local fishing grounds off northern Japan, by five-day periods; catch and effort statistics; distribution of various types of schools; short-term prediction of fishing conditions; horizontal and vertical distribution of water temperature.

1964. Current reports of fishing conditions of bluefin tuna, albacore, skipjack and saury for 1964 [in Japanese]. (Issued every 5 days, and later combined into one volume). Gyokyō sokuhō (Curr. Rep. Fish. Cond.). (1)-(52) : without pagination.

Seasonal catch; effort; catch per unit of effort off Japan; fishing conditions by area and time; seasonal variation in size composition; live-bait and purse-seine fishing.

1965. Current reports of fishing conditions of bluefin tuna, albacore, skipjack and saury for 1965 [in Japanese]. (Issued every 5 days and later combined into one volume). Gyokyō sokuhō (Curr. Rep. Fish. Cond.). (1)-(52) : without pagination.

Seasonal catch; effort and catch per unit of effort off Japan; fishing conditions by area and time; seasonal variation in size composition; live-bait and purse-seine fishing.

CONNER, GERALDINE

1929. Comparison of the catches north and south of the international boundary including fish taken in the territorial waters of the United States and Mexico and on the high seas. Fish Bull., Sacramento, (15) : 50-62.

CORWIN, GENEVIEVE A.

1930. A bibliography of the tunas. Fish Bull., Sacramento, (22) : 103 p.

CRAIG, J. A.

1929. List of common and scientific names of fishes. Fish Bull., Sacramento, (15) : 11-12.

CRIOU, RENÉ

1959. Possibilités de péche artisanale du thon en Nouvelle-Calédonie [in French]. ORSTOM, Institut Français d'Océanie, 20 p.

Brief description; fishing methods; handling of catch.

1961. Tuna trolling and its prospects in New Caledonia. Tech. Pap. S. Pacif. Commn, (134) : 1-13.

Description of fish and trolling gear.

CURTIS, ANTHONY

1938. A short zoology of Tahiti in the Society Islands. Privately published in U. S. A., 193 p.

Occurrence; fishing methods; brief description; common names.

CUSHING, JOHN E.

1952(*1*). Individual variation in the hemagglutinin content of yellowfin and skipjack bloods. J. Immun., 68(5) : 543-547.

1952(*2*). The serological differentiation of fish bloods. Science, N. Y., 115 : 404-405.

Individual variation in agglutinin content of fish blood.

1956. Observations on serology of tuna. Spec. Scient. Rep. U. S. Fish Wildl. Serv., 183 : 14.

Individual differences in erythrocyte antigens.

1964. The blood groups of marine animals. *In:* Russell, F. S. (Ed.) Advances in Marine Biology. Vol. 2, Academic Press, London: 85-131.

Review of serological investigation; blood types; blood systems; population genetics.

CUSHING, JOHN E. and GEORGE L. DURALL

1957. Isoagglutination in fish. Am. Nat. 91(857) : 121-126.

Individual differences in erythrocyte antigens.

CUVIER, GEORGES and ACHILLE VALENCIENNES

1831. Histoire naturelle des poissons [in French]. (8) : 509 p., Paris.

Description and distribution, mostly pertaining to material from Atlantic Ocean.

DAVIES, DAVID H.

1958. The relationship between sportfishing in the kelp beds and the harvesting of kelp off the coast of California. Univ. Calif., IMR Ref. (58-4) : 56 p.

Listed as one of many fishes caught by sportsmen in or near kelp beds.

DAVIS, J. CHARLES

1949. California salt water fishing. A. S. Barnes and Co., New York, 271 p.

Description; common names.

de BEAUFORT, L. F. and W. M. CHAPMAN

1951. The fishes of the Indo-Australian archipelago. E. J. Brill, Leiden; 9 : 484 p.

Description; synonymony; records of occurrence.

de BUEN, FERNANDO

1953. Las familias de peces de importancia económica [in Spanish]. Primer Centro Latinoamericano de Capacitación Pesquera, FAO, Santiago de Chile, 311 p.

Commercially important fishes.

1955. Notas sobre un viaje de estudios de oceanografía aplicada en el extremo norte de la costa chilena [in Spanish]. Boln Cient. Cia Adm. Guano, 2 : 25-39.

Distribution correlated with oceanographic conditions.

1957(*1*). Pelagic fishes and oceanographic conditions along the northern and central coast of Chile. (French summary). UNESCO Symposium on Physical Oceanography 1955 Tokyo, UNESCO, Tokyo, 153-155.

Occurrence off Chile in two types of water.

1957(*2*). Preliminary list of Chilean fishes and their vernacular names. Proc. Pacif. Sci. Congr., 3 : 266-279.

Common names.

1958. Peces del suborden *Scombroidei* en aguas de Chile [in Spanish]. Revta Biol. Mar., 7(1, 2 and 3) : 3-38.

Description; fishery; food; sexual maturity.

de CASTELNAU, F.

1879. Essay on the ichthiology of Port Jackson. Proc. Linn. Soc. N. S. W., 3 : 347-402.

Occurrence recorded.

DELSMAN, H. C. and J. G. F. HARDENBURG

1934. De Indische zeevisschen en zeevisscherij [in Dutch]. Visser & Co., Batavia (Djakarta), 388 p.

Distribution; keys; fishery.

DEL SOLAR, ENRIQUE M.

1942. Ensayo sobre la ecología de la anchoveta [in Spanish]. Boln Cía Adm. Guano, 18(1) : 3-23.

Occurrence off Peruvian coast as influenced by oceanographic factors; stomach content and analysis.

DEMANDT, E.

1913. Die Fischerei der Samoaner. Eine Zusammenstellung der bekanntested Methoden des Fanges der Seetiere [in German]. Mitt. Mus. Völkerk. Hamb., 3(1) : 142 p.

Description of native fishery; boats, fishing gear and methods, fishing areas and fishing seasons; cultural aspects of the fish and fishery.

DICK, MYVANWY M.

1964. Scombroid fishes in the Museum of Comparative Zoology, Harvard University. Marine Biol. Assoc. India, Proc. Symposium Scombroid Fish., Mandapam Camp, Part 1 : 459-460.

Specimens from Galapagos and Society Islands.

DOMANTAY, JOSE S.

1940. Tuna fishing in Southern Mindanao. Philipp. J. Sci. 73(4) : 423-436.

Importance in commercial catch; fishing methods; fishing grounds.

D'OMBRAIN, ATHEL

1957. Game fishing off the Australian coast. Angus and Robertson, Sydney, 230 p.

General account of distribution and food.

DOUMENGE, F.

1962. Ou en est le Japon dans le domaine de la pêche et du commerce international des thonides? [in French]. Pêche Marit., (1012) : 504-511.

Monthly fluctuations in landings.

DUNG, DOROTHY I. Y. and WILLIAM F. ROYCE

1953. Morphometric measurements of Pacific scombroids. Spec. Scient. Rep. U. S. Fish Wildl. Serv., (95) : 170 p.

Detailed measurements of samples from different areas.

DUNSTAN, D. J.

1961. Trolling results of F. R. V. "Tangula" in Papuan waters from August, 1957, to February, 1959. Papua N. Guin. Agric. J., 13(4) : 148-156.

Exploratory fishing.

ECKLES, HOWARD H.

1949(*1*). Fishery exploration in the Hawaiian Islands (August to October 1948), by the vessel *Oregon* of the Pacific Exploration Company. Comml Fish. Rev., 11(6) : 1-9.

1949(*2*). Observations on juvenile oceanic skipjack (*Katsuwonus pelamis*) from Hawaiian waters and sierra mackerel from the eastern Pacific. Fish. Bull. Fish Wildl. Serv., U. S., 51(48) : 245-250.

Description of juveniles.

EGO, KENJI and TAMIO OTSU

1952. Japanese tuna-mothership expeditions in the western equatorial Pacific Ocean (June 1950 to June 1951). Comml Fish. Rev., 14(6) : 1-19.

Longline catches.

EIGENMANN, CARL H.

1892. The fishes of San Diego, California. Proc. U. S. Natn. Mus., 15(897) : 123-178.

Recorded from San Diego.

EIGENMANN, CARL H. and ROSA S. EIGENMANN

1890. Additions to the fauna of San Diego. Proc. Calif. Acad. Sci., 2 Ser., 3 : 1-24.

Occurrence recorded.

1892. A catalogue of the fishes of the Pacific coast of America north of Cerros Island. Ann. N. Y. Acad. Sci., 1891-1892, (6) : 349-358.

Recorded from San Diego.

ELLIOTT, LOUIS D.

1922. The tunas of southern California. Pacif. Fisherm., 20(2) : 12-13.

Description; brief description of the fishery.

1923. The tunas of southern California. Pacif. Fisherm. Yb., : 76-77.

Reprint of paper published by Elliott in 1922; one illustration of *K. pelamis* added but mislabeled as *S. chilensis*.

1924. The tunas of southern California. Pacif. Fisherm., 22(5) : 14-15.

Revised version of papers published by Elliott in 1922 and 1923.

ENDO, KINJI and WATARU SIMIDU

1955. Studies on muscle of aquatic animals—XXIII. Distribution of extractive nitrogens in bloody muscle [in Japanese with an English summary]. Bull. Jap. Soc. Scient. Fish., 21(2) : 127-129.

Nitrogen compounds occurring in extracts from dark and ordinary meat of skipjack, mackerel and yellowtail, analyzed and compared.

EVERMANN, BARTON W. and ALVIN SEALE

1907. Fishes of the Philippine Islands. Bull. Bur. Fish. Wash., 26 : 51-110.

Records.

FICHTER, GEORGE S. and PHIL FRANCIS

1965. A guide to fresh and salt-water fishing. Golden Press, New York, 160 p.

Brief description; habitat; sport fishing methods.

FIEDLER, R. H. H.

1944. The Peruvian fisheries. Geogrl Rev., 34 : 96-119.

Article based on "La pesca y las industrias pesqueras en el Perú" by Fiedler *et al.* 1943.

FIEDLER, REGINALD H., NORMAN D. JARVIS and MILTON J. LOBELL

1943. La pesca y las industrias pesqueras en el Perú con recomendaciones para su futuro desarrollo [in Spanish]. Compania Administradora del Guano, Lima, 371 p.

Occurrence off Peru; observations on fish caught during exploratory fishing; oceanographic conditions correlated with fishing; general remarks on biology of skipjack from Peruvian waters.

FINCH, ROLAND

1963. The tuna industry. *In:* Maurice E. Stansby (Ed.) Industrial Fishery Technology : 87-106, Reinhold Publishing Corp., New York, 393 p.

Brief description; size of commercially caught fish; short description of eastern Pacific fishery.

FINK, BERNARD D.

1965(*1*). Estimations, from tagging experiments, of mortality rates and other parameters respecting yellowfin and skipjack tuna [in English and Spanish]. Bull. Inter-Am. Trop. Tuna Commn, 10(1) : 1-82.

1965(*2*). A technique, and the equipment used, for tagging tunas caught by the

FINK, BERNARD D., continued

pole and line method. (French and Spanish summaries). J. Cons. Int. Explor. Mer, 29(3) : 335-339.

1966. Tuna tagging in the eastern tropical Pacific Ocean, 1955-1964. (Abstract). *In:* Biological studies of tunas and sharks in the Pacific Ocean. Proc. Pacif. Sci. Congr., 7 : 23. (Translation into Japanese—Tuna Fishg [52] : 22).

FISH, MARIE POLAND

1948. Sonic fishes of the Pacific. Woods Hole Oceanographic Institution, Technical Report (2) : 144 p.

Distribution; size; synonymy; seasonal distribution off Japan.

FISHERIES AGENCY, JAPAN

1963. Report of research boat, *Shoyo-maru,* for 1962 fiscal year. (Exploratory research of the tuna fishing grounds in the eastern Pacific) [in Japanese]. Suisan-chō seisan-bu kaiyō-dainika (Second Deep Ocean Section, Marine Production Division, Fisheries Agency), Tokyo, July 1963, 177 p.

Records include skipjack caught by longline; measurements and sexual maturity data.

1964. Report of research boat, *Shoyo-maru,* for 1963 fiscal year. (Reports on the navigation and researches on the tuna resources in the eastern Pacific Ocean) [in Japanese]. Suisan-chō chōsakenkyū-bu, kenkyū-daiikka (First Research Section, Research Division, Fisheries Agency), Tokyo, Aug. 1964, 465 p.

Records include skipjack caught by longline; data on collection of young specimens taken by plankton nets.

1965. Report of research boat, *Shoyo-maru,* for 1964 fiscal year. (Report on the navigations and researches on tuna and spear fish resources in the eastern Pacific Ocean) [in Japanese]. Suisan-chō chōsakenkyū-bu, kenkyū-daiikka (First Research Section, Research Division, Fisheries Agency), Tokyo, Aug. 1965 : 417 p.

Data on skipjack taken by longline and larvae caught in plankton nets.

FITCH, JOHN E.

1964. First records for the bigeye thresher (*Alopias superciliosus*) and slender tuna (*Allothunnus fallai*) from California, with notes on eastern Pacific scombroid otoliths. Calif. Fish Game, 50(3) : 195-206.

Otoliths described and illustrated.

1966. A marine catfish, *Bagre panamensis* (Gill), added to the fauna of California, and other anomalous fish occurrence off southern California in 1965. Calif. Fish Game, 52(3) : 214-215.

Distribution influenced by oceanographic conditions.

FLETT, A.

1944. A report on live-bait fishing for tuna in Australia. J. Coun. Scient. Ind. Res. Aust., 17(1) : 59-64.

Experimental fishing; catches of skipjack.

FORMOSA GOVERNMENT-GENERAL FISHERIES EXPERIMENTAL STATION

1930. Oceanographic investigations. Sect. 3. Northern oceanographic conditions and skipjack fishing [in Japanese]. Taiwan sōtokufu suisan shiken-jō suisan shiken hōkoku (Fish. Res. Rep. Formosa Gov.-Gen. Fish. Expt. Stn) for 1928: 67-70.

Skipjack fishing conditions in Taiwan-Ryukyu waters discussed in relation to oceanographic conditions, particularly water temperature; catch and catch-per-trip by ten-day periods.

1931. Oceanographic investigations. Sect. 3. Northern oceanographic conditions

FORMOSA GOVERNMENT-GENERAL FISHERIES EXPERIMENTAL STATION continued

and skipjack fishing [in Japanese]. Taiwan sōtokufu suisan shiken-jō suisan shiken hōkoku (Fish. Res. Rep. Formosa Gov.-Gen. Fish. Expt. Stn) for 1929: 28-30.

Seasonal fishing conditions for skipjack in Taiwan-Ryukyu waters discussed in relation to oceanographic conditions, such as surface water temperature and specific gravity; catch and catch-per-trip by ten-day periods.

1932. Oceanographic investigations in the waters adjacent to Formosa. Part 2. Northern oceanographic conditions and skipjack fishing [in Japanese]. Taiwan sōtokufu suisan shiken-jō jigyō hōkoku (Prog. Rep. Formosa Gov.-Gen. Fish. Expt. Stn) for 1930 (Ocean.): 10-11.

Seasonal fishing conditions in Taiwan-Ryukyu waters of skipjack discussed in relation to oceanographic conditions, particularly surface water temperature and specific gravity; catch and catch-per-trip by ten-day periods.

1933. Oceanographic investigations in waters adjacent to Formosa. Part 2. Oceanographic conditions and skipjack fishing in northern Formosa [in Japanese]. Taiwan sōtokufu suisan shiken-jō jigyō hōkoku (Prog. Rep. Formosa Gov.-Gen. Fish. Expt. Stn) for 1931 (Ocean.): 13-15.

Seasonal fishing conditions for skipjack in Taiwan-Ryukyu waters discussed in relation to oceanographic conditions, such as surface temperature and specific gravity; catch and catch-per-trip by ten-day periods for 1930 and 1931.

1940. Investigations of tuna longline fishing grounds in the South China Sea [in Japanese]. *In:* Report of fishing grounds investigations by the *Shonan-maru* in 1937. Taiwan sōtokufu suisan shiken-jō shuppan (Publns Formosa Gov.-Gen. Fish. Expt. Stn) (21) : 69-117.

Results of a longline exploratory fishing cruise in the South China Sea; catches analyzed by size and depth of hooks; tag records with detailed oceanographic data; data on length, sexual maturity and stomach contents of 42 skipjack.

FORSBERGH, ERIC D.

1963. Some relationships of meteorological, hydrographic, and biological variables in the Gulf of Panama [in English and Spanish]. Bull. Inter-Am. Trop. Tuna Commn, 7(1) : 1-109.

Catch of skipjack and zooplankton abundance correlated.

FOWLER, HENRY W.

1928. The fishes of Oceania. Mem. Bernice P. Bishop Mus., 10 : 540 p.

Description; synonymy.

1931. The fishes of Oceania. Supplement 1. Mem. Bernice P. Bishop Mus., 11(5) : 313-381.

Euthynnus pelamis listed from Hawaii.

1934. The fishes of Oceania. Supplement 2. Mem. Bernice P. Bishop Mus., 11(6) : 385-466.

Euthynnus pelamis listed from Tahiti.

1938. The fishes of the George Vanderbilt South Pacific Expedition, 1937. Monogr. Acad. Nat. Sci. Philad., 2 : 349 p.

Description; synonymy.

1944. The fishes. *In:* Results of the Fifth George Vanderbilt Expedition (1941) (Bahamas, Caribbean Sea, Panama, Galapagos Archipelago and Mexican Pacific Islands). Monogr. Acad. Nat. Sci. Philad., (6) : 57-529.

Occurrence recorded 300 miles southeast of Clipperton Island.

1945. Los peces del Peru—catálogo sistemático de los peces que habitan en aguas

FOWLER, HENRY W., continued

peruanas [in Spanish]. Museo Historia Nacional, Javier Prado, Lima, 298 p.

Distribution; synonymy.

1949. The fishes of Oceania. Mem. Bernice P. Bishop Mus., Suppl. 3, 12(2) : 38-186.

Synonymy; previously published records from Central Pacific.

FOX, D. L. and N. MILLOTT

1954. A biliverdin-like pigment in the skull and vertebrae of the ocean skipjack, *Katsuwonus pelamis* (Linnaeus). Experientia 10(4) : 185-187.

Biochemical study of unusually pigmented bones.

FRASER-BRUNNER, A.

1950. The fishes of the family Scombridae. Ann. Mag. Nat. Hist., 3(26) : 131-163.

Classification; phylogeny; distribution.

FUJII, YUTAKA

1963(*1*). Biochemical studies on the races of tuna. XII. The antigen-antibody reaction between tuna testis DNA and anti-serum [in Japanese with an English summary]. Rep. Nankai Reg. Fish. Res. Lab., 19 : 53-67.

Results of tests using different techniques to study differences in DNA; serological reaction of antigen DNA compared between skipjack and mackerel vs. yellowfin and bigeye based on differences in the reaction of antibody and antigen against anti-yellowfin or anti-bigeye serum by the complement-fixation technique.

1963(*2*). Biochemical studies on the races of tuna. XIII. Immunological studies on DNA of tuna testis by the technique of complement fixation [in Japanese with an English summary]. Rep. Nankai Reg. Fish. Res. Lab., 19 : 69-78.

Serological properties of DNA eluted in each fraction by ecteola-cellulose column fractionation analyzed by the complement-fixation technique; DNA of yellowfin and skipjack testis compared.

FUJIMAKI, MASAO, S. ODAGIRI and C. INAGAKI

1953. On the so-called vitamin C of canned bonito in brine [in Japanese with an English summary]. Bull. Jap. Soc. Scient. Fish., 18(12) : 703-708.

Vitamin C contents in fresh, cooked and canned meat of skipjack determined by several methods.

FUJINO, KAZUO and LUCIAN M. SPRAGUE

1966. Genetic study of the red blood cells and serum components of skipjack and yellowfin tunas. (Abstract). *In:* Divisional Meeting—Fisheries Science. Proc. Pacif. Sci. Congr., 7 : 2.

FUJISAKI, SHUJI

1934. Oceanographic investigations in the waters adjacent to Formosa. Part 2. Oceanographic conditions and skipjack fishing in northern Formosa [in Japanese]. Taiwan sōtokufu suisan shiken-jō jigyō hōkoku (Prog. Rep. Formosa Gov.-Gen. Fish. Expt. Stn) for 1932 (Ocean.) : 10-12.

Seasonal fishing conditions of skipjack in Taiwan-Ryukyu waters discussed in relation to oceanographic conditions, such as surface water temperature and specific gravity; catch and catch-per-trip by ten-day periods for 1931 and 1932.

FUJITA, TSUNENOBU

1902. Nihon suisan dōbutsu-gaku (Japan Marine Zoology) [in Japanese]. Shōka-bō, Tokyo, 171-173.

General description of skipjack.

FUJITA, TSUNENOBU and YOJIRO WAKIYA

1915. A list of fishes from Kishu [in Japanese]. Suisan gakkai hō (Proc. Scient. Fishery Ass.), 1(1) : 25-37.

Scientific name, Japanese common names and Japanese standard names of fishes found in southern Japan.

FUKUDA, HIRONARI

1958. Studies on the succinic dehydrogenase of fish. V. Difference of succinic dehydrogenase activity between various fishes and fish organs [in Japanese with an English summary]. Bull. Jap. Soc. Scient. Fish., 24(1) : 24-28.

Succinic dehydrogenase contained in various parts ot fish measured and compared between several species of fish.

FUKUDA, HIRONARI and TOSHIAKI HIGUCHI

1954. Studies on the catalase of fishes. II. Distribution of catalase in the fish-organs [in Japanese with an English summary]. Bull. Jap. Soc. Scient. Fish., 20(3) : 232-236.

Amount of catalase contained in various portions of fish organs compared among various species of fish.

FUKUDA, MASANOBU and SHOSUKE IIZUKA

1939(*1*). Experimental pole and line fishing for skipjack [in Japanese]. Kumamoto-ken suisan shiken-jō jigyō hōkoku (Prog. Rep. Kumamoto Pref. Fish. Expt. Stn) for 1938: 1-14.

Summary of exploratory live-bait fishing in Ryukyu waters; seasonal fishing conditions in relation to water temperature; catch records and oceanographic data.

1939(*2*). Skipjack tagging experiment [in Japanese]. Kumamoto-ken suisan shiken-jō jigyō hōkoku (Prog. Rep. Kumamoto Pref. Fish. Expt. Stn) for 1938: 21.

Release data and lengths of 19 tagged skipjack.

FUKUSHIMA, KIYOSHI, I. OSAKABE, T. KIKUCHI and I. OKADA

1957. Polarographic studies on fish muscle meats. J. Tokyo Univ. Fish., 43(2) : 173-178.

SH-group contents in white and dark flesh of skipjack and other species determined by polarography compared; change of SH-group contents during storage of flesh also examined.

FUKUSHIMA, SHINICHI

1953. Body temperature of skipjack, measured immediately after capture. (With special reference to the extraordinarily high temperature of the "red muscles") [in Japanese with an English summary]. Bull. Tohoku Reg. Fish. Res. Lab., 2 : 22-25.

Body temperature in body cavity and red muscle compared with water temperature for 18 skipjack caught near Japan.

FURUYA, KIYOSHI

1955. Tuna longline exploratory fishing investigation in the South Sea and by *Sagami-maru* [in Japanese]. Kanagawa-ken suisan shiken-jō gyōmu hōkoku (Prog. Rep. Kanagawa Pref. Fish. Expt. Stn) for 1952 and 1953: 1-63.

Catch records and oceanographic observations from South Sea waters.

GABRIELSON, IRA N. and FRANCESCA LA MONTE

1950. The fisherman's encyclopedia. Stackpole and Heck, New York: 968 p.

Description; distribution.

GODFREY, MARY LYNNE

1958. Review of POFI's oceanographic program, January 1952-June 1957. Proc. Pacif. Sci. Congr., 16 : 18-20.

Fishery-oceanography surveys.

GODSIL, H. C.

1936. Tuna tagging. J. Cons. Int. Explor. Mer, 11(1) : 94-97.

Two kinds of tags; tagging techniques.

1937. The five tunas. *In:* The commercial fish catch of California for the year 1935. Fish Bull., Sacramento, (49) : 24-33.

Catch statistics; trend of tuna fishery.

1938(*1*). Tuna tagging. Calif. Fish Game, 24(3) : 245-250.

Two kinds of tags; tagging tools; release records.

1938(*2*). The high seas tuna fishery of California. Fish Bull., Sacramento, (51) : 40 p.

Catch statistics; fishing area; fishing methods.

1945. The Pacific tunas. Calif. Fish Game, 31(4) : 185-194.

Illustrated keys.

1949. The tunas. *In:* The commercial fish catch of California for the year 1947 with an historical review 1916-1947. Fish Bull., Sacramento, (74) : 11-27.

Historical sketch of fishery; catch statistics; distribution of fish, fishing methods.

GODSIL, H. C. and ROBERT D. BYERS

1944. A systematic study of the Pacific tunas. Fish Bull., Sacramento, (60) : 131 p.

Meristics; morphometry, anatomy; description; classification.

GODSIL, H. C. and E. C. GREENHOOD

1948. Some observations on the tunas of the Hawaiian region. California Division of Fish Game. Bureau of Marine Fisheries (mimeogr.), 8 p.

Exploratory cruise report; distribution.

1952. Observations on the occurrence of tunas in the eastern and central Pacific. Calif. Fish Game, 38(2) : 239-249.

Exploratory cruise; distribution.

GOODING, REGINALD M.

1963. The olfactory organ of the skipjack *Katsuwonus pelamis* (French and Spanish abstracts). *In:* Rosa, H., Jr. (Ed.) Proceedings of the World Scientific Meeting on the Biology of Tunas and Related Species. FAO, Fish. Rep., 3(6) : 1621-1631.

1964. Observations of fish from a floating observation raft at sea. Proc. Hawaii Acad. Sci.: 27.

Adults and young seen from underwater viewing chamber.

1965. A raft for direct subsurface observation at sea. Spec. Scient. Rep. U. S. Fish Wildl. Serv., (517) : 5 p.

Literature on association of skipjack with drifting objects mentioned.

GORBUNOVA, N. N.

1965. Sroki i usloviya razmnozheniya skumbrievidnykh ryb (Pisces, Scombroidei). Seasons and conditions of spawning of the Scombroid fishes [in Russian, English summary]. Trudy Inst. Okeanol., 80 : 36-61.

Discussion of spawning and larval ecology in world oceans.

GOSLINE, W. A. and V. E. BROCK

1960. Handbook of Hawaiian fishes. Honolulu, Univ. of Hawaii Press, 372 p.

Common names; descriptions; behavior and habitats; commercial importance; distribution; key.

GREENHOOD, EDWARD G. and STERLING P. DAVIS

1963. Tuna landings and production 1916 to 1961 (French and Spanish abstracts). *In:* Rosa, H., Jr. (Ed.) Proceedings of the World Scientific Meeting on the Biology of Tunas and Related Species. FAO, Fish. Rep., 3(6) : 1395-1407.

Historical account of commercial fishes; commercial importance in comparison with other tunas.

GRIFFITHS, RAYMOND C.

1963. Studies of oceanic fronts in the mouth of the Gulf of California, an area of tuna migrations (French and Spanish abstracts). *In:* Rosa, H., Jr. (Ed.) Proceedings of the World Scientific Meeting on the Biology of Tunas and Related Species. FAO, Fish. Rep., 3(6) : 1583-1605.

Environmental study with some reference to association of skipjack with oceanic fronts.

1965. A study of ocean fronts off Cape San Lucas, Lower California. Spec. Scient. Rep. U. S. Fish Wildl. Serv., (499) : 54 p.

Association of skipjack with oceanic fronts mentioned.

GÜNTHER, ALBERT C. L. G.

1860. Catalogue of the acanthopterygian fishes in the collection of the British Museum, 2 : 548 p. London. (Reprinted in 1964 by Wheldon & Wesley, Ltd. and Verlag J. Cramer).

Description; distribution and synonymy of *Thynnus pelamys*.

1876. Die Fische der Südsee [in German]. J. Mus. Godeffroy, 2(11) : 257 p.

Synonymy; description; distribution.

1880. An introduction to the study of fishes. Edinburgh, Adam and Charles Black, 720 p.

Brief mention of distribution.

GUTIÉRREZ, TONATIUH

1965. Atlas pesquero nacional [in Spanish]. Dirección General de Pesca e Industrias Conexas, México, 40 charts, no pagination.

Fishing areas; commercial importance.

HALSTEAD, BRUCE W.

1954. A note regarding the toxicity of the fishes of the skipjack family, Katsuwonidae. Calif. Fish Game, 40(1) : 61-63.

Case of ichthyosarcotoxism.

1956. Animal phyla known to contain poisonous marine animals. *In:* Buckley, E. E. and N. Porges (Ed.), Venoms. American Association for the Advancement of Science, Washington, Publication (44) : 9-27.

Ichthyosarcotoxism; symptoms; treatment.

1957. Poisonous fishes and their relationship to marine food resources in the Pacific area. Proc. Pacif. Sci. Congr., 8(3) : 321-330.

Ichthyosarcotoxism: chemical characteristics; treatment.

1959. Dangerous marine animals. Cornell Maritime, Cambridge, Maryland, 146 p.

Ichthyosarcotoxism: symptoms; treatment.

HALSTEAD, BRUCE W., TOSHIHARU KAWABATA, and THOMAS F. JUDEFIND

1961. The public health significance of the recent outbreaks of poisonings by marine organisms in Japan. Proc. Pacif. Sci. Congr., 10 : 84-87.

Increase of poisonings in Philippine Islands.

HALSTEAD, BRUCE W., and W. M. LIVELY, JR.

1954. Poisonous fishes and ichthyosarcotoxism. U. S. Arm. Forces Med. J., 5(2) : 157-175.

Icthyosarcotoxism: symptoms; occurrences.

HAMRE, JOHS.

1963. Size and composition of tuna stocks. (French and Spanish abstracts). *In:* Rosa, H., Jr. (Ed.) Proceedings of the World Scientific Meeting on the Biology of Tunas and Related Species. FAO, Fish. Rep., 3(6) : 1023-1039.

Review of published works on analyses of age and growth.

HARADA, ISOKICHI

1928. A new species of Acanthocephala from the Japanese bonito, *Euthynnus vagans*. Jap. J. Zool., 2(1) : 1-4.

Description of a new species of an acanthocephalan, a parasite.

HASHIMOTO, YOSHIO, S. YAMADA and T. MORI

1953. Animal protein factor (APF) and Vitamin B_{12} in marine products. I. Aquatic animals [in Japanese with an English summary]. Bull. Jap. Soc. Scient. Fish., 19(3) : 135-140.

Comparison of amounts of Vitamin B_{12} contained in various portions of skipjack and other aquatic animals.

HAYASHI, SHIGEICHI

1959. A review on age determination of the Pacific tunas. Proc. Indo-Pacif. Fish. Coun., 7(2-3) : 53-64. *Note:* Year of publication as given on the copyright page (1959) disagrees with that given on the cover and the front page (1958).

Includes discussion on population structure and growth in relation to spawning season and areas.

HELA, ILMO and TAIVO LAEVASTU

1961. The influence of temperature on the behavior of fish. Suomalaisen Eläin- ja Kasvitieteellisen Seuran Vanamon Tiedonannot (Arch. Soc. 'Vanamo'), 15(1-2) : 83-103.

Mention of influence of temperature on migration noted by Uda and Watanabe 1958.

n.d. Fisheries hydrography—how oceanography and meteorology can and do serve fisheries. Fishing News (Books), London, 137 p.

Influence of oceanographic conditions on distribution of fish and the fishery.

HEMPEL, GOTTHILF

1961. Biology of seafish production. *In:* Borgstrom, Georg (Ed.) Fish as Food, Volume 1, Production, Biochemistry, and Microbiology. Academic Press, New York, 1-40.

Distribution correlated with temperature.

HENNEMUTH, RICHARD C.

1957. An analysis of methods of sampling to determine the size composition of commercial landings of yellowfin tuna (*Neothunnus macropterus*) and skipjack (*Ka-*

HENNEMUTH, RICHARD C., continued

tsuwonus pelamis) [in English and Spanish]. Bull. Inter-Am. Trop. Tuna Commn, 2(5) : 171-243.

Analysis of optimal number of fish for individual samples and optimal number of monthly samples for statistical areas.

1959(*1*). Morphometric comparison of skipjack from the central and eastern tropical Pacific Ocean [in English and Spanish]. Bull. Inter-Am. Trop. Tuna Commn, 3(6) : 239-304.

Morphometric comparison among skipjack from eastern Pacific, Hawaii and French Polynesia; presence of semi-independent population units discussed; lack of complete mixing between the populations of central and eastern Pacific suggested.

1959(*2*). Additional information on the length-weight relationship of skipjack tuna from the eastern tropical Pacific Ocean [in English and Spanish]. Bull. Inter-Am. Trop. Tuna Commn, 4(2) : 23-37.

Length-weight relationship calculated for fish from three areas of the eastern Pacific.

HERALD, EARL S.

1951. Pseudofins on the caudal peduncle of juvenile scombroids. Calif. Fish Game, 37(3) : 335-337.

1961. Living fishes of the world. Hamish Hamilton, London, 304 p.

Remarks on biology; commercial importance.

HERRE, ALBERT W. C. T.

1932. A check list of fishes recorded from Tahiti. J. Pan-Pacif. Res. Instn, 7(1) : 2-6.

Occurrence recorded.

1933. A check-list of fishes from Dumaguete, Oriental Negros, P. I., and its immediate vicinity. J. Pan-Pacif. Res. Instn, 8(4) : 6-11.

Occurrence recorded.

1935. A check list of the fishes of the Pelew Islands. Mid-Pacif. Mag., 47(2) : 163-166.

Occurrence recorded.

1936. Fishes of the Crane Pacific Expedition. Zool. Ser. Field Mus. Nat. Hist., 21(353) : 472 p.

Recorded from Galapagos Islands.

1940. Distribution of the mackerel-like fishes in the western Pacific north of the equator. Proc. Pacif. Sci. Congr., 3 : 211-215.

Distribution; fishery.

1953. Check list of Philippine fishes. Res. Rep. U. S. Fish Wildl. Serv., (20) : 977 p.

Synonymy; common names; range.

HERRE, ALBERT W. C. T. and U. F. UMALI

1948. English and local common names of Philippine fishes. Circ. U. S. Fish Wildl. Serv., (14) : 128 p.

HESTER, FRANK J.

1961. Tuna seines: how deep? Pacif. Fisherm., 59(12) : 19-20.

Behavior during purse-seine operations.

HIATT, ROBERT W. and DONALD W. STRASBURG

1960. Ecological relationships of the fish fauna on coral reefs of the Marshall Islands. Ecol. Monogr., 30(1) : 65-127.

Occurrence in the area of study; food.

HIDA, THOMAS S.

1966. Catches of bigeye and yellowfin tunas in the Hawaiian longline fishery. *In:* Thomas A. Manar (Ed.), Proceedings, Governor's Conference on Central Pacific Fishery Resources, State of Hawaii: 161-167.

Listed as a species of lesser importance for longline fishery.

HIGASHI, HIDEO

1940(*1*). Utilization of fishery by-products from the South Seas (Introduction) [in Japanese]. Nanyō suisan (So. Sea Fish.) 6(6) : 22-31.

Proportion of flesh to total body weight; data on length, weight, etc.

1940(*2*). Utilization of fishery by-products from the South Seas (3) [in Japanese]. Nanyō suisan (So. Sea Fish.) 6(7) : 13-20.

Body parts normally discarded; ratio of viscera to body weight; review of hormones in various organs of fish.

1940(*3*). Utilization of fishery by-products from the South Seas (4) [in Japanese]. Nanyō suisan (So. Sea Fish.) 6(9) : 27-35.

Possible utilization of body parts usually discarded; ratio of weight of various body parts to total body weight; monthly catch data for 1939.

1940(*4*). Utilization of fishery by-products from the South Seas (7) [in Japanese]. Nanyō suisan (So. Sea Fish.) 6(12) : 10-13.

Ratio of weight of viscera and other body parts to body weight.

1941(*1*). Utilization of fishery by-products from the South Seas (8) [in Japanese]. Nanyō suisan (So. Sea Fish.) 7(1) : 33-37.

Possible utilization of liver; ratio of liver weight to body weight of skipjack caught near Palao.

1941(*2*). Utilization of fishery by-products from the South Seas (10) [in Japanese]. Nanyō suisan (So. Sea Fish.) 7(3) : 32-43.

Comparisons of vitamin contents and weights of various body parts of several species of fishes.

1941(*3*). Utilization of fishery by-products from the South Seas (11) [in Japanese]. Nanyō suisan (So. Sea Fish.) 7(5) : 45-47.

Distribution and amounts of vitamins A, D, and B_2 in various organs.

1941(*4*). Utilization of fishery by-products from the South Seas (12) [in Japanese]. Nanyō suisan (So. Sea Fish.) 7(6) : 39-40.

Vitamin A content of liver.

1942(*1*). Utilization of fishery by-products from the South Seas (13) [in Japanese]. Nanyō suisan (So. Sea Fish.) 7(7) : 29-32.

Amounts of vitamins D, B_1 and B_2 in liver.

1942(*2*). Record of experiments on fishes of the South Seas [in Japanese]. Nanyō suisan (So. Sea Fish.) 8(11) : 13-27.

Weights of various body parts; amounts of vitamins A, B_1, B_2 and D in liver.

HIGASHI, HIDEO and H. HIRAI

1948. The nicotinic acid content of fish [in Japanese with an English summary]. Bull. Jap. Soc. Scient. Fish., 13(4) : 129-132.

Comparison of nicotinic acid content in various organs in fish of two different sizes, in males and females, in fish from different areas by sex, area, depth and time of capture.

HIGASHI, HIDEO, Y. SHIMMA and H. TAGUCHI

1960. Studies on the fatty acids in marine animal livers. 1. Quantitative analysis

HIGASHI, HIDEO, Y. SHIMMA and H. TAGUCHI, continued

of unsaturated fatty acid bromides [in Japanese with an English summary]. Bull. Jap. Soc. Scient. Fish., 26(4) : 411-420.

Free- and ester-type fatty acids from liver of tuna and marine animals separated into solid and liquid acids; iodine contents compared.

HIGGINS, BRUCE E.

1966. Sizes of albacore and bigeye, yellowfin, and skipjack tunas in the major fisheries of the Pacific Ocean. *In:* Thomas A. Manar (Ed.), Proceedings, Governor's Conference on Central Pacific Fishery Resources, State of Hawaii : 169-195.

Size-frequency composition of catches; causes of differences in size composition from various areas discussed.

HILDEBRAND, SAMUEL F.

1946. A descriptive catalog of the shore fishes of Peru. Bull. U. S. Natn. Mus., 189 : 1-530.

Keys; description; distribution.

HIYAMA, YOSHIO and FUJIO YASUDA

1961. Japanese fishes—Japanese edition—[in Japanese]. (Nihon suisan gyofu). Uchida rokakuho Publ. House, Tokyo, 155 + 39 p.

Description; outline of biology.

HOLDER, CHARLES FREDERIC

1912. The fishes of the Pacific Coast. Dodge Publishing Company, New York, 111 p.

Description; fishing area and season; Note: section dealing with *Katsuwonus pelamis* is entitled: "The California bonito *(Sarda chilensis)*."

1914. Attempts to protect the sea fisheries of southern California. Calif. Fish Game, 1 : 9-19.

Listed as game and commercial fish.

HONDA, KATUJI

1966. Part IV. Fishing gear, fishing methods and fishing boats [in Japanese with an English summary. Discussion by the audience included]. *In:* Symposium on tuna fisheries. Bull. Jap. Soc. Scient. Fish. 32(9) : 804-822 and 831.

Biting response to live and artificial bait, and upon satiation.

HONMA, TERUTAKE

1959. Paper chromatography and paper electrophoresis of fish insulin. Bull. Jap. Soc. Scient. Fish., 25(1) : 22-26.

Comparison of skipjack and beef insulin molecules.

1960. Isolation of protamine sulfate from bonito, *Katsuwonus vagans Lesson,* and its some properties [in Japanese with an English summary]. Bull. Jap. Soc. Scient. Fish., 26(1) : 21-24.

Protamine sulfate extracted from testis by two methods and its relation to sexual maturity examined; paper chromatography and other tests.

HORIGUCHI, YOSHISHIGE, D. KAKIMOTO and K. KASHIWADA

1950. Distribution of inositol in skipjack (*Katsuwonus vagans*) [in Japanese with an English summary]. J. Kagoshima Fish. Coll., 1 : 41-46.

Amount of inositol in various organs compared.

HORIGUCHI, YOSHISHIGE, K. KASHIWADA and D. KAKIMOTO

1953. Biochemical studies on skipjack, *Katsuwonus vagans*. II. Contents of inorganic substances in pyloric coeca [in Japanese with an English summary]. Bull. Jap. Soc. Scient. Fish., 18(7) : 279-282.

Variety and abundance of inorganic elements contained in pyloric caeca compared with other species.

HORIGUCHI, YOSHISHIGE and K. KASHIWADA

1953. Biochemical studies on skipjack (*Katsuwonus vagans*). V. Distribution of phosphorous in pyloric coeca [in Japanese with an English summary]. Bull. Jap. Soc. Scient. Fish., 19(6) : 733-736.

Amount and composition of phosphorus compounds in pyloric caeca compared with those in muscle.

HORNELL, JAMES

1940. Report on the fisheries of Fiji. Government Printer, Suva, 87 p.

Mention of potential fishery.

1950. Fishing in many waters. University Press, Cambridge, 210 p.

Description of Japanese, Polynesian and Californian fisheries for skipjack.

HOTTA, HIDEYUKI

1953. On the distribution of young of skipjack, *Katsuwonus pelamis*, in the southern seas of Kyushu [in Japanese with an English summary]. Bull. Tohoku Reg. Fish. Res. Lab., 2 : 19-21.

Distribution based on stomach contents; monthly size composition used to estimate time of spawning.

1960. A study on the "biting" of skipjack in the live-bait fishery. Part II. Relation between the "biting" and the social condition in the school [in Japanese with an English summary] (Translation by W. G. Van Campen, mimeo, 1963). Bull. Tohoku Reg. Fish. Res. Lab., 17 : 31-37.

Aquaria experiments on Pacific mackerel to determine amount of food ingested, and reaction of a school, containing various combinations of hungry and satiated fish, to food.

1961. Comparative study of the axial skeleton of Japanese teleostei [in Japanese]. Nippon gyogaku shinkōkai, Tokyo, 155 p.

HOTTA, H., S. FUKUSHIMA, S. ODATE and Y. AIZAWA

1961. Observation of fish schools and sea-bird flocks in Tohoku sea area of Japan [in Japanese with an English summary]. Bull. Tohoku Reg. Fish. Res. Lab., 19 : 49-72.

Relation between bird flocks and fish schools; observations by airplane.

HOTTA, HIDEYUKI, T. KARIYA and T. OGAWA

1959. A study on the "biting" of skipjack in the live-bait fishery. Part 1. Relation between the "biting" and the alimental canal in the Tohoku Sea area [in Japanese with an English summary] (Translation by W. G. Van Campen, Honolulu Lab., mimeo, 32 p.). Bull. Tohoku Reg. Fish. Res. Lab., 13 : 60-78.

"Biting" qualities analyzed in relation to amount and types of stomach contents, size, state of digestion, histological condition of stomach.

HOTTA, HIDEYUKI and TATSU OGAWA

1953. On the parasitic rate of Acanthocephala (*Rhadinorhynchus katsuwonis* Harada) in skipjack (*Katsuwonus pelamis* [Linnaeus]) [in Japanese with an English

HOTTA, HIDEYUKI and TATSU OGAWA, continued

summary]. Bull. Tohoku Reg. Fish. Res. Lab., 2 : 11-18.

Frequency of occurrence and number of parasites per fish compared by areas and age of fish; 1500 skipjack examined.

1955. On the stomach contents of the skip-jack, *Katsuwonus pelamis* [in Japanese with an English summary]. Bull. Tohoku Reg. Fish. Res. Lab., 4 : 62-82.

Quantitative and qualitative comparisons from five major commercial fishing areas off Japan; relation between contents and geographical distribution of food organisms; contents of young skipjack analyzed.

HOWARD, GERALD V.

1963. The matter of availability and the harvest of tunas (French and Spanish abstracts). *In:* Rosa, H., Jr. (Ed.) Proceedings of the World Scientific Meeting on the Biology of Tunas and Related Species. FAO, Fish. Rep. 3(6) : 1041-1055.

Review of present knowledge on fluctuations in availability and variations in vulnerability; suggestions for future research.

HOWELL, R. LUIS and MAR JUÁREZ F.

1954. Estados larvales y juveniles del bonito (*Katsuwonus pelamis*) [in Spanish]. Torreia, (22) : 14 p.

Includes a review of reports on larvae and juveniles from various oceans.

HOSAKA, EDWARD Y.

1944. Sport fishing in Hawaii. Bond's Honolulu, 184 p.

Description; behavior; descriptions of commercial fishery and fishing methods; commercial importance.

HUNTER, JOHN R. and CHARLES T. MITCHELL

1966. Association of fishes with floatsam in the offshore waters of Central America. Fishery Bull. Fish Wildl. Serv. U. S., 66(1) : 13-29.

Size composition; food; ecology.

ICKES, HAROLD L.

1945. Fisheries resources of the United States—letter of the Secretary of the Interior transmitting pursuant to law, a report on a survey of the fishery resources of the United States and its possessions. 79th Congress, 1st Session, Senate Document, (51) : 135 p.

General description of the fish and the fishery.

IGETA, YUZO

1965. A consideration on the relation between skipjack and albacore fishing grounds and vertical distribution of water temperature determined by bathythermograph [in Japanese]. *In:* Summary of proceedings of Tuna Fisheries Research, Tuna Fishg (34 & 35) : 63.

IKEBE, KENZO

1941. A contribution to the study of tuna spawning grounds [in Japanese] Nanyō suisan jōhō (So. Sea Fish. News), 5(4) : 9-12. (Translation by SCAP translators and edited by POFI. *In:* Spec. Scient. Rep. U. S. Fish Wildl. Serv., [18] : 12-14).

Notes on past surveys of spawning grounds.

IKEBE, KENZO and T. MATSUMOTO

1937. Progress report on experimental skipjack fishing near Yap [in Japanese].

IKEBE, KENZO and T. MATSUMOTO, continued

Nanyō suisan jōhō (So. Sea Fish. News), 1(4) : 3-9. (Translation *In:* Spec. Scient. Rep. U. S. Fish Wildl. Serv., [46] : 1-13).

Exploratory baitboat fishing; fish measurements; oceanographic studies.

1938. Report of a skipjack bait investigation in Saipan waters [in Japanese]. Nanyō suisan jōhō (So. Sea Fish. News), 1(6) : 2-12. (Translation by POFI. *In:* Spec. Scient. Rep. U. S. Fish Wildl. Serv., [44] : 15 p.)

ILLINGWORTH, NEIL

1961. Fighting fins—big game fishing in New Zealand waters. A. H. & A. W. Reed, Wellington, N. Z., 256 p.

Description; distribution; habitat.

IMAI, SADAHIKO

1950. On the young stages of flying fish as the natural food for bonito [in Japanese with an English summary]. J. Kagoshima Fish. Coll., 1 : 137-147.

Species description of flying fish from tuna stomachs collected south of Japan.

IMAMURA, YUTAKA

1949. The skipjack fishery [in Japanese]. Suisan kōza (Text Fish.) Japan Fisheries Association, Tokyo, Vol. 6, Fishing section: 17-94. (Translation *In:* Spec. Scient. Rep. U. S. Fish Wildl. Serv., [49] : 67 p.)

Summary of knowledge about skipjack and its fishery in the Pacific.

IMANISHI, NOBORU

1960(*1*). Studies on the inorganic chemical constituents of marine fishes. 2. On the chemical elements contained in ashes of *Katsuwonus pelamis* and *Monocentris japonica* [in Japanese with an English summary]. J. Oceanogr. Soc. Jap., 16(1) : 15-17.

Amounts of inorganic substances in various body parts.

1960(*2*). Studies on the inorganic chemical constituents of marine fishes. 3. On the distribution and the relative quantities of alkaline elements and alkaline earth elements in *Katsuwonus pelamis* and *Monocentris japonica* [in Japanese with an English summary]. J. Oceanogr. Soc. Jap., 16(1) : 19-23.

Distribution and amount of Ca, Mg, Na, and K in various organs.

1960(3). Studies on inorganic chemical constituents in sea fishes—the chemical elements, and the relative quantities of calcium and phosphorus in *Katsuwonus pelamis* (Part 4). Rec. Oceanogr. Wks Jap., Special number (4) : 129-133.

Distribution and amount of P, Ca, and some other minerals in various organs; ratio of P to Ca compared among organs and with organs in other fish.

1960(*4*). Studies on the inorganic constituents of marine fishes—V. On the non-metallic constituents of deep-sea fishes, *Katsuwonus pelamis* and *Monocentris japonica* [in Japanese with an English abstract]. J. Oceanogr. Soc. Jap., 16(2) : 74-78.

1960(*5*). Studies on the inorganic constituents of marine fishes—VI. On the distribution of zinc, copper and lead in deep-sea fishes, *Monocentris japonica* and *Katsuwonus pelamis* [in Japanese with an English summary]. J. Oceanogr. Soc. Jap., 16(2) : 79-82.

Amounts and distribution of Zn, Cu and Pb in the ashes of various body parts compared.

1961(*1*). Studies on the inorganic chemical constituents of marine fishes—IX. On the methods to indicate the relative quantities of alkaline elements and alkaline-earth

IMANISHI, NOBORU, continued

elements in marine fishes [in Japanese with an English abstract]. J. Oceanogr. Soc. Jap., 17(1) : 33-39.

Relative composition of Ca, Mg, Na and K in various organs of several species compared to habitat and growth of fish.

1961(*2*). Studies on the inorganic chemical constituents of marine fishes—X. On the distribution of iron and aluminum [in Japanese with an English abstract]. J. Oceanogr. Soc. Jap., 17(1) : 40-44.

Amounts and distribution of Fe and Al in the ashes of various body parts compared.

1961(*3*). Studies on the inorganic chemical constituents of marine fishes—XI. On the distribution of tin [in Japanese with an English abstract]. J. Oceanogr. Soc. Jap., 17(2) : 101-102.

Amount and distribution of Sn in the ashes of various organs compared.

1961(*4*). Studies on the inorganic chemical constituents of marine fishes—XII. On the distribution of manganese in marine fishes [in Japanese with an English abstract]. J. Oceanogr. Soc. Jap., 17(3) : 161-164.

Amounts and distribution of Mn in the ashes of various organs compared.

IMPERIAL FISHERIES INSTITUTE
(After 1930, IMPERIAL FISHERIES EXPERIMENTAL STATION)

1924(*1*). Fishing conditions [in Japanese]. *In:* Summary of observation and research. Q. Rep. Oceanogr. Invest., Tokyo (Apr., May and June 1923), 21 : 18-24.

Fishing conditions in Japanese waters (including Formosa and Ryukyu waters).

1924(*2*). Fishing conditions [in Japanese]. *In:* Summary of observation and research. Q. Rep. Oceanogr. Invest., Tokyo (July, Aug. and Sept. 1923), 22 : 34-37.

Fishing conditions in Japanese waters (including Formosa and Ryukyu waters).

1924(*3*). Fishing conditions [in Japanese]. *In:* Summary of observation and research. Q. Rep. Oceanogr. Invest., Tokyo (Oct.-Dec., 1923), 23 : 49-52.

Fishing conditions in Japanese waters (including Formosa and Ryukyu waters).

1924(*4*). Fishing conditions [in Japanese]. *In:* Summary of observation and research. Q. Rep. Oceanogr. Invest., Tokyo (Jan.-Mar., 1924), 24 : 2-7.

Fishing conditions in Japanese waters (including Formosa and Ryukyu waters).

1924(*5*). Fishing conditions [in Japanese]. *In:* Summary of observation and research. Q. Rep. Oceanogr. Inevst., Tokyo (Apr.-June, 1924), 25 : 19-25.

Fishing conditions in Japanese waters (including Formosa and Ryukyu waters).

1924(*6*). Fishing conditions [in Japanese]. *In:* Summary of observation and research. Q. Rep. Oceanogr. Invest., Tokyo (July-Sept., 1924), 26 : 36-41.

Fishing conditions in Japanese waters (including Formosa and Ryukyu waters).

1925(*1*). Fishing conditions [in Japanese]. *In:* Summary of observation and research. Q. Rep. Oceanogr. Invest., Tokyo (Oct.-Dec., 1924), 27 : 52-57.

Fishing conditions in Japanese waters (including Formosa and Ryukyu waters).

1925(*2*). Fishing conditions [in Japanese]. *In:* Summary of observation and research. Q. Rep. Oceanogr. Invest., Tokyo (Apr.-June, 1925), 29 : 16-22.

Fishing conditions in Japanese waters (including Formosa and Ryukyu waters).

1925(*3*). Fishing conditions [in Japanese]. *In:* Summary of observation and research. Q. Rep. Oceanogr. Invest., Tokyo (July-Sept., 1925), 30 : 32-36.

Fishing conditions in Japanese waters (including Formosa and Ryukyu waters).

1926(*1*). Fishing conditions [in Japanese]. *In:* Summary of observation and research. Q. Rep. Oceanogr. Invest., Tokyo (Oct.-Dec., 1925), 31 : 46-50.

Fishing conditions in Japanese waters (including Formosa and Ryukyu waters).

IMPERIAL FISHERIES INSTITUTE, continued

1926(*2*). Fishing conditions [in Japanese]. *In:* Summary of observation and research. Q. Rep. Oceanogr. Invest., Tokyo (Jan.-Mar., 1926), 32 : 3-8.

Fishing conditions in Japanese waters (including Formosa and Ryukyu waters).

1926(*3*). Fishing conditions [in Japanese]. *In:* Summary of observation and research. Q. Rep. Oceanogr. Invest., Tokyo (Apr.-June, 1926), 33 : 18-23.

Fishing conditions and biting quality in Japanese waters (including Formosa and Ryukyu waters).

1926(*4*). Fishing conditions [in Japanese]. *In:* Summary of observation and research. Q. Rep. Oceanogr. Invest., Tokyo (July-Sept., 1926), 34 : 35-40.

Seasonal fishing conditions and biting quality in Japanese waters (including Formosa and Ryukyu waters).

1927(*1*). Fishing conditions [in Japanese]. *In:* Summary of observation and research. Q. Rep. Oceanogr. Invest., Tokyo (Oct.-Dec., 1926), 35 : 52-58.

Seasonal fishing conditions and biting quality in Japanese waters (including Formosa and Ryukyu waters).

1927(*2*). Fishing conditions [in Japanese]. *In:* Summary of observation and research. Q. Rep. Oceanogr. Invest., Tokyo (Jan.-Mar., 1927), 36 : 4-9.

Seasonal fishing conditions in Ryukyu waters.

1927(*3*). Fishing conditions [in Japanese]. *In:* Summary of observation and research. Q. Rep. Oceanogr. Invest., Tokyo (Apr.-June, 1927), 37 : 18-31.

Seasonal fishing conditions in Japanese waters; catch and effort statistics by prefecture and 10-day periods.

1927(*4*). Skipjack [in Japanese]. *In:* Summary of observation and research. Q. Rep. Oceanogr. Invest., Tokyo (July-Sept., 1927), 38 : 49-53.

Seasonal fishing conditions for skipjack by area in Japanese waters; catch and effort statistics by prefecture and 10-day periods.

1928. Fishing conditions [in Japanese]. *In:* Summary of observation and research. Q. Rep. Oceanogr. Invest., Tokyo (Apr.-June, 1928), 41 : 20-27.

Fishing conditions; catch and effort data by prefecture and 10-day periods.

1929(*1*). Fishing conditions [in Japanese]. *In:* Summary of observation and research. Q. Rep. Oceanogr. Invest., Tokyo (July-Sept., 1928), 42 : 42-50.

Fishing conditions and catch and effort data by prefecture and 10-day periods.

1929(*2*). Fishing conditions [in Japanese]. *In:* Summary of observation and research. Q. Rep. Oceanogr. Invest., Tokyo (Oct.-Dec., 1928), 43 : 66-72.

Fishing conditions; catch and effort data by prefecture and 10-day periods.

1930(*1*). Fishing conditions [in Japanese]. Semi-a. Rep. Oceanogr. Invest., Tokyo (Jan.-June, 1929), 44 : 6-13.

Catch and effort data by prefecture and 10-day periods.

1930(*2*). Fishing conditions [in Japanese]. *In:* Summary of observation and research (Appendix). Semi-a. Rep. Oceanogr. Invest., Tokyo (Jan.-June, 1929), 44 : 157-163.

Fishing conditions in Japanese waters by area and season.

1930(*3*). Fishing conditions [in Japanese]. Semi-a. Rep. Oceanogr. Invest., Tokyo (July-Dec., 1929), 45 : 6-26.

Fishing conditions; catch and effort data by prefecture and 10-day periods; fish sizes recorded.

1930(*4*). General results of fisheries [in Japanese]. Semi-a. Rep. Oceanogr. Invest., Tokyo (Jan.-June, 1930), 46 : 201-218.

Fishing conditions; catch and effort data by prefecture and 10-day periods; fish sizes recorded.

IMPERIAL FISHERIES INSTITUTE, continued

1930(*5*). General results of fisheries in 1929 [in Japanese]. Semi-a. Rep. Oceanogr. Invest., Tokyo (Jan.-June, 1930), 46 : 256-264.

Seasonal changes in fishing condition in Japanese waters.

1931(*1*). Skipjack fisheries [in Japanese]. *In:* Suisan shiken seiseki sōran (General review of the results of fisheries research), Imperial Fisheries Experimental Station, Tokyo, 1035-1063 p.

Summary of skipjack research in vicinity of Japan, carried out by various organizations; results of experimental fishing using several types of gear.

1931(*2*). General results of fisheries [in Japanese]. Semi-a. Rep. Oceanogr. Invest., Tokyo (July-Dec., 1930), 47 : 250-283.

Catch and effort data; fishing conditions near Japan by area and 10-day periods.

1931(*3*). General results of fisheries [in Japanese]. Semi-a. Rep. Oceanogr. Invest., Tokyo (Jan.-June, 1931), 48 : 144-197.

Catch and effort data; fishing conditions in Japanese waters by area and 10-day periods.

1931(*4*). General results of fisheries in 1930 [in Japanese]. Semi-a. Rep. Oceanogr. Invest., Tokyo (Jan.-June, 1931), 48 : 244-254.

Fishing conditions in Japanese waters.

1932(*1*). Résumé of fisheries [in Japanese]. Semi-a. Rep. Oceanogr. Invest., Tokyo (July-Dec., 1931), 49 : 183-214.

Catch and effort data; fishing conditions near Japan by area and 10-day periods.

1932(*2*). Résumé of fisheries [in Japanese]. Semi-a. Rep. Oceanogr. Invest., Tokyo (Jan.-June, 1932), 50 : 333-370.

Catch and effort data; fishing conditions near Japan by area and 10-day periods.

1932(*3*). Résumé of oceanographic states and fisheries in 1931 [in Japanese]. Semi-a. Rep. Oceanogr. Invest., Tokyo (Jan.-June, 1932), 50 : 399-403.

Fishing conditions in Japanese waters.

1933(*1*). Résumé of fisheries [in Japanese]. Semi-a. Rep. Oceanogr. Invest., Tokyo (July-Dec., 1932), 51 : 199-254.

Catch and effort data; fishing conditions near Japan by area and 10-day periods.

1933(*2*). Résumé of fisheries [in Japanese]. Semi-a. Rep. Oceanogr. Invest., Tokyo (Jan.-June, 1933), 52 : 170-229.

Catch; effort; fishing conditions near Japan by area and ten-day periods.

1933(*3*). Résumé of oceanographic states and fisheries in 1932 [in Japanese]. Semi-a. Rep. Oceanogr. Invest., Tokyo (Jan.-June, 1933), 52 Appendix: 240-241.

Fishing conditions in Japanese waters.

1934(*1*). Résumé of fisheries [in Japanese]. Semi-a. Rep. Oceanogr. Invest., Tokyo (July-Dec., 1933), 53 : 311-354.

Catch and effort data; fishing conditions, and average size of fish caught commercially in Japanese waters, by area and 10-day periods.

1934(*2*). Résumé of investigations on hydrography and fisheries in 1933 [in Japanese]. Semi-a. Rep. Oceanogr. Invest., Tokyo (July-Dec., 1933), 53 : 391-401.

Fishing conditions in Japanese waters.

1934(*3*). Résumé of fisheries [in Japanese]. Semi-a. Rep. Oceanogr. Invest., Tokyo (Jan.-June, 1934), 54 : 172-212.

Catch and effort data, fishing conditions, and size of fish caught commercially in Japanese waters by area and 10-day periods; fishing related to temperature.

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1934(*4*). Marked fish [in Japanese]. Semi-a. Rep. Oceanogr. Invest., Tokyo (Jan.-June, 1934), 54 : 213-219.

Release and recovery information of skipjack tagged in Ryukyu waters.

1935(*1*). Résumé of fisheries [in Japanese]. Semi-a. Rep. Oceanogr. Invest., Tokyo (July-Dec., 1934), 55 : 195-207.

Summary of researches by prefectural research vessels in Japanese waters; water temperature and color; specific gravity; size and nature of skipjack schools; biting conditions; catch and effort statistics by season and area.

1935(*2*). Marked fish [in Japanese]. Semi-a. Rep. Oceanogr. Invest., Tokyo (July-Dec., 1934), 55 : 230-238.

Release data of 67 skipjack tagged in Ryukyu waters.

1935(*3*). Review of general fishing conditions in 1934 [in Japanese]. Semi-a. Rep. Oceanogr. Invest., Tokyo (July-Dec., 1934), 55 : 276-279.

Fishing conditions in Japanese waters in relation to migrations of skipjack; weather and oceanographic conditions.

1935(*4*). Résumé of fisheries [in Japanese]. Semi-a. Rep. Oceanogr. Invest., Tokyo (Jan.-June, 1935), 56 : 182-280.

Fishing logs of prefectural research boats in Japanese waters; water temperature and color; specific gravity; size and nature of schools; biting conditions; catch and effort data by area and 10-day periods.

1936(*1*). Résumé of fisheries [in Japanese]. Semi-a. Rep. Oceanogr. Invest., Tokyo (July-Dec., 1935), 57 : 203-226.

Fishing logs of prefectural research vessels in Japanese waters; water temperature and color; specific gravity; size and nature of skipjack schools; biting conditions; catch and effort data by season and area.

1936(*2*). Marked fish [in Japanese]. Semi-a. Rep. Oceanogr. Invest., Tokyo (July-Dec., 1935), 57 : 284-294.

Release and recovery information of skipjack tagged in Pacific Ocean and Ryukyu waters.

1936(*3*). Review of general fishing conditions in 1935 [in Japanese]. Semi-a. Rep. Oceanogr. Invest., Tokyo (July-Dec., 1935), 57 : 337-338.

Fishing conditions in Japanese waters in relation to migrations of skipjack; weather and oceanographic conditions.

1936(*4*). Résumé of fisheries [in Japanese]. Semi-a. Rep. Oceanogr. Invest., Tokyo (Jan.-June, 1936), 58 : 152-153.

Fishing conditions in Japanese waters during the first half of 1936; size of fish caught.

1936(*5*). Records of high-sea fisheries [in Japanese]. Semi-a. Rep. Oceanogr. Invest., Tokyo (Jan.-June, 1936), 58 : 154-197.

Summary tables of experimental live-bait and longline fishing in Japanese waters by prefectural research vessels; mean length and weight of fish; number of schools found; water temperature and color; specific density; size and nature of schools; biting conditions; catch and effort statistics by area and 10-day periods.

1936(*6*). Marked fish [in Japanese]. Semi-a. Rep. Oceanogr. Invest., Tokyo (Jan.-June, 1939), 58 : 200-205.

Release information on 11 skipjack tagged in the Pacific.

1937(*1*). Résumé of fisheries [in Japanese]. Semi-a. Rep. Oceanogr. Invest., Tokyo (July-Dec., 1936), 59 : 181-1-82.

Fishing conditions and seasonal shifts of fishing grounds in Japanese waters.

1937(*2*). Records of high-sea fisheries [in Japanese]. Semi-a. Rep. Oceanogr. Invest., Tokyo (July-Dec., 1936), 59 : 183-232.

Catch records of experimental live-bait and longline fishing in Japanese waters by prefectural

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research vessels; catch by size; mean length and weight of fish; number, nature and size of schools observed; biting conditions; water temperature and color; specific gravity, etc.; catch and effort statistics by area and 10-day periods.

1937(*3*). Marked fish [in Japanese]. Semi-a. Rep. Oceanogr. Invest., Tokyo (July-Dec., 1936), 59 : 235-245.

Release and recovery information on skipjack tagged near Japan.

1937(*4*). Résumé of fisheries [in Japanese]. Semi-a. Rep. Oceanogr. Invest., Tokyo (Jan.-June, 1937), 60 : 153-156.

Fishing conditions and seasonal shifts of fishing grounds in Japanese waters.

1937(*5*). Records of high-sea fisheries [in Japanese]. Semi-a. Rep. Oceanogr. Invest., Tokyo (Jan.-June, 1937), 60 : 157-201.

Catch records of experimental live-bait and longline fishing in Japanese waters by prefectural research vessels; catch by size; mean length and weight of fish; number, nature and size of schools observed; biting conditions; water temperature and color; specific gravity.

1938(*1*). Résumé of fisheries [in Japanese]. Semi-a. Rep. Oceanogr. Invest., Tokyo (July-Dec., 1937), 61 : 172-175.

Fishing conditions in relation to water temperature and seasonal shifts of fishing grounds in Japanese waters.

1938(*2*). Records of high-sea fisheries [in Japanese]. Semi-a. Rep. Oceanogr. Invest., Tokyo (July-Dec., 1937), 61 : 176-210.

Catch records of experimental live-bait and longline fishing in Japanese waters by prefectural research vessels; catch by size; mean length and weight of fish; number, nature and size of schools observed; biting conditions; water temperature and color; specific gravity.

1938(*3*). Marked fish [in Japanese]. Semi-a. Rep. Oceanogr. Invest., Tokyo (July-Dec., 1937), 61 : 213-215.

Release and recovery information on skipjack in Japanese and Indonesian waters.

1938(*4*). Résumé of fisheries [in Japanese]. Semi-a. Rep. Oceanogr. Invest., Tokyo (Jan.-June, 1938), 62 : 140-143.

Fishing conditions in relation to water temperature and seasonal shifts of fishing grounds in Japanese waters.

1938(*5*). Records of high-sea fisheries [in Japanese]. Semi-a. Rep. Oceanogr. Invest., Tokyo (Jan.-June, 1938), 62 : 144-168.

Catch records of experimental live-bait and longline fishing in Japanese waters by prefectural research vessels; catch by size; mean length and weight of fish; number, nature and size of schools observed; biting condition; water temperature and color; specific gravity.

1939(*1*). Résumé of fisheries [in Japanese]. Semi-a. Rep. Oceanogr. Invest., Tokyo (July-Dec., 1938), 63 : 116-118.

Fishing conditions and seasonal shifts of fishing grounds in relation to water temperature, in Japanese waters.

1939(*2*). Records of high-sea fisheries [in Japanese]. Semi-a. Rep. Oceanogr. Invest., Tokyo (July-Dec., 1938), 63 : 119-138.

Catch records of experimental live-bait and longline fishing in Japanese waters by prefectural research vessels; catch by size; mean length and weight of fish; number, nature and size of schools observed; biting conditions; water temperature and color; specific gravity.

1939(*3*). Marked fish [in Japanese]. Semi-a. Rep. Oceanogr. Invest., Tokyo (July-Dec., 1938), 63 : 142-158.

Release and recovery information on skipjack tagged in Japanese waters.

1940(*1*). Résumé of fisheries [in Japanese]. Semi-a. Rep. Oceanogr. Invest., Tokyo (Jan.-June, 1939), 64 : 120-123.

Fishing condition and seasonal shifts of fishing grounds in relation to water temperature in Japanese waters.

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1940(*2*). Records of high-sea fisheries [in Japanese]. Semi-a. Rep. Oceanogr. Invest., Tokyo (Jan.-June, 1939), 64 : 124-153.

Catch records of experimental live-bait and longline fishing in Japanese waters by prefectural research vessels; catch by size; mean length and weight of fish; number, nature and size of schools observed; biting conditions; water temperature and color; specific gravity.

1940(*3*). Résumé of fisheries [in Japanese]. Semi-a. Rep. Oceanogr. Invest., Tokyo (July-Dec., 1939), 65 : 111-113.

Fishing conditions and seasonal shifts of fishing grounds in relation to water temperature in Japanese waters.

1940(*4*). Records of high-sea fisheries [in Japanese]. Semi-a. Rep. Oceanogr. Invest., Tokyo (July-Dec., 1939), 65 : 114-132.

Catch records of experimental live-bait and longline fishing in Japanese waters by prefectural research vessels; catch by size; mean length and weight of fish; number, nature and size of schools observed; biting conditions; water temperature and color; specific gravity, etc.

1940(*5*). Marked fish [in Japanese]. Semi-a. Rep. Oceanogr. Invest., Tokyo (July-Dec., 1939), 65 : 136-144.

Release information on 10 skipjack tagged in Japanese waters.

1941(*1*). Résumé of fisheries [in Japanese]. Semi-a. Rep. Oceanogr. Invest., Tokyo (Jan.-June, 1940), 66 : 106-109.

Fishing condition and seasonal shifts of fishing grounds in relation to water temperature in Japanese waters.

1941(*2*). Records of high-sea fisheries [in Japanese]. Semi-a. Rep. Oceanogr. Invest., Tokyo (Jan.-June, 1940), 66 : 110-129.

Catch records of experimental live-bait and longline fishing in Japanese waters by prefectural research vessels; catch by size; mean length and weight of fish; number, nature and size of schools observed; biting conditions; water temperature and color.

1941(*3*). Résumé of fisheries [in Japanese]. Semi-a. Rep. Oceanogr. Invest., Tokyo (July-Dec., 1940), 67 : 100-102.

Fishing conditions and seasonal shifts of fishing grounds in relation to water temperature in Japanese waters.

1941(*4*). Records of high-sea fisheries [in Japanese]. Semi-a. Rep. Oceanogr. Invest., Tokyo (July-Dec., 1940), 67 : 103-116.

Catch records of experimental live-bait and longline fishing in Japanese waters by prefectural research vessels; effort; catch by size; number, nature and size of schools observed; biting conditions; surface water temperature.

1942(*1*). Résumé of fisheries [in Japanese]. Semi-a. Rep. Oceanogr. Invest., Tokyo (Jan.-June, 1941), 68 : 134-137.

Fishing conditions and seasonal shifts of fishing grounds in relation to water temperature and currents in Japanese waters.

1942(*2*). Records of high-sea fisheries [in Japanese]. Semi-a. Rep. Oceanogr. Invest., Tokyo (Jan.-June, 1941), 68 : 138-161.

Catch records of experimental live-bait and longline fishing in Japanese waters by prefectural research vessels; effort; catch by size; mean length and weight of fish; number, nature and size of schools observed; biting conditions; water temperature.

1942(*3*). Resume of fisheries [in Japanese]. Semi-a. Rep. Oceanogr. Invest., Tokyo (July-Dec., 1941), 69 : 88-90.

Fishing conditions and seasonal shifts of fishing grounds in relation to water temperature in Japanese waters.

1942(*4*). Records of high-sea fisheries [in Japanese]. Semi-a. Rep. Oceanogr. Invest., Tokyo (July-Dec., 1941), 69 : 91-104.

Catch records of experimental live-bait and longline fishing in Japanese waters by prefectural

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research vessels; catch by size; mean length and weight of fish; number, nature and size of schools observed; biting conditions; water temperature and color.

1943(*1*). Resume of fisheries [in Japanese]. Semi-a. Rep. Oceanogr. Invest., Tokyo (Jan.-June, 1942), 70 : 60-63.

Fishing conditions and seasonal shifts of fishing grounds in Japanese waters.

1943(*2*). Records of high-sea fisheries [in Japanese]. Semi-a. Rep. Oceanogr. Invest., Tokyo (Jan.-June, 1942), 70 : 64-72.

Fishing conditions and seasonal shifts of fishing grounds in relation to water temperature and currents in Japanese waters.

1943(*3*). Resume of fisheries [in Japanese]. Semi-a. Rep. Oceanogr. Invest., Tokyo (July-Dec., 1942), 71 : 52-54.

Fishing conditions and seasonal shifts of fishing grounds in relation to water temperature in Japanese waters.

1943(*4*). Records of high-sea fisheries [in Japanese]. Semi-a. Rep. Oceanogr. Invest., Tokyo (July-Dec., 1942), 71 : 55-64.

Catch records of longline and live-bait fishing in Japanese waters by prefectural research boats.

INABA, TAKASHI

1928. On skipjack with abnormally dark viscera [in Japanese]. Suisan Kenkyū shi (J. Fish. Res.), 23(9) : 291-293.

Abnormality in relation to season, locality and fish size.

INANAMI, YOSHIYUKI

1941. Report of oceanographic changes and fishing conditions in Palau waters [in Japanese]. Nanyō suisan jōhō (So. Sea Fish. News), 5(2) : 2-6. (Translation *In:* Spec. Scient. Rep. U. S. Fish Wildl. Serv., [42] : 2-6).

Poor fishing explained by conditions near Palau, January-March, 1941.

1942(*1*). Skipjack fishing conditions at Saipan, Truk, and Ponape [in Japanese]. Nanyō suisan jōhō (So. Sea Fish. News), 6(1) : 5-7.

Result of fishing survey; fishing seasons; size of fish.

1942(*2*). Catch per day per skipjack boat [in Japanese]. Nanyō suisan jōhō (So. Sea Fish. News), 6(1) : 6.

Catch per day, per boat, near four major islands in the south seas, 1935-1940.

1942(*3*). Small skipjack caught at Truk [in Japanese]. Nanyō suisan jōhō (So. Sea Fish. News), 6(1) : 7. (English translation *In:* B. M. Shimada, Contribution to the biology of tunas from the western equatorial Pacific. Fishery Bull., Fish Wildl. Serv. U. S., 52[62] : 111-119, 1951).

Description of juveniles.

1942(*4*). Report on grounds fished by tuna boats operating in the inner South Seas [in Japanese]. Nanyō suisan jōhō (So. Sea Fish. News), 6(1) : 7-9. (English translation *In:* Spec. Scient. Rep. U. S. Fish Wildl. Serv., [42] : 1-2).

An analysis of the shift in tuna fishing grounds in relation to abnormal oceanographic conditions.

INIASEVSKII, A. N.

1930. K promyslovomu ispol'zovaniyu tak nazyvaemykh skumbriinykh ryb Dal'nego Vostoka [in Russian]. Ryb. Khoz. Dal'n. Vost., (5-6) : 46-52.

Common names; description; commercial importance; possibilities of utilization by Soviet fishery.

INOUE, MAKOTO

1959. On the relation of behaviours of skipjack and tuna shoals to their catch inferred from the data for seine fishery [in Japanese with an English summary]. Bull. Jap. Soc. Scient. Fish., 25(1) : 12-16.

Analysis of the number of successful sets and catch per set of one- and two-boat seining operations off northern Japan, by species, type, and size of school.

1961. A study of the fishing power of the purse seine fishery. J. Tokyo Univ. Fish., 47(2) : 123-248.

History and development of purse-seine fishery in Japan; description of gear; scouting methods; seining operations; fishing performance compared by years; fishing grounds and seasons discussed in relation to other species of tuna; nature and size of schools in association with floating objects.

INOUE, MOTOO

1965(*1*). Albacore fishing ground along 40 degrees North [in Japanese]. *In:* Symposium on tuna fishing grounds (III). Bull. Jap. Soc. Fish. Oceanogr., (6) : 79-85.

Catch data include type and size of schools, sea and weather conditions.

1965(*2*). Oceanographic conditions in the Kuroshio Current correlated with aggregation and migration of albacore [in Japanese]. *In:* Symposium on the Kuroshio Current from the fisheries view point. Bull. Jap. Soc. Fish. Oceanogr., (7) : 53-59.

Includes skipjack.

1966(*1*). Exploitation of skipjack and yellowfin tuna resources in the equatorial waters of southwestern Pacific Ocean [in Japanese]. Tuna Data, Fish. Res. Lab., Tokai Univ., (45) : 23-24.

Possibility of exploitation of skipjack stocks by new fishing methods.

1966(*2*). Automation of skipjack angling by lift system [in Japanese]. Tuna Fishg, (51) : 24-25.

New fishing technique; exploitation of new grounds.

1966(*3*). Exploitation of albacore fishing ground in summer season in the Northwestern Pacific [in Japanese]. *In:* Fifth symposium on the tuna fisheries. Bull. Jap. Soc. Fish. Oceanogr., (9) : 54-61.

Use of trolling gear and light to attract fish to surface.

INOUE, MOTOO, R. AMANO and Y. IWASAKI

1963. Studies on environments alluring skipjack and other tunas—I. On the oceanographical condition of Japan adjacent waters and the drifting substances accompanied by skipjack and other tunas [in Japanese with an English summary]. Rep. Fish. Res. Lab., Tokai Univ., 1(1) : 12-22.

Relation of fish schools to floating objects; yearly variations and oceanographic conditions, 1951-1960.

1966. Studies on environments alluring skipjack and other tuna—I, II. (Abstract). *In:* Divisional meeting—Freshwater sciences and ichthyology. Proc. Pacif. Sci. Congr., 7 : 17.

An analysis of the abundance and movement (drift) of floating objects, and their relation to skipjack ecology.

INOUE, MOTOO and KUSUTARO YAMASHITA

1963. Report on test use of improved troll gear [in Japanese]. Rep. Fish. Res. Lab., Tokai Univ., 1(1) : 40-43.

The response of fish to artificial bait; trolling for midwater schools.

ISHII, NOBUTARO

1935. Studies on the family Didymozooidae (Monticelli, 1888). Jap. J. Zool., 6(2) : 279-335.

Host for 10 species of trematodes.

1936. Some new ectoparasitic trematodes of marine fishes [in Japanese with English summary]. Zool. Mag., Tokyo, 48(8-10) : 781-790.

Description of two species of parasites on the gill.

ISHII, NOBUTARO and TOSHISADA SAWADA

1938. Studies on the ectoparasitic trematodes. *In:* Livro Jubilar do Professor Lauro Travassos—Editado para commemorar o 25° anniversario de suas actividades cientificas (1913-1938). Privately published, Rio de Janeiro, Brazil: 231-243.

Listed as host for three species of trematodes.

ISHIKAWA, CHIYOMATSU *et al.* (Ed.)

1931. Illustrations of Japanese aquatic plants and animals. Volume One [in Japanese and English]. (Nihon suisan dō-shokubutsu zushū) Fisheries Society of Japan (Dai nippon suisan-kai) Tokyo, 50 Pls.

Description; ecology.

ISHIYAMA, REIZO and KEISUKE OKADA

1957. Postlarval form of the skipjack (*Katsuwonus pelamis*) from the Phoenix Islands [in Japanese with an English summary]. J. Shimonoseki Coll. Fish., 7(1) : 141-146.

Eleven larval fish collected from the Phoenix Islands area described and identified as skipjack; morphometric measurements.

IVERSEN, EDWIN S. and GARTH I. MURPHY

1955. What the Jangaard longline venture found in mid-Pacific. Pacif. Fisherm., 53(4) : 22, 25, 27.

Results of several exploratory cruises.

IVERSEN, EDWIN S. and HOWARD O. YOSHIDA

1957. Longline and troll fishing for tuna in the central equatorial Pacific, January 1955—February 1956. Spec. Scient. Rep. U. S. Fish Wildl. Serv., (203) : 38 p.

Results of several exploratory cruises.

IVERSEN, ROBERT T. B.

1962. Food of albacore tuna, *Thunnus germo* (Lacépède), in the central and northeastern Pacific. Fishery Bull. Fish. Wildl. Serv. U. S., 62(214) : 459-481.

Feeding behavior mentioned.

IWASAKI, YUKINOBU

1966. Fishing condition of albacore in summer season in Kinan area in 1966 [in Japanese]. *In:* Fifth symposium on the tuna fisheries. Bull. Jap. Soc. Fish. Oceanogr., (9) : 51-53.

Includes discussion of fishing conditions for skipjack in Mariana and Japanese waters.

JAPANESE FEDERATION OF TUNA FISHERMEN'S COOPERATIVE ASSOCIATION and JAPAN TUNA VESSEL OWNERS ASSOCIATION

1959. Present status and problems of tuna fisheries. (3) [in Japanese]. Tuna Fishg, (64) : 26-29.

Economic evaluation of skipjack live-bait fishery of Japan; comparison of this type of fishing with tuna longline fishing.

JENKINS, OLIVER P.

1903. Report on collections of fishes made in the Hawaiian Islands with descriptions of new species. Bull. U. S. Fish Commn, 22 : 417-511.

Records.

JORDAN, DAVID STARR

1925. Giant game fishes of Santa Catalina—swordfishes, tunas and other mackerel-like species. Nat. Hist., N. Y., 25 : 338-345.

Description; distribution; common names.

JORDAN, DAVID STARR, and BARTON WARREN EVERMANN

1896. The fishes of North and Middle America: a descriptive catalogue of the species of fish-like vertebrates found in the waters of North America, north of the Isthmus of Panama. Bull., U. S. Natn. Mus., 47, Part 1, 954 p. (Reprinted in 1963, T. F. H. Publications, Jersey City).

Description; synonymy; distribution.

1905. The aquatic resources of the Hawaiian Islands. I. The shore fishes of the Hawaiian Islands, with a general account of the fish fauna. Bull. U. S. Fish Commn, 23, Part 1: 574 p.

Description; distribution.

1908. American food and game fishes. A popular account of all the species found in America north of the Equator, with keys for ready identification, life histories and methods of capture. Doubleday, Page and Company, New York, 572 p.

Description; distribution.

JORDAN, DAVID STARR, BARTON WARREN EVERMANN and HOWARD WALTON CLARK

1930. Check list of the fishes and fishlike vertebrates of North and Middle America north of the northern boundary of Venezuela and Colombia. Rep. U. S. Commnr Fish., 670 p. (Reprinted in 1955, U. S. Fish and Wildlife Service, Washington).

Distribution; synonymy; common names.

JORDAN, DAVID STARR and CARL LEAVITT HUBBS

1925. Record of fishes obtained by David Starr Jordan in Japan, 1922. Mem. Carneg. Mus., 10(2) : 93-346.

Distribution; common names.

JORDAN, DAVID STARR and ERIC KNIGHT JORDAN

1922. A list of the fishes of Hawaii, with notes and descriptions of new species. Mem. Carneg. Mus., 10(1) : 1-92.

Commercial importance; common names.

JORDAN, DAVID STARR and A. C. LOVEKIN

1926. Migration of bonitos or victor-fish in the North Pacific. Science, N. Y., 64(1664) : 499.

Extensive school.

JORDAN, DAVID STARR and ALVIN SEALE

1906. The fishes of Samoa—Description of the species found in the archipelago, with a provisional check-list of the fishes of Oceania. Bull. Bur. Fish., Wash., 25 : 173-455.

Gymnosarda pelamis listed.

JORDAN, DAVID STARR and EDWIN CHAPIN STARKS

1907. Notes on fishes from the island of Santa Catalina, southern California. Proc. U. S. Natn. Mus., 32 : 67-77.

Records.

JORDAN, DAVID STARR, S. TANAKA, and J. O. SNYDER

1913. A catalogue of the fishes of Japan. J. Coll. Sci. Imp. Univ. Tokyo, 33(1) : 1-497.

Record from Japan; synonymy.

JOSEPH, JAMES

1963. Fecundity of yellowfin tuna (*Thunnus albacares*) and skipjack (*Katsuwonus pelamis*) from the eastern Pacific Ocean [in English and Spanish]. Bull. Inter-Am. Trop. Tuna Commn, 7(4) : 255-292.

Fecundity; relation of fecundity to length and weight; effect of preservation on diameter of ovum.

JOSEPH, JAMES and IZADORE BARRETT

1963. The schooling behavior of Pacific yellowfin and skipjack tuna held in a bait well. Calif. Fish Game, 49(1) : 55.

Observations on captive fish.

JOUAN, HENRI

1867. Note sur quelques poissons nuisibles du Japon [in French]. Mém. Soc. Natn. Sci. Nat. Math. Cherbourg, 13 : 142-144.

Symptoms of ichthiosarcotoxism.

JUNE, FRED C.

1950. The tuna industry in Hawaii. Pan-Am. Fisherm., 4(10) : 11, 19.

History of the fishery.

1951(*1*). Preliminary fisheries survey of the Hawaiian-Line Islands area, Part II—notes on the tuna and bait resources of the Hawaiian, Leeward, and Line Islands. Comml Fish. Rev., 13(1) : 1-22.

1951(*2*). Preliminary fisheries survey of the Hawaiian-Line Islands area, Part III—the live-bait skipjack fishery of the Hawaiian Islands. Comml Fish. Rev., 13(2) : 1-18.

Biology; fishery.

KAFUKU, TAKEICHIRO

1950. "Red muscles" in fishes. I. Comparative anatomy of the scombroid fishes of Japan [in Japanese with an English summary]. Jap. J. Ichthyol., 1(2) : 89-100.

Structure, location and anatomy of dark muscles in relation to ordinary muscles compared among scombroids, including skipjack; development of dark muscle discussed from evolutionary point of view; functions of dark muscles deduced from the anatomy and from past biochemical studies.

KAGOSHIMA PREFECTURAL FISHERIES EXPERIMENTAL STATION

1925. Experimental skipjack fishing [in Japanese]. Kagoshima-ken suisan shikenjō jigyō hōkoku (Prog. Rep. Kagoshima Pref. Fish. Expt. Stn) for 1923: 1-53.

Results of 14 exploratory live-bait fishing cruises in waters south of Japan; catch records and oceanographic data; fishing conditions in relation to water temperature; lengths, girths, and weights of more than 20 skipjack.

1926(*1*). Experimental skipjack fishing [in Japanese]. Kagoshima-ken suisan shikenjō jigyō hōkoku (Prog. Rep. Kagoshima Pref. Fish. Expt. Stn) for 1924: 1-51.

Results of 12 test fishing trips by a live-bait research boat in waters south of Japan: catch log and oceanographic data; fishing conditions in relation to water temperature; length, girths, and weights of skipjack; studies of maturity; summary of studies on larvae; collec-

KAGOSHIMA PREFECTURAL FISHERIES EXPERIMENTAL STATION, continued

tion of larvae by net; stomach contents; growth of larvae; description of larvae; relation between type of school and biting; observations of behavior relative to drifting objects.

1926(*2*). Experimental longline fishing for tuna [in Japanese]. Kagoshima-ken suisan shikenjō jigyō hōkoku (Prog. Rep. Kagoshima Pref. Fish. Expt. Stn) for 1924: 52-82.

Summary and logbook data of longline experimental fishing in waters south of Japan during summer months, including records of a few skipjack.

1927. Experimental skipjack fishing [in Japanese]. Kagoshima-ken suisan shikenjō jigyō hōkoku (Prog. Rep. Kagoshima Pref. Fish. Expt. Stn) for 1925: 1-38.

Results of 16 exploratory live-bait fishing cruises in Ryukyu waters; catch records and oceanographic data; study of attraction of schools by marked drifting objects; larvae collected by plankton nets; commercial seasonal fishing conditions in relation to water temperature; fishing and biting conditions in relation to tide; monthly catch and effort statistics by local fisheries; analysis of fishing.

1928(*1*). Experimental skipjack fishing [in Japanese]. Kagoshima-ken suisan shikenjō jigyō hōkoku (Prog. Rep. Kagoshima Pref. Fish. Expt. Stn) for 1926: 1-22.

Results of nine exploratory live-bait fishing cruises in Taiwan-Ryukyu waters; catch records and oceanographic data; seasonal fishing conditions in relation to water temperature and currents; lengths, girths and weights recorded; experimental fishing in the new fishing grounds near Taiwan; ten small skipjack tagged; monthly catches and catches per trip landed to Makurazaki by local fisheries.

1928(*2*). Skipjack fisheries in the South Seas [in Japanese]. Kagoshima-ken suisan shikenjō jigyō hōkoku (Prog. Rep. Kagoshima Pref. Fish. Expt. Stn) for 1926: 113-145.

Results of exploratory live-bait fishing cruises by two boats in waters near Taiwan, South Sea Islands (Palau), Philippine Islands and Indonesia; fishing conditions, weather, currents, baitfish situation, description of local fishing and logbook data.

1929. Experimental skipjack fishing [in Japanese]. Kagoshima-ken suisan shikenjō jigyō hōkoku (Prog. Rep. Kagoshima Pref. Fish. Expt. Stn) for 1927: 1-20.

Results of 11 exploratory live-bait fishing cruises in Ryukyu waters; catch records and oceanographic data; fishing conditions in relation to water temperature; lengths, girths, and weights.

1930. Experimental skipjack fishing [in Japanese]. Kagoshima-ken suisan shikenjō jigyō hōkoku (Prog. Rep. Kagoshima Pref. Fish. Expt. Stn) for 1928: 1-18.

Results of 11 exploratory live-bait fishing cruises in Ryukyu waters; catch records and oceanographic data; fishing conditions in relation to water temperature and currents; catch and effort statistics by month, by local fisheries; exploitation of new fishing grounds in the East China Sea.

1931. Experimental skipjack fishing [in Japanese]. Kagoshima-ken suisan shikenjō jigyō hōkoku (Prog. Rep. Kagoshima Pref. Fish. Expt. Stn) for 1929: 1-16.

Results of 10 exploratory live-bait fishing cruises in Ryukyu waters; catch records and oceanographic data; fishing conditions in relation to water temperature; monthly catch and effort statistics by local fisheries; exploitation of new fishing grounds in Ryukyu waters and East China Sea.

1932. Experimental skipjack fishing [in Japanese]. Kagoshima-ken suisan shikenjō jigyō hōkoku (Prog. Rep. Kagoshima Pref. Fish. Expt. Stn) for 1930: 1-20.

Results of nine exploratory live-bait fishing cruises in Ryukyu waters; catch records and oceanographic data; fishing conditions in relation to water temperature.

1933. Investigation of skipjack fishing [in Japanese]. Kagoshima-ken suisan shikenjō jigyō hōkoku (Prog. Rep. Kagoshima Pref. Fish. Expt. Stn) for 1931: 1-16.

Results of eight exploratory fishing cruises in Ryukyu waters and two cruises in Philippine waters; catch records and oceanographic data; fishing conditions in relation to water temperature, currents, and weather.

1934. Investigation of skipjack fishing [in Japanese]. Kagoshima-ken suisan shi-

KAGOSHIMA PREFECTURAL FISHERIES EXPERIMENTAL STATION, continued

kenjō jigyō hōkoku (Prog. Rep. Kagoshima Pref. Fish. Expt. Stn) for 1932: 1-27.

Results of eight exploratory fishing cruises by a live-bait research vessel in Ryukyu waters; catch records; water temperature data; fishing conditions discussed in relation to oceanographic conditions, weather, and biting; catches by these local fisheries given by 10-day periods and size classes of fish.

1935(*1*). Investigation of skipjack fishing [in Japanese]. Kagoshima-ken suisan shikenjō jigyō hōkoku (Prog. Rep. Kagoshima Pref. Fish. Expt. Stn) for 1933: 1-13.

Results of nine exploratory live-bait fishing cruises in Ryukyu waters; catch records; results of oceanographic survey cruises in the same waters discussed in relation to fishing conditions; local catch statistics by 10-day periods; catches recorded by size classes of fish and 10-day periods.

1935(*2*). Cooperative South Seas skipjack and tuna fishing (1932) [in Japanese]. Kagoshima-ken suisan shikenjō jigyō hōkoku (Prog. Rep. Kagoshima Pref. Fish. Expt. Stn) for 1933: 15-18.

Results of two exploratory fishing cruises in the Sulu Sea by a commercial boat; catch and water temperature data.

1935(*3*). Cooperative South Seas skipjack and tuna fishing (1933) [in Japanese]. Kagoshima-ken suisan shikenjō jigyō hōkoku (Prog. Rep. Fish. Expt. Stn) for 1933: 18-21.

Results of two exploratory fishing cruises in the Sulu and Celebes seas by a commercial boat during the fall and winter, employing both the live-bait and longline methods; catch log and water temperature data.

1936(*1*). Investigation of skipjack fishing [in Japanese]. Kagoshima-ken suisan shikenjō jigyō hōkoku (Prog. Rep. Kagoshima Pref. Fish. Expt. Stn) for 1934: 1-16.

Results of 10 exploratory live-bait fishing cruises in Ryukyu waters; catch records and oceanographic data; fishing conditions in the same waters discussed in relation to oceanographic conditions; local catch statistics by month; 20 to 40 skipjack measured and weighed on each cruise.

1936(*2*). Cooperative southern skipjack and tuna fishing [in Japanese]. Kagoshima-ken suisan shikenjō jigyō hōkoku (Prog. Rep. Kagoshima Pref. Fish. Expt. Stn) for 1934: 17-21.

Results of four exploratory live-bait fishing cruises in the Celebes and Sulu seas by a commercial boat during the winter; catch records and water temperature data.

1936(*3*). Investigation of the migration of important fishes [in Japanese]. Kagoshima-ken suisan shikenjō jigyō hōkoku (Prog. Rep. Kagoshima Pref. Fish. Expt. Stn) for 1934: 86-87.

Release data of 45 skipjack tagged in Ryukyu waters; fish caught by pole and line and hand line.

1937(*1*). Investigation of skipjack fishing [in Japanese]. Kagoshima-ken suisan shikenjō jigyō hōkoku (Prog. Rep. Kagoshima Pref. Fish. Expt. Stn) for 1935: 1-8.

Results of eight exploratory live-bait fishing cruises in Ryukyu waters; catch records and oceanographic data; mean length and weight of 10 samples of skipjack; fishing conditions in 1935 described in relation to oceanographic conditions; local catch statistics by month; relation between seasonal variations of fishing conditions and of oceanographic conditions compared for 1933-1935; catches and their values compared for 1928-1935; seasonal variation in size composition of catches in 6 years analyzed; temperature distribution on fishing grounds plotted for 1933-1935.

1937(*2*). Cooperative southern skipjack and tuna fishing [in Japanese]. Kagoshima-ken suisan shikenjō jigyō hōkoku (Prog. Rep. Kagoshima Pref. Fish. Expt. Stn) for 1935: 9-11.

Results of four exploratory fishing cruises in the Sulu Sea by a commercial boat, employing both the live-bait and longline methods; catch records and water temperature data.

KAGOSHIMA PREFECTURAL FISHERIES EXPERIMENTAL STATION, continued

1937(*3*). Survey of the present condition of the skipjack industry [in Japanese]. Kagoshima-ken suisan shikenjō jigyō hōkoku (Prog. Rep. Kagoshima Pref. Fish. Expt. Stn) for 1935: 96-103.

Numbers of skipjack live-bait fishing boats by size classes in the Kagoshima Prefecture; statistics on engines, equipment, average number of trips per year, number of fishing days; economic data on operation of the boats.

1938(*1*). Investigation of skipjack fishing [in Japanese]. Kagoshima-ken suisan shikenjō jigyō hōkoku (Prog. Rep. Kagoshima Pref. Fish. Expt. Stn) for 1936: 1-6.

Results of nine exploratory live-bait fishing cruises in Ryukyu waters; catch records and oceanographic data; mean length and weight of fish of 15 samples of about 20 fish each; seasonal fishing conditions described in relation to water temperature; local monthly catch statistics.

1938(*2*). Cooperative southern skipjack and tuna fishing [in Japanese]. Kagoshima-ken suisan shikenjō jigyō hōkoku (Prog. Rep. Kagoshima Pref. Fish. Expt. Stn) for 1936: 7-10.

Results of two exploratory fishing cruises in the Sulu and Celebes seas by a commercial live-bait boat; catch records and water temperature data; comparison of condition factors of fish of South Seas and Ryukyu waters.

1938(*3*). Investigation of the migration of important fishes [in Japanese]. Kagoshima-ken suisan shikenjō jigyō hōkoku (Prog. Rep. Kagoshima Pref. Fish. Expt. Stn) for 1936: 89.

Release data with mean length and weight of 45 skipjack tagged in Ryukyu waters.

1939(*1*). Investigation of skipjack fishing [in Japanese]. Kagoshima-ken suisan shikenjō jigyō hōkoku (Prog. Rep. Kagoshima Pref. Fish. Expt. Stn) for 1937: 1-6.

Results of seven exploratory live-bait fishing cruises in Ryukyu waters; catch records and water temperature data; seasonal fishing conditions related to water temperature; mean length and weight for eight samples of about 20 fish each; local monthly catch statistics.

1939(*2*). Cooperative southern skipjack fishing experiment [in Japanese]. Kagoshima-ken suisan shikenjō jigyō hōkoku (Prog. Rep. Kagoshima Pref. Fish. Expt. Stn) for 1937: 7-9.

Summary of one exploratory live-bait fishing cruise in the Sulu Sea by a commercial boat.

1939(*3*). Investigation of the migration of important fishes [in Japanese]. Kagoshima-ken suisan shikenjō jigyō hōkoku (Prog. Rep. Kagoshima Pref. Fish. Expt. Stn) for 1937: 69.

Release data of 36 skipjack tagged in Ryukyu waters.

1940(*1*). Experimental skipjack fishing [in Japanese]. Kagoshima-ken suisan shikenjō jigyō hōkoku (Prog. Rep. Kagoshima Pref. Fish. Expt. Stn) for 1938: 1-6.

Summary of nine exploratory fishing trips made by a live-bait research vessel south of Kyushu, Japan; general review of fishing conditions; monthly statistics of catch by commercial boats of Kagoshima Prefecture; mean lengths and weights of 13 samples of skipjack collected by the research vessel.

1940(*2*). Cooperative southern skipjack and tuna fishing experiment [in Japanese]. Kagoshima-ken suisan shikenjō jigyō hōkoku (Prog. Rep. Kagoshima Pref. Fish. Expt. Stn) for 1938: 7-9.

Results of four exploratory fishing cruises by a commercial boat in the Sulu Sea in the fall; catch (probably skipjack) and water temperature data.

1940(*3*). Investigation of the migration of important fishes [in Japanese]. Kagoshima-ken suisan shikenjō jigyō hōkoku (Prog. Rep. Kagoshima Pref. Fish. Expt. Stn) for 1938: 43.

Release records of 20 skipjack tagged in the East China Sea.

1941(*1*). Experimental skipjack fishing [in Japanese]. Kagoshima-ken suisan shi-

KAGOSHIMA PREFECTURAL FISHERIES EXPERIMENTAL STATION, continued

kenjō jigyō hōkoku (Prog. Rep. Kagoshima Pref. Fish. Expt. Stn) for 1939: 1-6.

Summary of 10 exploratory fishing cruises by a live-bait research vessel south of Kyushu, Japan; general review of fishing conditions; monthly statistics of catch by commercial boats of the prefecture; mean lengths and weights of eight skipjack samples.

1941(*2*). Cooperative southern skipjack and tuna fishing experiment [in Japanese]. Kagoshima-ken suisan shikenjō jigyō hōkoku (Prog. Rep. Kagoshima Pref. Fish. Expt. Stn) for 1939: 7-8.

Results of three exploratory fishing cruises in the fall and winter by a commercial vessel in the Sulu Sea; catch records and meteorological and oceanographic data.

KAKIMOTO, DAIICHI

1954. Biochemical studies on skipjack (*Katsuwonus vagans*)—VII. Distribution of guanidine compounds in pyloric coeca [in Japanese with an English summary]. Bull. Jap. Soc. Scient. Fish., 20(8) : 713-716.

Fresh and old caeca extract analyzed for their guanidine components, using paper partition chromatography method.

1957(*1*). Studies on B-vitamins in pyloric coeca of skipjack—II. P-aminobenzoic acid (PABA) and riboflavin [in Japanese with an English summary]. Bull. Jap. Soc. Scient. Fish., 22(9) : 577-582.

PABA and riboflavin measured by an improved method of bioassay.

1957(*2*). Studies on B-vitamins of pyloric coeca of skipjack, *Katsuwonus vagans*—IV. On vitamin B_{12} [in Japanese with an English summary]. Bull. Jap. Soc. Scient. Fish., 22(10) : 634-636.

Vitamin B_{12} determined by two different bioassays.

1960(*1*). Studies on an unknown factor in the pyloric coeca of skipjack—I. Discovery of an unknown factor as a substitute for the citrovorum factor [in Japanese with an English summary]. Bull. Jap. Soc. Scient. Fish., 26(8) : 759-764.

Folinic acid, citrovorum factor and another similar factor, extracted; amount and properties determined by bioassay and chemical methods.

1960(*2*). Studies on an unknown factor in the pyloric coeca of skipjack—II. Characteristics of the unknown factor (Part 1) [in Japanese with an English summary]. Bull. Jap. Soc. Scient. Fish., 26(8) : 765-770.

Unknown factor extracted which promotes growth of *Leuconostoc citrovorum*.

1960(*3*). Studies on the unknown factor in the pyloric coeca of skipjack—III. Isolation and characterization of the unknown factor [in Japanese with an English summary]. Bull. Jap. Soc. Scient. Fish., 26(10) : 989-995.

Attempt to obtain more nearly pure amounts of an unidentified substance.

1960(*4*). Studies on the unknown factor in the pyloric coeca of skipjack—IV. Characterization by bioassay of a crude crystalline preparation of the unknown factor [in Japanese with an English summary]. Bull. Jap. Soc. Scient. Fish., 26(10) : 996-1000.

Tests for presence of vitamin B group in the crude crystals of the unknown factor; comparison of its effect on growth of *Leuconostoc citrovorum* with that of thimidine and other known materials.

1960(5). Studies on B-vitamins of pyloric coeca of skipjack (*Katsuwonus vagans*)—III. On Vitamin B_6 [in Japanese with an English summary]. Mem. Fac. Fish. Kagoshima Univ., 9 : 22-29.

Vitamin B_6 extracted.

1962. Studies on the unknown factor in the pyloric coeca of skipjack—V. Composition of the unknown factor [in Japanese with an English summary]. Bull. Jap. Soc. Scient. Fish., 28(4) : 445-447.

KAKIMOTO, DAIICHI and A. KANAZAWA

1957. Studies on B-vitamins in pyloric coeca of skipjack—I. Thiamine, nicotinic acid, folic acid, biotin and pantothenic acid [in Japanese with an English summary]. Bull. Jap. Soc. Scient. Fish., 22(9) : 574-576.

Bioassay of Vitamin B components.

1959. Studies on folic acid and folinic acid of fishes [in Japanese with an English summary]. Bull. Jap. Soc. Scient. Fish., 24(11) : 933-936.

Determination and comparison of folic acid and folinic acid from various organs.

KAKIMOTO, DAIICHI, A. KANAZAWA and K. KASHIWADA

1953. Biochemical studies on skipjack (*Katsuwonus vagans*)—IV. Distribution of amino-acid in pyloric coeca [in Japanese with an English summary]. Bull. Jap. Soc. Scient. Fish., 19(6) : 729-732.

Analysis and identification by paper partition chromatography of amino-acids.

1957. Amino acid composition of the pyloric coeca of skipjack, *Katsuwonus vagans* [in Japanese with an English summary]. Bull. Jap. Soc. Scient. Fish., 22(10) : 631-633.

Amino acids determined and bioassayed and their composition compared with those of muscle.

KAKIMOTO, DAIICHI and HIROSHI MIZUMA

1956. Studies on the utilization of pyloric coeca of skipjack—I. Preparation of histidine from pyloric coeca extract [in Japanese with an English summary]. Bull. Jap. Soc. Scient. Fish., 22(5) : 316-319.

Separation of histidine with acid soil.

KAKIMOTO, DAIICHI and T. YOSHIMINE

1956. Studies on the utilization of pyloric coeca of skipjack—II. Preparation of arginine from pyloric coeca extract [in Japanese with an English summary]. Bull. Jap. Soc. Scient. Fish., 22(5) : 320-323.

Separation of arginine with activated charcoal at a specific pH.

KAMIMURA, TADAO

1966. Part II. Stock assessment [in Japanese with an English Summary. Discussion by audience included.]. *In:* Symposium on tuna fisheries. Bull. Jap. Soc. Scient. Fish., 32(9) : 756-786, and 829.

Abundance; fishing rate; ages of recruits at entry to fishery; spawning; maturity; expansion of fishery in relation to population size.

KAMIMURA, TADAO and MISAO HONMA

1963. Distribution of the yellowfin tuna *Neothunnus macropterus* (Temminck and Schlegel) in the tuna longline fishing grounds of the Pacific Ocean [in Japanese with an English summary]. Rep. Nankai Reg. Fish. Res. Lab., (17) : 31-53. Also *In:* Rosa, H., Jr. (Ed.) Proceedings of the World Scientific Meeting on the Biology of Tunas and Related Species [in English with Spanish and French summaries]. FAO, Fish. Rep., 3(6) : 1299-1328.

Includes information reported by Murphy and Ikehara (1955) on sighting of fish schools.

KAMOHARA, TOSHIJI

1950. Tosa oyobi Kishu no gyorui (Description of the fishes from the provinces of Tosa and Kishu) [in Japanese]. Bunkyō Kyōkai, Kōchi, 288 p.

Description.

1954(*1*). A list of fishes from the Tokara Islands, Kagoshima Prefecture, Japan.

KAMOHARA, TOSHIJI, continued

Publs Seto Mar. Biol. Lab., 3(3) : 265-299.

Katsuwonus pelamis recorded.

1954(2). Hermophroditic skipjack [in Japanese]. Saishū to shiiku (Collecting Breed.), 16(12) : 362.

1955. Coloured illustrations of the fishes of Japan (Genshoku Nihon gyorui zukan) [in Japanese]. Hoikusha, Osaka, Japan, 135 p. Revised edition, 1964, same publisher, 158 p.

Brief description of distribution, migration and spawning.

1958. A catalogue of fishes of Kochi Prefecture (Province Tosa), Japan. Rep. Usa Mar. Biol. Stn, 5(1) : 1-76.

1959. On the famous animals of Kochi Prefecture [in Japanese]. Res. Rep. Kōchi Univ., 8(1) : 1-12.

Distribution and migration of skipjack in Japanese waters.

1961. Coloured illustrations of the fishes of Japan (II) Zoku genshoku Nihon gyorui zukan [in Japanese]. Hoikusha, Osaka, Japan, 168 p.

List of Japanese local names of fishes; brief description of distribution and migration, ecology, and behavior of skipjack.

1964. Revised catalogue of fishes of Kochi Prefecture, Japan. Rep. Usa Mar. Biol. Stn, 11(1) : 1-99.

KANAGAWA PREFECTURAL FISHERIES EXPERIMENTAL STATION

1952-1956. Table of survey of tuna catches by months and by fishing area [in Japanese]. Kanagawa-ken suisan shikenjō geppō (Mon. Rep. Kanagawa Pref. Fish. Expt. Stn, Nos. 1-43. (Nos. 12-43 are identical with "Tuna Fishing" by Inv. Soc. of Tuna Fish.).

Data on world-wide catches of tunas by Japanese longline boats; includes data on effort, sampling coverage, and water temperature.

1961. Analysis of hook rate of pelagic tuna fishing boats in Japan, 1958 [in Japanese]. Kanagawa suishi shiryō (Rep. Kanagawa Pref. Fish. Expt. Stn), (3) : 47 p.

Catch and effort statistics of Japanese longline boats by month, area and species; water temperature data included.

KANAMURA, MASAMI and HARUO YAZAKI

1940. Investigation of tuna longline fishing grounds in the East Philippine Sea [in Japanese]. *In:* Report of fishing ground investigations by the *Shonan-maru* in 1937. Taiwan sōtokufu suisan shikenjō shuppan (Publs Formosa Gov.-Gen. Fish. Expt. Stn), (21) : 1-65.

Results of longline exploratory fishing east of the Philippine Islands; comparison of catch rates by two different sizes of hooks; analysis of catches in relation to depth of hooks; stomach contents; oceanographic data.

KANEKO, NAOSHI

1932. A consideration on skipjack fishery [in Japanese]. Rakusui, 27(8) : 15-18.

Water temperatures associated with best skipjack catches discussed by season; economic analysis of skipjack fishery.

KASHIWADA, KENICHI (KASHIWADA, KEN-ICHI)

1952. Studies on the enzymes of skipjack, *Katsuwonus vagans*, entrails—I. On the seasonal variation of proteolytic enzyme activity in pyloric coeca [in Japanese with an English summary]. Bull. Jap. Soc. Scient. Fish., 18(4) : 151-154.

Tests of seasonal variation in activity of proteolytic enzymes; comparison of these variations with skipjack catches and biting.

KASHIWADA, KENICHI (KASHIWADA, KEN-ICHI) continued

1956(*1*). Biochemical studies on skipjack, *Katsuwonus vagans*—VIII. On the mechanism of ammonia formation in pyloric coeca (1) [in Japanese with an English summary]. Bull. Jap. Soc. Scient. Fish., 21(10) : 1062-1065.

Attempt to determine the origin of ammonia in pyloric caeca.

1956(*2*). Biochemical studies on skipjack, *Katsuwonus vagans*—IX. On the mechanism of ammonia formation in pyloric coeca (2) [in Japanese with an English summary]. Bull. Jap. Soc. Scient. Fish., 21(10) : 1066-1069.

Changes in nitrogen compounds during autolysis examined to determine origin of ammonia.

1958. Studies on the enzymatic degradation of aquatic animal tissues—III. Relations between ammonia generation and amide [in Japanese with an English summary]. Bull. Jap. Soc. Scient. Fish., 23(10) : 656-659.

Attempt to determine origin of the ammonia generated in pyloric caeca and muscles of skipjack by an enzyme in pyloric caeca.

KASHIWADA, KEN-ICHI and D. KAKIMOTO

1952. On the nucleic acid and its related compounds in pyloric appendage of skipjack [in Japanese with an English summary]. Mem. Fac. Fish. Kagoshima Univ., 2(1) : 66-70.

Chemical compounds related to nucleic acid from pyloric caeca studied to demonstrate presence of nucleic acid.

KASHIWADA, KENICHI, D. KAKIMOTO and Y. HORIGUCHI

1952. Biochemical studies on skipjack, *Katsuwonus vagans*—I. Chemical components of pyloric coeca and extractive matter [in Japanese with an English summary]. Bull. Jap. Soc. Scient. Fish., 18(4) : 147-150.

Seasonal variations in chemical components of pyloric caeca; autolysis of pyloric caeca.

KASHIWADA, KENICHI, D. KAKIMOTO and A. KANAZAWA

1954. Biochemical studies on skipjack (*Katsuwonus vagans*)—VI. Organic acid in pyloric coeca [in Japanese with an English summary]. Bull. Jap. Soc. Scient. Fish., 20(8) : 709-712.

Quantitative determination of organic acid in extracts from pyloric caeca; studies of its components by paper chromatography.

KASHIWADA, KEN-ICHI, D. KAKIMOTO and T. YAMASAKI

1953. Biochemical studies on skipjack (*Katsuwonus vagans*)—III. On the nitrogen compounds in skipjack pyloric coeca extract [in Japanese with an English summary]. Bull. Jap. Soc. Scient. Fish., 19(1) : 15-18.

Nature of nitrogen compounds in water-soluble substance of pyloric caeca.

KASK, JOHN L.

1964. Razones de la cuota atunera para 1964 [in Spanish]. Pesca, Lima, 9(4-5) : 31-34 and 36-37.

Status of yellowfin and skipjack tuna stocks of the eastern Pacific Ocean.

1966. The world tuna resources and related problems [in Japanese]. (Lectures for Japan Fisheries Resources Conservation Association). Japanese Fisheries Resources Conservation Association (Nihon suisan shigen hogo kyŏkai), Tokyo: 72 p.

Mention of catch and stocks; evaluation of research.

KATSUBE, SEI

1921. Skipjack fishery in Oshima Islands [in Japanese]. Suisankai (J. Fish. Soc. Japan) 471 : 668-671.

Development of fishery reviewed.

KATSUMATA, TEIZO and YOSHIHISA TOGASAWA

1960. Studies on the proteinase of pyloric caeca—IV. Behaviour of the glycylglycine dipeptidase during the refining of crystalline proteinase of bonito pyloric caeca [in Japanese with an English summary]. Bull. Jap. Soc. Scient. Fish., 26(12) : 1200-1203.

Tests to determine if glycylglycine dipeptidase can be absorbed by suberlite XE-64, and how active GG dipeptidase works during the process of extracting proteinase from skipjack pyloric caeca.

KAWABATA, TOSHIHARU, TOSHIYUKI MIURA and KATSUKO SHIMANUKI

1963. Radiation survey of tuna fish obtained at the Tokyo Central Fish Market, during the period, May to October, 1962. *In:* Radioactivity survey of the mid-Pacific Area, 1962. III. At the Tokyo Central (Tsukiji) Fish Market. Department of Food Control, National Institute of Health, Tokyo: 1-16.

Accumulation of radioactive isotopes in various body portions analyzed and compared.

KAWAGUCHI, YOSUKE

1963. Skipjack fishing in recent years [in Japanese]. (Includes discussions by audience). (Abstract). *In:* Summary of Symposium on the pelagic fishing grounds in the Pacific adjacent to Japan. Bull. Jap. Soc. Fish. Oceanogr., (3) : 29-30.

Fishing conditions correlated with oceanographic conditions; migration routes of a few populations.

KAWAI, HIDEO

1955. On the polar frontal zone and its fluctuation in the waters to the northeast of Japan (II) [in Japanese with an English summary]. Bull. Tohoku Reg. Fish. Res. Lab., 5 : 1-42.

Physical oceanography of Kuroshio Current; relation of skipjack fishing to oceanographic conditions.

1959. On the polar frontal zone and its fluctuation in the waters to the northeast of Japan (III). Fluctuation of the water mass distribution during the period 1946-1950 and hydrographic conditions in the fishing grounds of skipjack and albacore [in Japanese with an English summary]. Bull. Tohoku Reg. Fish. Res. Lab., 13 : 13-59.

Seasonal changes in skipjack concentration relative to oceanographic conditions.

KAWAI, HIDEO and MINORU SASAKI

1962. On the hydrographic condition accelerating the skipjack's northward movement across the Kuroshio front [in Japanese with an English summary]. Bull. Tohoku Reg. Fish. Res. Lab., 20 : 1-27.

Seasonal northward shift of fishing grounds off north-eastern Japan analyzed in relation to northward extension of Kuroshio during summer.

KAWAI, TOMOYASU

1963. Migration and fishing condition of albacore [in Japanese]. *In:* Symposium on the pelagic fishing grounds in the Pacific adjacent to Japan. Bull. Jap. Soc. Fish. Oceanogr., (3) : 44-51.

Abundance and availability of skipjack in relation to oceanographic conditions and abundance of albacore.

KAWAMURA, HYOZO

1939. A consideration on occanography and fishing conditions in Palau waters [in Japanese]. Nanyō suisan (So. Sea Fish.), 5(2) : 2-7.

Annual variation in skipjack fishing conditions; relation of fishing conditions to changes in oceanographic conditions; prediction of fishing conditions in 1939.

KAWAMURA, HYOZO, continued

1940. Research and guidance program of South Sea Government-General Fisheries Experimental Station under the present tight international situation [in Japanese]. Suisankai (J. Fish. Soc. Japan), (687) : 24-26.

Abundance and distribution of fish in relation to currents.

KAWASAKI, TSUYOSHI

1952. On the populations of skipjack, *Katsuwonus pelamis* (Linnaeus), migrating to the north-eastern sea area along the Pacific coast of Japan [in Japanese with an English summary]. Bull. Tohoku Reg. Fish. Res. Lab., 1 : 1-14.

Population structure off northeastern Japan analyzed by length-weight relationship; yearly fluctuations in distribution discussed in relation to strength of current.

1955(*1*). On the migration and growth of the skipjack, *Katsuwonus pelamis* (Linnaeus), in the south-western sea area of Japan [in Japanese with an English summary]. Bull. Tohoku Reg. Fish. Res. Lab., 4 : 83-100.

Age, growth and migrations of two types of skipjack, sedentary and migratory, off southwestern Japan analyzed on the basis of size composition.

1955(*2*). On the migration and growth of the skipjack, *Katsuwonus pelamis* (Linnaeus), in the Izu and Bonin sea areas and the north-eastern sea area along the Pacific coast of Japan [in Japanese with an English summary]. Bull. Tohoku Reg. Fish. Res. Lab., 4 : 101-119. (Translation available at Library of Congress [1959]).

Age, growth and migrations of two types of skipjack, sedentary and migratory, off northeastern and central Japan, analyzed on the basis of size composition.

1957. On the fluctuation of the fisheries conditions in the live-bait fishery of skipjack in waters adjacent to Japan. I. [in Japanese with an English summary]. Bull. Tohoku Reg. Fish. Res. Lab., 10 : 17-28.

Annual fluctuation of catches off northeastern Japan analyzed and population size estimated; growth, average weight, time of recruitment, of 3-year-old fish discussed in relation to population, abundance and oceanographic conditions.

1958. On the fluctuation of the fisheries conditions in the live-bait fishery of skipjack in waters adjacent to Japan. II. [in Japanese with an English summary]. Bull. Tohoku Reg. Fish. Res. Lab., 11 : 65-81.

Analysis of the between-seasonal changes in oceanographic structures and fishing conditions off southern Japan; general discussion on the oceanographic structures which produce good skipjack fishing.

1959. On the structure of "fish school" of tunas [in Japanese with an English abstract]. Jap. J. Ecol., 9(1) : 52-54.

Species composition of schools of tuna; length composition of skipjack in a school in relation to type of school.

1960. Biological comparison between the Pacific tunas, Part II [in Japanese with an English summary]. Bull. Tohoku Reg. Fish. Res. Lab., 16 : 1-40.

Interspecific comparison of distribution, environment, and morphological features such as ratio of pectoral fin length to body length; evolution of tunas.

1963(*1*). The growth of skipjack on the northeastern sea of Japan [in Japanese with an English summary]. Bull. Tohoku Reg. Fish. Res. Lab., 23 : 44-60.

Study of seasonal growth of skipjack off northern Japan using length and weight data; growth rates compared among years (1951-1959); preliminary attempt to estimate amount of forage organisms from population size and growth rate of skipjack.

1963(*2*). Part 1. Forecast of fishing conditions for pole-and-line skipjack fishing and purse-seine bluefin tuna fishing in the Tohoku-sea region—particularly in relation to the oceanographic conditions [in Japanese. Discussions by audience included], p. 5-13. *In:* Kato, Genji (Ed.) summary of the 1st symposium. Rep. Conf. Fish.

KAWASAKI, TSUYOSHI, continued

Ag. Jap. Govt Fish. Resour. Invest., (1) : 5-40.

Ecology; relation between abundance and distribution.

1964. Population structure and dynamics of skipjack in the North Pacific and its adjacent waters [in Japanese with an English summary]. Bull. Tohoku Reg. Fish. Res. Lab., 24 : 28-47.

Spawning, migration, recruitment to the fishery, age of recruitment, population structure, growth, emigration from fishing grounds, discussed from data on distribution of catches, annual fluctuations in catch per unit of effort, size composition.

1965(*1*). Ecology and dynamics of the skipjack population (I), (II) [in Japanese]. Nihon suisan shigen hogo kyōkai, suisan kenkyū sōsho (Study Ser. Jap. Fish. Resor. Conserv. Ass.), 8-1 : 1-48, 8-2 : 49-108. English translation: 1967—by M. P. Miyake (Part I) and by U. S. Joint Publications Research Service (Part II). Inter-American Tropical Tuna Commission and U. S. Bureau of Commercial Fisheries. California, 54 p. and 79 p.

Comprehensive review of previous studies on classification, distribution, spawning, reproduction, larvae, juveniles, growth, age, feeding, biting conditions, schooling behavior, association with floating objects, environmental conditions, catch and effort statistics, population structure, tagging, population dynamics, and fishing in relation to oceanographic conditions.

1965(*2*). Relationship between skipjack and Kuroshio current [in Japanese]. *In:* Symposium on the Kuroshio Current from the fisheries viewpoint. Bull. Jap. Soc. Fish. Oceanogr., (7) : 63-64.

Also migration of various species.

1966. Population structure of skipjack in the Pacific [in Japanese]. *In:* Symposium on "Shirasu," anchovy, skipjack and albacore. Bull. Jap. Soc. Fish. Oceanogr., (8) : 69-72.

Spawning, racial studies, tagging, catch data, and longline catches reviewed to elucidate population structure.

KAWASAKI, TSUYOSHI and MORIYA ANRAKU

1962. On the abundance and its fluctuation of the skipjack and albacore migrating to the neighbouring seas of Japan. I. [in Japanese with an English summary]. Bull. Tohoku Reg. Fish. Res. Lab., 20 : 33-50.

Comparison of seasonal changes of skipjack abundance in relation to their migration off northeastern Japan; discussion of possibility of predicting catch from the abundance early in the season.

KAWASAKI, TSUYOSHI and MASAHIRO ASANO

1962. Biological comparison between the Pacific tunas. Part III [in Japanese with an English summary]. Bull. Tohoku Reg. Fish. Res. Lab., 20 : 45-50.

Comparison of water temperature, time of fishing, schooling patterns, depth of capture, and stomach contents for skipjack and albacore tuna taken off northern Japan in June by live-bait fishery.

KAWASAKI, TSUYOSHI and AKIRA NAGANUMA

1959. On the fluctuation of the fisheries conditions in the live-bait fishery of skipjack in waters adjacent Japan. III [in Japanese with an English summary]. Bull. Tohoku Reg. Fish. Res. Lab., 13 : 79-94.

Relationship between main fishing area and oceanographic conditions off northwestern Japan for 1951-1955.

1961. An ecological study of fishes taken in the Tohoku sea area and the fishing ground structure in the same area (preliminary report) [in Japanese with an English summary]. Bull. Tohoku Reg. Fish. Res. Lab., 19 : 72-80.

Discussion of relationship between skipjack distribution and water temperature at 100 m, in comparison to distribution of other tunas and sharks.

KAWASAKI, T., M. YAO, M. ANRAKU, A. NAGANUMA and M. ASANO

1962. On the structure and the fluctuation mechanism of the piscivorous fish community distributed in the subsurface layer of the Tohoku sea region. I [in Japanese with an English summary]. Bull. Tohoku Reg. Fish. Res. Lab., 22 : 1-44.

Comparison of geographical distribution, distribution in relation to water temperature, weight-frequency distribution and stomach contents of 11 species of fish off northern Japan; discussion of these communities in relation to oceanographic conditions.

KAZANOVA, I. I.

1962. Lichinki tuntsov tropicheskoi zony Atlanticheskogo okeana. (Tuna larvae of the tropical zone of the Atlantic Ocean) [in Russian]. Vop. Ikhtiol., 2(3-24) : 451-461. English translation by Kr. Fred Wiborg, George Washington University Biological Sciences Project and U. S. Bureau of Commercial Fisheries, Branch of Reports, Washington, D. C., 10 p.

Description of young based on published works, including some from the Pacific Ocean.

KIKUCHI, TAKEAKI, T. HIRANO, H. MOROOKA and I. OKADA

1958. Polarographic studies of protein contained in aquatic animal II. Specific difference shown in protein wave [in Japanese with an English summary]. Bull. Jap. Soc. Scient. Fish., 24(8) : 651-655.

Comparison of proteins in muscle tissue of 15 species of aquatic animals by polarographic method.

KIKUCHI, TAKEAKI, T. HIRANO and I. OKADA

1957. Polarographic studies of proteins contained in fish—Preliminary report [in Japanese with an English summary]. Bull. Jap. Soc. Scient. Fish., 23(7 & 8) : 467-470.

Study of proteins in dark meat, white meat, and various organs of skipjack by polarographic method.

KIMURA, KINOSUKE

1941. Skipjack fishing conditions. *In:* Fishing conditions of important fishes in Japan, Part 1 [in Japanese]. Suisan seizō kōgaku kōza (Fish. Tech. Lect. Ser.), 4 : 36 p.

General review of Japanese skipjack fishery; distribution and migration in relation to water temperature and currents; fishing seasons and conditions and various fishing grounds of Japan and South Seas; annual catch and effort statistics; age composition and size composition by area; length and weight range by ages.

1942. High seas fisheries [in Japanese]. Kaiyō no kagaku (Sci. Sea), 2(3) : 142-147.

General description of Japanese fishing areas and seasons and of distribution and migration in western Pacific.

1949. Atlas of skipjack fishing grounds—with data on the albacore grounds [in Japanese]. Kuroshio Publ. Co., Tokyo, 44 p. (English translation in the files of U. S. Bureau of Commercial Fisheries, Biological Laboratory, Honolulu).

Catches by commercial and research vessels east of Japan in 1936-1943 and 1947, by 1° squares and 10-day intervals, and corresponding sea-surface temperature.

1950. Measures against poor fishing of skipjack [in Japanese]. Kaiyō no kagaku (Sci. Sea), 6(1) : 42-46.

Biting conditions discussed in relation to annual variation of oceanographic conditions and abundance of forage fishes; vertical movement in relation to vertical and horizontal structure of water temperature and to location of oceanic boundaries.

1954. Analysis of skipjack (*Katsuwonus pelamis*) shoals in the water of "Tohoku Kaiku" by its association with other animals and objects based on the records of

KIMURA, KINOSUKI, continued

fishing boats [in Japanese with an English summary]. Bull. Tohoku Reg. Fish. Res. Lab., 3 : 1-87.

Analysis of seasonal and geographical distribution and biting in the northwestern Pacific in relation to size and type of schools associated with drifting objects and various other animals.

1962. Oceanographic investigations on the saury, skipjack and tuna fishing grounds off northeastern Japan [in Japanese]. (Summary). *In:* Summary of symposium on what is the fisheries oceanography. Bull. Jap. Soc. Fish. Oceanogr., (1) : 31-32.

1966. Migratory route of skipjack and albacore in relation to Kuroshio current [in Japanese]. *In:* Symposium on "Shirasu," anchovy, skipjack and albacore. Bull. Jap. Soc. Fish. Oceanogr., (8) : 72-73.

KIMURA, KINOSUKE, M. IWASHITA and T. HATTORI

1952. Image of skipjack and tuna recorded on echo sounding machine [in Japanese with an English summary]. Bull. Tohoku Reg. Fish. Res. Lab., 1 : 15-19.

Discussion of schooling and vertical migration of skipjack.

KING, JOSEPH E. and ISAAC I. IKEHARA

1956. Comparative study of food of bigeye and yellowfin tuna in the Central Pacific. Fishery Bull. Fish Wildl. Serv. U. S., 57(108) : 61-85.

Found in stomachs of yellowfin tuna.

KING, JOSEPH E. and PETER T. WILSON

1957. Studies on tilapia as skipjack bait. Spec. Sci. Rep. U. S. Fish Wildl. Serv., (225) : 8 p.

KISHINOUYE, KAMAKICHI

1894. Big skipjack [in Japanese]. Zool. Mag., Tokyo, 6(31) : 342.

Description of large skipjack found in a Japanese fish market.

1895. Food of tunas and skipjack [in Japanese]. Zool. Mag., Tokyo, 7(77) : 111.

1903. Scientific name of skipjack [in Japanese]. Zool. Mag., Tokyo, 15(181) : 415-416.

Classification of Pacific skipjack in relation to bonito.

1915(*1*). A study of the mackerels, cybiids and tunas [in Japanese]. Suisan gakkai hō, (Proc. Scient. Fish. Ass.), 1(1) : 1-24. (Translation *In:* Spec. Scient. Rep. U. S. Fish Wildl. Serv., [24] : 14 p.).

New classification system for tunas and descriptions.

1915(*2*). Anatomical aspects of dark muscle [in Japanese]. Suisan gakkai hō (Proc. Scient. Fish. Ass.), 1(2) : 128-136.

Comparison of locations and amounts of dark muscle among skipjack and other tunas; relationship between dark meat and circulatory system; comparison of circulatory system with dark muscle among several species of tuna.

1917(*1*). The food of tunas [in Japanese]. Suisan gakkai hō (Proc. Scient. Fish. Ass.), 2(1) : 106-108. (Translation by W. G. Van Campen, U. S. Bureau of Commercial Fisheries, Honolulu, Translation No. 29).

Stomach content data; observation on rate of digestion, direction of ingestion, and injuries to fish in the stomachs.

1917(*2*). A new order of the teleostomi [in Japanese]. Suisan gakkai hō. (Proc. Scient. Fish. Ass.), 2(2) : 1-4. (Translation *In:* Spec. Scient. Rep. U. S. Fish Wildl. Serv., [50] : 1-3).

New classification system for tunas; order Plecostei proposed.

KISHINOUYE, KAMAKICHI, continued

1918. Amount of blood in the dark muscle and other muscles of the Plecostei [in Japanese]. Suisan gakkai hō (Proc. Scient. Fish. Ass.), 2(3) : 259-260.

Colors of fluids from dark and white muscles of bigeye tuna and skipjack compared.

1919(*1*). Skipjack fishery in Okinawa Prefecture [in Japanese]. Suisan gakkai hō (Proc. Scient. Fish. Ass.), 2(3) : 113-114.

Fishing methods and relative efficiency of vessels.

1919(*2*). Studies on the Plecostei [in Japanese]. Suisan gakkai hō (Proc. Scient. Fish. Ass.), 2(4) : 269-274. (Translation, U. S. Bureau of Commercial Fisheries, Honolulu Translation [27]).

Comparative anatomy of tunas, with emphasis on circulatory system.

1919(*3*). The larval and juvenile stages of the Plecostei [in Japanese]. Suisan gakkai hō (Proc. Scient. Fish. Ass.), 3(2) : 49-53. (Translation *In:* Spec. Scient. Rep. U. S. Fish Wildl. Serv., [19] : 9-11.)

Comments on Günther's and Lütken's description of tuna larvae; observations on juveniles.

1922(*1*). Watery skipjack [in Japanese]. Suisan gakkai hō (Proc. Scient. Fish. Ass.), 3(4) : 304.

Possible relationship of watery flesh to spawning.

1922(*2*). Carangid-like markings of skipjack [in Japanese]. Suisan gakkai hō (Proc. Scient. Fish. Ass.), 3(4) : 304-305.

Stripes on the body of juvenile and adult specimens.

1923. Contribution to the comparative study of the so-called scombroid fishes. J. Coll. Agric. Imp. Univ., Tokyo, 8(3) : 293-475.

General biology including phylogeny; fishing methods.

1924. Observations on the skipjack fishing grounds [in Japanese]. Suisan gakkai hō (Proc. Scient. Fish. Ass.), 4(2) : 87-92. (Translation *In:* Spec. Scient. Rep. U. S. Fish Wildl. Serv., [19] : 12-14).

Growth and feeding of juveniles collected from stomach contents of tunas south of Japan; spawning season.

1926. An outline of studies of the Plecostei (Tuna and skipjack) in 1925 [in Japanese]. Suisan gakkai hō (Proc. Scient. Fish. Ass.), 4(3) : 125-137. (Transtion *In:* Spec. Scient. Rep. U. S. Fish Wildl. Serv., [19] : 1-8).

Description of larvae and tuna-like fish collected off southern Japan; six specimens identified or assumed to be skipjack.

KITAHARA, TASAKU

1897. Classification of Scombridae produced in Japan [in Japanese]. Suisan chōsa hōkoku, Suisan kyoku (J. Imp. Fish. Bur., Tokyo), 6(1) : 1-15.

Description and a key to Scombridae.

KITAHARA, TASAKU and MITSUHIKO SHIMAMURA

1912. On the cooperative survey of skipjack fisheries in 1911 [in Japanese]. Suisan kyoku gyogyō kihon chōsa hōkoku (Rep. Fund. Fish. Surv., Imp. Fish. Bur., Tokyo), 2 : 36-41.

Fishing conditions in relation to water temperature, specific gravity, and currents in Japanese waters.

KITANO, KIYOMITSU

1953. On the formation of the skipjack, *Katsuwonus pelamis* (Linnaeus), fishery ground off Kinkasan in the north-eastern sea area along the Pacific coast of Japan

KITANO, KIYOMITSU, continued

[in Japanese with an English summary]. Bull. Tohoku Reg. Fish. Res. Lab., 2 : 1-10.

Description of oceanographic conditions off northeastern Japan; relation between upwelling and fishing.

KLAWE, WITOLD L.

1960. Animals from night-light collections, p. 7-9. *In:* R. W. Holmes and M. Blackburn (Ed.) Scot Expedition April-June 1958. Spec. Scient. Rep. U. S. Fish Wildl. Serv., (345) : 106 p.

Includes young skipjack.

1963. Observations on the spawning of four species of tuna (*Neothunnus macropterus, Katsuwonus pelamis, Auxis thazard* and *Euthynnus linneatus*) in the eastern Pacific Ocean, based on the distribution of their larvae and juveniles [in English and Spanish]. Bull. Inter-Am. Trop. Tuna Commn, 6(9) : 447-540.

Distribution of the captures of larvae and juveniles; larval ecology; methods of collecting larvae and juveniles; extent and time of spawning.

KLAWE, W. L. and F. G. ALVERSON

1964. Occurrence of two species of young threadfin, *Polydactylus opercularis* and *P. approximans,* in the offshore waters of the eastern tropical Pacific Ocean. Pacif. Sci., 18(2) : 166-173.

K. pelamis feeding on *P. opercularis.*

KLAWE, WITOLD L., IZADORE BARRETT and BARBARA M. HILLSDON KLAWE

1963. Haemoglobin content of the blood of six species of scombroid fishes. Nature, 198(4875) : 96.

Includes data on *K. pelamis.*

KOBAYASHI, TADASHI

n.d. Investigation of skipjack fishing, 1936 [in Japanese]. Shizuoka-ken suisan shikenjō jigyō hōkoku (Prog. Rep. Shizuoka Pref. Fish. Expt. Stn) for 1936, 37 and 38: 1.

Summary of live-bait fishing by research boat; fishing conditions in relation to temperature and weather off southern and eastern Japan.

KOCHI PREFECTURAL FISHERIES EXPERIMENTAL STATION

1923. Oceanographic observations and search for skipjack fishing grounds [in Japanese]. Kochi-ken suisan shikenjō jigyō hōkoku (Prog. Rep. Kochi Pref. Fish. Expt. Stn), 20(1), for 1921: 1-4.

Catch records of live-bait research boat south of Kochi Prefecture; fishing conditions in relation to water temperature; seasonal effort and catch data of the prefecture's commercial boats.

1924. Skipjack purse-seine fishing experiment [in Japanese]. Kochi-ken suisan shikenjō jigyō hōkoku (Prog. Rep. Kochi Pref. Fish. Expt. Stn), 21(1), for 1922: 1-38.

Experimental fishing with a purse-seine; effect of purse-seining on schools and live-bait fishing; fishing conditions off Kochi, Japan, in relation to currents and water temperature; description of fishing gears.

KOGA, SIGEYUKI

1958. On the difference of the stomach contents of tuna and black marlin in the south equatorial Pacific Ocean [in Japanese with an English summary]. Bull. Fac. Fish. Nagasaki Univ., (7) : 31-40.

Young skipjack in stomachs of tunas and blue marlin.

1960. Studies on the fluctuation in catch of the tuna-fishing fleet—III. On the

KOGA, SIGEYUKI, continued

stomach contents of tuna in the western South Pacific Ocean, especially in the Fiji area [in Japanese with an English summary]. Bull. Fac. Fish. Nagasaki Univ., (9) : 10-17.

Size and quantity of skipjack found in stomachs of other tunas.

KOHAMA, Y.

1914. Skipjack fishing condition of Wakayama Prefecture [in Japanese]. Suisan kenkyū shi (J. Fish. Res.), 9(7) : 362.

Fishing conditions correlated with season.

KOIZUMI, TAKASHI

1955. Effect of the color of the fixed net upon the difference between the morning and evening catches of several fishes [in Japanese with an English summary]. Bull. Jap. Soc. Scient. Fish., 21(1) : 1-5.

Catches include skipjack.

KONOSU, SHOJI, S. KATORI, R. ŌTA, S. EGUCHI and T. MORI

1956. Amino acid composition of fish muscle protein [in Japanese with an English summary]. Bull. Jap. Soc. Scient. Fish., 21(11) : 1163-1166.

Bioassay of the muscle of 10 species of fish for amino-acid composition.

KOYASU, SHOZO

1931(*1*). On the skipjack fishing conditions off eastern Honshu (1) [in Japanese]. Suisankai (J. Fish. Soc. Japan), 579 : 2-25.

Seasonal shift of the main fishing grounds near Japan.

1931(*2*). On the skipjack fishing conditions off eastern Honshu (2) [in Japanese]. Suisankai (J. Fish. Soc. Japan), 580 : 24-30.

Seasonal fishing conditions correlated with water temperature.

KUBO, ITSUO

1966. Zoku suisan shigen kakuron (Treatise on fisheries resources. Part 2.) [in Japanese]. Suisan-gaku zenshū (Fish. Sci. Ser.), Tokyo, 24 : 273 p.

Classification; catch; life history; reproduction; fishing conditions correlated with oceanographic conditions; migration; schooling ecology; feeding response.

KUBO, ITSUO and TOMOKICHI YOSHIWARA

1957. Suisan shigengaku (Population studies of fisheries) [in Japanese]. Kyōritsu shuppan-sha, Tokyo, 345 p.

Textbook for population studies; includes studies on skipjack.

KUENNEN, R.

1957. A bibliography of research on tunas for the years 1957-1960. FAO Fish. Biol. Tech. Pap., (16) : 31 p.

KUMADA, TOSHIRO *et al.*

1941. Nanyō shokuyō suizoku zusetsu. (Illustrated atlas of edible marine animals and plants of the South Seas) [in Japanese]. Nissan Fisheries Research Station, Odawara, 5 p. + 8 p.

KUMAMOTO PREFECTURAL FISHERIES EXPERIMENTAL STATION

1927. Exploratory fishing and guidance of pole and line skipjack fishing [in Japanese]. Kumamoto-ken suisan shikenjō gyōmu kōtei hōkoku (Prog. Rep. Kumamoto Pref. Fish. Expt. Stn) for 1926: 1-13.

Summaries of 19 exploratory live-bait fishing cruises in Ryukyu waters; seasonal fishing conditions in relation to water temperature and color; catch records; oceanographic data.

KUMAMOTO PREFECTURAL FISHERIES EXPERIMENTAL STATION, continued

1928. Exploratory fishing and guidance of pole and line skipjack fishing [in Japanese]. Kumamoto-ken suisan shikenjō jigyō hōkoku (Prog. Rep. Kumamoto Pref. Fish. Expt. Stn) for 1927: 1-27.

Summaries of 33 exploratory live-bait fishing cruises in Ryukyu and south Japanese waters; seasonal fishing conditions in relation to water temperature and color; catch records; oceanographic data.

1929. Exploratory fishing and guidance of pole and line skipjack fishing [in Japanese]. Kumamoto-ken suisan shikenjō jigyō hōkoku (Prog. Rep. Kumamoto Pref. Fish. Expt. Stn) for 1928: 1-22.

Summaries of 34 exploratory live-bait fishing cruises in waters of the Ryukyu and southern Japan; seasonal fishing conditions in relation to water temperature; catch records; temperature and salinity profiles by month.

1930. Exploratory fishing and guidance of pole and line skipjack fishing [in Japanese]. Kumamoto-ken suisan shikenjō jigyō hōkoku (Prog. Rep. Kumamoto Pref. Fish. Expt. Stn) for 1929: 14-33.

Summaries of 24 exploratory live-bait fishing cruises in the waters of the Ryukyu and southern Japan; seasonal fishing conditions in relation to water temperature; catch records; oceanographic data.

1931. Exploratory fishing and guidance of pole and line skipjack fishing [in Japanese]. Kumamoto-ken suisan shikenjō jigyō hōkoku (Prog. Rep. Kumamoto Pref. Fish. Expt. Stn) for 1930: 1-19.

Summaries of 17 exploratory live-bait fishing cruises in Taiwan-Ryukyu waters; catch records; oceanographic data; fishing conditions in relation to water temperature, color and current; landing statistics by 10-day periods.

1932. Exploratory fishing and guidance of pole and line skipjack fishing (Appendix: Investigation of skipjack fishery in the waters off northeastern Japan) [in Japanese]. Kumamoto-ken suisan shikenjō jigyō hōkoku (Prog. Rep. Kumamoto Pref. Fish. Expt. Stn) for 1931: 1-13.

Summaries of 14 exploratory live-bait fishing cruises in waters off the Ryukyu and northeastern Japan; fishing conditions in relation to water temperature and color, currents, schooling, etc.; catch records; oceanographic data; comparison of the nature of biting and fishing conditions for the two areas; landing statistics by 10-day periods for three groups of fish.

1946. Experimental pole and line fishing for skipjack (1942) [in Japanese]. Kumamoto-ken suisan shikenjō jigyō hōkoku (Prog. Rep. Kumamoto Pref. Fish. Expt. Stn) for 1942, 1943, 1944: 3-5.

Summaries of four experimental fishing trips in Ryukyu waters; fishing conditions in relation to water temperature and biting.

KURIHARA, MICHIHIKO

1959. Studies on the trypsin inhibitor of pyloric coeca—I. Preparation and its some properties [in Japanese with an English summary]. Bull. Jap. Soc. Scient. Fish., 24(10) : 848-852.

Trypsin inhibitor extracted.

KURODA, RYUYA

1955. On the water temperature in the fishing grounds of the skipjack, *Katsuwonus pelamis* (Linnaeus), caught in the north-eastern sea area along the Pacific coast of Japan [in Japanese with an English summary]. Bull. Tohoku Reg. Fish. Res. Lab., 4 : 47-61.

Comparison of distribution and catches in 1950-1955, by types of schools; seasonal and annual variations in distribution and catches in relation to oceanographic conditions.

1959. On the tuna purse seine and the fishing conditions (preliminary report) [in

KURODA, RYUYA, continued

Japanese]. Nihon suisan gakkai, Tohoku shibu kaihō (Rep. Tohoku Brch Jap. Soc. Scient. Fish.), 9(1, 2) : 1-7.

Comparison of bluefin purse-seining grounds and skipjack pole and line fishing grounds off northeastern Japan.

1965. How should fisheries-oceanographic studies be on the Kuroshio current?—The relationship between Kuroshio and fisheries resources in nearshore and offshore waters off northeastern Japan [in Japanese]. *In:* Symposium on the Kuroshio Current from the fisheries viewpoint. Bull. Jap. Soc. Fish. Oceanogr., (7) : 94-97.

Seasonal and yearly fluctuations in abundance in relation to oceanographic conditions.

KURONUMA, KATSUZO

1961. A check list of fishes in Vietnam. Division of Agriculture and Natural Resources, United States Operations Mission to Vietnam, United States Consultants, Inc., Contract IV-153, 66 p.

Common names.

LAEVASTU, TAIVO and HORACIO ROSA, JR.

1963. Distribution and relative abundance of tunas in relation to their environment [French and Spanish abstracts]. *In:* Rosa, H., Jr. (Ed.) Proceedings of the World Scientific Meeting on the Biology of Tunas and Related Species. FAO, Fish. Rep., 3(6) : 1835-1851.

LA MONTE, FRANCESCA

1945. North American game fishes. Doubleday, Doran and Company, Garden City, New York, 202 p.

Description; common names; distribution.

LAMOTHE-ARGUMEDO, RAFAEL

1965. Trematodos de peces (II)—Presencia de los trematodos *Bianium plicitum* (Linton, 1928) Stunkard, 1931, y *Lecithochirium microstomum* Chandler, 1935, en peces del Pacifico mexicano [in Spanish with French summary]. An. Inst. Biol. Univ. Méx., 36(1 and 2) : 147-157.

Host of an intestinal parasite.

LANDA, ANTONIO

1965. Comisión Interamericana del Atún Tropical [in Spanish]. Pesca Mar., Los Ang., 17(4) : 12-13.

Description of the Latin American fisheries for tuna in the Pacific Ocean, with emphasis on Peru; catch statistics.

LANDBERG, LEIF C. W.

1966. Tuna tagging and the extra-oceanic distribution of curved, single-piece shell fishhooks in the Pacific. Am. Antiq., 31(4) : 485-493.

Migration of skipjack discussed.

LANG, O. W. and N. D. JARVIS

1943. Tuna. p. 175-198 (*In:* Principles and methods in the canning of fishery products by Norman D. Jarvis.) Res. Rep. U. S. Fish Wildl. Serv., (7) : 366 p.

Description; fishing methods; handling of catch; processing.

LEGAND, MICHEL

1950. Contribution a l'étude des méthodes de pêche dans les territoires français de Pacificque Sud [in French]. J. Soc. Océan., 6(6) : 141-184.

Fishing methods for skipjack.

LEGAND, MICHEL, continued

1957. Orsom III—résultats biologiques de l'éxpedition Equapac. [in French]. Rapp. Scient. Inst. Fr. Océanie, (1) : 5 p.

Observations on skipjack specimens from the cruise.

LESSON, RENÉ PRIMAVERE

1830. Voyage autour du monde, exécuté par order du roi, sur la corvette de sa majesté, "La Coquille," pendant les années 1822, 1823, 1824, 1825 [in French]. Zoologie, Vol. 2, pt. 1, Arthus Bertrand, Paris, 471 p.

Occurrence and description; case of ichthyosarcotoxicism.

LINDBERG, G. U.

1947. Predvarilel'myi spisok ryb Yaponskogo morya [in Russian]. Izv. Tikhookean. Nauchno-Issled. Inst. Ryb. Khoz. Okeanogr., 25 : 125-206.

Listed from the sea of Japan.

LINDBERG, G. U. *et al.* (Ed.)

1964. Illyustrirovannyy slovar' nazvaniy promyslovykh ryb zapadnoy chasti Tikhogo okeana [in Latin, Russian, Chinese, Korean, Vietnamese, Mongolian, Japanese and English]. Komissiya po Rybokhozyaystvennomu Issledovaniyu Zapadnoy Chasti Tikhogo Okeana, Peking, 601 p.

Illustration; common and scientific names.

MACINNES, I. G.(ed.)

n.d. Australian fisheries—a handbook prepared for the Second Meeting of the Indo-Pacific Council—Sydney, April 1950. Halstead Press, Sydney, 103 p.

Distribution in Australian waters; size range; fishing seasons.

MACLEAY, WILLIAM

1881. Descriptive catalogue of the fishes of Australia. Proc. Linn. Soc. N. S. W., 5 : 302-629.

MAEDA, HIROSHI

1957. Coaction in lamp-communities. Proc. Eighth Pacif. Sci. Congr., 3 : 234-240.

Ecological studies on animals aggregating under night-light.

MAGNUSON, JOHN J.

1963(*1*). Behavior. *In:* Wilvan G. van Campen (Ed.), Progress in 1961-62, Circ. U. S. Fish. Wildl. Serv., (163) : 23-28.

Feeding behavior of captive fish; influence of variations in feeding stimuli on fish encountered during exploratory cruises; visual acuity.

1963(*2*). Tuna behavior and physiology, a review [French and Spanish abstracts]. *In:* Rosa, H., Jr. (Ed.) Proceedings of the World Scientific Meeting on the Biology of Tunas and Related Species. FAO, Fish. Rep., 3(6) : 1057-1066.

MAGNUSON, JOHN J. and JOHN H. PRESCOTT

1966. Courtship, locomotion, feeding, and miscellaneous behavior of Pacific bonito (*Sarda chiliensis*). Anim. Behav., 14 : 54-67.

MANACOP, PORFIRIO R.

1952. The principal marine fisheries. *In:* Philippine Fisheries. M. Colcol and Co., Manila, 70-90 p.

Brief remarks on *K. pelamis* as a commercial species; spawning season and areas.

MANAR, THOMAS A.

1966(*1*). Progress in 1964-65 at the Bureau of Commercial Fisheries Biological Laboratory, Honolulu. Circ. U. S. Fish Wildl. Serv., (243) : 42 p.

1966(*2*). Skipjack landings could be doubled—scientists disclose at Hawaii meet. Pacif. Fisherm., 64(7) : 7 and 9.

Potential yield of Pacific stocks.

1966(*3*). Central Pacific fishery resources; an introduction. *In:* Thomas A. Manar (Ed.), Proceedings, Governor's Conference on Central Pacific Fishery Resources, State of Hawaii: 1-12.

Outline of the fisheries; population structure; reproduction; evaluation of population size; exploitation of new stocks in the mid-water layer.

MANN, F., GUILLERMO

1954. La vida de los peces en aguas chilenas [in Spanish]. Ministerio de Agricultura, Santiago, 342 p.

Description; common names; distribution; commercial importance.

MANNING, JOHN A.

1957. Pelagic gamefishes off the coast of Chile. *In:* Manning, J. A. 57-4 Summary of investigations on the pelagic fish survey of Chilean waters with special reference to the swordfish, marlins and tunas. Marine Laboratory, University of Miami, Coral Gables, Florida, 1-10 p.

Occurrence off Chile; commercial prospects.

MANTER, HAROLD W.

1940. Digenetic trematodes of fishes from the Galapagos Islands and the neighbouring Pacific. Allan Hancock Pacif. Exped., 2(14) : 329-497.

Host for trematodes.

MARR, JOHN C.

1948. Observations on the spawning of oceanic skipjack (*Katsuwonus pelamis*) and yellowfin tuna (*Neothunnus macropterus*) in the northern Marshall Islands. Fishery Bull. Fish Wildl. Serv., U. S., 51(44) : 201-206.

Records and description of juveniles; measurements of ovarian eggs; sexual maturity; fish lengths.

1962. Introduction, program, summary report of discussions and resolutions, p. 1-19. *In:* J. C. Marr (Ed.) Pacific Tuna Biology Conference—August 14-19, 1961—Honolulu, Hawaii. Spec. Scient. Rep. U. S. Fish Wildl. Serv., (415) : 45 p.

1963(*1*). Note on the return rate of tagged skipjack, *Katsuwonus pelamis*, and the effects of handling. Spec. Publs Int. Commn NW. Atlant. Fish., (4) : 15-16.

Mortality of tagged fish and fish kept in captivity.

1963(*2*). Subpopulation identification [French and Spanish abstracts]. *In:* Rosa, H., Jr. (Ed.) Proceedings of the World Scientific Meeting on the Biology of Tunas and Related Species. FAO, Fish. Rep., 3(6) : 1011-1021.

Discussion of methods.

MARR, JOHN C. and ALBERT L. TESTER

1966. Report of the working group on research program. *In:* Thomas A. Manar (Ed.), Proceedings, Governor's Conference on Central Pacific Fishery Resources, State of Hawaii: 40-50.

Discussion of the possible expansion of fishing grounds, development of new fishing techniques, and assessment of population structure and potential yield.

MARSHALL, TOM C.

1965. Fishes in the Great Barrier Reef and coastal waters of Queensland. Livingston Publishing Company, 566 p.

Description; common names; distribution in Australian waters.

MARTIN, CLARO

1938. Tuna fishery and long-line fishing in Davao Gulf, Philippines. Philipp. J. Sci., 67(2) : 189-198.

Fishing seasons, grounds, gear and methods; handling; marketing.

MARTIN, JOHN WILSON

1962. Distribution of catch-per-unit-of-effort and fishing effort for tuna in the eastern tropical Pacific Ocean by months of the year, 1951-1960 [in English and Spanish]. Bull. Inter-Am. Trop. Tuna Commn, 6(5) : 179-229.

MARUKAWA, HISATOSHI

1921. On the eggs and larvae of skipjack [in Japanese]. Suisankai (J. Fish. Soc. Japan), 479 : 476-480.

Juveniles from the stomach of dolphin identified; maturing ovaries examined; eggs described.

1939(*1*). Fisheries of the South Sea Islands (2); Present status of fisheries of the Islands [in Japanese]. Nanyō suisan (So. Sea Fish.), 5(3) : 8-17.

History and present status of skipjack fisheries in Palao waters; seasonal fluctuation in catches in relation to oceanographic conditions and spawning season; seasonal variation in average size of fish.

1939(*2*). Fisheries of the South Sea Islands (4); Bait fishes for tuna and skipjack [in Japanese]. Nanyō suisan (So. Sea Fish.), 5(5) : 4-10.

Livebait fishing.

1939(*3*). Fisheries of the South Sea Islands (6); Natural food of skipjack and tuna [in Japanese]. Nanyō suisan (So. Sea Fish.), 5(7) : 12-14.

Analysis of stomach contents of yellowfin tuna and skipjack.

1940. Kaiyō-gaku-jō-yori mitaru nanyō guntō no suisan (The fisheries in the South Sea Islands in oceanographic respect) [in Japanese]. Nanyō suisan sōsho (South Sea Fisheries Series) Vol. 8, Nanyō suisan kyōkai: 101 p.

Review of fisheries; availability of fish in relation to spawning; catch statistics; correlation of fishing conditions with oceanographic conditions discussed for Mariana and Caroline Islands.

MASUDA, SHOICHI (Ed.)

1963. Katsuo maguro sōran (General review of tuna and skipjack) [in Japanese]. Suisan-sha, Tokyo, 844 p.

Classification; development and present status of fisheries; life history; ecology and biology; distribution and migration; fishing techniques; regulations and management; marketing.

MATSUBARA, KIYOMATSU

1942. Southern fishes. Part 2 [in Japanese]. Taiwan suisan zasshi (Formosa Fish. Mag.), 334 : 11-14.

Description of fisheries; annual migration pattern; spawning; relation of fishing grounds to oceanographic conditions.

1955. Fish morphology and hierarchy (Gyorui no keitai to kensaku), Part I [in Japanese]. Ishizaki shoten, Tokyo, 789 p.

Evolution of scombroid fish; ecology; distribution; classification.

MATSUBARA, KIYOMATSU and AKIRA OCHIAI

1965. Gyorui-gaku (Ichthyology)—Part 2 [in Japanese]. Suisan-gaku zenshū (Fish. Sci. Ser.), Tokyo, 19 : 343-958.

Comprehensive review of life history, ecology, stocks, distribution and migration.

MATSUBARA, KIYOMATSU, AKIRA OCHIAI and TAMOTSU IWAI

1965. Gyorui-gaku (Ichthyology)—Part 1 [in Japanese]. Suisan-gaku zenshū (Fish. Sci. Ser.), Tokyo, 9 : 342 p.

Introduction to ecological, biological and taxonomical studies.

MATSUBARA, SHINNOSUKE

1890. Species of skipjack [in Japanese]. Zool. Mag., Tokyo, 2(25) : 486-490.

Description; distribution in Japanese waters; spawning; common names.

MATSUI, KIZO

1942(*1*). Growth, water and fat content of the brain of skipjack and tuna [in Japanese]. Kagaku nanyō (So. Sea Sci.), 5(1) : 106-116.

Relative growth of brain of fishes from Palau; water and fat content, and proportion, in weight, of various parts of brain.

1942(*2*). The gonads of skipjack from Palao waters [in Japanese]. Kagaku nanyō (So. Sea Sci.), 5(1) : 117-122. (Translation *In:* Spec. Scient. Rep. U. S. Fish Wildl. Serv., [20] : 1-6).

Weight, length, and maturity of gonads from 134 skipjack collected during October to December; maturity stages established.

MATSUMOTO, TAKESHI

1937. An investigation of the skipjack fishery in the waters of Woleai with notes on the bait situation at Lamotrek and Puluwat Is [in Japanese]. Nanyō suisan jōhō (So. Sea Fish. News), 3 : 2-6. (Translation *In:* Spec. Scient. Rep. U. S. Fish Wildl. Serv., [46] : 35-40).

Results of exploratory fishing of two baitboats in July 1937; oceanographic observations.

MATSUMOTO, WALTER M.

1952. Experimental surface gill net fishing for skipjack (*Katsuwonus pelamis*) in Hawaiian waters. Spec. Scient. Rep. U. S. Fish Wildl. Serv., (90) : 20 p.

1958. Description and distribution of larvae of four species of tuna in central Pacific waters. Fishery Bull. Fish Wildl. Serv., U. S., 58(128) : 31-72.

Seasons and areas of spawning; methods of collecting.

1960. The application of paper chromatography in identifying tuna larvae. Spec. Scient. Rep., U. S. Fish Wildl. Serv., (337) : 9 p.

Also deals with identification of adults by same technique.

1961. Collection and description of juvenile tunas from the central Pacific. Deep Sea Res., 8(3-4) : 279-286.

Includes methods of capture.

1966(*1*). Identification of tuna larvae. (Abstract). *In:* Biological studies of tunas and sharks in the Pacific Ocean. Proc. Pacif. Sci. Congr., 7 : 2.

1966(*2*). Catch and effort statistics for the eastern Pacific tuna fishery. *In:* Thomas A. Manar (Ed.), Proceedings, Governor's Conference on Central Pacific Fishery Resources, State of Hawaii: 131-146.

Skipjack included in this review.

1966(*3*). Distribution and abundance of tuna larvae in the Pacific Ocean. *In:*

MATSUMOTO, WALTER M., continued

Thomas A. Manar (Ed.), Proceedings, Governor's Conference on Central Pacific Fishery Resources, State of Hawaii: 221-230.

Review based on published and unpublished data; spawning season deduced from abundance of larvae.

MATSUURA, FUMIO, H. BABA and T. MORI

1953. Chemical studies on the red muscle ("chiai") of fishes—I. Occurrence of arginase in the red muscle of fishes [in Japanese with an English summary]. Bull. Jap. Soc. Scient. Fish., 19(8) : 893-898.

Arginase from white and dark flesh measured and compared.

MATSUURA, FUMIO and KANEHISA HASHIMOTO

1954. Chemical studies on the red muscle ("chiai") of fishes—II. Determination of the content of hemoglobin, myoglobin and cytochrome in the muscle of fishes [in Japanese with an English summary]. Bull. Jap. Soc. Scient. Fish., 20(4) : 308-312.

Nine species, including skipjack, analyzed.

1955. Chemical studies on the red muscle ("chiai") of fishes—IV. Preparation of crystalline myoglobin from the red muscle of fishes [in Japanese with an English summary]. Bull. Jap. Soc. Scient. Fish., 20(10) : 946-950.

Crystalline myoglobin analyzed and compared with horse and human myoglobin by spectrophotometry.

1956. Chemical studies on the blood hemoglobins of fishes—I [in Japanese with an English summary]. Bull. Jap. Soc. Scient. Fish., 21(10) : 1158-1162.

Oxy- and methemoglobin from several species of fish analyzed and compared with hemoglobin of horse by spectrophotometry.

1959. Chemical studies on the red muscle ("chiai") of fishes—X. A new method for determination of myoglobin [in Japanese with an English summary]. Jap. Soc. Scient. Fish., 24(10) : 809-815.

Includes analysis of myoglobin components in red meat and ordinary meat of tunas.

MATSUURA, F., K. HASHIMOTO and N. HARUTA

1959. Chemical studies on the red muscle ("chiai") of fishes—IX. Heat coagulability of red muscle myoglobin and blood hemoglobin [in Japanese with an English summary]. Bull. Jap. Soc. Scient. Fish., 24(9) : 730-734.

Six species of fish and a horse analyzed.

MATSUURA, FUMIO, S. KŌNOSU, R. OTA, S. KATORI and K. TANAKA

1955. Chemical studies on the red muscle ("chiai") of fishes—III. Comparative studies of amino-acid contents in the protein of the ordinary and the red muscle of fishes by microbiological assay [in Japanese with an English summary]. Bull. Jap. Soc. Scient. Fish., 20(10) : 941-945.

Four species of fish, including skipjack, analyzed.

McCULLOCH, ALLAN R.

1922. Check list of the fishes and fish-like animals of New South Wales, Part III. Aust. Zool., 2, pt. 3, 86-130.

1929. Checklist of fishes recorded from Australia. Mem. Aust. Mus., 5 : 534 p.

McKENZIE, M. K.

1961. A review of present knowledge relative to a possible tuna fishery in New Zealand. Fish. Tech. Rep., N. Z. Mar. Dep., (4) : 49.

Biology; identification key; distribution in New Zealand and Australian waters.

McNEELY, RICHARD L.

1961. Purse seine revolution in tuna fishing. Pacif. Fisherm., 59(7) : 27-58.

Description of boats and gear.

MEAD, GILES W., JR.

1949. Preliminary report on tuna fishing trip off Central America (April 23-June 9, 1949). Comml Fish. Rev., 11(8) : 20-21.

Biological observations made during a commercial fishing trip.

MEEK, SETH E., and SAMUEL F. HILDEBRAND

1923. The marine fishes of Panama. Part I. Publs Field Mus. Nat. Hist., 15(215) : 330 p.

Mention that skipjack will likely be recorded from the waters off Panama.

METELKIN, L. I.

1957. Promysel tunsov [in Russian]. TINRO, Primorskoe Knizhnoe Izdatel'stvo, Vladivostok, 64 p.

Brief account of the biology.

MIAKSHA, A. F.

1964. Tuntsy i mech-ryba kak promyshlennoe syr'e [in Russian]. Izv. Tikhookean. Nauchno-Issled. Inst. Ryb. Khoz., 55 : 197-205.

Body composition and other food-technology data.

MIE PREFECTURAL FISHERIES EXPERIMENTAL STATION

1930(*1*). Investigation of skipjack fishing grounds and guidance in fishing [in Japanese]. Mie-ken suisan shikenjō jigyō hōkoku (Prog. Rep. Mie Pref. Fish. Expt. Stn) for 1927: 1-17.

Records of catches and oceanographic observations from seven experimental fishing trips; seasonal fishing conditions described in relation to temperature and specific gravity of water through 1927 in Japanese waters.

1930(*2*). Investigation of skipjack fishing grounds and guidance of fishing [in Japanese]. Mie-ken suisan shikenjō jigyō hōkoku (Prog. Rep. Mie Pref. Fish. Expt. Stn) for 1928: 1-18.

Logbook records and oceanographic observations of 21 experimental fishing trips by a live-bait research vessel; seasonal fishing conditions described in relation to oceanographic conditions off eastern Japan.

1955. Report on skipjack fisheries investigation, 1953 and 1954 [in Japanese]. Mie-ken suisan shikenjō jigyō hōkoku (Prog. Rep. Mie Pref. Fish. Expt. Stn), 8 : 97 p.

Weekly oceanographic and fishing conditions in Japanese waters; relation of direction and velocity of currents to catches, discussed by area and season; catch statistics by area and month; logbook records, including oceanographic and chronological observations, schools observed, biting conditions; weight and length of skipjack.

1956. Report on skipjack fisheries investigation, 1955 [in Japanese]. Mie-ken suisan shikenjō jigyō hōkoku (Prog. Rep. Mie Pref. Fish. Expt. Stn), 10 : 60 p.

Oceanographic and fishing conditions by 10-day periods in Japanese waters; logbook records, including information on weather, water color and temperature, size, density and type of schools, biting conditions; length, weight and condition factors of skipjack.

1957. Report on skipjack fisheries investigation, 1956 [in Japanese]. Mie-ken suisan shikenjō jigyō hōkoku (Prog. Rep. Mie Pref. Fish. Expt. Stn), 12 : 85 p.

Oceanographic and fishing conditions by 10-day periods in Japanese waters; relationship between atmospheric pressure and catch analyzed; logbook records, including information on weather, water temperature and color, size density and type of schools, biting conditions, length, weight, and condition factors of skipjack.

MIE PREFECTURAL FISHERIES EXPERIMENTAL STATION, continued

1958. Report on skipjack fisheries investigation, 1957 [in Japanese]. Mie-ken suisan shikenjō jigyō hōkoku (Prog. Rep. Mie Pref. Fish. Expt. Stn), 13 : 51 p.

Oceanographic and fishing conditions by 10-day periods in Japanese waters; some information on fish and school size, biting conditions of school.

1959. Report on skipjack fisheries investigation, 1958 [in Japanese]. Mie-ken suisan shikenjō jigyō hōkoku (Prog. Rep. Mie Pref. Fish. Expt. Stn), 15 : 40 p.

Oceanographic and fishing conditions by 10-day periods in Japanese waters; some information on fish and school size, biting conditions.

1961. Report on skipjack fisheries investigation, 1959 and 1960 [in Japanese]. Mie-ken suisan shikenjō jigyō hōkoku (Prog. Rep. Mie Pref. Fish. Expt. Stn), 18 : 100 p.

Oceanographic and fishing conditions by 10-day periods in Japanese waters; some information on fish and school size, biting conditions, fishing effort; release and recovery data of tagged skipjack; analysis of seasonal variation in floating objects associated with fish schools; seasonal changes in catch per unit of effort.

1962. Report on skipjack fisheries investigation (forecast of skipjack and albacore fishing conditions), 1961 [in Japanese]. Mie-ken suisan shikenjō jigyō hōkoku (Prog. Rep. Mie Pref. Fish. Expt. Stn), 21 : 126 p.

Release and recovery data of 131 skipjack tagged in 1961; fishing conditions by 10-day periods near Japan discussed in relation to migration of fish schools; oceanographic conditions; some analysis on type and size of schools, and biting conditions; abundance and migration of skipjack compared with previous years.

1963. Report on skipjack fisheries investigation (forecast of skipjack and albacore fishing conditions), 1962 [in Japanese]. Mie-ken suisan shikenjō jigyō hōkoku (Prog. Rep. Mie Pref. Fish. Expt. Stn), 24 : 128 p.

Release data of 118 skipjack tagged in 1962, and recovery data from past tagging; skipjack fishing conditions by 5-day periods near Japan discussed in relation to migration of fish schools, oceanographic conditions; analyses on type and size of schools and biting conditions; abundance and migration compared with previous years.

1965(*1*). Forecast of skipjack and albacore fishing grounds [in Japanese]. Mie-ken suisan shikenjō jigyō hōkoku (Prog. Rep. Mie Pref. Fish. Expt. Stn) for 1963: 57-60.

Analysis of the accuracy of 1963 forecast.

1965(*2*). Consideration on the nature of schools of skipjack and albacore in 1963 [in Japanese]. Mie-ken suisan shikenjō jigyō hōkoku (Prog. Rep. Mie Pref. Fish. Expt. Stn) for 1963: 61-81.

Abundance, type and size of schools, biting conditions, by 5-day periods; catch per unit of effort and catch analyzed.

1965(*3*). Skipjack tagging [in Japanese]. Mie-ken suisan shikenjō jigyō hōkoku (Prog. Rep. Mie Pref. Fish. Expt. Stn) for 1963: 82-91.

Release records of 376 tagged skipjack and data on six recoveries; discussion of migratory movements.

MIGDALSKI, E. C.

1958. Angler's guide to the salt water game fishes—Atlantic and Pacific. Ronald Press Co., New York, 506 p.

MIGITA, MASAO and KIYOSHI ARAKAWA

1948. Melanophorhormone of fishes [in Japanese with an English summary]. Bull. Jap. Soc. Scient. Fish., 13(6) : 241-244.

Amount of melanophorhormone in pituitary gland of deep-sea fishes compared with that of pelagic fishes.

MILLER, DANIEL J., DAN GOTSHALL and RICHARD NITSOS

1961. A field guide to some common ocean sportfishes of California. Part 2. California Department of Fish and Game, Marine Resources Operations, 40 p.

Description; distribution.

MINAMI, DAIJIRO

1942. Fisheries in Palao [in Japanese]. Nanyō suisan (So. Sea Fish.), 8(8) : 26-28.

History and outlook of skipjack and tuna fisheries.

MITO, SATOSHI

1961. Pelagic fish eggs from Japanese waters—II. Lamprida, Zeida, Mugilina, Scombrina, Carangina and Stromateina [in Japanese with an English summary]. Sci. Bull. Fac. Agric. Kyushu Univ., 18(4) : 451-466.

Spawning season and area; description of eggs and larvae.

MIURA, SADANOSUKE

1941. Nankai no sakana (Fishes of South Seas) [in Japanese]. Unebi Book Co., Tokyo, 416 p.

Discussion of skipjack distribution, habitat, population structure, spawning, ecology, young, biting conditions, native trapnet fishing methods; bait fish, seasonal change in flora and fauna in relation to seasonal changes in behavior, etc., in the South Sea, especially near the Philippine Islands.

MIYAMA, YOSHIMICHI and ISAMU OSAKABE

1938. On the character of the fats obtained from the various bodily parts of fishes [in Japanese with an English summary]. Bull. Jap. Soc. Scient. Fish., 7(2) : 105-106.

MIYAMOTO, HIDEO

1952. Teichi-ami gyoron (Set-net fisheries) [in Japanese]. Kawade-shobō, Tokyo, 322 p.

Description and use.

MIYAUCHI, SAICHI

1915. Chemical studies of the dark lateral muscle [in Japanese]. Suisan gakkai hō (Proc. Scient. Fish. Ass.), 1(1) : 38-49.

Comparison of chemical components, protein components, rate of autolysis and rate of digestion by pepsin in white and dark flesh of skipjack and bluefin tuna; analysis of proportion of dark muscle to total weight of flesh.

MIYAUCHI, D. T.

1950. Some processing and technological methods in the Japanese fisheries. Comml Fish. Rev., 12(10) : 1-20.

Insulin content.

MOISEEV, P. A.

1961. On the biological basis of fishery in the western Pacific. Proc. Pacif. Sci. Congr., 10 : 64-71.

Oceanographic conditions governing distribution.

MOLTENO, C. J.

1948. The South African tunas. South African Fishing Industry Research Institute, Cape Town: 34 p.

Observations on behavior from Japanese waters based on Kishinouye's (1923) report.

MORGAN, ROBERT

1956. World sea fisheries. Methuen and Co., London, 307 p.

General discussion of various fisheries including that for skipjack.

MORI, TAKAJIRO, Y. HASHIMOTO and Y. KOMATA

1956. B-vitamins content in the muscle of fish [in Japanese with an English summary]. Bull. Jap. Soc. Scient. Fish., 21(12) : 1233-1235.

Analysis of B-vitamins in dark and white flesh.

MORITA, TOMOKAZU

1959. On the constitutional state of fishing ground over the waters near the Gotō Rettō [in Japanese with an English summary]. Mem. Fac. Fish. Kagoshima Univ., 7 : 161-167.

Relationship of seasonal variation in fishing to oceanographic conditions in the waters south of Japan.

1960. Studies on the constitutional state of skipjack fishing ground over the waters near Tokara Retto (I). On the relation between the water-temperature and the catching condition in the fishing ground [in Japanese with an English summary]. Mem. Fac. Fish. Kagoshima Univ., 8 : 121-129.

Relation of seasonal changes in fishing grounds off southern Japan to vertical oceanographic structure in terms of seasonal migration of stocks.

MUNRO, IAN S. R.

1958(*1*). The fishes of the New Guinea region—A check list of the fishes of New Guinea incorporating records of species collected by the fisheries survey vessel "FAIRWIND" during the years 1948 to 1950. Papua N. Guin. Agric. J., 10(4) : 97-369. Also *In:* Fish. Bull. Papua, (1) : 97-369.

1958(*2*). Handbook of Australian fishes. Fish. Newsl. Canberra, 17 (10) : 17-20.

MURAMATSU, SHOGO

1960. Pole and line fishing deck design and equipment. *In:* Traung, Jan-Olaf (Ed.), Fishing boats of the world. Fishing News (Books) Ltd., London, 2 : 84-93.

MURAYAMA, BINZO and SHIRO OKURA

1950. A study of experimental American-style purse seining (III) [in Japanese]. J. Fish. Res. Inst., Tokyo, 3 : 233-257.

Catch and catch-per-unit-of-effort of eight purse-seiners in Japanese waters.

1952. A study of experimental American-style purse seining (IV) [in Japanese]. J. Fish. Res. Inst., Tokyo, 4 : 381-394.

Description of gear; results of commercial fishing operations by season, area, fish schools and weather conditions.

MURAYAMA, SHIGEO and KIKUKO TABEI

1956. Studies on the vitamin B group (B_1, B_2, B_6 and B_{12}) in the pyloric appendages of fishes [in Japanese with an English summary]. Bull. Jap. Soc. Scient. Fish., 22(2) : 136-141.

Analysis of 17 species of fishes; comparison between species and specimens.

MURPHY, GARTH I. and ISAAC I. IKEHARA

1955. A summary of sightings of fish schools and bird flocks and of trolling in the central Pacific. Spec. Scient. Rep. U. S. Fish Wildl. Serv., (154) : 32 p.

MURPHY, GARTH I., and EDWIN L. NISKA

1953. Experimental tuna purse seining in the central Pacific. Comml Fish. Rev., 15(4) : 1-12.

Catches; gear described; factors affecting fishing.

MURPHY, GARTH I. and TAMIO OTSU

1954. Analysis of catches of nine Japanese tuna longline expeditions to the western Pacific Ocean. Spec. Scient. Rep. U. S. Fish Wildl. Serv., (128) : 46 p.

MURPHY, GARTH I. and RICHARD S. SHOMURA

1953(*1*). Longline fishing for deep-swimming tunas in the central Pacific, 1950-51. Spec. Scient. Rep. U. S. Fish Wildl. Serv., (98) : 47 p.

Gear described; amount and areal distribution of catches.

1953(*2*). Longline fishing for deep-swimming tuna in the central Pacific, January-June 1952. Spec. Scient. Rep. U. S. Fish Wildl. Serv., (108) : 32 p.

Results; factors affecting catch.

MURPHY, GARTH I., KENNETH D. WALDRON, and GUNTER R. SECKEL

1960. The oceanographic situation in the vicinity of the Hawaiian Islands during 1957 with comparison with other years. Rep. Calif. Coop. Oceanic Fish. Invest., 7 : 56-59.

Availability related to oceanographic factors.

NAKAMURA, EUGENE L.

1960. Confinement of skipjack in a pond. (Abstract). Proc. Hawaii. Acad. Sci., 24-25 p.

1962(*1*). Observations on the behavior of skipjack tuna, *Euthynnus pelamis,* in captivity. Copeia, (3) : 499-505.

1962(*2*). The establishment and behavior of skipjack tuna (*Katsuwonus pelamis*) in captivity, p. 32 (Abstract). *In:* J. C. Marr (Ed.) Pacific Tuna Biology Conference—August 14-19, 1961—Honolulu, Hawaii. Spec. Scient. Rep. U. S. Fish Wildl. Serv., (415) : 45 p.

1964. A method of measuring visual acuity of scombrids. (Abstract). Proc. Hawaii. Acad. Sci., 26-27.

Visual acuity of captive specimens.

1965. Food and feeding habits of skipjack tuna (*Katsuwonus pelamis*) from the Marquesas and Tuamotu Islands. Trans. Am. Fish. Soc., 94(3) : 236-242.

NAKAMURA, EUGENE L. and JOHN J. MAGNUSON

1965. Coloration of the scombrid fish *Euthynnus affinis* (Cantor). Copeia, (2) : 234-235.

Coloration of live *K. pelamis* mentioned.

NAKAMURA, EUGENE L. and WALTER M. MATSUMOTO

1966. Distribution of larval tunas in Marquesan waters. Fishery Bull. Fish Wildl. Serv., U. S., 66(1) : 1-12. (An erratum issued subsequently states that this publication appeared in January 1967.)

Ecology of larvae; vertical distribution; spawning season.

NAKAMURA, EUGENE L. and JAMES H. UCHIYAMA

1966. Length-weight relationship of Pacific tunas. *In:* Thomas A. Manar (Ed.), Proceedings, Governor's Conference on Central Pacific Fishery Resources, State of Hawaii: 197-201.

Includes *K. pelamis.*

NAKAMURA, HIROSHI

1935. Über intersexualität bei *Katsuwonus pelamis* (Linn.) [in German]. Trans. Nat. Hist. Soc. Formosa, 25 (141) : 197-198.

Bisexual gonad described.

NAKAMURA, HIROSHI, continued

1939(*1*). Summary of an investigation of scombroids of Formosa waters [in Japanese]. Taiwan suisan zasshi (Formosa Fish. Mag.), 288 : 22-26.

Scientific and Japanese standard names; occurrence; commercial catches of scomboid fishes in Formosan waters.

1939(*2*). A note in tunnies with a list of scombroid-fishes from Formosa waters [in Japanese]. Taiwan sōtokufu suisan shikenjō hōkoku (Rep. Formosa Gov.-Gen. Fish. Expt. Stn), Taiwan sōtokufu suisan shikenjō shuppan (Publs Formosa Gov.-Gen. Fish. Expt. Stn), (13) : 15 p.

Catch distribution, migration, size, ecology, and spawning; appendix includes classification and short species descriptions.

1949. Maguro-rui to sono gyogyō (The tunas and their fisheries) [in Japanese]. Takeuchi Shobō, Tokyo: 118 p. (Translation *In:* Spec. Scient. Rep. U. S. Fish Wildl. Serv., [82] : 115 p.).

Brief mention of migrating schools; schooling by size.

1954. Ocean currents and tuna fishing grounds [in Japanese]. Suisan kagaku (Fish. Sci., Tokyo), (14) : 9-17.

Relation of tuna distribution in Pacific and Indian Oceans to current systems; relation of migration and spawning to currents and other environmental factors.

1959. Introduction (p. 1-27). *In:* Nankai Regional Fisheries Research Laboratory (Ed.). Average year's fishing condition of tuna long-line fisheries (text)—1958 edition [in Japanese]. Federation of Japan Tuna Fishermen's Cooperative Associations, Tokyo, 414 p. (Partial English translation by G. Y. Beard in the files of the Honolulu Biological Laboratory, Bureau of Commercial Fisheries.)

Distribution of young based on collections from larval net tows and tuna stomachs.

1965. Tuna resources of the world. I. Classification, distribution and migration, reproduction and growth [in Japanese]. Nihon suisan shigen hogo kyōkai, suisan kenkyū sōsho. (Study Ser. Jap. Fish. Resor. Conserv. Ass.), 10-1 : 64 p.

Distribution and migration in relation to water temperature and currents.

NAKAMURA, HIROSHI and YOSHIO HIYAMA

1957. Recent studies on tunas and marlins in Japan. Proc. Pacif. Sci. Congr., 3 : 165-182.

Reproduction and young.

NAKAMURA, IZUMI

1965. Relationship of fish referable to the subfamily Thunninae on the basis of the axial skeleton. Bull. Misaki Mar. Biol. Inst., (8) : 7-38.

Phylogenetic relationship of the various tunas.

NAKAMURA, IZUMI and SHOJI KIKAWA

1966. Infra-central grooves of tunas with special reference to the identification of young tunas found in the stomachs of large predators. Rep. Nankai Reg. Fish. Res. Lab., (23) : 55-66.

Comparison of vertebral characteristics of tunas and related species.

NAKAMURA RESEARCH STAFF

1949. Report of investigations of skipjack and tuna resources in 1947 [in Japanese]. Suisan shikenjō chōsa hōkoku (Rep. Cent. Fish. Expt. Stn), (1) : 7 p. (English translation *In:* Spec. Scient. Rep. U. S. Fish Wildl. Serv., [17] : 19 p.)

Distribution of effort and catches in waters south and southeast of Japan; morphometric data; sex ratios; fecundity; juveniles.

NAKANO, TOMOO and YASUHIKO TSUCHIYA

1960. Studies on the physiological chemistry of phosphorus compounds in fish muscle—I. Distribution of various phosphorus compounds in fish muscle [in Japanese with an English summary]. Bull. Jap. Soc. Scient. Fish., 26(11) : 1095-1098.

NEAVE, FERRIS

1959. Records of fishes from waters off the British Columbia coast. J. Fish. Res. Bd Can., 16(3) : 383-384.

Caught in a gill net.

NICHOLS, JOHN T. and PAUL BARTSCH

1945. Fishes and shells of the Pacific world. The Infantry Journal, Washington, D. C., 192 p.

Brief description; distribution.

NICHOLS, JOHN TREADWELL and ROBERT CUSHMAN MURPHY

1944. A collection of fishes from the Panama Bight, Pacific Ocean. Bull. Am. Mus. Nat. Hist., 83, art. 4, 221-260 p.

Recorded from Ecuador.

NIGRELLI, ROSS F. and H. W. STUNKARD

1947. Studies on the genus *Hirudinella,* giant trematodes of scombriform fishes. Zoologica, N. Y., 31(4) : 185-196.

Taxonomy of *Hirundinella,* an endoparasitic trematode of many scombroids.

NIKOL'SKII, G. V.

1950. Chastnaya ikhtiologiya [in Russian]. Sovetskaya Nauka, Moscow, 436 p.

Brief description; commercial importance.

1954. Chastnaya ikhtiologiya [in Russian]. Sovetskaya Nauka, Moscow, 458 p. (Translations: Spezielle Fischkunde. Veb Deutscher Verlag der Wissenschaften, Berlin, 1957: 632 p. Special ichthyology. Israel Program for Scientific Translations, Jerusalem, 1961, Cat. No. 233 : 538 p.).

Brief description; commercial importance; fishing methods.

NISHIKAWA, SADAICHI

1934. On the future of the high-seas skipjack and tuna fisheries and standard for their operating methods [in Japanese]. Rakusui, 29(4) : 20-22.

1965. A note on the fishing ground for the spring skipjack in the vicinity of Shionomisaki, Wakayama Prefecture [in Japanese with an English summary]. J. Fac. Fish. Anim. Husb. Hiroshima Univ., 6(1) : 77-84.

Catch fluctuations and patterns of surface temperature examined.

NISHIMURA, MINORU

1961. Study on the fish finders for tuna [in Japanese]. Tuna Fishg, (76) : 1-8.

Vertical distribution and abundance off northeastern New Zealand assessed by echo sounders; longline catches compared with echo sounder records.

1963. Investigation of tuna behavior by fish finder. *In:* Rosa, H., Jr. (Ed.) Proceedings of the World Scientific Meeting on the Biology of Tunas and Related Species. FAO, Fish. Rep., 3(6) : 1113-1123.

NOMURA, SHUNZO

1952. Tuna fishing investigations by *Sagami-maru,* South Sea [in Japanese]. Kanagawa-ken suisan shikenjō gyōmu hōkoku (Prog. Rep. Kanagawa Pref. Fish. Expt. Stn) for 1951: 1-25.

Young from stomachs of longline caught tuna.

NORDHOFF, CHARLES

1927. II. Some of the commoner fishes of Tahiti, with their native names. Bull. Soc. Étud. Océanien., (20) : 280-283.

1930. Notes on the off-shore fishing of the Society Islands. J. Polynes. Soc., 39(2 and 3) : 1-79.

Detailed description of native fishery; fishing methods, gear and boats; economic importance; folklore.

N-SEI (pseud.)

1940(*1*). Birds and fish—The world of fish (II)—[in Japanese]. Suisankai (J. Fish. Soc. Japan), (696) : 55.

Association with bird flocks.

1940(*2*). Symbiosis between skipjack and shark.—The world of fish (3)—[in Japanese]. Suisankai (J. Fish. Soc. Japan), (697) : 49.

Advantages of symbiotic association.

OBATA, TEKKAI

1940. Exploratory trip to the South Sea fishing grounds (Part 2) [in Japanese]. Suisankai (J. Fish. Soc. Japan), (693) : 45-50.

Exploratory fishing in Indonesian waters.

OITA PREFECTURAL FISHERIES EXPERIMENTAL STATION

1925. Experimental skipjack purse seine fishing [in Japanese]. Oita-ken suisan shikenjō gyōmu hōkoku-sho. (Prog. Rep. Oita Pref. Fish. Expt. Stn) for 1924: 38-49.

Summary of 16 cruises in waters south of Kyushu, Japan; fishing conditions in relation to water temperature and color; fishing success and type of fish school.

1926. Experimental skipjack fishing [in Japanese]. Oita-ken suisan shikenjō gyōmu hōkoku-sho. (Prog. Rep. Oita Pref. Fish. Expt. Stn) for 1925: 57-75.

Live-bait and purse-seine fishing in waters off southern Japan; fishing conditions in relation to temperature and currents.

OKADA, KANAME *et al.*

1965. New illustrated encyclopedia of the fauna of Japan [in Japanese]. Hokuryū-kan Co., Ltd., Tokyo, 3 : 250.

Illustration; description; distribution; ecology; fishing methods.

OKADA, YAICHIRO

1955. Fishes of Japan. Maruzen Co., Ltd., Tokyo, 462 p.

Description; habits; common names.

OKADA, YAICHIRO and KIYOMATSU MATSUBARA

1938. Keys to fishes and fish-like animals of Japan (Nihon-san gyorui kensaku) [in Japanese]. Sansei-dō, Tokyo, 584 p.

1953. Bibliography of fishes in Japan (1612-1950) [in Japanese]. Faculty of Fisheries, Prefectural University of Mie, Mie Prefecture, 288 p.

OKADA, YAICHIRO, K. UCHIDA and K. MATSUBARA

1935. Nihon gyorui zusetsu (Illustrated atlas of Japanese fishes) [in Japanese]. Sansei-dō, Tokyo, 425 + 46 p.

Description; illustration.

OKADA, YO K.

1926. Description d'un trématode nouveau: *Wedlia katsuwonicola* n. sp. seconde espèce du genere [in French]. Annls Parasit. Hum. Comp., 4(2) : 140-147.

Host for a trematode.

OKAJIMA, KIYOSHI

1937(*1*). A general review of fisheries in the South Sea Islands (1) [in Japanese]. Nanyō suisan (So. Sea Fish.), 3(3) : 13-16.

History and present status of tuna fishing in Micronesia; catch statistics by area and year, 1927, 1933-1935.

1937(*2*). A general review of fisheries in the South Sea Islands (2) [in Japanese]. Nanyō suisan (So. Sea Fish.), 3(4) : 25-27.

Research staff, facilities and management of South Sea fishery investigations, mainly catch and effort statistics for 1936.

OKAMOTO, GOROZO

1940. On the composition of shoals of "Katuo," *Euthynnus vagans* (Lesson), in the northern Japanese waters as analyzed by the body-weight [in Japanese with an English summary]. Bull. Jap. Soc. Scient. Fish., 9(3) : 100-102. (Translation *In:* Spec. Scient. Rep. U. S. Fish Wildl. Serv., [51] : 24-30).

Seasonal changes in body-weight; population identity and age composition of catches.

OKAMURA, KINTARO and HISATOSHI MARUKAWA

1909. Report of the surveys in skipjack fishing grounds. Appendix. Skipjack larvae [in Japanese]. Rep. Imp. Fish. Inst., 5(4) : 1-18.

Water color, specific density, temperature, and plankton related to fishing success; stomach contents; juvenile skipjack from dolphin stomach described.

OKINAWA PREFECTURAL FISHERIES EXPERIMENTAL STATION

1929. Experimental skipjack fishing [in Japanese]. Okinawa-ken suisan shikenjō jigyō hōkoku (Prog. Rep. Okinawa Pref. Fish. Expt. Stn) for 1926-1928: 1-12; 36-46; 121-136.

Logbook and oceanographic records of live-bait research vessels in Ryukyu waters, 1926-1928, relation of fishing to oceanographic conditions.

1931(*1*). Experimental skipjack fishing [in Japanese]. Okinawa-ken suisan shikenjō jigyō hōkoku (Prog. Rep. Okinawa Pref. Fish. Expt. Stn) for 1930: 1-29.

Logbook and oceanographic records from 14 trips of a live-bait research boat in Ryukyu waters; relation of fishing to oceanographic conditions, weather and biting.

1931(*2*). Investigation of the maturity of skipjack [in Japanese]. Okinawa-ken suisan shikenjō jigyō hōkoku (Prog. Rep. Okinawa Pref. Fish. Expt. Stn) for 1930: 106-107.

Length, width and weight of body and gonads of 13 skipjack from Ryukyu waters.

1936. Experimental skipjack fishing [in Japanese]. Okinawa-ken suisan shikenjō jigyō hōkoku (Prog. Rep. Okinawa Pref. Fish. Expt. Stn) for 1934: 1-28.

Catch and oceanographic records from 15 trips of a live-bait vessel in Ryukyu waters.

1937. Experimental skipjack fishing [in Japanese]. Okinawa-ken suisan shikenjō jigyō hōkoku (Prog. Rep. Okinawa Pref. Fish. Expt. Stn) for 1935: 1-26.

Catch and oceanographic records from 12 trips of a live-bait vessel in Ryukyu waters.

1940. Experimental skipjack fishing [in Japanese]. Okinawa-ken suisan shikenjō jigyō seiseki (Prog. Rep. Okinawa Pref. Fish. Expt. Stn) for 1939: 3-5.

Catch records from seven trips of a live-bait vessel in Ryukyu waters; catches correlated with water and air temperatures.

1943. Experimental skipjack fishing [in Japanese]. Okinawa-ken suisan shikenjō jigyō seiseki gaiyō (Prog. Rep. Okinawa Pref. Fish. Expt. Stn) for 1941: 4-14.

Catch records from five trips of a live-bait vessel in Ryukyu waters; comparison of catch and catch-per-trip between 1935 and 1941; catches correlated with water and air temperatures.

OKUDA, YUZURU

1918. Some studies in marine chemistry (Part 3) [in Japanese]. Suisan gakkai-hō (Proc. Scient. Fishery Ass.), 2(3) : 193-204.

Comparison of amino-acids and other chemical components of white and dark flesh of skipjack.

OMMANNEY, F. D. *et al.*

1963. The fishes. Life Nature Library. Time, Incorporated, New York, 192 p.

Numbers of fish tagged; recovery rate.

OMORI, KAGEYU and MASANOBU FUKUDA

1938. Experimental pole and line fishing for skipjack [in Japanese]. Nagasaki suisan shikenjō jigyō hōkoku-sho (Prog. Rep. Nagasaki Pref. Fish. Expt. Stn) for 1936: 1-22.

Catch and oceanographic records from eight trips in Ryukyu waters.

OMORI, KAGEYU and SABURO KAWABE

1937(*1*). Experimental pole and line fishing for skipjack for the year 1934 [in Japanese]. Nagasaki suisan shikenjō jigyō hōkoku-sho (Prog. Rep. Nagasaki Pref. Expt. Stn) for 1934 and 1935: 1-20.

Catch and oceanographic records from 10 trips in waters south of Kyushu.

1937(*2*). Experimental pole and line fishing for skipjack for the year 1935 [in Japanese]. Nagasaki suisan shikenjō jigyō hōkoku-sho (Prog. Rep. Nagasaki Pref. Fish. Expt. Stn) for 1934 and 1935: 117-137.

Catch and oceanographic records from nine trips in Kyushu-Ryukyu waters.

OMURA, YASOHACHI

1916. Skipjack fishery of Ogasawara Islands [in Japanese]. Suisan-kai (J. Fish. Soc. Japan), 200 : 42-44.

Development of fishery reviewed; size of fish.

ONO, TOYOKI and FUMIO NAGAYAMA

1952. Biochemical studies on the vitamin A in fish viscera. II. Relations between the autolysis of liver and the vitamin A potency of oil. J. Tokyo Univ. Fish., 39(1) : 1-14.

Effect of autolysis on vitamin A potency during storage; comparison with vitamin A of mackerel.

ONODERA, MATSUJI

1941. The relation of freshness and condition factor of Palau Islands skipjack to the ratio of finished products [in Japanese]. Nanyō suisan jōhō (So. Sea Fish. News), 5(2) : 7-17.

Muscle fat and condition factors in fish from South Seas and Japanese waters; length and weight data from 60 specimens; condition factors compared by fish size.

ORANGE, CRAIG J.

1961. Spawning of yellowfin tuna and skipjack in the eastern tropical Pacific, as inferred from studies of gonad development [in English and Spanish]. Bull. Inter-Am. Trop. Tuna Commn, 5(6) : 457-526.

Gonad index; size of females at first spawning; areas and time.

ORANGE, CRAIG J. and GORDON C. BROADHEAD

1959. 1958-1959—A turning point for tuna purse seine fishing? Pacif. Fisherm., 57(7) : 20, 22, 25, 27 p.

Availability controlled by environmental factors; catch statistics.

ORANGE, CRAIG J., MILNER B. SCHAEFER, and FRED M. LARMIE

1957. Schooling habits of yellowfin tuna (*Neothunnus macropterus*) and skipjack (*Katsuwonus pelamis*) in the eastern Pacific Ocean as indicated by purse seine catch records, 1946-1955 [in English and Spanish]. Bull. Inter-Am. Trop. Tuna Commn, 2(3) : 81-126.

Seventy-two per cent of catch shown to originate from pure schools; areal and temporal variations noted; catch-per-set data included.

ORCES, GUSTAVO

1959. Peces marinos del Ecuador que se conservan en las colecciones de Quito [in Spanish]. Cienc. Nat., 2(2) : 72-91.

Specimen from Manta, Ecuador; commercial importance mentioned.

OSHIMA, MASAMITSU

1943. Nankai no kyōi (Wonders in the South Seas) [in Japanese]. Osakayagō shoten, Osaka: 314 p.

Experience of a live-bait vessel in the South Seas; some observations on skipjack gonads.

OSHIMA, YASUO and TOMOKICHI YOSHIHARA

1952. List of periodicals related to the fisheries in Japan [in Japanese]. 72 p.

OSIPOV, V. G.

1960. O rasprostranenii, biologii i promysle tikhookenskikh tuntsov [in Russian]. Trudy Soveshch. Ikhtiol. Kom., (10) : 188-194. Translation: The distribution, biology and fisheries of the Pacific tunas. Israel Program for Scientific Translations, Jerusalem 1964, Cat. No. 927, 6 p.

Brief account of exploratory fishing by a baitboat in NW Pacific in 1956 and 1957; short review (based principally on Japanese literature) of distribution and habitat of Pacific tunas and their fisheries; especially in NW Pacific.

1966. On biology of some predatory pelagic fishes in Pacific Ocean and oceanographic conditions (Abstract). *In:* Divisional meeting—Freshwater sciences and ichthyology. Proc. Pacif. Sci. Congr., 7 : 18-18'.

Distribution and abundance in relation to Kuroshio Current.

OSIPOV, V. G., I. V. KIZEVETTER, and A. V. ZHURAVLEV

1964. Tuntsy i mecheobraznye Tikhogo i Indiiskogo okeanov [in Russian]. Pishchevaya Promyshlennost', Moscow, 74 p. Tunas and spearfishes of the Pacific and Indian Oceans. English translation by U. S. Publication Research Service for the Bureau of Commercial Fisheries, 71 p.

General account of biology; possibilities for a Soviet fishery; technological data.

OTSU, TAMIO

1954. Analysis of the Hawaiian longline fishery, 1948-1952. Comml Fish. Rev., 16(9) : 1-17.

Incidental catch of skipjack in longline fishery.

1965. Tuna research program by Honolulu Biological Laboratory [in Japanese]. *In:* Summary of proceedings of Tuna Fisheries Research Conference, 1964. Tuna Fishg, (34 & 35) : 65.

OYA, TAKEO and T. TAKAHASHI

1936. On the growth acceleration substance in the liver of the marine animals [in Japanese with an English summary]. Bull. Jap. Soc. Scient. Fish., 5(3) : 192-194.

Water extracts of skipjack and whale liver tested for their ability to accelerate growth in mice.

PADOA, EMANUELE

1956. Divisione: Scombriformes [in Italian]. Fauna e Flora del Golfo di Napoli. 38. Monografia: Uova, larve e stadi giovanili di Teleostei. Stazione Zoologica di Napoli, Naples. Pt. 2: 471-547.

Spawning season in Japanese waters.

PALUMBO, R. F., A. H. SEYMOUR and A. D. WELANDER

1966. Radionuclides in foods from the Central Pacific, 1962. Nature, 209 (5029) : 1190-1192.

Flesh of a few skipjack tested for radioactivity from tests of nuclear devices near Christmas Island.

PARROTT, ARTHUR W.

1958. Big game fishes and sharks of New Zealand. Hodder and Stoughton, London: 127 p.

Description; common names.

PHILLIPPS, W. J.

1921. Notes on the edible fishes of New Zealand. With a record of fishes exposed for sale in Wellington during 1918. N. Z. Jl Sci. Technol., 4(3) : 114-125.

Records of occurrence and distribution.

1927(*1*). A check-list of the fishes of New Zealand. J. Pan-Pacif. Res. Instn, 2(1) : 9-15.

Occurrence recorded.

1927(*2*). Bibliography of New Zealand fishes. Bull. Mar. Dep. N. Z. Fish., (1) : 68 p.

Classification; synonymy; references.

1956. Wallis Island fishing customs. J. Polynes. Soc., 62 : 263-266.

Brief description of native fishery.

PHILLIPPS, W. J. and E. R. HODGKINSON

1922. Further notes on the edible fishes of New Zealand. N. Z. Jl Sci. Technol., 5(2) : 91-97.

Appearance in the Auckland market.

PROBATOV, A. N.

1958. Nekotorye dannye o rasprostranenii i promysle tuntsov v severozapadnoi chasti basseina Tikhogo okeana [in Russian]. Uchen. Zap. Rostov. Gos. Univ., 51(6) : 17-31.

Mentioned as an object of live-bait fishery.

QUIBBON

1922. California's fish-packing industries. Fish Trades Gaz., 40 (2029) : 35.

Average weight; fishing season.

RADOVICH, JOHN

1961. Relationships of some marine organisms of the northeast Pacific to water temperatures, particularly during 1957 through 1959. Fish Bull., Sacramento, (112) : 62 p.

Distribution as affected by water temperature.

1963. Effects of water temperature on the distribution of some scombrid fishes along the Pacific Coast of North America [French and Spanish abstracts]. *In:* Rosa, H., Jr. (Ed.) Proceedings of the World Scientific Meeting on the Biology of Tunas and Related Species. FAO, Fish. Rep., 3(6) : 1459-1475.

RANEY, EDWARD C.

1953. Oceanic bonito (*Euthynnus pelamis*), p. 804 *in* McClane, A. J. (Ed.) The Wise fishermen's encyclopedia—an encyclopedic handbook for fishermen covering the game fishes of the world and how to catch them. Wm. H. Wise and Co., New York, 1336 p.

Description; distribution; habits; sport fishing techniques.

REEVES, CORA D.

1928. A catalogue of the fishes of Northeastern China and Korea. J. Pan-Pacif. Res. Instn, 2(3) : 3-16.

Occurrence recorded.

REINTJES, JOHN W. and JOSEPH E. KING

1953. Food of yellowfin tuna in the Central Pacific. Fishery Bull. Fish Wildl. Serv. U. S., 54(81) : 91-110.

Found in stomachs of yellowfin tuna.

RESEARCH DIVISION, FISHERIES AGENCY OF JAPAN

1965. Annual report of effort and catch statistics by area on Japanese tuna long line fishery, 1962 [in Japanese with English captions]. Research Division, Fisheries Agency of Japan, Tokyo, 183 p.

Data by five-degree areas and months; incidental catches of skipjack included.

1966. Annual report of effort and catch statistics by area on Japanese tuna long line fishery, 1963 [in Japanese with English captions]. Research Division, Fisheries Agency of Japan, Tokyo, 322 p.

Data by 5-degree areas and months; incidental catches included.

RICHARDSON, JOHN

1846. Report on ichthyology of the seas of China and Japan. Rep. Br. Ass. Advmt Sci., 15th meeting, 185-320 p.

Distribution; synonymy.

RIDGWAY, GEORGE J.

1962(*1*). Distinction of tuna species by immunochemical methods, p. 33. (Abstract). *In:* J. C. Marr (Ed.) Pacific Tuna Biology Conference—August 14-19, 1961—Honolulu, Hawaii. Spec. Scient. Rep. U. S. Fish Wildl. Serv., (415) : 45 p.

Immunology and serology.

1962(*2*). Distinguishing tuna species by immunochemical methods. Fishery Bull. Fish Wildl. Serv., U. S., 63(1) : 205-211.

Interspecific differences in sera of various tunas studied by diffusion precipitation analysis.

ROBINS, J. P.

1952. Further observations on the distribution of striped tuna, *Katsuwonus pelamis* L., in eastern Australian waters, and its relation to surface temperature. Aust. J. Mar. Freshwt. Res., 3(2) : 101-110.

Exploratory fishing (trolling); apparent preferred temperatures.

ROEDEL, PHIL M.

1948. Common marine fishes of California. Fish Bull., Sacramento, 68 : 153 p.

Description; range; fishery; common names.

1953. Common ocean fishes of the California coast. Fish Bull., Sacramento, (91) : 184 p.

Description; range; fishery; common names.

ROEDEL, PHIL M., continued

1954. California's tuna and yellowtail tagging programs. Trans. N. Am. Wildl. Conf., 19 : 404-417.

Tagging techniques; recoveries of tagged fish; migration.

1962. The names of certain marine fishes of California. Calif. Fish Game, 48(1) : 19-34.

Common and scientific names.

ROEDEL, PHIL M., and JOHN E. FITCH

1962. Taxonomy and nomenclature of the Pacific tunas, p. 33-34. (Abstract). *In:* J. C. Marr (Ed.) Pacific Tuna Biology Conference—August 14-19, 1961—Honolulu, Hawaii. Spec. Scient. Rep. U. S. Fish Wildl. Serv., (415) : 45 p.

RONQUILLO, INOCENCIO A.

1952. Commercial aquatic fauna of the Philippines. II. Vertebrates. *In:* Philippine Fisheries, M. Colcol and Co., Manila, 36-46 p.

List of commercial species, including *K. pelamis*.

1953. Food habits of tunas and dolphins based upon the examination of their stomach contents. Philipp. J. Fish., 2(1) : 71-83.

1963. A contribution to the biology of Philippine tunas [French and Spanish abstracts]. *In:* Rosa, H., Jr. (Ed.) Proceedings of the World Scientific Meeting on the Biology of Tunas and Related Species. FAO, Fish. Rep., 3(6) : 1683-1752.

Biological observations on fish caught during trolling surveys.

ROSA, HORACIO, JR.

1950. Scientific and common names applied to tunas, mackerels and spear fishes of the world with notes on their geographic distribution. Progress Report on the Compilation of Scientific and Common Names of Important Food Fishes. Food and Agriculture Organization of the United Nations, Washington, D. C., 235 p.

ROSA, H., JR. and T. LAEVASTU

1962. World distribution of tunas and tuna fisheries in relation to environment, p. 34-35. (Abstract). *In:* J. C. Marr (Ed.) Pacific Tuna Biology Conference—August 14-19, 1961—Honolulu, Hawaii. Spec. Scient. Rep. U. S. Fish Wildl. Serv., (415) : 45 p.

Distribution influenced by oceanographic and topographical features.

ROTHSCHILD, BRIAN J.

1963. Skipjack ecology. *In:* Wilvan G. van Campen (Ed.), Progress in 1961-62. Circ. U. S. Fish Wildl. Serv., (163) : 13-17.

1964. Skipjack tuna oceanography. (Abstract). Proc. Hawaii. Acad. Sci., 25.

Population model for the central and eastern Pacific Ocean.

1965. Hypothesis on the origin of exploited skipjack tuna (*Katsuwonus pelamis*) in the eastern and central Pacific Ocean. Spec. Scient. Rep. U. S. Fish Wildl. Serv., (512) : 20 p.

1966(*1*). Skipjack tuna (*Katsuwonus pelamis*) resources of the trust territory of the Pacific islands. Comml Fish. Rev., 28(2) : 6-8.

Description and history of the fishery.

1966(*2*). Major changes in the temporal-spatial distribution of catch and effort in the Japanese longline fleet. *In:* Thomas A. Manar (Ed.), Proceedings, Governor's Conference on Central Pacific Fishery Resources, State of Hawaii: 91-126.

Skipjack included in this study.

1966(*3*). Preliminary assessment of the yield potential of the skipjack tuna in the

ROTHSCHILD, BRIAN J., continued

Central Pacific Ocean. *In:* Thomas A. Manar (Ed.), Proceedings, Governor's Conference on the Central Pacific Fishery Resources, State of Hawaii: 251-258.

ROUGHLEY, T. C.

1916. Fishes of Australia and their technology. W. A. Gullick, Government Printer, Sydney, 296 p.

Occurrence off Australia.

1951. Fish and fisheries of Australia. Sydney, Angus and Robertson, 343 p.

Distribution; description; size of commercially-caught fish.

ROXAS, HILARIO A. and CLARO MARTIN

1937. Checklist of Philippine fishes. Tech. Bull. Dept. Agric. Commerce Philipp. Is., (6) : 314 p.

Records of occurrence.

ROYCE, WILLIAM F.

1957. Observations on the spearfishes of the Central Pacific. Fishery Bull. Fish Wildl. Serv., U. S., 57(124) : 497-554.

Found in stomachs of three species of marlin.

ROYCE, W. F. and TAMIO OTSU

1954. Finding skipjack in Hawaiian waters. (Abstract). Proc. Hawaii. Acad. Sci., 7-8 p.

Association with bird flocks; scouting for schools of skipjack from vessels and aircraft.

1955. Observations of skipjack schools in Hawaiian waters, 1953. Spec. Scient. Rep. U. S. Fish Wildl. Serv., (147) : 31 p.

Scouting cruises.

SACHET, MARIE-HÉLENE

1962. Monographie physique et biologique de l'ile Clipperton [in French]. Annls Inst. Océanogr. Monaco, n. s., 15(1) : 107 p.

Occurrence off Clipperton Island recorded.

SAIKI, MASAMICHI, K. SHIRAI, S. OHNO and T. MORI

1957. Studies on the radioelements in the contaminating radioactive fish—II. On skipjacks caught at the Pacific Ocean in 1956 (Part 1) [in Japanese with an English summary]. Bull. Jap. Soc. Scient. Fish., 22(10) : 645-650.

SAITO, ICHIRO

1960. Enyō gyogyō (Offshore fisheries) [in Japanese]. Suisan-gaku zenshū (Fish. Sci. Ser.), Tokyo, 4 : 11-44.

Comprehensive review of biology and fisheries.

SAITO, KANAME

1953. Biochemical studies on fish-blood—V. On the respiration element of fish-blood [in Japanese with an English summary]. Mem. Fac. Fish. Kagoshima Univ., 3(1) : 132-140.

Analysis of density and shape of blood cells; hemoglobin contents; some discussion on relation between these results and ecology.

1954(*1*). Biochemical studies on the fish-blood—III. On the specific gravity and chemical components of blood and plasma [in Japanese with an English summary]. Bull. Jap. Soc. Scient. Fish., 20(3) : 196-201.

1954(*2*). Biochemical studies on the fish-blood—IV. On the colour of meat and Fe-content in blood and hemopoietic organ [in Japanese with an English summary].

SAITO, KANAME, continued

Bull. Jap. Soc. Scient. Fish., 20(3) : 202-205.

Analysis of more than 10 species of fish; includes study of ratio of weight of various hemopoietic organs to body weight.

1955(*1*). Biochemical studies on the fish-blood—VI. On the hemolysis in NaCl solution (1) [in Japanese with an English summary]. Bull. Jap. Soc. Scient. Fish., 20(10) : 881-884.

Analysis of the concentration of salt solution required to cause hemolysis; amount of hemoglobin determined.

1955(*2*). Biochemical studies on the fish blood—VII. On the hemolysis in NaCl solution (2) [in Japanese with an English summary]. Bull. Jap. Soc. Scient. Fish., 20(10) : 885-887.

1959. Biochemical studies on the fish blood—XIV. On the mean corpuscular constant and shape of red corpuscule [in Japanese with an English summary]. Mem. Fac. Fish. Kagoshima Univ., 7 : 192-198.

1960. Biochemical studies on the fish blood—XV. On the species specificity in the combination of serum protein with anionic and cationic dyes [in Japanese with an English summary]. Mem. Fac. Fish. Kagoshima Univ., 9 : 1-15.

The ease of binding between serum proteins of several species of fish and dyes (i.e. methyl orange, bromophenol blue and methylene blue) tested by equilibrium dialyses, paper electrophoretic analysis and spectrophotometry.

SAKAI, MORISABURO and MICHIO UNO

1940. Tuna (maguro) fisheries and boats in Japan [in Japanese with an English summary]. *In:* Census Report on important fisheries. Part II. J. Imp. Fish. Expt. Stn, Tokyo, (10) : 1-37.

Surveys of fishing effort by Japanese tuna vessels.

SAKAMOTO, ICHITARO

1962. On the action mechanism of the osmotic balance regulated by the T-Cl character in water masses upon the movements of the pelagic fish school. J. Oceanogr. Soc. Jap., 20th Anniversary Volume, 650-662 p.

SARDONE, L. T.

1957. Australia develops tuna potential. Wld Fishg, 6 : 77-80.

General review of fishery; fishing areas.

SASAKI, TAKEO

1939. Oceanographic conditions and the skipjack fishing grounds of the Northeastern Sea Area [in Japanese]. Miyagi-ken suisan shiken-jō-Pamphlet. (Miyagi Prefectural Fisheries Experimental Station, Ishinomaki, Guidance Material), (1) : 12 p. (Translation *In:* Spec. Sci. Rep., U. S. Fish Wildl. Serv., [83] : 1-21.)

Yearly and seasonal variations in fishing conditions related to water temperature.

SASAKI, TAKEO and ISAKU TAKEHISA

1932. A consideration of the skipjack fishery in the Northeastern Sea area in 1931 [in Japanese]. Rakusui, 27(4) : 1-10.

Shift of fishing ground; seasonal sea temperature variation; temperature range of skipjack distribution.

SCHAEFER, MILNER B.

1948(*1*). Size composition of catches of yellowfin tuna (*Neothunnus macropterus*) from Central America, and their significance in the determination of growth, age, and schooling habits. Fishery Bull. Fish Wildl. Serv., U. S., 51(44) : 197-200.

Mixed schools of skipjack and yellowfin tuna.

SCHAEFER, MILNER B., continued

1948(*2*). Spawning of Pacific tunas and its implications to the welfare of the Pacific tuna fisheries. Trans. N. Am. Wildl. Conf., 365-371.

Occurrence of young; management discussed.

1951. Some recent advances in the study of the biology and racial division of the Pacific tunas. Proc. Indo-Pacif. Fish. Coun., 2(2/3) : 63-69.

Growth; age; spawning.

1952(*1*). Algunos aspectos biológicos de la Corriente Peruana [in Spanish]. Boln Soc. Geogr., Lima, 69 : 87-93.

Occurrence off Peru in waters of the counter current and in tongues of warm water.

1952(*2*). Report on the investigations of the Inter-American Tropical Tuna Commission during the year 1951 [in English and Spanish]. Ann. Rep. Inter-Am. Trop. Tuna Commn, 1951-1952: 15-24, 37-47.

1953. Report on the investigations of the Inter-American Tropical Tuna Commission during the year 1952 [in English and Spanish]. Ann. Rep. Inter-Am. Trop. Tuna Commn, 1952: 14-61.

1954. Report on the investigations of the Inter-American Tropical Tuna Commission for the year 1953 [in English and Spanish]. Ann. Rep. Inter-Am. Trop. Tuna Commn, 1953: 18-87.

1955(*1*). Report on the investigations of the Inter-American Tropical Tuna Commission for the year 1954 [in English and Spanish]. Ann. Rep. Inter-Am. Trop. Tuna Commn, 1954: 24-100.

1955(*2*). Scientific investigation of the tropical tuna resources of the eastern Pacific. Papers of the International Technical Conference on the Conservation of the Living Resources of the Sea. United Nations, N .Y.: 194-221. (Russian Translation *In:* Issledovanie bogatstv tropicheskogo tuntsa y vodakh vostochnoi chasti Tikhogo okeana. Materialy mezdunarodnoi konferentsii po okhrane zaposov ryb y drugikh morskikh zhivotnykh. [Publisher not listed]. Moscow, 1957, 2 : 40-58.)

History of fishery in the eastern Pacific; status of studies of skipjack and of bait species; research by IATTC.

1955(*3*). Aspects of 1955 Inter-American tuna researches. Pacif. Fishm. Yb. 53(2) : 133-137.

Studies of eastern Pacific fishery; stocks of skipjack and bait species; research by IATTC.

1956. Report on the investigations of the Inter-American Tropical Tuna Commission for the year 1955 [in English and Spanish]. Ann. Rep. Inter-Am. Trop. Tuna Commn, 1955: 26-95.

1957(*1*). Report on the investigations of the Inter-American Tropical Tuna Commission for the year 1956 [in English and Spanish]. Ann. Rep. Inter-Am. Trop. Tuna Commn, 1956: 33-112.

1957(*2*). Development and conservation of the tuna fisheries of the Pacific. Proc. Eighth Pacif. Sci. Congr., 3 : 149-163. (The year of publication is 1958 on the cover page and 1957 on the title page.)

Review of Pacific fishery.

1958(*1*). Report on the investigations of the Inter-American Tropical Tuna Commission for the year 1957 [in English and Spanish]. Ann. Rep. Inter-Am. Trop. Tuna Commn, 1957: 31-134.

1958(*2*). Utilization and conservation of the tuna resources of the eastern tropical Pacific Ocean. Trans. N. Am. Wildl. Conf.: 472-484.

History of fishery in the eastern Pacific; status of stocks of skipjack; scientific investigations by IATTC.

1959(*1*). Report on the investigations of the Inter-American Tropical Tuna Com-

SCHAEFER, MILNER B., continued

mission for the year 1958 [in English and Spanish]. Ann. Rep. Inter-Am. Trop. Tuna Commn, 1958: 34-121.

1959(*2*). Status of the fishery for tunas of tropical waters of the eastern Pacific. Circ. U. S. Fish Wildl. Serv., (65) : 37-40.

Fishing areas; condition of the eastern Pacific tuna stocks.

1960. Report on the investigations of the Inter-American Tropical Tuna Commission for the year 1959 [in English and Spanish]. Ann. Rep. Inter-Am. Trop. Tuna Commn, 1959: 39-156.

1961(*1*). Report on the investigations of the Inter-American Tropical Tuna Commission for the year 1960 [in English and Spanish]. Ann. Rep. Inter-Am. Trop. Tuna Commn, 1960: 40-183.

1962(*2*). Tuna oceanography programs in the tropical central and eastern Pacific. Rep. Calif. Coop. Oceanic Fish. Invest., 8 : 41-44.

Abundance correlated with some oceanographic conditions.

1962(*1*). Report on the investigations of the Inter-American Tropical Tuna Commission for the year 1961 [in English and Spanish]. Ann. Rep. Inter-Am. Trop. Tuna Commn, 1961: 44-171.

1962(*2*). La pesca del atún tropical [in Spanish with an English summary]. Pesca, Anuario: 119-121.

Previews of eastern Pacific fishery; function of Inter-American Tropical Tuna Commission.

1963(*1*). Report on the investigations of the Inter-American Tropical Tuna Commission for the year 1962 [in English and Spanish]. Ann. Rep. Inter-Am. Trop. Tuna Commn, 1962: 35-149.

1963(*2*). Statistics of catch and effort required for scientific research on the tuna fisheries [French and Spanish summary]. *In:* Rosa, H., Jr. (Ed.), Proceedings of the World Scientific Meeting on the Biology of Tunas and Related Species. FAO, Fish. Rep. 3(6) : 1077-1087.

1966. Oceanography and the marine fisheries. p. 17-20. *In:* The First North American Fisheries Conference. Circ. U. S. Fish Wildl. Serv., (250) : 72 p.

Distribution related to temperature.

SCHAEFER, MILNER B., BRUCE M. CHATWIN, and GORDON C. BROADHEAD

1961. Tagging and recovery of tropical tunas, 1955-1959 [in English and Spanish]. Bull. Inter-Am. Trop. Tuna Commn, 5(5) : 341-455.

Tagging in eastern Pacific; recovery rates; effect of temperature, size of fish and handling or recovery rate; rates of tag recovery on basis of estimating fishing mortality; migrations; dispersion; tagging mortality; loss of tags; estimation of growth.

SCHAEFER, MILNER B., and JOHN C. MARR

1948. Spawning of yellowfin tuna (*Neothunnus macropterus*) and skipjack (*Katsuwonus pelamis*) in the Pacific Ocean off Central America, with description of juveniles. Fishery Bull. Fish Wildl. Serv., U. S., 51(44) : 187-196.

Description of young.

SCHAEFER, MILNER B., and CRAIG J. ORANGE

1956. Studies on the sexual development and spawning of yellowfin tuna (*Neothunnus macropterus*) and skipjack (*Katsuwonus pelamis*) in three areas of the eastern Pacific Ocean, by examination of gonads [in English and Spanish]. Bull. Inter-Am. Trop. Tuna Commn, 1(6) : 281-349.

Examination of gonads and ovarian eggs; stages of maturity described; relationship among fish size, weight of gonads, and size of ovarian eggs; areas of spawning; sex ratio.

SCHMIDT, P. J. (P. Yu. Shmidt)

1931. Fishes of Japan, collected in 1901 [Russian summary]. Trudy Tikhookean. Kom., (2) : 1-176.

Synonymy; preserved specimen described.

SCHULTZ, LEONARD P.

1960. Suborder Scombrina. *In:* Fishes of the Marshall and Marianas Islands. Vol. 2. Bull. U. S. Natn Mus., (202) : 410-417.

SCHWEIGGER, ERWIN

1943. Pesquería y oceanografía del Perú y proposiciones para su desarrollo futuro—informe elevado a la Compañia Administradora del Guano [in Spanish]. Compañia Administradora Guano, Lima: 356 p.

Distribution off Peru as related to areas, seasons and oceanographic factors; remarks and observations on general biology.

1959. Die Westküste Südamericas im Bereich des Peru-Stroms [in German]. Keysersche Verlagsbuchhandlung, Heidelberg-Munich: 513 p.

Observations and remarks on biology of skipjack off Peru; distribution as related to oceanographic factors.

1960. Fenómenos hidrográficos y biológicos en el sur del Perú y en el norte de Chile [in Spanish]. Revta Biol. Mar., 10(1-3) : 51-68.

Fishing season and areas.

SCOTT, TREVOR D.

1962. The marine and fresh water fishes of South Australia. W. L. Hawes, Government Printer, Adelaide: 338 p.

Description and distribution.

SEALE, ALVIN

1908. The fishery resources of the Philippine Islands. Part I, Commercial fishes. Philipp. J. Sci., Sec. A, 3 : 513-531.

Listed as food fish; common names.

1940. Report on fishes from Allan Hancock Expeditions in the California Academy of Sciences. Allan Hancock Pacif. Exped., 9(1) : 1-46.

Records of captures from Galapagos Islands.

SECKEL, GUNTER R.

1963. Climatic parameters and the Hawaiian skipjack fishery [French and Spanish abstracts]. *In:* Rosa, H., Jr. (Ed.), Proceedings of the World Scientific Meeting on the Biology of Tunas and Related Species. FAO, Fish. Rep., 3(6) : 1201-1208.

Association between availability and oceanographic conditions.

1964. Climatic oceanography and its application to the Hawaiian skipjack fishery (Abstract). Proc. Hawaii. Acad. Sci.: 26.

Oceanographic conditions used to predict relative success of Hawaiian summer fishery.

SECKEL, GUNTER R., and THOMAS S. AUSTIN

1962. The association between Hawaiian skipjack landings and the oceanographic climate (Abstract). *In:* J. C. Marr (Ed.) Pacific Tuna Biology Conference—August 14-19, 1961—Honolulu, Hawaii. Spec. Scient. Rep. U. S. Fish Wildl. Serv., (415) : 35-36.

Relation between oceanographic factors and availability.

SECKEL, GUNTER H. and KENNETH D. WALDRON

1960. Oceanography and the Hawaiian skipjack fishery. Pacif. Fisherm., 58(2) : 11-13.

Association between fishing success and oceanographic conditions.

SERVENTY, D. L.

1941(*1*). The Australian tunas. Pamph. Coun. Scient. Ind. Res. Aust., (104) : 48 p.

Description; distribution; common names.

1941(*2*). Victorian tunas and some recent records. Victorian Nat., 58 : 51-55.

Distribution in Australian waters; fishing season.

1947. A report on commercial tuna trolling tests in south-eastern Australia. J. Coun. Scient. Ind. Res. Aust., 20(1) : 1-16.

SETTE, OSCAR E.

1954. Progress in Pacific Oceanic Fishery Investigations 1950-53. Spec. Scient. Rep. U. S. Fish Wildl. Serv., (116) : 75 p.

Report on research in central Pacific; factors affecting distribution and catch; methods of capture.

1960. The long term historical record of meteorological, oceanographic and biological data. Rep. Calif. Coop. Oceanic Fish. Invest., 7 : 181-194.

Fluctuations in catch per unit of effort.

SETTE, O. E. and BRIAN J. ROTHSCHILD

1966. Report of the working group on skipjack tuna. *In:* Thomas A. Manar (Ed.), Proceedings, Governor's Conference on Central Pacific Fishery Resources, State of Hawaii: 17-28.

Summaries of horizontal and vertical distribution; population structure; estimate of potential yield.

SHAPIRO, SIDNEY

1948(*1*). The Japanese tuna fisheries. Report, Natural Resources Section, Supreme Commander for the Allied Powers, Tokyo, (104) : 60 p. (Also Fishery Leafl. Fish Wildl. Serv., U. S., [297] : 60 p.)

Historical review of the fishery; biology; ecology.

1948(*2*). Aquatic resources of the Ryukyu area. Report, Natural Resources Section, Supreme Commander of the Allied Powers, Tokyo, (117) : 54 p. (Also Fishery Leafl. Fish Wildl. Serv., U. S., [333] : 54 p.)

General account of the fishery.

SHIBATA, KEISHI

1966. Tuna fishing ground expedition by Nagasaki-maru using fish finders [in Japanese]. Gyogun tanchiki ni yoru maguro shigen kenkyu kyogikai hōkoku (Report of Conference to Study Tuna Resources by Use of Fish Finders.) Nihon suisan shigen hogo kyōkai (Japanese Fisheries Resources Conservation Association) Tokyo, March, 1966: 29-47.

Scouting with fish finders; stomach contents.

SHIBUSAWA, K.

1932. A list of the common and local names of fishes in Japan, Part 3 [in Japanese]. Nihon gyomin bunka kenkyūjo ihō (J. Res. Inst. Culture Jap. Fishm.), (59) : 304 p.

SHIINO, SUEO M.

1952. Copepods parasitic on Japanese fishes. 1. On the species of Caligus and Lepeophtheirus. Rep. Fac. Fish. Prefect. Univ. Mie, 1(2) : 79-113.

New species of parasitic copepod.

1954. On the male form of the copepod *Caligus katuwo* Yamaguti, parasitic on the Japanese bonito *Euthynnus pelamis* (L) [in Japanese]. Zool. Mag., Tokyo, 63(6) : 246-249.

Description of male forms of *Caligus katuwo;* female forms compared with those of related species.

1959(*1*). Neuer Artname für japanische Exemplare von *Caligus bonito* [in German]. Bull. Biogeogr. Soc. Japan, 20(11) : 51-57.

Description of a parasitic copepod.

1959(*2*). Revision der auf Goldmakrele, *Coryphaena hippurus L.,* schmarotzenden Caligidenarten [in German]. Ann. Rep. Prefect. Univ Mie, Sec. 2, Natural Science, 3(1) : 1-34.

External parasites *Caligus coryphaene* and *C. productus* on *K. pelamis* from NE and NW Pacific.

1963. Parasitic copepods of the eastern Pacific fishes. 1. Records of the known species. Rep. Fac. Fish. Prefect. Univ. Mie, 4(3) : 335-347.

External parasite *Caligus bonito* on *K. pelamis* from eastern Pacific.

1965. Parasitic copepods of the eastern Pacific fishes. 5. *Caligus.* Rep. Fac. Fish. Prefect. Univ. Mie, 5(2) : 391-420.

Host for two species of *Caligus.*

SHIMADA, BELL M.

1951(*1*). An annotated bibliography on the biology of Pacific tunas. Fishery Bull. U. S. Fish Wildl. Serv., 52(58) : 1-58.

Detailed subject index.

1951(*2*). Contributions to the biology of tunas from the western equatorial Pacific. Fishery Bull. U. S. Fish Wildl. Serv., 52(62) : 111-119.

Young skipjack from stomachs of longline-caught marlin, sailfish and yellowfin tuna.

1951(*3*). Juvenile oceanic skipjack from the Phoenix Islands. Fishery Bull. U. S. Fish Wildl. Serv., 52(64) : 129-131.

Description of five specimens; table of published records of young from Pacific Ocean.

1951(*4*). Japanese tuna-mothership operations in the western equatorial Pacific Ocean. Comml Fish. Rev., 13(6) : 1-26.

Longline catches.

1958. Geographical distribution of the annual catches of yellowfin and skipjack tuna from the eastern tropical Pacific Ocean from vessel logbook records, 1952-1955 [in English and Spanish]. Bull. Inter-Am. Trop. Tuna Commn, 2(7) : 287-363.

Baitboat and purse-seine catches for 1952-55 in the eastern Pacific by one-degree areas; relation between oceanographic conditions and fishery discussed.

SHIMADA, BELL M., and MILNER B. SCHAEFER

1956. A study of changes in fishing effort, abundance, and yield for yellowfin and skipjack tuna in the eastern tropical Pacific Ocean [in English and Spanish]. Bull. Inter-Am. Trop. Tuna Commn, 1(7) : 351-469.

History of the fishery; methods of fishing; fishing areas; fluctuations in annual catches; amount of fishing effort; fishing effort and apparent abundance found to be unrelated.

SHIMAMURA, KANAE

1927. On the correlation between skipjack catch and specific gravity of sea water [in Japanese]. Umi to sora (Sea and Sky), 7(12) : 196-198.

Relationship between the average specific gravity of sea water in the fall and next spring, and skipjack catches per boat in the next season in waters south of Japan; catch statistics and effort data for 1912-1926.

SHIMIZU, WATARU

1949(*1*). Studies on the muscle of marine animals. VII. The analysis of various fish meat [in Japanese with an English summary]. Bull. Jap. Soc. Scient. Fish., 15(1) : 32-34.

Comparison of chemical components in the muscle of several species of fish.

1949(*2*). Studies on the muscle of marine animals. VIII. Distribution of extractive nitrogen on various fishes [in Japanese with an English summary]. Bull. Jap. Soc. Scient. Fish., 15(1) : 35-40.

Comparison of amount of nitrogen in muscles of migratory and non-migratory fishes.

1963. Tuna meat [in Japanese]. Tuna Fishg, (9) (93) : 26-30.

Discussion of relation between chemical composition and taste of several tuna species.

SHIMODA, MOKUICHI

1937. Southern fisheries [in Japanese]. Kaiyō gyogyō (Ocean. Fish.) Tokyo, 7 : 1-136.

History and present status of Japanese tuna fisheries in tropical regions; summary of exploratory trolling and longline fishing in Indonesian waters; results of longline tuna fishing with mothership; prospects of future tuna fishing industry.

SHIPPEN, HERBERT H.

1961. Distribution and abundance of skipjack in the Hawaiian fishery, 1952-53. Fishery Bull. Fish Wildl. Serv. U. S., 61(188) : 281-300.

Distribution and abundance during a poor and a good fishing year compared and discussed.

SHIRAI, KAZUO, M. SAIKI and S. OHNO

1957. Studies on the radioelements in the contaminating radioactive fish—III. On skipjacks caught at the Pacific Ocean in 1956 (Part 2). On the presence of Cd^{113m} [in Japanese with an English summary]. Bull. Jap. Soc. Scient. Fish., 22(10) : 651-653.

Cd^{113m} detected in contaminated skipjack.

SHIRAISHI, YOSHIZO

1941. Summary of a census of dried-skipjack-stick production in Wakayama Prefecture, 1940, (Part 1) [in Japanese]. Suisankai (J. Fish. Soc. Japan), (703) : 48-59.

Catch data by month and by area; marketing research.

SHIZUOKA PREFECTURAL FISHERIES EXPERIMENTAL STATION

1932(*1*). Investigation of skipjack fishing grounds [in Japanese]. Shizuoka-ken suisan shikenjō jigyō hōkoku (Prog. Rep. Shizuoka Pref. Fish. Expt. Stn) 27, for 1930: 1-23.

Results of 11 exploratory trips by a livebait research boat; fishing discussed in relation to season, water temperature and locality; landing data by month and port.

1932(*2*). Investigation of tuna fishing grounds [in Japanese]. Shizuoka-ken suisan shikenjō jigyō hōkoku (Prog. Rep. Shizuoka Pref. Fish. Expt. Stn) 27, for 1930: 24-46.

1932(*3*). Fish school scouting survey by airplanes, 1930 [in Japanese]. Shizuoka-

SHIZUOKA PREFECTURAL FISHERIES EXPERIMENTAL STATION, continued

ken suisan shikenjō jigyō hōkoku (Prog. Rep. Shizuoka Pref. Fish. Expt. Stn) 27, for 1930: 46-65.

Summary of aerial surveys on tuna fishing grounds off eastern Japan; distribution of tuna schools.

1935(*1*). Investigation of skipjack fishing grounds [in Japanese]. Shizuoka-ken suisan shikenjō jigyō hōkoku (Prog. Rep. Shizuoka Pref. Fish Expt. Stn) 30, for 1933: 1-22.

Results of 10 exploratory trips by a livebait research boat in waters off eastern Japan; fishing conditions related to water temperature and color.

1935(*2*). Fish school scouting survey by airplanes [in Japanese]. Shizuoka-ken suisan shikenjō jigyō hōkoku (Prog. Rep. Shizuoka Pref. Fish. Expt. Stn) 30, for 1933: 72-88.

Summary of aerial surveys on tuna fishing grounds off eastern Japan; distribution of tuna schools.

1936(*1*). Investigation of skipjack fishing [in Japanese]. Shizuoka-ken suisan shikenjō jigyō hōkoku (Prog. Rep. Shizuoka Pref. Fish. Expt. Stn) 31, for 1934: 1-19.

Results of several exploratory trips by a livebait research boat in waters off eastern Japan; fishing conditions in relation to season, area and water temperature; local landing data by month.

1936(*2*). Fishing conditions for the period after October in 1934 [in Japanese]. Shizuoka-ken suisan shikenjō jigyō hōkoku (Prog. Rep. Shizuoka Pref. Fish. Expt. Stn) 31, for 1934: 34-42.

Fishing conditions in waters of southern and eastern Japan, in relation to season, area, water temperature and biting quality; catch statistics.

1936(*3*). Fish school scouting survey by airplanes [in Japanese]. Shizuoka-ken suisan shikenjō jigyō hōkoku (Prog. Rep. Shizuoka Pref. Fish. Expt. Stn) 31, for 1934: 45-57.

Summary of aerial surveys on tuna fishing grounds; catch records; distribution of tuna schools.

1937(*1*). Investigation of skipjack fishing [in Japanese]. Shizuoka-ken suisan shikenjō jigyō hōkoku (Prog. Rep. Shizuoka Pref. Fish. Expt. Stn) 32, for 1935: 259-285.

Results of 10 exploratory trips by a livebait research vessel in waters off eastern and southern Japan; fishing conditions discussed in relation to season and water temperature; landing data by month.

1937(*2*). Fish school scouting survey by airplanes [in Japanese]. Shizuoka-ken suisan shikenjō jigyō hōkoku (Prog. Rep. Shizuoka Pref. Fish. Expt. Stn) 32, for 1935: 320-335.

Summary of aerial surveys on tuna fishing grounds; catch records; distribution of tuna schools.

1938. Fish school scouting by airplanes, 1936-38 [in Japanese]. Shizuoka-ken suisan shikenjō jigyō hōkoku (Prog. Rep. Shizuoka Pref. Fish. Expt. Stn) for 1936, 1937, 1938: 8-9.

Summary of aerial scouting on tuna fishing grounds off eastern Japan.

SHMIDT, P. YU. (P. J. SCHMIDT)

1948. Ryby Tikhogo okeana—ocherk sovremennykh teorii i vozzrenii na raspor-stranenie y razvitie fauny ryb Tikhogo okeana [in Russian]. Pishohepromizdat, Moscow: 124 p.

Brief account of Japanese fishery.

SHOMURA, RICHARD S.

1955. A comparative study of longline baits. Spec. Scient. Rep. U. S. Fish Wildl. Serv., (151) : 34 p.

Catches related to depth.

1959. Changes in tuna landings of the Hawaiian longline fishery, 1948-1956. Fishery Bull. U. S. Fish Wildl. Serv., 60(160) : 87-106.

Incidental longline catches.

1963(*1*). Special studies—experimental gill net fishing for skipjack. *In:* Wilvan G. van Campen (Ed.), Progress in 1961-62, Circ. U. S. Fish Wildl. Serv., (163) : 19-20.

1963(*2*). Monofilament gill net fishing for skipjack tuna in Hawaiian waters—1961-62. Circ. U. S. Fish Wildl. Serv., 170 : 1-12.

Experimental fishing with gill-nets.

1963(*3*). Monofilament gill net fishing for skipjack tuna in Hawaiian waters (a progress report) [French and Spanish abstracts]. *In:* Rosa, H., Jr. (Ed.) Proceedings of the World Scientific Meetings on the Biology of Tunas and Related Species. FAO, Fish. Rep., 3(6) : 1177-1199.

Field experiments with gill nets.

1964. Effectiveness of tilapia as live bait for skipjack tuna fishing. Trans. Am. Fish. Soc., 93(3) : 291-294.

1966. Age and growth studies of four species of tunas in the Pacific Ocean. *In:* Thomas A. Manar (Ed.), Proceedings, Governor's Conference on Central Pacific Fishery Resources, State of Hawaii: 203-219.

Review; skipjack included.

SHOMURA, RICHARD S. and GARTH I. MURPHY

1955. Longline fishing for deep-swimming tunas in the Central Pacific, 1953. Spec. Scient. Rep. U. S. Fish Wildl. Serv., (157) : 70 p.

Sporadic catches.

SILLIMAN, RALPH P.

1966(*1*). Plan for an assessment of abundance and yield of tropical Pacific tunas. *In:* Thomas A. Manar (Ed.), Proceedings, Governor's Conference on Central Pacific Fishery Resources, State of Hawaii: 231-242.

History of Hawaiian and eastern Pacific fisheries; history of tuna research.

1966(*2*). Estimates of yield for Pacific skipjack and bigeye tunas. *In:* Thomas A. Manar (Ed.), Proceedings, Governor's Conference on Central Pacific Fishery Resources, State of Hawaii: 243-249.

Estimates derived by the population-simulation method.

SIVASUBRAMANIAM, K.

1963. On the sharks and other undesirable species caught by tuna longline. Rec. Oceanogr. Wks Jap., 7(1) : 74-81.

Variation of catches with longitude.

SMAYDA, THEODORE J.

1966. A quantitative analysis of the phytoplankton of the Gulf of Panama. III. General ecological conditions, and the phytoplankton dynamics at 8°45'N, 79°23'W from November 1954 to May 1957 [in English with Spanish summary]. Bull. Inter-Am. Trop. Tuna Commn, 11(5) : 353-612.

Relationship between standing crop of zooplankton and catch of skipjack.

SMITH, ROBERT O.

1947(*1*). Fishery resources of Micronesia. Fishery Leafl. Fish Wildl. Serv. U. S., (239) : 46 p.

Summarized version of another report by the same author [Smith 1947(2)].

1947(*2*). Survey of the fisheries of the former Japanese mandate islands. Fishery Leafl. Fish Wildl. Serv. U. S., (273) : 105 p.

Account of pre-World War II Japanese fishery and a post-war survey.

SMITH, O. R. and M. B. SCHAEFER

1949. Fishery exploration in the western Pacific (January to June 1948, by vessels of the Pacific Exploration Company). Comml Fish. Rev., 11(3) : 1-18.

SNOGRASS, ROBERT EVANS and EDMUND HELLER

1905. Shore fishes of the Revillagigedo, Clipperton, Cocos and Galapagos Islands. Proc. Wash. Acad. Sci., 6 : 333-427.

Listed from Revillagigedos, Cocos and Galapagos.

SOLDATOV, V. K. and G. IU. LINDBERG

1930. Obzor ryb dal'nevostochnykh morei. A review of the fishes of the seas of the Far East [in Russian with an English summary]. Izv. Tikhookean Nauch. Inst. Ryb. Khoz., 5 : 576 p.

Description; distribution.

SOUTH SEAS GOVERNMENT-GENERAL FISHERIES EXPERIMENTAL STATION

1937(*1*). Investigation of the fisheries of the Mariana Islands, 1924 [in Japanese]. Nanyō-chō suisan shikenjō jigyō hōkoku (Prog. Rep. So. Seas Gov.-Gen. Fish. Expt. Stn), 1(1923-35) : 6-9.

Unsuccessful attempts to fish skipjack using a purse-seine with livebait in the Ponape area; possibility of developing fishery discussed.

1937(*2*). Survey of fishing grounds and channels in Palau waters, 1925-1926 [in Japanese]. Nanyō-chō suisan shikenjō jigyō hōkoku (Prog. Rep. So. Seas Gov.-Gen. Fish. Expt. Stn), 1(1923-35) : 25-37. (Translation *In:* Spec. Scient. Rep. U. S. Fish. Wildl. Serv., [42] : 11-22).

Results of comprehensive exploratory fishing using trolling gear and livebait; availability of bait fishes investigated.

1937(*3*). Investigation of fisheries in the waters adjacent to the isolated islands south of Palao [in Japanese]. Nanyō-chō suisan shikenjō jigyō hōkoku (Prog. Rep. So. Seas Gov.-Gen. Fish. Expt. Stn), 1(1923-35) : 38-48.

Data on exploratory fishing by Hakuho-maru, 1925-1929.

1937(*4*). Skipjack fishing investigations (1930 through 1934) [in Japanese]. Nanyō-chō suisan shikenjō jigyō hōkoku (Prog. Rep. So. Seas Gov.-Gen. Fish. Expt. Stn), 1(1923-35) : 49-61.

Data on exploratory fishing in the South Seas area.

1937(*5*). Investigation of the waters near Ponape [in Japanese]. Nanyō-chō suisan shikenjō jigyō hōkoku (Prog. Rep. So. Seas Gov.-Gen. Fish. Expt. Stn), 1(1923-35) : 73-83. (Translation *In:* Spec. Scient. Rep. U. S. Fish Wildl. Serv., [46] : 22-33).

General description of climate and oceanographic conditions, fishing and skipjack distribution in the waters near Ponape Islands; bait fish survey.

1937(*6*). Investigation of the waters near Truk Islands [in Japanese]. Nanyō-

SOUTH SEAS GOVERNMENT-GENERAL FISHERIES EXPERIMENTAL STATION, continued

chō suisan shikenjō jigyō hōkoku (Prog. Rep. So. Seas Gov.-Gen. Fish. Expt. Stn), 1(1923-35) : 84-116.

General description of weather, oceanographic and fishing conditions; livebait fishes; data records of exploratory trolling (1930) and livebait fishing for skipjack (1930-1934).

1938. Fishing condition and relation between fishing conditions and oceanographic condition [in Japanese]. Nanyō-chō suisan shikenjō kaiyō chōsa hōkoku (Rep. Oceanogr. Invest. So. Seas Gov.-Gen. Fish. Expt. Stn), 1 for 1927-1937 : 54-65.

Catch and effort statistics by area and year in the South Seas area, 1922-36; monthly catch statistics for 1933-1937 discussed in relation to monthly mean weight of skipjack; catches and fishing conditions analyzed in relation to water temperature.

1939(*1*). Investigation of skipjack fishing in Yap waters, 1936 [in Japanese]. Nanyō-chō suisan shikenjō jigyō hōkoku (Prog. Rep. So. Seas Gov.-Gen. Fish. Expt. Stn), 2(1936, 1937) : 1-5.

Results of exploratory fishing by two research livebait vessels; description of fishing conditions on local banks.

1939(*2*). Investigation of tuna fishing in the Western Caroline Islands, 1936 [in Japanese]. Nanyō-chō suisan shikenjō jigyō hōkoku (Prog. Rep. So. Seas Gov.-Gen. Fish. Expt. Stn), 2(1936-37) : 13-17.

Results of exploratory longline fishing.

1939(*3*). Investigation of fishing grounds out of the territorial seas in the South Seas, 1936 [in Japanese]. Nanyō-chō suisan shikenjō jigyō hōkoku (Prog. Rep. So. Seas Gov.-Gen. Fish. Expt. Stn), 2(1936-37) : 22-25.

Summary of exploratory longline fishing in Indonesian waters; observations of fish schools.

1939(*4*). Investigation of skipjack fishing in the central Caroline Islands, 1937 [in Japanese]. Nanyō-chō suisan shikenjō jigyō hōkoku (Prog. Rep. So. Seas Gov.-Gen. Fish. Expt. Stn), 2(1936-37) : 63-68.

Results of exploratory livebait fishing in Woleai waters; observations of skipjack schools; 100 skipjack tagged.

1939(*5*). Investigation of skipjack fishing in Yap waters, 1937 [in Japanese]. Nanyō-chō suisan shikenjō jigyō hōkoku (Prog. Rep. So. Seas Gov.-Gen. Fish. Expt. Stn), 2(1936-37) : 69-75.

Results of exploratory livebait fishing; five samples examined for length, weight, sex and condition.

1943(*1*). Investigation of albacore fishing in the Central Pacific [in Japanese]. Nanyō-chō suisan shikenjō jigyō hōkoku (Prog. Rep. So. Seas Gov.-Gen. Fish. Expt. Stn), 4(1939) : 1-13.

Summary of three exploratory longline cruises.

1943(*2*). Investigation of tuna fishing in waters of Palau [in Japanese]. Nanyō-chō suisan shikenjō jigyō hōkoku (Prog. Rep. So. Seas Gov.-Gen. Fish. Expt. Stn), 4(1939) : 13-22.

Results of exploratory longline fishing.

SOUTH SEAS GOVERNMENT-GENERAL FISHERIES SECTION

1937. Annual catch statistics of skipjack [in Japanese]. Nanyō suisan jōhō (So. Sea Fish. News), (3) : 24-25.

Tables of catches by species, areas, and year for 1922-1935 in the South Seas.

SPRAGUE, LUCIAN M.

1961. Erythrocyte antigens of the oceanic skipjack (*Katsuwonus pelamis*) recognized by phytoagglutinins. (Abstract). Rec. Genet. Soc. Am., (30) : 111.

SPRAGUE, LUCIAN M., continued

1963. Subpopulations. *In:* Wilvan G. van Campen (Ed.), Progress in 1961-62. Circ. U. S. Fish Wildl. Serv., (163) : 10-12.

Subpopulation studies based on blood groups.

SPRAGUE, LUCIAN M. and JAMES R. HOLLOWAY

1962. Studies of the erythrocyte antigens of the skipjack tuna (*Katsuwonus pelamis*). Am. Nat., 96(889) : 233-238.

Serological differentiation of populations in the Central Pacific.

SPRAGUE, LUCIAN M., JAMES R. HOLLOWAY, and LESLIE I. NAKASHIMA

1963. Studies of the erythrocyte antigens of albacore, bigeye, skipjack, and yellowfin tunas and their use in subpopulation identification [French and Spanish abstracts]. *In:* Rosa, H., Jr. (Ed.) Proceedings of the World Scientific Meeting on the Biology of Tunas and Related Species. FAO, Fish. Rep., 3(6) : 1381-1393.

Blood-group systems and blood factors discussed in relation to population structure.

SPRAGUE, LUCIAN M., and LESLIE I. NAKASHIMA

1962(*1*). A comparative study of the erythrocyte antigens of certain tuna species p. 36 (Abstract). *In:* J. C. Marr (Ed.) Pacific Tuna Biology Conference—August 14-19, 1961—Honolulu, Hawaii. Spec. Scient. Rep. U. S. Fish Wildl. Serv., (415) : 45 p.

1962(*2*). Studies on the erythrocyte antigens of the skipjack tuna (*Katsuwonus pelamis*), p. 36-37 (Abstract). *In:* J. C. Marr (Ed.) Pacific Tuna Biology Conference—August 14-19, 1961—Honolulu, Hawaii. Spec. Scient. Rep. U. S. Fish Wildl. Serv., (415) : 45 p.

Blood groups; population study.

SQUIRE, JAMES L., JR.

1963. Atlas of eastern Pacific marine game fishing. Circ. U. S. Fish Wildl. Serv., (174) : 8 p. 21 charts.

Sport-fishing grounds in Hawaiian waters.

STARKS, EDWIN CHAPIN

1918(*1*). The mackerel and mackerel-like fishes of California. Calif. Fish Game, 4(3) : 118-129.

1918(*2*). On common names of fishes. Calif. Fish Game 4(4) : 179-180.

STARKS, EDWIN CHAPIN and EARL LEONARD MORRIS

1907. The marine fishes of southern California. Univ. Calif. Publs Zool., 3(11) : 159-251.

Occurrence recorded.

STEAD, DAVID G.

1906. Fishes of Australia. W. Brooks, Sydney: 278 p.

Description; distribution.

1908. The edible fishes of New South Wales. Department of Fisheries, New South Wales, Sydney: 123 p.

Description; distribution.

STEINBECK, JOHN and EDWARD F. RICKETTS

1941. Sea of Cortez—A leisurely journal of travel and research with a scientific appendix comprising materials for a source book on the marine animals of the Panamic faunal province. Viking Press, New York: 598 p.

Record of captures.

STRASBURG, DONALD W.

1958. Distribution, abundance, and habits of pelagic sharks in the Central Pacific Ocean. Fishery Bull. Fish Wildl. Serv., U. S., 58(138) : 335-361.

Shark damage to longline-caught tuna.

1959. Underwater observations on the behavior of Hawaiian tuna (Abstract). Proc. Hawaii. Acad. Sci.: 21.

Response to different kinds of baitfishes; response to various physical and chemical stimuli.

1960. Estimates of larval tuna abundance in the Central Pacific. Fishery Bull., U. S. Fish Wildl. Serv., 60(167) : 231-255.

Larval ecology as determined from plankton collections.

1961. Diving behavior of Hawaiian skipjack tuna. J. Cons. Int. Explor. Mer, 26(2) : 223-229.

Relation of diet on behavior.

STRASBURG, DONALD W. and JOHN C. MARR

1961. Banded color phases of two pelagic fishes, *Coryphaena hippurus* and *Katsuwonus pelamis*. Copeia (2) : 226-228.

Underwater observation on the coloration pattern.

STRASBURG, DONALD W. and H. S. H. YUEN

1960(*1*). Preliminary results of underwater observations of tuna schools and practical application of these results. Proc. Indo-Pacif. Fish. Coun., 8 Sect., 3 : 84-89.

1960(*2*). Progress in observing tuna underwater at sea. J. Cons. Int. Explor. Mer, 26(1) : 80-93.

Methods for behavior studies at sea.

SUDA, AKIRA

1953. Juvenile skipjack from the stomach contents of tunas and marlins [in Japanese with an English summary]. Bull. Jap. Soc. Scient. Fish., 19(4) : 319-327.

Seasonal and geographic distribution of occurrences of young and juvenile; determination of spawning time and nursery areas; identification of young.

1961(*1*). Tuna tagging experiments [in Japanese]. Maguro kenkyu panfuretto (Tuna Res. Pamph., Nankai), 6. (Extracted from Hokuyō [No. Pacif.], 6[1]) : without pagination.

144 troll- and handline-caught skipjack tagged in Northwestern Pacific 1957-59.

1961(*2*). Tagging experiments of tuna [in Japanese]. Tuna Fishg, 76 : 9-12.

Preliminary tagging experiments conducted aboard the "Shunyo-maru" in Micronesian waters, 1957-1959.

SUGIMURA, KEI-ICHIROH, H. TAIRA, N. HOSHINO, H. EBISAWA and T. NAGAHARA

1954. The amino acid content of fish muscle protein. Bull. Jap. Soc. Scient. Fish., 20(6) : 520-524.

Six marine species analyzed and compared.

SUN', TSZI-ZHEN'

1960. Lichinki i mal'ki tuntsov, parusnikov i mech-ryby (Thunnidae, Istiophoridae, Xiphiidae) tsentral'noi i zapadnoi chasti Tikhogo okeana [in Russian]. Larvae and juveniles of tunas, sailfishes, and swordfish (Thunnidae, Istiophoridae, Xiphiidae) from the central and western part of the Pacific Ocean. Trudy Inst. Okeanol., 41 : 175-191. English translation by W. L. Klawe, Inter-American Tropical Tuna Commission, La Jolla: 18 p., 1960.

Description of larvae; spawning seasons and areas.

SUYEHIRO, YASUO

1936. The reasons why the bonito does not take baits [in Japanese]. Suppl. Rep. Fish. Inv. Imp. Fish. Expt. Stn, 3 : 14-15.

Analysis and comparison of stomach contents of skipjack taken from good-biting and poor-biting schools.

1938. The study of finding the reasons why the bonito does not take to the angling-baits [in Japanese with an English summary]. J. Imp. Fish. Expt. Stn, 9 : 87-101. (English translation by Bureau of Commercial Fisheries, Honolulu, 1960).

Analysis of biting conditions near Japan in terms of area, migratory behavior, season, weather, time of day and quality and quantity of stomach contents.

1941. On the islets of Langerhans of teleost fishes [in Japanese]. J. Imp. Fish. Expt. Stn, 11(82) : 121-138.

Anatomy of islets of Langerhans.

1942. A study on the digestive system and feeding habits of fishes. Jap. J. Zool., 10(1) : 115-119.

Anatomy of digestive system; stomach contents; difference in feeding habits of migratory and non-migratory schools.

1950. On the pituitary body of the skipjack [in Japanese with an English summary]. Bull. Physiogr. Sci. Res. Inst., Tokyo, 6(9?) : 25-27.

Anatomical and cytological description.

1951. Gyoruigaku (Textbook of ichthyology) [in Japanese]. Iwanami-shoten Publishing Co., Tokyo: 332 p.

General discussion of ecology, physiology and habitat.

SUZUKI, SHOSUKE and KINGO SUZUKI

1959. On the few problems in "purse seine fishing" in the waters off northeastern Japan [in Japanese]. Nihon suisan gakkai, Tōhoku shibu kaihō (Rep. Tōhoku Brch. Jap. Soc. Scient. Fish), 10(1, 2) : 11-23.

Discussion of technical aspects of setting purse seines around tuna schools.

TACHIKAWA, TAKUITSU

1921. General review of skipjack fisheries in Japan [in Japanese]. Suisan kenkyū shi (J. Fish. Res.), 16(5) : 140-153.

Catch by prefectures; seasonal shift of fishing grounds; fishing effort by prefecture; economic structure of fishing operations reviewed.

1924. Ocean conditions and fishing conditions in the waters adjacent to Kinkazan. 1. [in Japanese]. Teisui, 3(10) : 45-48.

1932(*1*). The rise and decline of the skipjack fishery in Ryukyu waters. 1. [in Japanese]. Suisankai (J. Fish. Soc. Japan), 590 : 93-103.

Annual catch and effort statistics of Okinawa Prefecture; oceanographic conditions in Ryukyu waters.

1932(*2*). The rise and decline of the skipjack fishery in Ryukyu waters. 2. [in Japanese]. Suisankai (J. Fish. Soc. Japan), 591 : 18-26.

Economic situation discussed; some suggestions for increasing catches; fishing development in Micronesian waters.

TAIHOKU PROVINCE FISHERIES EXPERIMENTAL STATION

1927(*1*). Experimental skipjack fishing [in Japanese]. Taihoku-shū suisan shikenjō gyōmu hōkoku (Prog. Rep. Taihoku Prov. Fish. Expt. Stn), 2(for 1925) : 28-85.

Results of 14 exploratory fishing trips to Taiwan-Ryukyu waters by a livebait research vessel; general fishing conditions by season; oceanographic conditions, weather, biting, fish size; catch and effort data of provincial fishery, by boat and month.

TAIHOKU PROVINCE FISHERIES EXPERIMENTAL STATION, continued

1927(2). Experimental skipjack fishing [in Japanese]. Taihoku-shū suisan shikenjō gyōmu hōkoku (Prog. Rep. Taihoku Prov. Fish. Expt. Stn), 3(1926) : 1-55.

Results of 24 exploratory fishing trips to Taiwan-Ryukyu waters by a livebait research vessel; general fishing conditions by season; oceanographic conditions, weather, biting, size of fish; catch and effort data of provincial commercial fishery, by boat and month; fishing related to water temperature, specific gravity and water color.

1928. Report of experimental skipjack fishing [in Japanese]. Taihoku-shū suisan shikenjō gyōmu hōkoku (Prog. Rep. Taihoku Prov. Fish. Expt. Stn), 4(1927) : 1-102.

Results of 24 exploratory fishing trips to Ryukyu waters; fishing conditions by season; oceanographic conditions; weather; biting quality; nature of schools; stomach contents; fish size; maturity; fishing conditions experienced by commercial boats; catch and landing statistics in Taiwan-Ryukyu area.

1929. Report of experimental skipjack fishing [in Japanese]. Taihoku-shū suisan shikenjō gyōmu hōkoku (Prog. Rep. Taihoku Prov. Fish. Expt. Stn), 5(for 1928) : 1-80.

Summary of 23 exploratory fishing trips by a livebait research vessel in Taiwan-Ryukyu waters; description of seasonal fishing conditions; catch statistics.

1930. Report on experimental skipjack fishing [in Japanese]. Taihoku-shū suisan shikenjō gyōmu hōkoku (Prog. Rep. Taihoku Prov. Fish. Expt. Stn), 6(for 1929) : 1-59.

Summary of 29 exploratory fishing trips by a livebait research vessel in Taiwan-Ryukyu waters.

1931. General review of skipjack fishery in Taihoku Province during 1930 [in Japanese]. Taiwan suisan zasshi (Formosa Fish. Mag.), 185 : 12-17.

Fishing conditions in 1930 in Taiwan-Ryukyu waters in relation to oceanographic conditions, migration and bait supply.

1932. Report on the investigation of skipjack fishing grounds [in Japanese]. Taihoku-shū suisan shikenjō gyōmu hōkoku (Prog. Rep. Taihoku Prov. Fish. Expt. Stn), 7(1930) : 1-17.

Summary of 15 exploratory fishing trips by a livebait research vessel in Taiwan-Ryukyu waters.

1934. Skipjack test fishing [in Japanese]. Taihoku-shū suisan shikenjō gyōmu hōkoku (Prog. Rep. Taihoku Prov. Fish. Expt. Stn), 10(for 1933) : 1-16.

Summary of 12 experimental fishing trips by a livebait research vessel in Taiwan-Ryukyu waters; results of oceanographic studies.

1935. Skipjack test fishing [in Japanese]. Taihoku-shū suisan shikenjō gyōmu hōkoku (Prog. Rep. Taihoku Prov. Fish. Expt. Stn), 11(for 1934) : 1-28.

Summary of 15 exploratory fishing trips by a livebait research vessel in Taiwan-Ryukyu waters.

1936. Skipjack test fishing [in Japanese]. Taihoku-shū suisan shikenjō gyōmu hōkoku (Prog. Rep. Taihoku Prov. Fish. Expt. Stn), 12(for 1935) : 1-28.

Summary of 10 exploratory fishing trips by a livebait research vessel in Taiwan-Ryukyu waters; relationship between catches and water temperature.

TAKADA, KOJI and U. NISHIMOTO

1955. On the modified methods of choline estimation [in Japanese with an English summary]. Mem. Fac. Fish. Kagoshima Univ., 4 : 85-89.

Abundance and distribution of choline in various organs of skipjack and mackerel.

TAKAHASHI, NISUKE

1924. On the order plecostei established by Dr. Kishinouye [in Japanese]. Zool. Mag., Tokyo, 36(432) : 397-408. (Translation *In:* Spec. Scient. Rep. U. S. Fish

TAKAHASHI, NISUKE, continued

Wildl. Serv., [50] : 3-16).

Comment and criticism on establishment of Order Plecostei.

1926. On the Plecostei, an order of the Teleostoma established by Prof. Kishinouye. J. Coll. Agric. Imp. Univ., Tokyo, 7(4) : 383-398.

New Order Plecostei by Kishinouye critically reexamined from anatomical viewpoint.

TAKAMI,

1950. Review of skipjack fisheries in 1950 [in Japanese]. Mie-ken suisan shikenjō jihō (News Bull. Mie Pref. Fish. Expt. Stn), (165) : 24-25.

Seasonal skipjack fishing conditions off eastern Japan in relation to water temperature and currents.

TAKAYAMA, I., N. IKEDA and S. ANDO

1934. A study of the "Katsuwo" (*Katsuwonus pelamis*) fishing in 1930 [in Japanese with an English summary]. J. Imp. Fish. Expt. Stn, Tokyo, 5: 23-56.

Seasonal fishing grounds and catches discussed in relation to water temperature; catch records from prefectural research vessels.

TAKAYAMA, ITARO and H. YOSHIDA

1933. An investigation of the present position of the important fisheries [in Japanese with an English summary]. J. Imp. Fish. Expt. Stn, Tokyo, 3 : 1-36.

Geographic distribution of skipjack fishing effort; description of skipjack fleet; catch and landing data by area and type of gear; description of fishing areas off Japan.

TAKAYAMA, SHIGENE

1963. Fishing techniques for tunas and skipjack [French and Spanish abstracts]. *In:* Rosa, H., Jr., (Ed.) Proceedings of the World Scientific Meeting on the Biology of Tunas and Related Species. FAO, Fish. Rep. 3(6) : 1067-1076.

TAKEDA, SHIGEO

1941. History of skipjack and tuna fisheries [in Japanese]. Suisan-kai (J. Fish. Soc. Japan), 700 : 57-59.

TANAKA, SHIGEHO

1912. Figures and description of the fishes of Japan, including Riukiu Islands, Bonin Islands, Formosa, Kurile Islands, Korea and Southern Sakhalin [in English and Japanese]. Maruzen Co., Tokyo, 8 : 129-144.

1926. The food fishes of Japan and their gastronomical value [in Japanese]. Nankō-sha, Tokyo: 310.

Description; notes on behavior and ecology; common names; market value of fishes.

1931. On the distribution of fishes in Japanese waters. J. Fac. Sci., Toyko Univ., Section 4, Vol. 3, Part 1: 22, 50.

Relation between distribution and water temperature.

1951. Fishes of Japan (I-XXX). Revised [in English and Japanese]. Kazama shoten, Tokyo: 557 p.

Revised version of Tanaka (1912).

TANAKA, SHIGEHO and TOKIHARU ABE

1955. Zusetsu yūyōgyoshu senshu (Illustrated 1000 species of useful fishes) [in Japanese]. Kitamori shuppen Co., Ltd., Tokyo: 294 p. + 12 p.

Description and general outline of biology.

TANAKA, SHIGEHO, I. AMEMIYA *et al.*

1933. Yūyō yūgai kanshō suisan dōshokubutsu zusetsu (Illustration of useful, harmful and pet marine animals and plants) [in Japanese]. Daichi shoin, Tokyo: 607 p. + 46 p.

TANAKA, YU

1966. Catch of skipjack in 1965. *In:* Symposium on "shirasu," anchovy, skipjack and albacore [in Japanese]. Bull. Jap. Soc. Fish. Oceanogr., (8) : 62-63.

Fishing conditions in the Japanese and Mariana waters.

TARANETZ, A. IA.

1937. Kratki opredelitel' ryb sovetskogo Dal'nego Vostoka i prilezhashchikh vod. (Handbook for identification of fishes of Soviet Far East and adjacent waters) [in Russian]. Izv. Tikhookean. Nauchno-Issled. Inst. Ryb. Khoz. Okeanogr., 11 : 200 p.

Classification; distribution.

TAUCHI, MORISABURO

1943. On skipjack stocks [in Japanese with an English summary]. Bull. Jap. Soc. Scient. Fish., 11(5 & 6) : 179-183. (Translation *In:* Spec. Scient. Rep. U. S. Fish. Wildl. Serv., [83] : 22-31).

Migratory route in the western Pacific; fishing mortality rate based on body weight, age and tagging data.

TEMMINCK, C. J. and H. SCHLEGEL

1850. Pisces. *In:* Siebold, P. F. von, Fauna Japonica. A. Arnz et Soc., Lugduni Batavorum, 323 p. (Reprinted in 1934, Tokyo, containing: On the Pisces in Siebold's Fauna Japonica by Shigeho Tanaka, 325-345 p.).

Description; compared with description of other authors.

TEMPLE, ALAN

1963. Monofilament netting of striped tuna. Fish. Newsl. Canberra, 22(6) : 15-16.

Experimental fishing.

TENISON-WOODS, J. E.

1882. Fish and fisheries of New South Wales. Thomas Richards, Government Printer, Sydney: 213 p.

Occurrence recorded.

TERUI, KENZO

1919. Skipjack and tuna fisheries of Shizuoka Prefecture (11) [in Japanese]. Suisan kenyū shi (J. Fish. Res.), 14(1) : 7-19.

Scouting and fishing methods; swimming velocity and other aspects of behavior; migration and population structure in Japanese waters in relation to currents.

TESTER, ALBERT L.

1952. Establishing tuna and other pelagic fishes in ponds and tanks. Spec. Scient. Rep. U. S. Fish Wildl. Serv., (71) : 20 p.

1959. Summary of experiments on the response of tuna to stimuli [Summaries in French and Spanish]. *In:* Hilmar Kristjansson (Ed.) Modern fishing gear of the world. Fishing News (Books) Ltd., London: 538-542. (Reprinted in 1962).

TESTER, ALBERT L. and EUGENE L. NAKAMURA

1957. Catch rate, size, sex, and food of tunas and other pelagic fishes taken by trolling off Oahu, Hawaii, 1951-55. Spec. Scient. Rep. U. S. Fish Wildl. Serv., (250) : 25 p.

TESTER, ALBERT L., HEENEY YUEN, and MICHIO TAKATA

1954. Reaction of tuna to stimuli, 1953. Spec. Scient. Rep. U. S. Fish Wildl. Serv., (134) : 33 p.

Response to artificial bait and liquid attractants.

TESTER, ALBERT L., P. B. VAN WEEL, and JOHN J. NAUGHTON

1955. Response of tuna to chemical stimuli. Spec. Scient. Rep. U. S. Fish Wildl. Serv., (130) : 1-62.

Trolling for pelagic fishes.

THILENIUS, G.

1900. Bonito—und Haifang in Alt-Samoa [in German]. Globus, Hildburghausen, Brunswich, 78 : 127-128.

Fishing methods and school size.

THOMPSON, HAROLD

1943. Australian fisheries investigations. Some conclusions reached during the quinquennium 1938-1943. J. Coun. Scient. Ind. Res. Aust., 16(4) : 279-286.

Distribution; seasonal occurrence.

THOMPSON, WILL F.

1917. Rare fish appear off southern California. Calif. Fish Game, (4) : 182-183.

Occurrence.

1919(*1*). The recurrence of the frigate mackerel. Calif. Fish Game, 5(4) : 200.

Caught with other fish.

1919(*2*). The absence of the dolphin fish. Calif. Fish Game, 5(4) : 203.

Seasonal appearance.

1919(*3*). The occurrence of the albacore north of San Francisco. Calif. Fish Game, 5(4) : 203-204.

Occurrence.

TINKER, SPENCER WILKIE

1944. Hawaiian fishes—a handbook of the fishes found among the islands of the Central Pacific Ocean. Honolulu, Tongg Publishing Co.: 404 p.

Description, distribution; common names.

TOGASAWA, YOSHIHISA

1957. Effects of metal ions on the glycylglycine dipeptidase—III. On the active ground of the glycylglycine dipeptidase [in Japanese with an English summary]. Bull. Jap. Soc. Scient. Fish., 23(2) : 105-108.

Effects of sulf-hydryl reagents on the activity of glycylglycine dipeptidase extracted from skipjack pyloric caeca.

1958(*1*). Effects of metal ions on the glycylglycine dipeptidase—IX. On the states of Mg in enzyme solution of pyloric caeca [in Japanese with an English summary]. Bull. Jap. Soc. Scient. Fish., 24(3) : 186-190.

1958(*2*). Effects of metal ions on the glycylglycine dipeptidase—X. On the mechanism of Mg^{++} participation in the formation or active glycylglycine dipeptidase [in Japanese with an English summary]. Bull. Jap. Soc. Scient. Fish., 24(3) : 191-195.

Study of interrelationship between Mg and the enzyme, glycylglycine dipeptidase contained in skipjack pyloric caeca.

TOGASAWA, YOSHIHISA and TEIZO KATSUMATA

1956. Effects of metal ions on the glycylglycine dipeptidase—II. [in Japanese with an English summary]. Bull. Jap. Soc. Scient. Fish., 21(10) : 1070-1075.

Effects of various metal ions on the activity of the gylcylglycine dipeptidase extracted from skipjack pyloric caeca.

TOHOKU REGIONAL FISHERIES RESEARCH LABORATORY

1955. Skipjack (*Katsuwonus pelamis*) [in Japanese]. Ann. Rep. Fish Resor. Tohoku Reg. Fish. Res. Lab., in 1951, Sect. 2: 132 p.

Review of livebait fishery in Japanese waters; catch, effort, catch-per-unit-of-effort (CPUE), fishing conditions, occurrence of schools associated with floating objects, biting condition, school size, body, length-weight relationship, age, gonad weight-body length relationship, and morphometric measurements analyzed by area and season; catch statistics and CPUE by half-degree areas and 10-day periods; fishing condition by area and season in relation to oceanographic conditions.

1957. Skipjack (*Katsuwonus pelamis*) [in Japanese]. Ann. Rep. Fish Resor. Tohoku Reg. Fish. Res. Lab. in 1952, Sect. 2: 132 p.

Review of livebait fishery in Japanese waters; catch, effort, catch-per-unit-of-effort (CPUE), fishing conditions, occurrence of schools associated with floating objects, biting conditions, school size, body length-weight relationship, age, gonad weight-body length relationship, and morphometric measurements analyzed by area and season; catch statistics and CPUE by half-degree areas and 10-day periods; fishing conditions by area and season in relation to oceanographic conditions.

1959(*1*). Current report of fishing conditions of bluefin tuna, albacore, skipjack and saury for 1959 [in Japanese]. Tohoku kaiku suisan kenkyūsho gyokyō sokuhō (Curr. Rep. Fish. Cond. Tohoku Reg. Fish. Res. Lab.), 1-46. (Issued every 5 days and later combined into one volume).

Relation of fishing conditions to currents and water temperature off northern Japan by five-day periods; catch and effort statistics; distribution of various types of schools; short-term predictions of fishing conditions; horizontal and vertical distribution of water temperature.

1959(*2*). Skipjack (*Katsuwonus pelamis*) [in Japanese]. Ann. Rep. Fish Resor. Tohoku Reg. Fish. Res. Lab., in 1953, Sect. 2: 93 p.

Review of livebait fishery in Japanese waters; relation of seasonal fishing condition to oceanographic condition by area; catch statistics and catch-per-unit-of-effort by half-degree areas and 10-day periods; catch, effort, fishing conditions, occurrence of schools associated with floating objects, biting conditions, school size, length-weight relationship, size composition, and growth analyzed by time and area.

1960(*1*). Current report of fishing conditions of bluefin tuna, albacore, skipjack and saury for 1960 [in Japanese]. Tohoku kaiku suisan kenkyūsho gyokyō sokuhō (Curr. Rep. Fish. Cond. Tohoku Reg. Fish. Res. Lab.), 1-46. (Issued every 5 days and later combined into one volume).

Relation of fishing conditions to currents and water temperature off northern Japan by five-day periods; catch and effort statistics; distribution of various types of schools; short-term predictions of fishing conditions horizontal and vertical distribution of water temperature.

1960(*2*). Skipjack (*Katsuwonus pelamis*) [in Japanese]. Ann. Rep. Fish Resor. Tohoku Reg. Fish. Res. Lab., in 1954, Sect. 2: 98 p.

Review of livebait fishery in Japanese waters; seasonal fishing condition by area in relation to oceanographic conditions; catch statistics; catch, effort, fishing conditions, occurrence of schools associated with floating objects, biting conditions, school size, size composition, and populations analyzed by time and area.

1961(*1*). Current report of fishing conditions of bluefin tuna, albacore, skipjack and saury for 1961 [in Japanese]. Tohoku kaiku suisan kenkyūsho gyokyō sokuhō (Curr. Rep. Fish. Cond. Tohoku Reg. Fish. Res. Lab.), 1-46. (Issued every 5 days and later combined into one volume).

Review of livebait fishery in Japanese waters; catch, effort, catch-per-unit-of-effort; fishing

TOHOKU REGIONAL FISHERIES RESEARCH LABORATORY, continued

fleet; relation of seasonal changes in fishing grounds and fishing condition to oceanographic conditions; seasonal variation in size composition by areas.

1961(*2*). Skipjack (*Katsuwonus pelamis*) [in Japanese]. Ann. Rep. Fish Resor. Tohoku Reg. Fish. Res. Lab., in 1955, Sect. 2: 55 p.

Review of livebait fishery in Japanese waters; catch, effort, catch-per-unit-of-effort; fishing fleet; relation of seasonal changes in fishing grounds and fishing condition to oceanographic conditions; seasonal variation in size composition by areas.

1962(*1*). Current report of fishing conditions of bluefin tuna, albacore, skipjack and saury for 1962 [in Japanese]. Tohoku kaiku suisan kenkyūsho gyokyō sokuhō (Curr. Rep. Fish. Cond. Tohoku Reg. Fish. Res. Lab.), 1-46. (Issued every 5 days and later combined into one volume).

Relation of fishing conditions to currents and water temperature off northern Japan by five-day periods; school types, and their distribution; short-term predictions of fishing conditions; horizontal and vertical distribution of water temperature; length composition by areas.

1962(*2*). Skipjack (*Katsuwonus pelamis*) [in Japanese]. Ann. Rep. Fish Resor. Tohoku Reg. Fish. Res. Lab., in 1956, Sect. 2: 62 p.

Review of livebait fishery in Japanese waters; relation of seasonal fishing conditions to oceanographic conditions by area; catch statistics and catch-per-unit-of-effort by half-degree areas and 10-day periods; catch, effort, fishing conditions, occurrence of schools associated with floating objects, biting conditions, school size, length-weight relationship, size composition, and growth analyzed by time and area.

1963(*1*). Current report of fishing conditions of bluefin tuna, albacore, skipjack and saury for 1963 [in Japanese]. Tohoku kaiku suisan kenkyūsho gyokyō sokuhō (Curr. Rep. Fish. Cond. Tohoku Reg. Fish. Res. Lab.), 1-46. (Issued every 5 days and later combined into one volume).

Relation of fishing conditions to currents and water temperature off northern Japan by five-day periods; school types, and their distribution; short-term predictions of fishing conditions; horizontal and vertical distribution of water temperature; length composition by areas.

1963(*2*). Skipjack (*Katsuwonus pelamis*) [in Japanese]. Ann. Rep. Fish Resor. Tohoku Reg. Fish. Res. Lab., from 1957 to 1959, Sect. 2: 114 p.

Catch, effort and catch-per-unit-of-effort statistics of commercial livebait and purse-seine fisheries of Japan, by one-degree squares and ten-day periods; size, composition of catches by month and area; average weight of size classes; distribution of skipjack densities.

TOHOKU REGIONAL FISHERIES RESEARCH LABORATORY
MARINE RESOURCES DIVISION

1952. Katsuo ni tsuite (About skipjack) [in Japanese]. Tohoku suiken sōsho (Edu. Ser. Tohoku Reg. Fish. Res. Lab.), (1) : 31 p.

Summaries of past skipjack research; history of fishery; population structure; age and growth; tagging; relation between biting conditions and stomach contents, biting conditions and types of schools, relation of abundance to oceanographic conditions; geographical, vertical, and seasonal distribution; scouting with echo sounders; methods of predicting fishing conditions.

1955. Current report of fishing conditions of skipjack and saury for 1955 [in Japanese]. Tohoku kaiku suisan kenkyūsho gyokyō sokuhō (Curr. Rep. Fish. Cond. Tohoku Reg. Fish. Res. Lab.), 1-46 for 1955. (Issued every 5 days and later combined into one volume).

Relation of fishing conditions to currents and water temperature by five-day periods; catch and effort statistics; distribution of various types of schools; short-term prediction of fishing conditions.

1957. Current report of fishing conditions of albacore, skipjack and saury for 1957 [in Japanese]. Tohoku kaiku suisan kenkyūsho gyokyō sokuhō (Curr. Rep. Fish.

TOHOKU REGIONAL FISHERIES RESEARCH LABORATORY
MARINE RESOURCES DIVISION, continued

Cond. Tohoku Reg. Fish. Res. Lab.), 1-46. (Issued every 5 days and later combined into one volume).

Relation of fishing conditions to currents and water temperature off northern Japan by 5-day periods; catch and effort statistics; distribution of various types of schools; short-term predictions of fishing conditions; horizontal and vertical distribution of water temperature.

TOHYAMA, YUZO, S. TETSUMOTO, S. FUKUYA and S. YAMADA

1941. Studies on fish in Japan as a source of insulin. Bull. Jap. Soc. Scient. Fish., 10(4) : 153-155.

Analysis of amounts of insulin extracted from Langerhans islets of eight species of fish.

TOKAI UNIVERSITY, FISHERIES RESEARCH LABORATORY

1962. Skipjack resources. The 4th and 5th cruises of Tokai Daigaku-Maru [in Japanese]. Tokai daigaku suisan kenkyū-sho chōsa shiken hōkoku (Res. Rep. Tokai Univ. Fish. Res. Lab.) for 1962: 18 p.

Catches, oceanographic data, general fishing conditions, number, nature and size of fish schools observed during two trips of research baitboat in waters southeast of Japan; size composition of sedentary and migratory skipjack; vertical distribution studied by fish finders during fishing.

TOMINAGA, SEIJIRO

1943. Skipjack [in Japanese]. Kaiyō no kagaku (Sci. Sea), 3(10) : 460-465.

Outline of life history; behavior and habitat determined from type of fishing.

1957. Katsuo—shūsei to gyohō (Skipjack behavior and fishing methods) [in Japanese]. Ishisaki-shoten Co., Tokyo: 160 p.

General description of Japanese skipjack fisheries; relation of fishing to oceanographic conditions; migration; abundance; yearly fluctuation; spawning; population structure; effect of fishing on the population; behavior (migration, schooling, biting, etc.) in relation to fishing methods, etc.

1965. Anatomical sketches of 500 fishes (Gohyaku-shu gyotai kaibō zusetsu) (1) [in Japanese]. (Divided into two books as plates and text). Kadokawa-shoten, Tokyo (edited by Shibusawa, Keizo): plates, 191 p. text, 274 p.

Comparative anatomy of fish with special emphasis on feeding habits and anatomy of mouth; illustrations; ecology, food and behavior compared between species; fishing methods; distribution, migration and fishing conditions relative to oceanographic conditions; population size; illustration and description of normal and abnormal specimens.

TOMIYAMA, ICHIRO, T. ABE and T. TOKIOKA

1958. Colored illustrations of animals (Genshoku dōbutsu dai-zukan), Vol. II (Fishes) [in Japanese]. Hokuryū-kan, Tokyo: 392 p. + 86 p.

Short description; common names; taxonomy; distribution.

UCHIDA, KEITARO

1923. On the jumping and flight of fishes and other marine animals [in Japanese]. Suisan gakkai hō (Proc. Scient. Fishery Ass.), 4(1) : 43-73.

Discussion of motivation; classification.

1930. Gyo-rui, enkō-rui, tōsaku-rui (Fishes, Cyclostomes and Ostracoderms) [in Japanese]. *In:* Iwanami-kōza, Seibutsu-gaku (Iwanami Lecture Series—Biol.), Iwanami-shoten Co., Tokyo: 118 p.

Behavior and ecology.

1966. Sakana imei-shō (Common names of fishes) [in Japanese]. Asahi-shimbun-sha, Tokyo, 223 p. + 33 p.

Also includes classification and distribution in Japanese waters.

UCHIDA, RICHARD N.

1961. Hermaphrodite skipjack. Pacif. Sci., 15(2) : 294-296.

1966. The skipjack tuna fishery in Hawaii. *In:* Thomas A. Manar (Ed.), Proceedings, Governor's Conference on Central Pacific Fishery Resources, State of Hawaii: 147-159.

UCHIHASHI, KIYOSHI

1953. Ecological study of Japanese teleosts in relation to the brain morphology [in Japanese]. Bull. Japan Sea Reg. Fish. Res. Lab., (2) : 166 p.

Anatomy of brain; ecology; fishing methods; food; behavior discussed in relation to the brain.

UDA, MICHITAKA (MITITAKA)

1931. Studies of skipjack fishing conditions north of Zunan in 1930 [in Japanese]. Suisan butsuri danwakai kaihō (Bull. Fish. Phys. Disc. Group), (21) : 289-292.

Relation of catch to surface water temperature; annual variation of fishing grounds relative to strength of currents.

1932. On the body-weight of some scombroid fishes of Japan [in Japanese with an English summary]. Bull. Jap. Soc. Scient. Fish., 1(3) : 124-129. (The report is identical with that in "Suisan butsuri danwakai kaihō, 35 : 610-619").

Changes in body weight due to growth and exploitation of populations or age groups.

1933. The shoals of "Katuwo" and their angling [in Japanese with an English summary]. Bull. Jap. Soc. Scient. Fish., 2(3) : 107-111. (Translation *In:* Spec. Scient. Rep. U. S. Fish Wildl. Serv., [83] : 68-78.)

Distribution of schools associated with floating objects and oceanographic conditions; density, biting conditions and catchability analyzed in relation to types of schools and stomach contents.

1935(*1*). Skipjack schools congregating along current boundaries [in Japanese]. Kagaku (Science), Tokyo, 5(12) : 503-504.

Investigations off northeastern Japan.

1935(*2*). The results of simultaneous oceanographical investigations in the North Pacific ocean adjacent to Japan made in August, 1933 [in Japanese with an English summary]. J. Imp. Fish. Expt. Stn, Tokyo, 6 : 1-130.

Brief discussion of distribution and fishing conditions in relation to oceanographic conditions.

1936. Locality of fishing centre and shoals of "Katuwo," *Euthynnus vagans* (Lesson) correlated with the contact zone of cold and warm currents [in Japanese with an English summary]. Bull. Jap. Soc. Scient. Fish., 4(6) : 385-390.

Includes discussion of migratory behavior as inferred from size composition and recovery of one tagged fish.

1938(*1*). Correlation of the catch of "Katuo" in the waters adjacent to Japan [in Japanese with an English summary]. Bull. Jap. Soc. Scient. Fish., 7(2) : 75-78.

Relation between early-season and peak catches; catches discussed as related to oceanographic conditions.

1938(*2*). Hydrographical fluctuation in the north-eastern sea-region adjacent to Japan of north Pacific ocean [in Japanese]. (A result of the simultaneous oceanographical investigations in 1934-1937). J. Imp. Fish. Expt. Stn, Tokyo, 9 : 1-66.

Brief discussion on the relation between annual fishing conditions and oceanographic conditions.

1939. On the characteristics of the frequency curve for the catch of "Katuo," *Euthynnus vagans* (Lesson), referred to the water temperature [in Japanese with an English summary]. Bull. Jap. Soc. Scient. Fish., 8(4) : 169-172.

Analysis of catches relative to oceanographic conditions.

UDA, MICHITAKA (MITITAKA), continued

1940(*1*). The time and duration of angling and the catch of "Katuo," *Euthynnus vagans* (Lesson) [in Japanese with an English summary]. Bull. Jap. Soc. Scient. Fish., 9(3) : 103-106. (Translation *In:* Spec. Scient. Rep. U. S. Fish Wildl. Serv., [51] : 18-24).

Relation of catch to time of day, fishing time.

1940(*2*). A note on the fisheries condition of "Katuo" as a function of several oceanographic factors [in Japanese with an English summary]. Bull. Jap. Soc. Scient. Fish., 9(4) : 145-148. (Translation *In:* Spec. Scient. Rep. U. S. Fish Wildl. Serv., [51] : 1-11).

Distribution of fishing effort analyzed in terms of surface water temperature, water temperature at 100 m, salinity, and water transparency.

1940(*3*). On the recent anomalous hydrographical conditions of the Kuroshio in the south waters off Japan proper in relation to the fisheries [in Japanese with an English summary]. J. Imp. Fish. Expt. Stn, Tokyo, 10 : 231-278.

1941. The body-temperature and the bodily features of Katuo" and "Sanma" [in Japanese with an English summary]. Bull. Jap. Soc. Scient. Fish., 9(6) : 231-236. (Translation *In:* Spec. Scient. Rep. U. S. Fish Wildl. Serv., [51] : 18-24).

Body temperature compared with water temperature.

1948. On the abnormal oceanographic conditions in 1941 and 1942 and the skipjack fishing conditions [in Japanese]. Appl. Meteo., Sapporo, 2(3) : 6-12.

1952. On the relation between the variation of the important fisheries conditions and the oceanographical conditions in the adjacent waters of Japan 1. J. Tokyo Univ. Fish., 38(3) : 363-389.

1953(*1*). On the convergence and divergence in the NW Pacific in relation to the fishing grounds and productivity. Bull. Jap. Soc. Scient. Fish., 19(4) : 435-438.

Includes some discussion of relationship between fishing grounds and water mass boundaries.

1953(*2*). The Kuroshio and its branch currents in the seas adjacent to Hachijo Island in relation to fisheries (Report I). Rec. Oceanogr. Wks Jap., 1(1) : 1-10.

1956(*1*). Researches on the fisheries grounds in relation to the scattering layer of supersonic wave (Introductory report). J. Tokyo Univ. Fish., 42(2) : 103-111.

Relationships among occurrences of deep scattering layer, fishing grounds and oceanographic conditions discussed.

1956(*2*). On the circulation in the north Pacific in relation to pelagic fisheries. Proc. Pacif. Sci. Congr., 3 (Oceanography) : 663-672.

1957. A consideration on the long years trend of the fisheries fluctuation in relation to sea conditions. Bull. Jap. Soc. Scient. Fish., 23(7 & 8) : 368-372.

1958. Enrichment patterns resulting from eddy systems. Proc. Pacif. Sci. Congr., 16 (Oceanography) : 91-93.

Influence of eddies on the aggregation of fish.

1961. Fisheries oceanography in Japan, especially on the principles of fish distribution, concentration, dispersal and fluctuation. Rep. Calif. Coop. Oceanic Fish. Invest., 8 : 25-31.

Influence of oceanographic environment on distribution and availability.

1962(*1*). Cyclical fluctuation of the Pacific tuna fisheries in response to cold and warm water intrusions, p. 39 (Abstract). *In:* J. C. Marr (Ed.) Pacific Tuna Biology Conference—August 14-19, 1961—Honolulu, Hawaii. Spec. Scient. Rep. U. S. Fish Wildl. Serv., (415) : 45 p.

1962(*2*). Localized concentration of tunas in the eddies along oceanic fronts, p. 39-40 (Abstract). *In:* J. C. Marr (Ed.) Pacific Tuna Biology Conference—August 14-

UDA, MICHITAKA (MITITAKA), continued

19, 1961—Honolulu, Hawaii. Spec. Scient. Rep. U. S. Fish Wildl. Serv., (415) : 45 p.

1962(*3*). Fisheries oceanography in general [in Japanese] (Abstract). *In:* Summary proceedings of symposium on what is fisheries oceanography. Bull. Jap. Soc. Fish. Oceanogr., (1) : 39-44.

Longterm population fluctuation in relation to oceanographic conditions.

1963(*1*). Kaiyō gyojō gaku (Fisheries-Oceanography Science) [in Japanese]. Suisan-gaku zenshū (Fish. Sci. Ser.), Tokyo, 16 : 347.

1963(*2*). Two skipjack tagged by U. S. migrated to Hawaii [in Japanese]. Bull. Jap. Soc. Fish. Oceanogr., (3) : 126-127.

1966(*1*). New interpretation on the relationship between oceanographic condition and tuna resources and fishing conditions [in Japanese]. *In:* Summary of proceedings of Tuna Fisheries Research Conference 1965. Tuna Fishg, (43) : 44-45.

Migration related to ocean currents.

1966(*2*). Resource and migratory route of skipjack and tuna in relation to ocean structure in the Pacific [in Japanese]. *In:* Symposium on "Shirasu," anchovy, skipjack and albacore. Bull. Jap. Soc. Fish. Oceanogr., (8) : 74-76.

UDA, MICHITAKA and TOSHIYUKI HIRANO

1964. Fishery aspects of oceanographical researches in the Kuroshio waters. Information paper presented at the Meeting of Marine Science Experts on the Kuroshio Region for Formulating Basic Plans of the Cooperative Study of the Kuroshio and Adjacent Region (Japanese version *In:* Bull. Jap. Soc. Fish. Oceanogr., [4] : 156-162).

Relationship between distribution and currents; future problems.

UDA, MICHITAKA and MAKOTO ISHINO

1958. Enrichment pattern resulting from eddy systems in relation to fishing grounds. J. Tokyo Univ. Fish., 44(1-2) : 105-129.

Includes an analysis of ocean eddies based on model experiments.

UDA, MITITAKA and JIRO TSUKUSHI

1934. Local variations in the composition of various shoals of "Katuwo," *Euthynnus vagans* (Lesson), in several sea-districts of Japan [in Japanese with an English summary]. Bull. Jap. Soc. Scient. Fish., 3(4) : 196-202. (Translation *In:* Spec. Scient. Rep. U. S. Fish Wildl. Serv., [83] : 51-67).

Migration routes and population structure inferred from seasonal variations in fish size.

UDA, MITITAKA and N. WATANABE

1938. Autumnal fishing of skipper and bonito influenced the rapid hydrographic change after the pass of cyclones [in Japanese with an English summary]. Bull. Jap. Soc. Scient. Fish., 6(5) : 240-242.

UEHARA, SUSUMU

1962. Fishery oceanography around Enshu Nada off the central Pacific coast of Honshu—I. Oceanographic condition for skipjack and *shirasu* fisheries [in Japanese with an English summary]. Bull. Tokai Reg. Fish. Res. Lab., 35 : 55-66.

Distribution of fishing grounds in relation to temperature at 200 m.

UEYANAGI, SHOJI

1965. Progress report on the ecological studies of tunas and billfishes [in Japanese]. *In:* Summary of proceedings on Tuna Fisheries Research Conference, 1964. Tuna Fishg, (34 & 35) : 63-64.

Distribution and abundance of larvae based on material from stomachs of spear-fishes.

UEYANAGI, SHOJI, continued

1966(*1*). On the red pigmentation of larval tuna and its usefulness in species identification [in Japanese with an English summary]. Rep. Nankai Reg. Fish. Res. Lab., (24) : 41-48.

1966(*2*). Part I. Biology of tunas and billfishes [in Japanese with an English summary. Discussion by audience is included]. *In:* Symposium on tuna fisheries. Bull. Jap. Soc. Scient. Fish., 32(9) : 739-755, 828.

Swimming behavior; optical acuity.

UEYANAGI, SHOJI and HISAYA WATANABE

1964. Methods of identification of larvae of tunas and billfishes (II) [in Japanese]. Nankai-ku suisan kenkyū-sho, maguro gyogyō kenkyū kyōgikai shiryō (Nankai Regional Fisheries Research Laboratory, Materials for Tuna Fisheries Research Council, Kochi).

Includes descriptions, keys for identification, and size-frequency data.

UI, HOZO

1929. Kishū gyofu (Story about fishes in Kishu) [in Japanese]. Kindai Bungei-sha: 284 p.

Description; general distribution and fishing near Kii Peninsula.

ULREY, ALBERT B.

1929. A check-list of the fishes of Southern California and Lower California. J. Pan-Pacific Res. Instn, 4(4) : 2-11.

Occurrence recorded.

ULREY, ALBERT B. and PAUL O. GREELEY

1928. A list of the marine fishes (Teleostei) of southern California with their distribution. Bull. Sth. Calif. Acad. Sci., 27, pt. 1: 1-53.

Common names; synonymy.

ULRICH, HEINZ

1963. America's best deep-sea fishing. A. S. Barnes and Co., New York: 316 p.

Brief account on distribution; common names.

UMALI, AUGUSTIN F.

1950. Key to the families of common commercial fishes in the Philippines. Res. Rep. U. S. Fish Wildl. Serv., (21) : 1-47.

Includes data on distribution.

UNO, MICHIO

1965. On the migration of skipjack shoals in the Pacific coastal region of Japan [in Japanese with an English summary]. J. Fac. Fish. Prefect. Univ. Mie, 6(3) : 351-368.

Seasonal changes in fishing grounds compared in relation to oceanographic conditions.

UNO, MICHIO and TUNEO KONAGAYA

1960. Studies on the swimming noise of the fish. Bull. Jap. Soc. Scient. Fish., 26(11) : 1069-1073.

Analysis of sounds made by skipjack during live-bait fishing operations.

VAN CAMPEN, WILVAN G.

1952. Japanese mothership-type tuna-fishing operations in the western equatorial Pacific, June-October 1951. Comml Fish. Rev., 14(11) : 1-9.

Longline catches.

VAN CAMPEN, WILVAN G., continued

1953. Tuna fishing at Tahiti. Comml Fish. Rev., 15(10) : 1-4.

Description of vessels; fish distribution; fishing methods.

1954. Tuna fishing at American Samoa, January-April 1954. Comml Fish. Rev., 16(11) : 1-9.

Experiment in operating Samoan cannery with tunas (including skipjack) caught by Japanese fishing boats.

VAN CAMPEN, WILVAN G., and EARL E. HOVEN

1956. Tunas and tuna fisheries of the world—an annotated bibliography, 1930-53. Fishery Bull. Fish Wildl. Serv. U. S., 57(111) : 173-249.

VAN CLEAVE, HARLEY J.

1940. The Acanthocephala collected by the Allan Hancock Expedition, 1934. Allan Hancock Pacif. Exped., 2(15) : 512-527.

Skipjack as host.

VAN CLEVE, RICHARD

1945. Program of the Bureau of Marine Fisheries. Calif. Fish Game, 31(3) : 80-137.

Report on the research activities and plans for the future.

VAN PEL, H.

1956(*1*). A survey of fisheries resources in the British Solomon Island Protectorate with recommendations for their development. South Pacific Commission, Noumea: 32 p. (mimeogr.).

Listed; common names.

1956(*2*). A survey of fisheries in the New Hebrides with preliminary recommendations for their development. South Pacific Commission, Noumea: 27 p. (mimeogr.).

Included in fish fauna.

1956(*3*). A plan for the development of fisheries in Guam. South Pacific Commission, Noumea: 17 p. (mimeogr.).

Brief description of existing live-bait fishery.

1956(*4*). A fisheries development plan for the Caroline Islands (Trust Territory of the Pacific Islands). South Pacific Commission, Noumea: 25 p. (mimeogr.).

Economic importance.

1958. A survey of fisheries in the Tokelau Islands. South Pacific Commission, Noumea: 12 p. (mimeogr.).

Occurrence recorded; common names.

VAN PEL, H. and L. C. DEVAMBEZ

1957. The fisheries industry of French Polynesia. South Pacific Commission, Noumea: 29 p. (mimeogr.).

Tahitian fishery for skipjack described; some observations from other parts of French Polynesia.

VESEY-FITZGERALD, BRIAN and FRANCESCA LA MONTE

1949. Game fish of the world. Nicholson and Watson, London: 446 p.

Occurrence off California; marlin feeding on a school of skipjack.

VILDOSO, AURORA CHIRINOS DE

1958. Clave para la identificación de los peces peruanos de la familia Scombridae.—Presentación de las principales clasificaciones existentes sobre esta familia [in Spanish]. Ser. Divulg. Cient., Min. Agric., Lima, (9) : 23 p.

Key; description; anatomy, phylogeny.

WADE, CHARLES B.

1950(*1*). Juvenile forms of *Neothunnus macropterus*, *Katsuwonus pelamis* and *Euthynnus yaito* from Philippine seas. Fishery Bull. Fish Wildl. Serv. U. S., 51(53) : 395-404.

Description of young.

1950(*2*). Observations on the spawning of Philippine tuna. Fishery Bull. Fish Wildl. Serv. U. S., 51(55) : 409-423.

Study of gonads of troll-caught fish.

1951. Larvae of tuna and tuna-like fishes from Philippine waters. Fishery Bull. Fish Wildl. Serv. U. S., 51(57) : 445-485.

Distribution and abundance of larvae caught with plankton nets; ecology of larvae.

WAITE, EDGAR R.

1907. A basic list of the fishes of New Zealand. Rec. Canterbury Mus., 1(1) : 39 p.

Occurrence recorded.

WALDRON, KENNETH D.

1956. Variation in the occurrence and abundance of skipjack in Hawaiian waters (Abstract). Proc. Hawaii. Acad. Sci.: 21-22.

Environmental factors influencing distribution.

1963. Synopsis of biological data on skipjack *Katsuwonus pelamis* (Linnaeus) 1758 (Pacific Ocean). *In:* Rosa, H., Jr. (Ed.) Proceedings of the World Scientific Meeting on the Biology of Tunas and Related Species. FAO, Fish. Rep. 2(6) : 695-748.

Identity; distribution; bionomics; life history; population; exploitation.

1964. Fish schools and bird flocks in the Central Pacific Ocean, 1950-1961. Spec. Scient. Rep. U. S. Fish Wildl. Serv., (464) : 20 p.

Data summarized in series of charts.

WALDRON, KENNETH D. and JOSEPH E. KING

1963. Food of skipjack in the Central Pacific [French and Spanish abstracts]. *In:* Rosa, H., Jr. (Ed.) Proceedings of the World Scientific Meeting on the Biology of Tunas and Related Species. FAO, Fish. Rep., 3(6) : 1431-1457.

Study based on analysis of stomach contents.

WALFORD, LIONEL A.

1931. Handbook of common commercial and game fishes of California. Fish. Bull., Sacramento (28) : 181 p.

Description; distribution.

1937. Marine game fishes of the Pacific Coast from Alaska to the equator. Sta Barbara Museum of Natural History, University of California Press, Berkeley: 203 p.

Description; general account of distribution and life history.

WALTERS, VLADIMIR

1966. On the dynamics of filter-feeding by the wavyback skipjack (*Euthynnus affinis*) [Spanish summary]. Bull. Mar. Sci., 16(2) : 209-221.

Position of gill covers during movement.

WANG, I-KANG

1958. Yu lei fen lei sing (Fish systematics) [in Chinese]. K'o chi wei sheng pan she, Shanghai: 597 p.

Classification; description; distribution.

WARFEL, HERBERT E.

1950. Outlook for development of a tuna industry in the Philippines. Res. Rep. U. S. Fish Wildl. Serv., (28) : 37 p.

History of fishery; exploration for tunas; description; distribution.

WATANABE, HARUO

1940. Fishing conditions south of the Marshall Islands [in Japanese]. Nanyō suisan (So. Sea Fish.) 58, 6(3) : 12-19; 59, 6(4) : 14-25; 60, 6(5) : 9-15. (Translation *In:* Spec. Scient. Rep. U. S. Fish Wildl. Serv., [43] : 23 p.)

Results of experimental fishing by trolling and longlining.

WATANABE, HISAYA

1958. On the difference of stomach contents of the yellowfin and bigeye tunas from the western equatorial Pacific [in Japanese with an English summary]. Rep. Nankai Reg. Fish. Res. Lab., (7) : 72-81.

Vertical distribution of young skipjack inferred from their occurrence in stomach contents of tuna and marlin.

1960. Regional differences in food composition of the tunas and marlins from several oceanic areas [in Japanese with an English summary]. Rep. Nankai Reg. Fish. Res. Lab., (12) : 75-84.

Mean weight of skipjack found in stomach contents of tunas and billfishes by area, time, and season.

WATANABE, NOBUO

1942. Specific gravity, body temperature and swimming velocity of skipjack [in Japanese]. Bull. Jap. Soc. Scient. Fish., 11(4) : 146-148.

WATANABE, HISAYA and S. UEYANAGI

1962. Methods of identification of larvae of tunas and billfishes (I) [in Japanese]. Nankai-ku suisan kenkyū-sho, maguro gyogyō kenkyū kyōgikai shiryō (Nankai Regional Fisheries Research Laboratory, Materials for Tuna Fisheries Research Council, Kochi), Feb., 1962: 17 p.

WELSH, J. P.

1950(*1*). Preliminary report of Division of Fish and Game bait program. Spec. Bull. Div. Fish Game, Hawaii, (2), Fishery Research Report I, (1), Sec. 1: 1-25.

Commercial catch related to availability of bait.

1950(*2*). A preliminary study of food and feeding habits of Hawaiian kawakawa, mahimahi, ono, aku and ahi. Spec. Bull. Div. Fish Game, Hawaii, (2), Fishery Research Report I, (2) : 1-26.

Analysis of stomach contents of commercially-caught fish.

1950(*3*). A trolling survey of Hawaiian waters. Spec. Bull. Div. Fish Game, Hawaii, (2), Fishery Research Report I, (4) : 1-30.

Exploratory fishing using various trolling gear.

WHITEHEAD, S. S.

1929. Tuna season. Fish. Bull., Sacramento (15) : 48-49.

WHITLEY, G. P.

1949. "Fish Doctor" in Papua. Aust. Mus. Mag., 9(10) : 340-347.

Caught while trolling.

1964. Scombroid fishes of Australia and New Zealand. Symposium on Scombroid Fishes, Marine Biological Association of India, Mandapam Camp, India, Part 1: 221-254.

WILSON, CHARLES BRANCH

1937. Parasitic copepods taken during the third Hancock Expedition to the Galapagos Islands. Allan Hancock Pacif. Exped., 2(4) : 23-31.

Host for a parasitic copepod.

WILSON, PETER T.

1963. The past, present and future status of the tuna resources of the Trust Territory of the Pacific Islands [French and Spanish abstracts]. *In:* Rosa, H., Jr. (Ed.) Proceedings of the World Scientific Meeting on the Biology of Tunas and Related Species. FAO, Fish. Rep., 3(6) : 1633-1638.

WILSON, ROBERT C.

1953. Tuna marking, a progress report. Calif. Fish Game, 39(4) : 429-442.

Tagging and tagging techniques.

WILSON, ROBERT C. and THOMAS S. AUSTIN

1957. Task force in the Marquesas. Pan.-Am. Fisherm., 2(12) : 6-7, 14.

Exploratory fishing.

1959. Tuna season in the Marquesas. Pacif. Fisherm., 57(1) : 29-31.

WILSON, ROBERT C., EUGENE L. NAKAMURA and HOWARD O. YOSHIDA

1958. Marquesas area fishery and environmental data, October 1957-June 1958. Spec. Scient. Rep. U. S. Fish Wildl. Serv., (283) : 105 p.

Exploratory fishing and oceanographic conditions.

WILSON, ROBERT C. and MAURICE O. RINKEL

1957. Marquesas area oceanographic and fishery data, January-March, 1957. Spec. Scient. Rep. U. S. Fish Wildl. Serv., (238) : 135 p.

Exploratory fishing and oceanographic conditions.

YABE, HIROSHI

1951. On the distribution of larva of skipper *Cololabis saira* in the seas south of Kyushu [in Japanese with an English summary]. Bull. Jap. Soc. Scient. Fish., 17(1) : 1-4.

Abundance and distribution of saury on the skipjack fishing grounds; saury found in stomach contents of skipjack.

1953. Juveniles collected from south seas by Tenyō Maru at her second tuna research voyage (Preliminary Report) [in Japanese]. Contr. Nankai Reg. Fish. Res. Lab., (1), Contr. 25 : 1-14.

1954(*1*). Spawning ecology of tunas [in Japanese]. *In:* Summary report of the second lecture series on tuna fisheries. Tuna Fishg, (13) : 50.

Spawning area and season.

1952(*2*). A study of skipjack spawning in the Satsunan Sea area [in Japanese]. *In:* Suisangaku no gaikan—Nihon gakujutsu shinkōkai (General Review of Fishery Sci-

YABE, HIROSHI, continued

ence, Japan Association for the Advancement of Science), Tokyo: 182-199.

Monthly variations in ratio of gonad weight to body weight; occurrence of fully-matured eggs in gonads; relation between season of full maturity and fish size; measurements of ovarian eggs; fecundity studies.

1955. Studies on the fish larvae in the western Pacific Ocean. 1. The post-larvae of *Katsuwonus pelamis* [in Japanese with an English summary]. Bull. Jap. Soc. Scient. Fish., 20(12) : 1054-1059. Also reprinted *In:* Rep. Nankai Reg. Fish. Res. Lab., (4), 1956.

Skipjack larvae identified and described; some discussion of skipjack spawning areas.

YABE, HIROSHI, N. ANRAKU, and T. MORI

1953. Scombroid youngs found in the coastal seas of Aburatsu, Kyushu, in summer [in Japanese]. Contr. Nankai Reg. Fish. Res. Lab., (1) Contr. 11 : 1-10.

Description of fishing grounds and seasons; analysis of food, distribution and other biological features of young tunas.

YABE, HIROSHI and TOKUMI MORI

1950. An observation on the habit of bonito, *Katsuwonus vagans,* and yellow fin, *Neothunnus macropterus,* school under the drifting timber on the surface of ocean [in Japanese with an English summary]. Bull. Jap. Soc. Scient. Fish., 16(2) : 35-39.

YABE, HIROSHI and SHOJI UEYANAGI

1962(*1*). Contribution to the study of the early life history of the tunas. *In:* Papers Presented to the Pacific Tuna Biology Conference—August, 1961, Honolulu. Occ. Rep. Nankai Reg. Fish. Res. Lab., (1) : 57-72.

Tuna larvae collected between 1949 and 1960; description and comparison of larvae of various tunas; geographic, seasonal, and vertical distribution, mainly in western Pacific.

1962(*2*). Contribution to the study of the early life history of the tunas, p. 40-41 (Abstract). *In:* J. C. Marr (Ed.) Pacific Tuna Biology Conference—August 14-19, 1961—Honolulu, Hawaii., Spec. Scient. Rep. U. S. Fish Wildl. Serv., (415) : 45 p.

YABE, HIROSHI, SHOJI UEYANAGI and HISAYA WATANABE

1966. Studies on the early life history of bluefin tuna *Thunnus thynnus* and on the larva of the southern bluefin tuna *T. maccoyii* [in Japanese with an English summary]. Rep. Nankai Reg. Fish. Res. Lab., (23) : 95-129.

Larvae captured by surface and subsurface net hauls.

YABE, HIROSHI, YOICHI YABUTA and SHOJI UEYANAGI

1963. Comparative distribution of eggs, larvae and adults in relationship to biotic and abiotic environmental factors [French and Spanish abstracts]. *In:* Rosa, H., Jr. (Ed.) Proceedings of the World Scientific Meeting on the Biology of Tunas and Related Species. FAO, Fish. Rep., 3(6) : 979-1009.

YABUTA, YOICHI

1953. On the stomach contents of tuna and marlin from the adjacent seas of Bonin Islands [in Japanese]. Contr. Nankai Reg. Fish. Res. Lab., (1), Contr. 15 : 1-6.

Analysis of seasonal variation in stomach contents; length-frequency data for young skipjack found in stomach.

YAMADA, KINJIRO, H. TOZAWA, K. AMANO and A. TAKASE

1955(*1*). Studies on the radioactivity in certain pelagic fish—II. Group separation of radioactive elements in fish tissues [in Japanese with an English summary]. Bull. Jap. Soc. Scient. Fish., 20(10) : 916-920.

1955(*2*). Studies on the radioactivity in certain pelagic fish—III. Separation and

YAMADA, KINJIRO, H. TOZAWA, K. AMANO and A. TAKASE, continued
confirmation of Zn^{65} in the muscle tissue of skipjack [in Japanese with an English summary]. Bull. Jap. Soc. Scient. Fish., 20(10) : 921-926.

YAMAGAWA, MAKOTO and TAKESHI ITO
1926. Chemical study on the sperm of the marine animal. II. On the nucleic acid in bonito-testis [in Japanese with an English summary]. J. Imp. Fish. Inst., 22(2) : 111-116 (Resume: 32-33).

YAMAGUCHI, KAZUO
1942. History of the fishing gears [in Japanese]. Kaiyō no kagaku (Sci. Sea), 2(6) : 53-60.
Skipjack fishery in Japan.

YAMAGUTI, SATYU (YAMAGUCHI, SACHU)
1934(*1*). Studies on the helminth fauna of Japan. Part 2. Trematodes of fishes. Jap. J. Zool., 5(3) : 249-541.
Host for five species of trematodes.
1934(*2*). Studies on the helminth fauna of Japan. Part 4. Cestodes of fishes. Jap. J. Zool., 6(1) : 1-112.
Host for larval cestodes.
1935(*1*). Studies on the helminth fauna of Japan. Part 8. Acanthocephala, I. Jap. J. Zool., 6(2) : 247-278.
Supplementary description of *Rhadinorhynchus katsuwonis* Harada, 1928.
1935(*2*). Studies on the helminth fauna of Japan. Part 9. Nematodes of fishes. 1. Jap. J. Zool., 6(2) : 337-385.
Katsuwonus listed as one of hosts for *Anisakis salaris*.
1936. Parasitic copepods from fishes of Japan. Part 2. Caligoida, 1. Published by the author, Kyoto, Japan: 22 p.
Description of two species of parasitic copepods found on skipjack.
1938. Studies on the helminth fauna of Japan. Part 24. Trematodes of fishes, 5. Jap. J. Zool., 8(1) : 15-74.
Host for trematodes.
1941. Studies on the helminth fauna of Japan. Part 33. Nematodes of fishes, II. Jap. J. Zool., 9(3) : 343-396.
Host for nematodes.
1952. Studies on the helminth fauna of Japan. Part 49. Cestodes of fishes, 2. Acta Med. Okayama, 8(1) : 1-76.
One parasitic species from skipjack reported and described.
1958. Systema Helminthum. *Volume I—The Digenetic Trematodes of Vertebrates, part 1 and 2.* Interscience Publishers, New York: 1575 p.
Listed as host for 19 species of trematodes
1963(*1*). Parasitic Copepoda and Branchiura of fishes. Interscience Publishers, New York: 1104 p.
Host for parasitic copepods.
1963(*2*). Systema Helminthym. *Volume IV—Monogenea and Aspidocotylea.* Interscience Publishers, New York: 699 p.
Listed as host for four species of trematodes.
1963(*3*). Systema Helminthum. *Volume V—Acanthocephala.* Interscience Publishers, New York: 423 p.
Listed as host of *Nipporhynchus katsuwonis*.

YAMAMOTO, SHIGEO

1933. Points of information for the skipjack fishery gained from the study of fish's eyes [in Japanese]. Rakusui, 28(11) : 927-930.

Analysis of anatomy, focus and visual range of skipjack eye.

YAMAMOTO, SHOKICHI

1923. Report of surveys on katsuo-bushi (dried skipjack stick) in Kagoshima and Okinawa Prefectures [in Japanese]. J. Imp. Fish. Inst., 19(5) : 43-60.

Outline of skipjack fisheries and processing industry.

1940. Discussion on the improvement of the quality of skipjack products made from the tropical skipjack [in Japanese]. Nanyō suisan (So. Sea Fish.), 3(11) : 21-35.

Quality of skipjack from tropical and Japanese waters compared.

YAMANAKA, HAJIME

1962. Tunas and oceanic conditions [in Japanese with an English summary]. J. Oceanogr. Soc. Jap., 20th Anniversary Volume: 663-678.

Summary of past reports on the relationship between fishing conditions and oceanographic conditions in the eastern, central and western Pacific; relationship between plankton and concentration of skipjack; possibility of forecasting fishing conditions discussed.

YAMANAKA, HAJIME and YOSHIO KUROHIJI

1966. Summary report on experimental use of fish finders by Shunyō-maru [in Japanese]. Gyogun tanchiki ni yoru maguro shigen kenkyū kyōgikai hōkoku (Report of Conference to Study Tuna Resource by Use of Fish Finders.) Nihon suisan shigen hogo kyōkai. (Japan Fisheries Resources Conservation Association), Tokyo, March, 1966: 6-28.

Scouting with sonar; relation between skipjack and deep scattering layer; abundance.

YAMANAKA, HAJIME, YOSHIO KUROHIJI and JIRO MORITA

1966. General results of the investigation in the South Western Pacific Ocean by the fish-finder [in Japanese with an English summary]. Rep. Nankai Reg. Fish. Res. Lab., (24) : 115-127.

Vertical and horizontal distribution in relation to the scattered layer.

YAMANAKA, ICHIRO

1950. On body-measurement of bonito (*Katsuwonus vagans* [Lesson]) North-eastern Area [in Japanese with an English summary]. J. Oceanogr. Soc. Jap., 5(2-4) : 99-104.

Weight-frequency data analyzed by season, area, and year; condition factors and size-composition data analyzed in terms of age and population structure.

1966. Part III. Fishing ground and oceanography [in Japanese with an English summary. Discussion by audience included]. *In:* Symposium on tuna fisheries. Bull. Jap. Soc. Scient. Fish., 32(9) : 787-803, and 830-831.

Relation of distribution to current system; possibility of new fishery on unexploited population.

YAMASHITA, DANIEL T.

1958. Analysis of catch statistics of the Hawaiian skipjack fishery. Fishery Bull. Fish Wildl. Serv. U. S., 58(134) : 253-278.

Analysis of catch from 1900 to 1953; bait for skipjack fishery; specifications of fishing boats.

YAMASHITA, DANIEL T. and KENNETH D. WALDRON

1958. An all-plastic dart-type fish tag. Calif. Fish Game, 44(4) : 311-317.

Description of tag and tagging techniques.

1959. Tagging skipjack in Hawaiian waters. Pacif. Sci., 13(4) : 342-347.

Tagging techniques; migration; growth.

YAMASHITA, KUSUTARO

1966. Atarashii tsuri gyogyō no gijutsu (New angling techniques) [in Japanese]. Sōbunsha Co., Tokyo: 191 p.

New trolling technique introduced; scouting methods and attraction of fish studied in relation to ecology and fish behavior.

YANAGI, NAOMASA

1911. Survey of skipjack migration. Report 1 [in Japanese]. Rep. Imp. Fish. Inst., 7(1) : 25-29.

Discussion on motivation for migration in Japanese waters; stomach contents and maturity of gonads analyzed.

YANASE, MASAAKI

1955. Studies on vitamin B_{12} of aquatic animals—VI. The vitamin B_{12} level in the gastric and intestinal contents of fish [in Japanese with an English summary]. Bull. Jap. Soc. Scient. Fish., 21(3) : 197-200.

1956. The vitamin B_6 content of fish meat [in Japanese with an English summary]. Bull. Jap. Soc. Scient. Fish., 22(1) : 51-55.

YAO, MASAKAZU

1955. On the ovaries of the skipjack, *Katsuwonus pelamis* (Linnaeus), captured in the fishing grounds along the Japanese coast [in Japanese with an English summary]. Bull. Tohoku Reg. Fish. Res. Lab., 5 : 43-52.

Spawning discussed from the standpoint of seasonal changes in gonad weight; gonad weight-body length relation discussed in light of gonad maturity.

1962. Skipjack biting by the mathematical estimate [in Japanese with an English summary]. Bull. Tohoku Reg. Fish. Res. Lab., 20 : 28-32.

Comparison of biting in small and large schools.

1966. The distribution and migration of the skipjack. (Abstract). *In:* Biological studies of tunas and sharks in the Pacific Ocean. Proc. Pacif. Sci. Congr., 7 : 9.

Fishery related to oceanographic conditions and to stocks.

YOGI, YOSHINOBU

1914(*1*). On the skipjack fisheries of Formosa [in Japanese]. Suisan kenkyū shi (J. Fish. Res.), 9(4) : 130-155.

Catch, effort, catch-per-unit-of-effort; abundance; maturity; fishing grounds; oceanographic conditions; stomach contents; monthly average weight. (Continued in Volume 9[7].)

1914(*2*). On the skipjack fisheries of Formosa, Part 2 [in Japanese]. Suisan kenyū shi (J. Fish. Res.), 9(7) : 332-352.

Results of exploratory fishing.

YOKOTA, TAKIO, M. TORIYAMA, F. KANAI and S. NOMURA

1961. Studies on the feeding habit of fishes [in Japanese with an English summary]. Rep. Nankai Reg. Fish. Res. Lab., (14) : 234 p.

Spawning area and season estimated from larvae in tuna stomachs from western Pacific; geographical and seasonal changes in feeding habits; migration routes and population structure inferred from length and distribution data; age in terms of size and growth; effect of predators on larvae.

YONEZAWA, MATSUNOSUKE

1950. Skipjack fishing experience [in Japanese]. Kaiyō no kagaku (Sci. Sea), 6(1) : 47-49.

Fishermen's experiences; abundance and migration discussed in relation to currents; biting conditions and baitfishes analyzed in relation to oceanographic conditions and ecology; yearly and seasonal variations in size described by area.

YORK, A. G.

1964. Notes on tuna. Kai Moana, (3) : 1-11.

Identification; fishing methods.

YOSHIDA, HOWARD O.

1960. Marquesas area fishery and environmental data, January-March, 1959. Spec. Scient. Rep. U. S. Fish Wildl. Serv., (348) : 37 p.

Fishing survey cruise; ancillary observations.

1966(*1*). Tuna fishing vessels, gear, and techniques in the Pacific Ocean. *In:* Thomas A. Manar (Ed.), Proceedings, Governor's Conference, State of Hawaii: 67-89.

1966(*2*). Skipjack tuna spawning in the Marquesas Islands and Tuamotu Archipelago. Fishery Bull. Fish Wildl. Serv. U. S., 65(2) : 479-487.

Study based on examination of ovaries; results related to findings from other areas of Pacific Ocean.

YOSHII, GIICHI

1956. Studies on the radioactive marine organisms (especially *Katsuwonus vagans*) caused by nuclear detonation [in Japanese with an English summary]. J. Fac. Fish. Prefect. Univ. Mie, 2(2) : 43-96.

Variety and amount of radioactive isotopes analyzed; comparison of isotopes from plankton and rain in same area and time; process of isotope accumulation in body.

YUEN, HEENY S. H.

1959. Variability of skipjack response to live bait. Fishery Bull. Fish Wildl. Serv. U. S., 60(162) : 147-160.

1962. Experiments on the feeding behavior of skipjack at sea, p. 42. (Abstract). *In:* J. C. Marr (Ed.) Pacific Tuna Biology Conference—August 14-19, 1961—Honolulu, Hawaii. Spec. Scient. Rep. U. S. Fish Wildl. Serv., (415) : 45 p.

1963. Schooling behavior within aggregations composed of yellowfin and skipjack tuna [French and Spanish abstracts]. *In:* Rosa, H., Jr. (Ed.) Proceedings of the World Scientific Meeting on the Biology of Tunas and Related Species. FAO, Fish. Rep. 3(6) : 1419-1429.

1966. Swimming speed of yellowfin and skipjack tuna. Trans. Am. Fish. Soc., 95(2) : 203-209.

Measurements based on motion-picture records.

ZHAROV, V. L., IU. L. KARPECHENKO, and G. V. MARTINSEN

1961. Tuntsy i drugie ob'ekty tuntsovogo promysla [in Russian]. Gosplan SSSR (VNIRO), Moscow: 114 p.

Brief account of biology and fishery.

ANONYMOUS

1929. Pack of yellowfin and striped tuna breaks all records. Pacif. Fisherm. Statistical Number, 27(2) : 170.

Catch statistics; fishing areas.

ANONYMOUS, continued

1939. The skipjack tuna fisheries [in Japanese]. Kaiyō gyogyō (Ocean. Fish., Tokyo), 4(5) Vol. 33 : 1-42.

Development of fisheries in Japan, Micronesia and Indonesia; outline of fishing areas and seasons, monthly catches and effort, and fishing conditions near Japan; auxiliary fishing equipment; results of fish scouting from air; economics of fisheries.

1941(*1*). A symposium on the investigation of tuna and skipjack spawning grounds [in Japanese]. Kagaku nanyō (So. Sea Sci.), 4(1) : 64-75. (Translation "Spawning grounds of tuna and skipjack." *In:* Spec. Scient. Rep. U. S. Fish Wildl. Serv., [18] : 1-11).

Summary of knowledge and direction of future studies.

1941(*2*). Pacific skipjack indigenous to Sulu Sea [in Japanese]. Nanyō suisan (So. Sea Sci.), 7(5) : 55 p.

Spawning grounds near Palao.

1942. Report of a survey of the tuna fishery in Palau waters [in Japanese]. Nanyō suisan jōhō (So. Sea Fish. News), 6(1) : 10-13. (Translations *In:* Spec. Scient. Rep. U. S. Fish Wildl. Serv., [42] : 7-10.)

Oceanographic observations and experimental longline fishing in 1941.

1948(*1*). Pacific tuna fisheries. Fish. Newsl., Canberra, 7(6) : 6-9.

Review of Japanese and U.S. fishery; possibilities for Australian fishery; distribution in Australian waters.

1948(*2*). Progress report of central Pacific exploratory vessels. Comml Fish. Rev., 10(9) : 36-37.

Young collected; collection of young in other parts of the Pacific Ocean mentioned.

1948(*3*). Central Pacific exploratory vessels sight tuna. Comml Fish. Rev., 10(11) : 31-32.

Scouting for surface schools.

1948(*4*). California studies Pacific tuna fishery. Comml Fish. Rev., 10(12) : 23.

Distribution.

1949(*1*). Pacific Oceanic Fishery Investigations—organization and progress. Comml Fish. Rev., 11(5) : 27-29.

Observations on schools.

1949(*2*). Pacific Oceanic Fishery Investigations continues tuna research. Comml Fish. Rev., 11(7) : 23-24.

Remarks on size, composition of commercial catches.

1949(*3*). Report of Pacific Oceanic Fishery Investigations, June 1949—aku abundant in June in Marianas. Comml Fish. Rev., 11(8) : 23 p.

1949(*4*). Pacific Oceanic Fishery Investigations—Hawaiian tuna fishery—July 1949. Comml. Fish. Rev., 11(10) : 31.

Fishing conditions.

1949(*5*). Pacific Oceanic Fishery Investigations—Hawaiian tuna fishery. Comml Fish. Rev., 11(11) : 29-30.

Fishing conditions; size composition of landed catch.

1949(*6*). Pacific Oceanic Fishery Investigations—Hawaiian tuna fishery. Comml Fish. Rev., 11(12) : 30-31.

Fishing conditions.

1950(*1*). Giant skipjack found in Mid-Pacific. Pacif. Fisherm., 48(4) : 39.

Captures of fish weighing 75 lbs.

ANONYMOUS, continued

1950(*2*). Pacific Oceanic Fishery Investigations—"Hugh M. Smith" finds tuna (Cruise No. 2). Comml Fish. Rev., 12(3) : 44-45.

Sighting of surface school.

1950(*3*). Pacific Oceanic Fishery Investigations—"Hugh M. Smith" locates fish eggs and larvae and investigates tagging of tunas. Comml Fish. Rev., 12(4) : 22.

1950(*4*). Pacific Oceanic Fishery Investigations—"Hugh M. Smith" completes second cruise. Comml Fish. Rev., 12(5) : 35-37.

Exploratory fishing.

1950(*5*). Pacific Oceanic Fishery Investigations—"John R. Manning" tests west coast purse seine in Line Islands region (Cruise 2). Comml Fish. Rev., 12(7) : 27-28.

Scouting for surface schools.

1950(*6*). Pacific Oceanic Fishery Investigations—"Henry O'Malley" completes three-week cruise in Hawaiian waters (Cruise No. 3). Comml Fish. Rev., 12(7) : 28-29.

Experimental and exploratory fishing.

1950(*7*). Pacific Oceanic Fishery Investigations—long-line tuna fishing near Canton Island found excellent by "Hugh M. Smith." Comml Fish. Rev., 12(8) : 20-21.

Sighting of surface schools.

1950(*8*). Pacific Oceanic Fishery Investigations—"Henry O'Malley" scouts for bait and fishes for tuna (Cruise No. IV). Comml Fish. Rev., 12(10) : 33-34.

Exploratory fishing.

1950(*9*). Pacific Oceanic Fishery Investigations—"Hugh M. Smith" studies abundance of tuna spawn and new device (Cruise No. VI). Comml Fish. Rev., 12(10) : 34-35.

Sighting of surface schools.

1950(*10*). Pacific Oceanic Fishery Investigations—experimental fishing trip completed by "John R. Manning" (Cruise No. III). Comml Fish. Rev., 12(11) : 44-45.

Sighting of surface schools.

1951(*1*). Distribution of pelagic fish in eastern Australia. Fish. Newsl., Canberra, 10(11) : 8-9.

Distribution and abundance.

1951(*2*). Pacific Oceanic Fishery Investigations—"Hugh M. Smith" completes hydrographic and biological study cruise (Cruise No. VIII). Comml Fish. Rev., 13(4) : 39.

1951(*3*). Pacific Oceanic Fishery Investigations—"John R. Manning" investigates tuna seining in Phoenix-Line Islands area (Cruise No. V). Comml Fish. Rev., 13(4) : 39-41.

Exploratory fishing.

1951(*4*). Pacific Oceanic Fishery Investigations—experimental gill-net tuna fishing operations off Hawaii. Comml Fish. Rev., 13(8) : 20.

1951(*5*). Pacific Oceanic Fishery Investigations—"Hugh M. Smith" conducts bait and live-bait tuna fishing in the Line and Phoenix Islands (Cruise 9). Comml Fish. Rev., 13(8) : 21-22.

1951(*6*). Pacific Oceanic Fishery Investigations—tuna purse-seined in Hawaiian waters by "John R. Manning." Comml Fish. Rev., 13(10) : 15-16.

Experimental fishing.

ANONYMOUS, continued

1951(7). Pacific Oceanic Fishery Investigations—"John R. Manning" tries gill-net fishing for skipjack (Cruise No. 8). Comml Fish. Rev., 13(11) : 24-25.

Experimental fishing.

1951(8). Pacific Oceanic Fishery Investigations—"Hugh M. Smith" studies hydrography of Hawaiian waters (Cruise XII). Comml Fish. Rev., 13(12) : 18.

Scouting for surface schools.

1952(1). Pacific Oceanic Fishery Investigations—research vessels return from fishing and hydrographic surveys. Comml Fish. Rev., 14(10) : 45-46.

Scouting for surface schools.

1952(2). Pacific Oceanic Fishery Investigations—"Hugh M. Smith" observes skipjack schools (Cruise No. 17). Comml Fish. Rev., 14(12) : 20.

Scouting for surface schools.

1952(3). Pacific Oceanic Fishery Investigations—scouting methods for skipjack tuna studied by "Charles H. Gilbert" (Cruise No. 3 and Flight No. 1). Comml Fish. Rev., 14(12) : 22 p.

1953(1). Pacific Oceanic Fishery Investigations—tuna scouting methods studied by "Charles H. Gilbert" (Cruise 6 and POFI Flights 2 and 3). Comml Fish. Rev., 15(2) : 43-44.

1953(2). Pacific Oceanic Fishery Investigations—"Charles H. Gilbert" finds many small schools of tuna west of Hawaii (Cruise No. 7). Comml Fish. Rev., 15(3) : 37-38.

Scouting for surface schools.

1953(3). Pacific Oceanic Fishery Investigations—"Charles H. Gilbert" studies tuna distribution and movements in Hawaiian area (Cruise 7). Comml Fish. Rev., 15(4) : 24.

Scouting for surface school.

1953(4). Pacific Oceanic Fishery Investigations—"Hugh M. Smith" studies oceanography as related to skipjack tuna in Hawaiian waters (Cruise No. 20). Comml Fish. Rev., 15(5) : 33.

Oceanographic conditions affecting distribution.

1953(5). California—tuna tagging by "N. B. Scofield" limited by poor fishing conditions. Comml Fish. Rev., 15(6) : 19.

Tagging cruise.

1953(6). Pacific Oceanic Fishery Investigations—sea-water changes studied by "Charles H. Gilbert" (Cruise No. 9). Comml Fish. Rev., 15(6) : 30.

Scouting for surface schools.

1953(7). Pacific Oceanic Fishery Investigations—tuna attractants tested by "Charles H. Gilbert" (Cruise No. 8). Comml Fish. Rev., 15(7) : 28-29.

1953(8). Pacific Oceanic Fishery Investigations—skipjack tuna studies in Hawaiian waters continued by "Charles H. Gilbert" (Cruise No. 12). Comml Fish. Rev., 15(7) : 29-30.

Tests with attractant solutions; oceanographic conditions governing distribution and abundance.

1953(9). California—tuna tagged off Baja California by M/V "Virginia R." (Cruise No. C-2-53). Comml Fish. Rev., 15(10) : 31-32.

Tagging methods and techniques.

ANONYMOUS, continued

1953(*10*). California—tuna tagged by M/V "Defiance" (Cruise C-3-53). Comml Fish. Rev., 15(10) : 32.

Tagging cruise.

1953(*11*). Pacific Oceanic Fishery Investigations—"Charles H. Gilbert" scouts for tuna in Hawaiian waters (Cruise 11). Comml Fish. Rev., 15(10) : 41.

Scouting for surface schools.

1953(*12*). Pacific Oceanic Fishery Investigations—skipjack tuna concentrations discovered off Hawaiian Islands by "Charles H. Gilbert" (Cruise 13). Comml Fish. Rev., 15(10) : 41-42.

Scouting; experiments with artificial bait.

1953(*13*). Pacific Oceanic Fishery Investigations—large skipjack tuna concentrations found in Hawaiian area by "Hugh M. Smith" (Cruise 22). Comml Fish. Rev., 15(11) : 33-34.

Scouting for surface schools.

1953(*14*). Suisan nenkan (Year book of fisheries) for 1953 [in Japanese]. Suisan-sha Co., Tokyo.

Fishing conditions in relation to oceanographic conditions; catch statistics; effort; market and production trends; market management and special actions related to fishery.

1954(*1*). Australian tunas—distribution: identification. Fish. Newsl. Canberra, 13(2) : 5-8. (Translation into Japanese by T. Yamamoto. Tuna Fishg, 1954, No. 8).

1954(*2*). Pacific Oceanic Fishery Investigations—skipjack tuna found abundant in Hawaiian waters by "Hugh M. Smith." Comml Fish. Rev., 16(1) : 21.

Scouting cruise.

1954(*3*). Pacific Oceanic Fishery Investigations—skipjack tuna abundance at seasonal low in Hawaiian waters reports the "Hugh M. Smith" (Cruise 24). Comml Fish. Rev., 16(2) : 22.

Scouting cruise; experiments with artificial bait.

1954(*4*). Pacific Oceanic Fishery Investigations—two-vessel expedition catches 100 tons of tuna off Christmas Island. Comml Fish. Rev., 16(5) : 34-35.

Exploratory long-lining.

1954(*5*). Pacific Oceanic Fishery Investigations—albacore tuna discovered north of Hawaii by "John R. Manning" (Cruise 19). Comml Fish. Rev., 16(5) : 33-34.

Long-line catches.

1954(*6*). Pacific Oceanic Fishery Investigations—Hawaiian skipjack tuna distribution studied. Comml Fish. Rev., 16(5) : 35.

Scouting methods.

1954(7). California—tuna tagged by clipper "Saratoga" (Cruise C-1-54). Comml Fish. Rev., 16(6) : 9.

Tagging cruise.

1954(8). Pacific Oceanic Fishery Investigations—good tuna fishing reported and new long-line gear tested in Line Islands area by "John R. Manning" (Cruise 20). Comml Fish. Rev., 16(8) : 32-33.

Exploratory long-lining; incidental catches.

1954(9). Pacific Oceanic Fishery Investigations—tuna schools plentiful in Hawaiian area reports "Hugh M. Smith" (Cruise 26). Comml Fish. Rev., 16(8) : 33-34.

Scouting cruise.

ANONYMOUS, continued

1954(*10*). Pacific Oceanic Fishery Investigations—two-vessel expedition catches 107 tons of tuna in central Pacific area. Comml Fish. Rev., 16(8) : 34-35.

Exploratory longlining.

1954(*11*). California—tuna tagged by commercial vessel "Mayflower" (Cruise C-2-54). Comml Fish. Rev., 16(10) : 23-24.

Capture of post-larvae.

1954(*12*). Pacific Oceanic Fishery Investigations—great number of skipjack tuna found in Hawaiian waters by "Charles H. Gilbert" (Cruise 16). Comml Fish. Rev., 16(10) : 33-34.

Scouting cruise.

1954(*13*). Pacific Oceanic Fishery Investigations—annual report, July 1, 1953, to June 30, 1954. Comml Fish. Rev., 16(10) : 35-38.

Report on research activities.

1954(*14*). California—albacore tuna and yellowtail tagging continued by "N. B. Scofield" (Cruise 54-S-4). Comml Fish. Rev., 16(12) : 22.

Tagging cruise.

1954(*15*). Suisan nenkan (Year book of fisheries) for 1954 [in Japanese]. Suisan-sha Co., Tokyo, *ca.* 800 p.

Fishing conditions in relation to oceanographic conditions; catch statistics; effort; market and production trends; market management and special actions related to fishery.

1955(*1*). California—tuna tagged in South Pacific on commercial clipper "Southern Pacific" (Cruise C-3-54). Comml Fish. Rev., 17(2) : 18-19.

Tagging techniques.

1955(*2*). California—tuna tagged off South America by "Mayflower" (Cruise C-4-54). Comml Fish. Rev., 17(3) : 26-27.

Tagging cruise.

1955(*3*). Pacific Oceanic Fishery Investigations—skipjack tuna found scarce in winter off Line Islands by "Charles H. Gilbert" (Cruise 19). Comml Fish. Rev., 17(4) : 42-43.

Scouting cruise; artificial bait experiments.

1955(*4*). California—yellowfin and skipjack tuna tagged by "N. B. Scofield" (Cruise 55-S-1). Comml Fish. Rev., 17(5) : 20-21.

Tagging cruise.

1955(*5*). Pacific Oceanic Fishery Investigations—oceanographic observations north of Hawaii by "Hugh M. Smith" indicate possible albacore tuna fishing area (Cruise 27). Comml Fish. Rev., 17(5) : 38-39.

Exploratory fishing (trolling).

1955(*6*). California—tuna tagged by commercial clipper "Ocean Pride" (Cruise C-55-2). Comml Fish. Rev., 17(6) : 34-35.

Tagging cruise.

1955(*7*). Pacific Oceanic Fishery Investigations—skipjack tuna tagged by "Hugh M. Smith" (Cruise 28). Comml Fish. Rev., 17(6) : 52.

Tagging cruise.

1955(*8*). California—tuna tagged by clipper "Virginia R." (Cruise C-55-1). Comml Fish. Rev., 17(8) : 16.

Tagging cruise.

1955(*9*). Pacific Oceanic Fishery Investigations—"Hugh M. Smith" reports alba-

ANONYMOUS, continued

core tuna scarce in May north and northeast of Hawaii (Cruise 29). Comml Fish. Rev., 17(9) : 68-69.

Caught on longline.

1955(*10*). Pacific Oceanic Fishery Investigations—first tagged tuna recoveries in Hawaiian waters. Comml Fish. Rev., 17(9) : 69-70.

1955(*11*). Pacific Oceanic Fishery Investigations—more skipjack tuna tagged by "Charles H. Gilbert" northwest of Hawaii (Cruise 21). Comml Fish. Rev., 17(9) : 70-71.

Tagging and tagging techniques (electronarcosis).

1955(*12*). Pacific Oceanic Fishery Investigations—good yellowfin tuna catches near equator by "Commonwealth" (Cruise 4). Comml Fish. Rev., 17(10) : 61-62.

Association with bird flocks.

1955(*13*). Pacific Oceanic Fishery Investigations — skipjack tagging cruise by "Charles H. Gilbert" (Cruise 22). Comml Fish. Rev., 17(10) : 62.

Tagging cruise.

1955(*14*). Pacific Oceanic Fishery Investigations—new albacore grounds located by "John R. Manning" (Cruise 26). Comml Fish. Rev., 17(10) : 62-65.

Scouting (trolling).

1955(*15*). Pacific Oceanic Fishery Investigations — North Pacific oceanographic cruise by "Hugh M. Smith" (Cruise 30). Comml Fish. Rev., 17(10) : 65.

Scouting (trolling).

1955(*16*). Pacific Oceanic Fishery Investigations—more tagged tuna recovered in Hawaiian waters. Comml Fish. Rev., 17(10) : 66.

1955(*17*). Pacific Oceanic Fishery Investigations—tagged skipjack tuna recovered from stomach of yellowfin tuna. Comml Fish. Rev., 17(10) : 66-67.

1955(*18*). California—tuna tagged off west coast of Mexico by "Southern Pacific" (Cruise 55-C-4). Comml Fish. Rev., 17(11) : 25.

Tagging cruise.

1955(*19*). Suisan nenkan (Year book of fisheries) for 1955 [in Japanese]. Suisan-sha Co., Tokyo, *ca.* 800 p.

Fishing conditions in relation to oceanographic conditions; catch statistics; effort; market and production trends; market management and special actions related to fishery.

1956(*1*). Pacific Oceanic Fishery Investigations—albacore tuna survey in North Pacific by "Charles H. Gilbert" (Cruise 23). Comml Fish. Rev., 18(1) : 32-33.

Incidental longline catch.

1956(*2*). Pacific Oceanic Fishery Investigations—skipjack tuna-scouting trip completed by "Charles H. Gilbert" (Cruise 24). Comml Fish. Rev., 18(1) : 33.

1956(*3*). Pacific Oceanic Fishery Investigations—fertility of eastern tropical Pacific studied by "Hugh M. Smith" (Cruise 31). Comml Fish. Rev., 18(1) : 33-35.

Scouting for surface schools.

1956(*4*). Pacific Oceanic Fishery Investigations—tagged tuna recoveries indicate extensive migration and rapid growth. Comml Fish. Rev., 18(3) : 21.

1956(*5*). Pacific Oceanic Fishery Investigations—sonic fish finder used by "Charles H. Gilbert" to locate tuna: Cruise 25. Comml Fish. Rev., 18(4) : 18-19.

Scouting for tunas; echo-locating apparatus, trolling, longlining.

1956(*6*). Pacific Oceanic Fishery Investigations—yellowfin tuna abundance studied

ANONYMOUS, continued

in Line Islands continued by "John R. Manning" (Cruise 29). Comml Fish. Rev., 18(4) : 19-20.

Scouting, tagging.

1956(7). Pacific Oceanic Fishery Investigations—spring abundance of albacore tuna north of Hawaiian Islands checked by "Charles H. Gilbert" (Cruise 27). Comml Fish. Rev., 18(7) : 49-50.

Scouting (trolling).

1956(8). Pacific Oceanic Fishery Investigations—skipjack tuna spring distribution north of Leeward Islands surveyed by "John R. Manning" (Cruise 30). Comml Fish. Rev., 18(7) : 50-51.

Scouting.

1956(9). Pacific Oceanic Fishery Investigations—oceanography and biology along the equator studied by "Hugh M. Smith" (Cruise 33). Comml Fish. Rev., 18(7) : 51-52.

Scouting for surface schools.

1956(10). Pacific Oceanic Fishery Investigations—Hawaii skipjack fishing ground survey completed by "Hugh M. Smith" (Cruise 34). Comml Fish. Rev., 18(8) : 42-43.

Scouting cruise; tagging.

1956(11). Pacific Oceanic Fishery Investigations—skipjack tuna behavior in Hawaiian waters studied by "Charles H. Gilbert" (Cruise 28). Comml Fish. Rev., 18(8) : 43-44.

Echo-locating device; scouting.

1956(12). Pacific Oceanic Fishery Investigations—second spring skipjack scouting cruise completed by "John R. Manning" (Cruise 31). Comml Fish. Rev., 18(8) : 44-45.

1956(13). California—two tuna-tagging cruises (M/V "Heroic," Cruise 56-C-1 and M/V "Southern Pacific," Cruise 56-C-2). Comml Fish. Rev., 18(9) : 17-18.

Tagging cruise.

1956(14). Pacific Oceanic Fishery Investigations—"Charles H. Gilbert" uses electronic fish finder to scout for tuna (Cruise 29). Comml Fish. Rev., 18(9) : 27-28.

1956(15). Pacific Oceanic Fishery Investigations—review of fiscal year 1956 operations. Comml Fish. Rev., 18(9) : 28-32.

Research report.

1956(16). California—clipper tags yellowfin and skipjack tuna (M/V "Lucky Star." Cruise 56-C-3). Comml Fish Rev., 18(10) : 14.

Tagging cruise.

1956(17). California—yellowfin and skipjack tuna tagged and measured by clipper "Elsinore" (Cruise 56-C-4). Comml Fish. Rev., 18(11) : 26.

Tagging cruise.

1956(18). Pacific Oceanic Fishery Investigations—exploratory tuna fishing around Marquesas Islands by M/V "Charles H. Gilbert" (Cruise 30). Comml Fish. Rev., 18(11) : 47-48.

Scouting; exploratory live-baiting (fishing).

1956(19). Pacific Oceanic Fishery Investigations—oceanography of Pacific equatorial region surveyed ("Hugh M. Smith," Cruise 35). Comml Fish. Rev., 18(12) : 47.

Scouting for surface schools.

ANONYMOUS, continued

1956(*20*). Pacific Oceanic Fishery Investigations—skipjack tuna tagged with harpoon-type tag recovered. Comml Fish. Rev., 18(12) : 48.

1956(*21*). Pacific Oceanic Fishery Investigations—research for third quarter 1956 (July 1-September 30, 1956). Comml Fish. Rev., 18(12) : 48.

1956(*22*). Suisan nenkan (Year book of fisheries) for 1956 [in Japanese]. Suisan-sha Co., Tokyo, *ca.* 800 p.

Fishing conditions in relation to oceanographic conditions; catch statistics; effort; market and production trends; market management and special actions related to fishery.

1957(*1*). Many fish tagged around Hawaii. Pan-Am. Fisherm., 2(12) : 15.

Description of tags and tagging methods.

1957(*2*). Pacific Oceanic Fishery Investigations—summer tuna fishery and bait potentialities of Marquesas and Tuamotu Islands. Comml Fish. Rev., 19(4) : 23-24.

Exploratory fishing.

1957(*3*). Pacific Oceanic Fishery Investigations—deep-swimming yellowfin tuna sampled by long-lining in Marquesas area (M/V John R. Manning Cruise 34). Comml Fish. Rev., 19(4) : 24-25.

Exploratory fishing.

1957(*4*). California—tuna tagged off Mexico, Central America, and Ecuador (M/V Challenger, Cruise 57-C-1). Comml Fish. Rev., 19(8) : 15.

Tagging and tagging methods.

1957(*5*). Pacific Oceanic Fishery Investigations—skipjack tagged between Islands of Oahu and Hawaii (M/V Charles H. Gilbert Cruise 33). Comml Fish. Rev. 19(8) : 33-34.

Tagging and exploratory fishing.

1957(*6*). Pacific Oceanic Fishery Investigations—skipjack tuna tagged around Hawaiian Island of Oahu (M/V John R. Manning Cruise 35). Comml Fish. Rev. 19(8) : 34-36.

Tagging and tagging techniques.

1957(*7*). Pacific Oceanic Fishery Investigations—more skipjack tagged in Hawaiian area (M/V Hugh M. Smith Cruise 39). Comml Fish. Rev., 19(8) : 36-37.

1957(*8*). Pacific Oceanic Fishery Investigations—annual report for fiscal year 1957. Comml Fish. Rev., 19(9) : 38-41.

Report on research activities.

1957(*9*). Discovery of "Skipjack Hole" aids large-scale tuna tagging in Hawaiian waters. Comml Fish. Rev., 19(9) : 46-47.

Discovery of permanent congregation of fish.

1957(*10*). California—yellowfin and skipjack tuna tagged between southern Mexico and Ecuador (M/V Cape Falcon Cruise 57-C-3). Comml Fish. Rev., 19(11) : 12.

Tagging cruise.

1957(*11*). Pacific Oceanic Fishery Investigations—direct underwater observation of tuna behavior. Comml Fish. Rev., 19(11) : 25-26.

1957(*12*). Pacific Oceanic Fishery Investigations—"Skipjack Concourse" studies off Hawaiian Islands. Comml Fish. Rev., 19(11) : 26-27.

Tagging in area of aggregation.

1957(*13*). Pacific Oceanic Fishery Investigations—area of persistently occurring skipjack tuna found in Hawaiian waters (M/V Charles H. Gilbert Cruise 34). Comml Fish. Rev., 19(11) : 27-28.

Studies of environment in area of aggregation.

ANONYMOUS, continued

1957(*14*). Pacific Oceanic Fishery Investigations—skipjack tuna concourse areas survey completed (John R. Manning Cruise 37). Comml Fish. Rev., 19(12) : 31-32.

Studies of environment in area of aggregation.

1957(*15*). Suisan nenkan (Year book of fisheries) for 1957 [in Japanese]. Suisan-sha Co., Tokyo, *ca.* 800 p.

Fishing conditions in relation to oceanographic conditions; catch statistics; effort; market and production trends; market management and special actions related to fishery.

1958(*1*). Orsom III, Compte-rendu des croisières du deuxieme semestre 1957 [in French]. Rapp. Crois. Inst. Fr. Océanie Sect. Océanogr., (1) : 17 p.

Remarks on specimens captured during the cruises. Observations on schools accompanied by birds.

1958(*2*). Pacific Oceanic Fishery Investigations—returns of tagged skipjack tuna exceed 8 percent. Comml Fish. Rev., 20(1) : 57.

Returns of tagged fish; growth.

1958(*3*). Pacific Oceanic Fishery Investigations—stomach contents of skipjack tuna studied for clues to catchability. Comml Fish. Rev., 20(2) : 34.

Previous feeding related to catchability.

1958(*4*). Pacific Oceanic Fishery Investigations—International Geophysical Year stations occupied and oceanographic and biological data collected in Marshall Islands area. Comml Fish. Rev., 20(2) : 34-35.

Sighting of schools.

1958(*5*). Pacific Oceanic Fishery Investigations—winter abundance and distribution of skipjack tuna in Hawaiian waters surveyed (John R. Manning Cruise 38). Comml Fish. Rev., 20(2) : 35-36.

Seasonal distribution; tagging.

1958(*6*). Pacific Oceanic Fishery Investigations—Marquesas Islands area surveyed for surface tuna schools and live bait (M/V Charles H. Gilbert Cruise 35). Comml Fish. Rev., 20(2) : 37-38.

Exploratory fishing and scouting.

1958(*7*). Pacific Oceanic Fishery Investigations—recoveries of tagged skipjack tuna in 1957. Comml Fish. Rev., 20(3) : 26.

Exploratory fishing; gathering of oceanographic data.

1958(*8*). Pacific Oceanic Fishery Investigations—skipjack tuna and live-bait sardines found abundant in Marquesas (M/V Hugh M. Smith Cruise 42). Comml Fish. Rev., 20(4) : 34-35.

Exploratory fishing; gathering of oceanographic data.

1958(*9*). Pacific Oceanic Fishery Investigations—tagged skipjack tuna returns high. Comml Fish. Rev., 20(5) : 38.

1958(*10*). California—yellowfin and skipjack tuna studies off west coast of South America (M/V Southern Pacific Cruise 57C5-Tuna). Comml Fish. Rev., 20(6) : 24-25.

Tagging techniques; releases of tagged fish.

1958(*11*). California—yellowfin and skipjack tuna studies off west coast of South America (M/V Ruthie B. Cruise 57C6-Tuna). Comml Fish. Rev., 20(6) : 25-26.

Collecting biological data from commercial boat; tagging; oceanographic observations.

1958(*12*). Pacific Oceanic Fishery Investigations—enumeration and sampling of tuna schools in the Marquesas Islands area (M/V Charles H. Gilbert Cruise 38). Comml Fish. Rev., 20(6) : 40-42.

Exploratory fishing; gathering of oceanographic data.

ANONYMOUS, continued

1958(*13*). Pacific Oceanic Fishery Investigations—equatorial tuna studies. Comml Fish. Rev., 20(7) : 40-41.

Exploratory survey; food study.

1958(*14*). Pacific Oceanic Fishery Investigations—Hawaiian skipjack studies. Comml Fish. Rev., 20(7) : 41.

Recoveries of tagged fish; fishing conditions; oceanographic data related to fishery.

1958(*15*). Pacific Oceanic Fishery Investigations. Hawaiian skipjack tagging program. Comml Fish. Rev., 20(7) : 42.

Tagging; growth.

1958(*16*). Pacific Oceanic Fishery Investigations—survey of Marquesas Islands for tuna resources continued (M/V Hugh M. Smith Cruise 43). Comml Fish. Rev., 20(7) : 42-44.

Exploratory fishing; collection of oceanographic data.

1958(*17*). Pacific Oceanic Fishery Investigations. New ocean current and tuna in the Marquesas surveyed (M/V Hugh M. Smith Cruise 45). Comml Fish. Rev., 20(8) : 44-46.

Exploratory fishing; collection of oceanographic data.

1958(*18*). Pacific Oceanic Fishery Investigations—tuna tagging developments. Comml Fish. Rev., 20(8) : 46-47.

Report on tagging.

1958(*19*). Pacific Oceanic Fishery Investigations—annual report for fiscal year 1958. Comml Fish. Rev., 20(9) : 56-61.

Research report.

1958(*20*). Pacific Oceanic Fishery Investigations—underwater photographic equipment tested and tuna feeding behavior studied (M/V Charles H. Gilbert Cruise 39). Comml Fish. Rev., 20(9) : 61-62.

Behavior; tagging; oceanographic observations.

1958(*21*). Pacific Oceanic Fishery Investigations—observations to delineate northern boundary of down-stream California Current type water near Hawaiian Islands (M/V Charles H. Gilbert Cruise 40). Comml Fish. Rev., 20(9) : 62-63.

Sighting of school during an oceanographic cruise.

1958(*22*). California—yellowfin tuna and skipjack tagged along Baja California coast (M/V Independence Cruise 58-C-1 tuna). Comml Fish. Rev., 20(10) : 19.

Tagging cruise.

1958(*23*). Pacific Oceanic Fishery Investigations—tuna tagging program provides information on growth rates. Comml Fish. Rev., 20(11) : 49-50.

1958(*24*). California—yellowfin and skipjack tuna tagging along Baja California coast (M/V Cape Beverly Cruise 58-C-2-tuna). Comml Fish. Rev., 20(12) : 31-32.

1958(*25*). Pacific Oceanic Fishery Investigations—Central North Pacific albacore tuna oceanographic and plankton surveys (M/V Hugh M. Smith Cruise 46). Comml Fish. Rev., 20(12) : 44-45.

Incidentally caught on longline gear.

1958(*26*). Pacific Oceanic Fishery Investigations—skipjack tuna behavior studies provide a possible key to new fishing methods (M/V Charles H. Gilbert Cruise 41). Comml Fish. Rev., 20(12) : 46.

Underwater observations on feeding fish.

1958(*27*). Suisan nenkan (Year book of fisheries) for 1958 [in Japanese]. Suisan-sha Co., Tokyo, *Ca.* 800 p.

Fishing conditions in relation to oceanographic conditions; catch statistics; effort; market and production trends; market management and special actions related to fishery.

ANONYMOUS, continued

1959(*1*). Orsom III, Compte rendu de la croisière de l'annee 1958 [in French]. Rapp. Crois. Inst. Fr. Océanie Sect. Océanogr., (2) : 21 p.

Remarks on specimens captured during the cruise; observation on schools accompanied by birds.

1959(*2*). Pacific Oceanic Fishery Investigations—tuna feeding behavior in Line Islands area studies (M/V Charles H. Gilbert Cruise 42). Comml Fish. Rev., 21(1) : 42-43.

Underwater observations on feeding.

1959(*3*). Pacific Oceanic Fishery Investigations—tuna tagging returns reveal growth rates and movements. Comml Fish. Rev., 21(1) : 43-44.

1959(*4*). Pacific Oceanic Fishery Investigations—young tuna caught with new-type midwater trawl (M/V Hugh M. Smith Cruise 47). Comml Fish. Rev., 21(1) : 44-45.

Sighting of schools.

1959(*5*). California—yellowfin and skipjack tuna tagging studies continued (M/V Valiana Cruise 58-C-3-tuna). Comml Fish. Rev., 21(2) : 13-14.

Tagging cruise report.

1959(*6*). Pacific Oceanic Fishery Investigations—five tagged skipjack recaptured in November 1958. Comml Fish. Rev., 21(2) : 30.

1959(*7*). Pacific Oceanic Fishery Investigations—observations on tuna behavior. Comml Fish. Rev., 21(3) : 44-45.

Response to various species of bait.

1959(*8*). Pacific Oceanic Fishery Investigations—skipjack tuna migration studies initiated (M/V Hugh M. Smith). Comml Fish. Rev., 21(4) : 50.

Monitoring of distribution of fish.

1959(*9*). Pacific Oceanic Fishery Investigations—tuna resources survey in Marquesas and Tuamotu Islands area ended (M/V Charles H. Gilbert Cruise 43). Comml Fish. Rev., 21(5) : 32.

Exploratory fishing report; scouting.

1959(*10*). Pacific Oceanic Fishery Investigations—survey of California Current extension and skipjack tuna off Hawaiian Islands (M/V Hugh M. Smith Cruise 51). Comml Fish. Rev., 21(6) : 45-46.

Scouting for schools.

1959(*11*). Tuna—tagged fish recovered off Japan and Galapagos Islands. Comml Fish. Rev., 21(6) : 48.

Migration of tagged fish.

1959(*12*). Central Pacific Fishery Investigations—relationship found between sea surface temperature and abundance of skipjack tuna. Comml Fish. Rev., 21(8) : 21.

Catch predictions based on oceanographic observations.

1959(*13*). Central Pacific Fishery Investigations—skipjack tuna studies off Hawaii continued (M/V Charles H. Gilbert Cruise 44). Comml Fish. Rev., 21(8) : 22.

Monitoring of distribution of fish.

1959(*14*). California—tuna tagged between southern Mexico and Peru (M/V Constitution Cruise 59C1-tuna). Comml Fish. Rev., 21(9) : 24-25.

Tagging techniques; tagged fish released.

1959(*15*). Central Pacific Fisheries Investigations—behavior studies of skipjack tuna to be made during Hawaiian summer fishery. Comml Fish. Rev., 21(9) : 27.

ANONYMOUS, continued

1959(*16*). Central Pacific Fisheries Investigations—tagging returns indicate skipjack tuna migrate into Hawaiian waters from the west. Comml Fish. Rev., 21(9) : 27.

1959(*17*). Central Pacific Fisheries Investigations—relationship found between sea surface temperature and skipjack abundance. Comml Fish. Rev., 21(10) : 25-26.

Catch prediction based on oceanographic observations; response to various species of bait.

1959(*18*). Central Pacific Fisheries Investigations—skipjack tuna behavior studied in vicinity of Hawaiian Islands: M/V "Charles H. Gilbert" Cruise 45. Comml Fish. Rev., 21(11) : 30-31.

Underwater observations of behavior.

1959(*19*). Central Pacific Fishery Investigations—oceanographic and fishery survey in Hawaiian waters completed: M/V "Charles H. Gilbert" Cruise 46. Comml Fish. Rev., 21(12) : 44-45.

1959(*20*). Central Pacific Fishery Investigations—skipjack tuna landings in Hawaii increase according to prediction. Comml Fish. Rev., 21(12) : 45-46.

Catch prediction based on oceanographic conditions.

1959(*21*). Suisan nenkan (Year book of fisheries) for 1959 [in Japanese]. Suisan-sha Co., Tokyo, *ca.* 800 p.

Fishing conditions in relation to oceanographic conditions; catch statistics; effort; market and production trends; market management and special actions related to fishery.

1960(*1*). Blood types, tuna. Inf. Bull. Pacif. Sci. Ass., 12(6) : 5.

Résumé of serological findings during a cruise to Line, Society and Tuamotu Islands.

1960(*2*). Central Pacific Fishery Investigations—skipjack tuna behavior studies off Hawaii continued—M/V Charles H. Gilbert Cruise 46. Comml Fish. Rev., 22(1) : 30-31.

Behavior study; exploratory fishing.

1960(*3*). Central Pacific Fishery Investigations—research on identification of tuna larvae. Comml Fish. Rev., 22(2) : 31.

Collection of young; their identification.

1960(*4*). Central Pacific Fisheries Investigations—Tilapia culture as source of live bait for tuna fishery successful. Comml Fish. Rev., 22(3) : 19-20.

Catches of skipjack using various species of baitfishes.

1960(*5*). Hawaii—higher skipjack tuna landings in 1959 bear out prediction by biologists. Comml Fish. Rev., 22(3) : 22.

Catch prediction based on oceanographic conditions.

1960(*6*). Japan—tuna industry planning skipjack fishing off British North Borneo. Comml Fish. Rev., 22(3) : 65.

Fishing grounds off Shamil Island.

1960(*7*). Central Pacific Fishery Investigations—Hawaiian skipjack tuna research trends, March, 1960. Comml Fish. Rev., 22(6) : 25.

Size composition of landed fish; maintenance of captive fish.

1960(*8*). Central Pacific Fisheries Investigations—Future research on Pacific tunas pointed towards solution of practical problems. Comml Fish. Rev., 22(7) : 24-25. (Reprinted under title: Tuna Research, Inf. Bull. Pacif. Sci. Ass., 12(5) : 8-9, 1960).

Résumé of past research, with an outline for future investigations.

1960(*9*). Central Pacific Fishery Investigations—skipjack tuna behavior studies in Eastern Pacific: M/V "Charles H. Gilbert" Cruise 47. Comml Fish. Rev., 22(8) : 19-20.

Observations of feeding behavior of schools; tagging; collection of oceanographic data.

ANONYMOUS, continued

1960(*10*). Hawaii—below-average skipjack tuna season predicted. Comml Fish. Rev., 22(8) : 26.

Prediction of catch based on oceanographic conditions.

1960(*11*). Central Pacific Fisheries Investigations—fluctuations in Hawaii's skipjack tuna catch may be due to changes in oceanic conditions. Comml Fish. Rev., 22(9) : 17-18.

Results of five exploratory fishing and scientific cruises.

1960(*12*). Central Pacific Fishery Investigations—reaction of skipjack tuna to nets tested. Comml Fish. Rev., 22(11) : 25.

Trial fishing with gill nets.

1960(*13*). Central Pacific Fishery Investigations—tagging returns indicate that the skipjack tuna is not a wide-ranging species. Comml Fish. Rev., 22(11) : 25-26.

Movements of tagged fish.

1960(*14*). Central Pacific Fishery Investigations—experimental net fishing for skipjack tuna: M/V "Charles H. Gilbert" Cruise 49. Comml Fish. Rev., 22(12) : 28.

Experimental fishing with gill nets.

1960(*15*). Records of fishing grounds survey flights and oceanographic research flights, 1959 [in Japanese]. Suisan kōku kabushiki kaisha (Fisheries Aviation Co., Ltd.), Tokyo, without pagination.

Aerial observations on fish schools northeast of Japan; data on numbers, location, size, time, etc.

1960(*16*). Suisan nenkan (Year book of fisheries) for 1960 [in Japanese]. Suisan-sha Co., Tokyo, *ca.* 800 p.

Fishing conditions in relation to oceanographic conditions; catch statistics; effort; market and production trends; market management and special actions related to fishery.

1961(*1*). A world list of experts concerned with the study of tuna. FAO, Fish. Biol. Tech. Pap., (10) : 14 p.

1961(*2*). Orsom III—Compte-rendu des croisières de l'année 1960. Rapp. Crois. Inst. Fr. Océanie Sect. Océanogr., (4) : 29 p.

Captures by means of troll and longline.

1961(*3*). Progress in 1960. Circ. U.S. Fish Wildl. Serv., (127) : 31 p.

Report on research activities of the Honolulu Biological Laboratory.

1961(*4*). Central Pacific Fishery Investigations—skipjack tuna blood samples aid in distribution studies: M/V "Charles H. Gilbert" Cruise 50. Comml Fish. Rev., 23(2) : 17-18.

Population study based on blood typing.

1961(*5*). Central Pacific Fishery Investigations—ocean conditions and tuna schools near Hawaiian Islands surveyed: M/V "Charles H. Gilbert" Cruise 51. Comml Fish. Rev., 23(5) : 12-13.

Scouting for schools during an oceanographic cruise.

1961(*6*). Central Pacific Fishery Investigations—tuna bait, gear, and oceanographic studies made near Hawaiian Islands: M/V "Charles H. Gilbert" Cruise 52. Comml Fish. Rev., 23(8) : 22-23.

Tagging cruise; experiments with gill nets.

1961(*7*). Central Pacific Fishery Investigations—threadfin shad continues to show promise as live bait for skipjack tuna. Comml Fish. Rev., 23(6) : 18-19.

1961(*8*). Central Pacific Fisheries Investigations—area south and west of Hawaii

ANONYMOUS, continued

scouted for seasonal skipjack tuna: M/V "Charles H. Gilbert." Comml Fish. Rev., 23(7) : 14.

1961(*9*). Central Pacific Fisheries Investigations—New type gill net for skipjack tuna fishing shows promise. Comml Fish. Rev., 23(7) : 14-15.

Experimental fishing with gill nets.

1961(*10*). Central Pacific Fisheries Investigations—oceanographic data collected from Hawaiian Island waters: M/V "Charles H. Gilbert" Cruise 53. Comml Fish. Rev., 23(10) : 12.

Scouting for schools during an oceanographic cruise.

1961(*11*). Suisan nenkan (Year book of fisheries) for 1961 [in Japanese]. Sui-san-sha Co., Tokyo, *ca.* 800 p.

Fishing conditions in relation to oceanographic conditions; catch statistics; effort; market and production trends; market management and special actions related to fishery.

1961(*12*). Katsuo to maguro (Skipjack and tunas). Japanese Federation of Tuna Fishermen's Co-operative Association and Japan Tuna Fishermen's Federation, Tokyo, 43 p.

Outline of Japanese tuna fisheries; catch and effort data.

1962(*1*). A world list of experts concerned with the study of the biology of tunas and related species. FAO Fish. Biol. Tech. Pap. (10) (Rev. 1): 25 p.

1962(*2*). A world list of experts concerned with the study of the biology of tunas and related species. FAO Fish. Biol. Tech. Pap. (10) (Rev. 2): 26 p.

1962(*3*). Hawaii—skipjack tuna landings, January-October 1961. Comml Fish. Rev., 24(1) : 21.

Catch statistics; size composition of catch.

1962(*4*). Central Pacific Fisheries Investigations—tuna studies in south Pacific by M/V "Charles H. Gilbert." Comml Fish. Rev., 24(2) : 16-17.

Report of a cruise to Marquesas, Tuamotu, Society and Line Islands.

1962(*5*). Central Pacific Fisheries Investigations—monofilament gill nets tested in Hawaiian skipjack fishery. Comml Fish. Rev., 24(2) : 17.

1962(*6*). Hawaii—skipjack tuna landings, January-December 1961. Comml Fish. Rev., 24(3) : 19.

Catch statistics, including catch per successful trip; size composition of catch.

1962(*7*). Central Pacific Fisheries Investigations—sensory systems of skipjack tuna being studied. Comml Fish. Rev., 24(5) : 16-17.

Olfactory organ examined and described.

1962(*8*). Central Pacific Fisheries Investigations—tuna blood types being studied for subpopulation identification. Comml Fish. Rev., 24(6) : 7-8.

Phenotypic differences between Hawaiian and Marquesas fish.

1962(*9*). Central Pacific Fisheries Investigations—tuna studies in South Pacific continued by M/V "Charles H. Gilbert." Comml Fish. Rev., 24(6) : 8-10.

Longline and troll catches during a scientific cruise.

1962(*10*). Hawaii—yield of skipjack tuna fishery this year expected to be below average. Comml Fish. Rev., 24(6) : 22-23.

Forecast based on oceanographic conditions.

1962(*11*). Hawaii—good results with tilapia as live bait for skipjack tuna. Comml Fish. Rev., 24(8) : 27.

Response of skipjack schools to tilapia.

ANONYMOUS, continued

1962(*12*). Central Pacific Fisheries Investigations—tuna studies in South Pacific continued. Comml Fish. Rev., 24(9) : 16-18.

Sighting of schools during scientific cruises; longline catches.

1962(*13*). Central Pacific Fisheries Investigations—skipjack tuna subpopulation identification studies. Comml Fish. Rev., 24(10) : 12-13.

Subpopulation study on fish from Hawaiian waters.

1962(*14*). Central Pacific Fisheries Investigations—machine tabulating equipment used to analyze cruise observations. Comml Fish. Rev., 24(11) : 22-23.

Geographic and seasonal distribution of bird flocks and accompanying schools of skipjack.

1962(*15*). Central Pacific Fisheries Investigations—tuna studies in South Pacific continued. Comml Fish. Rev., 24(12) : 28-30.

Captures of skipjack and sighting of schools during a cruise.

1962(*16*). Central Pacific Fisheries Investigations—fish behavior near floating objects studied. Comml Fish. Rev., 24(12) : 30-31.

Sighted from a raft equipped for underwater observations.

1962(*17*). Central Pacific Fisheries Investigations—fish behavior studied on first raft expedition. Comml Fish. Rev., 24(12) : 31-32.

Sighted from a raft equipped for underwater observations.

1962(*18*). Suisan nenkan (Year book of fisheries) for 1962 [in Japanese]. Suisan-sha Co., Tokyo, *ca.* 800. p.

Fishing conditions in relation to oceanographic conditions; catch statistics; effort; market and production trends; market management and special actions related to fishery.

1963(*1*). Skipjack—a world resource. Circ. U. S. Fish Wildl. Serv., 165 : 28 p.

World distribution of skipjack and skipjack fisheries; behavior of schools; swimming depth of large individuals; stocks of eastern and central Pacific; influence of meteorological and oceanic climate on the fishery; selected literature.

1963(*2*). Central Pacific Fisheries Investigations—feeding behavior of skipjack tuna studied: M/V "Charles H. Gilbert" Cruise 62(November 26-December 18, 1962). Comml Fish. Rev., 25(2) : 22-23.

Behavior studies of feeding schools; collecting of skipjack for sea-shore aquaria.

1963(*3*). Seasonal availability of Hawaiian skipjack tuna may be predicted from studies of oceanographic climate. Comml Fish. Rev., 25(2) : 23.

Predicting availability based on oceanographic and meteorological conditions.

1963(*4*). Central Pacific Fisheries Investigations—research vessel scouts for skipjack tuna east of Hawaii. Comml Fish. Rev., 25(2) : 23-24.

Plans for an exploratory fishing cruise.

1963(*5*). Central Pacific Fisheries Investigations—skipjack tuna respond to underwater sound. Comml Fish. Rev., 26(5) : 24.

Experiments with trained captive fish.

1963(*6*). Central Pacific Fisheries Investigations—skipjack tuna sought east of Hawaii: M/V "Charles H. Gilbert" Cruise 63—Boundary I. Comml Fish. Rev., 25(5) : 25-26.

Exploratory fishing.

1963(*7*). Tuna—good skipjack tuna season forecast for Hawaii in 1963. Comml Fish. Rev., 25(5) : 45.

Predicting catch based on oceanographic conditions.

1963(*8*). Central Pacific Fisheries Investigations—predictions on abundance of sum-

ANONYMOUS, continued

mer skipjack tuna in Hawaiian waters. Comml Fish. Rev., 25(6) : 22-23.

Predicting availability based on oceanographic conditions; migration.

1963(*9*). Central Pacific Fisheries Investigations—tuna studies: M/V "Charles H. Gilbert" Cruise 65. Comml Fish. Rev., 25(7) : 36.

Feeding behavior; capture of fish for sea-shore aquaria; scouting.

1963(*10*). Central Pacific Fisheries Investigations—distribution of skipjack tuna and other large fish of open sea: M/V "Charles H. Gilbert" Cruise 67. Comml Fish. Rev., 25(10) : 18-20.

1963(*11*). Central Pacific Fisheries Investigations—visual perception of skipjack tuna and little tunny. Comml Fish. Rev., 25(11) : 27-28.

Visual perception of captive fish.

1963(*12*). Central Pacific Fisheries Investigations—factors affecting abundance of summer skipjack tuna in Hawaiian waters. Comml Fish. Rev., 25(12) : 24-25.

Predicting catch based on oceanographic conditions.

1963(*13*). Records of the marking experiments of tuna carried out in the Fisheries Research Laboratory, Tokai University [in Japanese]. Rep. Fish. Res. Lab. Tokai Univ., 1(1) : 48-49.

Release data of tagged tuna in western Pacific, 1962-63.

1963(*14*). Suisan nenkan (Year book of fisheries) for 1963 [in Japanese]. Suisan-sha Co., Tokyo, *ca.* 800 p.

Fishing conditions in relation to oceanographic conditions; catch statistics; effort; market and production trends; market management and special actions related to fishery.

1964(*1*). Progress on investigations. 1963 [in English and Spanish]. Ann. Rep. Inter-Am. Trop. Tuna Commn, 7-29, 35-53, 58-84 p.

1964(*2*). Central Pacific Fisheries Investigations—tuna studies continued: M/V "Charles H. Gilbert" Cruise 69. Comml Fish. Rev., 26(2) : 13-15.

Cruise report.

1964(*3*). Central Pacific Fisheries Investigations—speed and swimming effort of tunas studied. Comml Fish. Rev., 26(3) : 15.

Behavior of fish in open sea.

1964(*4*). Central Pacific Fisheries Investigations — new fisheries-oceanographic research vessel completes successful maiden voyage: M/V "Townsend Cromwell" Cruise 1. Comml Fish. Rev., 26(5) : 13-14.

1964(*5*). Central Pacific Fisheries Investigations—pelagic fish population studies continued: M/V "Charles H. Gilbert" Cruise 71. Comml Fish. Rev., 26(6) : 12-14.

Collection of fish for shore-tank experiments; young and juveniles observed from a drifting raft.

1964(*6*). Central Pacific Fisheries Investigations—trade wind zone oceanographic studies continued: M/V "Townsend Cromwell" Cruise 2. Comml Fish. Rev., 26(7) : 10-11.

Scouting for schools during an oceanographic cruise.

1964(7). Central Pacific Fisheries Investigations—trade wind zone oceanographic studies continued: M/V "Townsend Cromwell" Cruise 5. Comml Fish. Rev., 26(10) : 22-23.

1964(8). Central Pacific Fisheries Investigations—skipjack tuna blood-typing studies expanded. Comml Fish. Rev., 26(11) : 26-27.

Summary of blood-typing study of the Honolulu Biological Laboratory.

ANONYMOUS, continued

1964(*9*). Central Pacific Fisheries Investigations—results of midwater trawling for juvenile tuna: M/V "Townsend Cromwell" Cruise 7. Comml Fish. Rev., 26(12) : 32-34.

Two types of midwater trawls and a modified plankton net used off Hawaii for collecting juvenile tunas.

1964(*10*). Central Pacific Fisheries Investigations—tuna biological studies continued: M/V "Charles H. Gilbert" Cruise 74. Comml Fish Rev., 26(12) : 35-36.

Exploratory fishing; collection of ancillary material.

1964(*11*). Table of survey of tuna catches by month and by fishing area [in Japanese]. *In:* Maguro gyogyō, shukusatsu-ban (Tuna Fishing, Collection of reprints). Japan Federation of Tuna Fishermen's Co-operative Association and Japan Tuna Fishermen's Association, Tokyo, 868 p. [Originally published between the years 1953 and 1960, Maguro Gyogyō (Tuna Fishg), (1)-(73) by Investigative Society of Tuna Fishery. *Note:* Tuna Fishg Nos. 1-32 are also published as Mon. Rep. Kanagawa Pref. Fish. Expt. Stn Nos. 12-43.]

Catch data of Japanese longliners for Pacific and other oceans. Effort, rate of sampling and surface temperatures given.

1964(*12*). Suisan nenkan (Year book for fisheries) for 1964 [in Japanese]. Suisan-sha Co., Tokyo, *ca.* 800 p.

Fishing conditions in relation to oceanographic conditions; catch statistics; effort; market management and special action related to fishery.

1965(*1*). Research [in English and Spanish]. Ann. Rep. Inter-Am. Trop. Tuna Commn, 1964: 17-40, 55-81, 88-98.

Report on research activities.

1965(*2*). Review of the coastal fisheries of the west coast of Latin America. IMR Ref. Univ. Calif., (65-4) : 152 p.

Briefly mentioned as an object of some Latin American fisheries.

1965(*3*). Progress in 1962-1963. Circ. U. S. Fish Wildl. Serv., (206) : 31 p.

Report on research activities of the Honolulu Biological Laboratory.

1965(*4*). Central Pacific Fisheries Investigations—experiments on tuna response to outside stimuli. Comml Fish. Rev., 27(1) : 22.

Electrophysiological and neuroanatomical studies of the lateral line system.

1965(*5*). Central Pacific Fisheries Investigations—skipjack tuna biological studies continued. Comml Fish. Rev., 27(1) : 22-23.

Exploratory skipjack fishing cruise to the Line Islands.

1965(*6*). Central Pacific Fisheries Investigations—skipjack tuna biological studies continued. Comml Fish. Rev., 27(2) : 16-17.

Collection of biological data on skipjack during a cruise in Hawaiian waters.

1965(*7*). Central Pacific Fisheries Investigations—origin and movements of skipjack tuna in Pacific Ocean studied. Comml Fish. Rev., 27(3) : 26-27.

Hypothetical population structure model.

1965(*8*). Central Pacific Fisheries Investigations—advances made in tuna blood group studies. Comml Fish. Rev., 27(4) : 18-19.

Blood group systems of skipjack.

1965(*9*). Australia—tuna fishery trends, 1936-64. Comml Fish. Rev., 27(4) : 52-54.

Remarks on seasonal occurrence; gill-net fishing experiments.

ANONYMOUS, continued

1965(*10*). Tuna—behavior studies aid United States fishing industry. Comml Fish. Rev., 27(5) : 41-42.

Handling of captive fish in shoreside experimental tanks.

1965(*11*). Central Pacific Fisheries Investigations—skipjack tuna biological studies continued. Comml Fish. Rev., 27(6) : 17-18.

Collection of biological data on skipjack during a cruise to Hawaiian and adjacent waters.

1965(*12*). Central Pacific Fisheries Investigations—skipjack tuna blood group studies. Comml Fish. Rev., 27(6) : 18.

Subpopulation studies in Hawaiian waters based on blood typing.

1965(*13*). Central Pacific Fisheries Investigations—forecast for summer 1965—Hawaiian skipjack tuna fishery. Comml Fish. Rev., 27(7) : 19-20.

1965(*14*). Central Pacific Fisheries Investigations—tuna behavior and response to signals studied. Comml Fish. Rev., 27(7) : 20.

Response to simple acoustical and optical signals.

1965(*15*). Central Pacific Fisheries Investigations—skipjack tuna biological studies continued. Comml Fish. Rev., 27(8) : 28-29.

Scouting for surface schools during a research cruise.

1965(*16*). Central Pacific Fisheries Investigations—transport technique for live tuna aids behavior studies. Comml Fish. Rev., 27(8) : 29-30.

1965(*17*). Central Pacific Fisheries Investigations—skipjack tuna appear in large numbers around Hawaiian Islands. Comml Fish. Rev., 27(8) : 29.

Unusually abundant in Hawaiian waters.

1965(*18*). Central Pacific Fisheries Investigations—equipment tested for sampling tuna larvae. Comml Fish. Rev., 27(10) : 26.

Effectiveness of two types of nets for collecting larval tunas.

1965(*19*). Central Pacific Fisheries Investigations—results of plankton net tests in Hawaiian waters. Comml Fish. Rev., 27(10) : 27-28.

Catch efficiency of two types of nets for collecting larvae.

1965(*20*). Central Pacific Fisheries Investigations—oxygen studies in relation to catching tuna. Comml Fish. Rev., 27(12) : 28-29.

Effect of low oxygen content on skipjack.

1965(*21*). Central Pacific Fisheries Investigations—submarine for underwater research brings new discoveries. Comml Fish. Rev., 27(12) : 29-30.

Underwater observations; depth distribution.

1965(*22*). Suisan nenkan (Year book of fisheries) for 1965 [in Japanese]. Suisansha Co., Tokyo, 608 p.

Fishing conditions in relation to oceanographic conditions; catch statistics; effort; market management and special actions related to fishery.

1965(*23*). Illustration of Japanese fishing boat and fishing gear. Edited by Japan Fisheries Agency. Nōrin-kyōkai, Tokyo, 185 p.

1965(*24*). Results of skipjack fishing operations in the adjacent sea to Palau [in Japanese]. Tuna Data, Fish. Res. Lab., Tokai Univ., (40) : 6-8.

Abundance; fishing ground and fishing conditions related to oceanographic conditions.

1965(*25*). Studies on coastal resources [in Japanese] p. 6-80. *In:* Progress report of the cooperative investigations on fisheries resources 1962 & 1963. Rep. Conf. Fish. Ag. Jap. Govt Fish. Resour. Invest., (3) : 135 p.

Review of Japanese studies on biology and ecology.

ANONYMOUS, continued

1965(*26*). Studies on environment [in Japanese]. p. 110-119. *In:* Progress report of the cooperative investigations on fisheries resources 1962 & 1963. Rep. Conf. Fish. Ag. Jap. Govt Fish. Resour. Invest., (3) : 135 p.

Fishing grounds correlated with oceanographic conditions.

1966(*1*). Central Pacific Fisheries Investigations—function of dark and light muscle in tuna studies. Comml Fish. Re., 28(1) : 25-26.

Electrophysiological studies of muscles.

1966(*2*). Suisan nenkan (Year book of fisheries) for 1966 [in Japanese]. Suisan-sha Co., Tokyo, 634 p.

Fishing conditions in relation to oceanographic conditions; catch statistics; effort; market management; market and production fluctuations; special actions related to fishery.

1966(*3*). The cover. Pacif. Fisherm. Yb. (63): Cover pg. and pg. 1.

Underwater photograph of feeding individuals.

1966(*4*). Skipjack—a little fish with a big future. Pacif. Fisherm. Yb., (63) : 70.

Commercial potential; catch statistics.

1966(*5*). Annual report of the Inter-American Tropical Tuna Commission—1965 [in English and Spanish]. Ann. Rep. Inter-Am. Trop. Tuna Commn, 106 p.

Eastern Pacific fishery and progress report on investigations.

1966(*6*). Tuna—attractant study. Comml Fish. Rev., 28(5) : 33-34.

Association with floating objects mentioned.

1966(*7*). Central Pacific Fisheries Investigations — huge skipjack tuna potential seen. Comml Fish. Rev., 28(6) : 8-9.

Estimates of potential yield from eastern and central Pacific.

1966(*8*). Central Pacific Fisheries Investigations—tuna biological studies continued. Comml Fish. Rev., 28(6) : 11-12.

Collection of larvae and juveniles; juveniles used in blood grouping study.

1966(*9*). Key book to world map of fisheries. Jørgen Frimodt, Copenhagen, 95 p.

World distribution; common names.

1966(*10*). Central Pacific Fisheries Investigations—forecast for summer 1966 Hawaiian skipjack tuna industry. Comml Fish. Rev., 28(7) : 19-20.

1966(*11*). Central Pacific Fisheries Investigations—tuna biological studies continued: M/V "Charles H. Gilbert" Cruise 90. Comml Fish. Rev., 28(7) : 20-21.

Scouting for tunas.

1966(*12*). Central Pacific Fisheries Investigations—M/V "Townsend Cromwell" Cruise 23. Comml Fish. Rev., 28(8) : 24-25.

Longline catches.

1966(*13*). Historia y desarrollo de la pesca del atún en el Pacífico [in Spanish]. Pesca Mar., Los Ang., 18(4) : 20 and 22.

Brief review of eastern Pacific fishery; catch statistics; population dynamics; need of further biological research.

1966(*14*). New skipjack fishing ground was found in the South Sea [in Japanese]. Tuna Data, Fish. Res. Lab., Tokai Univ., (45) : 24.

New fishing ground; fish size; tests to attract fish by light.

1966(*15*). General discussion [in Japanese]. *In:* Symposium on tuna fisheries. Bull. Jap. Soc. Scient. Fish., 32(9) : 823-826.

Availability to live-bait fishery.

ANONYMOUS, continued

1966(*16*). Present problems of some commercial fisheries in Japan. Adv. Fish. Oceanogr. Jap. Soc. Fish. Oceanogr., (1) : 18-22.

Review of biology, ecology and migration related to oceanographic conditions; future program of population studies.

1966(*17*). Studies on coastal resources [in Japanese] p. 8-64. *In:* Progress report of the cooperative investigations on fisheries resources 1964. Rep. Fish. Resour. Invest. Scientists Fish. Ag. Jap. Govt, (6) : 110 p.

Fishing grounds correlated with oceanographic conditions; hypothesis on the population structure of entire Pacific.

1966(*18*). Central Pacific fisheries investigations—"Cromwell" studies sonar techniques to track tuna. Comml Fish. Rev., 28(12) : 17-18.

1966(*19*). Institute of Marine Resources—annual report for the year ending 30 June 1966. Univ. Calif., IMR Ref. (66-14) : 41 p.

Brief report of research on tuna ecology off Baja California.

1966(*20*). Skipjack. Curr. Aff. Bull. Indo-Pacif. Fish. Coun. (45/46) : 35-36.

Potential yield of Pacific stocks.

1966(*21*). Tuna color. Curr. Aff. Bull. Indo-Pacif. Fish. Coun., (45/46) : 37-38.

Feeding behavior.

n. d.(*1*). Orsom III, compte rendu des croisières de l'annee 1959 [in French]. Rapp. Crois. Inst. Fr. Océanie Sect. Océanogr., (3) : 33 p.

Observations on specimens captured during the cruises.

n. d.(*2*). Records of cooperative flights for fishing, 1962 [in Japanese]. Suisan kōkū kabushiki kaisha (Fisheries Aviation Co. Ltd.), Tokyo, without pagination.

Aviation logs and records of number, location, size, time, etc. of schools of fish and marine mammals observed during the flights, northeast of Japan.

n. d.(*3*). Record of cooperative flights for fishing, 1963 [in Japanese]. Suisan kōkū kabushiki kaisha (Fisheries Aviation Co. Ltd.), Tokyo, without pagination.

Aviation logs and number, location, size, time, etc. of schools of fish and marine mammals observed during the flights, northeast of Japan.

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Anonymous, 1949(*1*); 1953(*7*), (*8*), (*12*); 1954(*3*); 1955(*1*), (*3*); 1957(*5*), (*11*), (*13*); 1958(*19*), (*20*), (*26*); 1959(*2*), (*7*), (*9*), (*15*), (*17*), (*18*), (*19*); 1960(*2*), (*9*), (*12*), (*14*); 1961(*3*), (*4*), (*6*); 1962(*4*), (*11*); 1963(*1*), (*2*), (*5*), (*7*), (*11*); 1964(*3*); 1965(*3*), (*10*), (*14*), (*16*), (*20*), (*25*); 1966(*3*), (*6*), (*15*), (*21*)

BIBLIOGRAPHY

Bernabei, 1964
Corwin, 1930
Kuennen, 1957
Okada and Matsubara, 1953
Oshima and Yoshihara, 1952
Rosa, 1950
Shimada, 1951(*1*)
Van Campen and Hoven, 1956
Anonymous, 1963(*1*)

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Barrett and Connor, 1962, 1964
Butler, 1946
Cabbat and Standal, 1964
Endo and Simidu, 1955
Fox and Millott, 1954
Fujii, 1963(*1*), (*2*)
Fujimaki, Odagiri and Inagaki, 1953
Fukuda, 1958
Fukuda and Higuchi, 1954
Fukushima, Osakabe, Kikuchi and Okada, 1957

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Hashimoto, Yamada and Mori, 1953
Higashi, 1940(*2*); 1941(*3*), (*4*); 1942(*1*), (*2*)
Higashi and Hirai, 1948
Higashi, Shimma and Taguchi, 1960
Honma, 1959, 1960
Horiguchi, Kakimoto and Kashiwada, 1950
Horiguchi, Kashiwada and Kakimoto, 1953
Horiguchi and Kashiwada, 1953
Imanishi, 1960(*1*), (*2*), (*3*), (*4*), (*5*); 1961(*1*), (*2*), (*3*), (*4*)
Kafuku, 1950
Kakimoto, 1954, 1957(*1*), (*2*); 1960 (*1*), (*2*), (*3*), (*4*), (*5*); 1962
Kakimoto and Kanazawa, 1957, 1959
Kakimoto, Kanazawa and Kashiwada, 1953, 1957
Kakimoto and Mizuma, 1956
Kakimoto and Yoshimine, 1956
Kashiwada, 1952, 1956(*1*), (*2*); 1958
Kashiwada and Kakimoto, 1952
Kashiwada, Kakimoto and Horiguchi, 1952
Kashiwada, Kakimoto and Kanazawa, 1954
Kashiwada, Kakimoto and Yamasaki, 1953
Katsumata and Togasawa, 1960
Kawasaki, 1965(*1*)
Kikuchi, Hirano, Morooka and Okada, 1958
Kikuchi, Hirano and Okada, 1957
Kishinouye, 1918
Klawe, Barrett and Klawe, 1963
Konosu, Katori, Ota, Eguchi and Mori, 1956
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Matsumoto, 1960
Matsuura, Baba and Mori, 1953
Matsuura and Hashimoto, 1954, 1955, 1956, 1959
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Miaksha, 1964
Migita and Arakawa, 1948
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Mori, Hashimoto and Komata, 1956
Murayama and Tabei, 1956
Nakano and Tsuchiya, 1960
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Ono and Nagayama, 1952
Oya and Takahashi, 1936
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Schaefer, 1962(*1*); 1963(*1*)
Shimizu, 1949(*1*), (*2*); 1963
Sugimura, Taira, Hoshino, Ebisawa and Nagahara, 1954
Takada and Nishimoto, 1955
Togasawa, 1957, 1958(*1*), (*2*)
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Barrett and Connor, 1962, 1964
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Fujimaki, Odagiri and Inagaki, 1953
Fukuda, 1958
Fukuda and Higuchi, 1954
Fukushima, Osakabe, Kikuchi and Okada, 1957
Hashimoto, Yamada and Mori, 1953
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Kashiwada, 1956(*2*); 1958
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Royce and Otsu, 1955
Saito, I., 1960
Schaefer, 1954, 1955(*1*), (*2*); 1956, 1957(*1*); 1958(*1*), (*2*); 1959(*1*), (*2*); 1960, 1961(*1*); 1962(*1*); 1963(*1*), (*2*)
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Taihoku Pref. Fish. Exp. Stat., 1927 (*1*), (*2*); 1928, 1929, 1930, 1931, 1932, 1934, 1935, 1936
Takayama, Ikeda and Ando, 1934
Takayama and Yoshida, 1933
Tester and Nakamura, 1957
Tohoku Reg. Fish. Res. Lab., 1955, 1957, 1959(*1*), (*2*); 1960(*1*), (*2*); 1961(*1*), (*2*); 1962(*1*), (*2*); 1963(*1*), (*2*)
Tohoku Reg. Fish. Res. Lab. Mar. Res. Div., 1952, 1955, 1957
Tohyama, Tetsumoto, Fukuya and Yamada, 1941
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Bur. Fish. Min. Agr. For., 1939, 1940
Cabbat and Standal, 1964
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Cobb, 1905(*1*), (*2*); 1919
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Nakamura, E. L., 1965
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South Seas Gov.-Gen. Fish. Exp. Stat., 1934(*1*)
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CHEMICAL ANALYSIS

Amano, Tozawa and Takase, 1956
Cabbat and Standal, 1964
Endo and Simidu, 1955
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Hashimoto, Yamada and Mori, 1953
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Shibusawa, 1932
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Steinbeck and Ricketts, 1941
Suyehiro, 1951
Tanaka, 1912, 1951
Temmnick and Schlegel, 1850
Tinker, 1944
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Tomiyama, Abe and Tokioka, 1958
Uchida, K., 1966
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Ulrey and Greeley, 1928
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van Pel, 1956(*1*); 1958
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Warfel, 1950
Whitley, 1964
Zharov, Karpechenko and Martinsen, 1961
Anonymous, 1965(*1*); 1966(*9*)

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Collette, 1966
Kafuku, 1950
Kawasaki, 1960
Kishinouye, 1903, 1915(*1*), (*2*); 1917 (*2*); 1918, 1919(*3*); 1922(*2*); 1924
Kitahara, 1897
Masuda, 1963
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Uchihashi, 1953
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Vildoso, 1958
Watanabe and Ueyanagi, 1962
Yabe, Anraku and Mori, 1953
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Collette, 1966
Fujii, 1963(*1*), (*2*)
Inoue, 1961
Iishyama and Okada, 1957
Jordan and Evermann, 1908
Kafuku, 1950
Kagoshima Pref. Fish. Exp. Stat., 1926(*1*); 1927
Kamimura, 1966
Kawasaki, 1960
Kawasaki and Asano, 1962
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Kawasaki, Yao, Anraku, Naganuma and Asano, 1962
Kimura, 1949
Kishinouye, 1915(*1*), (*2*); 1917(*2*); 1919(*2*), (*3*)
Kitahara, 1897
Masuda, 1963
Matsubara, 1955
Matsui, 1942(*1*)
Miyauchi, 1915
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Nakamura and Kikawa, 1966
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Vildoso, 1958
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Yabe, 1955
Yabe, Anraku and Mori, 1953
Yabe and Ueyanagi, 1962(*1*)
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Cannon, 1956
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Chen, 1956
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Cleaver and Shimada, 1950
Clemens and Wilby, 1946, 1949, 1961
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Curtis, 1938
Cuvier and Valiencennes, 1831
Davis, 1949
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Evermann and Seale, 1907
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Fujita, 1902
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Godsil and Byers, 1944
Gosline and Brock, 1960
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Hiyama and Yasuda, 1961
Holder, 1912
Hosaka, 1944
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Illingworth, 1961
Iniasevskii, 1930
Ishikawa, *et al.*, 1931
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June, 1951(*2*)
Kagoshima Pref. Fish. Exp. Stat., 1926(*1*); 1927
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Kawasaki, 1965(*1*)
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Kitahara, 1897
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Lang and Jarvis, 1943
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Macleay, 1881
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Marshall, 1965
Marukawa, 1921
Masuda, 1963
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Matsubara and Ochiai, 1965
Matsumoto, 1958, 1961
Meek and Hildebrand, 1923
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Miller, Gotshall and Nitsos, 1961
Munro, 1958(*2*)
Nakamura, 1935, 1939(*2*)
Nichols and Bartsch, 1945
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Okada, 1955
Okada *et al.*, 1966
Okada and Matsubara, 1938
Okada, Uchida and Matsubara, 1935
Okamura and Marukawa, 1909
Osipov, Kizevetter and Zhuravlev, 1964
Parrott, 1958
Raney, 1953
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Scott, 1962
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Shapiro, 1948(*1*)
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Starks, 1918(*1*)
Stead, 1906
Suda, 1953
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Suyehiro, 1942
Takahashi, 1926
Tanaka, 1912, 1926, 1951
Tanaka and Abe, 1955
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Temmnick and Schlegel, 1850
Terui, 1919
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Tomiyama, Abe and Tokioka, 1958
Uchihashi, 1963
Ueyanagi, 1966(*1*)
Ueyanagi and Watanabe, 1964
Ui, 1929
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York, 1964
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Anonymous, 1954(*1*)

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Blackburn and Tubb, 1950
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Broadhead and Barrett, 1964
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Brown and Sherman, 1962
Cannon, 1956
Chyung, 1954, 1961
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Clemens and Wilby, 1946, 1949
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Eigenmann, 1892
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Fish, 1948
Fisheries Agency, Japan, 1963, 1964, 1965
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Fukuda and Iizuka, 1939(*1*)
Furuya, 1955
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Godsil, 1949
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Hela and Laevastu, n. d.
Herre, 1932, 1933, 1935, 1936, 1940, 1953
Hildebrand, 1946
Hiyama and Yasuda, 1961
Ickes, 1945
Ikebe and Matsumoto, 1937
Illingworth, 1961
Imamura, 1949
Imp. Fish. Inst., 1924(*1*), (*2*); 1926(*3*), (*4*); 1927(*1*)
Inoue, 1961, 1965(*1*)
Inoue, Amano and Iwasaki, 1963
Iwasaki, 1966
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Jordan, Tanaka and Snyder, 1913
June, 1951(*2*)
Kagoshima Pref. Fish. Exp. Stat., 1925, 1926(*1*); 1927, 1928(*1*), (*2*); 1929, 1930, 1931, 1932, 1933, 1934, 1935(*1*), (*2*), (*3*); 1936(*1*), (*2*); 1937(*1*), (*2*); 1938(*1*); 1939(*1*); 1940(*1*); 1941(*1*)
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Kanamura and Yazaki, 1940
Kawaguchi, 1963
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Kitano, 1953
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Masuda, 1963
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Mie Pref. Fish. Exp. Stat., 1930(*1*), (*2*); 1955, 1956, 1957, 1958, 1959, 1961, 1962, 1963, 1965(*1*)
Migdalski, 1958
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Nishikawa, 1934
Obata, 1940
Oita Pref. Fish. Exp. Stat., 1925, 1926
Okada, 1955
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Sakamoto, 1962
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Snodgrass and Heller, 1905
Soldatov and Lindberg, 1930
South Seas Gov.-Gen. Fish. Exp. Stat., 1934(*1*); 1937(*2*), (*5*), (*6*); 1938, 1939(*1*), (*3*), (*4*), (*5*)
Starks, 1918(*1*)
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Stead, 1906, 1908
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Suyehiro, 1951
Tachikawa, 1921
Taihoku Prov. Fish. Exp. Stat., 1927(*1*), (*2*); 1928, 1929, 1930, 1931, 1932, 1934, 1935, 1936
Takami, 1950
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Tohoku Reg. Fish. Res. Lab., 1955, 1957, 1959(*1*), (*2*); 1960(*1*), (*2*); 1961(*1*), (*2*); 1962(*1*), (*2*); 1963 (*1*), (*2*)
Tohoku Reg. Fish. Res. Lab. Mar. Res. Div., 1952, 1955, 1957
Tokai Univ. Fish. Res. Lab., 1962
Tominaga, 1943, 1957, 1965
Tomiyama, Abe and Tokioka, 1958
Uchida, K., 1966
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Uda and Tsukushi, 1934
Uehara, 1962
Ui, 1929
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Zharov, Karpechenko and Martinsen, 1961
Anonymous, 1939, 1941(*1*); 1942, 1948(*1*), (*4*); 1951(*1*); 1954(*1*), (*6*); 1958(*19*), (*25*); 1959(*8*); 1960(*15*); 1963(*1*), (*4*), (*6*), (*10*), 1964(*6*); 1965(*24*), (*25*); 1966 (*7*), (*9*), (*14*), (*16*), (*17*), (*20*); n. d.(*2*)

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Hotta, 1953
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Miura, 1941
Nakamura, 1959
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Nakamura Research Staff, 1949

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Watanabe, 1960
Yabe, 1954(*1*); 1955
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Lamothe-Argumedo, 1965
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Mann, 1954
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Masuda, 1963
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Nakamura and Matsumoto, 1966
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Neave, 1959
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Ommanney *et al.*, 1963
Orange, 1961
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Osipov, Kizevetter and Zhuravlev, 1964
Otsu, 1965
Quibbon, 1922
Radovich, 1961
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Schaefer, 1948(*1*); 1952(*2*); 1953, 1954, 1955(*1*), (*2*), (*3*); 1956, 1957(*1*), (*2*); 1958(*1*), (*2*); 1959 (*1*), (*2*); 1960, 1961(*1*), (*2*); 1962(*1*), (*2*); 1963(*1*)
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Schaefer and Orange, 1956
Schweigger, 1943, 1959, 1960
Seale, 1940
Sette, 1960
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Aikawa, 1933, 1949
Anraku and Kawasaki, 1966
Blackburn, 1959(*1*); 1960(*2*); 1961, 1962(*1*), (4); 1965(*1*); 1966
Brown and Sherman, 1962
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Chyung, 1954
Cleaver and Shimada, 1950
Fiedler, Jarvis and Lobell, 1943
Formosa Gov.-Gen. Fish. Exp. Stat., 1940
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Hiatt and Strasburg, 1960
Hotta, 1960
Hotta, Fukushima, Odate and Aizawa, 1961
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Imamura, 1949
Inoue, 1961
Inoue, Amano and Iawasaki, 1963, 1966
Ishikawa, *et al.*, 1931
Kagoshima Pref. Fish. Exp. Stat., 1926(*1*); 1927
Kamohara, 1961
Kanamura and Yazaki, 1940
Kawasaki, 1955(*1*), (*2*); 1958, 1959, 1960, 1963(*1*), (*2*); 1964, 1965(*1*)
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Kimura, Iwashita and Hattori, 1952
Kishinouye, 1924
Kitano, 1953
Koizumi, 1955
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Maeda, 1957
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Marukawa, 1940
Masuda, 1963
Matsubara, 1955
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Miura, 1941
Nakamura, 1954
Nakamura, E. L., 1965
Nakamura and Matsumoto, 1966
N-sei, 1940(*1*), (*2*)
Osipov, 1966
Otsu, 1965
Rothschild, 1963
Saito, I., 1960
Saito, K., 1953
Sakamoto, 1962
Sasaki and Takehisa, 1932
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Shimoda, 1937
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Tominaga, 1943, 1957, 1965
Uchida, 1923, 1930
Uchihashi, 1953
Uda, 1933, 1963(*1*); 1966(*2*)
Uda and Ishino, 1958
Ueyanagi, 1966(*2*)
Uno and Konagaya, 1960
Waldron, 1956, 1963
Watanabe, 1942, 1958
Yabe, 1954(*2*)
Yabe, Anraku and Mori, 1953
Yabe and Mori, 1950
Yabe, Ueyanagi and Watanabe, 1966
Yabe, Yabuta and Ueyanagi, 1963
Yamamoto, 1933
Yamanaka, 1962
Yamanaka and Kurohiji, 1966
Yamanaka, Kurohiji and Morita, 1966
Yamashita, 1966
Yao, 1962
Yonezawa, 1950
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Imamura, 1949
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Kubo, 1966
Manar, 1966(*3*)
Marr, 1948
Marukawa, 1921
Masuda, 1963
Matsui, 1942(*2*)
Mito, 1961
Orange, 1961
Schaefer, 1948(*2*); 1955(*2*)
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Suyehiro, 1951
Uchida, 1961
Waldron, 1963
Yabe, 1954(*2*)
Yao, 1955
Yoshida, 1966(*2*)
Yuen, 1959
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Dunstan, 1961
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Marr, 1962
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Masuda, 1963
Matsubara and Ochiai, 1965
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McKenzie, 1961
Miura, 1941
Nakamura, 1962(*1*), (*2*)
Nakamura, E. L., 1965
Nordhoff, 1930
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Osipov, 1966
Ronquillo, 1953
Saito, I., 1960
Shomura, 1964
Snodgrass and Heller, 1905
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Suyehiro, 1936, 1938, 1951
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Fujita, 1902
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Godsil and Byers, 1944
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Ishikawa, *et al.*, 1931
Ishiyama and Okada, 1957
Jordan, 1925
Jordan and Evermann, 1905
Kamohara, 1950, 1955
Kawasaki, 1965(*1*)
Kishinouye, 1915(*1*), (*2*); 1919(*2*), (*3*); 1923
Kitahara, 1897
Kumada *et al.*, 1941
Masuda, 1963
Matsubara, 1890
Matsubara and Ochiai, 1965
Matsumoto, 1958, 1961
McCulloch, 1922
Nakamura, 1959
Nakamura, I. and Kikawa, 1966
Okada, 1955
Okada, *et al.*, 1966
Okada, Uchida and Matsubara, 1935
Okamura and Marukawa, 1909
Roedel, 1948
Roughley, 1951
Saito, I., 1960
Serventy, 1941(*1*)
Starks, 1918(*1*)
Suda, 1953
Takahashi, 1924
Tanaka, 1912
Tanaka and Abe, 1955
Tanaka, Amemiya *et al.*, 1933
Temmnick and Schlegel, 1850
Tinker, 1944
Tominaga, 1957, 1965
Tomiyama, Abe and Tokioka, 1958
Ueyanagi, 1966(*1*)
Walford, 1931
Wang, 1958
Watanabe and Ueyanagi, 1962
Yabe, 1953
Anonymous, 1965(*10*)

FISHERIES MANAGEMENT AND REGULATIONS

Kask, 1966
Lang and Jarvis, 1943
Matsuda, 1963
Okajima, 1937(*2*)
Schaefer, 1948(*2*)
Tachikawa, 1932(*2*)
Anonymous, 1939, 1953(*14*); 1954 (*15*); 1955(*19*); 1956(*22*); 1957 (*15*); 1958(*27*); 1959(*21*); 1960 (*16*); 1961(*11*); 1962(*18*); 1963 (*14*); 1964(*12*); 1965(*22*); 1966 (*2*)

FISHING AREAS

Aikawa, 1933, 1941, 1942, 1949
Alverson, 1959, 1960, 1963(*2*)
Amano, 1965
Angot, 1959
Berdegué, 1960
Blackburn and Tubb, 1950
Brandhorst, 1965
Broadhead and Barrett, 1964
Broadhead and Marshall, 1960
Broadhead and Orange, 1960
Brock, 1959(*2*)
Calkins, 1961, 1963
Cleaver and Shimada, 1950
Conner, 1929
de Buen, 1958
Fiedler, Jarvis and Lobell, 1943
Fish, 1948
Godfrey, 1958
Godsil, 1949
Gutiérrez, 1965
Hennemuth, 1959(*1*)
Holder, 1912
Imp. Fish. Inst., 1931(*1*)
Inanami, 1942(*4*)
Inoue, 1961, 1966(*1*)
Iwasaki, 1966
June, 1951(*1*), (*2*)
Kamimura, 1966
Kawai, 1959
Kawai and Sasaki, 1962
Kawasaki, 1955(*1*), (*2*); 1957, 1958, 1963(*2*); 1965(*1*); 1966
Kawasaki and Anraku, 1962
Kawasaki and Naganuma, 1959
Kawasaki, Yao, Anraku, Naganuma and Asano, 1962
Kimura, 1941, 1942, 1949, 1954
Kitano, 1953
Koyasu, 1931(*1*)
Kubo, 1966
Laevastu and Rosa, 1963
Lang and Jarvis, 1943
MacInnes, n. d.
Manar, 1966(*3*)
Martin, 1938, 1962
Marukawa, 1939(*1*); 1940
Masuda, 1963
Matsubara, 1942
Matsubara and Ochiai, 1965
Morgan, 1956
Morita, 1960
Murayama and Okura, 1950
Nakamura, 1939(*1*)
Okada, 1955
Okamura and Marukawa, 1909
Omura, 1916
Osipov, 1960
Osipov, Kizevetter and Zhuravlev, 1964
Probatov, 1958
Ronquillo, 1963
Rothschild, 1965
Royce and Otsu, 1954, 1955
Saito, I., 1960
Sardone, 1957
Schaefer, 1955(*2*), (*3*); 1956, 1957 (*2*); 1959(*2*)
Schaefer, Chatwin and Broadhead, 1961
Schweigger, 1943, 1960
Serventy, 1941(*2*)
Sette and Rothschild, 1966
Shapiro, 1948(*1*), (*2*)
Shimada, 1958
Shimada and Schaefer, 1956
Shippen, 1961
Smith, 1947(*1*), (*2*)
South Seas Gov.-Gen. Fish. Exp. Stat., 1937(*2*), (*5*)
Squire, 1963
Takayama and Yoshida, 1933
Thompson, 1943
Tohoku Reg. Fish. Res. Lab., 1955, 1957, 1959(*2*); 1960(*2*); 1961(*2*); 1962(*2*); 1963(*2*)
Tominaga, 1957, 1965
Uchida, R. N., 1966
Uda, 1931, 1948, 1953, 1963(*1*)
Uehara, 1962
Waldron, 1963
Whitehead, 1929
Yabe, Anraku and Mori, 1953

FISHING AREAS, continued
Yabe, Yabuta and Ueyanagi, 1963
Yamanaka, 1962
Yamashita, 1958
Yogi, 1914(*1*), (*2*)
Yonezawa, 1950
Anonymous, 1929, 1939, 1951(*1*); 1953(*13*); 1956(*10*); 1960(*6*); 1961(*12*); 1963(*1*); 1965(*7*), (*19*), (*24*); 1966(*9*), (*14*), (*16*)

FISHING CONDITIONS CORRELATED WITH AREAS
Aikawa, 1933, 1942, 1949
Amano, 1965
Broadhead and Barrett, 1964
Commission to Popularize the Knowledge of Fishing Grounds, 1958, 1964, 1965
Formosa Gov.-Gen. Fish. Exp. Stat., 1930, 1931, 1932, 1933, 1940
Fujisaki, 1934
Fukada and Iizuka, 1939(*1*)
Imamura, 1949
Imp. Fish. Inst., 1924(*1*), (*2*), (*3*), (*4*), (*5*), (*6*); 1925(*1*), (*2*), (*3*); 1926(*1*), (*2*), (*3*), (*4*); 1927(*1*), (*2*), (*3*), (*4*); 1928, 1929(*1*), (*2*); 1930(*1*), (*2*), (*3*), (*4*), (*5*); 1931(*2*), (*3*), (*4*); 1932(*1*), (*2*), (*3*); 1933(*1*), (*2*), (*3*); 1934(*1*), (*2*), (*3*); 1935(*1*), (*3*), (*4*); 1936 (*1*), (*3*), (*4*), (*5*); 1937(*1*), (*2*), (*4*), (*5*); 1938(*1*), (*2*), (*4*), (*5*); 1939(*1*), (*2*); 1940(*1*), (*2*), (*3*), (*4*); 1941(*1*), (*2*), (*3*), (*4*); 1942 (*1*), (*2*), (*3*), (*4*); 1943(*1*), (*2*), (*3*), (*4*)
Inanami, 1942(*1*), (*4*)
Inoue, 1961, 1965(*1*)
Kagoshima Pref. Fish. Exp. Stat., 1925, 1926(*1*); 1927, 1928(*1*), (*2*); 1929, 1930, 1931, 1932, 1933, 1934, 1935 (*1*), (*2*), (*3*); 1936(*1*), (*2*); 1937 (*1*), (*2*); 1938(*1*), (*2*); 1939(*1*); 1940(*1*); 1941(*1*)
Kawaguchi, 1963
Kawai, 1955, 1959
Kawai and Sasaki, 1962
Kawasaki, 1955(*1*), (*2*); 1958, 1963 (*2*); 1964, 1965(*1*)
Kawasaki and Anraku, 1962
Kawasaki, Yao, Anraku, Naganuma and Aasano, 1962
Kimura, 1941, 1949, 1954
Kobayashi, n. d.
Kochi Pref. Fish. Exp. Stat., 1923, 1924
Kubo, 1966
Kumamoto Pref. Fish. Exp. Stat., 1927, 1928, 1929, 1930, 1931, 1932, 1946
Kuroda, 1955
Marr and Tester, 1966
Marukawa, 1940
Masuda, 1963
Matsubara and Ochiai, 1965
Matsumoto, 1937
Mie Pref. Fish. Exp. Stat., 1930(*1*), (*2*); 1955, 1956, 1957, 1958, 1959, 1961, 1962, 1963, 1965(*1*)
Miura, 1941
Murayama and Okura, 1952
Nakamura Research Staff, 1949
Oita Pref. Fish. Exp. Stat., 1925, 1926
Okajima, 1937(*1*)
Okinawa Pref. Fish. Exp. Stat., 1929, 1931(*1*); 1943
Omori and Fukuda, 1938
Omori and Kawabe, 1937(*1*), (*2*)
Osipov, 1960
Saito, I., 1960
Sasaki, 1939
Sasaki and Takehisa, 1932
Sette, 1954
Shimoda, 1937
Shizuoka Pref. Fish. Exp. Stat., 1932(*1*), (*2*); 1935(*1*); 1936 (*1*), (*2*); 1937(*1*)
South Seas Gov.-Gen. Fish. Exp. Stat., 1937(*2*), (*3*), (*6*); 1939(*1*)
Suyehiro, 1938
Tachikawa, 1921, 1932(*1*)
Taihoku Prov. Fish. Exp. Stat., 1927(*1*), (*2*); 1931
Takami, 1950
Takayama, Ikeda and Ando, 1934
Terui, 1919
Tohoku Reg. Fish. Res. Lab., 1955, 1957, 1959(*1*), (*2*); 1960(*1*), (*2*); 1961(*1*), (*2*); 1962(*1*), (*2*); 1963(*1*)
Tohoku Reg. Fish. Res. Lab. Mar. Res. Div., 1952, 1955, 1957
Tokai Univ. Fish. Res. Lab., 1962
Tominaga, 1943, 1957
Uda, 1935(*2*); 1938(*1*); 1948

FISHING CONDITIONS CORRELATED WITH AREAS, continued

Uda and Tsukushi, 1934
Uno, 1965
Waldron, 1963
Watanabe, Haruo, 1940
Yabe, Anraku and Mori, 1953
Yamanaka, 1962
Yao, 1966
Yonezawa, 1950
Anonymous, 1939, 1941(*1*); 1953 (*14*); 1954(*15*); 1955(*19*); 1956 (*22*); 1957(*15*); 1958(*27*); 1959 (*21*); 1960(*16*); 1961(*11*); 1962 (*18*); 1963(*14*); 1964(*12*); 1965 (*22*), (*25*); 1966(*2*), (*17*)

FISHING CONDITIONS CORRELATED WITH SEASON

Aikawa, 1933, 1942, 1949
Anraku and Kawasaki, 1966
Blackburn, 1962(*4*); 1963
Broadhead and Barrett, 1964
Commission to Popularize the Knowledge of Fishing Grounds, 1958, 1964, 1965
Formosa Gov.-Gen. Fish. Exp. Stat., 1930, 1931, 1932, 1933
Fujisaki, 1934
Fukuda and Iizuka, 1939(*1*)
Howard, 1963
Imamura, 1949
Imp. Fish. Inst., 1924(*1*), (*2*), (*3*), (*4*), (*5*), (*6*); 1925(*1*), (*2*), (*3*); 1926(*1*), (*2*), (*3*), (*4*); 1927(*1*), (*2*), (*3*), (*4*); 1928, 1929(*1*), (*2*); 1930(*1*), (*2*), (*3*), (*4*), (*5*); 1931 (*2*), (*3*), (*4*); 1932(*1*), (*2*), (*3*); 1933(*1*), (*2*), (*3*); 1934(*1*), (*2*), (*3*); 1935(*1*), (*3*), (*4*); 1936(*1*), (*3*), (*4*), (*5*); 1937(*1*), (*2*), (*4*), (*5*); 1938(*1*), (*2*), (*4*), (*5*); 1939 (*1*), (*2*); 1940(*1*), (*2*), (*3*), (*4*); 1941(*1*), (*2*), (*3*), (*4*); 1942(*1*), (*2*), (*3*), (*4*); 1943(*1*), (*2*), (*3*), (*4*)
Inoue, 1961
Iwasaki, 1966
Kagoshima Pref. Fish. Exp. Stat., 1925, 1926(*1*); 1927, 1928(*1*), (*2*); 1929, 1930, 1931, 1932, 1933, 1934, 1935(*1*); 1936(*1*); 1937(*1*); 1938 (*1*); 1939(*1*); 1940(*1*); 1941(*1*)
Kawai, 1955, 1959
Kawai and Sasaki, 1962
Kawasaki, 1952, 1955(*1*), (*2*); 1958, 1963(*2*); 1964, 1965(*1*)
Kawasaki and Anraku, 1962
Kawasaki and Naganuma, 1959
Kawasaki, Yao, Anraku, Naganuma and Asano, 1962
Kimura, 1941, 1949, 1954, 1966
Kochi Pref. Fish. Exp. Stat., 1923, 1924
Kohama, 1914
Koyasu, 1931(*1*), (*2*)
Kubo, 1966
Kumamoto Pref. Fish. Exp. Stat., 1927, 1928, 1929, 1930, 1931, 1932, 1946
Kuroda, 1955, 1965
Marukawa, 1939(*1*); 1940
Masuda, 1963
Matsubara and Ochiai, 1965
Mie Pref. Fish. Exp. Stat., 1930(*1*), (*2*); 1955, 1956, 1957, 1958, 1959, 1961, 1962, 1963, 1965(*1*)
Miura, 1941
Morita, 1959, 1960
Murayama and Okura, 1952
Nakamura Research Staff, 1949
Oita Pref. Fish. Exp. Stat., 1926
Okinawa Pref. Fish. Exp. Stat., 1929, 1931(*1*)
Omori and Fukuda, 1938
Omori and Kawabe, 1937(*1*), (*2*)
Osipov, 1960
Saito, I., 1960
Sasaki, 1939
Sasaki and Takehisa, 1932
Shizuoka Pref. Fish. Exp. Stat., 1932 (*1*), (*2*); 1935(*1*); 1936(*1*), (*2*); 1937(*1*)
South Seas Gov.-Gen. Fish. Exp. Stat., 1937(*2*); 1938
Suyehiro, 1936, 1938
Tachikawa, 1921
Taihoku Prov. Fish. Exp. Stat., 1927 (*1*), (*2*); 1928, 1929, 1930, 1931
Takami, 1950
Takayama, Ikeda and Ando, 1934
Tanaka, 1966
Tohoku Reg. Fish. Res. Lab., 1955, 1957, 1959(*1*), (*2*); 1960(*1*), (*2*); 1961(*1*), (*2*); 1962(*1*), (*2*); 1963(*1*)
Tohoku Reg. Fish. Res. Lab. Mar. Res. Div., 1952, 1955, 1957

FISHING CONDITIONS CORRELATED WITH SEASONS, continued
Tominaga, 1943, 1957
Uda, 1938(*1*); 1948
Uda, and Tsukushi, 1934
Uno, 1965
Waldron, 1963
Watanabe, 1940
Yabe, Anraku and Mori, 1953
Yamanaka, 1962
Yogi, 1914(*1*)
Yonezawa, 1950
Anonymous, 1939, 1941(*1*); 1953(*14*); 1954(*15*); 1955(*19*); 1956(*22*); 1957(*15*); 1958(*6*), (*14*), (*27*); 1959(*2*), (*21*); 1960(*16*); 1961(*11*); 1962(*18*); 1963(*14*); 1964(*12*); 1965(*22*), (*24*), (*25*); 1966(*2*), (*17*)

FISHING EFFORT
Aikawa, 1949
Alverson, 1959, 1963(*2*)
Amano, 1965
Broadhead and Barrett, 1964
Calkins, 1961, 1963
Fink, 1965(*1*)
Formosa Gov.-Gen. Fish. Exp. Stat., 1930, 1931, 1932, 1933
Fujisaki, 1934
Imamura, 1949
Imp. Fish. Inst., 1924(*1*), (*2*), (*4*), (*5*), (*6*); 1925(*1*), (*2*), (*3*); 1926(*1*), (*2*), (*3*), (*4*); 1927(*1*), (*2*), (*3*), (*4*); 1928, 1929(*1*), (*2*); 1930(*1*), (*2*), (*3*), (*4*); 1931(*2*), (*3*), (*4*); 1932(*1*), (*2*), (*3*); 1933(*1*), (*2*); 1934(*1*), (*3*); 1935(*1*), (*4*); 1936(*1*), (*5*); 1937(*2*), (*5*); 1938(*2*), (*5*); 1939(*2*); 1940(*2*), (*4*); 1941(*2*); 1942(*2*), (*4*); 1943(*2*), (*4*)
Kagoshima Pref. Fish. Exp. Stat., 1927, 1928(*1*); 1931, 1937(*1*), (*3*)
Kamimura, 1966
Kanagawa Pref. Fish. Exp. Stat., 1952-1956, 1961
Katsube, 1921
Kawasaki, 1957, 1964, 1965(*1*)
Kawasaki and Anraku, 1962
Kimura, 1941
Kishinouye, 1919(*1*)
Koyasu, 1931(*2*)
Kubo, 1966
Kumamoto Pref. Fish. Exp. Stat., 1932?
Manar, 1966(*3*)
Martin, 1962
Marukawa, 1939(*1*); 1940
Masuda, 1963
Mie Pref. Fish. Exp. Stat., 1955, 1957, 1961, 1962, 1963, 1965(*1*), (*2*)
Murayama and Okura, 1950
Okinawa Pref. Fish. Exp. Stat., 1929
Omura, 1916
Res. Div. Fish. Age. Jap., 1965, 1966
Saito, I., 1960
Sakai and Uno, 1940
Schaefer, 1954, 1955(*2*); 1958(*2*); 1959(*2*); 1963(*2*)
Shimada, 1958
Shimamura, 1927
Shippen, 1961
Silliman, 1966(*2*)
South Seas Gov.-Gen. Fish. Exp. Stat., 1938
Tachikawa, 1921, 1932(*1*)
Taihoku Prov. Fish. Exp. Stat., 1927(*1*), (*2*); 1928, 1931
Takayama, Ikeda and Ando, 1934
Takayama and Yoshida, 1933
Tohoku Reg. Fish. Res. Lab., 1955, 1957, 1959(*2*); 1960(*2*); 1961(*2*); 1962(*2*); 1963(*2*)
Tohoku Reg. Fish. Res. Lab. Mar. Res. Div., 1952
Tominaga, 1957
Uchida, R. N., 1966
Uda, 1940(*1*), (*2*)
Uno, 1965
Waldron, 1965
Yabe, Anraku and Mori, 1953
Yamamoto, 1923
Yamashita, 1958
Yao, 1962
Yogi, 1914(*1*)
Anonymous, 1939, 1953(*14*); 1954(*15*); 1955(*19*); 1956(*22*); 1957(*15*); 1958(*27*); 1959(*21*); 1960(*16*); 1961(*11*), (*12*); 1962(*18*); 1963(*1*), (*14*); 1964(*11*), (*12*); 1965(*22*), (*24*); 1966(*2*), (*17*)

FISHING METHODS AND GEAR (OTHER THAN PURSE-SEINE, LONGLINE, LIVEBAIT AND TROLL)

Baessler, 1905
Cobb, 1905(*2*)
Curtis, 1938
Demandt, 1913
Hornell, 1950
Hosaka, 1944
Imp. Fish. Inst., 1931(*1*)
Inoue, 1961, 1966(*2*)
Kishinouye, 1923
Koizumi, 1955
Legand, 1950
Marr, 1962
Martin, 1938
Matsumoto, 1952
Miura, 1941
Miyamoto, 1952
Nordhoff, 1930
Phillipps, 1956
Sette, 1954
Shapiro, 1948(*2*)
Shomura, 1963(*1*), (*2*), (*3*); 1964
Suda, 1961(*1*), (*2*)
Takayama, 1963
Takeda, 1941
Temple, 1963
Thilenius, 1900
Tominaga, 1957
Uda, 1948
van Pel and Devambez, 1957
Waldron, 1963
Yabe, Anraku and Mori, 1953
Yamaguchi, 1942
Anonymous, 1951(*4*), (*6*), (*7*); 1960 (*12*), (*14*); 1961(*3*), (*6*), (*9*); 1962(*4*); 1963(*1*); 1965(*9*), (*23*)

FISHING SEASONS

Aikawa, 1933, 1941, 1942
Alverson, 1959, 1960, 1963(*2*)
Angot, 1959, 1960
Berdegué, 1960
Blackburn, 1960(*2*); 1961(*1*)
Brock, 1965
Brock and Marr, 1960
Calkins, 1961, 1963
Cannon, 1956
Cleaver and Shimada, 1950
Demandt, 1913
Doumenge, 1962
Elliott, 1922, 1923, 1924
Godsil, 1949
Gosline and Brock, 1960
Holder, 1912
Imamura, 1949
Imp. Fish. Inst., 1931(*1*)
Inanami, 1942(*1*)
Inoue, 1961, 1966(*1*)
June, 1951(*1*), (*2*)
Kawasaki, 1955(*1*); 1958, 1965(*1*)
Kawasaki and Anraku, 1962
Kawasaki and Naganuma, 1959
Kimura, 1941, 1942, 1954
Kubo, 1966
Lang and Jarvis, 1943
MacInnes, n. d.
Manar, 1966(*1*)
Martin, 1938, 1962
Marukawa, 1939(*1*)
Masuda, 1963
Matsubara and Ochiai, 1965
Matsumoto, 1966(*2*)
McKenzie, 1961
Mie Pref. Fish. Exp. Stat., 1955
Miura, 1941
Murayama and Okura, 1950
Murphy, Waldron and Seckel, 1960
Nakamura Research Staff, 1949
Nordhoff, 1930
Osipov, 1960
Osipov, Kizevetter and Zhuravlev, 1964
Phillipps and Hodgkinson, 1922
Probatov, 1958
Quibbon, 1922
Ronquillo, 1963
Roughley, 1951
Royce and Otsu, 1955
Saito, I., 1960
Schaefer, 1961(*2*)
Schweigger, 1943, 1960
Seckel, 1963
Seckel and Waldron, 1960
Serventy, 1941(*2*)
Shapiro, 1948(*1*)
Shimada, 1958
Shippen, 1961
Shomura, 1964
Smith, 1947(*1*), (*2*)
Smith and Schaefer, 1949
South Seas Gov.-Gen. Fish. Exp. Stat., 1937(*2*)
Takayama and Yoshida, 1933
Terui, 1919

FISHING SEASONS, continued
Thompson, 1919(*2*); 1943
Tohoku Reg. Fish. Res. Lab., 1955, 1957, 1959(*2*); 1960(*2*); 1961(*2*); 1962(*2*)
Tominaga, 1957
Uchida, R. N., 1966
Uda, 1948, 1963(*1*)
Waldron, 1963
Walford, 1931
Warfel, 1950
Whitehead, 1929
Wilson and Austin, 1957
Yabe, Anraku and Mori, 1953
Yamashita, 1958
Yogi, 1914(*2*)
Yonezawa, 1950
Anonymous, 1939, 1941(*1*); 1949(*2*); 1952(*2*); 1954(*3*), (*9*); 1956 (*10*); 1957(*8*); 1958(*13*); 1961 (*3*); 1965(*3*), (*9*), (*24*)

FOOD
Ahlstrom and Counts, 1958
Alverson, 1961, 1963(*1*)
Bini, 1952
Blackburn, 1959(*3*); 1960(*2*); 1961, 1964, 1965(*2*), (*3*); 1966
Brock and Marr, 1960
Clemens and Wilby, 1946, 1949, 1961
Collette and Gibbs, 1965
de Buen, 1957(*1*); 1958
Del Solar, 1942
D'Ombrain, 1957
Eckles, 1949(*2*)
Fiedler, Jarvis and Lobell, 1943
Fisheries Agency, Japan, 1963
Formosa Gov.-Gen. Fish. Exp. Stat., 1940
Gabrielson and La Monte, 1950
Gosline and Brock, 1960
Hiatt and Strasburg, 1960
Hosaka, 1944
Hotta, 1953
Hotta, Kariya and Ogawa, 1959
Hotta and Ogawa, 1953, 1955
Hunter and Mitchell, 1966
Illingworth, 1961
Imai, 1950
Imamura, 1949
Inaba, 1928
Ishikawa, *et al.*, 1931
June, 1951(*2*)
Kagoshima Pref. Fish. Exp. Stat., 1926(*1*)
Kawamura, 1939
Kawasaki, 1952, 1963(*1*); 1965(*1*)
Kawasaki and Asano, 1962
Kawasaki, Yao, Anraku, Naganuma and Asano, 1962
Kimura, 1950
King and Wilson, 1957
Kishinouye, 1895, 1917(*1*), 1923, 1924
Klawe and Alverson, 1964
Kubo, 1966
Kumamoto Pref. Fish. Exp. Stat., 1931
Lesson, 1830
Mann, 1954
Marr, 1962
Marukawa, 1921, 1939(*3*)
Masuda, 1963
Matsubara and Ochiai, 1965
Matsubara, Ochiai and Iwai, 1965
Miura, 1941
Munro, 1958(*2*)
Nakamura, 1962(*1*), (*2*)
Nakamura, E. L., 1965
Nakamura Research Staff, 1949
Nordhoff, 1930
N-sei, 1940(*2*)
Okamura and Marukawa, 1909
Ronquillo, 1953
Saito, I., 1960
Schaefer, 1955(*2*); 1957(*1*); 1958(*1*); 1959(*1*); 1960, 1961(*1*); 1962
Schweigger, 1943, 1959
Shapiro, 1948(1)
Shibata, 1966
Shizuoka Pref. Fish. Exp. Stat., 1932(*1*)
Snodgrass and Heller, 1905
Strasburg, 1961
Suyehiro, 1936, 1938, 1942, 1951
Taihoku Prov. Fish. Exp. Stat., 1928, 1929
Temple, 1963
Tester and Nakamura, 1957
Tinker, 1944
Tohoku Reg. Fish. Res. Lab. Mar. Res. Div., 1952
Tominaga, 1943, 1957, 1965
Uchihashi, 1953
Uda, 1933
Waldron, 1963
Waldron and King, 1963
Walford, 1937

FOOD, continued

Welsh, 1950(*2*)
Wilson and Austin, 1959
Yabe, 1951
Yabe, Anraku and Mori, 1953
Yamanaka, 1962
Yamashita, 1966
Yanagi, 1911
Yanase, 1955
Yogi, 1914(*1*)
Yokota, Toriyama, Kanai and Nomura, 1961
Yonezawa, 1950
Yuen, 1959
Zharov, Karpechenko and Martinsen, 1961
Anonymous, 1953(*13*); 1957(*8*); 1958 (*3*), (*10*), (*13*), (*17*), (*19*); 1960 (*7*); 1965(*3*); 1966(*19*)

FRENCH POLYNESIA

Angot, 1959, 1960
Austin, 1957
Baessler, 1905
Bleeker, 1854, 1860(*1*)
Brock and Marr, 1960
Brock and Riffenburgh, 1960
Chabouis and Chabouis, n. d.
Curtis, 1938
Cushing, 1964
Dick, 1964
Dung and Royce, 1953
Fowler, 1934
Herre, 1932
Iversen, 1962
Kamimura and Honma, 1963
Legand, 1950
Lesson, 1830
Manar, 1966(*1*)
Matsumoto, 1958, 1961
Murphy and Ikehara, 1955
Nakamura, E. L., 1965
Nakamura and Matsumoto, 1966
Nordhoff, 1927, 1930
Phillipps, 1956
Rothschild, 1964, 1965, 1966(*3*)
Schaefer, 1961(*2*)
Sprague, 1963
Sprague and Holloway, 1962
Sprague, Holloway and Nakashima, 1963
Sprague and Nakashima, 1962(*2*)
Van Campen, 1953
van Pel and Devambez, 1957
Waldron, 1964
Wilson and Austin, 1957, 1959
Wilson, Nakamura and Yoshida, 1958
Wilson and Rinkel, 1957
Yoshida, 1960, 1966(*2*)
Anonymous, 1956(*3*), (*18*), (*19*), (*21*); 1957(*2*), (*3*), (*8*); 1958(*6*), (*8*), (*12*), (*13*), (*16*), (*17*), (*19*); 1959(*9*); 1960(*1*), (*8*); 1961(*3*), (*4*); 1962(*4*), (*8*), (*14*); 1963 (*1*); 1964(*2*)

GROWTH

Aikawa, 1941, 1942, 1949
Aikawa and Kato, 1938
Bell, 1964
Bonham, 1946
Brock, 1954, 1965
Brock and Marr, 1960
Gosline and Brock, 1960
Hamre, 1963
Hayashi, 1959
Herald, 1961
Imamura, 1949
Kagoshima Pref. Fish. Exp. Stat., 1926(*1*)
Kawasaki, 1955(*1*), (*2*); 1957, 1960, 1963(*1*); 1964, 1965(*1*)
Kishinouye, 1923, 1924
Kubo, 1966
Magnuson, 1963(*1*)
Masuda, 1963
Matsubara and Ochiai, 1965
Matsui, 1942(*1*)
Moiseev, 1961
Nakamura, 1959, 1962(*1*)
Okamoto, 1940
Rothschild, 1963, 1965, 1966(*3*)
Saito, I., 1960
Schaefer, 1951, 1960, 1961(*1*)
Schaefer, Chatwin and Broadhead, 1961
Shippen, 1961
Shomura, 1966
Silliman, 1966(*2*)
Tohoku Reg. Fish. Res. Lab., 1955, 1957, 1959(*2*); 1960(*2*)
Tohoku Reg. Fish. Res. Lab. Mar. Res. Div., 1952
Tominaga, 1943, 1957, 1965
Waldron, 1963
Walford, 1937
Uda, 1932

GROWTH, continued

Ueyanagi and Watanabe, 1964
Yamashita and Waldron, 1959
Yao, 1966
Yokota, Toriyama, Kanai and Nomura, 1961
Anonymous, 1956(*4*); 1958(*2*), (*15*), (*23*); 1959(*3*); 1964(*1*); 1965 (*25*); 1966(*17*)

HAWAIIAN WATERS

Austin and Barkley, 1962
Barkley, 1963
Bonham, 1946
Brock, 1949, 1954, 1965
Brock and Marr, 1960
Brown and Sherman, 1962
Cabbat and Standal, 1964
Chapman, 1946
Cobb, 1905(*1*), (*2*); 1919
Cushing, 1952(*1*); 1964
Dung and Royce, 1953
Eckles, 1949(*1*), (*2*)
Fowler, 1928
Godfrey, 1958
Godsil and Greenhood, 1948, 1952
Gooding, 1963, 1964
Gosline and Brock, 1960
Hayashi, 1959
Hela and Laevastu, n. d.
Hennemuth, 1959(*1*)
Herald, 1961
Herre, 1940
Hida, 1966
Higgins, 1966
Hosaka, 1944
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Iversen, 1962
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Jenkins, 1903
Jordan, 1925
Jordan and Evermann, 1905
Jordan and Jordan, 1922
Jordan and Lovekin, 1926
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Kamimura and Honma, 1963
Kask, 1964
Kawasaki, 1964, 1965(*1*); 1966
King and Wilson, 1957
Manar, 1966(*1*), (*2*), (*3*)
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Masuda, 1963
Matsubara and Ochiai, 1965
Matsumoto, 1952, 1958, 1961, 1966(*3*)
Morgan, 1956
Murphy and Ikehara, 1955
Murphy and Niska, 1953
Murphy and Shomura, 1953(*1*)
Murphy, Waldron and Seckel, 1960
Nakamura, 1965
Otsu, 1954, 1965
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Royce and Otsu, 1954, 1955
Schaefer, 1951, 1957, 1963(*1*); 1966
Seckel, 1963, 1964
Seckel and Austin, 1962
Seckel and Waldron, 1960
Sette, 1954
Sette and Rothschild, 1966
Shippen, 1961
Shomura, 1959, 1963(*1*), (*2*), (*3*); 1964, 1966
Shomura and Murphy, 1955
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Smith and Schaefer, 1949
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Squire, 1963
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Tester, 1952
Tester and Nakamura, 1957
Tester, van Weel and Naughton, 1955
Tinker, 1944
Tominaga, 1957
Uchida, R. N., 1961, 1966
Uda, 1963(*2*)
Vesey-Fitzgerald and La Monte, 1949
Waldron, 1956, 1963, 1964
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Yamashita, 1958
Yamashita and Waldron, 1958, 1959
Yoshida, 1966(*1*), (*2*)
Yuen, 1959, 1963, 1966
Anonymous, 1948(*2*), (*3*), (*4*); 1949 (*1*), (*2*), (*4*), (*5*), (*6*); 1950(*3*), (*6*), (*9*); 1951(*4*), (*5*), (*6*), (*7*), (*8*); 1952(*1*), (*2*), (*3*); 1953(*1*), (*2*), (*3*), (*4*), (*6*), (*7*), (*8*), (*11*),

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Higgins, 1966
Hiyama and Yasuda, 1961
Hornell, 1950
Hotta, 1960
Hotta, Fukushima, Odate and Aizawa, 1961
Hotta, Kariya and Ogawa, 1959
Hotta and Ogawa, 1953, 1955
Howard, 1963
Igeta, 1965
Imai, 1950
Imamura, 1949
Imp. Fish. Inst., 1924(*1*), (*2*), (*3*), (*4*), (*5*), (*6*); 1925(*1*), (*2*), (*3*); 1926(*1*), (*2*), (*3*), (*4*); 1927(*1*), (*2*), (*3*), (*4*); 1928, 1929(*1*), (*2*); 1930(*1*), (*2*), (*3*), (*4*), (*5*); 1931 (*1*), (*2*), (*3*), (*4*); 1932(*1*), (*2*), (*3*); 1933(*1*), (*2*), (*3*); 1934(*1*), (*2*), (*3*), (*4*); 1935(*1*), (*2*), (*3*), (*4*); 1936(*1*), (*2*), (*3*), (*4*), (*5*), (*6*); 1937(*1*), (*2*), (*3*), (*4*), (*5*); 1938(*1*), (*2*), (*3*), (*4*), (*5*); 1939 (*1*), (*2*), (*3*); 1940(*1*), (*2*), (*3*), (*4*), (*5*); 1941(*1*), (*2*), (*3*), (*4*); 1942(*1*), (*2*), (*3*), (*4*); 1943(*1*), (*2*), (*3*), (*4*)
Inaba, 1928
Inoue, 1959, 1961, 1965(*1*), (*2*)
Inoue, Amano and Iwasaki, 1963, 1966
Ishii, 1935
Ishii and Sawada, 1938
Ishikawa, *et al.*, 1931
Iversen, 1962
Iwasaki, 1966
Jap. Fed. Tuna Fish. Coop. Assoc., 1959
Jordan and Hubbs, 1925
Jordan, Tanaka and Snyder, 1913
Jouan, 1867
Kagoshima Pref. Fish. Exp. Stat., 1925, 1926(*1*), (*2*); 1927, 1928(*1*); 1929, 1930, 1931, 1932, 1933, 1934, 1935 (*1*); 1936(*1*); 1937(*1*), (*3*); 1938 (*1*); 1939(*1*); 1940(*1*); 1941(*1*)
Kamimura, 1966
Kamohara, 1950, 1954(*1*), (*2*); 1955, 1958, 1959, 1961, 1964
Kaneko, 1932
Kashiwada, 1952
Katsube, 1921
Kawaguchi, 1963
Kawai, 1955, 1959, 1963
Kawai and Sasaki, 1962
Kawasaki, 1955(*1*), (*2*); 1957, 1958, 1959, 1960, 1963(*1*), (*2*); 1964, 1965(*1*), (*2*); 1966
Kawasaki and Asano, 1962
Kawasaki and Naganuma, 1959, 1961
Kawasaki, Yao, Anraku, Naganuma and Asano, 1962
Kimura, 1941, 1942, 1949, 1950, 1954, 1962, 1966
Kimura, Iwashita and Hattori, 1952
Kishinouye, 1894, 1895, 1919(*1*); 1922(*1*)
Kitahara and Shimamura, 1912
Kitano, 1953
Kobayashi, n. d.
Kochi Pref. Fish. Exp. Stat., 1923, 1924
Kohama, 1914
Koizumi, 1955
Koyasu, 1931(*1*), (*2*)
Kubo, 1966
Kumamoto Pref. Fish. Exp. Stat., 1927, 1928, 1929, 1930, 1931, 1932, 1946
Kuroda, 1955, 1959, 1965
Lindberg, 1947
Maeda, 1957
Manar, 1966(*1*), (*3*)
Marr and Tester, 1966
Marukawa, 1921
Masuda, 1963
Matsubara, 1890, 1942
Matsubara and Ochiai, 1965
Matsubara, Ochiai and Iwai, 1965
Matsumoto, 1966(*3*)
Metelkin, 1957
Mie Pref. Fish. Exp. Stat., 1930(*1*), (*2*); 1955, 1956, 1957, 1958, 1959, 1961, 1962, 1963, 1965(*1*), (*2*), (*3*)
Mito, 1961
Miyama and Osakabe, 1938
Miyamoto, 1952
Molteno, 1948
Morgan, 1956
Morita, 1959, 1960
Murayama and Okura, 1950, 1952
Nakamura, 1954, 1959, 1965
Nakamura and Uchiyama, 1966
Nakamura Research Staff, 1949
Nishikawa, 1934, 1965
Oita Pref. Fish. Exp. Stat., 1925, 1926
Okada, 1926, 1955
Okada, Uchida and Matsubara, 1935

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Okamoto, 1940
Okamura and Marukawa, 1909
Okinawa Pref. Fish. Exp. Stat., 1929, 1931(*1*), (*2*); 1940, 1943
Omori and Fukuda, 1938
Omori and Kawabe, 1937(*1*), (*2*)
Omura, 1916
Onodera, 1941
Osipov, Kizevetter and Zhuravlev, 1964
Padoa, 1956
Probatov, 1958
Richardson, 1846
Saito, I., 1960
Sakai and Uno, 1940
Sasaki, 1939
Sasaki and Takehisa, 1932
Schaefer, 1955(*3*)
Schmidt, 1931
Shapiro, 1948(*1*), (*2*)
Shibusawa, 1932
Shiino, 1952, 1954, 1959(*1*)
Shimamura, 1927
Shizuoka Pref. Fish. Exp. Stat., 1932 (*1*), (*2*), (*3*); 1935(*1*), (*2*); 1936(*1*), (*2*), (*3*); 1937(*1*), (*2*); 1938
Shiraishi, 1941
Shmidt, 1948
Shomura, 1966
Soldatov and Lindberg, 1930
Suda, 1953, 1961(*1*)
Sun', 1960
Suyehiro, 1936, 1938, 1941, 1942
Suzuki and Suzuki, 1959
Tachikawa, 1921, 1924
Takami, 1950
Takayama, Ikeda and Ando, 1934
Takayama and Yoshida, 1933
Takeda, 1941
Tanaka, 1912, 1926, 1931, 1951, 1966
Tanaka and Abe, 1955
Tanaka, Amemiya *et al.,* 1933
Taranetz, 1937
Tauchi, 1943
Temminck and Schlegel, 1850
Terui, 1919
Tohoku Reg. Fish. Res. Lab., 1955, 1957, 1959(*1*), (*2*); 1960(*1*), (*2*); 1961(*1*), (*2*); 1962(*1*), (*2*); 1963 (*1*), (*2*)
Tohoku Reg. Fish. Res. Lab. Mar. Res. Div., 1952, 1955, 1957
Tokai Univ. Fish. Res. Lab., 1962
Tominaga, 1943, 1957, 1965
Tomiyama, Abe and Tokioka, 1958
Uchida, K., 1966
Uda, 1931, 1932, 1933, 1935(*1*), (*2*); 1936, 1938(*1*), (*2*); 1939, 1940(*1*), (*2*), (*3*); 1941, 1948, 1952, 1953 (*1*), (*2*); 1956(*1*), (*2*); 1957, 1961, 1962(*1*), (*2*); 1963
Uda and Ishino, 1958
Uda and Tsukushi, 1934
Uda and Watanabe, 1938
Uehara, 1962
Ui, 1929
Uno, 1965
Uno and Konagaya, 1960
Walford, 1937
Yabe, 1951, 1954(*1*), (*2*)
Yabe, Anraku and Mori, 1953
Yabe and Mori, 1950
Yabe and Ueyanagi, 1962(*1*)
Yabuta, 1953
Yamaguchi, 1942
Yamaguti, 1934(*1*), (*2*); 1935(*1*); 1936, 1938, 1941, 1952, 1958, 1963 (*2*), (*3*)
Yamamoto, 1923
Yamanaka, 1950, 1962, 1966
Yanagi, 1911
Yao, 1955, 1962, 1966
Yokota, Toriyama, Kanai and Nomura, 1961
Yonezawa, 1950
Yoshida, 1966(*1*), (*2*)
Anonymous, 1939, 1953(*14*); 1954 (*15*); 1955(*19*); 1956(*22*); 1957 (*15*); 1958(*27*); 1959(*21*); 1960 (*15*), (*16*); 1961(*11*), (*12*); 1962 (*18*); 1963(*14*); 1964(*12*); 1965 (*22*), (*25*), (*26*); 1966(*2*), (*16*), (*17*); n. d.(*2*), (*3*)

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Brock, 1949
Delsman and Hardenburg, 1934
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Godsil, 1945
Gosline and Brock, 1960
Jordan and Evermann, 1905
Jordan and Hubbs, 1925
Kishinouye, 1923
Kitahara, 1897

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(*1*), (*2*); 1940(*1*), (*2*), (*3*), (*4*); 1941(*1*), (*2*), (*3*), (*4*); 1942(*1*), (*2*), (*3*), (*4*); 1943(*1*), (*2*), (*3*), (*4*)

Inanami, 1942(*1*), (*2*), (*3*)

Inoue, 1965(*1*)

Inoue, Amano and Iwasaki, 1963, 1966

Iwasaki, 1966

Jap. Fed. Tuna Fish. Coop. Asso., 1959

June, 1950, 1951(*1*), (*2*)

Kagoshima Pref. Fish. Exp. Stat., 1925, 1926(*1*); 1927, 1928(*1*), (*2*); 1929, 1930, 1931, 1932, 1933, 1934, 1935(*1*), (*2*), (*3*); 1936(*1*), (*2*), (*3*); 1937(*1*), (*2*), (*3*); 1938(*1*), (*2*), (*3*); 1939(*1*), (*2*), (*3*); 1940 (*1*), (*2*), (*3*); 1941(*1*), (*2*)

Kamimura, 1966

Kamohara, 1961

Kaneko, 1932

Katsube, 1921

Kawaguchi, 1963

Kawai, 1955, 1959, 1963

Kawai and Sasaki, 1962

Kawasaki, 1957, 1958, 1963(*2*); 1964, 1965(*1*); 1966

Kawasaki and Anraku, 1962

Kawasaki and Asano, 1962

Kawasaki and Naganuma, 1959, 1961

Kawasaki, Yao, Anraku, Naganuma and Asano, 1962

Kimura, 1941, 1942, 1949, 1950, 1954

Kimura, Iwashita and Hattori, 1952

King and Wilson, 1957

Kishinouye, 1919(*1*); 1923

Kobayashi, n. d.

Kochi Pref. Fish. Exp. Stat., 1923, 1924

Koyasu, 1931(*1*), (*2*)

Kubo, 1966

Kumamoto Pref. Fish. Exp. Stat., 1927, 1928, 1929, 1930, 1931, 1932, 1946

Kuroda, 1955, 1965

MacInnes, n. d.

Manar, 1966(*1*), (*3*)

Marr and Tester, 1966

Martin, 1938, 1962

Marukawa, 1939(*1*), (*2*); 1940

Masuda, 1963

Matsubara, 1942

Matsubara and Ochiai, 1965

Matsumoto, 1937, 1966(*2*)

McNeely, 1961

Mead, 1949

Metelkin, 1957

Mie Pref. Fish. Exp. Stat., 1930(*1*), (*2*); 1955, 1956, 1957, 1958, 1959, 1961, 1962, 1963, 1965(*1*), (*2*), (*3*)

Minami, 1942

Miura, 1941

Morita, 1959

Muramatsu, 1960

Murphy and Niska, 1953

Nakamura, 1939(*1*)

Nakamura, E. L., 1965

Nishikawa, 1965

Oita Pref. Fish. Exp. Stat., 1926

Okajima, 1937(*1*)

Okinawa Pref. Fish. Exp. Stat., 1929, 1931(*1*); 1936, 1937, 1940, 1943

Omori and Fukuda, 1938

Omori and Kawabe, 1937(*1*), (*2*)

Omura, 1916

Oshima, 1943

Osipov, 1960

Probatov, 1958

Rothschild, 1966(*1*)

Royce and Otsu, 1955

Saito, I., 1960

Sardone, 1957

Sasaki, 1939

Sasaki and Takehisa, 1932

Schaefer, 1952(*2*); 1953, 1954, 1955 (*1*), (*2*), (*3*); 1956, 1957(*1*), (*2*); 1958(*1*), (*2*); 1959(*1*), (*2*); 1960, 1961(*1*); 1962(*1*), (*2*); 1963(*1*)

Schaefer, Chatwin and Broadhead, 1961

Sette, 1954

Sette and Rothschild, 1966

Shapiro, 1948(*1*), (*2*)

Shimada, 1958

Shimada and Schaefer, 1956

Shimamura, 1927

Shimoda, 1937

Shippen, 1961

Shiraishi, 1941

Shizuoka Pref. Fish. Exp. Stat., 1932 (*1*), (*2*), (*3*); 1935(*1*), (*2*); 1936(*1*), (*2*), (*3*); 1937(*1*), (*2*); 1938

Shmidt, 1948

Shomura, 1963(*2*); 1964

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Strasburg and Marr, 1961
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Suda, 1961(*2*)
Suyehiro, 1936, 1938, 1942
Tachikawa, 1921, 1932(*1*), (*2*)
Taihoku Prov. Fish. Exp. Stat., 1927(*1*), (*2*); 1928, 1929, 1930, 1931, 1932, 1934, 1935, 1936
Takami, 1950
Takayama, 1963
Takayama, Ikeda and Ando, 1934
Takayama and Yoshida, 1933
Tanaka, 1966
Terui, 1919
Tester and Nakamura, 1957
Tohoku Reg. Fish. Res. Lab., 1955, 1957, 1959(*1*), (*2*); 1960(*1*), (*2*); 1961(*1*), (*2*); 1962(*1*), (*2*); 1963 (*1*), (*2*)
Tohoku Reg. Fish. Res. Lab. Mar. Res. Div., 1952, 1955, 1957
Tokai Univ. Fish. Res. Lab., 1962
Tominaga, 1943, 1957, 1965
Uchida, R. N., 1966
Uchihashi, 1953
Uda, 1932, 1933, 1935(*1*), (*2*); 1936, 1938(*1*), (*2*); 1939, 1940(*1*), (*2*), (*3*); 1941, 1948, 1963(*1*)
Uda and Tsukushi, 1934
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Uno, 1965
Uno and Konagaya, 1960
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Waldron, 1963
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Warfel, 1950
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Wilson, 1963
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Wilson, Nakamura and Yoshida, 1958
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Yabe and Mori, 1950
Yamaguchi, 1942
Yamamoto, 1923, 1940
Yamanaka, 1950, 1962
Yamashita, 1958, 1966
Yao, 1955, 1962, 1966
Yogi, 1914(*1*), (*2*)
Yokota, Toriyama, Kanai and Nomura, 1961
Yonezawa, 1950
Yoshida, 1960, 1966(*1*)
Yuen, 1959, 1962
Anonymous, 1939, 1948(*3*); 1949(*4*), (*5*), (*6*); 1950(*4*), (*6*), (*8*); 1951 (*5*); 1953(*14*); 1954(*12*), (*15*); 1955(*3*), (*19*); 1956(*10*), (*14*), (*18*), (*21*), (*22*); 1957(*2*), (*5*), (*6*), (*7*), (*12*), (*15*); 1958(*3*), (*5*), (*6*), (*8*), (*12*), (*16*), (*20*), (*27*); 1959(*2*), (*7*), (*9*), (*17*), (*18*), (*19*), (*21*); 1960(*2*), (*4*), (*9*), (*16*); 1961(*3*), (*4*), (*6*), (*7*), (*11*); 1962(*18*); 1963(*1*), (*4*), (*7*), (*10*), (*14*); 1964(*1*), (*10*), (*12*); 1965(*1*), (*22*), (*23*), (*24*), (*25*); 1966(*2*), (*5*), (*14*), (*15*), (*17*)

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Angot, 1959
Austin, 1957
Brock, 1965
Bur. Fish. Min. Agr. For., 1939, 1940
Ego and Otsu, 1952
Fisheries Agency, Japan, 1963, 1964, 1965
Formosa Gov.-Gen. Fish. Exp. Stat., 1940
Furuya, 1955
Hida, 1966
Higgins, 1966
Imp. Fish. Inst., 1935(*1*), (*4*); 1936 (*5*); 1937(*2*), (*5*); 1938(*5*); 1939 (*2*); 1940(*2*), (*4*); 1941(*2*); 1942 (*2*); 1943(*2*), (*4*)
Iversen and Murphy, 1955
Kagoshima Pref. Fish. Exp. Stat., 1926(*2*); 1935(*2*), (*3*); 1937(*2*)
Kamimura, 1966
Kanagawa Pref. Fish. Exp. Stat., 1952-1956, 1961
Kanamura and Yazaki, 1940
Kawasaki, 1964, 1965(*1*)

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Schultz, 1960
Shimada, 1951(*4*)
Smith, 1947(*1*), (*2*)
Smith and Schaefer, 1949
Sun', 1960
Tanaka, 1966
Tominaga, 1957
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Wilson, 1963
Yamanaka and Kurohiji, 1966
Anonymous, 1949(*3*); 1958(*4*); 1965(*24*)

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Alverson, 1959
Angot, 1959
Anraku and Kawasaki, 1966
Blunt and Messersmith, 1960
Broadhead and Barrett, 1964
Brock, 1965
Brock and Marr, 1960
Clemens and Roedel, 1964
Commission to Popularize the Knowledge of Fishing Grounds, 1958, 1964, 1965
Fitch, 1966
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Hayashi, 1959
Herre, 1940
Higgins, 1966
Hiyama and Yasuda, 1961
Howard, 1963
Imamura, 1949
Imp. Fish. Inst., 1927(*3*), (*4*); 1934 (*4*); 1936(*2*); 1937(*3*); 1939(*3*)
Inoue, 1961
Ishikawa *et al.*, 1931
Kagoshima Pref. Fish. Exp. Stat., 1934, 1935(*1*); 1937(*1*)
Kamimura, 1966
Kamohara, 1955, 1959, 1961
Kask, 1964, 1966
Kawaguchi, 1963
Kawai, 1959
Kawai and Sasaki, 1962
Kawasaki, 1952, 1955(*1*), (*2*); 1958, 1963(*2*); 1964, 1965(*1*), (*2*); 1966
Kawasaki, and Anraku, 1962
Kawasaki and Naganuma, 1959
Kawasaki, Yao, Anraku, Naganuma and Asano, 1962
Kimura, 1941, 1942, 1966
Kishinouye, 1923
Kitano, 1953
Kubo, 1966
Kuroda, 1965
Landberg, 1966
Manar, 1966(*1*), (*2*), (*3*)
Marr and Tester, 1966
Masuda, 1963
Matsubara, 1942
Matsubara and Ochiai, 1965
Matsubara, Ochiai and Iwai, 1965
Mie Pref. Fish. Exp. Stat., 1955, 1956, 1957, 1958, 1959, 1961, 1962, 1963, 1965(1), (*3*)
Migdalski, 1958
Miura, 1941
Moiseev, 1961
Morita, 1960
Murphy, Waldron and Seckel, 1960
Nakamura, 1949, 1954, 1959, 1965
Nakamura Research Staff, 1949
Omori and Kawabe, 1937(*1*)
Osipov, Kizevetter and Zhuravlev, 1964
Otsu, 1965
Rothschild, 1964, 1965, 1966(*3*)
Royce and Otsu, 1955
Saito, I., 1960
Sasaki, 1939
Sasaki and Takehisa, 1932
Schaefer, 1957(*1*); 1958(*1*); 1959 (*1*); 1961(*1*); 1962(*1*); 1963(*1*)
Schaefer, Chatwin and Broadhead, 1961
Sette and Rothschild, 1966
Serventy, 1941(*1*)
Shapiro, 1948(*1*)
Shimoda, 1937
Shippen, 1961
South Seas Gov.-Gen. Fish. Exp. Stat., 1938
Suyehiro, 1951
Taihoku Prov. Fish. Exp. Stat., 1931
Tauchi, 1943
Terui, 1919
Tester and Nakamura, 1957
Tohoku Reg. Fish. Res. Lab., 1955, 1957, 1959(*1*), (*2*); 1960(*1*), (*2*); 1961(*1*), (*2*); 1962(*1*), (*2*); 1963(*1*)
Tohoku Reg. Fish. Res. Lab. Mar. Res. Div., 1952, 1955, 1957
Tominaga, 1943, 1957, 1965

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Uda and Tsukushi, 1934
Uno, 1965
Waldron, 1963
Whitley, 1964
Yabe, Anraku and Mori, 1953
Yamanaka, 1962, 1966
Yamashita and Waldron, 1959
Yanagi, 1911
Yao, 1966
Yokota, Toriyama, Kanai and Nomura, 1961
Yonezawa, 1950
Anonymous, 1939, 1941(*1*); 1954(*9*); 1955(*10*), (*17*); 1956(*15*); 1957 (*6*), (*8*); 1958(*2*), (*5*), (*9*), (*11*), (*18*), (*19*), (*22*), (*23*); 1959(*3*), (*6*), (*8*), (*11*), (*16*); 1960(*1*), (*11*), (*13*); 1961(*3*), (*8*); 1962 (*13*); 1963(*1*), (*8*); 1964(*1*); 1965 (*1*), (*7*), (*12*), (*25*); 1966(*5*), (*16*), (*17*)

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Dung and Royce, 1953
Hennemuth, 1959(*1*)
Kawasaki, 1960
Marr, 1963(*2*)
Nakamura Research Staff, 1949
Schaefer, 1955(*1*); 1956, 1957(*1*); 1958(*1*); 1959(*1*); 1963(*1*)
Tohoku Reg. Fish. Res. Lab., 1955, 1957
Yabe, 1955
Yabe, Anraku and Mori, 1953
Anonymous, 1965(*1*)

MORTALITY
Fink, 1965(*1*)
Kawasaki, 1957, 1965(*1*)
Marr, 1963(*1*)
Nakamura, 1962(*1*)
Rothschild, 1966(*3*)
Schaefer, 1960, 1963(*1*)
Schaefer, Chatwin and Broadhead, 1961
Silliman, 1966(*2*)
Tauchi, 1943
Waldron, 1963
Yokota, Toriyama, Kanai and Nomura, 1961
Anonymous, 1964(*1*); 1965(*1*); 1966(*5*)

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Collette, 1966
Kishinouye, 1903, 1915(*1*); 1917(*2*); 1919(*2*)
Roedel, 1962
Rosa, 1950
Takahashi, 1924, 1926
Waldron, 1963

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Angot, 1959
Anraku and Kawasaki, 1966
Austin and Barkley, 1962
Austin and Brock, 1959
Barkley, 1963
Bini, 1952, 1954
Blackburn, 1959(*1*), (*2*), (*3*); 1960 (*1*), (*2*); 1961, 1962(*1*), (*2*), (*3*), (*4*); 1963, 1965(*1*), (*2*), (*3*); 1966
Bourgois, 1965
Broadhead and Barrett, 1964
Broadhead and Orange, 1960
Brock, 1959(*1*); 1965
Brock and Marr, 1960
Brown and Sherman, 1962
Chapman, 1954
Chyung, 1954
Cleaver and Shimada, 1950
Commission to Popularize the Knowledge of Fishing Grounds, 1958, 1964, 1965
de Buen, 1955, 1957(*1*)
Del Solar, 1942
Fiedler, 1944
Fiedler, Jarvis and Lobell, 1943
Fitch, 1966
Formosa Gov.-Gen. Fish. Exp. Stat., 1930, 1931, 1932, 1933
Forsbergh, 1963
Fujisaki, 1934
Fukuda and Iizuka, 1939(*1*)
Godfrey, 1958
Griffiths, 1963, 1965
Hela and Laevastu, 1961, n. d.
Hempel, 1961
Hildebrand, 1946

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Howard, 1963
Igeta, 1965
Imamura, 1949
Imp. Fish. Inst., 1931(*1*), (*2*), (*3*), (*4*); 1932(*3*); 1934(*3*); 1935(*1*), (*3*), (*4*); 1936(*1*), (*3*), (*5*); 1937 (*2*), (*4*), (*5*); 1938(*1*), (*2*), (*4*), (*5*); 1939(*1*), (*2*); 1940(*1*), (*2*), (*3*), (*4*); 1941(*1*), (*2*), (*3*), (*4*); 1942(*1*), (*2*), (*3*), (*4*); 1943(*3*)
Inanami, 1941, 1942(*4*)
Iniasevskii, 1930
Inoue, 1965(*2*)
Inoue, Amano and Iwasaki, 1963
Ishikawa *et al.*, 1931
Iwasaki, 1966
June, 1951(*1*)
Kagoshima Pref. Fish. Exp. Stat., 1925, 1926(*1*); 1927, 1928(*1*), (*2*); 1929, 1930, 1931, 1932, 1933, 1934, 1935(*1*), (*2*), (*3*); 1936(*1*), (*2*); 1937(*1*), (*2*); 1938(*1*), (*2*); 1939 (*1*); 1940(*1*); 1941(*1*)
Kanamura and Yasaki, 1940
Kaneko, 1932
Kawaguchi, 1963
Kawai, 1955, 1959, 1963
Kawai and Sasaki, 1962
Kawamura, 1939, 1940
Kawasaki, 1952, 1955(*1*), (*2*); 1957, 1958, 1963(*3*); 1965(*1*), (*2*); 1966
Kawasaki and Anraku, 1962
Kawasaki and Asano, 1962
Kawasaki and Naganuma, 1959, 1961
Kawasaki, Yao, Anraku, Naganuma and Asano, 1962
Kimura, 1941, 1949, 1950, 1954, 1962, 1966
Kishinouye, 1923
Kitahara and Shimamura, 1912
Kitano, 1953
Kobayashi, n. d.
Kochi Pref. Fish. Exp. Stat., 1923, 1924
Koyasu, 1931(*2*)
Kubo, 1966
Kumamoto Pref. Fish. Exp. Stat., 1927, 1928, 1929, 1930, 1931, 1932, 1946
Kuroda, 1955, 1959, 1965
Laevastu and Rosa, 1963
Manar, 1966(*1*), (*2*)
Manning, 1957
Marr, 1962
Marukawa, 1939(*1*); 1940
Masuda, 1963
Matsubara, 1942
Matsubara and Ochiai, 1965
Matsubara, Ochiai and Iwai, 1965
McKenzie, 1961
Metelkin, 1957
Mie Pref. Fish. Exp. Stat., 1930(*1*), (*2*); 1955, 1956, 1957, 1958, 1959, 1961, 1962, 1963, 1965(*1*)
Miura, 1941
Moiseev, 1961
Morita, 1959, 1960
Murayama and Okura, 1950
Murphy and Ikehara, 1955
Murphy and Niska, 1953
Murphy and Shomura, 1953(*2*)
Murphy, Waldron and Seckel, 1960
Nakamura, 1954, 1965
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Oita Pref. Fish. Exp. Stat., 1925, 1926
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LIST OF ABBREVIATIONS AND TRANSLATIONS OF PERIODICAL TITLES

LISTA DE LAS ABREVIACIONES Y TRADUCCIONES DE LOS TITULOS DE REVISTAS

Act. Soc. Sci. Indo-Neerl.—Acta Societatis Scientiarum Indo-Neerlandicae. Batavia.

Acta Med. Okayama—Acta Medicinae Okayama. Okayama City.

Adv. Fish. Oceanogr. Jap. Soc. Fish. Oceanogr.—Advances in Fisheries Oceanography. The Japanese Society of Fisheries Oceanography. Tokyo.

Allan Hancock Pacif. Exped.—Allan Hancock Pacific Expedition. Los Angeles.

Am. Antiq.—American Antiquity. Menesha.

Am. Nat.—American Naturalist. Lancaster, Pennsylvania.

An. Inst. Biol. Univ. Méx.—Anales del Instituto de Biología. Universidad de México.

Anim. Behav.—Animal Behaviour. London.

Ann. Mag. Nat. Hist.—Annals and Magazine of Natural History. London.

Ann. N. Y. Acad. Sci.—Annals of the New York Academy of Sciences. New York.

Ann. Rep. Inter-Am. Trop. Tuna Commn—Annual Report. Inter-American Tropical Tuna Commission. Informe Anual. Comisión Interamericana del Atún Tropical. *afterwards* Annual Report of the Inter-American Tropical Tuna Commission. Informe Anual de la Comisión Interamericana del Atún Tropical. La Jolla, California.

Ann. Rep. Prefect. Univ. Mie—Annual Report of the Prefectural University of Mie. Mie-kenritsu daigaku kenkyū nempō. Tsu City, Mie.

Ann. Rep. Fish Resor. Tohoku Reg. Fish. Res. Lab.—Annual Report on the Fish Resources. Tohoku Regional Fisheries Research Laboratory. Tohoku kaiku suisan kenkyūsho kaiyō shigen nempō. Shiogama City.

Annls Inst. Océanogr., Monaco—Annales de l'Institut Océanographique. Monaco, Paris.

Annls. Parasit. Hum. Comp.—Annales de Parasitologie Humaine et Comparées. Paris.

Appl. Met. Sapporo—Applied Meteorology. Ōyō kishō. Published by Hoppo shuppansha. Sapporo City.

Arch. Soc. 'Vanamo'—Archivum Societatis Zoologicae Botanicae Fennicae 'Vanamo'. Suomalaisen Eläin- ja Kasvitieteellisen Seuran Vanamon Tiedonannot. Helsinki.

Aust. J. Mar. Freshwat. Res.—Australian Journal of Marine and Freshwater Research. Melbourne.

Aust. Zool.—Australian Zoologist. Sydney.

Ber. Landw.—Berichte über Landwirtschaft. Berlin.

Boletín. Comisión Interamericana del Atún Tropical—see Bull. Inter-Am. Trop. Tuna Commn.

Boll. Pesca Piscic. Idrobiol.—Bolletino di Pesca, Piscicoltura e Idrobiologia. Rome.

Boln Cia. Adm. Guano—Boletín de la Compañía Administradora del Guano. Lima.

Boln Soc. Geogr. Lima—Boletín de la Sociedad Geográfica de Lima. Lima

Bull. Am. Mus. Nat. Hist.—Bulletin of the American Museum of Natural History. New York.

Bull. Biogeogr. Soc. Japan—Bulletin of the Biogeographical Society of Japan. Nihon seibutsu chiri gakkai kaihō. Tokyo.

Bull. Bur. Fish., Wash.—Bulletin of the Bureau of Fisheries. Washington.

Bull. Commonw. Scient. Ind. Res. Org.—Bulletin. Commonwealth Scientific and Industrial Research Organization, Australia. Melbourne.

Bull. Fac. Fish. Nagasaki Univ.—Bulletin of the Faculty of Fisheries, Nagasaki University. Nagasaki Daigaku, suisan gakka hōkoku. Sasebo City.

Bull. Fish. Phys. Disc. Group—Bulletin of the Fisheries Physics Discussion Group. Suisan butsuri danwakai kaihō. Tokyo.

Bull. Fish. Res. Bd Can.—Bulletin. Fisheries Research Board of Canada. Ottawa.

Bull. Inter-Am. Trop. Tuna Commn—Bulletin. Inter-American Tropical Tuna Commission. La Jolla, California. Boletín. Comisión Interamericana del Atún Tropical, La Jolla, California.

Bull. Jap. Soc. Fish. Oceanogr.—Bulletin of the Japanese Society of Fisheries Oceanography. Suisan kaiyō kenkyū-kai kai-hō. Tokyo.

Bull. Jap. Soc. Scient. Fish.—Bulletin of the Japanese Society of Scientific Fisheries. Nihon suisan gakkai-shi. Tokyo.

Bull. Mar. Dep. N.Z. Fish.—Bulletin. Marine Department, New Zealand Fisheries. Wellington.

Bull. Mar. Sci.—Bulletin of Marine Science. Miami, Florida.

Bull. Misaki Mar. Biol. Inst.—Bulletin of the Misaki Marine Biological Institute. Koyoto University. Maizuru City.

Bull. Physiogr. Sci. Res. Inst., Tokyo—Bulletin of the Physiographical Science Research Institute, Tokyo University. Tokyo daigaku ritchi shizen kagaku kenkyūsho hōkoku. Tokyo.

Bull. Soc. Étud. Océanien.—Bulletin de la Société d'Études Océaniennes (Polynésie Orientale). Papeete, Tahiti.

Bull. Sth. Calif. Acad. Sci.—Bulletin of the Southern California Academy of Sciences. Los Angeles.

Bull. Tohoku Reg. Fish. Res. Lab.—Bulletin of Tohoku Regional Fisheries Research Laboratory. Tōhoku kaiku suisan kenkyūsho kenkyū hōkoku. Shiogama City.

Bull. Tokai Reg. Fish. Res. Lab.—Bulletin of Tokai Regional Fisheries Research Laboratory. Tokaiku suisan kenkyūsho kenkyū hōkoku. Tokyo.

Bull. U. S. Fish Commn—Bulletin of the United States Fish Commission. Washington, D.C.

Bull. U.S. Natn. Mus.—Bulletin. United States National Museum. Smithsonian Institution. Washington.

Boln Cient., Cía Adm. Guano—Boletín Científico. Compañía Administradora del Guano. Lima.

Calif. Fish Game—California Fish and Game. Sacramento.

Calif. Univ., IMR Ref.—Institute of Marine Resources—Reference, University of California. La Jolla, California.

Calif. Univ., SIO Ref.—Scripps Institution of Oceanography—Reference, University of California. La Jolla, California.

Cienc. Interam.—Ciencia Interamericana, Washington.

Cienc. Nat.—Ciencia y naturaleza. Quito.

Circ. U.S. Fish Wildl. Serv.—Circular. United States Department of Interior, Fish and Wildlife Service. Washington.

Collecting Breed.—Collecting and Breeding, Saishū to shiiku, Tokyo.

Comml Fish. Rev.—Commercial Fisheries Review. United States Department of Interior, Fish and Wildlife Service. Washington.

Contr. Nankai Reg. Fish. Res. Lab.—Contributions. Nankai Regional Fisheries Research Laboratory. Nankai-ku suisan kenkyūsho gyōseki-shū. Kōchi City.

Copeia—Copeia. New York.

Curr. Aff. Bull. Indo-Pacif. Fish. Coun.—Current Affairs Bulletin. Indo-Pacific Fisheries Council, F.A.O. Bangkok.

Curr. Rep. Fish. Cond.—Current Report on Fishing Condition. Gyokyō sokuhō. Commission to Popularize the Knowledge of Fishing Grounds. Gyojō chishiki fukyū-kai. (*Also* Current Report on Fishing Conditions. Tohoku Regional Fisheries Research Laboratory. Tōhoku kaiku suisan kenkyūsho gyokyō sokuhō). Shiogama City.

Curr. Rep. Fish. Cond. Tohoku Reg. Fish. Res. Lab.—Current Report on Fishing Conditions. Tohoku Regional Fisheries Research Laboratory. Tōhoku kaiku suisan kenkyūsho gyokyō sokuhō. Shiogama City.

Deep. Sea Res.—Deep Sea Research. London.

Dōbutsugaku zasshi.—*see* Zool. Mag., Tokyo.

Ecol. Monogr.—Ecological Monographs. Durham, N.C.

Edu. Ser. Tohoku Reg. Fish. Res. Lab.—Education Series. Tohoku Regional Fisheries Research Laboratory. Tōhoku suiken sōsho. Shiogama City.

Experientia—Experientia. Basel.

FAO Fish. Biol. Tech. Pap.—Fisheries Biology Technical Paper. Food and Agriculture Organization of the United Nations. Rome.

FAO Fish. Circ.—FAO Fisheries Circular, Good and Agriculture Organization of the United Nations. Rome.

FAO Fish. Rep.—Fisheries Report. Food and Agriculture Organization of the United Nations. Rome.

Fish. Bull. Papua—Fisheries Bulletin. Department of Agriculture, Stock and Fisheries, Papua and New Guinea. Port Moresby.

Fish. Bull., Sacramento—Fish Bulletin. California Fish and Game Commission. Sacramento, California.

Fish. Newsl., Canberra—Fisheries Newsletter. Commonwealth Director of Fisheries. Department of Primary Industries. Canberra.

Fish. Res. Rep. Formosa Gov.-Gen. Fish. Expt. Stn—Fisheries Research Report. Formosa Government-General Fisheries Experimental Station. Taiwan sōtokufu suisan shikenjō suisan shiken hōkoku. Taihoku (Taipei).

Fish. Sci., Tokyo—Fisheries Science. Suisan kagaku. Tokyo.

Fish. Sci. Ser., Tokyo—Fisheries Science Series. Suisan-gaku zenshū. Published by: Kōsei-sha, kosei-kaku, Tokyo.

Fish. Tech. Lect. Ser.—Fisheries Technology Lecture Series. Suisan seizō kōgaku kōza. Tokyo.

Fish. Tech. Rep. N.Z. Mar. Dep.—Fisheries Technical Report. New Zealand Marine Department. Wellington.

Fish Trades Gaz.—Fish Trades Gazette. London.

Fishery Bull. Fish Wildl. Serv. U. S.—Fishery Bulletin. Fish and Wildlife Service. United States Department of Interior. Washington.

Fishery Leafl. Fish Wildl. Serv. U. S.—Fishery Leaflet Fish and Wildlife Service, United States Department of Interior. Washington.

Formosa Fish. Mag.—Formosa Fisheries Magazine. Taiwan suisan zasshi. Taihoku (Taipei).

Geogrl Rev.—Geographical Review. New York, etc.

Gyogyō shigen kenkyū kaigi-hō—*See* Rep. Conf. Fish. Ag. Jap. Govt Fish. Resour. Invest.

Gyokyō sokuhō—*See* Curr. Rep. Fish. Cond.

Gyoruigaku zasshi—*See* Jap. J. Ichthyol.

Hokuyō—*See* No. Pacif.

ICNAF Spec. Publ.—International Commission for the Northwest Atlantic Fisheries. Special Publication. Dartmouth, Canada.

IMR Ref., Univ. Calif.—IMR Reference. Institute of Marine Resources, University of California. La Jolla, California.

Inf. Bull. Pacif. Sci. Ass.—Information Bulletin. Pacific Science Association. Honolulu.

Informe Anual. Comisión Interamericana del Atún Tropical—*See* Ann. Rep. Inter-Am. Trop. Tuna Commn.

Izv. Tikhookean. Nauch. Inst. Ryb. Khoz.—Izvestiya Tikhookeanskogo Nauchnogo Instituta Rybnogo Khozyaistva. Vladivostok.

Izv. Tikhookean. Nauchno—Issled. Inst. Ryb. Khoz. Okeanogr.—Izvestiya Tikhookeanskogo Nauchno-Issledovatel'skogo Instituta Rybnogo Khoziaistva i Okeanografii. Vladivostok.

J Coll. Agric. Imp. Univ. Tokyo—Journal of the College of Agriculture, Imperial University of Tokyo. Tokyo.

J. Coll. Sci. Imp. Univ. Tokyo—Journal of the College of Science, Imperial University of Tokyo. Tokyo.

J. Cons. Int. Explor. Mer—Journal du Conseil. Conseil Permanent International pour l'Exploration de la Mer. Copenhagen.

J. Coun. Scient. Ind. Res. Aust.—Journal of the Council for Scientific and Industrial Research, Australia. Melbourne.

J. Fac. Fish. Anim. Husb. Hiroshima Univ.—Journal of the Faculty of Fisheries and Animal Husbandry, Hiroshima University. Fukuyama.

J. Fac. Fish. Prefect. Univ. Mie—*See* Rep. Fac. Fish. Prefect. Univ. Mie.

J. Fac. Sci. Tokyo Univ.—Journal of the Faculty of Science, Tokyo University. Tokyo.

J. Fish. Res.—Journal of Fisheries Research. Suisan kenkyū-shi. Tokyo.

J. Fish. Res. Bd Can.—Journal of the Fisheries Research Board of Canada. Ottawa.

J. Fish. Res. Inst., Tokyo—Journal of the Fisheries Research Institute. Suisan kenkyūkai hō. Tokyo.

J. Fish. Soc. Japan—Journal of the Fisheries Society of Japan. Suisankai. Tokyo.

J. Immun.—Journal of Immunology. Baltimore, Maryland.

J. Imp. Fish. Bur., Tokyo—Journal of the Imperial Fisheries Bureau. Suisan chōsa hōkoku, suisan kyoku. Tokyo.

J. Imp. Fish. Inst.—*See* J. Tokyo Univ. Fish.—Journal of the Imperial Fisheries Institute. Suisan kōshūjo kenkyū hōkoku. (*afterwards* Journal of the Tokyo College of Fisheries. Tokyo suisan daigaku kenkyū hōkoku). Yokosuka City.

J. Imp. Fish. Exp. Stn, Tokyo—Journal. Imperial Fisheries Experimental Station. Suisan shikenjō hōkoku. Tokyo.

J. Mus. Godeffroy—Journal des Museum Godeffroy. Hamburg.

J. Kagoshima Fish. Coll.—Journal of the Kagoshima Fisheries College. Kagoshima suisan semmon gakkō kenkyū hōkoku. Kagoshima City.

J. Oceanogr. Soc. Jap.—Journal of the Oceanographical Society of Japan. Nihon kaiyō gakkai-shi. Tokyo.

J. Pan-Pacif. Res. Instn—Journal of the Pan-Pacific Research Institution. Honolulu.

J. Polynes. Soc.—Journal of the Polynesian Society. Wellington, N.Z.

J. Res. Inst. Culture Jap. Fishm.—Journal of the Research Institute on the Culture of Japanese Fishermen. Nihon gyomin bunka kenkyū-jo ihō.

J. Shimonoseki Coll. Fish.—Journal of the Shimonoseki College of Fisheries, Ministry of Agriculture and Forestry. Nōrinshō, Suisan kōshūjo kenkyū hōkoku. Shimonoseki City.

J. Soc. Océan.—Journal de la Société des Océanistes. Paris.

J. Tokyo Coll. Fish.—*See* J. Tokyo Univ. Fish.—Journal of the Tokyo College of Fisheries (*afterwards* Journal of the Tokyo University of Fisheries). Yokosuka City.

J. Tokyo Univ. Fish.—Journal of the Tokyo University of Fisheries. Tokyo suisan daigaku kenkyū hōkoku. Yokuska City, etc.

Jap. J. Ecol.—Japanese Journal of Ecology. Nihon seitai gakkai-shi. Tokyo.

Jap. J. Ichthyol.—Japanese Journal of Ichthyology. Gyoruigaku Zasshi. Tokyo.

Jap. J. Zool.—Japanese Journal of Zoology. Tokyo.

Kagaku—*See* Science, Tokyo.

Kagaku nanyō—*See* So. Sea Sci.

Kagoshima daigaku, suisan gakubu kiyō—*See* Mem. Fac. Fish. Kagoshima Univ.

Kagoshima-ken suisan shikenjō jigyō hōkoku—*See* Prog. Rep. Kagoshima Pref. Fish. Expt. Stn.

Kagoshima suisan semmon gakkō kenkyū hōkoku—*See* J. Kagoshima Fish. Coll.

Kai Moana—Kai Moana. Marine Department, New Zealand. Wellington.

Kaiyō chōsa yōhō, suisan kōshūjo—*See* Semi-a. Rep. Oceanogr. Invest., Tokyo.

Kaiō chōsa yōhō, suisan shikenjō—*See* Semi-a. Rep. Oceanogr. Invest., Tokyo.

Kaiyō gyogyō—*See* Ocean. Fish., Tokyo.

Kaiyō no kagaku—*See* Sci. Sea.

Kanagawa-ken suisan shikenjō geppō—*See* Mon. Rep. Kanagawa Pref. Fish. Expt. Stn.

Kanagawa-ken suisan shikenjō gyōmu hōkoku—*See* Prog. Rep. Kanagawa Pref. Fish. Expt. Stn.

Kanagawa suishi shiryō—*See* Rep. Kanagawa Pref. Fish. Expt. Stn.

Kōchi daigaku, gakujutsu kenkyū hōkoku—*See* Res. Rep. Kochi Univ.

Kōchi-ken suisan shikenjō jigyō hōkoku—*See* Prog. Rep. Kochi Fish. Expt. Stn.

Kumamoto-ken suisan shikenjō gyōmu kōtei hōkoku—*See* Prog. Rep. Kumamoto Pref. Fish. Expt. Stn.

Kumamoto-ken suisan shikenjō jigyō hōkoku—*See* Prog. Rep. Kumamoto Pref. Fish. Expt. Stn.

Kyūshū daigaku nōgakubu gakugei zasshi—*See* Sci. Bull. Fac. Agric. Kyushu Univ.

Maguro gyogyō—*See* Tuna Fishg.

Maguro shiryō—*See* Tuna Data, Fish. Res. Lab., Tokai Univ.

Mem. Aust. Mus.—Memoirs of the Australian Museum. Sydney.

Mem. Bernice P. Bishop Mus.—Memoirs of the Bernice P. Bishop Museum. Honolulu, Hawaii.

Mem. Carneg. Mus.—Memoirs of the Carnegie Museum. Pittsburgh.

Mem. Fac. Fish. Kagoshima Univ.—Memoirs of the Faculty of Fisheries, Kagoshima University. Kagoshima daigaku, suisan gakubu kiyō. Kagoshima City.

Mém. Soc. Natn. Sci. Nat. Math. Cherbourg—Mémoires de la Société Nationale des Sciences Naturelles et mathématiques de Cherbourg.

Mid-Pacif. Mag.—Mid-Pacific Magazine. Honolulu.

Mie-ken suisan shikenjō jigyō hōkoku—*See* Prog. Rep. Mie Pref. Fish. Expt. Stn.

Mie-ken suisan shikenjō jihō—*See* News Bull. Mie Pref. Fish. Expt. Stn.

Mie-kenritsu daigaku kenkyū nempō—*See* Ann. Rep. Prefect. Univ. Mie.

Mie-kenritsu daigaku suisan gakubu kiyō—*See* Rep. Fac. Fish. Prefect. Univ. Mie.

Mitt. Mus. Völkerk. Hamb.—Mitteilungen des Museums für Völkerkunde in Hamburg.

Mon. Rep. Kanagawa Pref. Fish. Expt. Stn.—Monthly Report of the Kanagawa Prefectural Fisheries Experimental Station. Kanagawa-ken suisan shikenjō geppō. Miura City.

Monogr. Acad. Nat. Sci. Philad.—Monographs. Academy of Natural Sciences of Philadelphia.

N. Z. Jl Sci. Technol.—New Zealand Journal of Science and Technology. Wellington.

Nagasaki-ken suisan shikenjō jigyō hōkoku-sho—*See* Prog. Rep. Nagasaki Pref. Fish. Expt. Stn.

Nankai-ku suisan kenkyūsho gyōseki-shū—*See* Contr. Nankai Reg. Fish. Res. Lab.

Nankai-ku suisan kenkyūsho hōkoku—*See* Rep. Nankai Reg. Fish. Res. Lab.

Nankai-ku suisan kenkyūsho hōkoku, rinjigō—*See* Occ. Rep. Nankai Reg. Fish. Res. Lab.

Nankai-ku suisan kenkyūsho, maguro kenkyū panfuretto—*See* Tuna Res. Pamph., Nankai.

Nanyō suisan—*See* So. Sea Fish.

Nanyō suisan jōhō—*See* So. Sea Fish. News.

Nanyō-chō suisan shikenjō jigyō hōkoku—*See* Prog. Rep. So. Seas Gov.-Gen. Fish. Expt. Stn.

Nanyō-chō suisan shikenjō kaiyō chōsa hōkoku—*See* Rep. Oceanogr. Invest. So. Seas Gov.-Gen. Fish. Expt. Stn.

Nat. Hist. N.Y.—Natural History, the Journal of American Museum of Natural History. New York.

Nature—Nature. London.

Natuurw. Tijdchr. Ned.-Indië.—Natuurwetenschappelijk Tijdschrit voor Nederlansch-Indië. Weltevreden.

News Bull. Mie Pref. Fish. Expt. Stn—News Bulletin. Mie Prefectural Fisheries Experimental Station. Mie-ken suisan shikenjō jihō. Shima-gun.

Nihon gyomin bunka kenkyū-jo ihō—*See* J. Res. Inst. Culture Jap. Fishm.

Nihon kaiyō gakkai-shi—*See* J. Oceanogr. Soc. Jap.

Nihon seibutsu chiri gakkai kaihō—*See* Bull. Biogeogr. Soc. Jap.

Nihon seitai gakkai-shi—*See* Jap. J. Ecol.

Nihon suisan gakkai, Tōhoku shibu kai-hō—*See* Rep. Tohoku Brch Jap. Soc. Scient. Fish.

Nihon suisan gakkai-shi—*See* Bull. Jap. Soc. Scient. Fish.

Nihon suisan shigen hogo kyōkai, suisan kenkyū sōsho—*See* Study Ser. Jap. Fish. Resor. Conserv. Ass.

No. Pacif.—North Pacific. Hokuyō. Agricultural Economics Research Institute. Nōrin keizai kenkyūsho. Tokyo.

Nōrinshō, Suisan kōshūjo kenkyū hōkoku—*See* J. Shimonoseki Coll. Fish.

Occ. Rep. Nankai Reg. Fish. Res. Lab.—Occasional Reports. Nankai Regional Fisheries Research Laboratory. Nankai-ku suisan kenkyūsho hōkoku, rinjigō. Kochi City.

Ocean. Fish., Tokyo—Oceanic Fisheries. Oceanic Fisheries Association. Kaiyō gyogyō. Kaiyō gyogyō kyōkai. Tokyo.

Ōita-ken suisan shikenjō gyōmu hōkoku-sho—*See* Prog. Rep. Oita Pref. Fish. Expt. Stn.

Okinawa-ken suisan shikenjō jigyō hōkoku—*See* Prog. Rep. Okinawa Pref. Fish. Expt. Stn.

Okinawa-ken suisan shikenjō jigyō seiseki—*See* Prog. Rep. Okinawa Pref. Fish. Expt. Stn.

Okinawa-ken suisan shikenjō jigyō seiseki gaiyō—*See* Prog. Rep. Okinawa Pref. Fish. Expt. Stn.

Ōyō kishō—*See* Appl. Met., Sapporo.

Pacif. Fisherm.—Pacific Fisherman. Seattle, Washington.

Pacif. Fisherm. Yb.—Pacific Fisherman, Yearbook. Seattle, Washington.

Pacif. Sci.—Pacific Science. Honolulu, Hawaii.

Palao nettai seibutsu kenkyūsho, kenkyū—*See* Palao Trop. Biol. Stn Stud.

Palao Trop. Biol. Stn Stud.—Palao Tropical Biological Station Studies. Palao nettai seibutsu kenkyū-sho, kenkyū. Tokyo.

Pamph. Coun. Scient. Ind. Res. Aust.—Pamphlet. Council for Scientific and Industrial Research, Australia. Melbourne.

Pan-Am. Fisherm.—Pan-American Fisherman. San Diego, California.

Papua N. Guin. Agric. J.—Papua and New Guinea Agricultural Journal. Port Moresby.

Pêche Mart.—Pêche Maritime. Paris.

Pesca, Anuario—Anuario de Pesca. Pesca Yearbook. Lima.

Pesca Mar., Los Ang.—Pesca y Marina. Los Angeles.

Pesca, Lima—Pesca. Lima.

Pesca, Los Angeles—Pesca. Los Angeles, California.

Pesca Yearbook—*See* Pesca, Anuario.

Philipp. J. Fish.—Philippine Journal of Fisheries. Manila, Quezon City.

Philipp. J. Sci.—Philippine Journal of Science. Manila.

Proc. Calif. Acad. Sci.—Proceedings of the California Academy of Sciences. San Francisco, California.

Proc. Gulf Caribb. Fish. Inst.—Proceeding. Gulf and Caribbean Fisheries Institute. Coral Gables, Florida.

Proc. Hawaii. Acad. Sci.—Proceedings. Hawaiian Academy of Sciences. Honolulu.

Proc. Indo-Pacif. Fish. Coun.—Proceedings. Indo-Pacific Fisheries Council. Bangkok, etc.

Proc. Linn. Soc. N. S. W.—Proceedings of the Linnean Society of New South Wales. Sydney.

Proc. Pacif. Sci. Congr.—Proceedings of the Pacific Science Congress, Java, etc.

Proc. Scient. Fishery Ass.—Proceedings of the Scientific Fishery Association. Suisan gakkai-ho. Tokyo.

Proc. U. S. Natn. Mus.—Proceedings of the United States National Museum. Washington.

Proc. Wash. Acad. Sci.—Proceedings of the Washington Academy of Sciences. Washington, D.C.

Prog. Rep. Formosa Gov.-Gen. Fish. Expt. Stn—Progress Report. Formosa Government-General Fisheries Experimental Station. Taiwan sōtokufu suisan shikenjō jigyō hōkoku. Taihoku (Taipei).

Prog. Rep. Kagoshima Pref. Fish. Expt. Stn—Progress Report. Kagoshima Prefectural Fisheries Experimental Station. Kagoshima-ken suisan shikenjō jigyō hōkoku. Kagoshima City.

Prog. Rep. Kanagawa Pref. Fish. Expt. Stn—Progress Report. Kanagawa Prefectural Fisheries Experimental Station. Kanagawa-ken suisan shikenjō gyōmu hōkoku. Miura City.

Prog. Rep. Kochi Pref. Fish. Expt. Stn—Progress Report. Kochi Prefectural Fisheries Experimental Station. Kochi-ken suisan shikenjō jigyō hōkoku. Suzaki City.

Prog. Rep. Kumamoto Pref. Fish. Expt. Stn—Progress Report. Kumamoto Prefectural Fisheries Experimental Station. Kumamoto-ken suisan shikenjō gyōmu kōtei hōkoku (*afterwards* Kumamoto-ken suisan shikenjō jigyō hōkoku). Kumamoto City.

Prog. Rep. Mie Pref. Fish. Expt. Stn—Progress Report. Mie Prefectural Fisheries Experimental Station. Mie-ken suisan shikenjō jigyō hōkoku. Shima-gun.

Prog. Rep. Nagasaki Pref. Fish. Expt. Stn—Progress Report. Nagasaki Prefectural Fisheries Experimental Station. Nagasaki-ken suisan shikenjō jigyō hōkoku-sho. Nagasaki City.

Prog. Rep. Oita Pref. Fish. Expt. Stn—Progress Report. Oita Prefectural Fisheries Experimental Station. Ōita-ken suisan shikenjō gyōmu hōkoku. Usuki City.

Prog. Rep. Okinawa Pref. Fish. Expt. Stn—Progress Report. Okinawa Prefectural Fisheries Experimental Station. Okinawa-ken suisan shikenjō jigyō hōkoku (*afterwards* Okinawa-ken suisan shikenjō jigyō seiseki *afterwards* Okinawa-ken suisan shikenjō jigyō seiseki gaiyō). Naha.

Prog. Rep. Shizuoka Pref. Fish. Expt. Stn—Progress Report. Shizuoka Prefectural Fisheries Experimental Station. Shizuoka-ken suisan shikenjō jigyō hōkoku. Shimizu City.

Prog. Rep. So. Seas Gov.-Gen. Fish. Expt. Stn—Progress Report of the South Seas Government-General Fisheries Experimental Station. Nanyō-chō suisan shikenjō jigyō hōkoku. Palau.

Prog. Rep. Taihoku Prov. Fish. Expt. Stn—Progress Report. Taihoku Province Fisheries Experimental Station. Taihoku-shū suisan shikenjō gyōmu hōkoku. Taihoku (Taipei).

Publs Field Mus. Nat. Hist.—Publications. Field Museum of Natural History. Chicago.

Publs Formosa Gov.-Gen. Fish. Expt. Stn—Publications. Formosa Government-General Fisheries Experimental Station. Taiwan sōtokufu suisan shikenjō shuppan. Taihoku (Taipei).

Publs Seto Mar. Biol. Lab.—Publications of the Seto Marine Biological Laboratory, Kyoto University. Sirahama.

Q. Bull. S. Pacif. Commn—Quarterly Bulletin. South Pacific Commission. Noumea, New Caledonia.

Q. Rep. Oceanogr. Invest., Tokyo—Quarterly Report of Oceanographical Investigations. Imperial Fisheries Institute. Suisan kōshūjo, kaiyō chōsa yōho. Department of Agriculture and Commerce (*afterwards* Department of Agriculture and Forestry). Tokyo.

Rakusui—Rakusui. Publication of the Alumni of the Imperial Fisheries Training Institute (*afterwards* Tokyo University of Fisheries). Yokosuka City and Tokyo.

Rapp. Crois. Inst. Fr. Océanie Sect. Océanogr.—Rapport de Croisière. Institut Francais d'Océanie, Section Océanographie. Noumea, New Caledonia.

Rapp. Scient. Inst. Fr. Océanie—Rapport Scientifique. Institut Francais d'Océanie. Nouméa, New Caledonia.

Rec. Canterbury Mus.—Record of the Canterbury Museum. Christchurch, New Zealand.

Rec. Genet. Soc. Am.—Record. Genetic Society of America. Columbus.

Rec. Oceanogr. Wks Jap.—Records of Oceanographic Works of Japan. Japanese National Commission for UNESCO. Tokyo.

Rep. Br. Ass. Advmt. Sci.—Report of the British Association for the Advancement of Science. London.

Rep. Calif. Coop. Oceanic Fish. Invest.—Report. California Cooperative Oceanic Fisheries Investigations. La Jolla, California.

Rep. Cent. Fish. Expt. Stn—Report of the Central Fisheries Experimental Station. Suisan shikenjō chōsa hōkoku. Tokyo.

Rep. Conf. Fish. Ag. Jap. Govt Fish. Resour. Invest.—Report of the Conference of the Fisheries Agency, Japanese Government, for Fisheries Resources Investigations (*afterwards* Report of Fisheries Resources Investigations by the Scientists of the Fisheries Agency, Japanese Government). Gyogyō shigen kenkyū kaigi-hō. Tokyo.

Rep. Fac. Fish. Prefect. Univ. Mie—Report of the Faculty of Fisheries, Prefectural University of Mie (*afterwards* Journal of the Faculty of Fisheries, Prefectural University of Mie). Mie-kenritsu daigaku suisun gakuba kiyō. Tsu City.

Rep. Fish. Inst.—*See* J. Tokyo Univ. Fish.—Report. Fisheries Institute. Suisan Kōshūjo shiken hōkoku (*afterwards* Report of the Imperial Fisheries Institute; no change in Japanese title). Yokosuka City.

Rep. Fish. Res. Lab., Tokai Univ.—Report. Fisheries Research Laboratory, Tokai University. Tokai daigaku suisan kenkyūsho hōkoku. Shimuzu City.

Rep. Fish. Resour. Invest. Scientists Fish. Ag. Jap. Govt—*See* Rep. Conf. Fish. Ag. Jap. Govt Fish. Resour. Invest.—Report of Fisheries Resources Investigations by the Scientists of the Fisheries Agency, Japanese Government. Gyogyō shigen kenkyū kaigi-hō. Tokyo.

Rep. Fund. Fish. Surv., Imp. Fish. Bur., Tokyo—Report of the Fundamental Fisheries Surveys. Imperial Fisheries Bureau. Suisan kyoku, gyokyō kihon chōsa hōkoku. Tokyo.

Rep. Imp. Fish. Inst.—*See* J. Tokyo Univ. Fish.—Report of the Imperial Fisheries Institute. Suisan kōshūjo shiken hōkoku (*afterwards* Journal of the Imperial Fisheries Institute. Suisan kōshūjo kenkyū hōkoku). Yokosuka City.

Rep. Kanagawa Pref. Fish. Expt. Stn—Report of the Kanagawa Prefectural Fisheries Experimental Station. Kanagawa suishi shiryō. Miura City.

Rep. Nankai Reg. Fish. Res. Lab.—Report. Nankai Regional Fisheries Research Laboratory. Nankai-ku suisan kenkyūsho hōkoku. Kochi.

Rep. Oceanogr. Invest. So. Seas Gov.-Gen. Fish. Expt. Stn—Report of the Oceanographic Investigations, South Seas Government-General Fisheries Experimental Station. Nanyō-chō suisan shikenjō kaiyō chōsa hōkoku. Palau.

Rep. Tohoku Brch Jap. Soc. Scient. Fish.—Report of the Tohoku Branch of the Japanese Society of Scientific Fisheries. Nihon suisan gakkai, Tōhoku shibu kai-hō. Sendai City.

Rep. U. S. Bur. Fish.—*See* Rep. U. S. Commnr Fish.

Rep. U. S. Commnr Fish.—Report of the United States Commissioner of Fisheries. Washington, D.C.

Rep. Usa Mar. Biol. Stn.—Report of the Usa Marine Biological Station, Kochi University. Usa rinkai jikkensho kenkyū hōkoku, Kochi daigaku. Usa City.

Res. Rep. Kochi Univ.—Research Report of the Kochi University. Kōchi daigaku, gakujutsu kekyū hōkoku. Kochi City.

Res. Rep. Fish. Res. Lab. Tokai Univ.—Research Report. Fisheries Research Laboratory, Tokai University. Tokai daigaku suisan kenkyūsho chōsa shiken hōkoku. Shimizu City.

Res. Rep. U. S. Fish Wildl. Serv.—Research Report. United States Fish and Wildlife Service. Washington, D.C.

Revta Biol. Mar.—Revista de Biología Marina. Valparaiso, Chile.

Ryb. Khoz.—Rybnoe Khozyaistvo. Moscow.

Ryb. Khoz. Dal'n. Vost.—Rybnoe Khoziaistvo Dal'nego Vostoka. Vladivostok.

Saishū to shiiku—*See* Collecting Breed.

Sci. Bull. Fac. Agric. Kuyshu Univ.—Science Bulletin of the Faculty of Agriculture, Kyushu University. Kyūshū daigaku nōgakubu gakugei zasshi. Fukuoka City.

Sci. Sea—Science of the Sea. Kaiyō no kagaku. Oceanographical Society of Japan. Nihon kaiyō gakkai. Tokyo.

Science, N. Y.—Science. New York.

Science, Tokyo—Science. Kagaku. Tokyo.

Sea and Sky—Sea and Sky. Kobe Marine Observatory Group. Umi to sora. Kōbe jishū-kai, Kobe City.

Semi-a. Rep. Oceanogr. Invest., Tokyo—Semi-annual Report of Oceanographical Investigations. Imperial Fisheries Institute (*afterwards* Imperial Fisheries Experimental Station). Kaiyō chōsa yōhō, suisan kōshūjo (*afterwards* suisan shikenjō). Tokyo.

Ser. Divulg. Cient., Min. Agric., Lima—Serie de Divulgación Científica. Ministerio de Agricultura, Dirección de Pesquería y Caza. Lima.

Shizuoka-ken suisan shikenjō jigyō hōkoku—*See* Prog. Rep. Shizuoka Pref. Fish. Expt. Stn.

So. Sea Fish.—South Sea Fisheries. Nanyō suisan. Tokyo.

So. Sea Fish. News—South Sea Fisheries News. Nanyō suisan joho. Palau.

So. Sea Sci.—South Sea Science. Kagaku nanyō. Palau.

Spec. Bull. Div. Fish Game, Hawaii—Special Bulletin. Division of Fish and Game, Department of Land and Natural Resources. Honolulu, Hawaii.

Spec. Publs Int. Commn NW. Atlant. Fish.—Special Publications. International Commission for the Northwest Atlantic Fisheries. Halifax, Nova Scotia.

Spec. Scient. Rep. U. S. Fish Wildl. Serv.—Special Scientific Report. United States Department of the Interior, Fish and Wildlife Service. Washington, D.C.

Study Ser. Jap. Fish. Resor. Conserv. Ass.—Study Series. Japan Fisheries Resource Conservation Association. Nihon suisan shigen hogo kyōkai, suisan kenkyū sōsho. Tokyo.

Suisan butsuri danwakai kaihō—*See* Bull. Fish. Phys. Disc. Group.

Suisan chōsa hōkoku, suisan kyoku—*See* J. Imp. Fish. Bur., Tokyo.

Suisan gakkai-hō—*See* Proc. Scient. Fishery Ass.

Suisan kagaku—*See* Fish. Sci., Tokyo.

Suisan kaiyō kenkyū-kai kai-hō—*See* Bull. Jap. Soc. Fish. Oceanogr.

Suisan kenkyū-shi—*See* J. Fish. Res.

Suisan kenkyū-kai hō—*See* J. Fish. Res. Inst., Tokyo.

Suisan kōshūjo, kaiyō chōsa yōhō—*See* Q. Rep. Oceanogr. Invest., Tokyo.

Suisan kōshūjo kenkyū hōkoku—*See* J. Imp. Fish Inst.

Suisan kōshūjo shiken hōkoku—*See* Rep. Fish. Inst. *and* Rep. Imp. Fish. Inst.

Suisan kōza—*See* Text Fish.

Suisan kyoku, gyogyō kihon chōsa hōkoku—*See* Rep. Fund. Fish. Surv., Imp. Fish. Bur., Tokyo.

Suisan seizō kōgaku kōza—*See* Fish. Tech. Lect. Ser.

Suisan shikenjō chōsa hōkoku—*See* Rep. Cent. Fish. Expt. Stn.

Suisan shikenjō chōsa shiryō—*See* Suppl. Rep. Fish. Invest. Imp. Fish. Expt. Stn.

Suisan shikenjō hōkoku—*See* J. Imp. Fish. Expt. Stn, Tokyo.

Suisan-gaku zenshū—*See* Fish. Sci. Ser., Tokyo.

Suisankai—*See* J. Fish. Soc. Japan.

Suomalaisen Eläin—ja Kasvitieteellisen Seuran Vanamon Tiedonannot—*See* Arch. Soc. 'Vanamo'.

Suppl. Rep. Fish. Invest. Imp. Fish. Expt. Stn—Supplementary Report of Fishery Investigation. Imperial Fisheries Experimental Station. Suisan shikenjō chōsa shiryō. Tokyo.

Taihoku-shū suisan shikenjō gyōmu hōkoku—*See* Prog. Rep. Taihoku Prov. Fish. Expt. Stn.

Taiwan sōtokufu suisan shikenjō jigyō hōkoku—*See* Prog. Rep. Formosa Gov.-Gen. Fish. Expt. Stn.

Taiwan sōtokufu suisan shikejō shuppan—*See* Publs Formosa Gov.-Gen. Fish. Expt. Stn.

Taiwan sōtokufu suisan shikenjō suisan shiken hōkoku—*See* Fish. Res. Rep. Formosa Gov.-Gen. Fish. Expt. Stn.

Taiwan suisan zasshi—*See* Formosa Fish. Mag.

Tech. Bull. Dep. Agric. Commerce Philipp. Is.—Technical Bulletin. Department of Agriculture and Commerce, Philippine Islands. Manila.

Tech. Pap. Div. Fish. C. S. I. R. O.—*See* Tech. Pap. Div. Fish. Oceanogr. C. S. I. R. O.

Tech. Pap. Div. Fish. Oceanogr. C. S. I. R. O.—Technical Papers. Division of Fisheries. (*afterwards* Division of Fisheries and Oceanography) C. S. I. R. O., Australia. Melbourne.

Tech. Pap. S. Pacif. Commn—Technical Papers. South Pacific Commission. Noumea, New Caledonia.

Teisui—Teisui. Imperial Fisheries Association. Teikoku suisan-kai. Tokyo.

Text Fish.—The Text of the Fishery. Suisan koza. Tokyo.

Tijdschr. Ned. Dierk. Vereen.—Tijdschrift der Nederlandsche Dierkundinge Vereeiniging. Leiden.

Tōhoku suiken sōsho—*See* Edu. Ser. Tohoku Reg. Fish. Res. Lab.

Tōhoku kaiku suisan kenkyūsho gyokyō sokuhō—*See* Curr. Rep. Fish. Cond. Tohoku Reg. Fish. Res. Lab.

Tōhoku kaiku suisan kenkyūsho kaiyō shigen nempō—*See* Ann. Rep. Fish. Resor. Tohoku Reg. Fish. Res. Lab.

Tōhoku kaiku suisan kenkyūsho kenkyū hōkoku—*See* Bull. Tohoku Reg. Fish. Res. Lab.

Tōkai daigaku suisan kenkyūsho chōsa shiken hōkoku—*See* Res. Rep. Fish. Res. Lab. Tokai Univ.

Tōkai daigaku suisan kenkyūsho hōkoku—*See* Rep. Fish. Res. Lab. Tokai Univ.

Tōkaiku suisan kenkyūsho kenkyū hōkoku—*See* Bull. Tokai Reg. Fish. Res. Lab.

Tokyo daigaku ritchi shizen kagaku kenkyūsho hōkoku—*See* Bull. Physiogr. Sci. Res. Inst., Tokyo.

Tokyo suisan daigaku kenkyū hōkoku—*See* J. Tokyo Univ. Fish.

Torreia—Torreia. Habana (Havana).

Trans. Am. Fish. Soc.—Transactions of the American Fisheries Society. New York.

Trans. N. Am. Wildl. Conf.—Transactions of the North American Wildlife Conference. Wildlife Management Institute. Washington, D.C.

Trans. Nat. Hist. Soc. Formosa—Transactions of the Natural History Society of Formosa. Taiwan hakubutsu gakkai kaihō. Taihoku (Taipei).

Trudy Inst. Okeanol.—Trudy Instituta Okeanologii. Akademiya Nauk SSSR. Moscow.

Trudy Soveshch. Ikhtiol. Kom.—Trudy Soveshchanii. Ikhtiologicheskaya komissiya. Moskow.

Trudy Tikhookean. Kom.—Trudy Tikhookeanskogo Komiteta. Akademiia Nauk SSSR. Leningrad.

Tuna Data, Fish. Res. Lab., Tokai Univ.—Tuna Data, Fisheries Research Laboratory, Tokai University. Tōkai daigaku, suisan kenkyūsho, maguro shiryō. Shimizu City.

Tuna Fishg—Tuna Fishing. Investigative Society of Tuna Fishery (*afterwards* All Japan Investigative Conference of Tuna). Maguro gyogyō. Maguro gyogyō kenkyū-kai (*afterwards* Zenkoku katsuo-maguro kenkyū kyōgi-kai). Miura City.

Tuna Res. Pamph., Nankai—Tuna Research Pamphlet. Nankai Regional Fisheries Research Laboratory. Nankai-ku suisan kenkyūsho, Maguro kenkyū panfuretto. Kochi City.

Uchen. Zap. Rostov. Gos. Univ.—Uchenye Zapiski Rostovskogo-na-Donu Gosudarstvennogo Universiteta. Rostov on Don.

Umi to sora—*See* Sea and Sky.

Univ. Calif. Publs Zool.—University of California Publications in Zoology. Berkeley, California.

Univ. Calif. SIO Ref.—Scripps Institution of Oceanography—Reference. University of California San Diego. La Jolla, California.

U. S. Arm. Forces Med. J.—United States Armed Forces Medical Journal. Washington, D.C.

Usa rinkai jikkensho kenkyū hōkoku (Kochi diagaku)—*See* Rep. Usa Mar. Biol. Stn.

Verh. Batav. Genoot. Kunst. Wet.—Verhandelingen van het Bataviaasch Genootschap van Kunsten en Wetenschappen. Batavia.

Verh. K. Akad. Wet.—Verhandelingen der K. Akademie van Wetenschappen. Amsterdam.

Versl. Gewone Vergad. Wis- en Natuurk. Afd. K. Akad. Wet. Amst.—Verslagen en Mededeelingen (*afterwards* Verslagen van Gewone Vergaderingen der Wis- en Natuurkundige Afdeeling). K. Akademie van Wetenschappen te Amsterdam.

Versl. Meded. K. Akad. Wet. Amst.—*See* Versl. Gewone Vergad. Wis- en Natuurk. Afd. K. Akad. Wet. Amst.

Victorian Nat.—Victorian Naturalist. Melbourne.

Vop. Ikhtiol.—Voprosy Ikhtiologii. Otdelenie biologicheskikh nauk. Akademiya Nauk SSSR. Moscow.

Wld Fishg—World Fishing. London.

Z. Ethnol.—Zeitschrift für Ethnologie. Berlin.

Zool. Mag., Tokyo—Zoological Magazine. Dōbutsugaku zasshi. Tokyo.

Zool. Ser. Fld Mus. Nat. Hist.—Zoological Series. Field Museum of Natural History. Chicago.

Zoologica, N. Y.—Zoologica. Scientific Contributions of the New York Zoological Society. New York.

LIST OF JUNIOR AUTHORS

LISTA DE AUTORES NOVELES

FUKUYA, S
Tohyama, Tetsumoto, Fukuya and Yamada, 1941

GIBBS, ROBERT H., JR.
Collette and Gibbs, 1963, 1965
GOTSHALL, DAN
Miller, Gotshall and Nitsos, 1961
GREELEY, PAUL O.
Ulrey and Greeley, 1928
GREENHOOD, E. C.
Godsil and Greenhood, 1948, 1952

HARDENBURG, J. G. F.
Delsman and Hardenburg, 1934
HARUTA, NAOHISA
Matsuura, Hashimoto and Haruta, 1959
HASHIMOTO, KANEHISA
Matsuura and Hashimoto, 1954, 1955, 1956, 1959
Matsuura, Hashimoto and Haruta, 1959
HASHIMOTO, YOSHIO
Mori, Hashimoto and Komata, 1956
HATTORI, TOSHIO
Kimura, Iwashita and Hattori, 1952
HELLER, EDMUND
Snodgrass and Heller, 1905
HESTER, FRANK J.
Barrett and Hester, 1964
HIGUCHI, TOSHIAKI
Fukuda and Higuchi, 1954
HILDEBRAND, SAMUEL F.
Meek and Hildebrand, 1923
HIRAI, H.
Higashi and Hirai, 1948
HIRANO, TOSHIYUKU
Kikuchi, Hirano and Okada, 1957
Kikuchi, Hirano, Morooka and Okada, 1958
Uda and Hirano, 1964
HIYAMA, YOSHIO
Nakamura and Hiyama, 1957
HODGKINSON, E. R.
Phillipps and Hodgkinson, 1922
HOLLOWAY, JAMES R.
Sprague and Holloway, 1962
Sprague, Holloway and Nakashima, 1963
HONMA, MISAO
Kamimura and Honma, 1963
HORIGUCHI, YOSHISHIGE
Kashiwada, Kakimoto and Horiguchi, 1952
HOSHINO, NAOJI
Sugimura, Taira, Hoshino, Ebisawa and Nagahara, 1954
HOVEN, EARL E.
Van Campen and Hoven, 1956
HUBBS, CARL LEAVITT
Jordan and Hubbs, 1925

IIZUKA, SHOSUKE
Fukuda and Iizuka, 1939(*1*), (*2*)
IKEDA, NOBUO
Takayama, Ikeda and Ando, 1934
IKEHARA, ISAAC I.
King and Ikehara, 1956
Murphy and Ikehara, 1955
INAGAKI, CHOTEN
Fujimaki, Odagiri and Inagaki, 1953
ISHINO, MAKOTO
Uda and Ishino, 1958
ITO, TAKESHI
Yamagawa and Ito, 1926
IWAI, TAMOTSU
Matsubara, Ochiai and Iwai, 1965
IWASAKI, YUKINOBU
Inoue, Amano and Iwasaki, 1963, 1966
IWASHITA, MITSUO
Kimura, Iwashita and Hattori, 1952

JARVIS, NORMAN D.
Fiedler, Jarvis and Lobell, 1943
Lang and Jarvis, 1943
JORDAN, ERIC KNIGHT
Jordan and Jordan, 1922
JUAREZ, F., MAR
Howell and Juárez, 1954
JUDEFIN, THOMAS F.
Halstead, Kawabata and Judefin, 1961

KAKIMOTO, DAIICHI
Horiguchi, Kakimoto and Kashiwada, 1950
Horiguchi, Kashiwada and Kakimoto, 1953
Kashiwada and Kakimoto, 1952
Kashiwada, Kakimoto and Horiguchi, 1952
Kashiwada, Kakimoto and Kanazawa, 1954
Kashiwada, Kakimoto and Yamasaki, 1953

MESSERSMITH, JAMES B.
Blunt and Messersmith, 1960
MILLOTT, N.
Fox and Millott, 1954
MITCHELL, CHARLES T.
Hunter and Mitchell, 1966
MIURA, TOSHIYUKI
Kawabata, Miura and Shimanuki, 1963
MIZUMA, HIROSHI
Kakimoto and Mizuma, 1956
MORI, TAKAJIRO
Hashimoto, Yamada and Mori, 1953
Konosu, Katori, Ota, Eguchi and Mori, 1956
Matsuura, Baba and Mori, 1953
Saiki, Shirai, Ohno and Mori, 1957
MORI, TOKUMI
Yabe, Anraku and Mori, 1953
Yabe and Mori, 1950
MORITA, JIRO
Yamanaka, Kurohiji and Morita, 1966
MOROOKA, HIROSHI
Kikuchi, Hirano, Morooka and Okada, 1958
MORRIS, EARL LEONARD
Starks and Morris, 1907
MURPHY, GARTH I.
Iversen and Murphy, 1955
Shomura and Murphy, 1955
MURPHY, ROBERT CUSHMAN
Nichols and Murphy, 1944

NAGAHARA, TAROH
Sugimura, Taira, Hoshino, Ebisawa and Nagahara, 1954
NAGANUMA, AKIRA
Kawasaki and Naganuma, 1959, 1961
Kawasaki, Yao, Anraku, Naganuma and Asano, 1962
NAGAYAMA, FUMIO
Ono and Nagayama, 1952
NAKAMURA, EUGENE L.
Wilson, Nakamura and Yoshida, 1958
Tester and Nakamura, 1957
NAKASHIMA, LESLIE I.
Sprague and Nakashima, 1962(*1*), (*2*)
Sprague, Holloway and Nakashima, 1963
NAUGHTON, JOHN J.
Tester, van Weel and Naughton, 1955
NISHIMOTO, U.
Takada and Nishimoto, 1955
NISKA, EDWIN L.
Murphy and Niska, 1953
NITSOS, RICHARD
Miller, Gotshall and Nitsos, 1961
NOMURA, SEIZI
Yokota, Toriyama, Kanai and Nomura, 1961

OCHIAI, AKIRA
Matsubara and Ochiai, 1965
Matsubara, Ochiai and Iwai, 1965
OHNO, SUSUMU
Saiki, Shirai, Ohno and Mori, 1957
Shirai, Saiki and Ohno, 1957
OKADA, IKUNOSUKE
Kikuchi, Hirano, Morooka and Okada, 1958
Fukushima, Osakabe, Kikuchi and Okada, 1957
Kikuchi, Hirano and Okada, 1957
OKADA, KEISUKE
Ishiyama and Okada, 1957
OKURA, SHIRO
Murayama and Okura, 1950, 1952
ODAGIRI, S.
Fujimaki, Odagiri and Inagaki, 1953
ODATE, SHIGERU
Hotta, Fukushima, Odate and Aizawa, 1961
OGAWA, TATSU
Hotta, Kariya and Ogawa, 1959
Hotta and Ogawa, 1953, 1955
ORANGE, CRAIG J.
Broadhead and Orange, 1960
Schaefer and Orange, 1956
OSAKABE, ISAMU
Fukushima, Osakabe, Kikuchi and Okada, 1957
Miyama and Osakabe, 1938
OTA, RYOZO
Konosu, Katori, Ota, Eguchi and Mori, 1956
Matsuura, Konosu, Ota, Katori and Tanaka, 1955
OTSU, TAMIO
Ego and Otsu, 1952
Murphy and Otsu, 1954
Royce and Otsu, 1954, 1955

TESTER, ALBERT L.
Marr and Tester, 1966
TETSUMOTO, SOGO
Tohyama, Tetsumoto, Fukuya and Yamada, 1941
TOGASAWA, YOSHIHISA
Katsumata and Togasawa, 1960
TOKIOKA, TAKASHI
Tomiyama, Abe and Tokioka, 1958
TORIYAMA, MASAHIRO
Yokota, Toriyama, Kanai and Nomura, 1961
TORTONESE, ENRICO
Bini and Tortonese, 1955
TOZAWA, HARUMI
Amano, Tozawa and Takase, 1956
Yamada, Tozawa, Amano and Takase, 1955(*1*), (*2*)
TSUCHIYA, YASUHIKO
Nakano and Tsuchiya, 1960
TSUKUSHI, JIRO
Uda and Tsukushi, 1934
TUBB, J. A.
Blackburn and Tubb, 1950

UCHIDA, KEITARO
Okada, Uchida and Matsubara, 1935
UCHIYAMA, JAMES H.
Nakamura and Uchiyama, 1966
UEYANAGI, SHOJI
Watanabe and Ueyanagi, 1962
Yabe and Ueyanagi, 1961, 1962
Yabe, Ueyanagi and Watanabe, 1966
Yabe, Yabuta and Ueyanagi, 1963
UMALI, A. F.
Herre and Umali, 1948
UNO, MICHIO
Sakai and Uno, 1940

VALENCIENNES, ACHILLE
Cuvier and Valenciennes, 1831
van WEEL, P B.
Tester, van Weel and Naughton, 1955

WAKIYA, YOJIRO
Fujita and Wakiya, 1915
WALDRON, KENNETH D.
Murphy, Waldron and Seckel, 1960
Seckel and Waldron, 1960
Yamashita and Waldron, 1958, 1959
WATANABE, HISAYA
Ueyanagi and Watanabe, 1964
Yabe, Ueyanagi and Watanabe, 1966
WATANABE, N.
Uda and Watanabe, 1938
WELANDER, A. D.
Palumbo, Seymour and Welander, 1966
WILBY, G. V.
Clemens and Wilby, 1946, 1949, 1961
WILSON, PETER T.
King and Wilson, 1957

YABUTA, YOICHI
Yabe, Yabuta and Ueyanagi, 1963
YAMASHITA, KUSUTARO
Inoue and Yamashita, 1963
YOSHIDA, H.
Takayama and Yoshida, 1933
YOSHIHARA, TOMOKICHI
Oshima and Yoshihara, 1952
YAMADA, S.
Tohyama, Tetsumoto, Fukuya and Yamada, 1941
YAMADA, SHIGEHIDE
Hashimoto, Yamada and Mori, 1953
YAMASAKI, TOSHIMORI
Kashiwada, Kakimoto and Yamasaki, 1953
YAO, MASAKAZU
Kawasaki, Yao, Anraku, Naganuma and Asano, 1962
YASUDA, FUJIO
Hiyama and Yasuda, 1961
YAZAKI, HARUO
Kanamura and Yazaki, 1940
YOSHIDA, HOWARD O.
Iversen and Yoshida, 1957
YOSHIMINE, TETSUO
Kakimoto and Yoshimine, 1956
YOSHIWARA, TOMOKICHI
Kubo and Yoshiwara, 1957
YUEN, HEENY S. H.
Strasburg and Yuen, 1958, 1960
Tester, Yuen and Takata, 1954

ZHURAVLEV, A. V.
Osipov, Kizevetter and Zhuravlev, 1964

ENTRIES NOT CONSULTED

ENTRADAS NO EXAMINADAS

BUREAU OF FISHERIES, JAPAN

1933. Report of the southern fisheries investigation for 1931 [in Japanese]. Bureau of Fisheries, Ministry of Agriculture and Forestry: 96 p.

CHIBA PREFECTURAL FISHERIES EXPERIMENTAL STATION

1936. Investigation of skipjack fishing grounds [in Japanese]. Chiba-ken suisan shikenjō jigyō hōkoku (Progress Report, Chiba Prefectural Fisheries Experimental Station), 1934: 1-12.

1936. Investigation of tuna fishing grounds [in Japanese]. Chiba-ken suisan shikenjō jigyō hōkoku (Progress Report, Chiba Prefectural Fisheries Experimental Station), 1934: 13-19.

CHIBA PREFECTURAL FISHERIES EXPERIMENTAL STATION, KATSUURA BRANCH

1937. Investigation of skipjack fishing grounds [in Japanese]. Chiba-ken suisan shikenjō Katsuura bunjō jigyō hōkoku (Progress Report, Katsuura Branch, Chiba Prefectural Fisheries Experimental Station), 1935: 1-9.

1938. The skipjack fishery [in Japanese]. Chiba-ken suisan shikenjō Katsuura bunjō jigyō hōkoku (Progress Report, Katsuura Branch, Chiba Prefectural Fisheries Experimental Station), 1936: 20-25.

1941. Skipjack fishery [in Japanese]. Chiba-ken suisan shikenjō Katsuura bunjō jigyō hōkoku (Progress Report, Katsuura Branch, Chiba Prefectural Fisheries Experimental Station), 1938: 22-25.

1941. The skipjack fishery [in Japanese]. Chiba-ken suisan shikenjō Katsuura bunjō jigyō hōkoku (Progress Report, Katsuura Branch, Chiba Prefectural Fisheries Experimental Station), 1939: 14-17.

FUJITA, TSUNENOBU

1912 and 1913. Nihon suisan dōbutsu-gaku [in Japanese]. (Fishery zoology of Japan, in two parts). Publisher unknown: 561 p.

IKEDA, NOBUYA

1932. The bait problem and the development of our skipjack and mackerel fisheries [in Japanese]. Miyagi no suisan (Miyagi Fisheries), 1 : 9-29.

IKEDA, NOBUYA and SEIJI ANDO

1933. A consideration of skipjack fishing conditions off northeastern Japan in 1930 [in Japanese]. Gyorō kenkyū-kai kaihō (Bulletin of Students of Fishing Techniques), 5.

KAWAI, KAKUYA and MOTOJIRO OHASHI

1911. Report on experimental purse-seine fishing for skipjack [in Japanese]. Report Imperial Fisheries Institute, 7(1) : 9-24.

KIMURA, KINOSUKE

1957. Proceedings from the research conference on the fish stocks [in Japanese]. Nōrin suisan gijutsu kaigi (Technical Board of Agriculture and Fisheries): pagination unknown.

KODAMA, MASAHARU, K. IIZUKA and T. HARADA

1934. Weight ratio of various body parts and analyses of the normal constituents of fresh flesh of important South Sea fish [in Japanese]. Taiwan sōtokufu suisan shikenjō jigyō hōkoku (Progress Report, Formosa Government-General Fisheries Experimental Station) 1932, Technological Section: 1-6.

MATSUBARA, SHINNOSUKE

1890. Skipjack fishery and dried skipjack [in Japanese]. Dainihon suisan gakkaihō (Report of the Great Japan Fisheries Association), 94 : 293-299.

MATSUI, HIDESABURO, SHOKICHI YAMAMOTO, HIDEKI SUMI and TADAITSU ASAKURA

1918. Studies on skipjack flesh [in Japanese]. Suisan kōshūjo shiken hōkoku (Report of the Imperial Fisheries Institute), 13(4) : 1-10.

MIYAGI PREFECTURE, FISHERIES ASSOCIATION

1929. Survey of skipjack and tuna fisheries [in Japanese]. Teisui 8(8) : 25-30; 8(9) : 22-26.

OKAMURA, KINTARO and HISATOSHI MARUKAWA

1909. Surveys of skipjack fishing grounds [in Japanese]. Dainihon suisan gakkaihō (Report of the Great Japan Fisheries Association), 322 : 26-28; 323 : 15-18.

OKUMURA, ISABURO

1943. Management of the southern tuna fisheries [in Japanese]. Suisankai (Journal of the Fisheries Society of Japan), 728 : 67-72.

OSHIMA, MASAMITSU

1940. Sakana (Fishes) [in Japanese]. Sansei-dō Printing Co., Tokyo: 661 p.

OTAKI, K., T. FUJITA and T. HIGURASHI

1907. Fishes of Japan: an account principally of economic species [in Japanese]. Publisher unknown, Tokyo: pagination unknown.

RUMYANTSEV, A. I. and I. V. KIZEVETTER

1949. Tuntsy. (Kratkie svedeniya po biolgii, promyslu i obrabotke tuntsov Tikhogo okeana) [in Russian]. Primizdat, Vladivostok: 64 p.

TACHIKAWA, TAKUETSU

1925. Oceanographic conditions and fishing conditions in the waters adjacent to Kinkazan. 3 and 4 [in Japanese]. Teisui, 4(1) : 30-33; 4(4) : 25-29.

1925. Skipjack in the waters adjacent to Kinkazan [in Japanese]. Teisui 4(11) : 41-44.

TERUI, KENZO

1918-1920. Skipjack and tuna fisheries of Shizuoka Prefecture, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 13, 17, 18, 19 and 20 [in Japanese]. Suisan kenkyū-shi (Journal of Fisheries Research), 13(3) : 55-78, 13(4) : 121-155, 13(5) : 189-223, 13(6) : 260-275, 13(7) : 248-316, 13(8) : 343-349, 13(9) : 371-375, 13(10) : 398-408, 13(11) : 435-444, 13(12) : 461-472, 14(2) : 29-44, 14(3) : 61-62, 14(9) : 205-226, 14(10) : 233-242, 14(12) : 277-282, 15(3) : 49-54.

TERANO, SEIICHI

1904. Katsuo gyogyō (Skipjack fishery) [in Japanese]. Bureau of Fisheries, Tokyo: pagination unknown.

TUGE, HIDEOMI, KIYOSHI UCHIHASHI and HATSUTARO SHIMAMURA

1966. An atlas of the brains of fishes of Japan. Tsukiji Shokan Co., Tokyo: pagination unknown.

UDA, MITITAKA

1929. The relationship between skipjack fishery and oceanographic conditions in 1929 [in Japanese]. Suisan butsuri danwakai kaihō (Bulletin of the Fisheries Physics Discussion Group), 8 : 57-60.

YABE, HIROSHI and TOKUMI MORI

1948. Report on skipjack investigations for 1947 [in Japanese]. Suisan shikenjō chōsa hōkoku (Report of the Central Fisheries Experimental Station), 30 : pagination unknown.

YAMAMOTO, SHIGEO

1934. Points of information for the skipjack fishery gained from the study of fish's eyes [in Japanese]. Rigakkai, 32(1) : 28.

YAMAMOTO, SHOKICHI and TADASHI AKAZAWA

1921. Studies on skipjack flesh. Part 2 [in Japanese]. Suisan kōshujō shiken hōkoku (Report of the Imperial Fisheries Institute), 17(1) : 97-119.