

Eastern Pacific sea turtles

*Caretta
caretta*
Loggerhead



Dermochelys coriacea
Leatherback



Chelonia mydas agassizii
Black/Green



Eretmochelys imbricata
Hawksbill

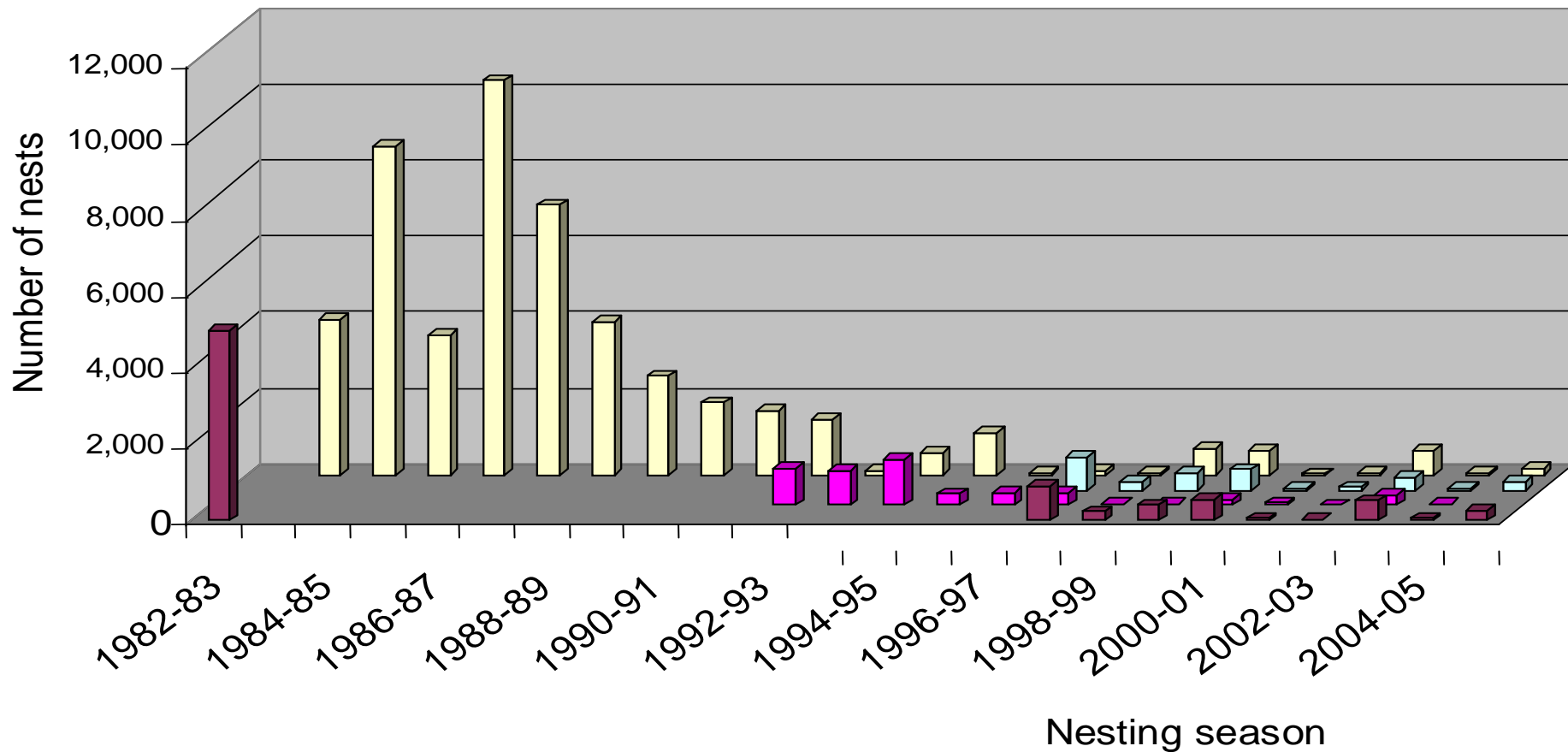


*Lepidochelys
olivacea*
Olive ridley





Numbers of nests in index beaches, 1982 - present

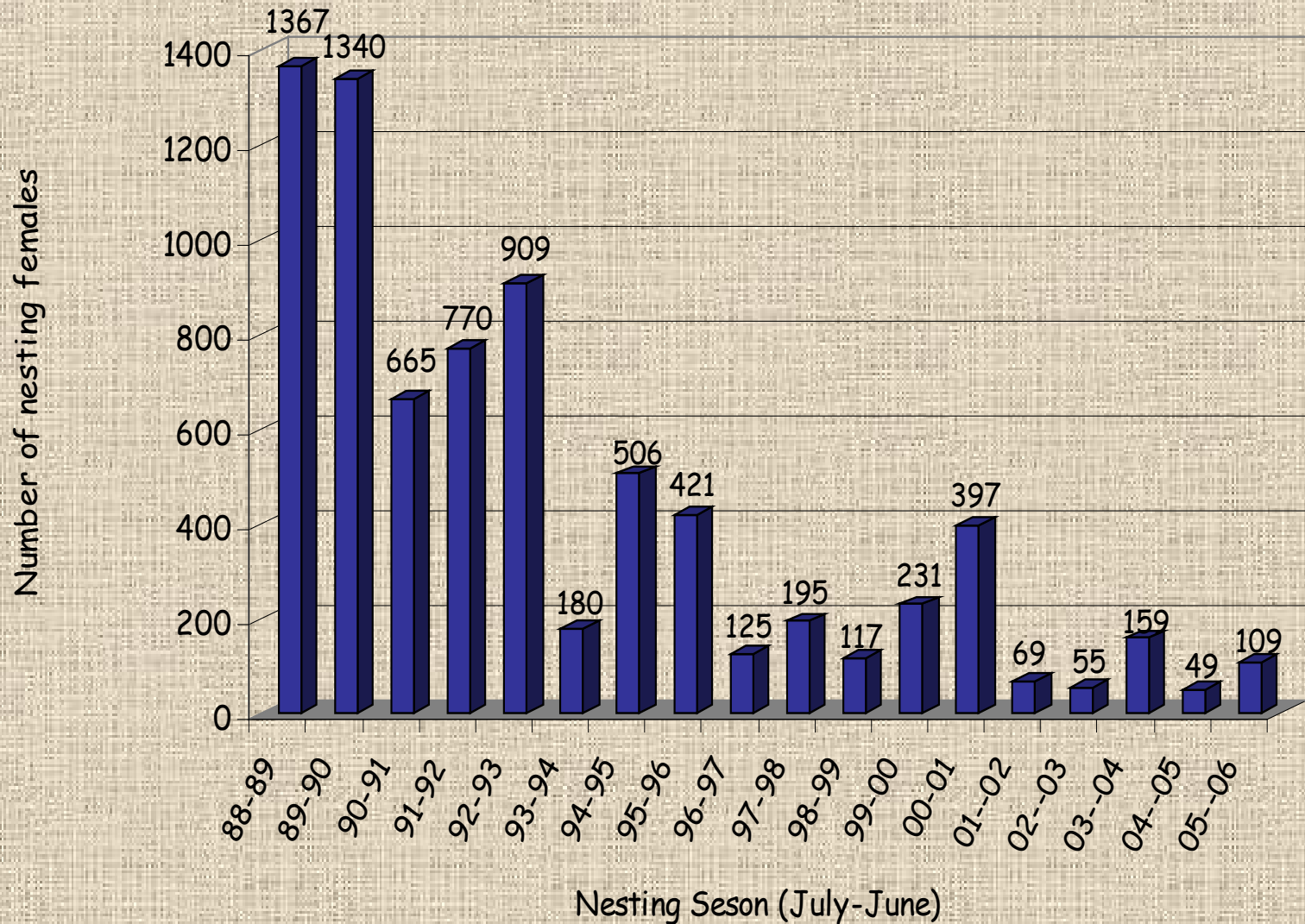


Tierra Colorada, Gro.
Barra de la Cruz, Oax.

Cahuitán, Oax.
Mexiquillo, Mich.

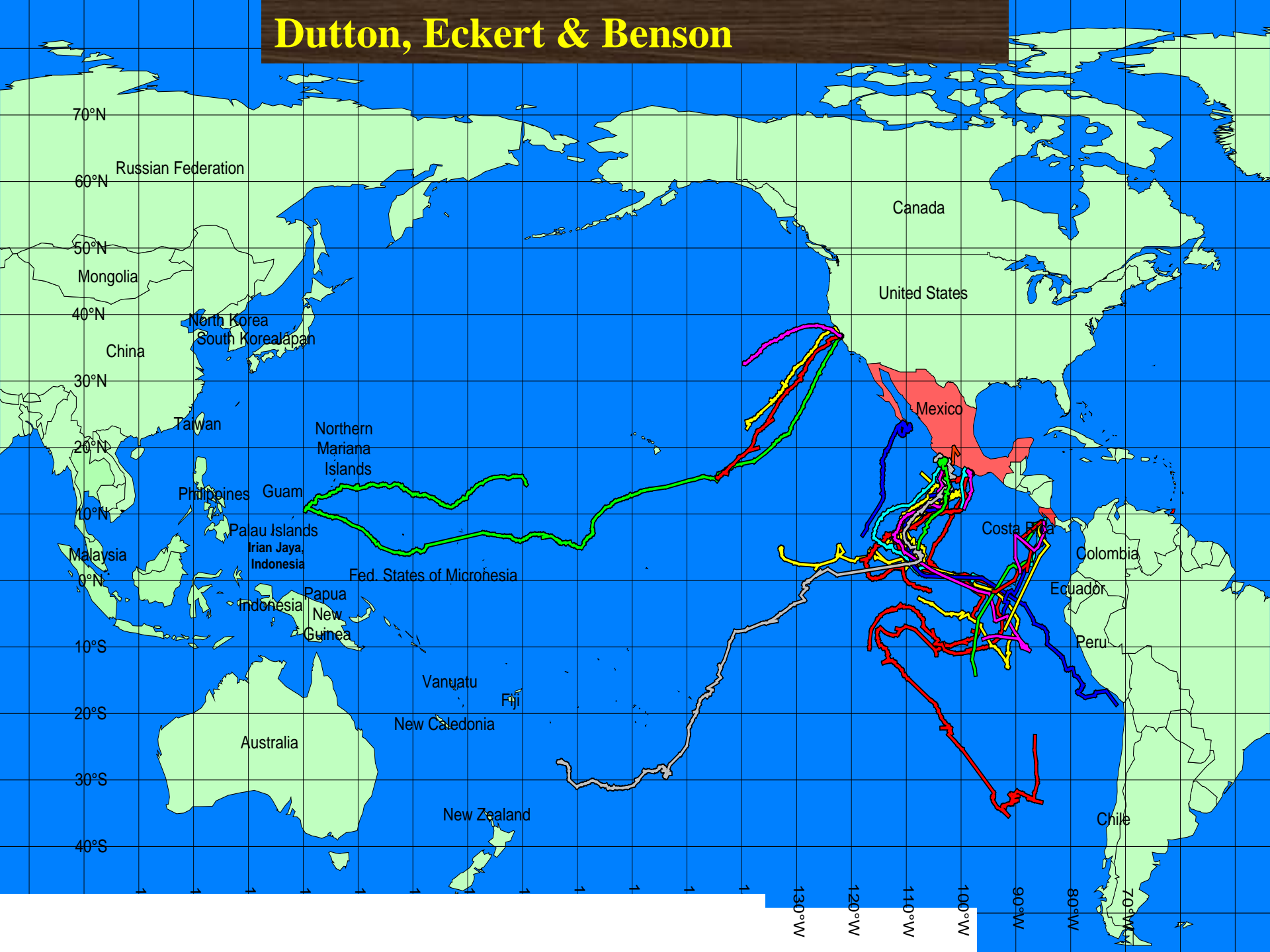
Sarti et al.

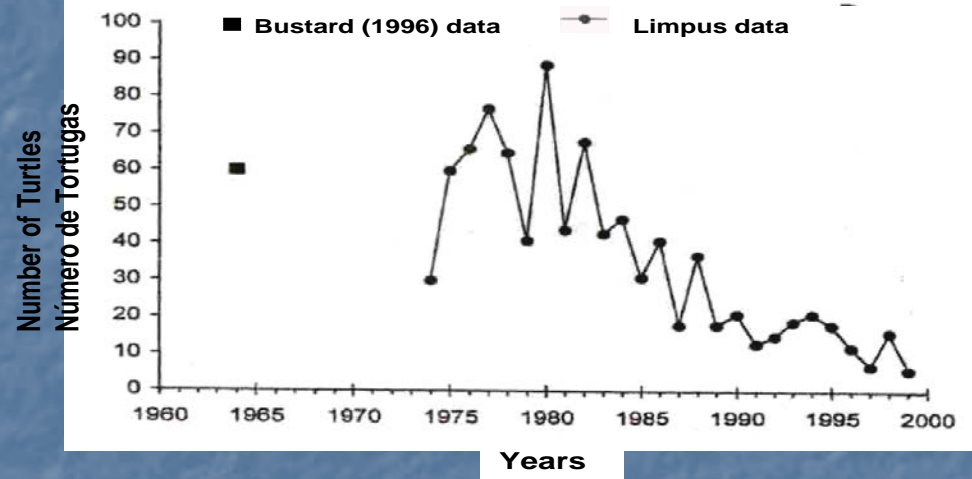
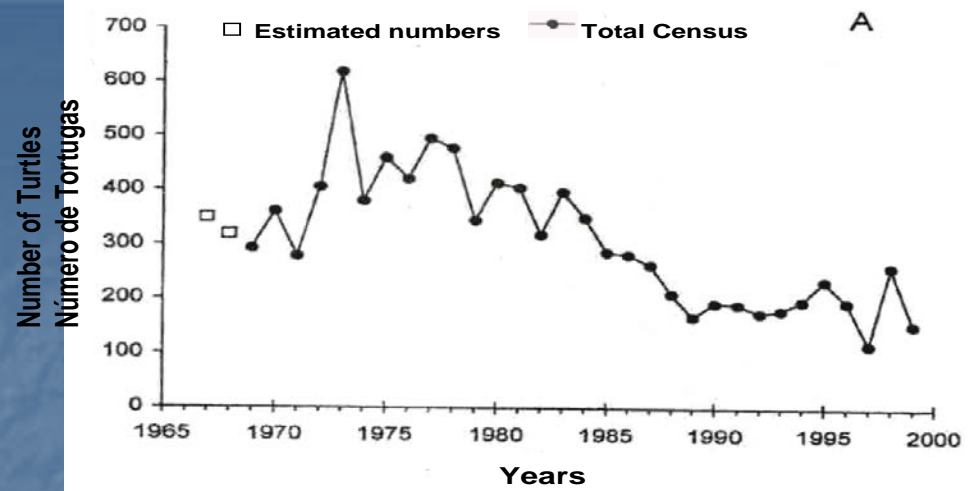
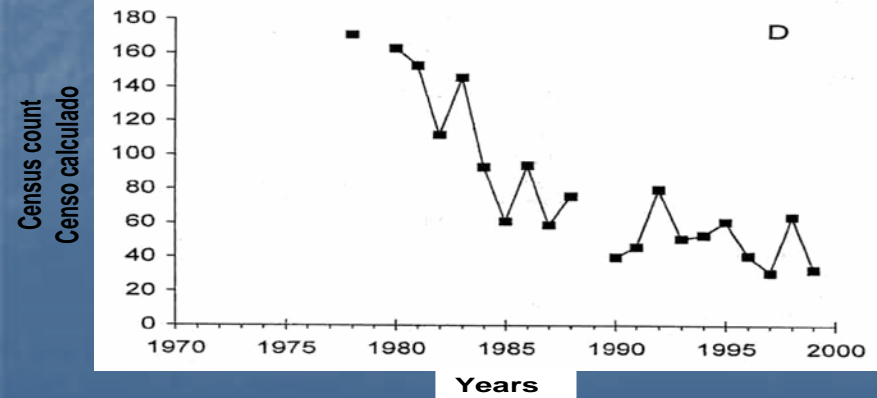
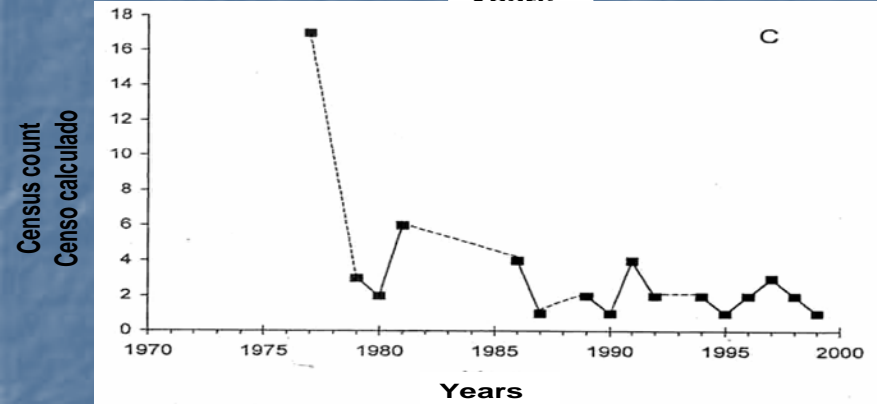
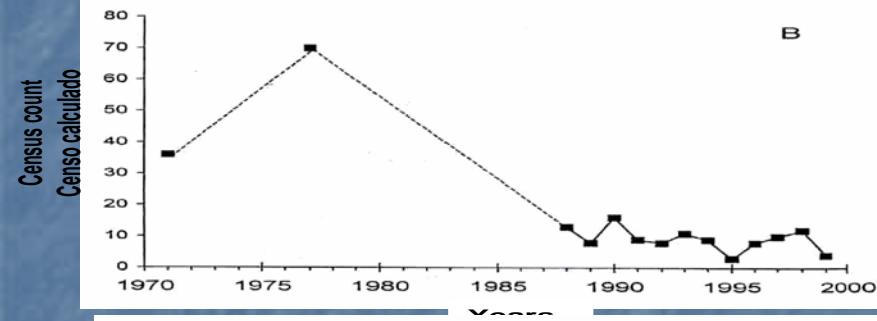
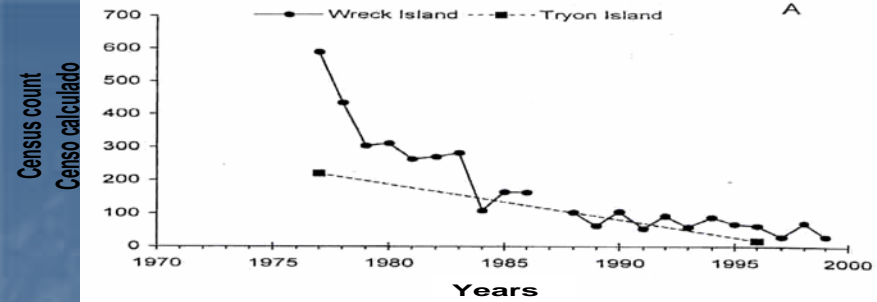
Number of female leatherbacks, Playa Grande, Costa Rica



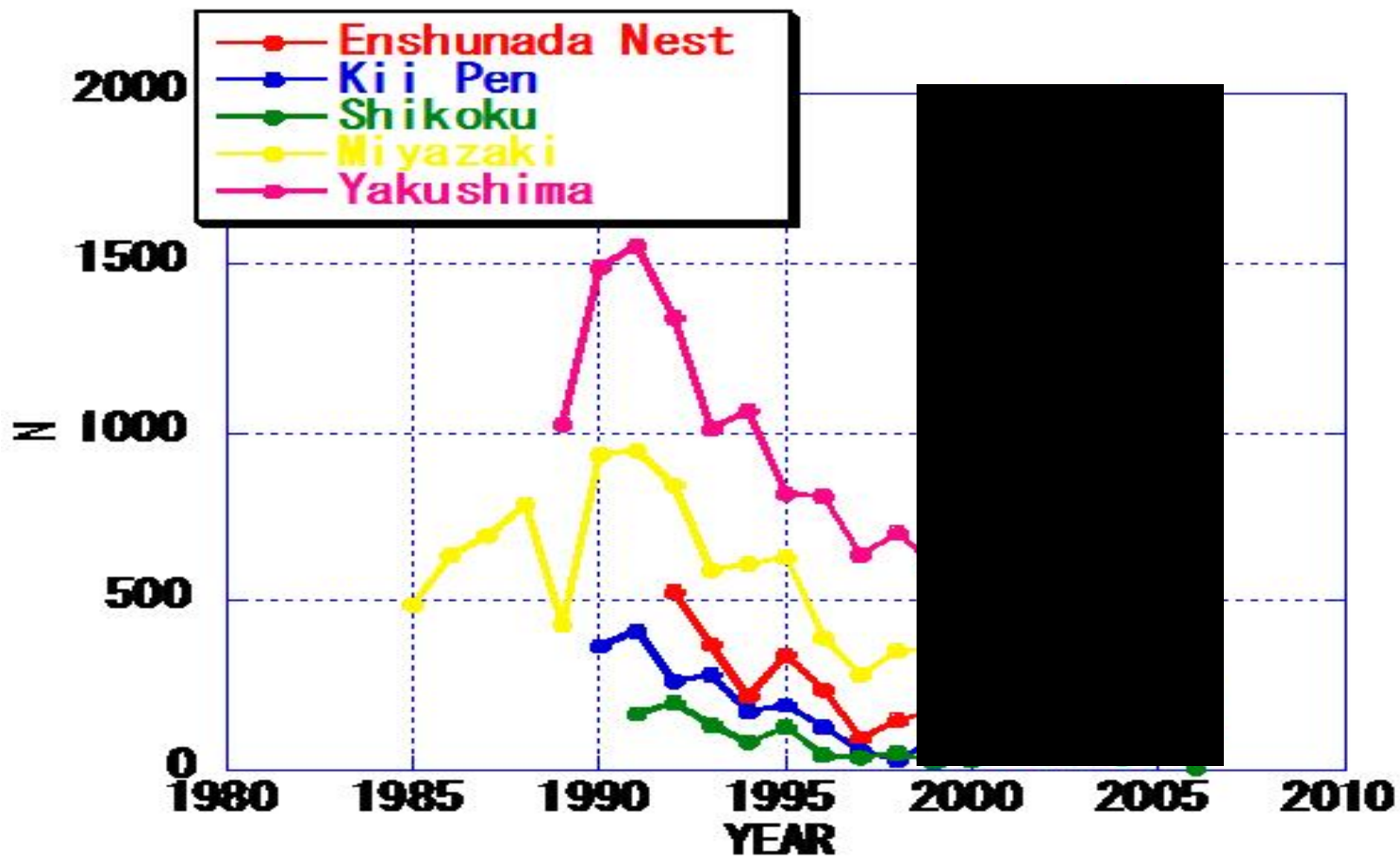
Nesting trends of leatherback turtles in Costa Rica (Spotila et al. unpub.)

Dutton, Eckert & Benson

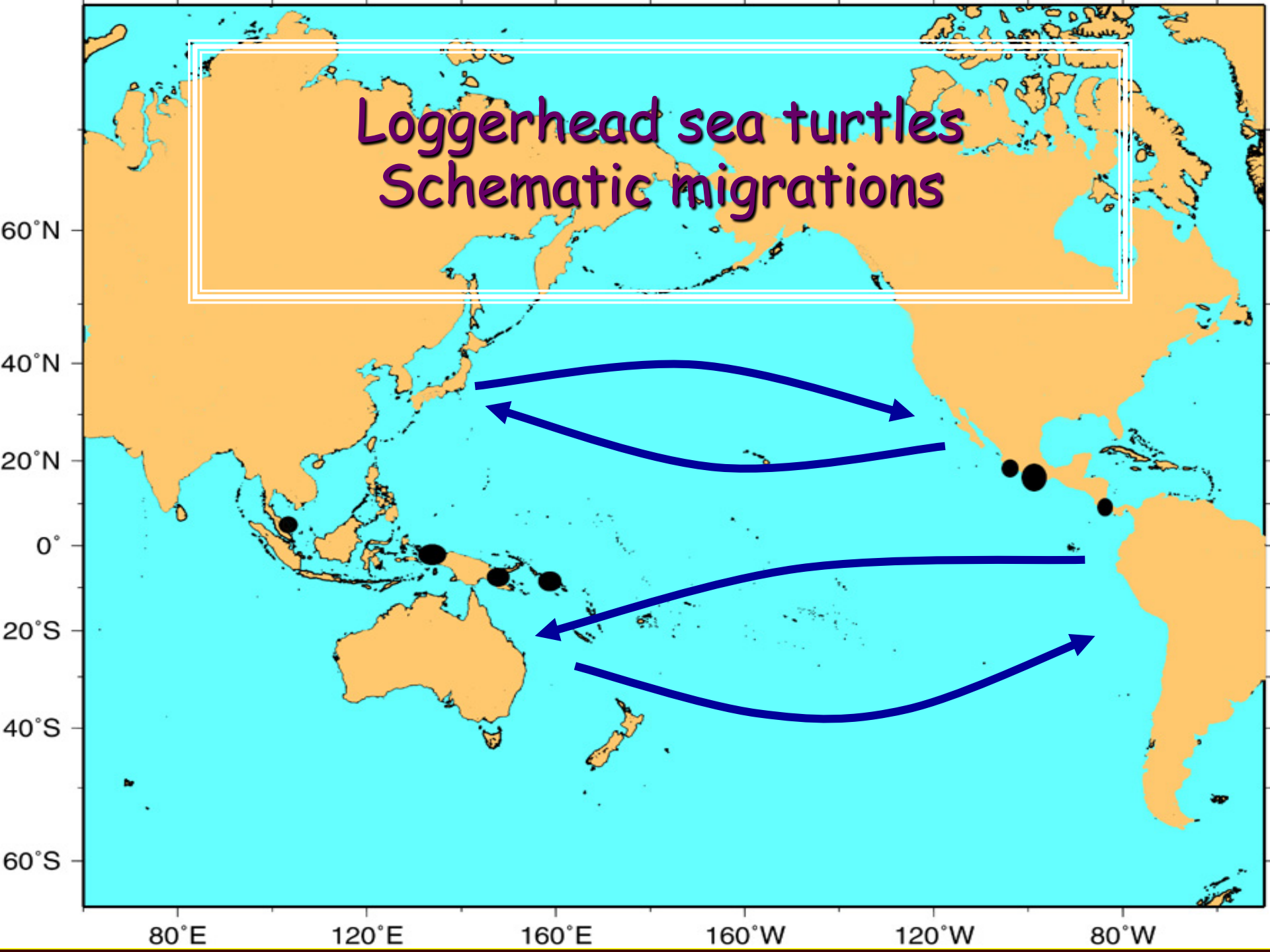




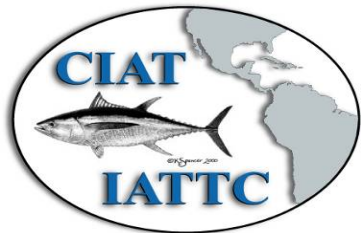
**Loggerheads nesting
in Australia**



Loggerhead sea turtles Schematic migrations



Species	Location	Size at maturity	Years
Loggerhead	SE U.S.	75 cm SCL	10-15
	SE U.S.	74-92 cm SCL	12-30/ 30-47
	Australia	93 cm CCL	35.9
	SE U.S.	80-90 cm CCL	13-15
	SE U.S.	92.5 cm SCL	22/26
	SE U.S.	92.4 cm SCL	20-24
Green Verde	SE U.S.		25-30
	SE U.S.	88-99 cm SCL	18-27/ 26-33
	U.S Virgin	106-112 cm CCL	27-3
	Atlantic	104-130 kg	19-24
	Australia	95 cm CCL	<u>>40</u>
Leatherback	Pacific	144.5 cm CCL	<u>3.7-13.3</u>



Iniciative of Ecuador
in late 2003



Overseas Fisheries Cooperation
Foundation, Japan



Western Pacific Regional
Fishery Management Council





San Carlos - Loreto - Culiacan - Mazatlan - Manzanillo - Tapachula
Tonala - Mazunte - Chanperico - Pto San Jose - Bella Vista
Iztapa - Las Lisas - La Union - La Libertad - Acajutla
San Juan del Sur - Coajiniquil - Puntarenas - Golfito - David
Chiriqui - Balboa - Mensabe - Vacamonte - Pedregal - Coquira
Tumaco - Buenaventura - Esmeraldas - Muisne - Jaramijo
Manta - San Mateo - Santa Rosa de Manabi - Anconcito
Santa Rosa de Salinas - Playas - Talara - Cancas - Paita - Callao
Pucusana - Ilo

Image © 2007 NASA

Image © 2007 TerraMetrics

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Pointer 5°17'24.58" N 96°50'30.38" W

Streaming ||||| 100%

Eye alt 3387.32 mi



Bergmann, Boggs, Cantú, Donnelly
Kinan, Seminoff, Swimmer, Watson

Guatemala: Villagran, Perez,
Sanchez, Jolon, Lopez.

El Salvador Salaverria, Sui, Barahona

Nicaragua: Urteaga

Panama: Mituhasi, Pacheco

Colombia: Barreto, Zapata

Ecuador: Hara, Rendon, Parrales

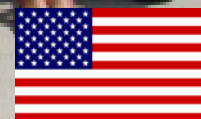
Costa Rica:
Mug, Andraka

Segura

Peru: Valqui, De Paz,
Kelez, Calderon



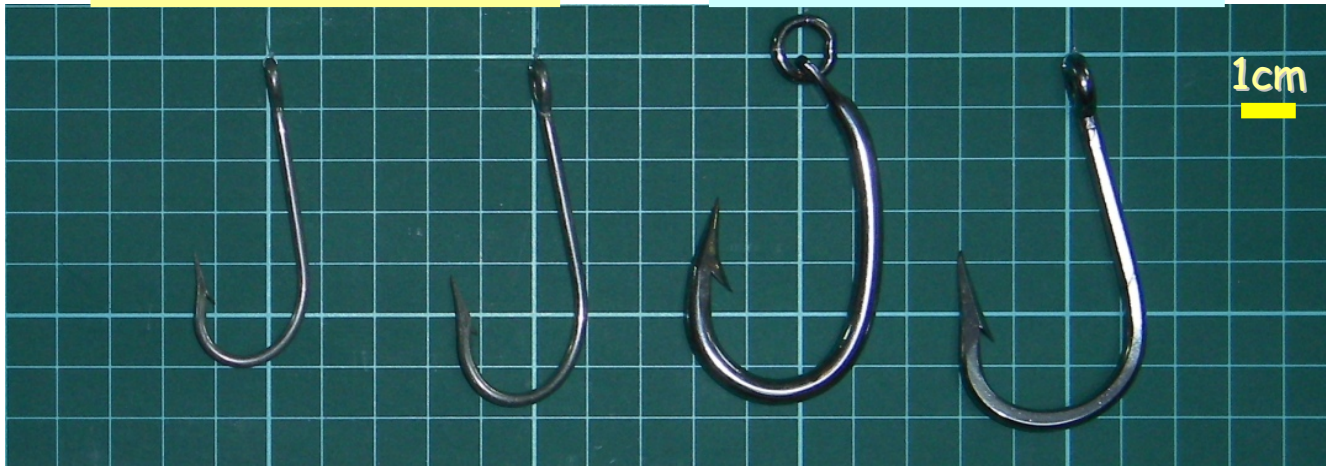
Primer Taller Técnico
Programa Regional Tortugas Marinas del Pacífico Oriental
Puntarenas, Costa Rica
12- 17 de junio, 2006



Hook Exchanges in the Program

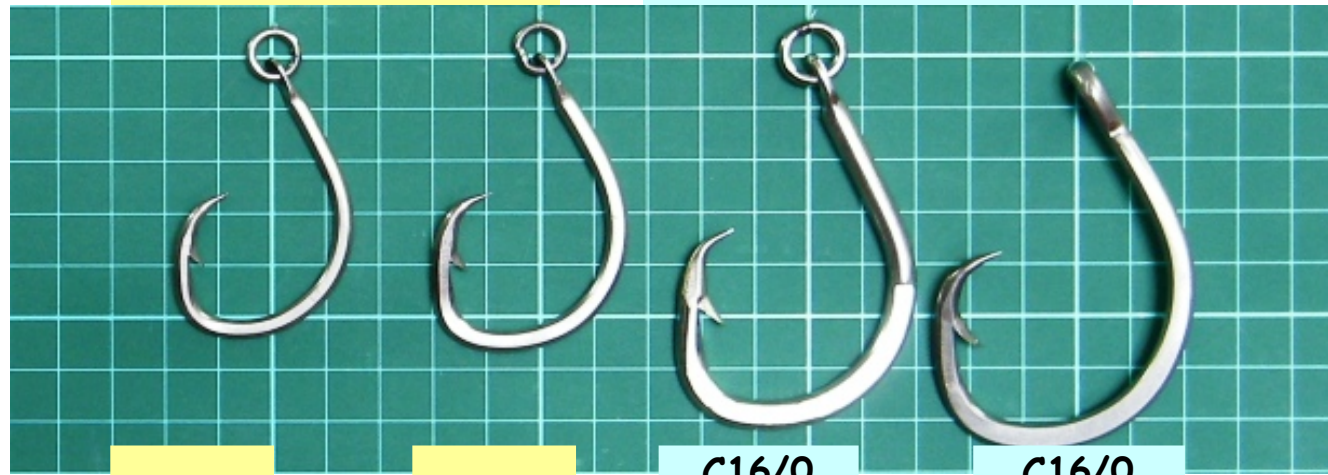
"J"

"Tuna" & "J"



Mahi-mahi

TBS



C12/0

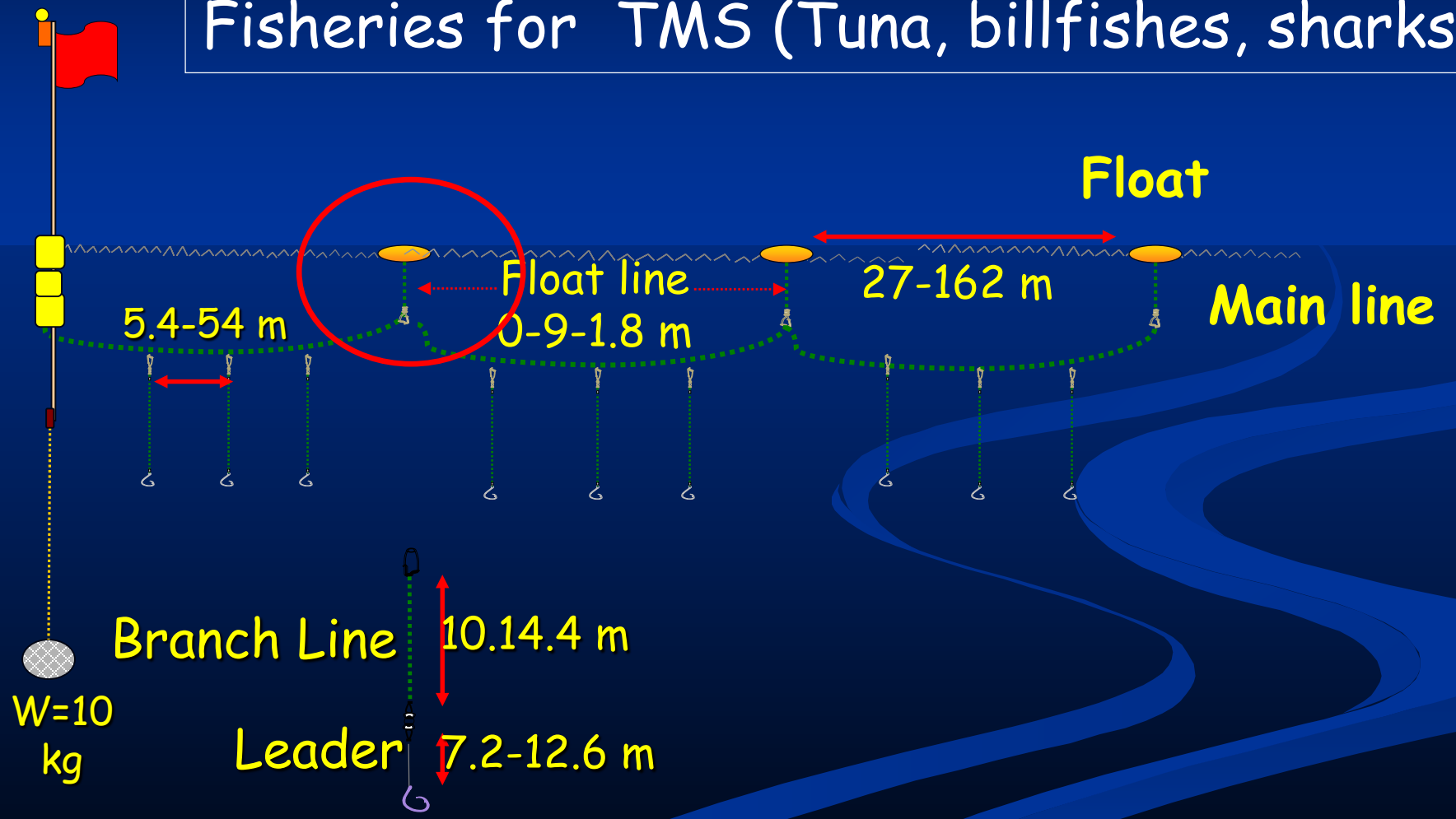
C13/0

C16/0
with ring

C16/0
without ring

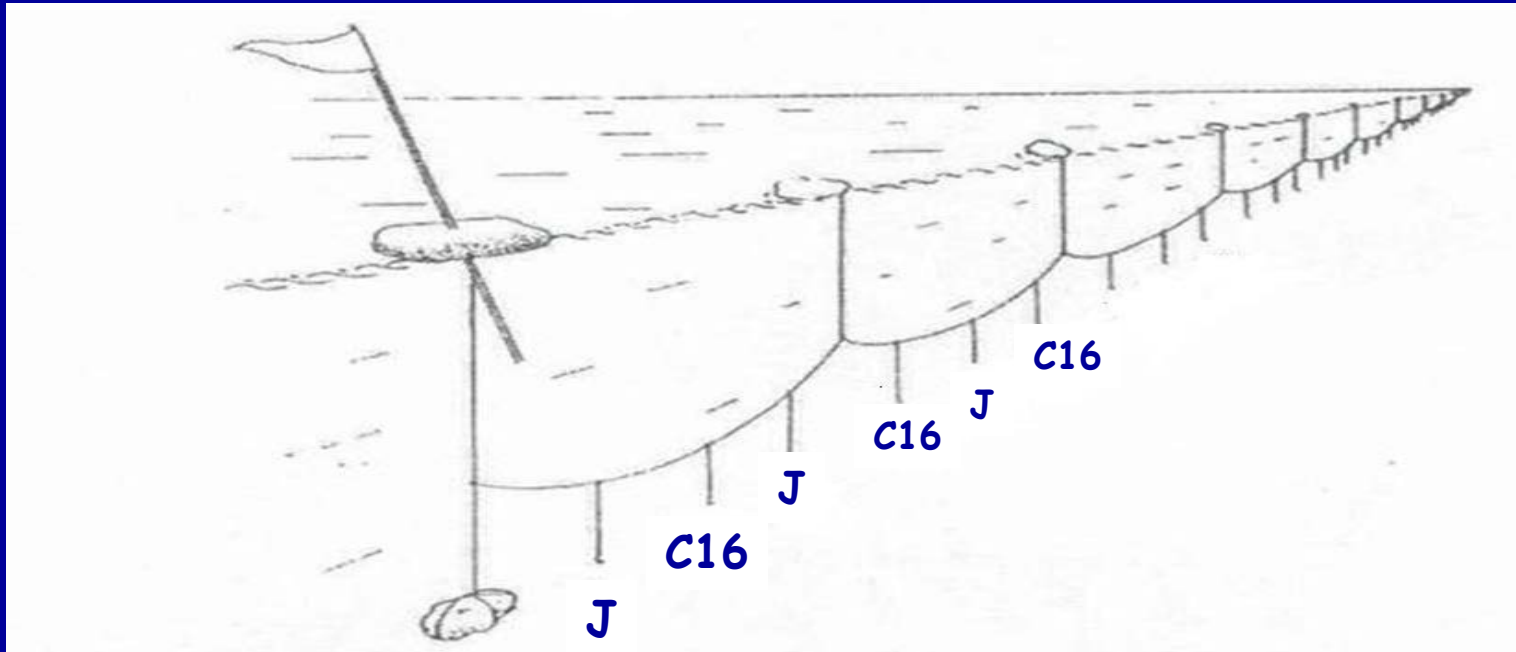
Types of longline gear from eastern Pacific fleets

Fisheries for TMS (Tuna, billfishes, sharks)

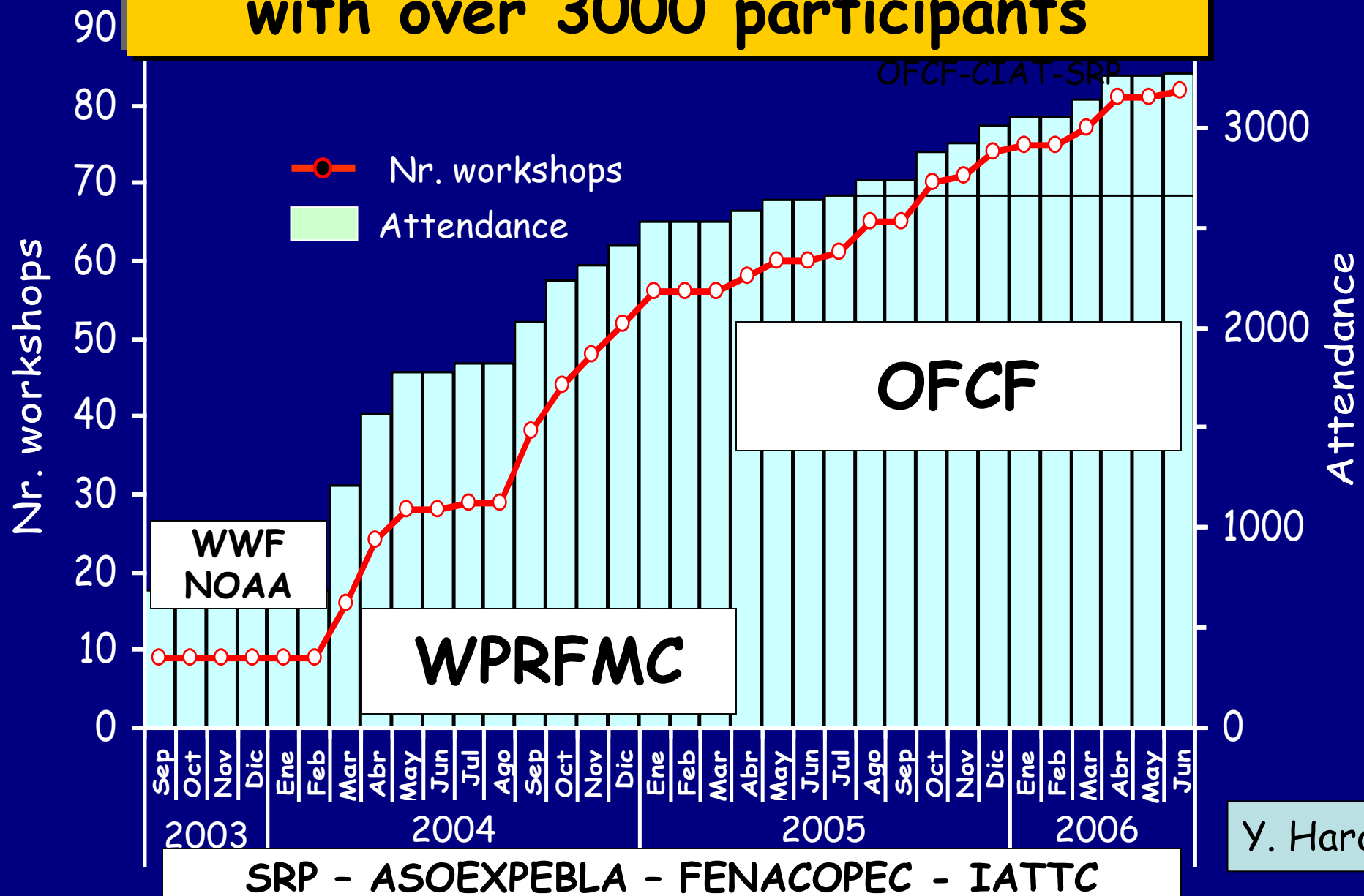


Total number of hooks in line 250-2000

TBS fisheries



Ecuador: over 80 workshops with over 3000 participants

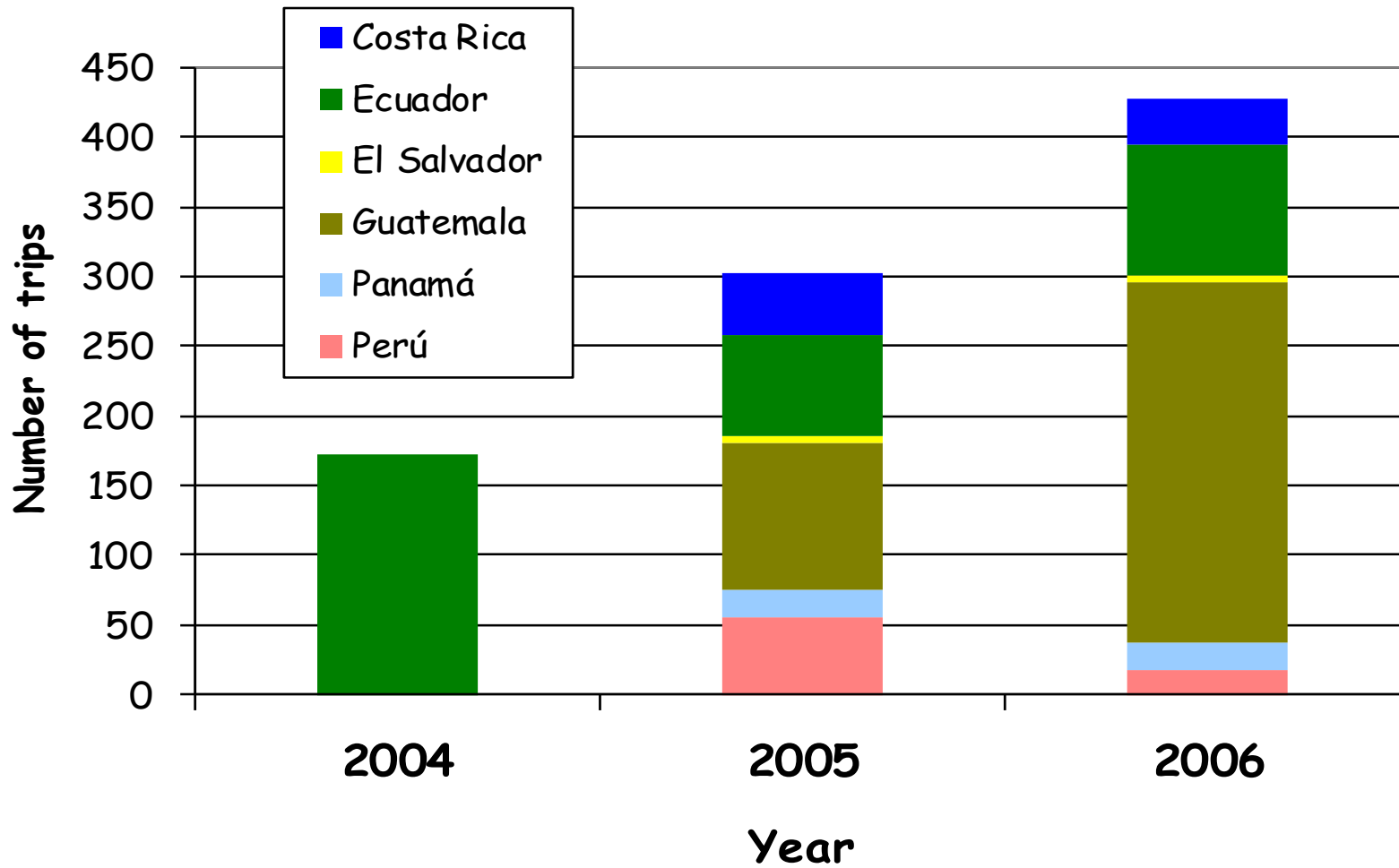


Y. Hara

SRP - ASOEXPEBLA - FENACOPEC - IATTC

Country	Port	Nr observed trips	Nr observed sets	Nr experimental vessels
Costa Rica	Puntarenas	76	775	24
Ecuador	Manta	341	1394	136
El Salvador	Santa Tecla	10	19	5
Guatemala	San Jose	340	929	41
Panamá	Balboa	39	426	5
Perú	Ilo	31	210	7
Perú	Paita	18	147	13
Perú	Pucusana	24	195	11
	TOTAL	879	4095	242

Number of observed turtle longline trips per year



Observed effort 2003 - 2006

Sets Fishery:

X TBS

o Mahi Mahi

Sets Fishery:

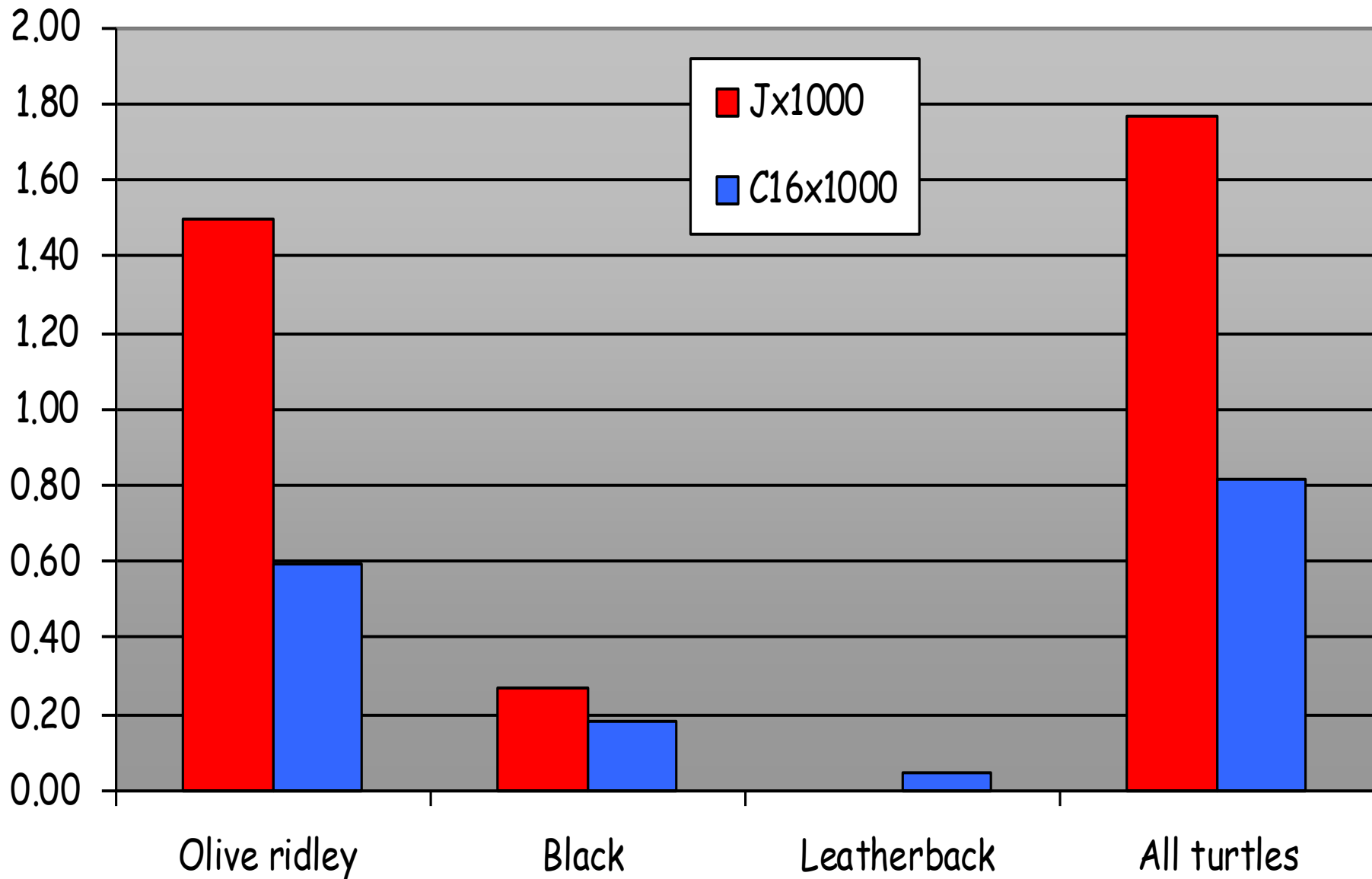
X TBS

o Mahi Mahi

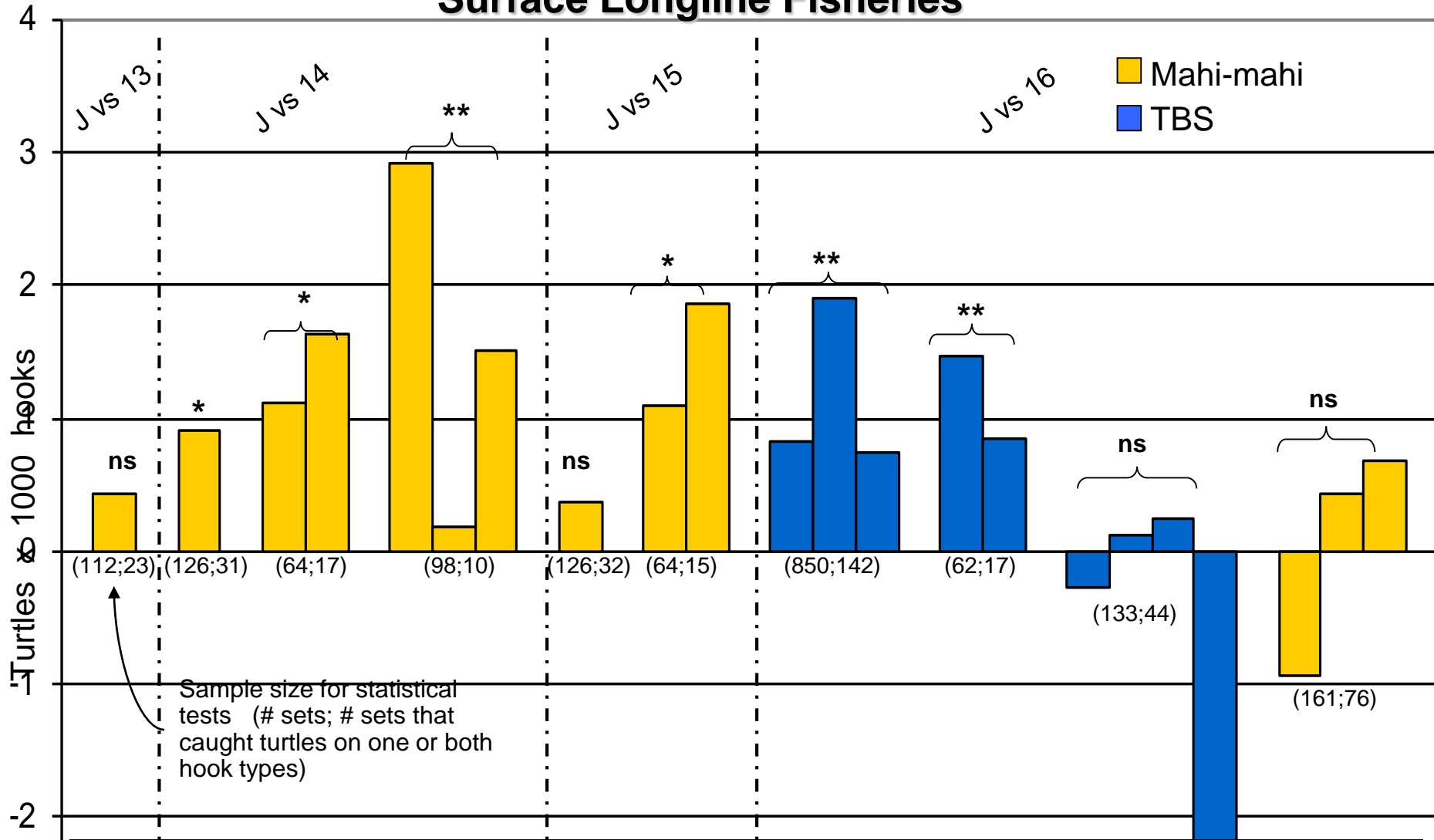
Perú

Sea turtle hooking rates (x1000 hooks)

Country A 2006

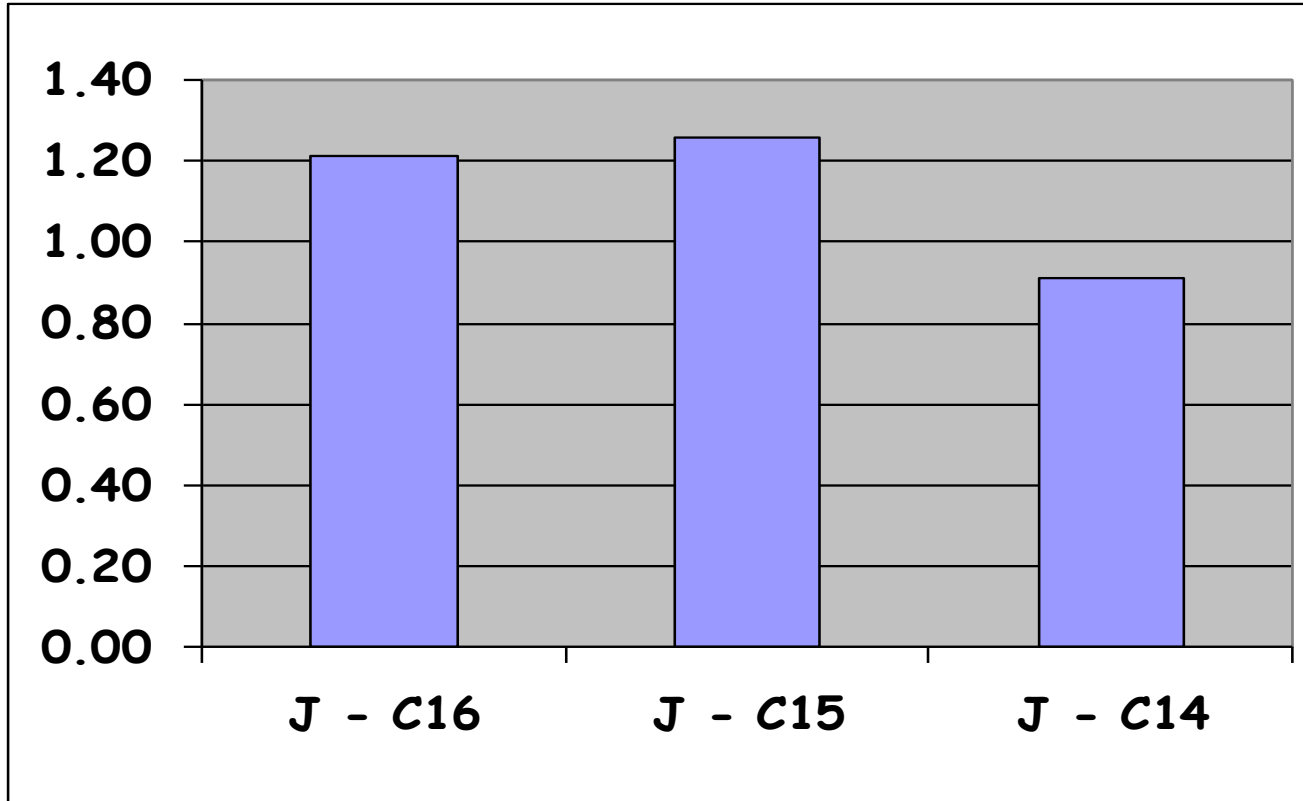


Surface Longline Fisheries



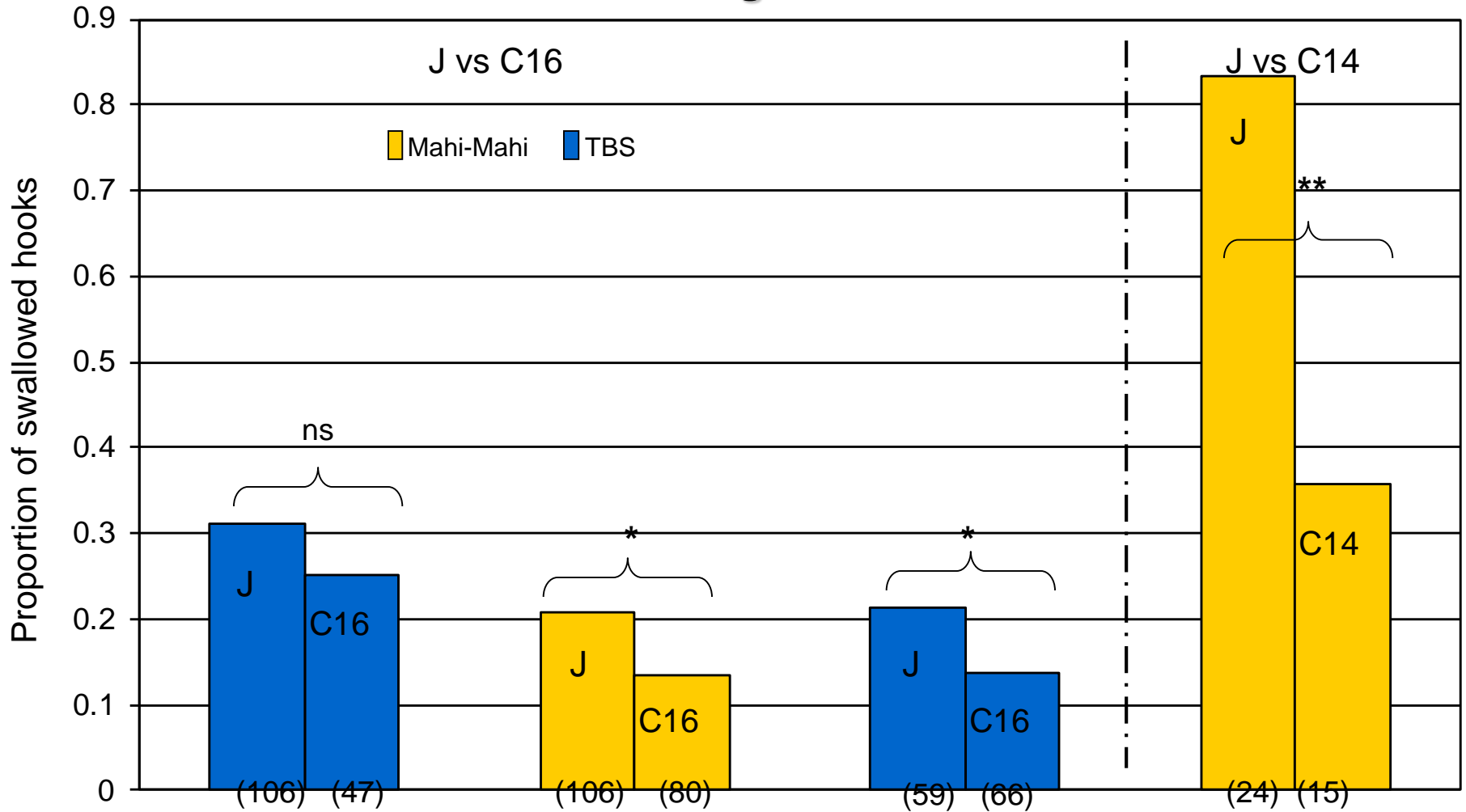
Difference in overall hooking rates between J hooks and four types of circle hooks (*i.e.*, $\{[\# \text{ turtles hooked on J hooks} / \# \text{ J hooks}] - [\# \text{ turtles hooked on C hooks} / \# \text{ C hooks}]\} \times 1000$), by fishing year, grouped according to fishery and port. 'TBS' indicates tuna, billfish and shark fisheries. Only those fisheries and ports with sufficient data for statistical tests of the difference in hook performance are shown. p-values associated with two-tailed tests of the null hypothesis of no difference in hook performance, by fishery and port, are indicated as follows: 'ns' – p-value > 0.10; '*' – p-value ≤ 0.10 but > 0.01; '**' – p-value ≤ 0.01 . Statistical tests are described below.

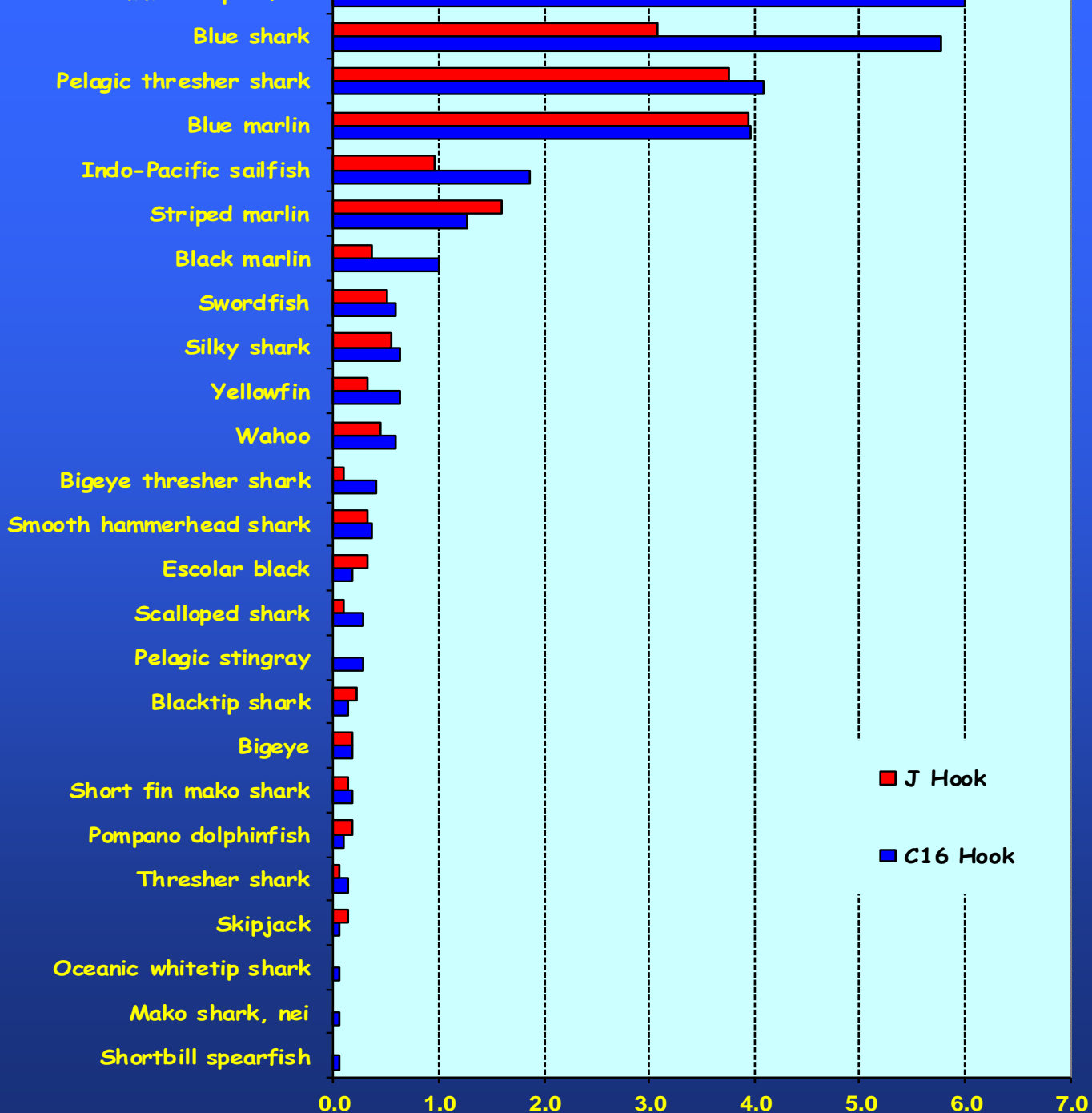
Bottom longline fisheries: Central America



Difference in Nr turtles per 1000 J hooks and
Nr turtles per 1000 circle hooks sizes 14, 15, and 16

Surface Longline Fisheries





Catch rates (pre 1000 hooks) Tuna Fishery A 2006

Vessels



PERU

E/E Huamanga

CEP-Paita

16 m - 52 ft

Converted trawler



ECUADOR

B/P Siempre

Olayita + 4 Fibras

22 m - 72 ft

Fibras: 7.0 m - 7.5 m

Longliner

Muestra 18 lances, 25,000 anzuelos

Control J

C 13/0 alambre

C 16/0



Enganches tortugas

Peru resultados - **80%** - **100%**

Ecuador resultados - **53%** - **53%**

Resultados globales - **63%** - **70%**

Enganches menor supervivencia

76%

25%

12%

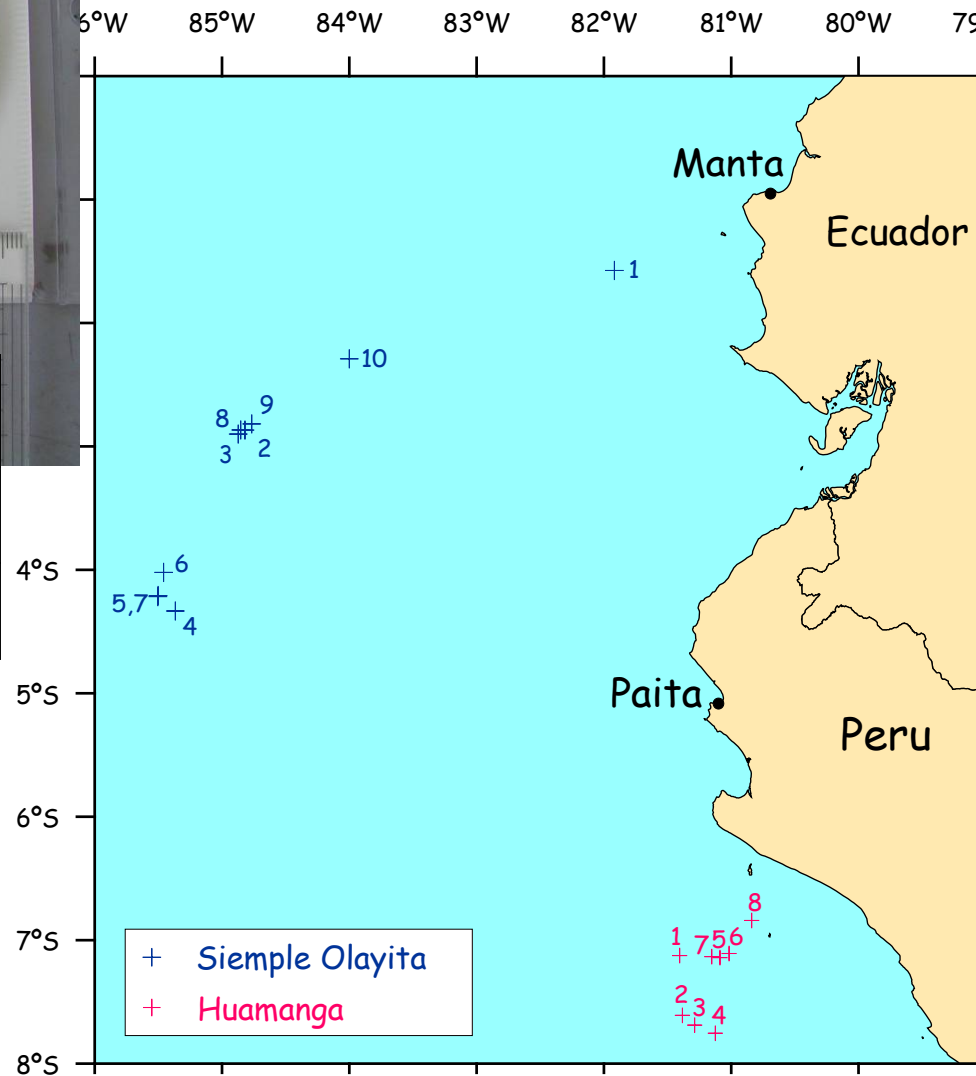
Captura peces


27.8

30.0

23.9

Takahisa Mituhasi, Charles Bergmann,
Manuel Parrales, Jairo Calderon,
Martin Hall

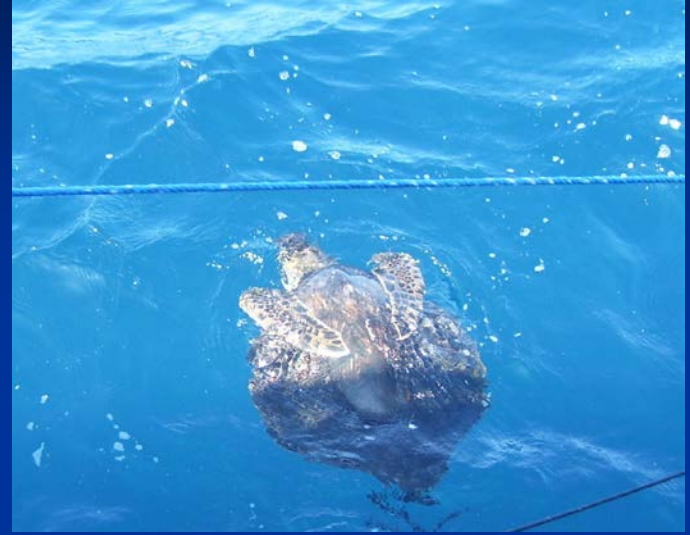




De PAZ, Nelly
ANDRAKA, Sandra
BARAHONA, Diana
CALDERON, Jairo
CRUZ, Amado
HALL, Martin
HARA, Yoshiro
JOLON, Mario
KELEZ, Shaleyra
LENNERT-CODY,
Cleridy
MITUHASI, Takahisa
MUG, Moises
PACHECO, Lucas
PARRALES, Manuel
PEREZ, Sara
RENDON, Liliana
SALAVERRIA, Sonia
SANCHEZ, Regina
SUI, Salvador
SEGURA, Alvaro
VALQUI, Michael
VILLAGRAN, Erick
VOGEL, Nickolas

UNDERSTANDING AND MITIGATING THE ENTANGLEMENT OF SEA TURTLES IN THE ARTISANAL LONGLINE FISHERIES OF THE EASTERN PACIFIC

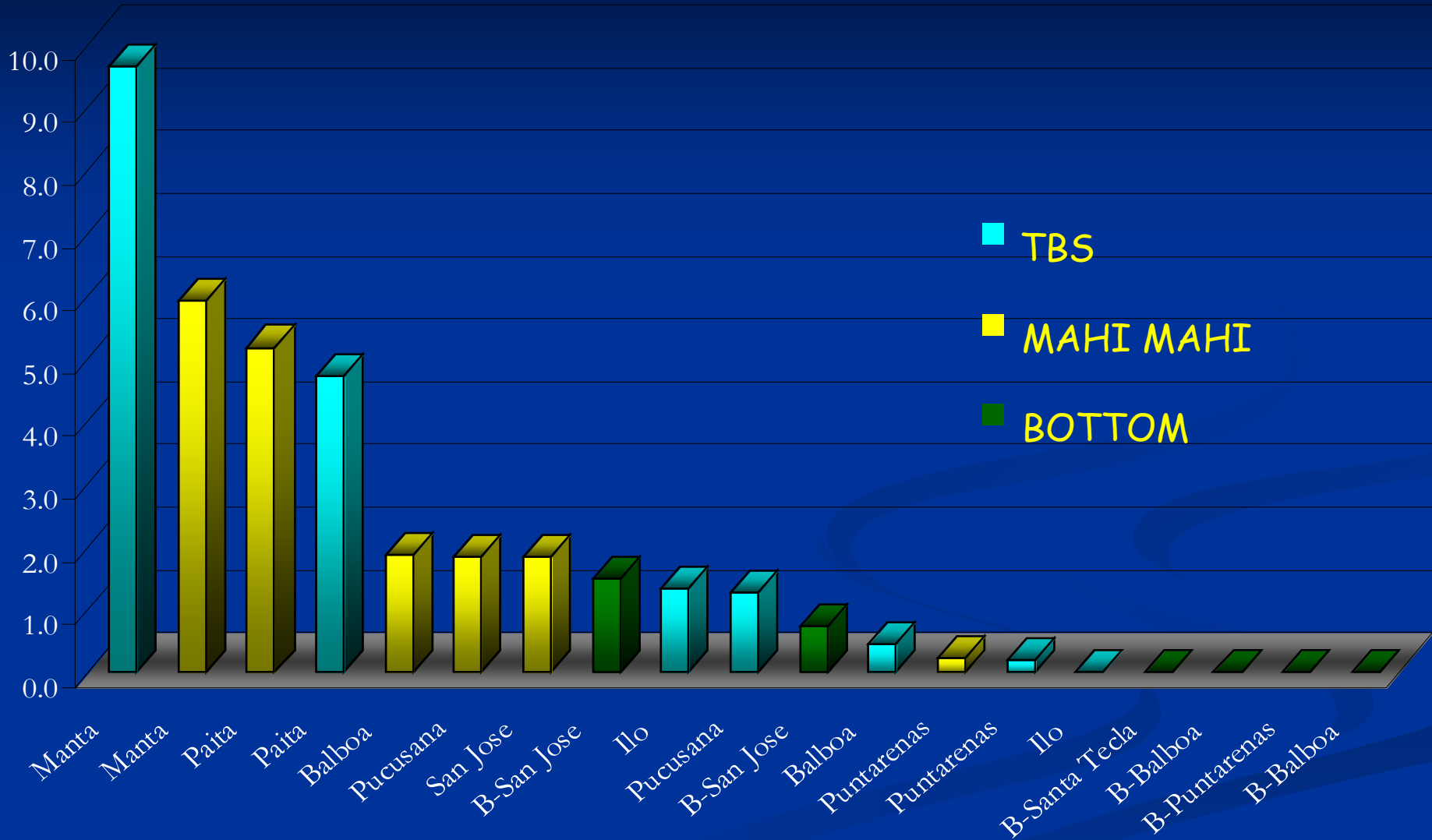
Types of entanglements



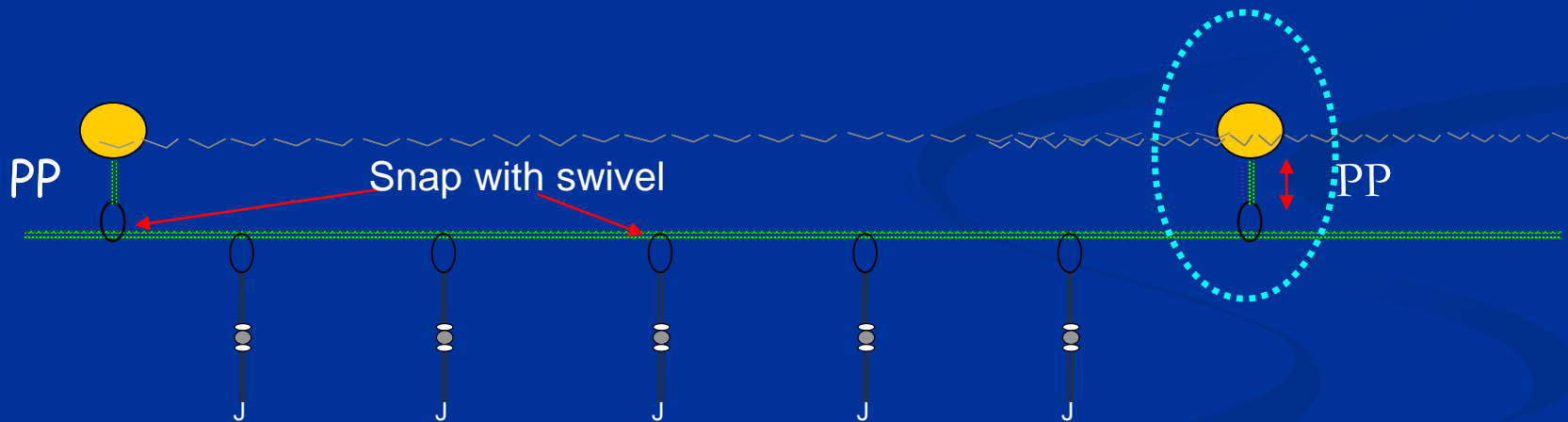
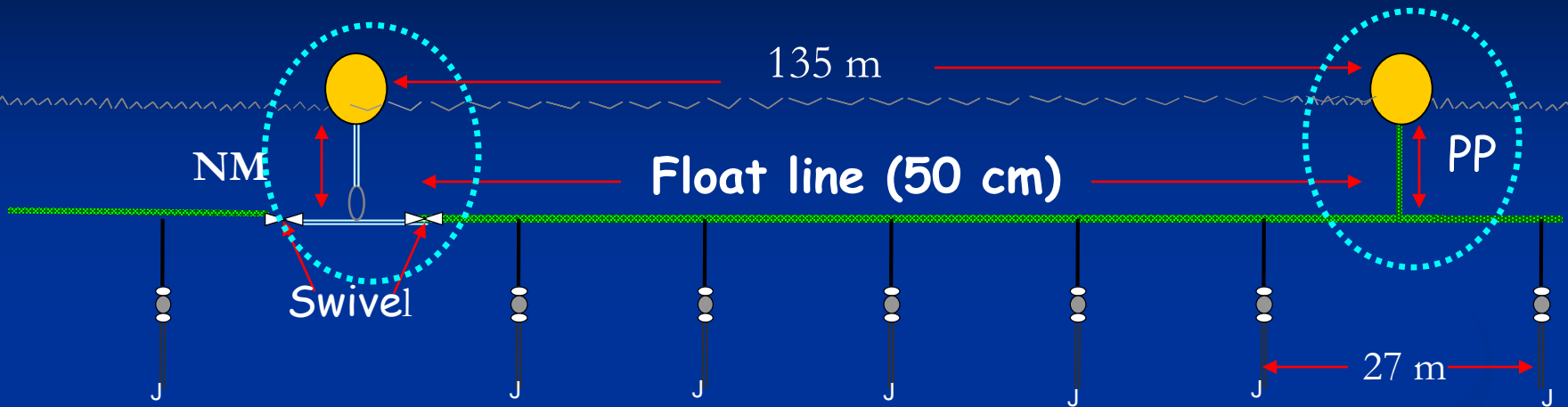
Why sea turtles get entangled ?

- Swimming into line without noticing it.
- Attracted to the line (especially floats)
 - Because of bait (smell, sight, etc.)
 - Because of floats (play, feeding, rest)
 - Because of line (physical boundary, etc.)

Entanglements/100 miles



Replace PP by MNF near floats

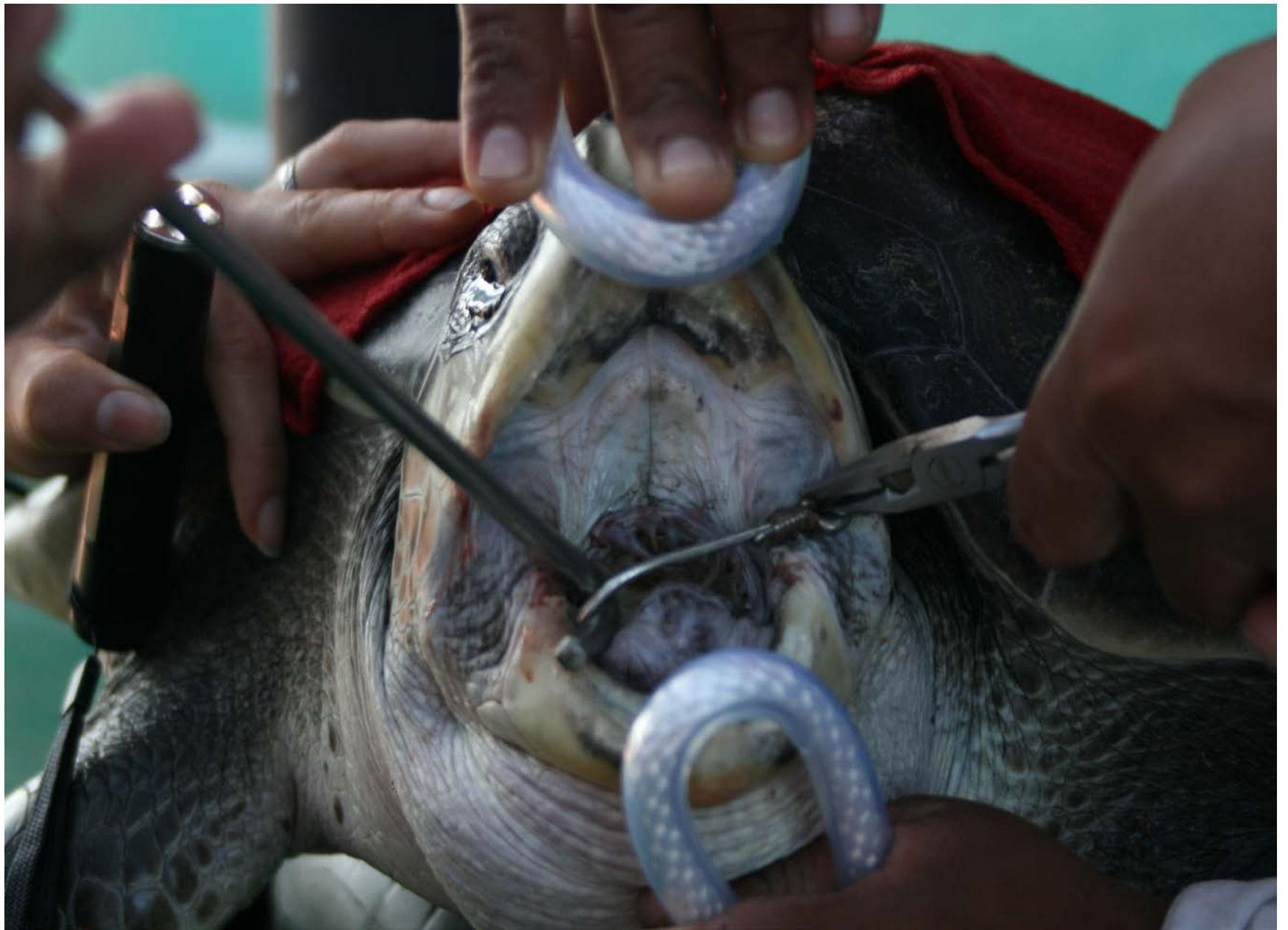


OFCF - IATTC - SRP

Polypropylene (PP) rope
Nylon monofilament (PA mono)













Veterinarian
CRAM - Spain

Gear expert
OFCF of Japan

Observers

Workshop on sampling design and estimation methods

- Goal: to bring together a small group of experts on survey sampling and mixed models to draft guidelines to be used in the design of fisheries observer programs and the estimation of differences in hook performance with respect to sea turtle bycatch.
- Some of the challenges include: zero-valued observations that can have different meanings (no turtles present versus no turtles hooked on the longline), differences in fishing gear that may affect longline detection and/or the probability of hooking given the line was detected, and a mixture of hierarchical and non-hierarchical data structures.

- Organizers: Cleridy Lennert, Mihoko Minami, Marti McCracken, Michelle Sims

- Confirmed experts attending: Bryan Manly, Steven Thompson, Mary Christman, Paul Kinas, Daniel Hall

- Workshop products:

- Workshop proceedings

- Technical paper on sampling design and estimation for hook-comparison studies

- Non-technical guidelines on sampling design and estimation for hook-comparison studies.

4th International Fishers Forum

- Puntarenas, Costa Rica
- November 12-16, 2007



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Bergmann, Boggs, Cantú, Donnelly, Fahy, Gerke, Kinan, Nahill, Nichols, Seminoff, Simmons, Swimmer, Watson, and many others