WORKSHOP ON DEVELOPING INDICES OF ABUNDANCE FROM PURSE-SEINE CATCH AND EFFORT DATA

LA JOLLA, CALIFORNIA (USA)
3-5 NOVEMBER 2004

Presentations: THE EPO FISHERIES AND DATA

- SUMMARY OF THE FISHERIES (E. EVERETT)
- THE EPO FISHERIES, FROM A FISHING CAPTAIN'S PERSPECTIVE (R. STEPHENSON)
- THE FAD FISHERY, FROM AN OBSERVER'S PERSPECTIVE (M. ROMÁN)
- SUMMARY OF THE FISHERY DATA (J. SUTER)
- SUMMARY OF OBSERVER DATA (N. VOGEL)
- SUMMARY OF FISH BEHAVIOR AND DATA (K. SCHAEFER AND D. FULLER)

Presentations: THE ANALYSIS OF CPUE DATA

- TRADITIONAL CPUE APPROACHES (M. MAUNDER)
- PAST IATTC USES OF CPUE DATA (S. HOYLE)
- USING CATCH AND EFFORT DATA IN A-SCALA AND MODEL SENSITIVITY (M. MAUNDER)
- INCORPORATING OCEANOGRAPHIC DATA (A. LANGLEY)
- MODELING ABUNDANCE OF TUNA AT ANCHORED FLOATING OBJECTS IN THE TROPICAL EASTERN PACIFIC OCEAN (S. HARLEY AND M. MAUNDER*)
- FADS AS ATTRACTORS (M. MAUNDER)
- COUNTING FADS (S. HOYLE, C. LENNERT-CODY, AND M. MAUNDER

Presentations: THE ANALYSIS OF CPUE DATA

- EFFECTS OF COMMUNICATION AMONG FISHERMEN ON CPUE AS AN INDEX OF ABUNDANCE (M. DREYFUS)
- ABUNDANCE OF BYCATCH DERIVED FROM “KNOWN” BIGEYE TUNA ABUNDANCE. (M. NEWMAN, R. OLSON, AND M. MAUNDER*)
- JAPANESE PURSE-SEINE FISHERIES IN THE NORTH PACIFIC OCEAN: CONSIDERATIONS FOR BLUEFIN TUNA ASSESSMENT (H. YAMADA)
- STATISTICAL HABITAT BASED MODEL FOR STANDARDIZING LONGLINE CPUE (M. MAUNDER AND M. HINTON)

WHAT IS THE BASIS FOR EXPECTING THAT CPUE DATA PROVIDE INFORMATION ON ABUNDANCE?

- Only if a measure of effective effort is available
- Effective effort for the dolphin-associated and unassociated fisheries by determining the searching time
- Not available for the FAD fisheries
- Cohort analyses carried out by the IATTC staff for yellowfin tuna have produced similar trends to catch per day fished

IS THERE AN APPROPRIATE MEASURE OF EFFORT?

- Dolphin-associated fisheries and unassociated school fisheries is search time/distance/area,
  - code groups
  - spatial shifts
  - use of helicopters.
  - it may be appropriate to use only vessels that make most of their sets by one method.
- No measure of effective effort is currently identified for the FAD fisheries.

HAS THE DEVELOPMENT IN TECHNOLOGY IN THE FISHERIES INCREASED CATCHABILITY?

- A comprehensive analysis has not been performed to determine how changes in technology have influenced catchability in the EPO purse-seine fisheries

ARE OUR CURRENT TECHNIQUES ABLE TO ESTIMATE INCREASES IN CATCHABILITY FOR PURSE-SEINE FISHERIES?

- A-SCALA can estimate changes in catchability if longline CPUE is proportional to abundance.
- However, an appropriate measure of effort is required for the purse-seine fisheries.

WHAT DATA SHOULD BE COLLECTED TO DEVELOP INDICES OF ABUNDANCE FROM PURSE-SEINE CATCH AND EFFORT DATA?

- equipment used
- fishing strategy
- use of code groups
- uniquely identify individual FADs
- information on the behavior and abundance of fish around FADs
- information from echo-sounder FADs
- new FAD form

WHAT ARE THE MOST PROMISING METHODS TO DEVELOP INDICES OF ABUNDANCE FROM PURSE-SEINE CATCH AND EFFORT DATA?

- GLM or similar approach on dolphin-associated and unassociated fisheries with search time/distance as the dependent variable
- Abundance from stock assessment as an offset used to estimating the effects of technology on catchability
- Abundance of bigeye or yellowfin from stock assessments used in a change-in-ratio method for skipjack or bycatch species.
- Model the spatial and temporal correlation
- Cluster analysis of vessels to identify code groups
- Modeling the dynamics of tuna around FADs including estimation of local FAD density
- Large-scale tagging programs

MARKING FADS

- Placing unique marks on all FADS so they can be identified between trips and between vessels is necessary for much of the work suggested to develop indices of abundance from the FAD fisheries

- **MARK CHARACTERISTICS**
  - unique permanent identifiers
  - attached before the FAD is first put in water
  - easily identified by an observer while the FAD is still in the water
- **CONSIDERATIONS**
  - Who attaches the marks?
  - Confidentiality
  - Should the mark be linked to object or beacon?
  - Dealing with vessels without observers fishing on FADs;
  - Type of mark e.g. number, barcode, or short-range radio system.
- **ALTERNATIVE**
  - Mandatory completion of the new *Flotsam Information Record* , including when a FAD is deployed and when it is removed
  - Mark a proportion of FADs