

*FAO Project  
on the Management of Tuna Fishing Capacity:  
Conservation and Socio-economics*

*in collaboration with and with support from*

*Tuna Agencies and Programs,  
other international and national fisheries institutions  
including those of tuna fishing industry  
and universities*

**Methodological Workshop**  
**on the Management of Tuna Fishing Capacity:**  
Stock Status, Data Envelopment Analysis,  
Industry Surveys and Management Options

**Program**

**Background Information**

Tuna stocks have been traditionally managed on the basis of information from the stock assessments undertaken by scientists. As a result of these assessments, desired values of population parameters or their reference points including those of fishing mortality are being routinely estimated for each stock.

If the fisheries management is to include that of fishing capacity, a desired magnitude of or desired change to fishing capacity needs to be estimated. This has been done recently for very few tuna fisheries on the basis of Data Envelopment Analysis (DEA). This analysis is used to estimate the output of fishing capacity and capacity utilization. It calculates a frontier or maximum landings curve, as determined by the best-practice vessels, given the state of technology, environment and stocks (fixed inputs) and provided that fishing effort (variable input) is fully utilized under normal operating conditions.

The tuna fisheries for which DEA has been performed are limited to few purse seine fisheries, but they do not include other important tuna fisheries (like those using longlines and pole-and-lines) operating even on the same tuna stocks. Presently, DEA is not performed routinely like stock assessments and requires input data different to those for stock assessments, which are presently not available for most tuna fisheries. Industry surveys of tuna fishing capacity utilization have not been performed either to any significant extent, if at all.

Because the assessment of stock status is routinely carried out for, at least, principal market tuna species, it might be more practical, if feasible, to determine the desired magnitude of or desired change to fishing capacity on the basis of information from these assessments rather than from DEA or industry surveys of tuna fishing capacity utilization. Fishing effort is considered to be proportional to fishing mortality, but the relationship between fishing effort and fishing capacity is more complicated. Because of that, quantitative methods need to be developed and/or established to determine the desired magnitude of or desired change to fishing capacity on the basis of the status of tuna stocks, taking into account the multi-species and multi-gear nature of tuna fisheries. This nature of tuna fisheries significantly complicates analyses and provision of advice for the management of tuna fishing capacity.

Therefore, the 2<sup>nd</sup> Meeting of the Technical Advisory Committee (2<sup>nd</sup> TAC) of the FAO Project on the “Management of Fishing Capacity: Conservation and Socio-economics” (held in Madrid (Spain) in March 15 to 18, 2004) recommended that the Project in collaboration with the Tuna Agencies and Programs should organize a Workshop to develop quantitative methods to determine the desired magnitude of or desired change to fishing capacity on the basis of the status of stocks. Subsequently, as a result of informal discussions among some Members of TAC, it was proposed to extend the scope of the Workshop as outlined in the Objectives section below.

Subsequently, a preliminary proposal of the Workshop was prepared by the FAO Project and presented and discussed at the 5<sup>th</sup> Meeting of the Secretariats of Tuna Agencies and Programs (Rome, Italy, March 11, 2005). The Meeting generally agreed that it could be a good idea to extend studies on fishing capacity to combine economic and biological considerations. They considered that the outcome of the Workshop would be very relevant for the work of their institutions and their member countries, technically assisting their fisheries managers in undertaking decisions on the management of tuna fishing capacity.

### Objectives

- A. To develop quantitative methods to determine the desired magnitude of or desired change to fishing capacity on the basis of the status of stocks, taking into account the multi-species and multi-gear nature of tuna fisheries
- B. To determine the feasibility of (i) routinely collecting input data for the Data Envelopment Analysis (DEA) and (ii) performing industry surveys of tuna fishing capacity utilization
- C. To relate DEA estimates of fishing capacity utilization to traditional estimates of fishing capacity
- D. To review the factors affecting fishing capacity (number of vessels, their physical characteristics, etc.) that could be regulated by fisheries authorities

- E. To review the existing measures for managing tuna fishing capacity and possibly, to identify additional options for such measures in the context of the outcome of addressing Objectives A to D
- F. To prepare a Statement of participants of the Workshop
- G. To formulate recommendations of the Workshop to the FAO Project on the Management of Tuna Fishing Capacity, FAO and the other institutions participating in the Workshop

### **Participants**

- Chairman: Dr Robin Allen, Director, IATTC
- Convenor: Dr Jacek Majkowski, Fishery Resources Officer, Marine Resources Service, Fishery Resources Division, Fisheries Department, FAO
- Other participants
  - Most Members of TAC
  - Some other stock assessment and DEA experts
  - Some staff of FAO(in total about 20 participants)

### **Papers**

Papers addressing and proposing how to fulfil Objectives A to E will be prepared and distributed to the participants of the Workshop by April 15, 2006.

Specifically regarding Objective A, the Tuna Agencies and Programs will carry out and document one or several case studies, using their real data and their methodologies. The paper(s) addressing Objective B will be prepared by one or few experts on DEA and industry surveys of tuna fishing capacity utilization. Objectives C and D will be addressed possibly jointly in several papers prepared by FAO, the Tuna Agencies and Programs and the tuna fishing industry. Some Tuna Agencies and Programs may address them in their case study papers associated with Objective A, particularly if their proposals relate to these case studies and/or do not merit separate papers. For further details, see the enclosed Provisional List of the Papers.

### **Arrangements for and support to the Workshop**

FAO's Project on the Management of Tuna Fishing Capacity is organizing the Workshop, coordinating and contributing to the technical work preparatory to the Workshop. FAO's Regular Programme will also contribute to that work and its experts will participate in the Workshop.

The Inter-American Tropical Tuna Commission (IATTC) in La Jolla, CA, USA will host the Workshop.

Support to the Workshop is being provided by (i) most Tuna Agencies and Programs, (ii) some other international and national fisheries institutions including those of tuna fishing industry and (iii) universities. They include:

- (i) the Forum Fisheries Agency (FFA), IATTC, the International Commission for the Conservation of Atlantic Tunas (ICCAT), the Indian Ocean Tuna Commission (IOTC), the Secretariat of the Pacific Community (SPC),
- (ii) the Japan Federation of Tuna Fisherman's Association (Japan Tuna), the National Fisheries Service (NMFS), the National Research Institute of Far Seas Fisheries (NRIFSF), the World Tuna Purse-Seine Organization (WTPO),
- (iii) the College of William and Mary (CWM) and the University of California, San Diego (UCSD).

These institutions are contributing to the technical work preparatory to the Workshop, including the implementation of various studies to be documented in the papers for their presentation at the Workshop. They will also finance the participation of their experts in the Workshop. All the contributions to the Workshop will be fully acknowledged in the Proceedings of the Workshop.

All participants are requested to bring their laptops to the Workshop.

### **Dates**

May 8 (Mon.) to 12 (Fri.), 2006

### **Venue, hotel and transportation**

The venue of the Workshop will be the large conference room of Southwest Fisheries Science Center (SWFSC) at 8604 La Jolla Shores Drive in La Jolla.

As informed by Robin Allen on March 28, 2006, IATTC has blocked rooms at the Radisson Hotel at 3299 Holiday Court in La Jolla for the participants of the Workshop with the deadline of April 7, 2006 for making definite bookings.

Transportation from the Hotel to the venue of the Workshop will be provided by IATTC with the pick up at the lobby of the Hotel at 8:30 am.

### **Local contact**

Alejandra Ferreira (Assistant to Robin Allen, Director, IATTC): tel. (+1 858) 546 7100, fax: (+1 858) 546 7133 and [afferreira@iattc.org](mailto:afferreira@iattc.org)

## Provisional Agenda

Registration: 8:30 to 9:30 on Mon., May 8, 2006

Sessions: 9:00 (with the exception of the first day – see below) to 17

Coffee breaks: 10:30 to 10:45 and 15:15 to 15:30

Lunch breaks: 12:15 to 13:45

Presentation of papers: 20 min. each followed by 10 min. question and answer session with a 90 min. overall discussion at the end of each substantive Agenda Item

### Monday, May 8, 2006

1. [9:30] **Opening**
2. [9:45] **Introduction of participants**
3. [9:50] **Adoption of provisional agenda and of provisional list of papers**
4. [9:55] **Logistic arrangements for the Workshop**
5. [10:05] **Statement from and Report of the Workshop: content and logistic arrangements for their preparation**
6. [11:00] **Overview of the Project and its implementation**
7. [11:15] **Development of quantitative methods to determine the desired magnitude of or desired change to fishing capacity on the basis of the status of stocks, taking into account the multi-species and multi-gear nature of tuna fisheries**

### Tuesday

8. [9:00] **Feasibility of (i) routinely collecting input data for the Data Envelopment Analysis (DEA) and (ii) performing industry surveys of tuna fishing capacity utilization**
9. [13:45] **Review of factors affecting fishing capacity (number of vessels, their physical characteristics, etc.) that could be regulated by fisheries authorities**

### Wednesday

10. [9:00] **Review of existing measures for managing tuna fishing capacity and possibly, identification of additional options for such measures in the context of the outcome of addressing Agenda Items 7 to 9**
11. [11:15] **Statement from the Workshop: discussion of content**  
*Note: After the completion of Agenda Item 11, the 1<sup>st</sup> draft of the Statement will be prepared probably by a small group of participants, which will be identified at the Workshop for its presentation on the next day (see Agenda Item 14)*

### Thursday

12. [9:00] **Future research related to the management of tuna fishing capacity: formulation of proposals**
13. [11:15] **Overall discussion and recommendations**
14. [15:30] **Statement from the Workshop: review of its 1<sup>st</sup> draft**  
*Note: After the completion of Agenda Item 14, the 1<sup>st</sup> draft of the Statement will be revised for its adoption on the next day (see Agenda Item 16)*
15. [16:45] **Other matters**

**Friday**

**16. [9:00] Adoption of the Statement from and Report of the Workshop**

**Provisional List of Papers**

**Agenda Item 1**

**P1/A1            Program of the Workshop on the Management of Tuna Fishing Capacity**

**Agenda Item 2**

**P2/A2            Provisional list of participants**

**Agenda Item 3**

**P3/A3            Provisional agenda**

**P4/A3            Provisional list of papers**

**Agenda Item 6**

**P5/A6            Overview of the Project on the Management of Tuna Fishing Capacity and its implementation by Jacek Majkowski (FAO)**

**Agenda Item 7**

**P6/A7            Estimated target fleet size for the tuna fleet in the eastern Pacific Ocean, based on stock assessments of target species by Pablo Arenas (IATTC)**

**P7/A7            Estimates of large-scale purse seine and longline fishing capacity in the Atlantic based on stock assessments of target species by Victor Restrepo (ICCAT)**

**P8/A7            A case study of the impact of recent management measures on overall US Atlantic longline fishing capacity and effort by Gerry Scott (NMFS)**

**P9/A7            Addressing fishing capacity issues in the Indian Ocean: a progress report by the IOTC Secretariat**

**P10/A7           Estimates of large-scale purse seine and longline fishing capacity in the western and central Pacific based on stock assessments of target species by John Hampton (SPC)**

**Agenda Item 8**

**P11/A8           Review of existing information and their potential use for analyses and management of fishing capacity by Sachiko Tsuji (FAO)**

**P12/A8           Measuring fishing capacity in tuna fisheries: Data Envelopment Analysis, industry surveys and data collection by Chris Reid (FFA) and Dale Squires (NMFS)**

**P13/A8           Assessing Capacity in the Tuna Fishery with Undesirable Outputs by Jim Kirkley (CWM)**

**Agenda Item 9:**

- P14/A9&10**    **Factors affecting recent development in tuna longline fishing capacity and possible options for management of longline capacity** by Peter Miyake (Tuna Japan) – *the part of the paper on management will be presented at the session for Agenda Item 10*
- P15/A9&10**    **Tuna fishing capacity: perspective of purse seine fishing industry on factors affecting it and its management** by Julio Moron (WTPO) - *the part of the paper on management will be presented at the session for Agenda Item 10*
- P16/A9**        **Productivity growth in natural resource industries and the environment: an application to the Korean tuna purse-seine fleet in the Pacific Ocean** by Dale Squires (NMFS), Christopher Reid (FFA) and Yongil Jeon (Central Michigan University)

**Agenda Item 10**

- P17/A10**        **Relating DEA estimates of capacity utilization to traditional measures of fishing capacity** by Dale Squires, Ted Groves, Jim Kirkley, Chris Reid and Jim Joseph
- P14/A9&10**    **Factors affecting recent development in tuna longline fishing capacity and possible options for management of longline capacity** by Peter Miyake (Tuna Japan) – *only the part of the paper on management will be presented at the session for this Agenda Item*
- P18/A10**        **Requirements and Alternatives for the Limitation of Fishing Capacity in Tuna Purse-seine Fleets** by Jim Joseph, Dale Squires and Ted Groves
- P15/A10**        **Tuna fishing capacity: perspective of purse seine fishing industry on factors affecting it and its management** by Julio Moron (WTPO) – *only the part of the paper on management will be presented at the session for this Agenda Item*
- P19/A10**        **Vessel buy back schemes** by Dale Squires (NMFS) and Theodore Groves (UCSD)

**Agenda Item 12**

- P20/A12**        **Measurement of the Global Fishing Capacity of Large-Scale Tuna Purse Seiners** by Ignacio de Leiva Moreno and Jacek Majkowski (FAO)