

## V INTERNATIONAL PANEL OF EXPERTS ON PERUVIAN ANCHOVY

### Role of anchovy in the Humboldt Current Upwelling Ecosystem

#### 1. **Background / Justification**

Forage fish, such as the Peruvian anchovy (*Engraulis ringens*), play an important role in the ecosystem and for fisheries. They are very important as energy carriers through the ecosystem from plankton to predatory fish, seabirds, mammals and fishers. The Peruvian upwelling system is subjected to bottom up forcing at intraseasonal, interannual, multidecadal and centennial time scales. The dynamic of anchovy population is therefore tightly linked to the environmental variability. Recent advances (see Prog. Oceanogr. 79(2-4), 2008) on the northern Humboldt system provide a strong base in the perspective of the implementation of the ecosystem approach to fisheries but some gaps still exist. To reach such objective it is important to establish the role of anchovy, particularly with regard to ecosystem stability and biodiversity. Also it is necessary to evaluate the state of the anchovy population according to different environmental characteristics and fishing pressure levels. With such knowledge it will be possible to begin an effective implementation process of the ecosystem approach to fisheries.

#### 2. **Objectives:**

- Perform an actualized analysis of the state of anchovy population.
- Fill the gaps on the knowledge of anchovy's biology and improve knowledge on its interrelation with its principal predators.
- Characterize the role of anchovy in the Upwelling Ecosystem off Peru.
- Perform a general synopsis of the pelagic ecosystem functioning and its variability; prognostic of the most probable state for the next 5 to 10 years.
- Propose a scheme for the implementation of the ecosystem approach to fisheries management for anchovy.

3. **Participants:** international experts, IMARPE personal, IRD Experts, experts from Universities and Fisheries Ministry, fishers and ship-owners

4. **Languages:** Spanish and English (simultaneous translation first and last day)

5. **Date and duration:** August 10<sup>th</sup> to 14<sup>th</sup> 2009, 5 days

6. **Place:** Central building of IMARPE, Peruvian Marine Research Institute, Chucuito, Callao, Peru

## 7. Schedule of the activities:

Monday, August 10<sup>th</sup>

Morning

08:30 – 09:30 h

Inauguration (see special programme)

09:30 – 10:00 h

Coffee break

10:00 – 13:00 h

Expositions:

- Miguel Ñiquen: New contributions to the knowledge of the biology and fishery of Peruvian anchovy
- Jorge Csirke: Advances and perspectives in the implementation of the Ecosystem Approach to Fisheries Management
- Francisco Chavez: Anchovy and environment: possibilities to predict its abundance

Afternoon:

14:30 h

- Arnaud Bertrand: Climate variability and anchovy habitat.
- Larry Hutchings: Co-occurrence of sardine and anchovy in the Benguela Large Marine Ecosystem
- Astrid Jarre: Using ecosystem models and indicators in a structured decision-making process for management
- Christopher Costello: Can catch shares prevent fisheries collapse?
- Pierre Freon: Comparison of the three segments of the anchovy fishery in Peru

Tuesday, 11<sup>th</sup> and Wednesday, 12<sup>th</sup> of August

Morning and Afternoon:

Workshops in separate groups (International Experts, Peruvian Experts, IRD Experts, Representatives from Universities and Fisheries Ministry)

Thursday, August 13<sup>th</sup>

Morning

Workshops in separate groups (International Experts, Peruvian Experts, IRD Experts, Representatives from Universities and Fisheries Ministry)

Afternoon

Common workshop: Discussion of the results and proposals (International Experts, IRD Experts, Peruvian Experts, Representatives from Universities and Fisheries Ministry)

Friday, August 14<sup>th</sup>

Morning

- End of the workshop: Conclusions presented to the Panel
- Closure.

## 6. Participants: 80

### International Experts:

- Arnaud Bertrand (Institut de Recherche pour Le Développement, France - Peru)
- Sophie Bertrand (Institut de Recherche pour Le Développement, France - Peru)
- Francisco Chávez (Monterey Bay Aquarium Research Institute, USA)
- Christopher Costello (University of California, Santa Barbara, USA)
- Jorge Csirke (FAO, Roma, Italy)
- Boris Dewitte (Institut de Recherche pour Le Développement, France - Peru)
- Pierre Fréon (Institut de Recherche pour Le Développement, France - Peru)
- Steven Gaines (University of California, Santa Barbara, USA)
- François Gerlotto (Institut de Recherche pour Le Développement, France)
- Larry Hutchings (University of Cape Town, South Africa)
- Astrid Jarre (University of Cape Town, South Africa)
- Andrew Rassweiler (University of California, Santa Barbara, USA)
- Monique Messie (Monterey Bay Aquarium Research Institute, USA)