

The organization and implications of cooperative research for fisheries management

Teresa R. Johnson

**Ecology and Evolution Graduate Program, Human Ecology,
Rutgers University, USA**

Wim L.T. van Densen

**Institute for Marine Resources and Ecosystem Studies,
IJmuiden, the Netherlands**

What is Cooperative Research?



Captain Jim Ruhle aboard the F/V Darana R,
during an Ilex squid cooperative research project

- “the active participation of industry in scientific research”
(Harms and Sylvia 2001)
- “more than simple agreements to share the logistical burden of data gathering” but are “cooperative problem solving efforts”
(Bernstein and Iudicello, 2004)
- “mechanism to renew trust and good faith in the management process” and contributing “a sound methodological tool”
(Kaplan and McCay, 2004)

Overview

- Forms of cooperative research
 - Fishery-independent data collection
 - Industry-based Surveys
 - Gear selectivity and bycatch research
- Implications of Cooperative Research
- Organizational Guidelines



Photos by Sarah King, Rutgers University
Mid-Atlantic Industry-based survey; F/V Luke and Sarah

Fishery-dependent Data Collection (Study fleets)

- Objective
 - To improve the collection of fishery -dependent data
- Examples
 - U.S. *Illex* Squid Real-Time Data Collection
 - Netherlands F-Project



Netherlands F-Project; discussion with F-fleet fishermen about data storage.



•Fishermen and Scientists discuss data collected in the F-project.

Lessons/Outcomes:

- Participation and representation needed
- Capacity building
- Inclusion of assessment scientists and managers



Industry-based Surveys (IBSs)

- Objective
 - Supplement fishery-independent data collection
 - Use fishermen's vessels, gear, and knowledge
- Examples
 - U.S. Northeast IBSs (e.g., Cod)
 - Iceland survey
- Lessons
 - Involve appropriate end users
 - Communicate rationale for survey design



Photo: Sarah King, Rutgers University
Mid-Atlantic supplemental finfish survey
To be used in stock assessments in the future.

Gear Selectivity/Bycatch Reduction

- Objective
 - To improve the selectivity of fishing gear
- Examples
 - Many in the NE U.S.!
 - Netherlands sole fishery
- Lessons
 - Standardization issues
 - \$ for testing and data analysis
 - Permitting issues



Photo: Sarah King, Rutgers University cooperative *Loligo* squid net selectivity study

Potential Implications of Cooperative Research

■ Direct Benefits

- Improving science – more, better, and more relevant data
- New data sources (e.g., fishermen's knowledge)
- Reducing costs of science (allowing more to be done)

■ Indirect Benefits

- Creating “buy-in” to science and management
- Better relationships – trust building
- Capacity building and intellectual property rights
- Adaptive/Alternative Management
- Income to Industry and Maintenance of Infrastructure

Guidelines for Organizing Cooperative Research (1)

- Problem Identification/Research Objective
 - Involve fishermen early and often in the research process
 - Include those who are likely to use the data
 - Develop a shared problem description/research objective and articulate potential potential uses of the results
- Research Approach/Design Specification
 - Assess the feasibility and statistical power of the design
 - Appraise the budget (time, money) and secure sufficient funding to cover research effort

Guidelines (2)

■ Data Collection

- Cooperation between fishermen and scientists on board
- Provide instruction on data collection (emphasize consistency and standardization)
- Communicate to fishing industry at large about the project

■ Data Processing/Analysis

- Data need to be reviewed for data quality
- Provide the crew with raw data (at least their catch) and allow participants to review preliminary results
- Discuss the format for presenting the results

Guidelines (3)

- Communication of results
 - Discuss the significance of the results to the fishermen involved in the project
 - Communicate the objective, approach, results and meaning of the outcome to the rest of the industry
 - Provide final report/data to appropriate end users
 - Assure a clear demarcation between results and the management implications (value laden)
 - Publish on the outcome of the study in common

Conclusion

- Fishermen are involved in all stages of the project.
- Scientists/managers most likely to utilize the data are involved or consulted throughout research.
- Fishermen are treated as equal partners (co-PIs).
- Communication is emphasized throughout the project.
- Preliminary data are shared with industry partners.
- Peer review and data quality assurance processes are balanced with needs to utilize results quickly.