EXECUTIVE SUMMARY

Training Managers for 21st Century Fisheries
December 5-7, 2001
Queenstown, New Zealand
http://oregonstate.edu/dept/trainfishmngr/

Introduction
The dawning of the 21st century reveals a fisheries management process experiencing unprecedented socioeconomic, environmental, and institutional challenges. Over the last 50 years, fisheries governance has rapidly evolved from primarily open access to regulated common property and rights-based institutions. Under the rubric of “sustainability,” 21st century fisheries managers are charged with balancing society’s conflicting needs with the unknown desires of future generations while employing vaguely defined concepts of precautionary and ecosystem-based management principles. Managers are also expected to accommodate an ever-widening range of community and industry “stakeholder” interests in the management and scientific process. The rapidly mounting legal and social pressures are eroding fishery management systems and revealing fundamental flaws in governance and institutional design. The pressures are also revealing an equally disturbing and related problem: society has not adequately invested in the human capital capable of co-designing and implementing the institutional structures that will lead to rational management of 21st century fisheries.

The low level of investment in human capital is illustrated by the observation that the majority of fishery managers worldwide have received no formal academic training in the discipline. Where academic training does exist in fisheries management, it has traditionally evolved from a biologically oriented focus to include varying degrees of multidisciplinary coursework, usually with the goal of creating entry-level administrators or broadly balanced research scientists. However, given the problems facing 21st century fisheries, managers must also be expert problem solvers, leaders, and institutional innovators capable of working with a variety of stakeholders and advisors. In addition, as the definition of the “fisheries manager” broadens in response to evolving institutions and increased participation in management, our understanding of training needs must also expand.

The need to invest in human capital is paramount as many nations are experiencing problems with recruitment and retention of quality managers. In the United States, for example, 45 percent of National Oceanic and Atmospheric Administration (NOAA) Fisheries (National Marine Fisheries Service) employees who are upper level scientists, managers, and administrators are eligible for retirement in 2005. During the economically vibrant 1990’s, many nations lost existing or potential quality fishery scientists and managers to private corporations capable of providing better salary and benefits. Managers in both developed and developing nations are now suffering from regulatory implementation overload. Managers need the educational tools to
enable effective implementation of a wide variety of regulations, including those suitable to rationally developing and managing smaller scale fisheries.

In recognition of the challenges facing contemporary fisheries management, organizers designed the international workshop, *Training Managers for 21st Century Fisheries*, held in Queenstown, New Zealand, on December 5-7, 2001. The workshop engaged recognized government, industry, academic, and nongovernmental organization (NGO) leaders from Oceania, North America, and Europe (Appendices A and B) in defining the necessary skills, training curricula, and professional working environments necessary to produce effective fishery managers. Sixty-three speakers and participants addressed a wide range of issues, organized under five headings: 1) vision and management challenges of 21st century fisheries; 2) requisite skills and knowledge; 3) current training and curricula; 4) incentives, responsibilities, and rewards to enhance recruitment and retention; and 5) consensus strategies. Breakout groups organized by topic and in some cases by sector (government, industry, academic) addressed leading questions organized around these headings. Participants developed a common vision, generated a list of general curriculum needs, suggested retention and recruitment barriers and solutions, and developed consensus strategies for addressing future training and education needs. The conference concluded with establishing an international steering committee charged with facilitating implementation of major recommendations and strategies. A full copy of the workshop notes is available in Appendix E (available online only at: http://oregonstate.edu/dept/trainfishmnger/report.html).

**Vision**
The workshop group developed a vision of 21st century fisheries and described a challenging and complex management future requiring a broad range of skills and abilities (Section 2). Defining the “fisheries manager” was a central issue in all discussions. There was no vision of a single manager, but consensus that depending on the governance system, there may be many “managers” in the fisheries process including stakeholders, stakeholder leaders, formal directors of private sector and NGO groups, mid-level government managers, elected policymakers, and policy analysts and institutional designers. Participants agreed that the definition of fisheries manager has evolved to include many of the participants in the fisheries management process.

**Curriculum**
Workshop participants developed a comprehensive set of management skills and knowledge for effective management of fisheries through pre-workshop focus questions, presentations, and group discussion at the workshop (Section 3). Responses to focus questions primarily identified the need for leadership qualities and skills related to leadership: communications, conflict resolution, decision making, problem solving, critical thinking, systems analysis (including modeling and integrative multidisciplinary, holistic thinking). Respondents also identified more traditional but necessary skill and knowledge areas including analytical science skills, and fisheries and related marine science, ecosystem science and management, economics, social science, policy, law, and business administration knowledge and related skills (Table 3.1).

Although the type and rigor of training should vary depending on the sector, management system, and management responsibilities, the workshop participants reached consensus that management at all levels required interdisciplinary training in a broad range of science and
management skills, reality-based classroom experiences, internships, and field practice. The participants particularly stressed the need for greater emphasis on effective communication and working relationships, problem solving, and strategic leadership. Presentations and group discussion also emphasized the need for skills in managing the interface between specialists and decision-makers, skills in incorporating indigenous and industry knowledge, and knowledge of all stakeholder groups. Group discussion highlighted some institutional or sectoral differences in training needs (Table 3.2). There was also varied opinion on whether training should occur primarily through academic programs, continuing education, or on-the-job training.

Training needs and delivery methods specific to managers of different sectors, responsibilities, regions and nations must be further defined and developed; this task was beyond the scope of the workshop.

**Current Training**

As input to discussion of curricular needs and training delivery methods, the workshop included presentations assessing current training capacity and examples of continuing education models, summarized in Section 4.

The current training review identified 72 academic programs offering 165 degree options (primarily with postgraduate diploma or certificate, Masters, or Ph.D.) at a total of 46 institutions with at least some specific focus on fisheries management. Programs were discovered through an exhaustive search of online literature. Regardless of degree title, most were primarily fisheries science programs. Only 20 percent of the programs emphasized leadership, decision-making, or critical thinking skills in their website literature. This stood in contrast to the leading business management, public administration, and natural resource or forestry educational programs that unanimously emphasized “capstone” integrated courses or requirements with emphasis on leadership, teamwork, and critical decision-making skills. In addition, the presenters developed a comprehensive website indexing links to all relative training programs identified during the web search, primarily academic programs, but also some continuing education and professional programs. While no single education program can be expected to provide all the necessary knowledge, skills, or expertise, there are significant components of top training programs that should be considered if the goal is to develop effective leaders and decision makers for 21st century fisheries.

Presentations on continuing education or professional training programs developed by Oregon State University Extension Forestry and the New Zealand Seafood Industry Training Organisation (SITO) emphasized the need to develop flexible learning pathways that recognize the existing hierarchy of knowledge, attitudes, skills, and abilities of managers as well as the time that professionals have available for training. Presenters also suggested developing training programs based on needs assessment, goal identification, and evaluation—including measuring goal achievement, formative evaluation during the educational program, and more formal summative evaluation to determine effectiveness (see Appendices G and H).

Cooperative and innovative efforts within and among academia, government, industry, and NGOs could be highly beneficial toward developing new opportunities. For example, academic
programs can provide additional degree options, such as certificates or diplomas, suited to continuing education of professionals. They can also develop specialized workshops (onsite or online) based on in-house expertise, and industry and government can participate as instructors in academic programs.

Furthermore, communication and exchange of information on training opportunities and curricular resources within and across sectors should be enhanced through websites or e-mail groups dedicated to fisheries management training.

**Incentives and Rewards**
The pre-workshop focus survey (Appendices C and D) and workshop discussion emphasized that fisheries management as a profession is in crisis (Section 5). Key symptoms of this crisis in agencies include difficulty recruiting, high turnover, low retention, and an aging workforce. Several internal and external causes were identified, including limited professional development opportunities, low job satisfaction, perceived conflict between science and management disciplines, the political and, in some jurisdictions, litigious nature of fisheries management, and low morale. Participants also identified reluctance by non-agency stakeholders to engage in the fisheries management process because of past failure to achieve positive outcomes, or because they achieved better results through direct political approaches.

The group believed that given the challenges of fisheries management, effective leadership requires a supportive working environment with appropriate responsibilities and rewards, including strategic incentives and ongoing professional education. In addition, promoting management successes and collaborative work between all stakeholders (agency and non-agency) could improve involvement in the management process. Creating an international association tasked with developing and promoting fisheries management as a profession could benefit this effort.

**Consensus Strategies and Recommendations**
Workshop participants unanimously expressed a desire to continue working together to improve the education of fisheries managers by focusing on the following consensus strategies (Section 6):

1. Develop creative partnerships within and among institutions, sectors, and nations.
2. Include the management process as a learning experience.
3. Broaden and lengthen career paths.
4. Identify the gaps between those supplying and demanding management training.
5. Create a website that shares information about training programs and resources.
6. Encourage industry scholarships.
7. Develop a case study library similar to those created by the top business management programs.
8. Establish a network of training providers.
The group highlighted three areas for international cooperation: 1) exchanges in formal education of graduate students; 2) international internships and secondments* for students and working managers; and 3) development of fishery management case studies.

A steering committee was formed at the workshop and additional members have joined as a result of a follow-up meeting held at the August, 2002, International Institute of Fisheries Economics and Trade (IIFET) Conference in Wellington, New Zealand. The steering committee has international representation from academia, government, and industry:

- Lee Anderson, University of Delaware, College of Marine Studies (lgafish@udel.edu)
- Darrin Apanui, Manager, Human Resource Development, Te Ohu Kai Moana (Darrin.Apanui@tokm.co.nz)
- Poul Degnbol, Institute for Fisheries Management and Coastal Development, Denmark (pd@ifm.dk)
- Michael Harte, Falkland Islands Government (mhart@sec.gov.fk)
- Laura Jodice, previously Marine Resource Management, Oregon State University, now Clemson University (jodicel@clemson.edu)
- Alistair McIlgorm, Dominion Consulting Pty. Ltd, Australia (mcilgorm@tradesrv.com.au)
- Rebecca Metzner (Rebecca.Metzner@fao.org)
- Jonathan Peacey, New Zealand Ministry of Fisheries (jonathan.peacey@fish.govt.nz)
- Kevin Stokes, New Zealand Seafood Industry Council (kevin@seafood.co.nz)
- Jon Sutinen, University of Rhode Island, Department of Environmental and Natural Resources Economics (jsutinen@uri.edu)
- Gil Sylvia, Oregon State University, Coastal Oregon Marine Experiment Station (gil.sylvia@oregonstate.edu)

This committee is currently developing plans for implementing and facilitating the workshop recommendations.

A website (http://oregonstate.edu/dept/trainfishmngr/) and listserv (trainfishmngr@lists.orst.edu) have been created to aid communications for this initiative. The website includes instructions for joining the listserv. A copy of this report, progress reports, a current training index, and other resources are also available on the website.

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* A secondment is the transfer of personnel to another section or organization for a specific period followed by their return to their original position. They experience no change in salary or terms of employment. For example, a stock assessment scientist was seconded from Oregon State University to the At Sea Processors Association for one year to assist with the development of an industry-led stock assessment program.