

## Marine Fisheries Stock Assessment Improvement Plan

NMFS has a difficult and complex task in managing U.S. marine fisheries. Despite some successes, too many stocks continue to decline. Over the past decade, several problems have been identified that have contributed to the current dissatisfaction with how marine fisheries are managed. This dissatisfaction is evident from the large number of lawsuits filed by the fishing industry and environmental organizations. One central problem is overfishing. Overfishing issues have been discussed in a series of NRC reports, and these reports identify overcapitalization, and technological and gear improvements as some of the causes. The reports recommend ways to stem these problems and to advance the practice of fishery science at NMFS. This report reiterates some of these recommendations, and makes new recommendations to enhance the use of data and science for fisheries management.

Because marine mammals (MM), such as whales and dolphins, often inhabit waters where commercial fishing occurs, they can become entangled in fishing gear, which may injure or kill them -- this is referred to as "incidental take." The MMPA requires the Nat. Marine Fish. Serv. (NMFS) to establish take reduction teams for certain MM to develop measures to reduce their incidental takes. This report determines the extent to which NMFS: (1) can identify the MM stocks that meet the MMPA's requirements for establishing such teams; (2) has established teams for those stocks that meet the requirements; (3) has met the MMPA's deadlines for the teams subject to them; and (4) evaluates the effectiveness of take reduction regulations.

The National Marine Fisheries Service (NMFS) is responsible for the stewardship of the nation's living marine resources and their habitat. As part of this charge, NMFS conducts stock assessments of the abundance and composition of fish stocks in several bodies of water. At present, stock assessments rely heavily on human data-gathering and analysis. Automatic means of fish stock assessments are appealing because they offer the potential to improve efficiency and reduce human workload and perhaps develop higher-fidelity measurements. The use of images and video, when accompanied by appropriate statistical analyses of the inferred data, is of increasing importance for estimating the abundance of species and their age distributions. "Robust Methods for the Analysis of Images and Videos for Fisheries Stock Assessment" is the summary of a workshop convened by the National Research Council Committee on Applied and Theoretical Statistics to discuss analysis techniques for images and videos for fisheries stock assessment. Experts from diverse communities shared perspective about the most efficient path toward improved automation of visual information and discussed both near-term and long-term goals that can be achieved through research and development efforts. This report is a record of the presentations and discussions of this event.

Improving Fish Stock Assessments

A Framework Guide to the Stock Assessment Tools of the Fisheries Management and Science Programme

Fisheries management successes in Alaska and the reauthorization of the Magnuson-Stevens Fishery Conservation and Management Act

Report of the Alaska Regional Habitat Assessment Prioritization Coordination Team Stock Assessment

Hearings Before a Subcommittee of the Committee on Appropriations, House of Representatives, One Hundred Ninth Congress, Second Session  
Commerce, Justice, Science, and Related Agencies Appropriations for Fiscal Year 2012

Congress has promoted fisheries science for over a century and its involvement in fisheries management took a great leap forward with passage of the Fisheries Conservation and Management Act of 1976. In the past decade, Congress has requested advice from the National Research Council (NRC) on both national issues (e.g., individual fishing quotas and community development quotas) and the assessments related to specific fisheries (Northeast groundfish). This report was produced, in part, in response to another congressional request, this time related to the assessments of the summer flounder stocks along the East Coast of the United States. Following the initial request, the NRC, National Marine Fisheries Service (NMFS), and congressional staff agreed to broaden the study into a more comprehensive review of marine fisheries data collection, management, and use.

Fisheries science in North America is changing in response to a changing climate, new technologies, an ecosystem approach to management and new thinking about the processes affecting stock and recruitment. Authors of the 34 chapters review the science in their particular fields and use their experience to develop informed opinions about the future. Everyone associated with fish, fisheries and fisheries management will find material that will stimulate their thinking about the future. Readers will be impressed with the potential for new discoveries, but disturbed by how much needs to be done in fisheries science if we are to sustain North American fisheries in our changing climate. Officials that manage or fund fisheries science will appreciate the urgency for the new information needed for the stewardship of fish populations and their ecosystems. Research organizations may want to keep some extra copies for a future look back into the thoughts of a wide range of fisheries professionals. Fisheries science has been full of surprises with some of the surprises having major economic impacts. It is important to minimize these impacts as the demand for seafood increases and the complexities of fisheries management increase.

The collapse of cod, flounder, and haddock fish stocks in the Northeast United States has caused widespread concern among managers and fishers in the United States and Canada. The diminishing stocks have forced managers to take strict regulatory measures. Numerous questions have been raised about the adequacy of stock assessment science used to evaluate the status of these stocks and the appropriateness of the management measures taken. Based on these concerns, Congress mandated that a scientific review of the methodology and data used to evaluate these stocks be conducted. In this volume, the committee concludes that although there are improvements to be made in data collection, modeling uncertainty, and communicating between fishers, managers, and scientists, the scientific methods used in the Northeast stock assessments are sound. Recommendations are made on how the stock assessment process can be improved.

Pacific groundfish continued efforts needed to improve reliability of stock assessments : report to congressional requesters.

Continued Efforts Needed to Improve Reliability of Stock Assessments

Programmatic Supplemental EIS for Alaska Groundfish Fisheries Implemented Under

the Authority of the Fishery Management Plans for the Groundfish Fishery of the Gulf of Alaska and the Groundfish of the Bering Sea and Aleutian Islands Area  
Assessment of the Kenyan Marine Fisheries

Hearings Before a Subcommittee of the Committee on Appropriations, United States Senate, One Hundred Twelfth Congress, First Session, on H.R. 2596/S. 1572, an Act Making Appropriations for the Departments of Commerce and Justice, and Science, and Related Agencies for the Fiscal Year Ending September 30, 2012, and for Other Purposes

Alaska Marine Mammal Stock Assessments, 2016

This excellent second edition of *Fisheries Biology, Assessment and Management*, has been fully updated and expanded, providing a book which is an essential purchase for students and scientists studying, working or researching in fisheries and aquatic sciences. In the same way that excessive hunting on land has threatened terrestrial species, excessive fishing in the sea has reduced stocks of marine species to dangerously low levels. In addition, the ecosystems that support coastal marine species are threatened by habitat destruction, development and pollution. Open access policies and subsidised fishing are placing seafood in danger of becoming a scarce and very expensive commodity for which there is an insatiable demand. Positive trends include actions being taken to decrease the incidental catches of non-target species, consumer preferences for seafood from sustainable fisheries, and the establishment of no-take areas that provide refuges for marine species. But there is an urgent need to do more. Because there is an increasing recognition of the need to manage ecosystems as well as fish stocks, this second edition of this bestselling text book includes an additional chapter on marine ecology. Chapters on parameter estimation and stock assessment now include step-by-step instructions on building computer spreadsheet models, including simulations with random variations that realistically emulate the vagaries of nature. Sections on ecosystem management, co-management, community-based management and marine protected areas have been expanded to match the increased interest in these areas. Containing many worked examples, computer programs and numerous high quality illustrations, *Fisheries Biology, Assessment and Management*, second edition, is a comprehensive and essential text for students worldwide studying fisheries, fish biology, aquatic and biological sciences. As well as serving as a core text for students, the book is a superb reference for fisheries and aquatic researchers, scientists and managers across the globe, in both temperate and tropical regions. Libraries in all universities where fish biology, fisheries, aquatic sciences and biological sciences are studied and taught will need copies of this most useful new edition on their shelves. Supplementary material is available at: [www.blackwellpublishing.com/king](http://www.blackwellpublishing.com/king)

Ocean harvests have plateaued worldwide and many important commercial stocks have been depleted. This has caused great concern among scientists, fishery managers, the fishing community, and the public. This book evaluates the major models used for estimating the size and structure of marine fish populations (stock assessments) and changes in populations over time. It demonstrates how problems that may occur in fisheries data--for example underreporting or changes in the likelihood that fish can be caught with a given type of gear--can seriously degrade the quality of stock assessments. The volume makes recommendations for means to improve stock assessments and their use in fishery management.

*Stock Assessment: Quantitative Methods and Applications for Small Scale Fisheries* is a book about stock assessment as it is practiced. It focuses on applications for small scale or artisanal fisheries in developing countries, however it is not limited in applicability to tropical waters and should also be considered a resource for students of temperate fishery management problems. It incorporates a careful sample design, various mathematical models as a basis for predicting

consequences for stock exploitation, and discusses the impact of exploitation on non-targeted species. This was a unique concept involving a collaborative effort between U.S. and host country scientists to address issues of regional and global concern through innovative research. Unlike other books on stock assessment that show mathematical models, this is the only book of its kind that discusses how an assessment is carried out. It looks at the field as a whole and includes sampling, age determination and acoustics. The book represents the culmination of a nine-year program financed by the United States Agency for International Development to provide new or improved methods of stock assessment for artisanal fisheries. August 11-13, 2009, Alaska Fisheries Science Center, Seattle, WA

Habitat Assessment Prioritization for Alaska Stocks

oversight field hearings before the Subcommittee on Fisheries and Oceans of the Committee on Resources, U.S. House of Representatives, One Hundred Ninth Congress, first session, Wednesday, July 6, 2005, in Ketchikan, Alaska, and Friday, July 8, 2005, in Kodiak, Alaska  
Hearing Before the Subcommittee on Oceans, Atmosphere, Fisheries, and Coast Guard of the Committee on Commerce, Science, and Transportation, United States Senate, One Hundred Twelfth Congress, First Session, March 8, 2011

Departments of Commerce, Justice, and State, the Judiciary, and related agencies appropriations for 2004

Confronting Tradeoffs

MARINE FISHERIES STOCK ASSESSMENT IMPROVEMENT PLAN... U.S. DEPARTMENT OF COMMERCE... OCTOBER 2001

"On 30 April 1994, Public Law 103-238 was enacted allowing significant changes to provisions within the Marine Mammal Protection Act (MMPA). Interactions between marine mammals and commercial fisheries are addressed under three new sections. This new regime replaced the interim exemption that has regulated fisheries-related incidental takes since 1988. Section 117, Stock Assessments, required the establishment of three regional scientific review groups to advise and report on the status of marine mammal stocks within Alaska waters, along the Pacific Coast (including Hawaii), and the Atlantic Coast (including the Gulf of Mexico). This report provides information on the marine mammal stocks of Alaska under the jurisdiction of the National Marine Fisheries Service. Each stock assessment includes, when available, a description of the stock's geographic range; a minimum population estimate; current population trends; current and maximum net productivity rates; optimum sustainable population levels and allowable removal levels; estimates of annual human-caused mortality and serious injury through interactions with commercial, recreational, and subsistence fisheries, takes by subsistence hunters, and other human-caused events (e.g., entanglement in marine debris, ship strikes); and habitat concerns. The commercial fishery interaction data will be used to evaluate the progress of each fishery towards achieving the MMPA's goal of zero fishery-related mortality and serious injury of marine mammals. The Stock Assessment Reports should be considered working documents, as they are updated as new information becomes available. The

Alaska Stock Assessment Reports were originally developed in 1995 (Small and DeMaster 1995). Revisions have been published for the following years: 1996 (Hill et al. 1997), 1998 (Hill and DeMaster 1998), 1999 (Hill and DeMaster 1999), 2000 (Ferrero et al. 2000), 2001 (Angliss et al. 2001), 2002 (Angliss and Lodge 2002), 2003 (Angliss and Lodge 2004), 2005 (Angliss and Outlaw 2005), 2006 (Angliss and Outlaw 2007), 2007 (Angliss and Outlaw 2008), 2008 (Angliss and Allen 2009), 2009 (Allen and Angliss 2010), 2010 (Allen and Angliss 2011), 2011 (Allen and Angliss 2012), 2012 (Allen and Angliss 2013), 2013 (Allen and Angliss 2014), 2014 (Allen and Angliss 2015), and 2015 (Muto et al. 2016). Each Stock Assessment Report is designed to stand alone and is updated as new information becomes available. The MMPA requires Stock Assessment Reports to be reviewed annually for stocks designated as strategic, annually for stocks where there is significant new information available, and at least once every 3 years for all other stocks. New information for all strategic stocks (Western U.S. Steller sea lions, northern fur seals, Cook Inlet beluga whales, AT1 Transient killer whales, harbor porpoise, sperm whales, humpback whales, fin whales, North Pacific right whales, and bowhead whales) was reviewed in 2015-2016. This review, and a review of other stocks, led to the revision of the following stock assessments for the 2016 document: Western U.S. and Eastern U.S. stocks of Steller sea lions; northern fur seals; bearded seals; ringed seals; Cook Inlet beluga whales; narwhals; Eastern North Pacific (ENP) Alaska Resident, ENP Gulf of Alaska, Aleutian Islands, and Bering Sea Transient, and AT1 Transient stocks of killer whales; Southeast Alaska, Gulf of Alaska, and Bering Sea stocks of harbor porpoise; sperm whales; Western North Pacific and Central North Pacific stocks of humpback whales; fin whales; North Pacific right whales, and bowhead whales. The Stock Assessment Reports for all stocks, however, are included in this document to provide a complete reference. Those sections of each Stock Assessment Report containing significant changes are listed in Appendix 1. The authors solicit any new information or comments which would improve future Stock Assessment Reports. The U.S. Fish and Wildlife Service (USFWS) has management authority for polar bears, sea otters, and walruses. Copies of the stock assessments for these species are included in Appendix 8 of this NMFS Stock Assessment Report for your convenience. Ideas and comments from the Alaska Scientific Review Group (SRG) have significantly improved this document from its draft form. The authors wish to express their gratitude for the thorough reviews and helpful guidance provided by the Alaska Scientific Review Group members: Karl Haflinger, Lloyd Lowry (Chair from 2012 to

2016), Beth Mathews, Craig Matkin, Mike Miller, Grey Pendleton, Robert Small, Kate Stafford, Robert Suydam, David Tallmon, and Kate Wynne. We would also like to acknowledge the contributions from the NMFS Alaska Region and the Communications Program of the Alaska Fisheries Science Center. The information contained within the individual Stock Assessment Reports stems from a variety of sources. Where feasible, we have attempted to utilize only published material. When citing information contained in this document, authors are reminded to cite the original publications, when possible"--Preface. [doi:10.7289/V5/TM-AFSC-355 (<https://doi.org/10.7289/V5/TM-AFSC-355>)]

Fluctuations and declines in marine fish populations have caused growing concern among marine scientists, fisheries managers, commercial and recreational fishers, and the public. *Sustaining Marine Fisheries* explores the nature of marine ecosystems and the complex interacting factors that shape their productivity. The book documents the condition of marine fisheries today, highlighting species and geographic areas that are under particular stress. Challenges to achieving sustainability are discussed, and shortcomings of existing fisheries management and regulation are examined. The volume calls for fisheries management to adopt a broader ecosystem perspective that encompasses all relevant environmental and human influences. *Sustaining Marine Fisheries* offers new approaches to building workable fisheries management institutions, improving scientific data, and developing management tools. The book recommends ways to change current practices that encourage overexploitation of fish resources. It will be of special interest to marine policymakers and ecologists, fisheries regulators and managers, fisheries scientists and marine ecologists, fishers, and concerned individuals.

The significance of habitat to sustainable management of the Nation's fisheries was acknowledged by the U.S. Congress in 1996. The Magnuson-Stevens Fishery Conservation and Management Act was amended by the Sustainable Fisheries Act of 1996 to include provisions for defining Essential Fish Habitat (EFH) as "those waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity", applicable to all federally managed species and all of their life-history stages. The sheer magnitude of the EFH mandate and the general absence of dedicated funding prompted the agency to produce the Habitat Assessment Improvement Plan (HAIP) for marine fisheries. The HAIP had multiple objectives including the improvement and prioritization of habitat-science research activities related to stock assessments and EFH definitions. One of the key recommendations in the HAIP is that NMFS should develop criteria

to prioritize stocks and geographic locations that would benefit from habitat assessments, meaning the process and products associated with consolidating, analyzing, and reporting the best available information on habitat characteristics relative to the population dynamics of fishery species and other living marine resources. This prompted formation of the national Habitat Assessment Prioritization Working Group (HAPWG) in 2011. The HAPWG developed national guidance for objectively scoring managed species/stocks on a standard set of rubrics. The prioritization process involved a sequential set of filters and scorable criteria intended to identify high, medium, and low priority stocks for future habitat assessments, both in terms of value to EFH designations and to address habitat-related uncertainty in stock assessments. A coordination team representing the Alaska Fisheries Science Center, the Alaska Regional Office, and the NMFS Office of Science and Technology adapted the generic prioritization process to the specific circumstances in the Alaska Region, assembled data and references to support online scoring, and arranged for the lead stock assessment authors to score their stock(s) from among the assembled list of managed stocks. As a result, a total of 69 stocks or stock complexes were individually evaluated by the stock-assessment authors including six crab stocks and one rockfish complex that are managed by the State of Alaska and three non-target species that were added at the request of the NPFMC Groundfish Plan Team. Fourteen stocks each in the stock assessment and EFH themes were identified as high priorities for habitat assessments, based on predetermined scoring thresholds for the Alaska Region. Overall, 17 different stocks were given high-priority status in one or the other theme and 11 stocks were prioritized in both themes. Upon completion, an internal review was conducted to assess the process and develop recommendations for future habitat-prioritization exercises. [doi:10.7289/V5/TM-AFSC-361 (<https://doi.org/10.7289/V5/TM-AFSC-361>)]

Sustaining Marine Fisheries

Ecosystem-Based Fisheries Management

A Requirements Plan for Improving the Understanding of the Status of U.S. Protected Marine Species

Robust Methods for the Analysis of Images and Videos for Fisheries Stock Assessment

Science and Its Role in the National Marine Fisheries Service

Science, the Departments of State, Justice, and Commerce, and Related Agencies Appropriations for 2007

U.S. Atlantic and Gulf of Mexico Marine Mammal Stock Assessments

**Marine Fisheries Stock Assessment Improvement Plan Report of the**

National Marine Fisheries Service, National Task Force for Improving Fish Stock Assessment  
MARINE FISHERIES STOCK ASSESSMENT IMPROVEMENT PLAN... U.S. DEPARTMENT OF COMMERCE... OCTOBER 2001  
Improving Fish Stock Assessments National Academies Press

Provides guidelines for fish stock assessment and fishery management using the software tools developed by the UK's Department for International Development's Fisheries Management Science Programme. This report explains some key elements of the precautionary approach to fisheries management and outlines a range of alternative stock assessment approaches.

The plan provided here is designed to provide the basis for improving NOAA Fisheries' protected species stock assessment.

Workshop on Stock Assessment and Social Science Careers

Improving the Collection, Management, and Use of Marine Fisheries Data  
National Marine Fisheries Service

Hearings Before a Subcommittee of the Committee on Appropriations, House of Representatives, One Hundred Eighth Congress, Second Session  
The Findings and Recommendations of the Department of Defense

Independent Review Relating to Fort Hood

Improving the Use of the "Best Scientific Information Available" Standard in Fisheries Management

Oversight Hearing Before the Subcommittee on Fisheries Conservation, Wildlife, and Oceans of the Committee on Resources, U.S. House of Representatives, One Hundred Seventh Congress, First Session, June 14, 2001

*Responsible fisheries management is of increasing interest to the scientific community, resource managers, policy makers, stakeholders and the general public. Focusing solely on managing one species of fish stock at a time has become less of a viable option in addressing the problem. Incorporating more holistic considerations into fisheries management by addressing the trade-offs among the range of issues involved, such as ecological principles, legal mandates and the interests of stakeholders, will hopefully challenge and shift the perception that doing ecosystem-based fisheries management is unfeasible. Demonstrating that EBFM is in fact feasible will have widespread impact, both in US and international waters. Using case studies, underlying philosophies and analytical approaches, this book brings together a range of interdisciplinary topics surrounding EBFM and considers these simultaneously, with an aim to provide tools for successful implementation and to further the debate on EBFM, ultimately hoping to foster enhanced living marine resource management.*

*Lack of information on fish stocks, inadequate and unreliable data have been a major concern in the management of marine resources in Kenya. A need to improve methodology in data collected and stock assessment has been recognized. Data collected by the Fisheries Program at Kenya Marine and Fisheries Research Institute from Lamu and Vanga areas was used to demonstrate various analyses. Mapping of catch distribution in the two areas, CPUE calculation, species composition, length distribution, length-weight relationships for selected species were performed. The estimated  $b$  values for the length-weight relationships for three species ranged from 1.954 to 2.326. No deductions can be made due to the limited data, however, recommendations on improvement of data to be collected and type of analyses to be performed in*



*future when adequate data is available have been suggested.*

*The National Marine Fisheries Service (NMFS) employs many fishery scientists with diverse skills. The agency finds that the supply of fishery biologists is adequate to meet most of its demand. However, increasing demands on the agency to understand fish populations and the social and economic conditions in fishing communities have created a need for additional experts in the fields of fisheries stock assessment and social sciences. NMFS has developed plans for meeting its anticipated staff needs in stock assessment and social sciences and asked the National Research Council (NRC) to convene a workshop to discuss the plans and suggest other actions the agency might take to ensure an adequate supply of experts in these fields. Approximately 30 individuals gathered in Woods Hole, Massachusetts on July 17, 2000 under the auspices of the NRC's Ocean Studies Board to discuss NMFS' plans. This document summarizes the presentations and discussions at that one-day workshop. No attempt was made to reach consensus among the participants; thus, the suggestions recorded in this summary represent the personal views of workshop participants, as summarized by NRC staff.*

*The Maximum (Un)Sustainable Yield. An Assessment*

*Departments of Commerce, Justice, and State, the Judiciary, and Related Agencies Appropriations for 2005*

*Implementation of the Magnuson-Stevens Fishery Conservation and Management Act*

*Improvements are Needed in the Federal Process Used to Protect Marine Mammals from Commercial Fishing*

*Review of Northeast Fishery Stock Assessments*

*Report of the NOAA Fisheries National Task Force for Improving Marine Mammal and Turtle Stock Assessments*

*Stock Assessment for Fishery Management*

**Under the Magnuson-Stevens Fisheries Conservation and Management Act (FCMA), managers are required to use the "best scientific information available" in the preparation of federal fishery management plans (National Standard 2 in the FCMA). However, the Act provides no further guidance as to how conformance to this standard should be determined. Because adherence to this standard has often been contentious, Congress has considered adding a definition for what constitutes "best scientific information available" in the reauthorization of the FCMA. This report examines both the current application and the controversy over the standard and concludes that a legislative definition would be too inflexible to accommodate regional differences and future advances in science and technology. Instead, the report recommends that NOAA Fisheries adopt procedural guidelines to ensure that the scientific information used in the development of fishery management plans is relevant and timely and is the product of processes characterized by inclusiveness, transparency and openness, timeliness, and peer review.**

**By examining a suite of over 90 indicators for 9 major US fishery ecosystem jurisdictions, the authors systematically track the progress the country has made towards advancing EBFM and making it an operational reality, lessons which are applicable to oceans globally. Essay from the year 2020 in the subject Politics - Environmental**

Policy, grade: 19/20, Sciences Po., Paris, course: Ocean governance and marine policy, language: English, abstract: This paper aims to investigate the roots of MSY and what prevents it from being as sustainable as intended. There exist three models of MSY; by Raymond and Hold, by Ricker, and by Schaefer. This paper focuses on Schaefer's Surplus Production Model, explaining how it works in regard to stock assessment and calculation approaches. Next, the scientific limitations of MSY are discussed, followed by the main focus of this paper, namely taking a closer look at the history of MSY in order to explain current critiques. It is found out that MSY is in fact a policy disguised as science which complicates the execution of its good intentions, and that fishery policies were not based on how successful MSY theories were, but rather the success of the theories was based on the fishery policies. These historic evolutions largely explain why the Maximum Sustainable Yield cannot be truly sustainable. Finally, several recommendations for the improvement of MSY and fisheries management are suggested. The term "over-fishing" was already present in the 1850s, however the extent of marine fisheries resources overexploitation was only realized in the 1900s. Simple and easily understandable guidelines on catch limits became desirable in fisheries management and thus a fixed maximum catch that a population could support seemed like an excellent reference point. The Maximum Sustainable Yield (MSY) has a hundred years long history, emerging from mathematical models that were first introduced to population ecology in the 1930s. It further developed and bloomed in the 1950s, as Surplus Production Models were developed. Today, MSY is applied internationally by almost all regional management bodies, and is therefore widely used for the assessment of exploited stocks worldwide. However, there is a widespread criticism regarding its effectiveness.

Hearings Before a Subcommittee of the Committee on Appropriations,  
United States Senate, One Hundred Ninth Congress, Second Session  
Recruiting Fishery Scientists

Hearing Before the Committee on Armed Services, United States Senate,  
One Hundred Eleventh Congress, Second Session, January 21, 2010  
Spending for NOAA and NMFS and the President's Fiscal Year 2012 Budget  
Request for These Agencies

Ecosystem-based Fishery Management and the Reauthorization of the  
Magnuson-Stevens Fishery Conservation and Management Act  
Estimating Natural Mortality in Stock Assessment Applications  
Environmental Impact Statement

"As part of the national program to improve and standardize stock assessment methods and to foster interaction among fisheries stock assessment scientists, the National Marine Fisheries Service (NMFS) Assessment Methods Working Group sponsored a three-day workshop on estimating natural mortality (M) for use in stock assessment applications. The workshop was held August 11-13, 2009, at the Alaska Fisheries Science Center in Seattle, Washington. A keynote presentation was delivered by Dr. Kai Lorenzen and 43 other scientists participated.

The presentations and discussions covered biological aspects of mortality, methods for estimation of M, and best practices for use of M in assessment models"--Executive summary.

Summary of a Workshop

Hearing Before the Subcommittee on Oceans, Atmosphere, Fisheries, and Coast Guard of the Committee on Commerce, Science, and Transportation, United States Senate, One Hundred Twelfth Congress, First Session, April 13, 2011

Fiscal Year 2012 NOAA Budget Request and Oversight

Report of the National Marine Fisheries Service, National Task Force for Improving Fish Stock Assessment

Quantitative Methods and Applications for Small Scale Fisheries

Oversight Hearing Before the Subcommittee on Fisheries, Wildlife, Oceans, and Insular Affairs of the Committee on Natural Resources, U.S. House of Representatives, One Hundred Twelfth Congress, First Session, Thursday, March 31, 2011

Continued Efforts Needed to Improve Reliability of Stock Assessments : Report to Congressional Requesters