American Institute of Fishery Research Biologists

Promoting excellence in fishery science

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Website: www.aifrb.org

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President's Message

Now that I am actually President of this prestigious Institute, I find that I am asked (more than ever) why a fishery research biologist should join the AIFRB, what are the benefits of membership, isn't it enough to belong to a large society that purportedly voices my views and concerns? I've been asked these questions from non-members as well as members, including members of our Board of Control (BOC)! The answers to these inquiries are both common and personal, and are as numerous as there are fisheries scientists. My first response has to be embedded in our Mission Statement: Promote Excellence in Fishery Science. But what does that really mean? How does one person instill or promote excellence in the profession of fisheries science? How does advocacy fit in? It seems to me that the more an organization advocates positions, the less importance an individual's position becomes. However, providing a forum for individuals to discuss and debate positions, especially in the promotion of great science without fear of retribution, that's one of the Institute's strongest traits. It was founded on that ideal, and it will always be that way. But there are many other reasons for that as well.

In an earlier AIFRB introductory brochure, several reasons to join the Institute were highlighted; not the least of which is the fact that members meet regionally (District oriented) to discuss issues important to fisheries resources and to fisheries scientists. This is really the hallmark of our organization, to provide an opportunity for students, private and public (state and federal agency) fisheries professionals, academicians (professors and researchers alike), and all other fishery research biologists to meet informally, and discuss anything relative to the industry. I personally enjoy the mentoring aspect afforded to students and young professionals by the older mossbacks, while recognizing the knowledge and insight provided by younger scientists. It goes both ways. AIFRB's focus is to provide advice on the science of evaluating fishery resources, and research issues that emphasize what is known and what needs to be known, in particular dealing with resource sustainability. The AIFRB prefers its role as a source of reliable information and professional advice.

We are proud of our awards programs, including our *Clark Hubbs* student research awards, awarded annually for assistance in presenting original research, our annual *W F Thompson* award for best student paper in fisheries research, our bi-annual *Hiroshi*

The AIFRB is a 501(c)(3) tax-exempt nonprofit organization (EIN 61-6050711).

Newsest AIFRB Member: Trevor Branch on CSPAN

Assistant Professor, Aquatic & Fishery Sciences at the University of Washington

I am most interested in solving real-life biological problems through synthesis of multiple data types and through fitting mathematical models to data. These core interests have led me in a variety of directions. My most recent research focuses on global scale analysis of fisheries, including their current status and future directions, whether fishing down marine food webs is detectable in catches and in ecosystems, and which factors influence patterns in fishery development. I also have a long-standing interest in the human side of fisheries, including fishing behavior and fleet dynamics, and the impacts of individual transferable quotas (catch shares) on target stocks, discards, and the environment. Another major field of interest is the status and trends of large whale populations, particularly blue whales but also humpback and minke whales, interests which have led to papers on abundance estimation, changes in population size over time, and the separation of blue whale subspecies.

Trevor Branch speaks: 1:29:25

Kasahara Early Career award recognizing excellence in the Institute's young professional members, as well as our individual and group achievement awards, for outstanding contributions by fishery researchers. We also provide a mentor service that includes arranging work experience throughout North America, as well as offering free pre-submission manuscript reviews. Learn more about these awards and programs on our website.

AIFRB hosts major symposia on important topics in fisheries. Proceedings of our 2007 50th anniversary symposium, *"The Future of Fisheries Science in North America"*, is to date one of the most downloaded sources of fisheries science, including specific downloads of 34 chapters by individual researchers reviewing the science in their particular fields, and using their experience to develop informed opinions about the future.

Joining the Institute is a way to give back to the profession of fishery science. Our Past President, Dick Beamish (2008-2011) stated *All of us were helped along the way by colleagues who wanted to protect fish and manage fisheries. Membership in AIFRB will help give back to our profession.* If you are a Professor or a Supervisory Professional Scientist, I hope that you will consider introducing your students/staff/colleagues to AIFRB and its events. Many students have been recipients of Research Awards and Young Professionals have received substantial awards for their original work and showing promise for excellence as career scientists. They all have the opportunity to rub shoulders with agency, academic and professional fishery scientists in District-specific meetings, major AIFRB symposia, as well as annual symposia supported and moderated by AIFRB at other professional societies. Our next AIFRB symposium, *Balancing Conservation and Utilization to Sustain Fisheries*, is currently being planned by AIFRB BOC members Steve Cadrin, Sean Lucey, and Cate O'Keefe for presentation at the upcoming 145th AFS national meeting in Portland, Oregon. More information on the symposium is available on our website as well as our LinkedIn group (and join it!).

In my first President's Message, I described how I have been influenced by several Past Presidents of the Institute. I neglected to say that in addition to our Past Presidents, there are a handful of dedicated AIFRB officers that are the heartbeat of this Institute, beginning with our Treasurer, Allen Shimada. Allen, a NOAA Fishery Scientist (and Fellow of the Institute) has a most interesting job, managing fleet allocation, ship time access and schedule for NMFS scientists among NOAA's fleet of fisheries survey vessels. Allen has been our treasurer since 1999, and his dedication has truly kept the Institute afloat. I often ask myself where AIFRB would be without Allen's efforts. But I also wonder where NOAA would be without his efforts! NOAA's most recent Fishery Survey Vessel, the 208 ft. Bell M. Shimada, is named for Allen's father, a pioneering fisheries scientist who studied tunas and oceanography as it relates to their distribution and abundance, as a scientist with the Honolulu Laboratory of Pacific Ocean Fisheries Investigations (POFI) and then, the Inter-American Tropical Tuna Commission (IATTC). My most sincere thanks to Allen for all that he does for the Institute.

Our dedication to students and professionals is strong. Although our current distribution of Districts may not adequately cover the needs and desires of our international membership, we strongly encourage members to reach out and perhaps start a District in your particular area. We promise to provide both mentoring and monetary support necessary for success. There are currently young Districts in development (such as in British Columbia by Brittany Jenewein, btjenewein@gmail.com) as well as District rebirth in the case of older Districts (as is occurring in Seattle). Please send me an email if I can be of any assistance in pursuit of District development, membership questions, involvement in upcoming symposia, or anything else!

Tom Keegan
Thomas.keegan@aecom.com

Research

Fishing and marine food webs

A prominent fisheries paper "Fishing down marine food webs" by Daniel Pauly proposed that humans first targeted and depleted top predators in the oceans, before successively depleting groups lower and lower in marine food webs. Together with a SAFS graduate student, Suresh Sethi, I examined whether top predators are more valuable than species low in marine food webs, finding that there is no correlation between trophic level (position in the food web) and fish prices, and that the pattern of global fishery development showed that profits were more important than predators. In other words, development started with large, easily accessible fisheries with high unit prices.

In more recent work I have led a study looking at ecosystem models, catches, trawl surveys, and stock assessments to assess whether mean trophic levels are a good measure of the effects of fishing of marine food webs and biodiversity. Interestingly, mean trophic levels are no longer declining in catches, nor are they declining in trawl surveys and stock assessments. Furthermore, mean trophic levels in catches are frequently negatively correlated with mean trophic levels in ecosystems, suggesting that this metric is a poor measure of changes in ecosystem biodiversity.

Selected publications

- Sethi, S. A. et al. 2010. Fishery development patterns are driven by profit but not trophic level. *Proceedings of the National Academy of Sciences U.S.A.*107:12163-12167.
- Branch, T.A., R. Watson, E.A. Fulton, S. Jennings, C.R. McGilliard, G.T. Pablico, D. Ricard, & S.R. Tracey. 2010. The trophic fingerprint of marine fisheries. *Nature* 468:431-435.

Status and trends in global fisheries

There has been some recent debate over the current status and trends in global fisheries, with views ranging from pessimism to optimism. I worked as part of a collaborative group combining conservationists, ecologists and fisheries scientists to compile and examine databases of ecosystem models, catches, trawl surveys, and stock assessments. We found that about two-thirds of fisheries are depleted below levels that would maximize yield, but that in five of ten well studied regions, exploitation rates have declined to levels that should promote rebuilding.

Selected publications

- Hilborn, R. et al. 2003. State of the world's fisheries. *Annual Review of Environment and Resources* 28:359-399.
- Worm, B. et al. 2009. Rebuilding global fisheries. *Science* 325:578-585.

Effects of individual transferable quota (catch share) fisheries

Catch share fisheries divide up an allowable quota among individuals, instead of having them fish as hard as they can to see who can grab the largest share of a limited quota. The idea is simple: allow each quota owner to fish when they want, and to sell or lease their quota to others. While catch share fisheries promote economic efficiency and have many benefits, they also can result in sore losers along with the wealthy winners. I have examined several effects of catch share fisheries, discovering that they may reduce discards in multispecies fisheries, and predicting the effects of catch shares if implemented in the U.S. west coast groundfish trawl fishery. Little work has been done on the overall ecological effect of catch share fisheries; I reviewed existing reports and found that target species are often positively affected but catch shares have mixed or unknown effects on non-target species and ecosystems as a whole.

Selected publications

- Branch, T. A. 2009. How do individual transferable quotas affect marine ecosystems? Fish and Fisheries 10:39-57.
- Branch, T. A. et al. 2006. Replacing trip limits with individual transferable quotas: implications for discarding. Marine Policy 30:281-292.

Fleet dynamics and fishing behavior

All fisheries regulations are aimed at changing fishing behavior in the most desirable direction, yet the study of human behavior, fleet dynamics and incentives remains a wide open field. I reviewed this field in 2006, pointing out areas where research has been conducted, and what remains to be done. Much of my research on the effects of individual transferable quotas (catch shares) can also be classed under fishing behavior, including an examination of how catch shares act as finely tuned incentives in multispecies fisheries for the targeting of species with relatively high quotas and the avoidance of species with relatively low quotas.

Selected publications

- Branch, T. A. et al. 2006. Fleet dynamics and fishermen behavior: lessons for fisheries managers. *Canadian Journal of Fisheries and Aquatic Sciences*63:1647-1668.
- Branch, T. A., and R. Hilborn. 2008. Matching catches to quotas in a multispecies trawl fishery: targeting and avoidance behavior under individual transferable quotas. *Canadian Journal of Fisheries and Aquatic Sciences* 65:1435-1446.

Trends and abundance of large whale populations

It takes a lot of vessel time to survey spread out whale populations, but I used survey data from the Antarctic to estimate the population sizes of blue, humpback, fin, killer, and minke whale populations in the Southern Hemisphere. Initial results for Antarctic minke whales showed a surprising >50% reduction in their numbers, spawning a concerted effort

by the International Whaling Commission to improve abundance estimation methods and to understand possible causes of the decrease in the abundance estimates. For Antarctic blue whales, once by far the most abundant of all blue whale populations, I used a Bayesian model fitted to all available data to show that huge declines caused by legal and illegal whaling reduced the population to just 0.15% of its former size, but newer abundance estimates provide the first evidence that they are recovering, although they are at about 1% of their original numbers.

Selected publications

- Branch, T. A. 2007. Abundance of Antarctic blue whales south of 60°S from three complete circumpolar sets of surveys. *Journal of Cetacean Research and Management* 9:253-262.
  Branch, T. A., and D. S. Butterworth. 2001. Southern Hemisphere minke whales: standardised abundance estimates from the 1978/79 to 1997/98 IDCR/SOWER surveys. *Journal of Cetacean Research and Management* 3:143-174.
- Branch, T. A., K. Matsuoka, and T. Miyashita. 2004. Evidence for increases in Antarctic blue whales based on Bayesian modelling. *Marine Mammal Science* 20:726-754.

Blue whale distribution, densities and movements

To understand the relation between different groups of blue whales in the Southern Hemisphere and northern Indian Ocean, I headed a group that compiled all known catches, sightings, acoustic records, and strandings of blue whales. The results outline areas where blue whales are both present and absent (central oceanic gyres) and suggest new migratory corridors linking Indonesia with southern and western Australia. Additional work looking at long-forgotten ovarian data, including some in logbooks from illegal Soviet whaling, provided good evidence of a separation between two recognized subspecies: Antarctic blue whales and pygmy blue whales. Further evidence from Bayesian mixture models fitted to length records of pregnant females caught during whaling operations suggested that south-east Pacific blue whales may belong to a third, as-yet unrecognized subspecies.

Selected publications

- Branch, T. A. et al. 2007a. Past and present distribution, densities and movements of blue whales Balaenoptera musculus in the Southern Hemisphere and northern Indian Ocean. *Mammal Review* 37:116-175.
- Branch, T. A. et al. 2007b. Separating southern blue whale subspecies based on length frequencies of sexually mature females. *Marine Mammal Science*23:803-833.
- Branch, T. A. et al. 2009. Separating pygmy and Antarctic blue whales using long-forgotten ovarian data. *Marine Mammal Science* 25:833-854.

Major Awards

Outstanding Researcher Award for the College of the Environment, University of Washington, 2013. For "research or scholarshipcontributed within the past two years that has been or has thepotential to be widely recognized by peers and whose achievements have had or may have a substantial impact of the profession, on research or the performance of others, or on society as a whole."

Leopold Leadership Fellow, 2013, training mid-career researchers in "translating their knowledge to action and for catalyzing change to address the world's most pressing environmental and sustainability challenges."

Carl R. Sullivan Fishery Conservation Award, 2012, American Fisheries Society, for the Alaska Salmon Program. I was a research scientist working in the Program for four years.

Ecological Society of America 2011 Sustainability Science Award for the paper Worm et al. (2009) "Rebuilding Global Fisheries" published in Science. Awarded "for the peer reviewed paper published in the past five years that makes the greatest contribution to the emerging science of ecosystem and regional sustainability through the integration of ecological and social sciences."

Young Investigator Award, 2004. Best oral presentation at the Fifth William R. and Lenore Mote Symposium.

Graduate Faculty Merit Award, PhD, 2004. For outstanding efforts by students who have achieved high scholastic standing, School of Aquatic and Fishery Sciences, University of Washington.

Credit: Washington.edu

One of AIFRB's Newest Members Wins the Bob Bittner Memorial Scholarship

(and on the Heels of Winning the DVFF-Bob Wisecarver Scholarship)

New AIFRB member Anna Steel won the 2014 Bob Bittner Memorial Scholarship with her presentation entitled "Flows, Food and Fish." Ms. Steel's research focuses on how seasonal disturbances to Mediterranean (mainly California) streams causes changes to the invertebrate communities upon which aquatic food webs are built. In other words, to what extent do high or low winter stream flows affect the amount and location of insects that trout and other fish need to survive? For instance, do high flows dislocate the rocks that protect insects before they hatch. The size of flows can impact the vulnerability of invertebrate communities to fish predators. By gaining a better understanding of how winter flows affect the "fish-food" in streams, decision makers can improve the seasonal stream flows to encourage food-rich habitats that can support thriving recreational fisheries.

Anna Steel is pursuing a Ph. D in fisheries ecology at UC Davis.

Credit: www.cffu.org/CFFU/Scholarship.html

2012 Recipient of the DVFF-Bob Wisecarver Scholarship: Anna Steel

The 2012 recipient of DVFF's Bob Wisecarver Scholarship was Anna Steel, a graduate student at UC Davis. The selection was made by the UC Davis Center for Aquatic Biology and Aquaculture from several candidates. Anna tells us a little about herself and her research:

"I am currently wrapping up my fourth year as a graduate student in the Ecology program at University of California, Davis and would like to sincerely thank you for the scholarship and your support of my research. My work focuses on the habitat use and behavior of the largemouth bass in the California Delta. As a sport fish, the largemouth provides valuable recreation opportunities and has significant effects on local and regional economies through the hundreds of tournaments held each year. In addition, we expect that the voracious bass is an influential character in its own community, yet we do not know how it interacts with other species and

with the Delta environments. My dissertation research uses acoustic telemetry techniques to explore how bass use their habitat, with a focus on the introduced and expanding regions of aquatic vegetation. I'm also considering what environmental parameters (time of day, tidal cycle, etc) impact the fish's activity levels and forays between vegetated and open-water habitats. The results of my study will be combined with work by my colleagues on the diet, distribution, and population structure to create a conceptual model of the interactions of largemouth bass in the Delta. Ultimately, our goal is to help managers predict how the bass will respond to various management strategies, such as altered flow patterns, restored wetlands, and the removal of invasive vegetation.

continued on next page

Member Spotlight

AIFRB Member: Natasha Gownaris

by Sarah.GF • February 2015

Natasha Gownaris is a PhD student entering her third year at SoMAS in the Institute for Ocean Conservation Science (IOCS). Recently, Natasha received a National Geographic Society Young Explorer's Grant, awarded through the Society's Committee for Research and Exploration for her proposed work in the Turkana Basin in East Africa's Rift Valley.

Previously, Natasha received a Turkana Basin Institute (TBI) Graduate Fellowship to study how planned hydroelectric development on the Omo River and climate change might impact the fisheries of Lake Turkana. TBI supports a program of inter-disciplinary scientific research working in affiliation with Stony Brook University, the National Museums of Kenya, the United States International University in Nairobi and others. TBI is a privately funded, non-profit initiative, founded by famed palaeoanthropologist and environmentalist Richard Leakey. Natasha's $45,000 fellowship will cover three years, with the funds being supplemental to that she is able to secure from other sources.Natasha Gownaris is a PhD student entering her third year at SoMAS in the Institute for Ocean Conservation Science (IOCS). Recently, Natasha received a National Geographic Society Young Explorer's Grant, awarded through the Society's Committee for Research and Exploration for her proposed work in the Turkana Basin in East Africa's Rift Valley.

Lake Turkana is the largest desert, alkaline lake in the world. The lake's fishery is virtually the only sustainable source of income for people living in the region. The lake is already subject to large fluctuations in water level and the region often experiences severe drought, which may exacerbate the potential problems posed by the installation of hydroelectric power dams in the region.

Natasha works under her advisor, Dr. Ellen Pikitch, Executive Director of the IOCS. Additionally, she has

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Meet a Committee Member

AIFRB Member Biography: Cecil A. Jennings

by Sarah.GF • February 2015

Cecil Jennings serves on the AIFRB Membership Committee.

I began work at the Georgia Cooperative Fish and Wildlife Research Unit in 1994 as the Assistant Unit Leader Fisheries and have been the Unit Leader since 1997. Prior to Georgia, I was a research fisheries biologist at the U.S. Geological Survey's Upper Midwest Environmental Sciences Center from 1990 to 1994. Much of my research focuses on broad aspects of the biology, ecology, and management of imperiled fishes or fishes of economic or ecological importance and how such species or assemblages respond to habitat alterations. This work is done primarily in in rivers, reservoirs, and estuaries.

Cecil A. Jennings Ph.D.
Fishery Research Biologist and Unit Leader/Adjunct Professor
U.S. Geological Survey
Georgia Cooperative Fish and Wildlife Research Unit
Warnell School of Forestry and Natural Resources
University of Georgia, Athens, GA 30605

One of AIFRB's Newest Members Wins the Bob Bittner Memorial Scholarship continued...

The Delta of the future may look quite different than it does now, so a clearer understanding of behavior and habitat use will be important for successful and long-term management of the largemouth bass.

When I'm not bass fishing in the Delta I can be found hiking in the Sierras, enjoying the beautiful upper Sacramento River, or gardening with my puppy my by side. Again, thank you so much for the scholarship – it will allow me to complete my data collection this summer and share my results with managers and other scientists. I'd be happy to talk further with anyone interested in my work – Ted Shapas has my contact information."

The DVFF-Bob Wisecarver Scholarship
Scholarship Background

With an increased membership and an improved fiscal picture DVFF made a very big move in 2007 by establishing an annual $2,000 scholarship fund for research in Fisheries Biology and/or Riparian or Limnetic Ecology. The scholarship will go to a selected student of the UC Davis College of Agriculture and Environmental Sciences, Center of Aquatic Biology and Aquaculture (CABA).

The scholarship is named in Bob Wisecarver's honor to recognize his long-standing leadership and contributions to DVFF, and his dedication to fly fishing and the environment. Some pertinent facts and tidbits about Bob fully substantiate his being chosen for this honor:

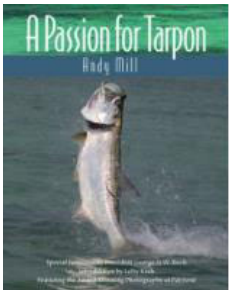
- When DVFF was formed in September of 1968, Bob became the club's first President and member serving through 1972.
- In the following years he served as Treasurer, Director and Windknots Editor.
- Under his leadership DVFF instituted fly tying and rod building classes, casting instruction, informative monthly programs and the Windknots.
- Bob continued to be a great contributor, and was always of the club's premier fly-casting instructors.

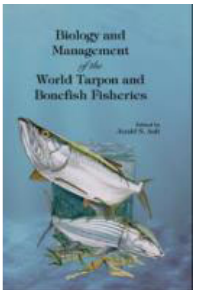
UC Davis was chosen after the Board of Directors made a concerted search and evaluation of potential universities in northern California. It became very clear after our Jan 30, 2008 visit by Board members to UCD that we truly had picked a world-class research organization. DVFF's scholarship program is currently being administered by Professor Raul H. Piedrahita, Ph.D. – Director, Center for Aquatic Biology and Aquaculture. UCD has a number of professors who lead the field in fisheries research, including Professor Peter Moyle, Ph.D. – Associate Director, Watershed Sciences. Dr. Moyle is the current "go to" fisheries technical expert on the Delta.

AIFRB Member Biography: Jerald S. Ault

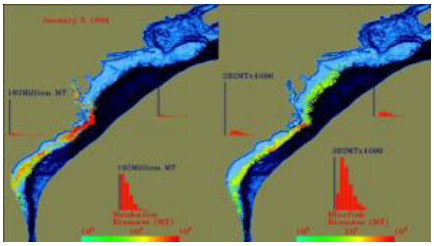
by Sarah.GF · February 2015

Jerald S. Ault, Ph.D., is a Professor of Marine Biology & Fisheries, and Chairman of the Tarpon & Bonefish Research Center, at the University of Miami, Florida. Ault is an internationally renowned fisheries scientist in population dynamics, statistical assessments of marine population risks, and management decision-making under uncertainty.



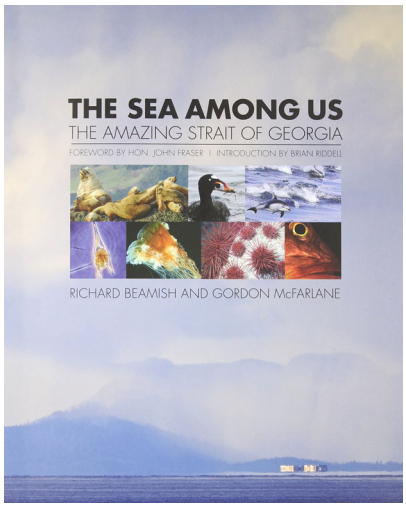


An avid sport fisherman, Jerry is also a Fellow of American Institute of Fisheries Research Biologists (AIFRB) and the American Fisheries Society. He was editor of Biology and Management of the World Tarpon and Bonefish Fisheries by CRC Taylor & Francis (2008), and coauthored A Passion for Tarpon by Wild River Press (2010).



A particularly novel aspect of his Fisheries Ecosystem Modeling and Assessment Research group (FEMAR, http://femar.rsmas.miami.edu/) entails development of dynamic large-scale coupled biological-physical ocean ecosystem simulation models to assess multispecies coral reef and coastal gamefish resource sustainability risks from exploitation and environmental changes.

Ault's fishery systems science approach is the recognized standard for coral reef ecosystems of the Florida Keys, U.S. Caribbean and tropical Pacific Ocean. Jerry has provided expert testimony to the Florida Governor & Cabinet, Hawaiian Legislature, International Council for Exploration of the Seas (Copenhagen), International Union for Conservation of Nature, and the International Scientific Committee for Tuna and Tuna-like Species in the North Pacific Ocean. He is a scientific advisor to NOAA Fisheries, the National Park Service, and the regional Fishery Management Councils of the Gulf of Mexico, South Atlantic, Caribbean and Western Pacific. His research has been featured on CBS Evening News with Dan Rather, Good Morning America, NBC News with Brian Williams, Today Show, National Geographic, CNN, CNBC Squawk, Animal Planet, Outdoor Life Channel, Florida Sportsman TV, PBS Waterways, BBC UK, Voice of America TV, AMHQ with Sam Champion & numerous regional TV news broadcasts; and, the Miami Herald, LA Times, London Financial Times, Chicago Tribune, Reuters International, Huffington Post and New York Times. He was named Hero of Conservation by Field & Stream Magazine (2006); and, received CCA's and Tarpon Tomorrow's Conservation Awards (2008). In 2010 he was featured on PBS's Emmy® award-winning "Changing Seas" series. He received the Captain Bob Lewis Memorial Fisheries Conservation (2010), IGFA Conservation (2011), and AIFRB Distinguished Service (2014) Awards for his body of work in marine fisheries conservation and sport fishing.



Publications

AIFRB MEMBER DICK BEAMISH reaches number 6 on the British Columbia Best Selling List for: The Sea Among Us: The Amazing Strait of Georgia

http://www.amazon.com/Sea-Among-Us-Strait-Georgia/dp/1550176838/ref=sr_1_1?s=books&ie=UTF8&qid=1418310795&sr=1-1

by **Richard Beamish** (Editor), Gordon McFarlane (Editor)

The Strait of Georgia is a one of the world's great inland seas, a 6,900 sq km body of water lying between the British Columbia mainland and Vancouver Island. Rich in history, teeming with wildlife and marine traffic, it is essential to British Columbians for food, jobs, travel and recreation. The sheltered waters of the strait are home to Canada's largest seaport and over two-thirds of the province's population.

Symposia in Portland

2015 American Fisheries Society Annual Meeting: Joint AFS/AIFRB Symposium

by Sarah.GF • February 2015

Meeting Dates: August 16-20, 2015 in Portland, Oregon

Balancing Conservation and Utilization to Sustain Fisheries

Conveners: Cate O'Keefe, Sean Lucey, Steve Cadrin

School for Marine Science & Technology, University of Massachusetts – Dartmouth

Description: The challenge of managing fisheries is achieving sustainability, not only ecologically, but also economically and socially. Striking a balance among these components of sustainability is even more difficult given ever changing environmental conditions and evolving societal preferences. While fisheries management in North America has been generally effective for avoiding overfishing and has had some successes in rebuilding fisheries there is still debate over conservation and utilization of fishery resources. The demand for seafood in North America has increased, but most seafood products are currently imported, largely as a result of restrictions to North American domestic fisheries. In addition, recreational fishing is a booming industry that needs to be managed in coordination with commercial fisheries, but usually with different objectives and approaches. As human populations continue to increase, particularly in coastal communities, working waterfronts are being out-competed, and some fishing grounds are threatened by other human uses. To address the tradeoffs between conservation and utilization, ecosystem approaches to fisheries management are being developed. This symposium invites fisheries scientists in all relevant disciplines to lend their perspectives on achieving sustainability.

Related themes include:

- Current state of fisheries resources in AFS regions and around the world
- Changing perspectives on utilization of wild fishery resources
- Food production vs. environmental conservation
- Economic viability of fishing industries vs. overfishing
- How to balance natural resource utilization with natural resource conservation
- Tradeoffs to conservation or resource utilization (single species management, marine mammals, top predators, trophic impacts)
- Historic and future perspectives: where have we been, where are we going?

Dutch Harbor, Alaska

Photo Credit: Alyssa Pourmonir, NOAA

NMFS Office of Science and Technology
Meeting Dates: August 16-20,2015 in Portland, Oregon

Staff (and AIFRB Members K. Blackhart and P. Lynch) are organizing several symposia at upcoming conferences for which we are soliciting abstracts and presentations. We are excited to have the opportunity to further explore these topics, and ask that you consider contributing abstracts to the sessions listed below. Please also share this information with colleagues who may be interested.

Session Title: The Habitat Science Needed for Effective Ecosystem Based Fisheries Management (EBFM)

Organizers: Kirsten Larsen, Kristan Blackhart, and Tony Marshak

Description: Ecosystem-Based Fisheries Management (EBFM) is a comprehensive approach to the management of fisheries sector living marine resources. In contrast to single-species or single-issue management, EBFM considers a wider range of relevant ecological, environmental, and human factors affecting societal choices regarding resource use. Inclusive in EBFM is the requirement of managers to consider the complex interactions between fishes and their dependent habitats, and the effects of fishing upon habitat and fish stocks. There are ever-increasing demands being placed on marine habitats across many sectors of the U.S. economy, but the role of marine habitats in supporting fishery production and in providing other critical ecosystem services is not always well known. Although the importance of habitat is widely recognized, the ability to model, assess, and anticipate changes in resource productivity resulting from habitat alteration, habitat loss, and habitat restoration is still in its early stages. In order to best manage national living marine resources, achieve sustainable fisheries, and meet the mandates of the Magnuson-Stevens Act, it is imperative to continue investigating the relationships between fisheries species and their habitats. Advances in habitat science can provide essential information to resource managers on the current status and future trends of marine habitats that are utilized by living marine resources throughout their life histories. Included in this symposium will be presentations on habitat science and assessments that increase the information available for fisheries managers to make better-informed decisions. It is expected that topics will range from habitat research that can be incorporated into stock assessments to studies promoting an increased understanding of habitat use by fisheries species, which can result in more effective designation of essential fish habitat. Increased habitat science can provide essential information to resource managers on the current status and future trends of habitats that are utilized by fisheries resources.

Session Title: Incorporating Ecosystem Dynamics in Fishery Stock Assessment and Management: Progress and Challenges

Chair: Patrick Lynch

Description: The fundamental goals of fisheries management are to prevent overfishing and optimize fishing opportunity over the long term. This long-term view infers that management measures should be responsive to fluctuations or shifts in any relevant ecosystem variables. Managers rely on stock assessments to estimate stock status and sustainable harvest levels. However, most stock assessment models are constructed without calibrating to dynamics in the ecosystem and often assume that many essential parameters that determine stock dynamics are either stable or vary according to a random process. For many stocks, this stationarity assumption is challenged by dynamics such as climate change, ecosystem cycles, and regime shifts. Yet, while there are well-established connections between stock productivity and various ecosystem attributes, numerous studies have demonstrated that including ecosystem variables in the stock assessment often does not improve the ability to achieve management goals. This presents a challenge to fishery management in determining how to account for major ecosystem oscillations, regime shifts, altered trophic structure, or climate change. The purpose of this symposium is to stimulate discussion on how to best incorporate environmental information in the fishery management process so as to be responsive to major ecosystem shifts and fluctuations. The symposium will include theoretical papers demonstrating novel concepts, relevant case studies, as well as syntheses of techniques and lessons learned.

Session Title: Space Oddity: Recent Advances Incorporating Spatial Processes in the Fishery Stock Assessment and Management Interface

Organizers: Aaron Berger, Patrick Lynch, and Daniel Goethel

Description: Population processes occur at various spatio-temporal dimensions, yet fishery stock assessment and management is typically conducted at an aggregate stock-level spatial resolution. However, recent technological advances related to fishery monitoring, animal tracking, and geostatistical analyses have resulted in an improved understanding of the influence of spatial patterning and

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NMFS Office of Science and Technology continued...

processes on fish population dynamics. Consequently, spatial management measures are increasingly being explored in response to heterogeneous fishing patterns and local stock depletion. However, moving from spatially-aggregated to spatially-explicit policies can cause non-intuitive results due to complex population structure at both local and regional scales (e.g., caused by multiscalar metapopulation dynamics). Because the ability to match the spatial scales of biological processes, assessment outputs, and management policies (including the calculation of biological reference points) is critical to achieving sustainable fisheries, a flurry of spatial modelling techniques have recently been developed, setting forth a path to improved spatial management. The objective of this symposium is to facilitate a forum for expert discussion and collaborative interaction on contemporary spatial applications in fisheries, particularly those that can be directly incorporated into spatial population dynamics models or management strategies. Given the complex and multidimensional nature of fisheries management, the symposium will host participants from diverse backgrounds and expertise such as stock assessment, tagging, reference point calculation, and decision analysis tools including simulation testing and management strategy evaluation. The symposium is considered a natural progression of the well-attended AFS2014 theme session on "The Next Generation of Fish Stock Assessments", with a refined focus on spatial considerations for assessment and management. It is expected that this session will be of broad interest to AFS members and participants who are interested in the spatial components of ecology, statistics, modeling, and resource management.

Coastal Estuarine Research Federation (CERF) Biannual Meeting

Session Title: Coastal habitat connections to offshore fisheries productivity

by Sarah.GF • February 2015

Meeting Dates: August 16-20, 2015 in Portland, Oregon

Coastal Estuarine Research Federation (CERF) Biannual Meeting

Meeting Dates: November 8-12, 2015 in Portland, Oregon

Session Title: Coastal habitat connections to offshore fisheries productivity
Conveners: Kristan Blackhart, Terra Lederhouse
Description: Many managed fishery stocks spend a majority of their life history in offshore waters, but rely on coastal habitats for spawning, rearing, and/or prey production. For these species, the ecosystem services provided by coastal areas are critical to maintaining sustainable populations. Although anthropogenic activities are not limited to nearshore areas, human disturbance is often disproportionately concentrated in coastal habitats due to the pressures of dense coastal populations and nearshore development. It is poorly understood how this kind of disturbance may impact the health and productivity of offshore populations, and in general there is a

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CERF Biannual Meeting continued...

lack of information quantifying the linkages between coastal and offshore ecosystems. Resource managers in particular need better data and tools to evaluate the physical and biological connections between coastal and offshore ecosystems. Research investigating these linkages is important to provide managers with a sound scientific basis for resource management decisions.

While traditional stock assessments provide information on the abundance and harvest of offshore adult populations of fishery stocks, they in general are not able to provide details on the nearshore or early life history stages. Within NOAA Fisheries, improving our understanding of the contributions of coastal habitats to offshore populations has been identified as a high priority science activity in support of mandated management responsibilities. A number of scientists within NOAA, as well as partner agencies and institutions, are currently working towards this goal in the United States, in addition to scientists asking similar questions around the world. In this session, we welcome abstracts related to projects that aim to quantify and improve understanding of the relationships between coastal ecosystems and offshore fishery populations and apply that information to fisheries and habitat management. This includes (but is not necessarily limited to) projects investigating the specific topics listed below:

- The effect of anthropogenic impacts to coastal habitats on offshore fishery populations
- Habitat-related bottlenecks for offshore fishery stocks
- The value of ecosystems services provided by coastal ecosystems to living marine resources
- Cumulative impacts on fisheries species of small-footprint projects in coastal habitats
- The effects of climate change on the connections between coastal and offshore fishery ecosystems
- The benefits offered by coastal habitat restoration activities to fishery species
- Management objectives for coastal habitats to maximize fisheries production
- Effectiveness measures for habitat management actions on fisheries productivity

Member Spotlight: Natash Gownaris continued...

established a close collaboration with Dr. William Oweke Ojwang, senior research officer at the Kenya Marine and Fisheries Research Institute, which maintains a research station on Lake Turkana. Natasha's research consists of both field and lab studies to understand trophic relationships within the lake's ecosystem, the movement patterns of fish, especially Nile tilapia (Oreochromis niloticus), within the lake, and the tolerance of lake fishes to changing water quality. The new NGS Young Explorer's Grant will help fund Natasha for the Nile tilapia movement component of her research, specifically through acoustic tagging.

What made you choose SoMAS for your graduate studies? I was drawn to SoMAS because I heard that it was a great marine science program and I was very interested in the way Dr. Pikitch (and IOCS in general) combined science and outreach. I also thought that the students and faculty were very engaging when I visited for prospective student's weekend.

What is it like traveling to do a significant portion of your research? My first trip to Kenya will not be until December, but I can say that preparing for international research has been a very interesting, though time-consuming, learning process. I have particularly enjoyed forming international collaborations and look forward to strengthening these collaborations during my visits to the lake.

What is your favorite thing about the Turkana Basin? Although I have yet to visit, I became interested in Lake Turkana because of the many important but unanswered ecological questions. The last major ecological study on the lake was conducted over 35 years ago, and I'm very excited about applying tools that have been developed since that time to this ecosystem. I also think it is a great system for studying the relationship between the health of ecological and social systems and the combined impacts of local and global anthropogenic impacts (e.g. hydroelectric power development and climate change).

I imagine you have tried Nile tilapia. Favorite recipe? I actually haven't- I don't like fish! I'm sure I will learn to while in Kenya, though.

Credit: Stonybrook.edu

Northeast Meet and Greet

A successful joint dinner and discussion was held at Roberto's Italian restaurant in Bristol, Rhode Island on Wednesday, March 13. After much talking and networking over the cocktail hour and dinner, an invigorating discussion about balancing utilization and conservation in fisheries management was led by Dr. Cate O'Keefe of the University of Massachusetts Dartmouth School for Marine Science and Technology and Sean Lucey of the Northeast Fisheries Science Center. Topics included the influence of Eco-labeling in fisheries management and if the role of state and federal agencies is to conserve fish populations or optimize fisheries. Similar topics will be presented and discussed at the AIFRB/AFS symposium at the 2015 AFS annual meeting. Approximately twenty scientists from six different organizations attended the event. A special thanks to the Southern New England chapter of AFS, which provided $150 to support the event.

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