American Institute of Fishery Research Biologists
Promoting excellence in fishery science

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President's Message

The AIFRB Science & Sustainability Forum in Arlington VA was a great success thanks to Brian Rothschild, Dick Beamish, Thor Lassen, Ocean Trust and the other sponsors for organizing a thought-provoking and productive event. The focus was on the definition and use of the term '***sustainability***' which is value-laden and has an important influence on how the general public views fisheries and seafood. Unfortunately, the term is often inappropriately applied, and misunderstanding exists among scientists as well as non-scientists. A frequent confusion is the indirect link between sustainability and 'overfishing' status. The formative debates in fisheries science in which Huxley questioned exhaustibility, Russell defined dynamic overfishing, and Graham conceived of maximum equilibrium yield suggest that fish populations should be able to sustain a wide range of harvest rates. Decades or even centuries of fishery production from heavily exploited resources demonstrate that fish populations are resilient, and overfishing can be sustainable – even though it fails to achieve other societal objectives. Within the important constraints of avoiding threat of extinction or recruitment failure, many alternative management options that reflect different views of optimum yield are sustainable. Another aspect of the sustainability debate is to recognize that most developed countries and international organizations have responsible fishery management systems that intend to regulate sustainable fisheries. Sustainability may be most threatened by unregulated, unreported or illegal fishing. Limiting the use of the term to truly unsustainable fishing practices may help to avoid confusion among scientists, and to send a consistent message to stakeholders and fish consumers.

Steve Cadrin

AIFRB New England District and AFS Southern New England Chapter Meet Over Dinner

The NE District held a joint dinner meeting with members of the AFS Southern New England Chapter at the United Fisherman's Club in New Bedford, MA, January 10, 2012. Thirty current and retired professionals from academic, state, and federal fishery organizations and graduate students from local universities came to meet new colleagues, renew old friendships, and form professional connections. Great Portuguese food, ample beverages and interesting conversations made for a wonderful atmosphere. After dinner, Dr. Ken Oliveira of the Department of Biology at the University of Massachusetts-Dartmouth presented an informative talk about the reproductive biology of American eels. He reviewed the life history of American eels and the gaps in our knowledge, hypotheses concerning the decline in abundance along the eastern North America coast, his efforts to spawn eels in the laboratory, and his on-going work on the maternal transfer of toxins to eggs and larvae. Dr. Oliveira's enthusiasm for American eels made listening and learning a pleasure. Another dinner is planned for early fall. Interested NE District members should contact Gary.Nelson@state.ma.us (voice: 978-282-0308 x114).

Founders Biographies on line at AIFRB.ORG

The American Institute of Fishery Research Biologists (AIFRB) is a professional organization established in 1956 to promote conservation and proper utilization of fishery resources through the use of fishery and related sciences. The role of the AIFRB is the professional development and performance of its members, and the recognition of their achievements. All of its 26 founding members (henceforth called "Founding Fellows" because they were all eventually promoted to fellows) are now deceased. The Founding Fellows, by establishing an organization with high standards for admission and for conduct, performed an important service for the profession. Biographies of the 26 Founding Fellows are presented on the AIFRB web site to recognize their contributions to fishery science.

The biographies were assembled from many sources, including obituaries in the AIFRB Briefs, newspapers, and scientific journals and from personal communications with family members and colleagues of the Founding Members. There are abbreviated biographies of nearly all the Founding Fellows in various editions of American Men and Women of Science, and these, since they are based on information supplied by the Founding Fellows, were highly useful for supplying missing information and

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checking dates and locations. In addition to the biographies, there are "remembrances," written by associates of some of the Founding Fellows. The biographies vary greatly in length because there was considerable variation in the amounts of information that were available for different Founding Fellows.

Because the biographies were assembled from various sources, and even those that were almost entirely from single sources were edited to some extent for various reasons, none of them is attributed to an author. However, there is a short list of references at the end of each biography that lists the sources of information for that biography (other than American Men and Women of Science). The remembrances, however, for obvious reasons are attributed to specific authors.

One biography will be printed in each issue of the Briefs. The first two will be those of Dr. William F. Thompson and Mr. Clinton E. Atkinson because they performed the work that was necessary for the establishment of the AIFRB as a nonprofit organization.

The biographies are far from perfect. Readers who find errors or omissions are urged to communicate with Dr. William Bayliff (WBayliff@iattc.org). Additional remembrances are particularly welcome, as these add flavor to biographies that might seem dull to some readers. Some of the biographies state that the subject had written many important papers, but do not give any further information about any of the papers. Specific information about those papers would also be welcome.

Clinton E. Atkinson

Clint Atkinson was born in Boise, Idaho, on November 5, 1913. He had a life-long interest in fish, both catching and rearing them. During his teenage years in Boise, he raised fish in tanks at his parents' home. Clint earned his B.S. degree at the University of Washington School of Fisheries in 1937. Much later, in 1964, he earned his M.S. degree at the same institution (then called the College of Fisheries).

He had a long and distinguished career in fisheries. He worked for the International Pacific Salmon Fisheries Commission (IPSFC) from 1938 to 1948. Research was conducted during that period at Hell's Gate on the Fraser River, where an obstruction that impeded the upstream migration of sockeye salmon eventually led to the construction of a fish ladder there. Clint left the IPSFC in 1948 to become Chief of the U.S. Fish and Wildlife Service (FWS) Middle and South Atlantic Fishery Investigations at Beaufort, North Carolina. The work during this period involved shad and other regional fisheries. He left Beaufort in 1952 to accept a position as Chief of the Pacific Salmon Investigations of U.S. FWS, which later became the U.S. Bureau of Commercial Fisheries (BCF).

During the 1940s and early 1950s, the School of Fisheries of the University of Washington and the International Fisheries Commission (later the International Pacific Halibut Commission) were housed in the same group of buildings on the University of Washington campus. Clint frequently joined Dr. William F. Thompson, Harry Dunlop, Heward Bell, and others for coffee at the Halibut Commission. One of the things that they discussed was the professional standing of fishery biologists, and these discussions eventually led to the formation of the American Institute of Fishery Research Biologists.

Clint was Director of the U.S. BCF Biological Laboratory in Seattle from 1957 to 1965. Its research during that period was directed mainly at high-seas distribution of salmon and at various problems associated with the International North Pacific Fisheries Commission.

Clint served as Regional Fisheries Attaché at the American Embassy in Tokyo, Japan, from 1966 to 1973. His work there involved collecting information and reporting on developments in the high-seas fisheries and initiating steps to avoid conflicts between the United States and East Asian and Pacific Island countries.

He retired formally in 1973, but he continued his fisheries activities as a consultant and advisor from 1974 to 2002. There was a broad scope to this phase of his work, including various aspects of biology and economics. He maintained a data bank of Japanese market statistics and related information. In 1978, he joined the faculty at the University of Washington, where he taught an upper division course in fisheries of the world. Between 1980 and 2003, Clint was a Visiting Scholar at the University of Washington.

During Clint's long and distinguished career, he received numerous awards. He received two Unit Meritorious awards for research on salmon and shad from the U.S. government. Japan granted him three citations for his contributions on salmon conservation and propagation. The Republic of Korea gave him a citation for his leadership in reestablishment of salmon runs in that nation. Clint was a Founding Fellow of the American Institute of Fishery Research Biologists. He was a member of the AIFRB Executive Committee, and received its Distinguished Service Award in 1999. He was also a Fellow of the International Institute of Fishery Economics and Trade.

Clint's publications, produced over a period of more than 60 years, cover a wide range of topics, including biology, economics, aquaculture, and allocation of high-seas fisheries resources. During his retirement years, he was active in the local fishing industry in the United States, and was instrumental in helping several young companies get started in and stay connected with international marketing of their products.

Overall, Clint made things happen. He enhanced careers, programs, and people's lives. Family, friends, and professional associates were all better for their proximity to Clint. He was both a consummate professional and an admirable human being. His help to graduate students, fishermen, colleagues, and especially to an army of close friends and family set a standard we can all aspire to attain.

Clint died in Seattle, Washington, on May 14, 2007, at the age of 93.

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William F. Thompson

William Francis Thompson was a major figure in fisheries research on the west coast of the United States during the early and mid-20th century. He came to prominence in an era of increased awareness in the United States of the need for conservation of wildlife, and for over 50 years he was a major contributor to fishery science and management and to fishery education. During this period, Thompson was possibly the most widely-known fishery scientist in North America.

Born in St. Cloud, Minnesota, on April 3, 1888, Will Thompson moved west with his family to Everett, Washington, in 1903. He demonstrated an early interest in natural history, and majored in zoology at the University of Washington in Seattle from 1906 to1909. David Starr Jordan, President of Stanford University in Palo Alto, California, learned of Thompson's drive and dedication, and offered him a scholarship in 1909. Thompson transferred to Stanford University, where he became a research assistant to Jordan. Thompson graduated with a B.A. degree in zoology in 1911. He published 10 papers on the taxonomy of marine fishes during 1910-1914, mostly as a junior author with Jordan.

Pursuing graduate work at Stanford in the fall of 1911, Thompson came under the influence of Charles Henry Gilbert a zoology professor and eminent early fishery biologist. Gilbert thought highly of Thompson, and arranged jobs for him during the summers, first with the California Fish and Game Commission (1911) and then with the British Columbia Provincial Fisheries Department (1912 and 1913). These assignments entailed surveys of shellfish resources.

Excelling at these studies, Thompson was then entrusted by the Provincial Fisheries Department to undertake a comprehensive, full-time investigation of the Pacific halibut in British Columbia. Thompson conducted an intensive study of this species from 1914 to 1917, and published the results in seven landmark papers.

In 1917, research on the halibut began to wind down as concern intensified in Canada over the ravages of World War I. Thompson was then hired by the California Fish and Game Commission to investigate that state's marine fisheries. While there, he helped found and direct the Commission's first marine fisheries research laboratory. Thompson focused his investigations initially on albacore, and then on Pacific sardine, as the commercial harvest of the latter species began to increase.

The International Fisheries Commission (now the International Pacific Halibut Commission) was established in 1923 by treaty between the United States and Canada to investigate and regulate the fishery for Pacific halibut. Thompson, the logical choice, was appointed Director of Investigations for the newly-formed Commission, so he left California and began his work for the IFC in Seattle in 1925. Expanding his earlier Pacific halibut studies, he engaged a small staff of scientists that undertook the applied research necessary for the scientific management of the halibut fishery. Thompson remained as Director of Investigations for the IFC until 1939. During his tenure, the abundance of halibut increased, as did the commercial harvest. The halibut fishery was eventually considered a model of a well-managed fishery.

Things did not bode well for the School of Fisheries or any other applied programs at the University of Washington in 1930. The new President of the University, Dr. Matthew L. Spencer, wanted scholarship and high academic standards. Courses in cannery and fishing methods may not have met the new President's ideas of scholarship. President Spencer notified the School of Fisheries faculty in April 1930 that the School would be disbanded the following June. All faculty members were dismissed except for Leonard P. Schultz, an ichthyologist, who was then assigned to the College of Science. This triggered protests from the students enrolled in Fisheries, and then an inquiry by the Governor. The outcome was that the University created a Department of Fisheries in the College of Science. This action allowed the fisheries students to complete their degrees in Fisheries. The creation of this new Department also signaled large changes in the direction of Fisheries at the University.

William F. Thompson was appointed Director of the School of Fisheries in 1930. This appointment was initially a part-time position, in addition to his duties at the IFC. Thompson was a very focused man, concerned with fine detail. By August 1931, he had collected his thoughts and wrote to President Spencer with recommendations for revision of the curriculum of the School. Thompson proposed to emphasize basic science and fishery biology in place of the previous emphasis on industrial fishery technology. Thompson's desire was to graduate students who were well grounded in the basic sciences and capable of teaching in them or continuing advanced work. He did not wish to graduate technicians, although he wrote Spencer that the School had an obligation to teach specialized knowledge to technicians.

The International Pacific Salmon Fisheries Commission (IPSFC) was established in 1937 to restore the sockeye salmon runs of the Fraser River in British Columbia. Thompson, by then recognized as one of the premier fishery scientists of the era, was chosen to be the director of this newly-formed organization. He initially retained his other positions as Director of the IFC and the School of Fisheries, thus holding three jobs simultaneously! Thompson followed his previous approach to fisheries research by building a small, but talented, staff of scientists and broadly attacking a wide range of research projects pertinent to the current fisheries problems. He directed research that resulted in the construction of fish ladders at Hell's Gate on the Fraser River. These ladders were built to enable salmon to bypass obstructions to their upstream migration caused by certain high water-level conditions. Thompson and the IPSFC were generally credited with restoring the abundance of salmon in the Fraser River. He resigned from the IFC in 1939 and the IPSFC in 1942 and returned to the University of Washington as the full-time Director of the School of Fisheries.

Thompson was Director of the School of Fisheries for over 17 years (1930-1947). During his tenure, the school developed into a preeminent facility to train fishery scientists, and it graduated many individuals who subsequently became prominent fishery scientists and leaders in fisheries research and administration.

After the close of World War II, the salmon packers of Bristol Bay, Alaska, became concerned about the declining abundance of salmon in Alaska. In 1945 they asked Thompson to under-take a preliminary study of the situation and to make recommendations for action. Thompson vi-sited Bristol Bay, reviewed much of the available data on the salmon fisheries of the region, and wrote

a report to the packers. He called for long-term studies of the runs to various watersheds of Bristol Bay, noting that such investigations were then lacking. The salmon packers funded an expanded investigation by Thompson in 1946 and 1947. The salmon canners of southeastern Alaska soon thereafter asked that Thompson also undertake scientific investigations in that region.

Realizing that a comprehensive investigation of salmon in Alaska would ultimately require a relatively large organization, Thompson organized the Fisheries Research Institute at the University of Washington. The university's Board of Regents approved the institute in 1947 and placed it administratively in the Graduate School and therefore distinct from the School of Fisheries. Thompson resigned the directorship of the School of Fisheries in 1947 and was named Research Professor and Director of the new institute.

Over the years, the Fisheries Research Institute undertook detailed studies of Pacific salmon in various areas of southeastern, central, and western Alaska. In the early years, this research was funded mainly by the Alaska salmon industry. Later, the federal government provided major sup-port for these studies. The Institute, well known for the high quality of its research, made major contributions over a 50-year period to knowledge of Pacific salmon biology. During the early part of this era, Thompson, who was involved in most aspects of salmon research, became recognized as an expert on salmon of Alaska and the Pacific Northwest. Thompson maintained close relations with the Alaska salmon industry that, in turn, respected and trusted him. He generally received broad support from industry and government for his research.

Thompson retired from the directorship of the Fisheries Research Institute in 1958 at the age of 70. He remained as a consultant to various fishery agencies, including the U.S. Bureau of Commercial Fisheries (now the National Marine Fisheries Service), the IPSFC, and the U.S. Army Corps of Engineers. Thompson also remained close to the salmon fishing industry as an advisor. Scientists and administrators held him in high esteem and welcomed his honest and forthright comments and criticism.

Will Thompson died on November 7, 1965, at the age of 77. He left a legacy as a preeminent fishery scientist of his era. He influenced a myriad of fishery scientists by studying the characteristics of the fisheries, rather than the environment, to develop management strategies. Thompson's work with the halibut and salmon of the Pacific Northwest and Alaska became classic, but at times controversial, studies of commercial fisheries. He published about 150 scientific papers, and was well known for his original studies of population dynamics of commercial fishes.

Under Thompson's leadership, the School of Fisheries at the University of Washington became world-renowned. He was the doctoral advisor for many of the principal scientists who carried out fishery work on the Pacific coast after World War II. He was also the major fishery researcher on the West Coast during the interlude between the two World Wars. Thompson was known as a highly-focused individual and an intense worker, who, at times, possessed a difficult personality.

Always possessing a high concern for ethics, Thompson helped found the American Institute of Fishery Research Biologists in 1956 to ensure high standards in the profession. Thompson's pioneering accomplishments remain in high esteem today.

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Dexter Frank Lall

Dexter Frank Lall passed away from a heart attack on March 29, 2011 in Las Vegas, NV while on a road trip with his wife. Son of Evan and Alma Anderson, Lall was born August 26, 1932 in Everett, WA. He was a Lake Stevens High School Graduate. He served as a radar technician for the Navy on an LST during the Korea War. In 1958, he graduated from the UW School of Fisheries. Soon after graduating, he began working as a Commercial Fisheries Biologist for the Alaska Department of Fish and Wildlife and continued there for 13 years. He retired as a Plant Manager from Peter Pan Seafoods, Inc. in 1992.

90 Nisei soldiers from the Pacific Northwest were given honors for their World War II service.

William Yasutake was a prisoner, along with his parents, when he decided to fight for the country that held them merely because they were Nisei — Japanese Americans. Other Nisei were shot in battle, charged through minefields, translated documents and performed such wartime heroics as part of the U.S. Army 100th Infantry Battalion, 442nd Regimental Combat Team, and the Military Intelligence Service that they became legendary — a fighting force sought throughout the war.

On Saturday, in a ceremony with speeches, music and other tributes, 90 Nisei soldiers from the Pacific Northwest were given honors for their World War II service. Eighteen were awarded the Bronze Star for valor and all 90 received the Congressional Gold Medal, the nation's highest civilian award. The awards came more than a year after President Obama signed legislation to collectively honor the 442nd Regimental Combat Team, the 100th Infantry Battalion, and Japanese Americans serving in the Military Intelligence Service. Sporting burgundy caps with Nisei emblems, they sat solemnly on the stage at Meany Theater at the University of Washington, some clutching canes, all now in their 80s and 90s.

The auditorium was packed with family and friends who rose for a standing ovation as Army Gen. Peter Chiarelli introduced the group, and U.S. Reps. Adam Smith, D-Tacoma, and Jim McDermott, D-Seattle, called them heroes who changed the course of history. "Most of us can't imagine the bigotry following the attack on Pearl Harbor," Chiarelli said. The Nisei "were under a heavy cloud of suspicion, yet ... they volunteered to serve not knowing if their country would accept them again."

After the Dec. 7, 1941, attack by Japan on Pearl Harbor, suddenly friends and neighbors — especially on the West Coast — considered those with Japanese ancestry as possible enemies. In the name of national security they were rounded up and imprisoned in camps. Yasutake and his family, from Seattle, were among them.

At first, Japanese Americans weren't allowed to join the military. That later changed, and some Nisei — a Japanese word meaning "second generation" — were drafted from the internment camps, while others volunteered. Yasutake was one of the volunteers. Now 89, and a Bothell resident, he speaks about the war days reluctantly. He was a medic who was wounded but still cared for others. He received two Bronze Stars for combat in Italy and France. "You don't think much of it at the time. It came naturally. You worry more about the others than you do yourself," he said after the ceremony.

Some of the veterans had already been honored in a November ceremony in Washington, D.C., but the majority had not. So Seattle's Nisei Veterans' Committee sponsored the ceremony, not just for the veterans but so the local community could be made aware of their accomplishments, said Stanley Shikuma, a committee member.

For family members, the ceremony was a moving tribute. "I'm just very proud," said Steven Chihara, who saw his grandfather, Tosh Chihara, receive a gold medal. "I had heard about the things they had to go through back then. It's hard to imagine it today."

Seattle Times

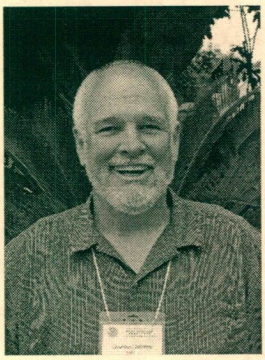
Yasutake returned to the University of Washington and graduated with a degree in zoology in 1951; he later earned his Ph.D. from the University of Tokyo. He worked as a fish pathologist at the Fish-Wildlife Service-U.S.G.S. from 1952-1988 in Seattle and retired in 1988 after working for 40 years. He is presently volunteering as a Senior Scientist Emeritus at the Western Fisheries Research Center in Seattle, WA (as of November 2007). Yasutake has written 60 papers and books about fish pathology.

Dr. Yasutake is an emeritus member of AIFRB

Church Grimes Retires

Dr. Churchill B. Grimes recently retired from the National Oceanographic Atmospheric Administration's National Marine Fisheries Service (NMFS) after a long and distinguished career in fishery research and administration. After earning his BS and MS degrees in Biology from East Carolina University, he began his career in 1970 investigating the ecological effects of steam-electric power plant effluent for the Florida Department on Natural Resources (now Florida Fish and Wildlife Research Institute) in Crystal River, FL. After earning his Ph.D. degree in Marine Science from the University of North Carolina in 1976, Dr. Grimes became Assistant Professor of Marine Fisheries at Rutgers University in New Brunswick, NJ where he attained the rank of Associate Professor. While on the faculty at Rutgers University, Dr. Grimes, colleagues and students conducted and published research on the fishery resources of the southern New England-Mid-Atlantic Bight region. Most notably, he along with colleague Ken Able with their students published extensively on the life history, habitat and behavioral ecology and fishery biology of tilefish. In so doing he, Ken Able and colleagues at Harbor Branch Foundation, NMFS Northeast Fishery Science Center and USGS Woods Hole, MA pioneered the application of manned submersibles and acoustic mapping technology to fishery research.

In 1984 Dr. Grimes accepted a position at NMFS Southeast Fishery Science Center in Panama City, FL, eventually becoming Laboratory Director, where the research mission focused on coastal pelagic and reef species in the Gulf of Mexico. He and



colleagues published extensively on the ecology and fishery biology of these important fishery species, but especially on the early life history and recruitment dynamics of fishes associated with the Mississippi River discharge plume. These studies were among the first to explore the role of the special physics and biology of the discharge environment in recruitment dynamics and attempt to understand the overall impact of the discharge plume on fishery recruitment Gulf of Mexico wide. During his tenure as Laboratory Director, an effort to close the facility was thwarted, and through addition of competent staff and relevant programs, the institution was advanced to a secure and valued position.

In 1998 Dr. Grimes relocated to Santa Cruz, CA to become founding Director of the NMFS Southwest Fishery Science Center laboratory that was being established there. In this role he oversaw the construction of the new laboratory, established strong and enduring relationships with the University of California at Santa Cruz as well as other academic and institutional partners, assembled an outstanding staff and guided the development of its scientific programs on west coast groundfish and salmon. He continued to be involved in research, in particular on the development and application of otolith microstructure and chemical techniques to identify the origins of wild and hatchery-reared salmon. He and colleagues also sought to identify and predict the relationships between salmon production and physical and biological ocean environmental factors, and identify chemical otolith markers for associating recruited juveniles with upwelling fronts.

Throughout his career Dr. Grimes was a member of many technical advisory groups and review panels, a Fellow the American Institute of Fishery Research Biologists, an active member of the American Fishery Society, a frequent reviewer of research proposals and scientific papers submitted for publication and author of over 130 scientific articles.

In retirement Dr. Grimes remains professionally active, as a senior editor of the Transactions of the American Fisheries Society and a member of the Scientific and Statistical Committee of the South Atlantic Fishery Management Council. He remains on the management board of the Pacific Ocean Shelf Tracking Project (POST) and Steering Committee of NOAA Integrated Ocean Observing System Acoustic Tracking Network.

Fishing: U.S. to limit catches of each species

In an effort to sustain commercial and recreational fishing for the next several decades, the United States will become the first country to impose catch limits for every species it manages, from Alaskan pollock to Caribbean queen conch. Although the policy has attracted scant attention outside the community of those who fish in the United States and the officials who regulate them, it marks an important shift in a pursuit that has helped define the country since its founding. Unlike most recent environmental policy debates, which have divided neatly along party lines, this one is about a policy that was created under President George W. Bush and completed with President Obama's backing. "It's something that's arguably first in the world," said Eric Schwaab, the National Oceanic and Atmospheric Administration's assistant administrator for fisheries. "It's a huge accomplishment for the country."

Five years ago, Bush signed a reauthorization of the Magnuson-Stevens Act, which dates to the mid-1970s and governs all fishing in U.S. waters. A bipartisan coalition of lawmakers joined environmental groups, some fishing interests and scientists to insert language in the law requiring each fishery to have annual catch limits in place by the end of 2011 to end overfishing. Although NOAA didn't meet the law's Dec. 31 deadline - it has finished 40 of the 46 fishery management plans that cover all federally managed stocks - officials said they are confident that they will have annual catch limits in place by the time the 2012 fishing year begins for all species. (The timing varies depending on the fish, with some seasons starting May 1 or later.) Some fish, such as mahi mahi and the prize game fish wahoo in the southeast Atlantic, will have catch limits for the first time.

Until recently, the nation's regional management councils, which write the rules for the 528 fish stocks under the federal government's jurisdiction, regularly flouted scientific advice and authorized more fishing than could be sustained, according to scientists. Joshua Reichert, managing director of the Pew Environment Group, said the law's ban on overfishing forced fishery managers to impose limits that some commercial and recreational fishers had resisted for years. "This simple but enormously powerful provision had eluded lawmakers for years and is probably the most important conservation statute ever enacted into America's fisheries law," Reichert said.

But the changes have not come without a fight, and critics are seeking to undo them. Some commercial and recreational operators, along with their congressional allies, argue that regulators lack the scientific data to justify the restrictions. They suggest that the ambitious goals the law prescribes, including a mandate to rebuild any depleted fish stock within a decade, are arbitrary and rigid. Rep. Frank Pallone, D-N.J., who has sponsored legislation with Rep. Walter Jones, R-N.C., to relax some of the new requirements, said his constituents are increasingly concerned that fishing will be curtailed without sufficient justification. "As more of these limits go into effect, they get more upset," Pallone said. "I don't think it's fair to put in place a system that's not scientific and rationally based."

Washington Post

Groundfish Gains

"ONE year ago, West Coast trawl fishermen entered a new management regime in the $40 million-a-year fishery for Pacific whiting, Dover sole and other groundfish. Called catch shares, the idea was to give fishermen an economic incentive to fish more carefully and not waste the resource. The new system appears to be a success."

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The content of the rest of this editorial is apparent in the "Letter to the Editor" that I submitted to the Seattle Times. My submission was not accepted (only 3-4 are carried daily), so I thought I'd try my luck with BRIEFS editor, John Butler. (If its not here, he rejected it too.) Not so.

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The Groundfish Gains editorial (01/12/2012) claims that the "catch shares system" appears to be a success. The evidence presented to support this claim is based on fishing regulations that "forbid throwbacks" and require "government observers on each vessel". Neither of these regs is part of the catch shares system — which has to do with the allocation of quotas to fishermen.

The reduction of discards ("wasted fish") is an important and encouraging "gain" and should be credited to the new fishing regulations not to the "catch shares system".

It seems unlikely that your error will be corrected by NOAA Fisheries, aka National Marine Fisheries Service, in that, its own claims of success for the shares system are often debatable. Further, NOAA usually down-plays or ignores arguments about the negative aspects of the system. In this regard, the mention of the "old way to set fishery limits for the fleet" is pertinent, as the world's prime example of this "old system" is in our back yard. The International Pacific Halibut Commission used the "fleet quota system" successfully for some 80 years, with far less bureaucratic tape, expense and consternation than NOAA's "catch shares".

Bernard Einar Skud, Former Director IPHC

Fishermen fight suit over forage limits; battle set over California's dominant fisheries

Joined by Monterey officials, California's wetfish producers are fighting a lawsuit that aims for greater protections for anchovies, sardines and squid, setting the stage for a major battle over one of the state's dominant fisheries. So-called "wetfish," also known as forage fish, live near the bottom of the food chain but make up a substantial percentage of California's commercial catch, including 97 percent of all landings in Moss Landing and Monterey. In December, environmentalists filed suit to change how the federal government manages those fisheries. "If they were to prevail, I think we'd lose our industry," said Diane Pleschner-Steele, executive director of the California Wetfish Producers Association, which asked a federal court on Tuesday for the right to intervene in the suit.

Much of the forage catch is shipped abroad to literally feed the global growth of fish farms, which raise salmon, tuna and other top fish predators popular with consumers. Squid are the exception, often heading directly to local plates as calamari appetizers or other delicious dishes, and now represents the state's most valuable fishery.

But environmentalists, including Monterey-based Oceana, have raised alarms about forage fisheries, and in December filed suit to force the federal government to consider impacts on the broader marine ecosystem when setting limits. "Basically, what Oceana's trying to do is put this historic industry out of business," Pleschner-Steele said, pointing to Monterey's link with sardine fisheries of the past. Locally, squid are the dominant fishery, though sardines and anchovies are also caught. Pacific mackerel and jack mackerel are also fished along the West Coast. Last year, the National Marine Fisheries Service declined to adopt an ecosystem-based fishery management plan. Environmentalists later sued, and have often complained that the fishing industry dominates that process.

Geoff Shester, Oceana's California program director, said his group is trying to force federal regulators to take a broader approach to setting catch limits and does not want to destroy fisheries. "We think they misunderstand the case," Shester said, pointing out that Oceana has not asked for an injunction or even a reduction in the catch. "The remedy is an analysis, not a reduction in catch."

In a court filing signed by Mayor Chuck Della Sala, Monterey officials are supporting the Wetfish Producers Association's efforts to intervene in the case. Della Sala said the city stood to lose financially from lower wharfage fees if catches were reduced, but that it could suffer "social and cultural harm." "Monterey is proud of its fishing heritage," Della Sala wrote. "Any harm to the viability of the wetfish fishery harms our culture and heritage as well."

Pleschner-Steele said environmentalists also fail to point out that current wetfish fisheries take well below the maximum levels set by regulators. Shester said those limits are constantly in flux. "The trouble with a lot of that is the models that they're basing things on are changing all the time," Shester said.

Santa Cruz Sentinal

Capture Fisheries and Aquaculture Worldwide to Reach 137.8 Million Tons by 2015

According to New Report by Global Industry Analysts, Inc.

GIA announces the release of a comprehensive global outlook on the Commercial Fishing Industry. Driven by the growing perception of seafood as an extremely healthy diet featuring less fat, cholesterol and high protein content, coupled with innovations in seafood production/transportation, capture fisheries and aquaculture worldwide is forecast to witness robust growth in the upcoming

Aquaculture is one of the fastest growing food industries in the world today and has been the driving force behind the growth in the seafood industry. Fish is considered as a main protein source for over one billion people in developing countries and accounts for nearly 7.5% of the world's food production. Commercial fishing offers large-scale employment. Several new regulations are mostly combined with international treaties and different fishing allocation schemes including individual fishing quotas, which aim to generate efficiency and restrict the fishing activities.

International markets for fish and seafood products are dominated by high-value aquatic species such as shrimp, tuna, salmon, gadiformes, bream and bass. Several high-volume and low-value species are also traded extensively in large quantities. The species that recorded highest growth rates in the last few years such as tilapia and catfish are chiefly produced for export purposes. The Pacific Ocean encompasses the largest ocean area for harvesting of fish. The Northwest Pacific represents a key market for commercial fishing activity in terms of productivity, contributing about a quarter of the world's total marine catches. The Southeast Pacific is the second-largest area with prominent species such as Anchoveta, the South American pilchard, and the Chilean jack mackerel. The Western Central Pacific and the Northeast Atlantic together account for a quarter of the total global catch.

Although the market for marine products is growing at a robust rate, production is falling short of soaring consumption levels. The world market for aquatic products is suffering a supply crisis due to rising levels of per capita consumption. As wild captured fisheries cannot meet the future demand for fish, the only option to meet this demand is through aquaculture. The insufficient populace of wild fish to meet the global appetite is forcing aquaculture industry to increase fish farming in order to narrow the gap between demand and supply. Subsequently, aquaculture has registered steady growth since late 1960s. The sector currently accounts for a substantial share in the international food market for fish for human consumption. However, in the upcoming years, sophisticated management of wild fish stocks will result in a continuous supply of species like Pollock, wild salmon, Pacific cod, and halibut.

The worldwide success of farmed fish and shellfish will support the supply and availability of the products. The production of farmed catfish, trout, salmon, and cultured shrimp throughout the world will continue to boost the world supply. The commercial fishing industry is currently dominated by developing countries and this trend is expected to continue in the coming years. The primary reason for this is that contribution by seafood products towards protein consumption is more in developing countries compared to developed countries.

Inland fisheries produce smaller volumes of aquatic species in comparison to marine fisheries. Nonetheless, the fish and other aquatic species harvested from inland waters represent a key element in the diets of people across the world, especially in developing nations of Asia-Pacific, Latin America and Eastern Europe. Level of exploitation in inland fisheries greatly varies among principal geographical regions due to cultural and demographic reasons. Overexploitation is also visible in inland fisheries, particularly in South America, which witnessed collapse of fisheries and decline in fish stocks. Based on extremely different biophysical systems, inland freshwater fisheries are distinct from marine fisheries. Inland fisheries demonstrate intense seasonality of numerous floodplain fisheries that yield heavy volumes of aquatic species.

Demand for fish is expected to continue upwards in the coming years. Growth in demand would be significantly higher in the Asia-Pacific region, especially China. In 2010, the average annual fish consumption per person was pegged at 34.2 kilogram, increasing by about 35% over an estimated 25.4 kilogram in 2008. Owing to tighter fishing regulations across the world, supply of inland and marine fish would remain sluggish through the next few years. On the other hand, fish prices are estimated to stay firm fueled by increasing demand in the worldwide markets, and tighter regulations and limited supply of certain widely consumed fish species.

The research report titled "Commercial Fishing: A Global Outlook" announced by Global Industry Analysts, Inc., provides a collection of statistical anecdotes, market briefs, and concise summaries of research findings. The report offers a rudimentary overview of the industry, highlights latest trends and demand drivers, in addition to providing statistical insights. Regional markets briefly abstracted and covered include the US, Canada, Europe (France, Italy, Spain, Bulgaria, Denmark, Greece, and Russia) Asia- Pacific (Japan, Bangladesh, Cambodia, China, India, Indonesia, Korea, Malaysia, Vietnam, Myanmar, Laos, Philippines, New Zealand, Taiwan, Thailand) Latin America (Mexico, Chile and Peru) and Rest of the World (Egypt, South Africa) The report offers a compilation of recent mergers, acquisitions, and strategic corporate developments. Also included is an indexed, easy-to-refer, fact-finder directory listing the addresses, and contact details of companies worldwide.

San Francisco Chronicle

Alaska salmon industry pulls out of sustainable fisheries certification program

Alaska's salmon industry, citing a need to broaden marketing efforts, gives Marine Stewardship Council notice of withdrawal from certification program. The Alaska salmon industry is pulling out of the Marine Stewardship Council (MSC) certification program in a move that will take effect at the end of October. The decision is a setback for the council, which was founded 14 years ago and has grown into a high-profile effort that uses independent contractors to certify 133 global fisheries as sustainable. The certification enables buyers to be assured a fishery is sustainably managed, and offers a means to track the product through the supply system, according to Kerry Coughlin, MSC Americas regional director.

In a statement released, the Alaska Fisheries Development Foundation, which represents the state's salmon industry in MSC certification, said the majority of processors "now feel it is time to redirect their resources toward a broader marketing message." It also said swift action was necessary "to resolve the issue and quell speculation and confusion in the salmon market." The action came after eight processors, which collectively handle more than 70 percent of the state harvest, told the foundation they would pull out of the program. One industry source said there was frustration with the rising complexity of the program, and concerns that some Alaska salmon might end up certified as sustainable while other harvests might not.

Alaska is North America's largest source of wild-caught salmon, and encompasses chinook, sockeye, pink, coho and chum caught in the state's coastal waters in harvests managed by the state Department of Fish and Game. The state salmon industry was an early participant in the MSC program with an initial certification in 2000 and a five-year recertification in 2007 that will stay in place through Oct. 29 of this year "We regret that the Alaska salmon fishery is being withdrawn from the assessment under way for a potential third certification period," Coughlin said in a statement released by the MSC on Tuesday. "While there are other sources of MSC-certified salmon, Alaska was an early and important leader in the program."

Under the MSC program, the industry contracts with a certifier that assesses how the fisheries management stacks up against the council's standards. The auditor that assessed Alaska's salmon in 2007 listed some 70 issues that needed to be addressed. As of December, as the industry worked on another five-year certification, some 19 of those conditions still had not been addressed, according to a document posted on the website of the Alaska Fisheries Development Foundation. Most of the unresolved issues dealt with the interactions of hatchery stock with other salmon.

In an interview, Coughlin said she hopes some Alaska salmon processors will be able to come forward on their own and obtain recertification. "A lot of companies have told us that this continues to be very important to them," Coughlin said. The salmon industry's decision to withdraw from the recertification does not affect one smaller tribally managed salmon harvest in Southeast Alaska or other Alaska fisheries that have obtained MSC certification.

Seattle Times

Paper Parks Re-Examined: Building a Future for "MPSs-In-Waiting"

In the field of marine protected areas, an unfortunate reality is that many sites are "paper parks". Existing on paper - in laws and on maps - but failing to provide effective management and enforcement, these sites offer the promise of robust protection without the reality of it. Budget shortfalls, faulty planning, insufficient community support...there are many reasons why an MPA may be a paper park. Overcoming the reasons for failure and steering these sites to a functional state pose big challenges for the MPA community.

Nonetheless, paper parks also offer an opportunity. The fact they have already been designated provides at least the seed for protection, particularly in jurisdictions where there is opposition to new MPAs. Conceivably this seed can sprout if given the right attention and resources. That may be easier said than done in this time of tight government finances and stretched management budgets. But practitioners are examining the opportunities at MPAs both large and small. In this issue of MPA News, we examine efforts to build a more effective and sustainable future for paper parks.

When MPA News published its first article on paper parks in 2001 (MPA News 2:11), we described reasons many MPAs fail and how practitioners were working to strengthen individual sites. Each year since then, that issue of the newsletter has remained among the most downloaded from our website - an indication that paper parks remain a significant problem. Case in point: an assessment of management effectiveness at coral reef MPAs worldwide, conducted by the World Resources Institute for its 2011 report "Reefs at Risk Revisited", found that 47% of the sites were ineffective in meeting their goals, as opposed to fully or partially effective (www.wri.org/publication/reefs-at-risk-revisited).

The phenomenon of paper parks has entered the public debate on usefulness of MPAs. In a newspaper opinion piece in 2010, a representative of California state wildlife wardens called for a halt to designating new no-take marine reserves in California waters, citing a lack of funds to enforce the sites adequately. His portrayal of the new MPAs as "Marine Poaching Areas" - productive areas where poachers would be able to fish illegally without fear of arrest - was picked up by opponents of the proposed sites. (Published in the Sacramento Bee, the opinion piece is no longer available on the newspaper's website.)

At least those California sites are inshore, relatively visible to coastal monitors. The farther offshore an MPA is, and the

larger its area, the bigger challenge enforcement can become. A recent article in Nature magazine suggested that the current global trend of designating very large MPAs in remote areas would make the problem of paper parks worse ("Ocean Conservation: Uncertain Sanctuary", http://bit.ly/naturepaperparks).

Developing ways to supplement at-sea enforcement

Among the newest, largest, and most remote MPAs in the world are shark sanctuaries, where fishing for sharks is banned to provide refuge from rampant global overfishing. At least six nations have designated a shark sanctuary across their EEZs in the past decade: Palau, the Maldives, Honduras, the Bahamas, Tokelau, and the Marshall Islands. Although the land area of some of these nations is very small, their marine areas can be enormous - hundreds of thousands of square kilometers in some cases.

Matt Rand is director of the Global Shark Conservation Campaign for Pew Environment Group, an NGO that has partnered with the above nations and local NGOs to develop shark sanctuary plans. He acknowledges that enforcement of the shark sanctuaries, particularly for developing nations, is difficult. "At-sea enforcement is expensive," says Rand. "Monitoring, control, surveillance, and enforcement of the Exclusive Economic Zones of many developing countries are insufficient to ensure that pirate fishers of sharks will be apprehended. Even when caught, bonds and fines are sometimes too low to serve as a deterrent."

With those challenges in mind, some in the MPA field have viewed the shark sanctuaries as paper parks: the sites lack the at-sea enforcement capacity to back up their ambitious goals. But Rand says there are ways around the at-sea enforcement dilemma, namely by strengthening enforcement elsewhere, like at port. "Enforcement at port does not require additional infrastructure, and additional training costs for customs and port officials can be minimal," he says. "For this reason, Pew advocates for measures that prohibit the possession, trade, or sale of sharks or shark products as part of a nation's shark sanctuary regulation or legislation. With no way to legally land or export sharks or shark fins at domestic ports, the incentive to target sharks is reduced, if not completely eliminated. Boats catching sharks are forced to go farther and use more fuel to get to ports where they can offload their catch."

When the Marshall Islands first designated its shark sanctuary, for example, it still allowed fishermen to retain bycatch of sharks - caught when the fishermen targeted other species. This left a loophole that fishermen could use to sell shark fins, claiming they had not meant to catch the sharks. Pew worked with the Marshall Islands Conservation Society and the Marshall Islands Marine Resource Authority to ban all sales of sharks or shark products in the nation, closing the bycatch loophole.

In addition, Rand supports "appropriately prohibitive fines" to prevent penalties from being absorbed by offenders as a cost of doing business. And where locals are dependent on the shark trade, compensation can be useful to encourage their switch to other trades, he says. When the Maldives government designated its shark sanctuary, for example, it simultaneously bought out the operators and gear of a small-boat shark fishery that supplied export markets.

At-sea enforcement does have its occasional successes, too, which can serve to supplement the port-based actions. Rand notes that in November 2011 a US Coast Guard vessel patrolling Marshallese national waters intercepted a vessel transporting shark fins and skins. And in December 2011 a Palauan patrol boat, aided by a Greenpeace ship and helicopter, intercepted a Taiwanese vessel with sharks and fins aboard. Legal action is underway against the offending vessels. "The development of shark sanctuaries is a bright spot for shark conservation," says Rand. "We hope to see many more countries following the lead of these small coastal nations."

Is a paper park better than no park at all?

Paper parks exist on land as they do at sea. When Yellowstone was designated in 1872 as the first US national park, there was virtually no enforcement of its regulations against hunting, logging, and other extractive activity. Poaching was rampant. The situation was so bad that in 1886 the US Army was handed management control of the park, which it held for 30 years (until the National Park Service was established by Congress).

Today that history is often forgotten. The park's management and enforcement - long since returned to civilian control and continuously improved over time - are models of good practice. At this point, there might be a temptation to view the park's first years as wasted time, that the park would have done just as well to be designated later when management capacity was stronger. But is that correct? If the government had delayed designation for decades until management capacity was ready, and while demands on resource use in the area continued to increase, would the resulting park look the same in terms of its boundaries and regulations?

A similar scenario could be imagined for paper parks in the marine realm. Mark Spalding, who co-edited a 2010 UNEP report on global MPA coverage ("Global Ocean Protection: Present Status and Future Possibilities"; www.iucn.org/dbtw-wpd/edocs/2010-053.pdf) and co-authored the above-mentioned "Reefs at Risk Revisited" report, says paper parks can serve a very basic purpose. "Quite a few sites have become more effective over time, and this may be the key," says Spalding. "Designation can provide a framework for protection that can then be improved and revised. The ineffective MPAs then become sort of 'MPAs-in-waiting'. At least the marker is down, and that might be critical as competition for the use of ocean space increases."

Part of the waiting aspect of MPAs-in-waiting may be for technologies and strategies to catch up to the need. Spalding says it is hard to imagine a situation, for example, where large "mega-MPAs" will ever effectively be enforced by conventional means like patrol boats and planes. "But we can get savvier," he says. "The use of unmanned surveillance vessels or aircraft is relatively untested in MPAs, but has huge potential.* Elsewhere, including in smaller MPAs, we perhaps need to get others involved to do the policing for their own benefit: those might be tourists, artisanal fishers, or even international commercial fishers operating under license, rather than patrol vessels. Incentives could be put in place to ensure these users benefit from reporting on activities that affect their own use or enjoyment of the resources."

Editor's note: A 2010 report on emerging enforcement technologies - based on work by the Surveillance and Enforcement of Remote Maritime Areas (SERMA) project, a partnership of resource managers, law enforcement personnel, and other experts - is at ww.mcbi.org/publications/pub_pdfs/SERMA.pdf.

To be clear, Spalding is not a fan of paper parks. He cautions against interpreting his comments as a license to designate MPAs without planning, or to do so against the will of critical stakeholders - which can cause resentment and heighten the potential for noncompliance, he says. He cites as an example the UK's 544,000-km2 Chagos MPA in the Indian Ocean, where displaced Chagossian islanders are still fighting for the right to return to the islands and to use the marine resources there. "In such cases, one can hope that over time and with concerted effort, genuine concerns can be taken into account and compromise achieved," says Spalding.

Funding the transformation of a paper park to functional status

The cost of managing an MPA varies from site to site due to a combination of natural and social factors, including MPA size ("Comparing the Costs of Large vs. Small MPAs...", MPA News 12:6) and number of visitors ("Box: The cost of operating an MPA", MPA News 5:5). In 2003, Kalli De Meyer, former manager of the successful Bonaire National Marine Park in the southern Caribbean, estimated that the 27-km2 site cost roughly US $10,000 per square kilometer (US $100 per hectare) to operate each year.

Without adequate financial support to match circumstances and management needs, an MPA can be driven to paper park status. In the Bahamas in the northern Caribbean, South Berry Island MPA provides an example. The 183-km2 no-take marine reserve, designated in 2009 under the jurisdiction of the Bahamas Department of Marine Resources, regularly experiences illegal fishing and physical damage to its coral reefs. The department suffers from limited resources, both financial and technical, and must ration support across its system of protected areas. As a result there is little funding available for South Berry Island MPA and no active management in place.

However, the MPA received a break in April 2011 when a cruise ship anchored nearby. The ship was hosting an international meeting of entrepreneurs, artists and innovators - the Summit at Sea (www.summitseries.com) - and attendees expressed an interest in focusing their collective energy on a particular project. An idea was embraced to raise funds to support and strengthen a needy marine protected area, including by building a sustainable management framework for it. South Berry Island MPA had the good fortune of being in the right place at the right time.

Within weeks, the MPA was the focus of a US $500,000 online fundraising campaign - an example of "crowdfunding" that has attracted mostly small donations from many individuals online (www.crowdrise.com/summitseriesmpa). As of mid-January 2012, the fundraising goal is already 98% reached, with a particular boost from one entrepreneur who donated $250,000.

The $500,000 target figure was based on a draft management plan of the MPA developed by the Bahamian government and The Nature Conservancy with public stakeholder input. Felicity Burrows, marine conservation specialist in The Nature Conservancy's Northern Caribbean office, says the collected funds will help address several immediate needs of the MPA, including a patrol boat, mooring and marker buoys, signage, and facilities. A portion of the funds will also help build a system to support the MPA's financial sustainability over time. "Effective management of MPAs is not a one-time deal - it is a long-term effort," says Burrows. "Using part of the $500,000 to create sustainable finance mechanisms, like entrance and user fees, is important if the reserve is to remain functional." She notes a feasibility study will determine the most effective funding mechanisms for the site.

M. Sanjayan, lead scientist for The Nature Conservancy worldwide, says that focusing funds and attention on existing paper parks makes sense. "The truth is that many good ideas or efforts languish for often pretty simple reasons," says Sanjayan. "Someone has started the job but not completed it. It is much more efficient to identify these opportunities and complete them than to start from scratch. It is analogous to doing energy-efficiency retrofits on existing buildings: it might not be as sexy as constructing a new highly efficient building, but it can be a much quicker way to achieve your efficiency goals. In the case of South Berry Island MPA, the site had already gone through the time-consuming designation process, and there was also already a local constituency for conservation. The MPA just needed a little financial help getting over the hump, and an investment could bring a great rate of return in terms of conservation outcomes."

The Nature Conservancy has agreed to match the $500,000 raised for South Berry Island MPA dollar for dollar. The match funds will be vested in the Bahamas Protected Areas Fund, an endowment now being established to provide sustainable finance for the Bahamas National Protected Area System.

A decade ago, The Nature Conservancy and partner institutions, with funds from the US Agency for International Development (USAID), conducted a program called Parks in Peril (www.parksinperil.org). The program transformed multiple nonfunctioning terrestrial parks in Latin America to functioning, sustainable conservation efforts. Says Sanjayan, "The key is to be clear about which sites are in trouble because of lack of funding and what the jams are, and to have quantifiable measures to ensure the fund is accountable to outcomes." Those quantifiable measures could include how effectively an area is protected, and how people's lives have been enhanced by the protection.

The Parks in Peril program came to an end when USAID's attention shifted more to sustainable development. However, says Sanjayan, a similar program for MPAs could still be a worthwhile endeavor. "If we had a comprehensive list of marine sites in need of support to transform from paper park to functioning MPA, and we could tie those efforts to quantifiable outcomes, I think a fund could be generated for those paper parks. That could have a shot."

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President's Message

The 2nd International AIFRB Symposium on "***The Relative Importance of Fishing and the Environment in the Regulation of Fish Population Abundance***" is just around the corner (**June 26-28, New Bedford Massachusetts**). The scientific and social programs are developing nicely, and the meeting promises to continue the success of the 2007 Symposium on "*The Future of Fishery Science in North America.*" Similar to the last symposium, the proceedings from this meeting will be published as an AIFRB book. In addition to the many valuable scientific contributions, the 2007 symposium and book effectively promoted the Institute and demonstrated its role in our scientific community. We hope that the symposium in New Bedford will be equally memorable for addressing such a central issue in fisheries science as well as an opportunity to network and invigorate the Institute. I'm thankful to my fellow conveners, Brian Rothschild and Dick Beamish, the experts on fishing and the environment who accepted our invitation to participate, and the sponsoring organizations. A preliminary program, sponsors, details on registration, lodging and other logistics are in the call for abstracts in this issue. Please consider joining us and contributing a presentation.

Steve Cadrin

Fun Facts about Fishes Provided in New Book Co-Authored by NSL's Bruce Collette

Bruce Collette of NEFSC's National Systematics Laboratory is the co-author of a new book: "Fishes,The Animal Answer Guide."

Published by The Johns Hopkins University Press in September 2011, the book provides answers to more than 100 of the most common questions about fishes, along with some unusual facts, and features over 100 color photographs. Ichthyologists Gene Helfman, professor emeritus at the University of Georgia's Odum School of Ecology, and Collette, a senior scientist at the National Systematics Laboratory, located at the Smithsonian Institution's National Museum of Natural History, wrote the book to share their interest and passion in fishes and fish conservation. Collette also serves on the Museum's Division of Fishes staff.

Chapters range from an introduction to fish and fishes (and how to use the terms correctly), form and function of fishes, fish behavior and fish colors, to fishes and humans, fishes in literature, and "fishology". The 216-page book contains answers to many common questions as well as some unusual and funky facts about fishes found throughout the world. Collette says it took about two years to complete the book, given his many other NOAA responsibilities and professional commitments like the International Union for Conservation of Nature (IUCN) Red List Committee, which he serves as chair of the Species Survival Commission Tuna and Billfish Specialist Group.

The authors, both graduates of Cornell University, are also two of the authors of *The Diversity of Fishes*, considered the world's leading college-level textbook on that subject. The second edition, published in 2009, expanded and updated their original work, but is not meant for young students or the casual and curious reader. Collette taught summer courses while on annual leave at the Shoals Marine Laboratory in Maine, which is affiliated with Cornell, at the Bermuda Biological Station, and at the Marine Science Institute of Northeastern University in Nahant, MA. Although he no longer teaches those courses, he remains committed to formal and informal education and hopes this latest effort will interest young people and members of the public to learn more about fishes of the world. Collette says he enjoyed working on this latest project because most of the questions have been asked during his career, and the basic question and answer-type format of the answer guide series was easy to work with.

He admits, however, that it was hard for him to write and edit in a simpler way that what he has been used to doing for scholarly research articles, textbooks, and other professional commitments in taxonomy and systematic. "I felt I had a social responsibility to share what I had learned during my career and communicate that in a way that was interesting, informative and fun for readers of all ages and experiences," said Collette, a zoologist who has studied tunas and other surface-dwelling fishes for more than 50 years with the federal fisheries service. "For someone like me who has spent much of his professional life focused on what fishes do and how they go about life, bringing a broader perspective about fishes to the public was definitely a good thing to do."

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

Meeting Announcement and Call for Abstracts

The Relative Importance of
Fishing and the Environment
in the Regulation of Fish Population Abundance

June 26-28 2012

A Symposium of the American Institute of Fishery Research Biologists
Waypoint Event Center, Fairfield Inn & Suites
185 MacArthur Drive · New Bedford, Massachusetts 02740 USA

Tentative Program

Welcoming addresses:
Hon. Jon Mitchell, Mayor of New Bedford
Paul Diodati, Massachusetts Marine Fisheries
Dr. Bill Karp, Northeast Fisheries Science Center

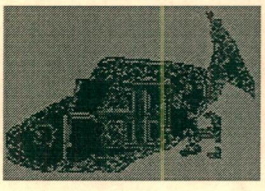
Presenter	Presentation
Dick Beamish	"Pink salmon catches throughout the northern North Pacific continue to set record highs because of climate changes and a little help from hatcheries"
Steve Cadrin	"Consideration of fishing and the environment in rebuilding plans"
Chris Chambers	"Characterizing and quantifying mortality in the early life-stages of marine fish populations"
Jeremy Collie	"Rebuilding fish communities: the ghost of fisheries past or the virtue of patience."
Timothy Ellis	"Effects of fishing and winter temperature on spotted seatrout survival"
Mike Fogarty	"Harvesting in a Nonlinear World: Fisheries as Complex Systems"
Kevin Friedland	"Zooplankton and cod production off New England"
Churchill Grimes	"The role of the environment and harvest on stock status: contrasting California salmon and rockfish fisheries"
Jim Ianelli	"Patterns in Eastern Bering Sea pollock fishery catch rates relative to assessment and quota recommendations: is there a disconnect?"
Francis Juanes	"The influence of temperature variability on life histories sets the sensitivity of Atlantic cod Gadus morhua to fishing"
Thor Lassen	"Science and Fisheries Sustainability"
Jason Link	"Integrating, and then disentangling, multiple drivers impacting living marine resources"
John Manderson	"Steps toward an operational seascape ecology in support of the management of sustainable ecosystems"
James Manning	"American lobster and its environment"
Rich McBride	"Demographics by depth: Spatially-explicit densities and life history dynamics of hogfish (Lachnolaimus maximus) in the eastern Gulf of Mexico"
Owen Nichols	"Environmental effects on longfin inshore squid distribution in Nantucket Sound at multiple spatiotemporal scales"
Malin Pinsky	"Are shifts in marine species' ranges predictable? Insights from both coasts of North America"
Terry Quinn	"The threshold to allow a fishery for herring in Prince William Sound, Alaska"
Brian Rothschild	"The overfishing metaphor and the ocean environment"
Kevin Stokesbury	"Theories on the influence of environment on Atlantic sea scallop distribution, abundance and recruitment"
Mike Wilberg	"Strengths and weaknesses of alternative methods for including environmental effects in stock assessments"

Social events include a cocktail reception at the New Bedford Whaling Museum, Symposium Dinner, and Whaleboat Races!

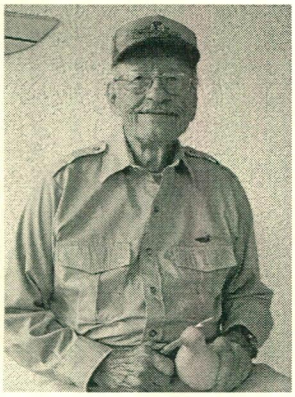
Abstracts are welcome for poster presentations or contributed oral presentations
(abstracts due by May 1 to scadrin@umassd.edu)

Hotel Room Group rate until May 26 ($139/night) cwp.marriott.com/ewbfi/umd
Early Registration online (www.aifrb.org) $150 ($100 students) starting April 9 2012
Registration increases to $200 ($150 students) after May 26
Contacts: Steve Cadrin (scadrin@umassd.edu), Brian Rothschild (brothschild@umassd.edu) and Dick Beamish (beamishr@pac.dfo-mpo.gc.ca)

Sponsorship from: Massachusetts Division of Marine Fisheries; Southern New England Chapter of the American Fisheries Society; University of Massachusetts School for Marine Science & Technology, Department of Fisheries Oceanography; OceanTrust; National Marine Fisheries Service

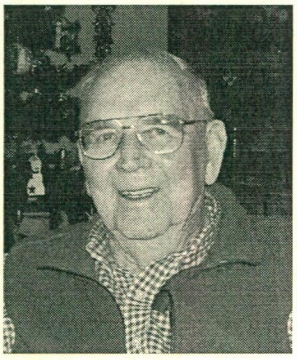


James E. Sykes



Jim to his family and friends died March 12, 2012. He was 88 years old. He lived in Largo, FL and is survived by his wife of 65 years Kathryn. Jim served in the Army Air Corp. as a B-17 pilot in WWII. After the war he went to work as a biologist for the United States Fish and Wildlife Service Laboratory at Beaufort, North Carolina, remaining with that and related organizations, including NOAA, until retirement. During the course of his career, Jim served as a Chief of fishery investigations on the Atlantic Coast, and as a Laboratory Director in Florida and in New Jersey. Before transferring to Florida, Jim's research was principally with coastal migrating fish such as American shad and striped bass. Here, he worked with fish populations in the Delaware and Connecticut Rivers, Chesapeake Bay tributaries; the York and James Rivers, the Ogeechee River in Georgia, the Edisto River in South Carolina and the St. Johns River in Florida. Field work on these species was what he liked, since it allowed him to be outdoors and on the water, working from boats and with fishermen. These activities provided the joys of being a marine biologist, with very limited supervisory and budgetary responsibilities. In those days, the process of getting up and being on the water at first light seemed to present no particular problem. It was part of an exhilarating life. The most rewarding and fascinating portion of his career, however, occurred as the director of research in Florida estuaries, where he and his staff sought to preserve thousands of acres of valuable fishery habitat from destruction by greedy land developers. While there, he and his staff also had to do battle with red tide infestations and the politicians clamoring for relief from the stench of dead fish killed by the red tide organism. In addition to the thrill and excitement of building, staffing and equipping a new laboratory in St. Pete Beach, FL. came the pleasures of designing cooperative research with the Gulf of Mexico States and bringing those studies to fruition with publication of the results. Friendships were developed which continue through today. This duty was followed by temporary assignment as Laboratory Director of the Sandy Hook, NJ laboratory, after which Jim returned to Beaufort, N.C. as Chief of Fsheries at that Laboratory. During that time he was elected President of The American Institute if Fishery Research Biologists. After retirement from NOAA, Jim became a Member of the North Carolina Coastal Resources Commission, and divided his hours between that part time work and his favorite hobby, waterfowl decoy carving.

Leslie Edward Whitesel



Leslie Edward Whitesel ("Ed"), 96, died Saturday, February 25, 2012 in Traverse City, Michigan. Ed was born in West Seattle, WA and had a busy childhood; he was a newspaper carrier, lifeguard, Eagle Scout, and trumpet player in the Seattle All City Orchestra. His fishery career started early — steelhead fishing with his father. After high school, he entered the University of Washington and earned a BS in Fisheries in 1937. He worked at a Washington State fish hatchery in Spokane that summer, and planned to attend graduate school in the fall. Instead, he accepted an offer from W. F. Thompson to work for the International Pacific Salmon Fisheries Commission in British Columbia. Ed's first assignment was on Cultus Lake under the direction of Earl Foerster, conducting research on the early life cycle of salmon. Later, Jack Kask and Bill Ricker were also involved with the project. Ed was fortunate to rub elbows with such leading salmon scientists so early in his career.

Ed was also fortunate to meet and marry Margaret MacLeod of Vancouver, BC in 1941. Considering that Marge's father was a federal Fisheries Officer, Ed was lucky to pass muster. He also passed muster when he served as an officer in the US Navy in the South Pacific from 1944-1946. After his military service, he returned to the Salmon Commission and continued his salmon research — the highlight of which was the publication he co-authored with Robert Clutter (Collection and Interpretation of Sockeye Salmon Scales, IPSFC Bulletin IX, 159 p.).

In 1955 he accepted a position in Juneau, Alaska as Supervisory Fishery Management Biologist with the Bureau of Sport Fisheries, U.S. Fish and Wildlife Service. After Alaska gained Statehood in 1959, there was a transitional period for federal agencies to divest their Territorial responsibilities, and Ed saw to those concerning sport fisheries. In 1961, he transferred to the Regional Office of FWS in Portland, OR and was involved with Federal Aid. He administered the Dingell/Johnson Grant and Aide Program in seven states of the Pacific Region. In 1965 Ed became the Federal Aid Coordinator in the mid-west Region of the Bureau of Commercial Fisheries in Ann Arbor, Michigan, where with other duties, administered the Commercial Fisheries and Development Act (PL88-309). Under the Reorganization Plan of 1970, when BCF became NMFS, the Ann Arbor staff was relocated to the NE Region in Glouscester, MA, where the Federal Aid Program serviced 19 states from Maine to Virginia as well as the Great Lakes States.

In 1972, Ed got back to his first love – salmon. He re-joined the U.S. Bureau of Sport Fisheries in Stockton, California and was the Service's representative on the Four Agency Study of the Sacramento-San Joaquin estuary. The other participating

agencies were the Bureau of Reclamation, California Depts. of Fish and Game and Water Resources. Ed designed a trawl that skimmed the surface to sample migrations of young salmon. He gave testimony at public hearings, and counseled scientists working on the program. His role and contributions in the joint study, as well as his "career-long professionalism and dedication" were recognized by the Regional Office when he retired in 1977 by naming a forty-foot research vessel after him — the Leslie Edward Whitesel was removed from service a few years ago and has been waiting for its Skipper.

A Canadian co-worker from the 1940's remembered Ed: "He always was a favorite with field crews as he would dig right in, no matter what you were doing, and offer his perspective on how these projects contributed to the aim of the Commission ... to my mind he was a fine ambassador for IPSFC". Indeed, remarks about Ed's work ethics were echoed by others from among his country-wide contacts and his role as an ambassador applied to all of the agencies he represented during his 40-year career. His "good-will attitude" was also evident in his contributions and participation in the community and his church.

Ed is survived by his two daughters, Sally (Leo) Miedler of Maumee, OH, and Leslie (John) Peck of Maple City, MI, 5 grandchildren, and 8 great-grandchildren. A memorial service to celebrate Ed's life was held Saturday, March 24 at the Northern Lakes Community Church in Traverse City.

Bernard Einar Skud

Biographies of Founding Fathers
F. HEWARD BELL

F. Heward Bell was born on July 4, 1902, in Swansea, Wales. He came to Canada as a child, and was raised there. As a young man, he attended the University of British Columbia in Vancouver, and graduated in 1924 with honors in biology. Upon graduation, he was appointed instructor in biology at that university. In 1925, he served as a research assistant for the Fisheries Research Board of Canada, tagging salmon off the west coast of Vancouver Island. Later in 1925, he was appointed Associate Scientific Assistant for the International Fisheries Commission, which later became the International Pacific Halibut Commission. On a leave of absence from the Halibut Commission in 19401941, he served as Assistant Director of the International Pacific Salmon Fisheries Commission of Canada and the United States. He became Assistant Director of the Halibut Commission in 1943 and remained in that position until he was appointed Director in 1963. He served in that capacity until his retirement in 1970.

During his early years with the Halibut Commission, he spent many months at sea on halibut vessels, either chartered or on regular commercial trips. He and another future Founding Fellow of the AIFRB, Richard Van Cleve, almost lost their lives aboard the schooner *Scandia* when it sank west of Kodiak Island, Alaska, in February1927. Throughout his 43year career with the Halibut Commission, he knew and worked with many individuals who had been involved in the fisheries for halibut and salmon as early as the late 19th century off the coasts of Alaska, British Columbia, and the contiguous United States. Those relationships, in addition to his early training in biology, were influential in forming his concepts of managing a fishery. He collected voluminous records of fishing effort and catch, which became the basis for several important papers, *e.g.* IFC Bulletin 6, Biological statistics of the Pacific halibut fishery, by Thompson, Dunlop, and Bell (1931), and IFC Bulletin 8, Biological statistics of the Pacific halibut fishery, by Thompson and Bell (1934) and for the assessment and management of the halibut fishery. (William F. Thompson and Henry A. Dunlop were also future Founding Fellows of the AIFRB.) During the period of 1930 to 1970 he was a Special Lecturer in Fisheries at the University of Washington. He was a Founding Fellow of the American Institute of Fishery Research Biologists and a member of other scientific societies.

Heward Bell was awarded the 1953 Coronation Medal of Elizabeth Regina II for services rendered to Canada with respect to the Pacific halibut fishery. He was the first person to receive the Golden Halibut Award, presented annually by the Halibut Fishermen's Wives Association, and was awarded a Golden Halibut by the Halibut Association of North America for services rendered to the industry. He retired in 1970, and after his retirement he wrote an important book, The Pacific Halibut: the Resource and the Fishery; every major fishery deserves a book like this, but few have it.

F. Heward Bell died on March 5, 1992, at the age of 89. He was a gentleman and a scholar, and the lives of all who knew him were enriched by the experience.

Bell, F. Heward. 1981. The Pacific Halibut: the Resource and the Fishery. Alaska Northwest Publishing Company, Anchorage, Alaska: xi, 267 pp. [biographies: F. Heward Bell, page x; Henry A. Dunlop, page 249; William F. Thompson, pages 258259]

Southward, Morris. 2004. Our Founding Members: two biographies: Henry A. Dunlop; F. Heward Bell. AIFRB Briefs, 33 (3): 23.

Southward, Morris. 2004. A stalwart of the AIFRB: Founding Member F. Heward Bell. AIFRB Briefs, 33 (5): 4.

Book Review
Overfishing: What Everyone Needs to Know

By Ray Hilborn

To hear some people tell it, the increasingly energetic and sophisticated fishing industry has left the world's oceans a shambles, with species of cod, sharks, tuna and other fish hunted almost to extinction and vast stretches of the ocean floor wrecked by bottom-scraping trawlers. To hear some other people tell it, many depleted stocks are recovering nicely.

Ray Hilborn, a fisheries scientist at the University of Washington, wades into this disagreement in his new book and comes out with a lucid explication of a highly tangled issue. •Each argument, he concludes, has some truth on its side. "It depends on where you look," he writes. "You can paint horror story after horror story if you want. You can paint success after success."

He navigates the path between horror and success through scores of questions and answers, nearly all of which demonstrate how difficult it is to sort this issue out.

Take the most basic question: What is overfishing? There are several answers, the book tells us. There is "yield overfishing," in which people take so many fish that they leave too few to spawn or catch too many fish before they are grown. Then there is "economic overfishing," in which economic benefits are less than they could be. If too many boats chase too few fish, for example, the struggle to make a good catch leads to overspending on boats, fuel and so on. (There is also "ecological overfishing," but that is something we must live with as long as we want to eat fish, Dr. Hilborn says. Fishing by definition alters the marine environment.)

Dr. Hilborn tells us of fisheries that succeed — like the halibut industry in Alaska — and fish stocks managed into difficulty, and then out again, like the pollock of the Bering Sea. And he gets into the issue of trawling, in which boats drop weighted nets to the bottom and drag them along, scraping up everything in their path. Critics liken trawling to harvesting timber by clear-cutting. For Dr. Hilborn, this analogy is not always apt, since in some areas the creatures rapidly repopulate the ocean floor.

Some countries do well by their fish, he writes, but with one exception they are relatively small: New Zealand, Iceland and Norway. The exception? The United States.

The true lesson of this book is that fisheries science is complicated; that the management of any given species must be considered in terms of its ecosystem; that fishing for one species alters the food web as a whole — and that sometimes there is not enough data to make good recommendations. In some cases, the only way to acquire reliable catch data is to station observers at ports or even on the boats themselves. This is now routine in many parts of the United States. But data collection can be expensive, and many countries do it poorly. There is little reliable data from Asia, for example. Moreover, an estimated 20 percent of the world's catch is landed illegally. "Almost every fisherman I know has told me tales of making a big catch by some violation of the rules," Dr. Hilborn writes. In many areas, rule-breaking "is an accepted way of business."

And the rules, whatever they may be, do not apply on the high seas. Is there any hope, he asks, for managing these high-seas fisheries? "Not much to crow about," he concludes, adding that on this issue he remains pessimistic.

That is one reason people debate the value of certification programs — efforts to identify fish that are sustainably harvested and can be eaten with a clear conscience. These efforts are "controversial," Dr. Hilborn writes; the fishing industry typically regards the standards as unnecessarily high.

"Overfishing" is part of the Oxford University Press series "What Everyone Needs to Know," which has already addressed nuclear energy and the Arab Spring and is planning books on reproductive politics and the legalization of marijuana.

The book is a primer. Its Q.-and-A. prose is not exactly lively. In an interview, Dr. Hilborn said he made a deliberate decision to write a book that "everybody would agree is balanced."

"It may be bland in places," he said, "but I tried not to be contentious."

After years of bitter argument, this noncontentious book should be welcomed by anyone who cares about fish. And that should be most of us: Worldwide, 20 percent of the world's protein intake comes from the sea. If we cannot make policies to protect this harvest, everyone will pay a price.

168 pages. Oxford University Press. $16.95.

New York Times

Controversial Fishery Management Plan Overruled

A ruling by a federal court in California threatens to upset a controversial new fishing management plan embraced by environmental groups, including the Environmental Defense Fund and The Nature Conservancy. In 2011, the regional council overseeing marine fisheries on the Pacific Coast instituted a kind of cap-and-trade program for the Pacific whiting fishery and the groundfish fishery, which includes fish such as Dover sole and petrale sole. The council, which oversees marine fisheries off the coast of California, Oregon and Washington, decreed the government would no longer tell fishermen when to fish or what kind of gear to use. Instead, they'd tell fishermen how many fish each could catch by assigning them shares, or a percentage of the fishery.

These shares can be bought, sold, leased or traded like any commodity. The idea behind the change is that if a fisherman "owns" a piece of the resource, he or she will be a better steward of it. In order to figure out each fisherman's - or corporation's - share, the Pacific Fishery Management Council reviewed catch level history from 1994 to 2003. Those who caught the most fish during those years got the biggest shares.

But a group of small-boat operators said they thought the way the council had divvied up those shares was unfair. So they sued the government, and last week, the judge ruled in their favor. "The original allocation was illegal," said James Walsh, lead counsel for the plaintiffs, the operators of the Pacific Dawn and Chellissa, James and Sandra Schones, the Da Yang Seafood company and Jessie's Ilwaco Fish Co. It "did not include the more recent history of harvesting and processing," he said, "thereby short-changing" those who have been consistently fishing the resource, "in favor of those who left the fishery prior to 2003." He said the allocation favored fishermen who gamed the system by leaving in 2004 to build shares in an Alaska fishery that was structuring a similar management plan, as well as "certain environmental groups that bought permits but haven't used them for fishing."

Although The Nature Conservancy owns the largest share of shares in the groundfish trawl fishery, it does not own Pacific whiting shares, which is the fishery involved in this case. And although a brief in the court case mentions that the Environmental Defense Fund owns permits, no evidence could be found to support that statement, and a spokesman for the organization denied any ownership. "This allegation - that EDF owns permits - is flat-out wrong," said Tom Lalley, a spokesman for the Washington D.C.-based organization. "EDF does not, and has never, owned permits. Permit ownership is public record, and there are no records showing that EDF has owned quota or permits."

The federal government and fishery council now will have to reconvene to figure out how to re-allocate the shares. The National Oceanic and Atmospheric Administration "takes the findings and conclusions of the court in the Pacific Dawn case seriously," said William Stelle Jr., northwest regional administrator for the agency's fisheries. "We appreciate the court's decision to accept our recommendations on referring the issues back to us, to embrace a workable schedule and to leave the overall program in place this year while we reconsider the limited scope of issues he found wanting in his ruling."

As the government moves forward, Walsh had this to say: "Do not reward game players, investors who did not work the fishery or environmental groups that are not committed to keeping this well-managed fishery competitive in world markets."

The Pacific Fishery Management Council will convene [PDF] in Sacramento from Feb. 29 to March 7 to discuss this issue and others.

Increasing pressure to harvest small fish worries scientists

Ocean scientists worry that pressure to harvest small schooling fish such as herring, smelt and sardines could have serious consequences for other sea life. There are growing concerns globally that some forage fish stocks are unhealthy and the way we harvest them is unsustainable," says a marine biologist.

Along the U.S. West Coast, most major fish, mammal and seabird species rely on forage fish for food — a group of about 30 species of small schooling fish. Scientists increasingly recognize that maintaining this small group of fish is key to ocean health. As ocean scientists probe what ails some of the largest creatures in the sea, a wave of new research is urging them to look at the little things — specifically the tiny schooling fish that make up the cornerstone of ocean food webs.

Species like herring, smelt, sardines and squid are the food of choice for many of the ocean's top predators. But there is increasing pressure globally to harvest marine "forage fish" for everything from hog feed and fertilizer to fishmeal in tuna pens or as bait for recreational or commercial fishing. And these creatures are often the fish scientists understand the least. "The idea that forage fish are important isn't new," said Phil Levin, a biologist with the National Marine Fisheries Service in Seattle. "But if you take the fish out of the system ... what are the costs if those fish are no longer there to be eaten by birds or mammals or other fish? That's what we're talking about now."

Take, for example, the discovery late last year by an international team of scientists who tracked what happens to birds when the small fish they eat vanish. Those researchers stumbled upon a remarkable pattern: Every time populations of ocean forage fish — small schooling creatures like squid or anchovies — dipped below a third of their peak, seabird births also plummeted, according to the study published in late December in the journal Science. It happened with terns and gulls and auklets and puffins. It happened in the Atlantic, the Arctic, in Europe and off the U.S. West Coast. Then, late last month, another pair of scientists determined that sardine populations from California to Washington appeared likely to collapse in coming years, just as they had during the "Cannery Row" days of the middle 20th century. Other experts disputed the finding, but the debate highlighted an emerging conflict in marine science. These tiny fish, while resilient, may be especially vulnerable to overfishing, climate change, habit loss and shifting ocean chemistry. And their loss could have profound impacts throughout marine ecosystems — far more so, even, then the loss of some well-known predators. "In the big picture, there are growing concerns globally that some forage fish stocks are unhealthy and the way we harvest them is unsustainable," said Bill Sydeman, a marine biologist with California's Farallon Institute and member of the team that worked on the bird study.

There's no clear pattern off the coast of Washington and Oregon. Fisheries for anchovies and herring are relatively small, and researchers say that while sardine populations have been in decline, there has also been a recent rebound and fishing

pressure remains a fraction of what it was a half-century ago. But some other species — such as the tiny endangered oceangoing smelt called eulachon found in the Columbia River and its tributaries — are facing dramatic reductions from habitat loss, climate changes and other factors. And the big battle shaping up is what to do next — whether to study and protect the important tiny schooling creatures we don't really fish yet at all.

Some see potential future protein in the voluminous, glowing lanternfish that occupy deep waters in the Pacific, or the slender eel-like sand lances that feed larger fish. But others see the future stability of an ocean food chain already in flux. "We know that predator species, marine mammals and seabirds are very dependent on forage species," said Paul Shively, with the Pew Environment program that is working to prevent expansion of commercial forage-fish harvests. "We know that the demand for forage species is growing. But most of our laws exist to promote fishing — not to make sure we're considering impacts on the entire ecosystem." In many cases, those impacts aren't clear.

Little fish, big role

The odd mechanics of the Pacific Coast help make California and the Pacific Northwest one of the world's most productive ocean environments. The entire system is driven by the bottom of the food chain. When the wind blows, it causes water to rise from the deep, bringing with it fresh nutrients that fuel microscopic plant and animal life. Between those tiny phytoplankton and zooplankton communities and the salmon and whales for which our region is famous are a relatively small group of fatty schooling creatures, often dubbed forage fish because so many other creatures eat them.

Researchers call this food chain "wasp-waisted," because this middle section is relatively narrow. Far fewer species, perhaps a few dozen in all, make up the bulk of marine forage fish, and that makes them extraordinarily important. "The majority of the biomass is really tied up in just a handful of species," said Levin, with the fisheries service. "With some predators there are two or three that play the same role, so that if one goes down, something else can functionally do the same job. That's not so much true with forage fish. There's not as much redundancy."

Populations of many of these creatures rise and fall in boom-and-bust patterns with cyclical ocean conditions. And some top predators, like Columbia River sturgeon, are opportunists and will feed on pretty much anything, from endangered smelt to healthier stocks of anchovies, clams and shrimp. "You couldn't draw a straight line that says the demise of smelt will result in the demise of sturgeon populations — it's not that straightforward," said Olaf Langness, a biologist with the Washington Department of Fish and Wildlife.

But other creatures, such as squid — the largest fishery by volume in California — are so ecologically essential it's not clear what would happen if their populations went bust. In part that's because they're so notoriously hard to study. One researcher compares counting squid to "managing a fog bank." "Pretty much everything eats market squid," Sydeman said. "But we know very little about its abundance, about what drives populations, about the actual needs of predators."

There is no evidence that squid are in decline, which leaves some to think fishing poses little problem. But researchers increasingly acknowledge they can't say for certain. "I, and some others, have resisted the notion that there's an eminent threat that's right around the corner" with forage fish in general, said John Field, a forage-fish expert with the National Marine Fisheries Service's Southwest Fisheries Science Center in California. "It's more that there's a need for a longer view about things that aren't currently actively managed." The Pacific Fisheries Management Council, the federal body that manages ocean fishing on the West Coast, is this year debating the future of forage-fish harvesting.

Seattle Times

A fishing way of life is threatened

GLOUCESTER, Massachusetts (CNN) — By daybreak, much of this town has already been at work for hours. Fishermen have long since cast off aboard boats named for their sweethearts and chugged out to sea before sunrise. Clad in yellow and orange rubber suits, these seafarers drag giant nets across the ocean floor during 12-hour work days, hauling back fish that they will later bring to market.

For about 400 hundred years, fishing has sustained communities such as Gloucester along America's northeastern shores, where thousands of seafood processors, wholesalers, distributors and retailers make a living off the waterfront. "It's kind of the bread-and-butter and the backbone of the community," said Dennis Robillard, who has scooped up fish off the coast of Massachusetts for more than two decades.

Now the federal government is contemplating what for generations seemed inconceivable — restricting or shutting down most of the cod fishing in the Gulf of Maine, a region that extends from Cape Cod up through Nova Scotia. A recent government survey found that Gulf of Maine cod, considered a top earner for fishermen in the region, are in far lower numbers than what experts had thought. Just three years earlier, the government had projected the area was well on its way to recovery after decades of overfishing. Since then, federal regulators gradually raised cod catch rates to nearly five times the sustainable level — with those allowed rates based on what are now reported as overly optimistic and incomplete estimates. The new data now suggest the stocks are so depleted that even if the fishing industry were to shut down, codfish would still not recover by 2014 to the levels mandated by federal law. Beginning in May, that will trigger a legal requirement that fishermen bring in around 22% less cod than they caught last year. But next year is the big one — the industry could face more than an 80% reduction from prior years' catches in the Gulf of Maine. "This is total Armageddon now for the fishery," said Vito Giacalone, a third-generation Gloucester fisherman and policy director for the Northeast Seafood Coalition, an advocacy group for the fishing industry.

"What happens when you do everything right and they still shut you down?"

Cod also swim alongside other fish, which means the proposed reductions would impact other industry staples such as flounder and haddock, even though those populations are considered to be far healthier. While larger trawlers capable of traveling to more distant fishing grounds are expected to survive, the reductions could cost most of region's smaller crews their jobs. "We basically have a balloon payment now to make up for those years (of overfishing)," said Steven Cadrin, a scientist at the University of Massachusetts-Dartmouth, who worked on the assessment. Cadrin and others say a year isn't enough time to make up the difference and meet federal mandates, which he says could signal an end to much of the region's small-boat fleet.

Environmentalists say depleted stocks show the region needs time to recover. "The coastal fishermen are facing an impossible situation through no fault of their own," said Peter Shelley, a lawyer with the Boston-based Conservation Law Foundation, an environmental advocacy group. "But once those fisheries are gone, that's it." Codfish aren't about to become an endangered species, according to Sam Rauch, head of the National Oceanic and Atmospheric Administration's fisheries service. The coming restrictions are about protecting the overall size of the cod population, which has been at a steady but low level for decades, and complying with federal law.

Confronted with possible drops in domestic supply, industry analysts say U.S. cod consumers will likely look elsewhere, importing more from countries such as Canada and Norway. "It will affect the local fresh market," said Cadrin. "There's a lot of frozen cod on the market from elsewhere."

Aboard the Julie Ann II, a not-quite-paid-off fishing trawler named for Robillard's wife, talk of cutbacks is a source of anxiety. "If they cut half the quota, that's my last day here," said crew member Kevon Hughes, hauling back nets from the day's catch — a mixture of cod, lobsters and flounder. "I'd have to leave." Hughes, his face pink from the biting cold of a winter wind at sea, says he's tired of the uncertainty. "I'm sick of everybody else running my life, my income," he said. "It's up to them. It has nothing to do with me."

Fishermen say the cod report doesn't actually reflect what they've seen out on the water. Surveys come from murky science, they say, that rely on catch records, government observers and random samplings at sea. "Fish have tails. They move," said Giacalone, emphasizing the difficulty of counting unseen fish in a region the size of Indiana that nearly spans the length of New England. "The data they have is 'best available,'" he said. "We're going to destroy 400 years of fishing based on what's 'best available'?"

Cadrin, a former NOAA scientist, said the science is "not much different than a weather report" and considers the issue more of an "administrative crisis than an environmental one." But the National Oceanic and Atmospheric Administration says the work is based on three years of additional data, and includes better technologies as well as records of fish discarded by recreational agencies — something that wasn't tallied in 2008. "We just have a much more realistic picture of the stock," said NOAA spokeswoman Teri Frady. "The really troubling thing here is the low number of young fish coming in."

Other factors, she noted, like shifts in water temperature and natural predators, also likely contributed to the depletion of a once cod-heavy region. "Cod fishing in New England is like cowboys out west," said Frady, stressing New England's historical ties to the bottom-dwelling ground fish. "They don't call it Cape Cod for nothing." Her agency's report has become a hot topic among interests groups and legislators in New Hampshire and Maine, though especially in Boston, where a wooden carving of a codfish still hangs from the House of Representatives. Massachusetts ranks second, behind California, in the number of jobs supported by the fishing industry. And Gulf of Maine cod brought in nearly $16 million to the regional economy in 2010, before distribution sales were tallied.

"When I was a kid growing up, people would ask who your father went fishing with as a way of identifying who you are," said Mike Parisi, 62, owner of Amanda Marie Fishing Charters in Gloucester. "It's been a way of life here." Recreational fishing on charter boats, like the one Parisi owns, now account for more than 30% of the region's total catch. The danger, industry advocates say, is a loss of market share. "You can't expect the fishery to come back in the same way after taking years off," said Jackie Odell, executive director of the Northeast Seafood Coalition. "Your suppliers and consumers just go elsewhere. It takes years to develop those kinds of relationships."

The issue garnered national attention last year when Senate lawmakers petitioned NOAA to reevaluate its findings. "The most recent Gulf of Maine cod assessment threatens to further exacerbate a number of issues our fishermen already face, with potentially disastrous consequences," Sen. John Kerry, D-Massachusetts, wrote in a letter, asking for a new assessment. NOAA declined the request, citing time constraints that prevented it from conducting another report ahead of the 2012 fishing season. "The only real solution is more fish," said Frady of NOAA. "Unless we just decide to make fishing less efficient." Agency officials also point out that their assessment had been reviewed by other independent scientists and would likely yield similar results.

CNN

Mars Can Wait, Oceans Can't

Washington (CNN) — While space travel still gets a lot of attention, not enough attention has been accorded to a major new expedition to the deepest point in the ocean, some 7 miles deep — the recent journey by James Cameron, on behalf of National Geographic.

The cover story of the prestigious journal Foreign Affairs lays out the "Case for Space." "60 Minutes" recently ran a story

about the dire effects on Florida's space industry of scaling back our extraterrestrial endeavors. Newt Gingrich gained attention earlier this year by calling for building a permanent base on the moon. And President Obama has talked of preparing to eventually send Americans into orbit around Mars.

Actually, there are very good reasons to stop spending billions of dollars on manned space missions, to explore space in ways that are safer and much less costly, and to grant much higher priority to other scientific and engineering mega-projects, the oceans in particular. The main costs of space exploration arise from the fact that we are set on sending humans, rather than robots. The reasons such efforts drive up the costs include: A human needs a return ticket, while a robot can go one way. Space vehicles for humans must be made safe, while we can risk a bunch of robots without losing sleep. Robots are much easier to feed, experience little trouble when subject to prolonged weightlessness, and are much easier to shield from radiation. And they can do most tasks humans can.

British astronomer royal Martin Rees writes, "I think that the practical case (for manned flights) gets weaker and weaker with every advance in robotics and miniaturization. It's hard to see any particular reason or purpose in going back to the moon or indeed sending people into space at all." Nobel Laureate Steven Weinberg calls manned missions "an incredible waste of money" and argues that "for the cost of putting a few people on a very limited set of locations on Mars we could have dozens of unmanned, robotic missions roving all over Mars."

The main argument for using humans is a public relations one. As Neil deGrasse Tyson puts it in Foreign Affairs, "China's latest space proclamations could conceivably produce another 'Sputnik moment' for the United States, spurring the country into action after a relatively fallow period in its space efforts." Also, astronauts are said to inspire our youth to become scientists and explorers. However, it is far from established that we cannot achieve the same effects by making other R&D projects our main priority.

Take the oceans, about which we know much less than the dark side of the moon. Ninety percent of the ocean floor has not even been charted, and while we have been to the moon, the technology to explore the ocean's floors is still being developed. For example, a permanent partially-submerged sea exploration station, called the SeaOrbiter, is currently in development. The oceans play a major role in controlling our climate. But we have not learned yet how to use them to cool us off rather than contribute to our overheating. Ocean organisms are said to hold the promise of cures for an array of diseases. An examination of the unique eyes of skate (ray fish) led to advances in combating blindness, the horseshoe crab was crucial in developing a test for bacterial contamination, and sea urchins helped in the development of test-tube fertilization. The toadfish's ability to regenerate its central nervous system is of much interest to neuroscientists. A recent Japanese study concluded that the drug eribulin, which was derived from sea sponges, is effective in combating breast, colon, and urinary cancer.

Given the looming crisis of water scarcity, we badly need more efficient and less costly methods to desalinate ocean water. By 2025, 1.8 billion people are expected to suffer from severe water scarcity, with that number jumping to 3.9 billion by 2050—well over a third of the entire global population.

If the oceans do not make your heart go pitter-patter, how about engineering a bacteria that eats carbon dioxide — and thus helps protect the world from overheating — AND excretes fuel which will allow us to drive our cars and machines, without oil? I cannot find any evidence that people young or old, Americans or citizens of other nations, would be less impressed or less inspired with such a breakthrough than with one more set of photos of a far away galaxy or a whole Milky Way full of stars.

Space enthusiasts claim that space exploration has generated major spinoffs for our life right here on Earth. Tyson quotes President Obama suggesting that the Apollo mission "produced technologies that have improved kidney dialysis and water purification systems; sensors to test for hazardous gases; energy-saving building materials; and fire-resistant fabrics used by firefighters and soldiers," and adds a few more innovations to the list: "digital imaging, implantable pacemakers, collision-avoidance systems on aircraft, precision LASIK eye surgery, and global positioning satellites."

Of course, the space environment is radically different from the one on Earth. Materials and technologies that are suited for a vacuum, zero gravity, and extreme cold and heat are not the ones we typically can use on Earth. Elias Carayannis, professor of Science, Technology, Innovation and Entrepreneurship at The George Washington University, notes "government agencies — particularly those such as the National Space and Aeronautics Administration that are continually pressured to justify their activities — tout the spin-off value of their investments in sometimes quite extravagant claims." Products such as Velcro, Tang, and Teflon that are often cited as spinoffs of space technology did not actually result from the space program.

Space promoters tell us, once every few months, that there are signs that there might be or has been water on one of the planets that might make "life" possible. I wonder if some of those who hear these reports interpret them to mean that we expect to find a civilization out there, one that we could ally with, say against the Chinese. What scientists are really talking about is organic material, the kind found in any compost — not a reason to spend billions of dollars of public funds.

In short, do not cry for Mars. It is not going away. We can send R2D2 to explore it and still keep a whole pile of dough for important and inspiring exploration missions right here on Earth, starting at the beach nearest you.

Editor's note: *Amitai Etzioni is professor of international relations and director of the Institute for Communitarian Policy Studies at George Washington University.*

Asian Carp Nets Sought for Chicago Rejected by U.S. High Court

The U.S. Supreme Court (1000L) turned away Michigan's efforts to make the U.S. Army Corps of Engineers install nets in Chicago-area waterways to keep out Asian carp, a blow to the state's efforts to prevent what it calls an "ecological and economic disaster." This action marked the fourth time in the past two years that the justices refused to consider requests for court action mandating short-term defensive measures while the Corps devises a longer-term battle plan against the Asian carp.

Michigan (BEESMI) and four nearby states say silver carp and bighead carp, which have migrated from the lower Mississippi River to within at least 60 miles of Lake Michigan, would spread rapidly if they reach the Great Lakes, consume nutrients needed by other species and harm the region's tourism business and its $7 billion sport-fishing industry. "Failure to decisively respond to this crisis will allow the carp to move for the first time into the Great Lakes, creating an ecological and economic disaster," Michigan's petition to the Supreme Court said. "Unless something is done, the ecological disaster of Asian carp invading the Great Lakes is a matter of when, not if."

Minnesota (BEESMN), Ohio (NFSEOH), Pennsylvania (BEESPA) and Wisconsin joined Michigan in suing the Corps and Chicago's metropolitan water district over the pace of response to the threat that Asian carp may make their way through Chicago waterways into the lake. They asked the Supreme Court to reverse lower court decisions rejecting requests for the installation of nets in the Little Calumet and Grand Calumet rivers while the case is being considered. They also wanted to speed a government study of other ways to keep Asian carp from reaching the Great Lakes.

The U.S. Justice Department, representing the Corps, said the states are asking the court to "second-guess" the decisions of "expert agencies that are administering the ongoing effort to combat Asian carp." The states "seek to take time and resources away from the agencies' priorities and substitute their own priorities, with which the agencies disagree," the U.S. argued.

Installing nets would increase the risk of flooding if debris in the barriers impedes water flow, the U.S. said. The Corps has already put in place systems that use electric currents in the water to keep carp out of the same waterways, the U.S. said. The states' request for an 18-month deadline on completion of a continuing study of the Asian carp response sets an arbitrary timetable that may not be practical, the U.S. said.

The case is Michigan v. U.S. Army Corps of Engineers, 11-541.

Ancient Hawaiians Caught More By Fishing Less

Centuries ago, Hawaiians caught three times more fish annually than scientists generally consider to be sustainable in modern times — and maintained this level of harvest for more than 400 years, researchers report in a new study in the journal Fish and Fisheries. The findings could be instructive for agencies that enforce fishing limits in overfished waters around the globe.

Native Hawaiians caught about 50 percent more fish than modern fleets catch today in both Hawaii and the Florida Keys, the two largest reef ecosystems in the United States, said a co-author of the study, Loren McClenachan, a fisheries researcher at Colby College in Waterville, Me. Hawaiians harvested about 15 metric tons of fish per square kilometer of reef annually from the years 1400 to 1800, the study found. That's five times the median harvest in island nations worldwide today. Dr. McClenachan and her co-author, John Kittinger, a researcher at the Center for Ocean Solutions in Monterey, Calif., drew on a variety of historical records and a method called catch reconstruction to estimate historical harvests in the Hawaiian Islands and the Florida Keys.

The Hawaiians used many techniques similar to those employed today, like temporary or permanent bans from fishing in certain areas, restrictions on certain species and gear, and catch limits. But they enforced the rules strictly; breaking them could mean corporal punishment or even death. While the authors obviously don't advocate such extremes, penalties in some areas could be stricter, the authors suggested, and enforcement could improve. In Hawaii today, "you get penalized much more harshly if you shoplift sunglasses from a store than if you take a bunch of fish that are the wrong size or kind," Dr. Kittinger said in an interview.

Dirk Zeller, a fisheries scientist at the University of British Columbia who was not involved in the study, said that the conclusion made sense: Hawaiians were able to maintain such high levels because their fishing activities were so well managed and focused on a variety of different species, he said. They also left well enough alone, regularly outlawing fishing in spawning grounds and other areas to allow populations to regenerate, Dr. Zeller said.

The two places studied tell very different stories. As historians have documented, native Hawaiians employed a carefully controlled community-based system of regulations on fishing. Rules were passed down by oral tradition and recorded when missionaries introduced printing presses to the islands in the early 1800's, Dr. Kittinger said. In the Florida Keys, however, where intensive fishing didn't take off until the mid-19th century, there have been fewer regulations and a repeating pattern of

overfishing of one species for sale on global markets followed by a crash in that fish population and a switch to a new species. This cycle has severely depleted green turtles, sponges, sawfish and other creatures. Now reefs in both places are overfished — "and there are less fish coming off the reef then back in the day," Dr. Kittinger said.

Given that enforcement agencies are often underfinanced, he said, they might do better to devise a bottom-up approach. That is already happening in some areas, where officials have adopted co-management schemes with community groups that help draft rules and regulations. Most productive reefs in long-ago Hawaii had community managers who knew a reef well and made rules unique to their own part of the ocean, Dr. Kittinger noted.

The researchers reconstructed historical harvest levels by calculating the amount of fish consumption per capita necessary to maintain estimated population levels in Hawaii over the last 700 years. Dr. Kittinger said the results were conservative because he and his colleague used the low end of anthropologists' population estimates in their calculations.

While some may question the use of such historical data, Daniel Pauly a researcher at the University of British Columbia, said that such information was probably just as accurate as current harvest estimates. One can estimate the catch of an isolated society like Hawaii by using population rates, which can be inferred quite reliably by anthropologists, said Dr. Pauly, who was not involved in the study.

Dr. Zeller suggested that the study showed "that we must learn from the past to save the future." If more marine reserves were established and limits were firmly imposed on fishing, he said, the fishing industry could actually catch more fish while making less of an effort. But the blame should not be assigned solely to regulatory agencies, Dr. Pauly said. "We moderns cannot stomach restrictions on fishing that are necessary to maintain the stocks," he said.

Whole Foods, Costco, PF Chang's Tied to Squid Fishing Slave Labor

What do Whole Foods and P.F. Chang's have in common? Not much, except for the fact that both may be making calamari out of squid caught by indentured fisherman. A six month investigation conducted by Bloomberg Businessweek found evidence of debt bondage on a South Korean fishing vessel called the Melilla 203 and at least nine others operating in New Zealand's waters. The report reveals human rights abuses committed against ship workers from Indonesia and other countries that involve false contracts, unsafe working conditions, daily physical and sexual abuse, withholding of pay, intimidation, and threats to their families if they walked away.

Fish from the Melilla 203 and other suspect vessels were bought and processed by New Zealand's eighth largest seafood company, United Fisheries, as recently as November 2011. In that same period, those same kinds of fish were sold to U.S. distributors who provide seafood to many major U.S. companies, including some of the country's largest grocery retailers and restaurants. One of the restaurants that indirectly does business with United Fisheries is P.F. Chang's China Bistro, which purchases squid exclusively through Turner, an importer based in California. Information from Import Genius and shipping records from Urner Barry indicate that Turner bought at least 568,554 pounds of squid from United Fisheries since November of 2010. According to crew members on the Melilla boats who reported the abuses to authorities, squid was one of the most common seafood species caught on those boats.

United Fisheries founder Kypros Kotzikas told Businessweek that his company sold ling, a species of fish caught by the Melilla crews, to Costco Wholesale Corp, the world's seventh largest retailer and the largest wholesaler in the U.S. The exact quantity of sales of seafood that were made to Costco are not traceable through public records.

In an interview that took place nine days after the three Melilla crew members had run away from the ship, Kotzikas said that he had heard of no complaints from crew members on board the ships. He said that he had personally ensured that conditions on the vessels "are of very high standard." Kotzikas also said that although New Zealand's labor laws are "a thousand pages of, you know, beautiful stuff," he believed they did not necessarily apply outside New Zealand's 12-mile ocean radius. Half of United Fisheries' annual revenue is generated outside of New Zealand waters.

Crew members working for Sanford, which is New Zealand's second largest seafood enterprise that sells to Whole Foods, reported similar treatment and abusive practices. On its website, Sanford touts itself as "The Home of Sustainable Seafood." Sanford's Chief Executive Officer, Eric Barratt, said his company's observers, which were placed on their foreign chartered vessels, reported that the ships "don't have any issues with labor abuse."

Although it's unclear exactly how much seafood caught by these indentured fishermen ends up on the plates of American consumers, rough estimates indicate that for squid, the number could be significant. Public shipping records are hard to come by, and seafood distributors don't usually disclose who their suppliers are. However, an analysis that uses several different sources, including information from the New Zealand Ministry of Agriculture and Forestry suggests that roughly 40 percent of New Zealand squid exports are caught on vessels that use forced labor.

In the U.S., which imports 86 percent of its seafood, regulators are starting to pay more attention to the conditions under which this food is caught. On January 1st of this year, The California Transparency in Supply Chains Act started requiring all retailers with more than $100 million in sales to disclose efforts to monitor and prevent slavery practices taking place in their supply chains. The law covers more than 3,000 organizations, including several in the seafood business.

Bloomberg

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President's Message

I'm writing this message on the eve of the AIFRB symposium on "The Relative Importance of Fishing and the Environment in the Regulation of Fish Population Abundance." In the process of wrapping up some loose ends, I'm struck by how many members have helped to make the event happen. I'll thank many of them personally at the meeting, but some won't be there, and the general membership should recognize all of their time and effort. Dick Beamish and Brian Rothschild served as co-conveners. In addition to soliciting sponsors, developing and moderating the program, and leading discussion panels, the topic was Dick's brainchild, and Brian arranged the social at the Whaling Museum and the conference dinner. Many members responded to our invitations to speak and the call for abstracts with outstanding contributions to an excellent program on the topic. In particular, Jason Link helped fill a last-minute gap in the program. Gary Nelson with the Massachusetts Division of Marine Fisheries, Kevin Stokesbury with the School for Marine Science and Technology, Bill Duffy and Sea Lucey from the Southern New England Chapter of AFS, and Thor Lassen with Ocean Trust helped with sponsorship. Allen Shimada coordinated all of the financial aspects of the event. Tom Ihde managed the ever-changing conference website. Dan Georgianna and his wife Sharon donated their time and whaleboat expertise on the evening of their wedding anniversary! Doug Vaughan helped with onsite registration and photo-documentation. Several student members helped with the program and logistics, including Owen Nichols, David Bethoney and Cate O'Keefe. Owen in particular put a great deal of time and attention to all aspects of registration, production of the program and the book of abstracts, and dozens of last-minute arrangements. Our Institute is lucky to have so many dedicated members who stepped up and volunteered their time to make the symposium a success – **THANKS!**

Steve Cadrin

Kenneth Dixon Carlander

by Gene Huntsman

Ken Carlander and Iowa State University were synonymous. After completing military service (ever-productive, Ken even produced, while he was in the service, a scientific paper on birds observed during maneuvers) and graduate research at the University of Minnesota on the fisheries of the Lake of the Woods, Ken became Assistant Professor of Zoology at Iowa State University and Leader of the Iowa Cooperative Fishery Unit. (Iowa State is home to the cooperative unit concept, a brainchild of Iowa's conservation pioneer, Ding Darling.) Ken remained at Iowa State throughout his active and emeritus career. By 1985, the date of his nominal retirement, he had directed pro-grams of 34 Ph.D. graduates and 59 M.S. students (of whom 22 also completed Ph.D. programs—12 at Iowa State).

Ken had a vital interest in encouraging fisheries research in developing countries. To that end, Ken mentored numerous foreign students from, among many countries, Sudan, Liberia, Iraq, and India, and also served as a visiting professor in Egypt and Indonesia.

None of the above, however prestigious, can convey the deep affection in which Ken was held by his students. Always calm, always understanding, always tolerant, Ken made each of us feel ac-cepted and capable of the work expected of us. His generosity was unequaled. At least one graduate student found long after completion of his degree that a supposed assistantship from the university that had supported him and his family during tight times had actually come straight from the pocket of Ken Carlander.

And I probably ought to nominate Ken for sainthood. Finishing a hot summer Friday of electro fishing, David Belmler and I were driving the 30 miles from the Des Moines River back to Ames when a 5-gallon container of strong formaldehyde solution overturned in the back of the sta-tion wagon assigned to the fisheries unit. The vile fluid filled the recessed wheel well in the aft floor of the vehicle. Completely saturated with fish, fish biology, heat, and the week's work, Dave and I were absolutely convinced that the formaldehyde would be overjoyed to spend the weekend in the wheel well so that its removal could provide us with a fitting beginning to the next Monday. We did not know that Ken and Jess Muncy were planning a very early departure in that same despoiled ve-hicle on Monday morning for the 150-mile round trip to Fort Dodge. Nor did Ken and Jess know in the cool of their pre-dawn departure that the morning's heat would vaporize the unsuspected, and then hidden, fish preservative and force them to ride the entire distance with their heads out the windows. Ken never mentioned the incident to Dave or me.

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Ken Carland and Iowa Days

by Dave Hoopes

My copy of the *Briefs* arrived in the mail today, and as I walked down our lane from the mailbox I was idly flipping through the pages when the notice of Ken Carlander's passing struck me between the eyes and, I might add, deep in my heart. For you (Huntsman) were right when you said Dr. Carlander was deeply loved by his students.

I was privileged to have Ken Carlander as my major professor for both my Master's and Ph.D. degrees, spending a full five years under his quiet, insightful tutelage. When towns along the Mississippi River sought to control the enormous hatches of caddis flies and mayflies that practical-ly halted river traffic for a period of time each year, Ken noted that poisoning the river could wreak havoc on the riverine ecosystem, and he convinced the local governments to support a study to de-termine the role played by these insects and to investigate possible alternative means of control. My office mate, Cal Fremling, a Ph.D. candidate, was elected to study the life history of several species in the hope of determining such alternatives. For my Master's thesis, Dr. Carlander suggested that I identify the role played by the immature forms in the aquatic food chain. The results of our studies unequivocally demonstrated the vital role that these insects played as food for a wide range of commercial and sport fish species. Cal was drawn to the fact that the mature adults were attracted to blue fluorescent lights, and he devised a series of light traps that were located along the river bluff at Keokuk, Iowa. These traps were quite successful in diverting mature insects, especially caddis flies, from impacting human health and activities. As a result of our work, the towns dismissed their plan to poison the river and adopted the much more benign approach of luring the adult insects away from points of conflict with riverside residents. Under Dr. Carlander's guidance, Cal and I were able to acquire a foundation of basic knowledge and apply that knowledge toward solving a practical problem in an environmentally-positive application.

I recount our experience because it illustrates a side of Ken Carlander not normally evident. Despite all the trappings of academe, the scientific treatises, the professional acclaim and honors, Ken never forgot that guiding his students toward careers as professional biologists required preparing them for the practical, as well as the theoretical, side of life. At 70, I am still involved in the fisheries field as a Lead Entity Coordinator in a statewide salmon recovery program here in Washington. I will always be grateful to Ken Carlander for showing me the way to a re-warding and satisfying career in fisheries science.

Max Katz 1919-2011

Max Katz, a fellow of the AIFRB since1984, died in December 2011, at the age of 91.

Max was born on March 27, 1919, and graduated from Garfield High School in Seattle, Washington, in 1936. He then entered the University of Washington, where he earned his B.S. and M.S. degrees in 1939 and 1942, respectively, from what was then the School of Fisheries. He was a good student, being elected to Phi Sigma and Sigma Xi honor societies. He worked as a fishery biologist for the Washington Department of Fisheries from 1940 to 1942, but then he was drafted into the U.S. Army, for which he served in the United States and Europe.

After his discharge from the Army, Max worked for the Institute of Paper Chemistry in Appleton, Wisconsin, from 1946 to 1947. He and Doris Sinaiko of Madison, Wisconsin, were married on March 19, 1946—a marriage that was to endure for 45 years until her death in 1991. He then returned to the University of Washington in 1947, where he earned his Ph.D. degree in 1949; his dissertation was entitled "The Hematology of the Coho Salmon."

After that, from 1949 to 1953, Max worked for the U.S. Public Health Service in Cincinnati, Ohio, but he grew tired of Midwest weather and moved his family to Corvallis, Oregon, where he was an associate professor in the Department of Fish and Game Management at Oregon State University from 1954 to 1960. In 1960 he joined the faculty of the University of Washington College of Fisheries, for which he served as an acting associate professor from 1960 to 1966, as a research professor from 1966 to 1973, Director of the Water Resources Information Center from 1971 to 1973, and as an affiliate professor after that. From 1974 to 1976 he was Research Director for Seattle Marine Laboratories, Inc., and from 1976 until his retirement he was President of Environmental Information Services, Inc., in Seattle.

Max's principal research interests were water quality requirements of fish, fish toxicology, biological effects of water pollution, parasites of the blood of fish, hematology of fish, and diseases of fish. However, he somehow found time to publish at least two papers on the fecundity of herring in the North Pacific Ocean in peer-reviewed journals.

He was a member of the American Fisheries Society, the American Institute of Fishery Research Biologists, the American Society of Ichthyologists and Herpetologists, the Marine Biological Association of the United Kingdom, Pacific Fisheries Biologists, Sigma Xi, the Water Pollution Control Federation, and the Izaak Walton League. In addition, he was actively involved in many Orthodox Jewish groups in Seattle. Also, he was an avid steelhead fisherman.

In spite of his many responsibilities, he had a pleasant personality, and it was a delightful experience to spend even a short time with him. Max suffered a stroke in 1999, and lived the last 10 years of his life at the Caroline Kline Galland Home in Seattle, where he was given the utmost in care and compassion. He is survived by four children and five grandchildren.

Bill Bayliff

Maurice Blackburn 1915-2012 | Passages

Maurice Blackburn, a long-time Friday Harbor resident, died Friday, March 30, 2012 in El Cerrito, Calf.

He is survived by his wife of 46 years, Anne Blackburn, sister, Louisa Hamilton, and seven children; Betty Guernsey, John Blackburn, Richard Blackburn, Katy Blackburn-Hamilton, Suzan Tiemroth-Zavala, Erik Tiemroth, and Anne Margaret Blackburn.

His grandchildren—Jean Blackburn, Elizabeth Blackburn, Lisa Krupicka, Lucia Hamilton, Daniel Guernsey, Max Joy, Roberto Hamilton, Gillian Perkins, Mariana Zavala, Marcio Zavala, Henrik Tiemroth, and Alina Tiemroth—join their parents, grandmother, and seven great-grandchildren in remembering Maurice and celebrating his life.

He was predeceased by his first wife, Florence Blackburn, and brother, Dick Blackburn.

Maurice Blackburn was born on Oct. 27, 1915 in Melbourne, Victoria, Australia, to Doris Hordern and Maurice Blackburn, prominent political figures. He was descended from English and Scottish families who came to Australia in the second quarter of the 19th century.

He was educated at Essendon High School and the University of Melbourne, where he graduated with a Bachelor of Science in 1936. Later degrees, from the same university, were Master of Science (1937) and Doctor of Science (1952).

A childhood interest in natural history caused Blackburn to follow science, and an undergraduate collecting trip to the Great Barrier Reef led him into marine biology.

In 1937 he joined the newly established Division of Fisheries of the Council for Scientific and Industrial Research, later called Commonwealth Scientific and Industrial Research Organization.

This was the first institution for organized marine science in Australia. He remained with the division for over 18 years, working in Melbourne, Sydney, and Hobart, becoming principal research officer.

In 1956, Maurice Blackburn became a professor of zoology at the University of Hawaii, in Honolulu. The next year he moved to California to become program director of the newly formed Scripps Tuna Oceanography Research Program, associated with the University of California at San Diego.

After 1971, he was associated with the Coastal Upwelling Ecosystems Analysis program, operated by a multi-disciplinary group of marine scientists from several universities. He became a naturalized citizen of the United States in 1966.

Maurice Blackburn retired from the University of California in 1977, as research biologist. He considered himself to have been, successively, a marine biologist, fishery biologist, fishery oceanographer, and biological oceanographer.

After a year in Cronulla, Australia, completing some Australian research projects, he settled in Friday Harbor, Wash., where he returned to his long-standing love of history and literature.

Annual NOAA report shows a record number of rebuilt fisheries

A record six fish populations were declared rebuilt to healthy levels in 2011, bringing the number of rebuilt U.S. marine fish populations in the last 11 years to 27, according to a report to Congress out today from NOAA's Fisheries Service. This report documents historic progress toward ending overfishing and rebuilding our nation's fisheries, due to the commitment of fishermen, fishing communities, non-governmental organizations, scientists, and managers.

"With annual catch limits in place this year for all domestic fish populations and the continued commitment of fishermen to rebuild the stocks they rely on, we're making even greater progress in ending overfishing and rebuilding stocks around the nation," said Samuel Rauch, acting assistant NOAA administrator for fisheries. "Healthy and abundant fish populations and marine ecosystems support seafood for Americans, create lasting jobs, and enhance saltwater recreational fishing opportunities."

NOAA's *Status of U.S. Fisheries* report declares Bering Sea snow crab, Atlantic coast summer flounder, Gulf of Maine haddock, northern California coast Chinook salmon, Washington coast coho salmon, and Pacific coast widow rockfish fully rebuilt to healthy levels.

Two indicators of stock health increased slightly over 2010:

- 86 percent of the populations examined for fishing activity (222 of 258) were not subject to overfishing, or not fished at too high a level, compared to 84 percent in 2010
- 79 percent of assessed populations (174 of 219) are not overfished, or were above levels that require a rebuilding plan, compared to 77 percent in 2010.

These data continue a long-term trend in rebuilding U.S. fisheries to sustainable and more productive levels that NOAA began tracking in 2000.

Although it is sometimes assumed that a fish population is low or "overfished" due to too much fishing, other factors also influence the health and abundance of fish populations, including environmental changes, disease, and degraded fish habitat.

"Fishermen, fishing communities, and seafood and sportfishing businesses are investing in the solutions that are helping end overfishing and rebuild our nation's fish populations," Rauch said. "These investments will continue to pay off and provide more economic opportunity and economic stability for the future."

NOAA studies predict that fully rebuilt fisheries are expected to add an estimated $31 billion to the economy and an additional 500,000 jobs. Commercial and recreational fishing currently generates $183 billion per year to the U.S. economy and supports more than 1.5 million full and part-time jobs.

Ed. Note: The status of Atlantic coast summer flounder changed due to a fundamental change in the stock assessment as reported in *Briefs* Vol. 40-6.

Army Corps releases report on valuation of commercial fisheries in the U.S. waters of the Great Lakes, Upper Mississippi River and Ohio River basins

The U.S. Army Corps of Engineers (USACE) released May 1 the "Commercial Fisheries Baseline Economic Assessment - U.S. Waters of the Great Lakes, Upper Mississippi River, and Ohio River Basins" (Commercial Fisheries Report), an Interim Product of the Great Lakes and Mississippi River Interbasin Study (GLMRIS). The report is available on the GLMRIS website at glmris.anl.gov.

"This baseline report provides a thorough summary of the most recently available commercial fisheries data in the GLMRIS study area," said GLMRIS Chicago Area Waterway System Project Manager Dave Wethington. "We will use this and other baseline reports to further our understanding of existing conditions, as well as to help forecast impacts from potential aquatic nuisance species transfer."

USACE will host a conference call May 10 at 10 a.m. (CST) for interested parties to ask questions on this report. Call-in information is: USA Toll-Free: United States: 866-233-3842; International: 651-291-9113; Participant Access Code: 246867

The average harvest level in the U.S. waters of the Great Lakes is estimated at 19.3 million pounds of commercially-caught fish with an associated average value of $22.5 million. Similar analysis estimates 10 million pounds with an associated value of $4 million for the Upper Mississippi River Basin and approximately 1.4 million pounds with an associated value of about $2 million in the Ohio River Basin.

The average harvest level is calculated from the most recent five years of state-licensed and tribal commercial fishing annual harvest data available.

Two complimentary fisheries baseline assessments will be released later this spring: subsistence fisheries and pro-fishing tournaments. An assessment of recreational angling in the GLMRIS study area is anticipated at the end of 2012.

The purpose of GLMRIS is to evaluate the range of options and technologies available to prevent aquatic nuisance species (ANS) transfer via aquatic pathways between the Great Lakes and Mississippi River basins. The final study will consider possible ANS controls to prevent ANS transfer, analyze the impacts each ANS control may have on significant natural resources, as well as the existing and forecasted uses of the lakes and waterways within the study area, and present alternatives to prevent ANS transfer between the basins. If necessary, the alternatives will include mitigation measures for impacted waterway uses and significant natural resources.

WTO: 'Dolphin-safe' label discriminates against Mexico

A recent World Trade Organization (WTO) ruling that the U.S. "dolphin-safe" label discriminates against Mexican tuna fleets is causing concern among some U.S. environmentalists.

Their major fear: The United States would have to sacrifice an important environmental law in the name of free international trade. At issue are Mexican fleets that rely on chasing-and-netting techniques that can harm and kill dolphins. It's not clear what the ruling, issued May 16, will mean for the future of the voluntary dolphin-safe label, but environmentalists are worried.

"This latest ruling makes truth-in-labeling the latest casualty of so-called 'trade' pacts, which are more about pushing deregulation than actual trade," Todd Tucker, research director for Public Citizen's Global Trade Watch, said in a news release.

"Members of Congress and the public will be very concerned that even voluntary standards can be deemed trade barriers."

The Mexican government had challenged the United States' dolphin-safe label with the WTO, saying it discriminates against Mexican tuna fleets. Last fall, a dispute panel ruled in favor of Mexico on some issues but acknowledged the United States had a legitimate consumer and environmental right to pursue the label. Mexico and the Office of the U.S. Trade Representative, which handles dispute cases before the WTO, appealed the case.

In the final ruling, the WTO appeals court sided with one of Mexico's major concerns: "The appellate body reasoned that, by excluding most Mexican tuna products from access to the 'dolphin-safe' label while granting access to most U.S. tuna products and tuna products from other countries, the measure modifies the conditions of competition in the U.S. market to the detriment of Mexican tuna products."

Nkenge Harmon, deputy assistant for public and media affairs for the U.S. trade representative, said via email the United States "will study the report carefully and consider its implications."

Harmon said the government viewed the appellate court's ruling as a mixed bag, confirming the label provides important consumer and environmental protections but deciding it did not offer equal protections to dolphins across the world's oceans. Mark Palmer, associate director of the International Marine Mammal Project for Earth Island Institute, noted the U.S. government has 15 to 19 months to "negotiate a way for the United States to come into compliance" with the WTO ruling. He said Earth Island will push the Obama administration to try to persuade the Mexican government and its fishing fleets to adopt more dolphin-safe methods.

Palmer noted Mexico can sell tuna in the United States, just not under the U.S. Department of Commerce's dolphin-safe label.

Regardless of the May 16 ruling, the three major U.S. tuna processors — Bumble Bee, StarKist and Chicken of the Sea, which collectively sell more than 80 percent of the canned and pouched tuna in the U.S. — claim they will not alter their tuna-buying practices.

"For those companies, their commitment to dolphin-safe tuna is unwavering," says Gavin Gibbons, spokesman for the National Fisheries Institute's Tuna Council, which represents the three processors.

Paper suggests sardine fishery collapsing, but is it?

SANTA CRUZ - In February, a pair of federal scientists released a paper that announced itself like a thunderclap - the sardine fishery in the northeast Pacific Ocean was collapsing.The conclusion reverberated immediately, especially at the intersections where fishermen and environmentalists meet to hash out fishery policies. It was a warning that the sardine fishery was set to ebb again and echoed Cannery Row's sardine collapse of the 1950s and 1960s, which crushed a vibrant industry and etched itself into the history of Monterey Bay."Our conclusion is that a number of events that were present (during that collapse) appear to be recurring," said the paper's co-author, David Demer, a National Oceanic and Atmospheric Administration scientist who heads the Advanced Survey Technologies Program in San Diego.What happened next, though, was highly unusual. Another group of NOAA scientists, lead by Santa Cruz-based Alec MacCall - an expert on sardine fisheries - published a rebuttal questioning the paper's methods and conclusions."I think were on a declining phase right now," MacCall said of sardine fisheries during an interview. "But collapse is too extreme a word. You've got to realize that we're fishing sardines at a lighter rate than any other sardine fishery in industrialized history."The implications of Demer's and co-author Juan Zmolinski's paper is potentially profound. If proven true, a major West Coast fishery, which helps feed to the growth of aquaculture worldwide is in trouble. It could also seriously impact ongoing debates about how the federal government manages fisheries."This is a whistleblower situation," said Geoff Shester, California policy director for the Monterey-based environmental group Oceana, which is suing the federal government over its management practices.MacCall said he doesn't believe the situation is as dire as the paper makes it out to be, saying the authors' sole reliance on sonar to assess fish stocks was flawed, and that they should have included other counting methods.At the very least, the rebuttal, which was signed by three other NOAA researchers, exposed a highly unusual public rift within NOAA over the state of a vital fishery. In an interview, Demer was cautious with his answers."All of these people have investment, intellectually and otherwise, in the subject," Demer said of the rebuttal, which was published in the same academic journal as the peer-reviewed original paper, Proceedings of the National Academy of Sciences."It's not surprising to me that people have different views on what's happened, and I think the expression of those views is what people are witnessing," he said. "I think it's a healthy academic exchange, and it perhaps highlights the different ways people can view the same information."

COUNTING FISH

One point of contention is an ongoing subject of discussion within fishery policy circles: how to count fish. Demer said acoustics - which give researchers feedback on the biomass of specific species - are a widely accepted method, and pointed out that he's overseeing a project this summer counting fish using that method along the West Coast. "The same technique is used in fisheries worldwide, by many different countries and is a well-studied and well-used and accepted method," Demer said.But Diane Pleschner-Steele, executive director of the California Wetfish Producers Association, said she believes already cautious catch limits - which have declined sharply in recent years - are based on low fish counts. "I think we're way underestimating it, based on what the fisheries see," Pleschner-Steele said, saying the surveys are taken further offshore than where most fish are caught. "Demer may be correct in that there may be a declining population," she said. "But I think where he's dead wrong is it's not mismanaged."Sardines are widely believed to be a species that grows and shrinks on decades-long cycles. If sardines' numbers are again dwindling, there may not be much fishery managers can do about it. "The thing is, no sardine fishery is

sustainable," MacCall said. "That's the spooky part of it. All we can do is sustain it for a reasonably long time so that society can benefit from it."

INTERNAL STRUGGLE

MacCall suggested that Demer and Zwolinski published their paper without clearance from higher-ups within NOAA, and the apparent schism between the paper said how NOAA officialdom responded is what captivates many. "I think it was unusual in that these are scientists across the hall from each other, and they should be doing a lot more talking," Shester said. Shester also said he didn't think MacCall's rebuttal undermined the fundamental conclusions of the paper. He said he expects it to be introduced in Oceana's fishery suit against the Department of Commerce and NOAA.MacCall stressed that not everyone has to fall in line with NOAA's scientific conclusions, but said once an agency goes public with information it is important that it do so with one voice. Regulators, fishermen and even environmentalists all rely on the government's scientific conclusions. "The government is in a situation where every individual scientist working for the government has to stand behind it and support the government's position," MacCall said. "So we have an extra burden of making sure what we do is right."Asked about the internal review process, Demer said he initiated a review as he does for all his papers. Asked what happened next, he declined to elaborate further. "I'm not going to continue with that one because that's going to get me in trouble," Demer said.A spokesman for NOAA confirmed that Demer initiated a review and said he was asked to include a disclaimer on the paper, which he did. But the next time the agency saw the paper was when it was published, the spokesman said.

Santa Cruz Sentinal

The Future of America's First Fishery: Improving Management Of The New England Groundfishery

Before Christopher Columbus's grandparents were born, early European explorers from the Vikings to the Basques had already discovered an untold wealth of fish in the corner of the northwest Atlantic now known as the Gulf of Maine. Here, the proximity of seemingly limitless stocks of cod that could be readily salted, dried, and transported back across the ocean helped establish communities that laid the groundwork for our modern-day society.

Today there is no more iconic profession in eastern New England than fishing. From the "Ocean State" of Rhode Island, to the Sacred Cod that has hung in the Massachusetts House of Representatives chamber since 1784, to the lobster that epitomizes coastal Maine, fish are integral to New England's culture and economy.

Today this fishery—which was once so robust, legend says, that fishermen could haul in a healthy catch just by dropping a weighted basket over the side of a skiff— is struggling to recover from decades of overfishing.

Coastal communities throughout New England rely on fishing as a fundamental source of employment, revenue, and cultural identity. And interest in this fishery expands beyond the shores from Eastport, Maine, to Point Judith, Rhode Island. As consumers become ever more educated about their seafood—trying to balance factors such as local sourcing, environmental impacts of different fishing gear, mercury and heavy metal content, and overall sustainability—reestablishing one of the world's most productive fisheries is of interest to more people than ever before.

This report begins by summarizing management of the northeast multispecies fishery, which is more commonly known as the New England groundfishery and whose participants are referred to as groundfishermen. (These terms will be used throughout this report.) The fishery is comprised of 15 bottom-dwelling species of fish such as haddock, flounders, and the iconic cod, which in some cases are further divided into distinct populations known as "stocks." Atlantic cod, for example, is managed as Gulf of Maine cod, Georges Bank cod, and Georges Bank cod east.

The document details a sea change that occurred when the groundfishery shifted to a management system known as sector management, or simply "sectors," at the beginning of the 2010 fishing year. It then provides an overview of looming challenges facing the fishery including the state of fisheries science, how to monitor and oversee the fishery in a cost-effective manner, and how to prevent socioeconomic upheaval in traditional fishing communities during the transition to a new management system intended to end the recent history of overfishing in the region.

The report concludes with recommendations for improving both the management of the fishery and the relationships among fishery stakeholders, which are critical to the fishery's future.

Today's management in the groundfishery: Sectors

Sector management, implemented at the start of the 2010 fishing year, is arguably the most drastic change the fishery has undergone since passage of the nation's first overarching fisheries management law, the Fishery Conservation and Management Act of 1976. At its core, sector management is a form of a so-called "catch share" system. In such systems, regulators set a limit on the overall amount of fish the industry is allowed to catch for the year, which is then partitioned among participating fishermen so each receives a percentage of the total.

Catch share systems in general, and sector management in particular, are highly controversial. Supporters of catch share

management point out that by assuring each fisherman that he will have access to a secure percentage of fish annually, the system gives fishermen a long-term stake in the health of the resource. Leaving more fish in the water today will directly benefit the fishermen tomorrow. The idea is that this takes away the perverse incentive to catch every fish as quickly as possible before someone else does.

Yet many fishermen, particularly those who feel initial allocations are not fairly assigned, oppose catch shares on the belief that the systems often lead to consolidation as fishermen accumulate fishing quotas in fewer hands to take advantage of economies of scale. They contend this reduces the number of boats on the water, costing jobs, and threatening communities.

Sector management has just completed its second year of operation. This report will provide a brief overview of year one and compare it to operations under the previous management system. It will also address common criticisms of sector management and delve into fundamental challenges facing the industry including the increased cost of monitoring operations and a sudden unexpected downturn in the scientific assessment of the health of a key fish stock: Gulf of Maine cod.

A key element of this review will be defining—in admittedly broad, sweeping terms—the positions of various stakeholder groups, including fishermen (both those who support and oppose the system), regulators, politicians, scientists, and environmental groups. By understanding the perspectives of all user groups, we can help to illuminate a path forward, clear the hurdles of the past, and find our way to a mutually beneficial future.

Sector management represents the best hope for the future of this historic fishery. The system has its limitations, and improvements are undoubtedly necessary. Yet there is near-universal distaste for a return to the old system of management—a system where fishing was controlled by limiting the number of days per year fishermen were allowed to fish—and no other viable alternative has emerged, even from those who suggest sector management will result in hyperconsolidation of the fishery into a few hands, financially supported either by corporate entities or environmental groups and foundations.

Troubled relationships in the fishery need to be fixed

The relationships among fishery regulators, scientists, industry members, and environmental groups are more contentious in New England than in any other region of the country. Every one of the groups involved has played a role in the deterioration of these relationships, which in turn has led to the lack of trust among stakeholders in the region.

Beginning in the late 1980s, regulators imposed increasingly strict limits on this historic fishery designed to allow depleted fish populations to recover. Congress bolstered these efforts by enhancing the conservation requirements in law.

Fishermen and their political allies often resisted these efforts, disparaging the science that suggested catch reductions were necessary.

Scientists struggled with imperfect data and the uncertainty of attempting to quantify and understand a resource consisting of a dozen different species that are mostly invisible, highly mobile, and spread across tens of thousands of square miles.

Environmentalists, worried that fish stocks were approaching a tipping point beyond which they might never recover, pushed back against industry efforts to weaken restrictions.

And regulators became ensnared in an escalating maelstrom of conflicting arguments, legal mandates, and increasingly convoluted regulations born of attempts to broker a compromise that could appease a disparate set of stakeholders.

As we attempt to rebuild depleted fish populations, these human relationships now labor in a toxic soup that has poisoned dialogue, expunged trust, and made rational progress all but impossible to achieve. The fundamental source of future success in the groundfishery must start with improved relationships among stakeholder groups. No management structure stands a chance without some degree of buy-in and cooperation of all participants.

Recommendations for improving stakeholder relationships and management

These recommendations will be explained in greater detail in the report, but here are the steps necessary to improve relationships and management strategies for the groundfishery. These will ensure the system can continue to build on the improvements made in its first year, particularly in light of budget constraints and belt-tightening taking place across the federal government as well as new challenges that have emerged involving scientific review of fisheries and how to collect data that will be integral to the future success. These recommendations will also help overhaul the relationships among the disparate stakeholder groups so rational dialogue can once more take the place of bombastic rhetoric.

- New personnel hired to fill leadership positions within the National Oceanic and Atmospheric Administration—the government agency with jurisdiction over our nation's fisheries—in the northeast region must prioritize changing the perception of the agency among fishermen and other stakeholders.
- Every stakeholder group, including the National Oceanic and Atmospheric Administration, scientists, fishermen, politicians, and environmental nongovernmental organizations, must take steps to improve communication and make a greater effort to understand the perspective of those who disagree with them.
- All fishery stakeholders must collaborate to improve fishery data collection and analysis to provide more accurate assessments of fish populations and reduce uncertainty that may artificially reduce total allowable catches.
- The National Oceanic and Atmospheric Administration's Northeast Fisheries Science Center must work with fishermen and external organizations to reduce the cost of fishery monitoring, including by developing methods to implement electronic monitoring systems as a replacement or supplement for human fishery observers.
- The National Oceanic and Atmospheric Administration and the New England fishery management council must take steps to analyze the validity of consolidation concerns in the sector management system and address them as necessary, including through exploration and development of permit banks to ensure a geographically diverse group of fishermen retain access to the fishery.

ThinkProgress.org

8 species of wild fish have been detected in aquaculture feed

Aquaculture initially came as an ecological initiative to reduce pressure from fishing and to cover human food needs. However, a problem has emerged: consumers prefer carnivore species, like salmon and cod that require tons of high quality protein for their quick, optimum development.

"If these proteins are obtained from extractive fisheries, aquaculture stops being an alternative to over-fishing and starts contributing to it, turning it into a risk for natural marine ecosystems" said Alba Ardura, lead author of the study published in '*Fisheries Research*' and researcher in the department of Functional Biology at the University of Oviedo, Spain.

The research team analyzed a DNA fragment from commercial feed made for aquarium cichlids, aquaculture of salmon and marine fish in aquariums. After removing oil and fat from the feed, DNA sequences were obtained and compared with public databases to identify the species found.

From fish feed samples, supplied by manufacturers and bought in animal shops, researchers identified eight species of wild marine fish that were from high trophic levels in the food chain.

Industrial waste from processing and commercialization for human consumption of Peruvian anchoveta (*Engraulis ringens*), European sprat (*Sprattus sprattus*), Pacific cod (*Gadus macrocephalus*), whiting (*Merlangius merlangus*), Atlantic herring (*Clupea harengus*), Pacific sandlance (*Ammodytes personatus*), jack mackerel (*Trachurus symmetricus*), and blue mackerel (*Scomber australasicus*), allow fish meal for aquaculture fish to be made.

Nonetheless, according to the researcher "some of the species found in this feed are commercialized fresh without being processed, and they suspect that they came to the feed directly from extractive fisheries." This is the case with herring and Pacific sandlance.

The research suggests that aquaculture is partly maintained by fisheries, and aquaculture fishes are fed by wild fish sold "whole" (without being processed) and fresh directly from fishing vessels. "If species from extractive fishing are used to feed farm fish, aquaculture does not help minimize over-fishing" warns the expert who suggests "urgently" revising the composition of aquaculture feed to replace them with other proteins. The aim is to reduce the exploitation of natural fish populations.

Vegetable proteins, an alternative

Ardura proposes increasing efforts to gain high quality proteins from other sources, such as vegetable proteins, which supplement farmed fish's nutritional needs. This way they will be able to "minimize the impact of aquaculture on wild populations."

River Herring Populations Teetering on the Brink

Forget the recent headlines suggesting that there is no decline in the numbers of alewives, the precious little forage fish that, along with its lookalike blueback herring cousin, underpins the marine food pyramid.

Alewives swarming up local rivers to spawn in recent weeks have inspired talk that the fish are as plentiful as in the past, but the runs are deceptive. To the contrary, the National Marine Fisheries Service (NMFS) is investigating whether to afford protection to the alewife and blueback herring, together called river herring, under the federal Endangered Species Act (ESA). A determination on whether to propose classification of the fish as 'threatened" under the act may be made as early as this autumn.

"There is no evidence yet that there is a better alewife run than normal," says Steve Gephard, veteran fisheries biologist with the state Department of Environmental Protection (DEEP), Connecticut.

Low water has made fish more evident and warm weather not only triggered the run almost a month early but probably brought more people to waterside to see the fish as they moved up from the sea. An accurate assessment of the alewife run cannot be made until another month or more passes, says Gephard, who also notes that blueback herring begin spawning runs in May. Low water, due to lack of rain, may impede upstream traffic of the river herrings, says Gephard. Beaver are building dams to raise water levels, creating another potential barrier, he adds.

The decline of river herring has been long in the making. River herring hatch upstream but mature in the Atlantic Ocean off the East Coast, where they spend most of their lives. A classic tome on fisheries published in 1953, *Fishes of the Gulf of Maine*, notes that when Europeans arrived in New England, a stream without a river herring run was rare. Sharp declines in spawning runs were noted as far back as the 1940s. By the 20th century runs of millions of fish were a memory.

Connecticut and other states have restored riverine habitat and built fish ladders to shepherd fish around dams and other barriers to their spawning runs. Connecticut, Massachusetts and Rhode Island are among the states that have closed river herring fisheries, even though there seems to be a fair number of alewives returning. The problem is that alewives and blueback herring are virtually identical, so that even if one recovers, both species must be protected. For years, virtually the only way to tell them apart was fatal, cutting them open to examine the stomach lining. Blueback herring recovery efforts on the Connecticut River

seem to have snatched defeat out of the jaws of victory. Improvements resulted in more than 630,000 blueback herring counted in 1985 at the Holyoke Dam on the Connecticut River. In 2006, only 21 fish passed the dam while last year the total was a paltry 138.

The threat to river herring seems to stem from factors far beyond state borders, in the open sea. Offshore, the fish are under federal jurisdiction, and have received minimal protection. That may be changing. In March, a federal judge in the nation's capital ruled in favor of litigation by a coalition of sports fishermen and conservationists and ordered the NMFS to initiate more protection for river herrings. Last August, the Natural Resources Defense Council petitioned the NMFS to have river herring listed as "threatened" under the ESA. Listing would afford the fish afford stringent federal protection intended to promote their recovery.

Many conservation groups claim that the bycatch of river herring taken offshore by industrial-scale trawlers fishing for Atlantic herring is decimating mature river herring populations. These ships can be up to 200 feet long and sweep up an entire herring run in a single net. The bycatch is most significant in winter, when herring school with Atlantic herring and mackerel. However, a study published in 2008 by the Maine Department of Marine Resources and the Massachusetts Division of Marine Fisheries suggested that, while significant, the bycatch alone is not responsible for the plight of river herring.

Whatever the root cause of the decline, it will take combined action by coastal states and the federal government, from upstream spawning grounds to offshore feeding areas, to restore healthy river herring populations. River herring, which reach a length of about 10 inches, are a prime prey of myriad other animals. They have been an important source of fish and lobster bait, and the list of their predators includes striped bass, tuna, whales, osprey, bald eagles, otters and — especially when smoked or pickled — people.

KDM Patch

Proposed Fisheries Act changes upend Cohen Commission salmon inquiry

OTTAWA — The federal government's bid to make sweeping changes to the Fisheries Act has prompted an 11th-hour scramble at the $26.4-million Cohen Commission, which was created by Prime Minister Stephen Harper in 2009 to study dramatic declines in the West Coast sockeye fishery.

Senior commission counsel Brian Wallace sent a letter to all hearing participants — including governments, industry, First Nations, and environmentalists — late last week asking them to submit by May 14 their views on how the budget bill affects their previous positions on the state of B.C.'s top fishery. The letter was in response to the Conservative government's tabling of a 431-page omnibus budget-implementation bill that includes Fisheries Act amendments which would, according to critics, "gut" key provisions to protect fisheries habitat. Justice Bruce Cohen's commission published a technical report in February 2011 that described the federal legislation's habitat-protection provisions, first established in 1976, as "Canada's primary legislative tool" and an "effective backbone" to protect sockeye habitat.

The government's new bill "contains proposed changes to a number of pieces of legislation relevant to the work of this commission," senior commission lawyer Brian Wallace wrote in a letter provided Tuesday to the Postmedia News. Wallace, noting that Bill C-38 was tabled as the commission "is nearing completion of its work," said there are no plans to reopen evidentiary hearings on the impact of the bill. But he offered participants the opportunity to provide "supplementary submissions" no later than May 14.

Craig Orr, chairman of the Pacific Marine Conservation Caucus — made up of conservation and environmental groups such as the David Suzuki Foundation — said Bill C-38 is a "game-changer" that will necessarily affect the commission's work. "I think this act does change how Cohen must view the ability of the federal government to effectively protect fish habitat in B.C. and across Canada and thus strikes at the heart of what this federal inquiry is trying to sort out," he said.

The current law prohibits Canadians from engaging in any activity "that results in the harmful alteration, disruption or destruction of fish habitat." The proposed new wording is far more narrow and focuses on economic fisheries, banning "serious harm to fish that are part of a commercial, recreational or aboriginal fishery, or to fish that support such a fishery." The government defines "serious harm" as "the death of fish or any permanent alteration to, or destruction of, fish habitat."

Commission spokeswoman Carla Shore said it's "too soon to tell" if the government's legislative plan will have a major impact in Cohen's findings. The commission, which concluded hearings in December, recently obtained a three-month extension from the federal cabinet and is now scheduled to report by Sept. 30. The commission was appointed in 2009 after three consecutive years of sockeye-fishing-season closures due to weak returns of spawning salmon to the Fraser River. The inquiry has looked at a wide variety of possible causes, including the impact of salmon farms, diseases and parasites, dumping of contaminants, climate change and the "status" of Fisheries and Oceans Canada's "science and management."

The 2011 technical report on habitat issues stressed the importance of Fisheries Act habitat protection provisions introduced in 1976. "Canada's primary legislative tool for fish habitat conservation and protection, including sockeye salmon habitats, is the Canada Fisheries Act. The Act provides an effective backbone for a habitat protection strategy," the scientific report said. Before that year, habitat destruction wasn't prohibited and as a result "considerable habitats" in the Fraser River estuary were "irreversibly lost."

The report noted that the Fisheries Act is "often the primary trigger" for reviews of economic projects under the Canadian Environmental Assessment Act. It also described the legislation as a regulatory driver that will "compel habitat conservation and compensate for habitat losses." The authors concluded that the evidence doesn't support arguments that declines of Fraser River sockeye returns from 1990 to 2010 were caused by habitat destruction caused by major projects. The federal government's "no net loss" policy on habitat, brought in by the Progressive Conservative government in 1986, has resulted in an "apparent net gain" in sockeye habitat over the period, the report said.

Fisheries Minister Keith Ashfield has argued that the legislation must be amended because landowners, farmers and municipalities have faced an unreasonable regulatory burden by fisheries bureaucrats.

B.C. Conservative leader John Cummins, a former federal Tory MP who has publicly criticized previous attempts by the federal government to change fisheries legislation, said Tuesday he doesn't know enough about the current bill to comment. He said he agrees that fisheries bureaucrats have gone too far in harassing land owners over issues that don't seriously endanger fish, though he also said the federal government must recognize the importance of habitat. "Protection of fish habitat goes hand-in-glove with protection of fish," Cummins said in an interview. "If you don't protect their habitat how the hell are you going to protect the fish? That's the obligation of the department (of fisheries), to protect fish, and that means fish habitat."

Fisheries changes attacked in prestigious Science journal

Three scientists from B.C. have used an internationally prestigious journal to launch an attack against changes to the federal Fisheries Act currently before the Senate.

In a letter published online Thursday in the journal "Science," the scientists from Simon Fraser University criticize cutbacks at eco-toxicology labs and an aquatic research facility and changes to the act itself, saying the government's rationale for making the changes is not supported by fact. The changes are part of the omnibus budget bill known as Bill C-38, which passed third reading in the House of Commons earlier this week but has not yet become law. The letter by the three scientists will also appear in the hardcopy edition of "Science" on Friday.

The Department of Fisheries and Oceans did not respond to a request for comment on the letter.

"Where it seems that the evidence doesn't support the claims, it's important that people look at that and make the leaders aware of that, and continue to call out that we do value evidence and we do value effective management of the country," said Brett Favaro, a PhD student at the university. "So that's where this really comes from is looking at the data and making sure we are making the best decisions based on the data."

According to the bill currently before the Senate, the amended act would only apply to major waterways and only to prohibit "serious harm" to a commercial, recreational or aboriginal fishery. "Serious harm" is defined as death or permanent damage to habitat. The changes would also give the federal government more leeway to allow exceptions.

Changes 'not supported by evidence'

The Conservative government has argued the legislation has been applied indiscriminately against ditches and other structures unlikely to bear fish and as a result has interfered with landowners and farmers, write Favaro, and SFU biology professors John Reynolds and Isabelle Cote, citing Parliamentary debates. The government has also argued that removing habitat protection would enable Canadians to undertake activities on their properties without obtrusive interference, the scientists add.

But they write that the reasons for making those changes are not supported by evidence.

In fact, the scientists write that between 2006 and 2011, only one proposal reviewed by the federal environmental assessment process was rejected because of potential destruction to fish habitat. And of 1,283 convictions under the Fisheries Act announced in media releases between 2007 and 2011, only 21 pertained to the destruction of fish habitat, write the scientists.

"Ours is the first, to my knowledge, quantitative assessment, where we actually looked at the data and figured out what they're saying," said Favaro. He said he hopes politicians will review the bill because of public concern. During the past 100 years, the country has lost about one-seventh of its wetlands, and it continues to lose them, a fact that will eventually lead to the loss of fish, he added. Four former fisheries ministers — two Conservative and two Liberal — said in an open letter last month they don't believe the government of Stephen Harper has given a good explanation for including environmental provisions in a budget bill. "We find it troubling that the government is proposing to amend the Fisheries Act via omnibus budget legislation in a manner that we believe will inevitably reduce and weaken the habitat protection provisions," wrote Tom Siddon, David Anderson, John Fraser and Herb Dhaliwal. All former ministers are from British Columbia.

Recently, Canada's only marine-mammal toxicologist, Peter Ross, announced he'd be losing his job at the Institute of Ocean Sciences on Vancouver Island because of federal budget cuts at Fisheries and Oceans.

The Fisheries Department will be slashing about 400 positions from its 11,000-strong workforce.

The Canadian Press

The end of fish, in one chart

Want to see how severely we humans are scouring the oceans for fish? Check out this striking map from the World Wildlife Fund's 2012 "Living Planet Report." The red areas are the most intensively fished (and, in many cases, overfished) parts of the ocean — and they've expanded dramatically since 1950:

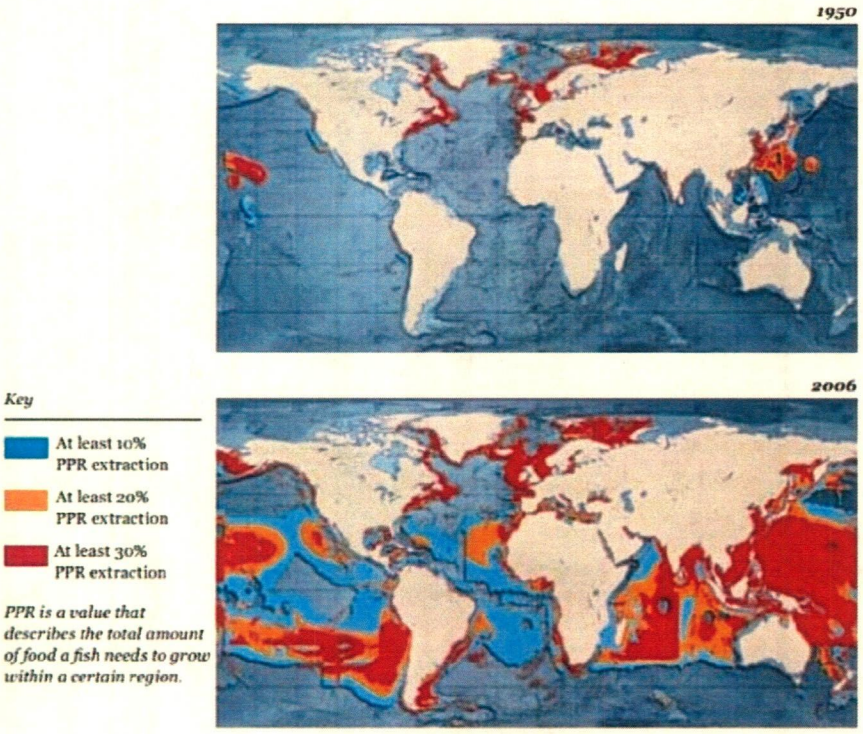

Figure 51: The expansion and impact of world fishing fleets in a) 1950 and b) 2006

To measure how intensively these areas are fished, Swartz et al., (2010) used the fish landed in each country to calculate the primary production rate (PPR) of each region of the ocean. PPR is a value that describes the total amount of food a fish needs to grow within a certain region. (WWF)

Between 1950 and 2006, the WWF report notes, the world's annual fishing haul more than quadrupled, from 19 million tons to 87 million tons. New technology — from deep-sea trawling to long-lining — has helped the fishing industry harvest areas that were once inaccessible. But the growth of intensive fishing also means that larger and larger swaths of the ocean are in danger of being depleted.

Daniel Pauly, a professor of fisheries at the University of British Columbia, has dubbed this situation "The End of Fish." He points out that in the past 50 years, the populations of many large commercial fish such as bluefin tuna and cod have utterly collapsed, in some cases shrinking more than 90 percent (see the chart to the right).

(WWF, Living Planet Report 2012) Indeed, there's some evidence that we've already hit "peak fish." World fish production seems to have reached its zenith back in the 1980s, when the global catch was higher than it is today. And, according to one recent study in the journal Science, commercial fish stocks are on pace for total "collapse" by 2048 — meaning that they'll produce less than 10 percent of their peak catch. On the other hand, many of those fish-depleted areas will be overrun by jellyfish, which is good news for anyone who enjoys a good blob sandwich.

The full WWF report (PDF), meanwhile, is chock full of brightly colored graphs charting the decline of wildlife across the globe. All told, global vertebrate populations have declined by some 30 percent since 1970. But that number masks a lot of variation. Wildlife actually appears to be recovering in the temperate areas, while it's utterly collapsing in the tropics. (It seems there have been some modest conservation successes in the wealthier temperate regions — the European otter is staging an impressive comeback, for instance.)

The big thing the WWF paper emphasizes, however, is that human consumption patterns are currently unsustainable. We're essentially consuming the equivalent of one and a half Earths each year. This is possible because we borrow from the future, as is the case with fish — one day the world's fish population may collapse, but there's plenty for us now. WWF doesn't quite call it a Ponzi scheme, but that's the first metaphor that comes to mind.

So is there any way to stop this slide? After all, it's not like people can just stop eating fish altogether. Pauly, surprisingly, is fairly optimistic. He argues that strict government quotas on catches can help stop the slide. "There is no need for an end to fish," he writes, "or to fishing for that matter." (He's not sold on aquaculture, or fish farming, since it often requires huge harvests of smaller fish to feed the big carnivorous ones in farms.)

The hitch is that when governments have tried to institute such quotas in the past — as they've recently attempted with Atlantic bluefin tuna — the rules tend to get, uh, watered down under intense lobbying. Or else shadowy black sushi markets emerge to flout the rules. But no one said it was easy, halting the end of fish.

Washington Post

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VOL. 41-4 JULY-AUGUST 2012

President's Message

I just returned from a productive week in St. Paul MN, and am inspired by the progress we made at the AIFRB Executive Board meeting. Thanks to Kathy Dickson, Allen Shimada, Tom Keegan, Tom Ihde, Dick Beamish, Jack Helle, Doug Vaughan, Jeff Schaeffer and Ed Roseman for their time and efforts. One of the most important items was an extensive discussion of keeping active Districts strong while reviving other Districts. We recognized that some well-established Districts (e.g., Northern and Southern California Districts) have regular and well-attended meetings, some Districts are reviving membership with dinner lectures and training courses (e.g., New England), and other Districts are in need of support to establish more frequent activities. In general, successful District activities are:

- focused on an attractive topic or speaker,
- well advertised,
- inclusive to all District members and selected non-members,
- attractive to students,
- organized by small group,
- have a local host who can organize the meeting,
- meetings are geographically central or rotational around the District,
- partner with other local organizations (AFS chapters, sportsmen groups)

In addition to offering this guidance on organizing successful District activities, the Board also recognized that District activities can be financially risky. Therefore, the Board decided to increase financial support to District Directors. The Board is requesting proposals from all District Directors to help fund District activities. Proposals should include planning details for funding up to $500 per proposal, but Districts can submit more than one proposal. Proposals will be reviewed by the Treasurer, Membership Chair and President (Allen Shimada, Tom Keegan and me). Proposals should be submitted to me (scadrin@umassd.edu). Once again, I thank Board members for their time and personal investment in AIFRB for supporting District activities and many other aspects of AIFRB governance. We hope that our efforts can help improve the benefits of membership.

Steve Cadrin

Seeking Nominations for Outstanding Achievement Awards

The Institute is seeking nominations for individual and group Outstanding Achievement Awards. The Outstanding Achievement Awards are the highest recognition given by AIFRB to individuals and to research groups.

The Individual Achievement Award is given to an individual who has made significant contributions to the advancement of fishery science. Candidates are rated on the following criteria: significance of publications, exceptional service to the profession, outstanding teaching or training of students, important discoveries or inventions, and significant contributions to the advancement of fishery science.

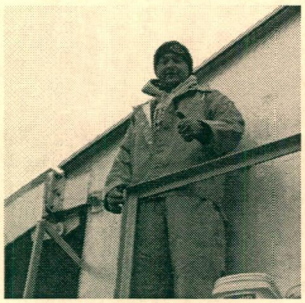
The Group Achievement Award is given to research groups with outstanding records of scientific contribution to fishery science or fishery resource policy. It is the Institute's highest award recognizing research groups that nurture excellence in fishery science. Candidates will be rated on the following criteria: sustained contribution of significant publications, exceptional service of the fishery profession, outstanding teaching or training programs, important discoveries or inventions, and significant contributions to the advancement of fishery science.

Members are encouraged to submit nominations to the Award Committee through the President (Steve Cadrin, scadrin@umassd.edu) by the end of 2012.

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

Clark Hubbs Research Assistance Award Recipients

The AIFRB Hubbs Research Assistance Award program promotes one of the Institute's primary roles by supporting the professional development and performance of its members. This years recipients are David Bethoney, Jessica Combean, Brandon Harris and Abigail Lynch. Abstracts and photos follow:



David Bethoney
PhD candidate and research associate at the University of Massachusetts Dartmouth School for Marine Science and Technology. My research is focused on increasing our understanding of river herring and American shad distribution at sea and using this information to help Atlantic herring and mackerel fishermen reduce incidental catch of river herring and shad.

David Bethoney:

Quantifying and reducing river herring bycatch in the U.S. northwest pelagic trawl fisheries

N. David Bethoney, Bradley Schondelmeier, Kevin Stokesbury and William Hoffman.

Abstract

Mid-water trawling, the primary method of harvesting Atlantic herring (*Clupea harengus*) and mackerel (*Scomber Scombrus*) in the U.S., can capture hundreds of tons of fishes in a single tow. Vessels using this fishing gear are efficient but have the potential to catch large amounts of non-target species that are difficult to quantify. Decreases in the number of anadromous river herring (*Alosa pseudoharengus, A. aestivalis*) and American shad (*A. sapidissima*) returning to spawn has led to speculation that these fishes are incidentally caught in large numbers by midwater trawl vessels. Although the role of bycatch in the decline of river herring and American shad is unclear, mid-water and bottom trawl Atlantic herring and mackerel fishermen collaborated with the University of Massachusetts Dartmouth School of Marine Science and Technology and the Massachusetts Division of Marine Fisheries to quantify and minimize bycatch. This collaborative project increased portside sampling of vessels landing in Massachusetts and Rhode Island from ²15% to 50% and created a near-real time communication system to notify vessels of areas with high bycatch. Portside sampling is an efficient, cost-effective method to estimate catch of river herring and American shad, which are pumped aboard vessels with targeted catch. Industry cooperation and the appearance of small scale spatial and temporal bycatch patterns suggest rapid communication may be effective for reducing bycatch. As managers of the Atlantic herring and mackerel fisheries consider adding regulations to reduce bycatch, this project provides fishermen with a tool to achieve this goal without increased regulation.

Jessica Comben
Jessica received a Bachelors degree in Fisheries Management for Lake Superior State University and is currently working towards her Masters degree in Aquatic Sciences at Grand Valley State University's Annis Water Resource Institute. Jessica's research interest are species of concern, specifically lake sturgeon, wetlands and aquatic insects.

Jessica Comben:

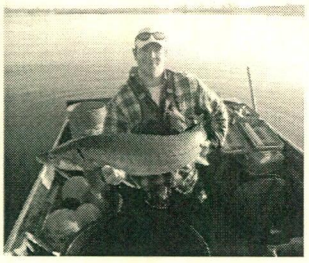
Distribution of age-0 lake sturgeon in the lower section of a Lake Michigan tributary

Jessica N. Comben[1,2], Carl R. Ruetz III[2], Kregg M. Smith[3], Elizabeth Binoniemi-Smith[1]

[1]Gun Lake Tribe (GLT), [2]Annis Water Resources Institute, Grand Valley State University, [3]Michigan Department of Natural Resources, Fisheries Division

Abstract

Knowledge of spatial distribution and habitat use of juvenile lake sturgeon (*Acipenser fulvescens*) is critical for successful restoration of this threatened species. Juvenile lake sturgeon distribution was assessed in September-December 2009-2011 using gill nets in the lower section of the Kalamazoo River near Lake Michigan. Captured lake sturgeon were fitted with either a radio or ultrasonic tag to track movement. We used side-scan sonar and hydro-acoustics to map areas where juvenile lake sturgeon were captured. Ten juvenile lake sturgeon (1 wild and 9 hatchery reared) from the Kalamazoo River were fitted with transmitters and tracked until signals were unattainable. All juvenile lake sturgeon appeared to emigrate to Lake Michigan in September-November shortly after being tagged. Total residency time of juvenile lake sturgeon in the lower section of this river is unclear, but our preliminary results suggest juveniles (d" age 1) are not utilizing the lower section of this system for nursery habitat before migrating to Lake Michigan in the late fall.



Brandon Harris
Brandon Harris is a graduate student at Grand Valley State University's Annis Water Resources Institute. Brandon's research interests are in fisheries biology and his thesis addresses questions related to population dynamics of a threatened fish species (lake sturgeon Acipenser fulvescens).

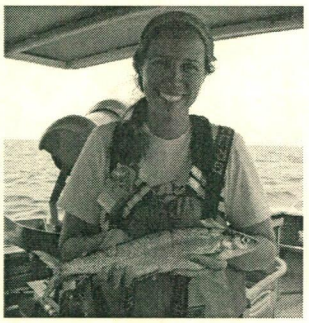
Brandon Harris:

Evaluating Removal and Mark-Recapture Methods for Estimating Abundance of a Small, Non-Game Fish

Brandon S. Harris, Carl R. Ruetz III, Jared Homola and James N. McNair, Grand Valley State University

Abstract

Unbiased estimates of stream fish abundance are critical for sound fisheries management. Most studies investigating the bias associated with estimates of stream fish abundance focus on salmonines, yet non-game fishes often comprise a major portion of many stream fish assemblages. We evaluated mark-recapture (i.e., Lincoln-Peterson model with Chapman correction) and removal methods (i.e., models M_b and M_{bh}) for estimating the abundance of mottled sculpin (*Cottus bairdii*), a common non-game fish. Specific objectives were to: (1) compare estimates of mottled sculpin abundance, (2) assess bias of removal methods by comparing estimated abundance to known abundance, and (3) evaluate closed-population model assumption. We sampled eight streams via backpack electrofishing; each stream was sampled over 2-days. On day one, fish were batch marked in three sections of a 90-m reach. On day two, fish were captured and temporarily removed from the stream during four electrofishing passes; the number and marking status of fish was recorded during each pass. Removal abundance estimates generated with program CAPTURE were significantly lower (range=22-58%) than mark-recapture estimates. Moreover, the removal method underestimated (range=38-59%) known abundances of marked mottled sculpins. Movement of marked fish was minimal among sections of the 90-m reach in all but one study stream. Survival and mark retention of mottled sculpin after capture was 100% for fish retained overnight in stream enclosures (n=405 fish). Our results suggest the closed-population assumption was valid in most streams and the removal method yielded negatively biased abundance estimates. Consequently, we recommend using mark-recapture methods to estimate abundance of small, non-game fishes.



Abigail Lynch
Abigail J. Lynch is a University Distinguished Fellow in the Center for Systems Integration and Sustainability at Michigan State University. She is a doctoral student in Fisheries and Wildlife with a dual major in Ecology, Evolutionary Biology, and Behavior, a Doctoral Specialization in Environmental Science and Policy, and a Certificate in College Teaching. Her research interests include marine and freshwater fish conservation with a policy and management focus on fisheries systems.

Abigail Lynch:

Projected impact of climate change on lake whitefish (*Coregonus clupeaformis*) in the Laurentian Great Lakes

Lynch, Abigail J.[1]; Taylor, William W.[1]; Ebener, Mark P.[2]

[1]Michigan State University, Department of Fisheries and Wildlife, Center for Systems Integration and Sustainability, 115 Manly Miles Building, East Lansing, MI 48824-1222

[2] Inter-Tribal Fisheries and Assessment Program, Chippewa Ottawa Resource Authority, 179 West Three Mile Road, Sault Ste. Marie, MI 49783

Abstract

Since 1980, populations of lake whitefish (*Coregonus clupeaformis*) have supported the most economically valuable and productive commercial fishery in the upper Laurentian Great Lakes (Lakes Huron, Michigan, and Superior; annual catch value = US$16.6 million). Changes in regional climate variables are expected to increase surface temperatures of the Great Lakes by as much as 6 degrees C and result with substantially reduced ice cover. Additionally, the average wind speed over these lakes is expected to decline. These changes are predicted to impact the ecology, productivity, and value of the lake whitefish fishery because the development of year class strength has been linked with these climatically influenced factors. This research will provide the foundation for a decision support tool to optimize harvest management in a changing climate by examining the correlation of climate projections with the compensatory resilience of lake whitefish and their recruitment dynamics in the upper Great Lakes. Specifically, this tool will integrate the impact of changes in climate on the ecology and population dynamics of this species in order to facilitate the management of this multi-jurisidictional fishery resource at a landscape-scale and assist in coordination of harvest strategies for this species in the face of changing global and regional climatic conditions.

AIFRB Seeking Young-Scientist Member for Executive Board

The Executive Board is seeking nominations for an Associate member to represent young professionals at the 2013 Board meeting (Little Rock AR, September 7-8 2013; the weekend before the Annual AFS meeting). Up to $600 in travel support is available to attend the meeting and participate in Board discussions. Associate members can nominate themselves or other members can nominate Associate Members who are willing to attend the meeting. Nominations and CVs should be sent to the Membership Committee Chair, Tom Keegan (tkeegan@ecorpconsulting.com).

Biography of AIFRB Founders

FREDERICK C. CLEAVER

Frederick C. Cleaver was born on June 27, 1916, in Everett, Washington, the first son of an English sailor and an Iowa farmer's daughter who met on a train near Tacoma, Washington. He grew up in Kalama, Washington, where he graduated from high school in 1933, earning two letters playing football as a 135-pound guard.

He earned his B.S. degree from the School of Fisheries of the University of Washington in 1941 and his Ph.D. degree from the same institution in 1967.

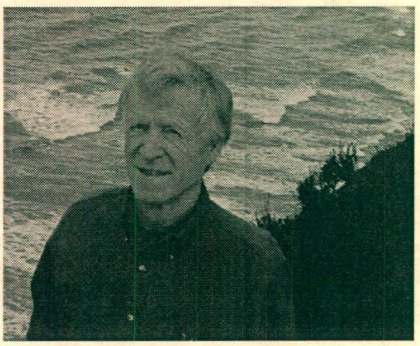
He worked for the Washington Department of Fisheries from 1942 to 1948, for the U.S. Fish and Wildlife Service in Honolulu, Hawaii, from 1948 to 1951, for the Oregon Fish Commission from 1951 to 1956, and again for the U.S. Fish and Wildlife Service from 1956 until his retirement in 1976. Dr. Cleaver's duties and assignments included research into the methodologies of determining sustainable yields of various fisheries, including Alaska king crab, salmon, and steelhead trout, and conducting biological research on various domestic and international fish populations, including flounder, herring, and tuna. In 1968, he became program director of the Columbia River Fisheries Program, where he managed programs to increase the runs of salmon and steelhead through the operation of hatcheries, establishment of bypass fish-ways at migration obstructions, and installation of screens at dangerous river diversions. He wrote and published numerous scientific papers, and reports from his research were instrumental in commercial fishing negotiations with Canada, Japan, and the former U.S.S.R.

He married Rosemary Hays of Portland, Oregon, in 1941. Rosemary passed away in June 1993, ending their long marriage of 52 years.

He belonged to many professional societies, including the American Fisheries Society, the Pacific Fishery Biologists, and, of course, the American Institute of Fishery Research Biologists—the organization that he helped establish in 1956.

Fred Cleaver died on February 6, 2002, at the age of 85, in Portland, Oregon.

John Butler Retires



Dr. John Butler, AIFRB Editor, recently retired from the National Oceanographic Atmospheric Administration's National Marine Fisheries Service (NMFS) after a long and distinguished career in fishery research. After earning his BS in Biological Oceanography from the University of Washington (1967) in and MS from Oregon State University (1971), he began his career in 1972 working for the Smithsonian Institution under Elbert. H. Alstrom as an Icthyologist. With Dr. Ahlstrom and Barbara Sumida, I published "Pelagic Stromateoid Fishes (Pisces, Perciformes) of the Eastern Pacific: Kinds, Distributions, and Early Life Histories and Observations on Five of these from the Northwest Atlantic", which has been cited more than 200 times. After earning his Ph.D. degree in Marine Biologist from the Scripps Institution of Oceanography in 1987, Dr. Butler worked for the National Marine Fisheries Service on a variety of topics including age and growth of the early stages of marine fishes, stock assessments, and survey technology. I was twice awarded the best paper in the Fishery Bulletin. In 2003 the " Biology and Population Dynamics of Cowcod (*Sebastes levis*) in the southern California Bight" won the award. In 2006 "Use of Multibeam Benthic Mapping Techniques to Refine Population Estimates of the Endangered White Abalone (Haliotis sorenseni)" won the award. Most recently I led the white abalone recovery program and the Remotely Operated Vehicle (ROV) program charged with monitoring white abalone. To meet these requirements he supervised the development and construction of a new ROV system with High Definition Video, fiber optics and advanced instrumentation specifically designed to survey benthic invertebrates and demersal fishes.

After conducting a stock assessment on cowcod rockfish which lead to creation of the Cowcod Conservation Area (4,200 sq. mi.), Dr. Butler began developing techniques to combine acoustics with optical surveys to monitor the recovery of cowcod in the area now closed to fishing and lethal sampling. His final contribution is a book "A Guide to the Rockfishes, Thornyheads and Scorpionfishes of the North Eastern Pacific" by John L. Butler, Milton S. Love, and Tom E. Laidig which is being published the University of California. The book draws largely on the 40,000 digital still images take by the ROV program from Mexico to the Gulf of Alaska and is intended to improve identification of rockfish by visual surveys.

Benefits of Rebuilding Global Marine Fisheries Outweigh Costs

Rebuilding global fisheries would make them five times more valuable while improving ecology, according to a new University of British Columbia study, published today in the online journal PLoS ONE. By reducing the size of the global fishing fleet, eliminating harmful government subsidies, and putting in place effective management systems, global fisheries would be worth US$54 billion each year, rather than losing US$13 billion per year. "Global fisheries are not living up to their economic potential in part because governments keep them afloat by subsidizing unprofitable large scale fishing fleets with taxpayer money," says study lead author Rashid Sumaila, a fisheries economist and director of the UBC Fisheries Centre. "This is like sinking money into a series of small, cosmetic fixes in an old home rather than investing in a complete, well thought-out renovation that boosts the home's value." Despite the US$130- to US$292-billion price tag for transitioning global fisheries, the study's authors estimate that in just 12 years, the returns would begin to outweigh the costs and the total gains over 50 years would return the investment three- to seven-fold. "We should be getting more from our fisheries, rather than less," says Sumaila. "If the environmental and sustainability reasons alone can't convince global governments to take action, the financial incentives should." "This study shows that politicians can no longer use the excuse that rebuilding fisheries is too expensive," says Daniel Pauly, principal investigator of UBC's Sea Around Us Project and a study co-author. "Not only is rebuilding better for the economy, it's better for ecology." In addition to eliminating harmful subsidies, new policies would need to address poor regulation, particularly on the high seas, and illegal fishing.

From PHYS.ORG

Fishing in the US Industry Market Research Report Now Available from IBISWorld

The US Fishing industry operates commercial fishing on a global scale. Exports account for almost all of the US industry's revenue, and imports largely satisfy US seafood demand. In other words, fish caught in American waters mostly end up on foreign plates where intense demand outstrips the available supply. In turn, supply shortages overseas due to strong demand make prices more lucrative for US operators. According to IBISWorld industry analyst Josh McBee, "in Asian countries especially, US fishing firms can sell at better prices than at home." Meanwhile, Asian fisheries are able to supply fish cheaper than domestic operators; thus, the industry has acquired a trade deficit of about $7.0 billion for much of the past decade. The trade-weighted index plays a key role in understanding revenue movements; an overall depreciation of the US dollar's value over the past five years has rendered a favorable environment for exports. Other influential factors on revenue include downstream demand from seafood preparation and per capita seafood consumption, while the prices for oil and seafood factor into profit margins. In the five years to 2012, industry revenue is expected to grow at an annualized rate of 4.6% to $5.7 billion on the back of strong export sales. In 2012 alone, revenue is expected to grow a marginal 0.6%; while disposable incomes increase, export demand is expected to level off as contamination fears following the Fukushima reactor scare in Japan die down.

Most participants in this industry are relatively small nonemploying firms. As such, industry concentration is very low. Fisheries management policies that restrict the number of operators issued commercial fishing licenses have increased concentration. Likewise, the limited availability of licenses spurs competition in the Fishing industry. Greater government regulation could increase concentration. For example, a reduction in the number of vessels permitted into a particular fishery would allow remaining incumbents to increase their share of the annual catch. "If some firms succeed in cornering a market with exclusive legal rights to certain waters, their business could expand to gain a significant market share," says McBee. Even if such a scenario did occur in the United States, industry concentration would remain low because nonemployers currently have such a vast majority of establishments.

Overall, reduced per capita disposable income in the past five years has driven US consumers away from fish and seafood purchases, as fish and seafood are often featured as part of the "white tablecloth" dining market. Although concerns about red meat's reported links to increased cancer risks have driven consumers to the industry's alternative protein source, seafood's higher prices relative to chicken and turkey have failed to fully capture the health-minded market. However, as the economy recovers and consumer spending picks up over the next five years, sales of fish are expected to rise. In addition, the trend toward health-consiousness is expected to gain traction, supporting demand. Through 2017, the Fishing industry is forecast to grow at at a steady rate. As marine-bound animal stocks recover after the 2010 BP oil spill, operators in the Gulf will be able to yield more pounds per catch and rebuild revenue. For more information, visit IBISWorld's Fishing in the US industry report page.

In new report, UN urges improved fisheries management to help ensure food security

The United Nations food agency today urged countries to effectively manage their fisheries and aquaculture sectors to help ensure the food security for millions of people, warning that failing to do so would have serious environmental, economic and social consequences. "Fisheries and aquaculture are making a vital contribution to global food security and economic growth," the head of the Food and Agriculture Organization's (**FAO**) Fisheries and Aquaculture Department, Árni M. Mathiesen, said in a news release. "However, the sector faces an array of problems, including poor governance, weak fisheries management regimes, conflicts over the use of natural resources, the persistent use of poor fishery and aquaculture practices. "It is further undermined by a failure to incorporate the priorities and rights of small-scale fishing communities and the injustices relating to gender discrimination and child labour," Mr. Mathiesen added.

According to the latest issue of its report on the matter, entitled ***The State of World Fisheries and Aquaculture 2012***, world fisheries and aquaculture produced a record 128 million tons of fish for human food last year – an average of 18.4 kilograms per person. In addition, the report notes that the sector is a source of income for 55 million people. It goes on to note that the primary threats undermining the food and nutrition security potential of fisheries and aquaculture result principally from ineffective management coupled with poor conservation of habitats – and states that a transition towards people-centred approaches is required to enhance the sector's contribution to food and livelihoods security.

In the report, FAO calls on governments to boost their efforts to ensure sustainable fisheries around the world, noting that many of the marine fish stocks monitored by the agency are under great pressure as nearly 30 per cent of them are overexploited, and 57 per cent are fully exploited, meaning that they are at their maximum sustainable production. "Overexploitation not only causes negative ecological consequences, but it also reduces fish production, which leads to negative social and economic consequences," the report states. "To increase the contribution of marine fisheries to the food security, economies and the well-being of coastal communities, effective management plans must be put in place to rebuild overexploited stocks."

In the news release, FAO's Director-General, José Graziano da Silva, said that fisheries and aquaculture play a vital role in the global, national and rural economy. "The livelihoods of 12 per cent of the world's population depend directly or indirectly on them. Fisheries and aquaculture give an important contribution to food security and nutrition," he said. "They are the primary source of protein for 17 per cent of the world's population and nearly a quarter in low-income food-deficit countries."

The report argues that strengthened governance in this sector is required to prove incentives for sustainable ecosystem mechanisms, and recommends the development of voluntary guidelines to attain a global sustainable food production system which takes into account the role of small-scale fisheries. "Enabling fisheries and aquaculture to flourish responsibly and sustainably requires the full involvement of civil society and the private sector," Mr. Mathiesen said. "Business and industry can help develop technologies and solutions, provide investment and engender positive transformation. Civil society and international and local non-governmental organizations can hold governments accountable on agreed commitments and ensure that the voices of all stakeholders are heard."

Fed Action To Limit Albatross Deaths From Longline Fishing Not Enough, Says Conservation Group

The U.S. Fish and Wildlife Service (FWS) issued a permit under the Migratory Bird Treaty Act (MBTA) on Monday, authorizing a limited number of seabirds to be killed or injured by Hawaiian swordfish vessels. This action is the first permit ever issued under the MBTA – America's foremost law protecting migratory bird species – to regulate the "take" of migratory birds in the operation of an otherwise lawful commercial activity.

Until now, only regulation under the Endangered Species Act had been used to prevent seabird deaths caused by commercial longline fishing, and then only in relation to the endangered Short-tailed Albatross. It has been well-known for decades that Hawaiian swordfish boats kill and injure Black-footed and Laysan albatrosses. The birds are attracted to and dive on baited hooks, becoming ensnared in lines or impaled by the hooks and dragged under the surface to be drowned. However, the MBTA had not historically been applied to this fishery because the National Marine Fisheries Service (NMFS – the federal agency that oversees the U.S. fishing fleet) had asserted that the areas where it operates, federal waters and on the high seas, lie outside the jurisdiction of the MBTA. But NMFS evidently reversed their position in 2011, when they decided to apply for this permit.

From the The Chattanoogan

White abalone slide toward extinction

Scientists from the federal fisheries lab in La Jolla have reported a serious decline of white abalone along the San Diego coastline, confirming some of the worst fears about the species as it slides toward extinction. "In the absence of fishing, we hoped to see the population stabilize or increase," said Kevin Stierhoff, a biologist at NOAA's Southwest Fisheries Science Center, and lead author of a new article in the journal Biological Conservation. "However, our latest assessment using data collected in 2008 and 2010 indicates that the white abalone population has continued to decline by approximately 78 percent over the last ten years."

In 2001, white abalone became the first marine invertebrate listed under the Endangered Species Act. The mollusk was once abundant off the coasts of Baja and Southern California, thriving in waters 15 to 200 feet deep.

Scientists have been surveying white abalone along the local shoreline since 2002 using a remotely operated vehicle. Their results confirm earlier predictions that wild populations had dwindled too low to support successful reproduction, and that as animals died of natural causes a new generation would not emerge. "The continuing decline 30 years after the last major commercial harvest demonstrates that the strategy of benign neglect, or allowing the population to recover without intervention, has clearly failed," the research study said.

White abalone are "broadcast spawners," projecting eggs and sperm into the water column at the same time for fertilization. If there is not a suitable partner close by, it offspring are unlikely. "Unfortunately we have continued to see white abalone grow larger, older and further apart with no evidence of significant numbers of offspring for the last ten years," said John Butler, a NOAA scientist and co-author of the article. "While it could be the juveniles are hiding or too difficult to see, it is more likely that the species is just failing to reproduce."

From the San Diego Union

Conch fishery lucrative, imperiled

MARTHA'S VINEYARD — While you won't find conch on menus at seafood joints on the Cape and Islands, in recent years it has become one of the southern New England fishing community's most lucrative fisheries, with most of the catch heading to Asia. Fishermen in southern New England have been so successful that state officials now say that unless significant conservation measures are implemented soon, the little-known industry will be in danger of collapse. According to the state Division of Marine Fisheries, last year the state's conch fishery brought in more than $6 million. For many fishermen, conch has come to replace lobster as the catch of choice, after stocks of the crustacean dropped in southern New England's warming ocean waters, said state senior marine fisheries biologist Robert Glenn. "As opportunities to fish for lobster have dramatically declined, the guys who historically didn't conch fish are now putting a substantial amount of effort into it," he said.

A jump in price of conch in recent years due to increased demand from Asia created what state fisheries managers called a "gold rush" mentality for the sea snail among fishermen from the Cape and Islands, and Buzzards Bay. According to the state, the conch fishing effort in Nantucket Sound has more than doubled in the past five years. That has meant more fishermen pulling in fewer and fewer conch. Earlier this month, at daybreak, fisherman Donald Benefit pulled his boat, Payback, into Edgartown harbor to refuel. "Conch is just about over," he said. "It's tough. A lot of people pounding them. The boats will be thinned out quickly . . . because there's not much left."

At the same time the conch population is diminishing, little is known about the the animal's biology — information that could help formulate conservation plans. In 2010 and 2011, Glenn led a survey team to determine the age, sexual maturity, and growth rates in local conch. "You would have thought this kind of study would have been done years ago," he said. "What we found was that virtually zero of the female conchs at minimum legal size [of 2.75 inches] are sexually mature. For a long-term harvest strategy, harvesting off the animals before they have the chance to spawn, even once, is probably not a sustainable strategy." Technically, the conchs are not conchs at all, but channeled whelks. True conchs are tropical herbivores while whelks live in more temperate waters and are predators. But the term conch has stuck for the local sea snails.The constant demand for conch in Asia, where they are popular in soups, has led to localized collapses all over the globe, from the Netherlands to Japan to South Carolina to Costa Rica.In many of those areas, populations of various kinds of sea snails have failed to recover because of their reproductive behavior. Where currents can carry lobster larvae from afar to repopulate an area where they have been completely removed, conch anchor their egg casings — familiar to beachcombers as twisting papery necklaces on the wrack line — on the ocean floor. Moving at literally a snail's pace, it takes decades for them to repopulate an area.

At the end of a recent weekday, Danny Chan returned from his daily rounds of Martha's Vineyard's harbors and unloaded 1,300 pounds of conch at his small sorting facility in Vineyard Haven. Chan is the president of the wholesale company Aqua World Seafood Corp., which he founded two decades ago, and one of the Vineyard's main buyers of conch. From his modest warehouse in Vineyard Haven, he ships the conch to shucking houses in New Bedford and New York City. Some of the catch stays stateside, where it is shipped to Chinatowns and the rare Italian restaurant serving "scungilli," but much of it ends up in Asia, especially Hong Kong. Surveying the bags of whorled, seaweed-crusted shells Chan said that day's haul was a shadow of

the catches of former years. "Every boat used to bring in four times this much when I first started," he said.

University of New Hampshire doctoral candidate Shelley Edmundson has been working with Vineyard fishermen to tag more than 2,000 conch as part of a multiyear project to illuminate the poorly understood fishery. Her work was partly inspired by the concerns of local fishermen whose horseshoe crab-baited pots dot the bottom of Horseshoe Shoal, the future site of Cape Wind. It is unknown how the proposed wind farm would affect the fishery, but local fishermen fear the worst. "We don't know a lot about the juveniles," Edmundson said. "Once they hatch, nobody knows where they go, what they feed on, what their growth rate is, or what is happening, so we're trying to figure that out."

This spring, Glenn visited fishermen on the Vineyard and in Bourne to discuss possibly increasing the minimum catch size limit from 2.75 inches to 3.5 inches, the point at which his team found that 50 percent of conch are sexually mature. This fall the state will hold public hearings on the proposed regulations. Benefit is skeptical that a new size restriction will help much and estimates it will put most of the current conch fishermen out of business. He proposes shutting down the fishery in August when the catch drops and scientists and fishermen believe the animals are breeding. "If you don't have enforcement now, what's a half inch gonna do?" he said. "It's like every other fishery they have: Wait until it's depleted then put so many restrictions on it that you can't fish it again. The conch will come back quick, maybe five years. But that's a long time when you're paying off a mortgage."

From the Boston Globe

Willapa Bay oyster grower sounds alarm, starts hatchery in Hawaii

A Willapa Bay shellfish company is shifting some of its business to Hawaii because of ocean acidification that scientists believe is killing tiny oyster larvae in shellfish farms along Washington's coast. After 34 years rearing shellfish in Willapa Bay, Dave Nisbet was in a bind: Nature had stopped providing. Oysters were no longer reproducing naturally on the Washington Coast. Oyster larvae were even dying in nearby hatcheries, which use seawater to raise baby shellfish that get sold as starter seed to companies like Nisbet's Goose Point Oysters. But when, in 2009, Nisbet heard oceanographers identify the likely culprit — increasingly corrosive ocean water, a byproduct of the same greenhouse gases that contribute to global warming — the oysterman did the unthinkable.

Nisbet took out a loan and spent three years testing and building a new hatchery that opened recently. In Hawaii.

Most of Washington's $100 million-a-year oyster industry has been whipsawed in recent years by ecological problems. But Nisbet's oyster company appears to be one of the first businesses in the Northwest — perhaps anywhere — to shift part of its business to a new region in response to ocean acidification. "I just got nervous," Nisbet said. "I was afraid if I didn't do something, then our business would just slowly die."

Now, rather than relying on oysters that have spawned in Willapa Bay or on juvenile oysters purchased from a nearby hatchery — as he has for years — Nisbet raises larvae in tanks in a million-dollar, 20,000-square-foot plant in Hilo, Hawaii. The tiny larvae are then sent by mail to Washington, where Nisbet and his team oversee the rest of the multiyear growing cycle in Willapa Bay. "It would have been much easier and cheaper to start a hatchery here," Nisbet said. "But we just saw the hatcheries having failures, the larvae dying in the tanks and just decided to sidestep the issue completely." Nisbet's move is just the latest sign of how the threat of ocean acidification is altering the way Washington's shellfish growers do business.

Changes come fast

Scientists for years have warned that excess carbon dioxide from the burning of fossil fuels eventually would be taken up by marine waters and begin lowering the pH of the world's oceans. In the last five years, oceanographers at the National Oceanic and Atmospheric Administration (NOAA) working along the U.S. West Coast repeatedly have documented that ocean chemistry is already changing, decades earlier than anyone predicted. Scientists are still learning just how those changes ultimately may upend marine food webs. Researchers have shown that less-alkaline seawater causes sea urchin larvae to change shape, makes squid more lethargic and prompts clown fish to race toward rather than away from predators. But the type of calcium carbonate used by juvenile oysters during the initial stage of forming their shells is particularly vulnerable to even slight increases in acidity. And the dark, frigid water that wells up from the deep along the Northwest coast during north winds already is naturally richer in carbon dioxide than most ocean surface water.

Those natural conditions combined with greenhouse-gas emissions, scientists reported earlier this year, have turned the tidal currents on Washington's once oyster-rich coast into a death trap for juvenile oysters. "We're the tip of the spear for the worst of the worst because of the way the ocean circulates," said Bill Dewey, with Taylor Shellfish. Oysters now haven't reproduced on their own in Willapa Bay since 2005, so every grower now relies on hatchery-produced larvae. Once the oysters make it to that stage they can survive acidic conditions just fine. But even producing larval oyster has become a complex game.

Already, the Taylor Shellfish hatchery on Hood Canal and the owners of the Whiskey Creek Hatchery on Oregon's Netarts Bay have started tracking breezes because heavy north winds draw water from the deep that tends to be more damaging. Both

now use expensive carbon-dioxide monitors to time the uptake of water into their growing tanks.

Taylor has even begun a series of experiments to add sodium carbonate — similar to baking soda — to its hatchery waters to counteract Hood Canal's increasingly acidity. "We have a huge investment in that hatchery and we can't just turn off the lights and walk away," Dewey said. "We're investing instead in the science to try and find a way to make it work."

But the Nisbets took another approach.

"We're on an escalator"

Goose Point Oysters employs 70 people and processes several million pounds of shellfish a year, which are sold all over the world. Since water quality is as important to an oyster grower as air to a human, the company had been following the changes closely. "We didn't know what was going on but we knew by 2009 that we could no longer depend on our current seed supply," said Kathleen Nisbet, Dave's daughter. When her father attended a meeting with NOAA oceanographers the depth of the problem became clear.

"They said, 'We're on an escalator with this thing,' " she said. "The problem is going to get worse and we're going to have to adapt." Kathleen Nisbet had attended the University of Hawaii-Hilo and had contacts there, including Maria Haws, an associate professor of aquaculture. Hawaii also doesn't experience the same upwelling events and acidification doesn't appear to be a problem — at least not yet. "The Northwest is really the canary in the coal mine, though sooner or later we won't have any place to run if we don't somehow reverse the trend," Haws said.

She and the Nisbet family spent several years working out kinks and started operating the hatchery earlier this year. "Luckily we've come out of this not too scarred," Kathleen Nisbet said. "We think we've come up with a way to work around things." But she said the experience has opened her eyes to how quickly acidification is taking hold. "What I think is scary is that not everybody knows this is real, that it's actually started to impact people," she said. "For now, here, it's oysters. But it's going to start affecting a lot of other fish and a lot of other food that we get from the sea."

From the Seattle Times

Ruling on river herring puts common sense into fishery

This month's decision by a federal judge to criticize the National Marine Fisheries Service over the senseless slaughter of herring by trawlers represents an important, overdue victory for environmentalists and local fishermen alike. The potentially precedent-setting decision finally puts some legal teeth into righting an injustice that has been decimating fish stocks for years.

The ruling found that both the fisheries service and the New England Fishery Management Council failed to follow federal law when they omitted river herring from their 2011 management plan for Atlantic sea herring. Both groups must now amend the plan to include catch limits for river herring. They must also draw up a plan to reduce the amount of river herring that perishes as bycatch, that is, when the fish is inadvertently caught by large trawlers.

River herring play a vital role in the ocean's food chain. They eat plankton, and are then consumed by larger fish, such as cod and tuna. They are not at the bottom of the food chain, but they are a crucial link in it. Given the precarious status of fishing stocks along the East Coast, anything that helps protect that ecosystem is welcome news. With any luck, it is also a harbinger of better regulatory action to come.

The case, brought by a Chatham charter boat captain, a recreational fisherman from Wareham and a Cambridge-based environmental group, reveals the power of individuals to make a difference, even when the opponents are nothing less than state and federal enforcement agencies, and the issue is as large as an entire ecosystem. Together, these three parties, likely with somewhat different agendas, were able to present a compelling argument that we need to do better when it comes to protecting river herring.

The case could have long-term repercussions far beyond this particular species; representatives on both sides of the issue concur that the decision may set a precedent in terms of how the regional and federal regulatory bodies draw up their protection plans. In essence, if a threatened fish is being caught, it needs to be part of the plan.

This sounds like a commonsense approach. The fisheries council and the National Marine Fisheries Service originally hoped to manage the river herring population by working toward limits on how many fish were killed as part of bycatch. That, too, is an important component to keeping the fishery viable, but in and of itself, it is insufficient when it comes to preserving the stocks.

For its part, the National Marine Fisheries Service has indicated that it will not challenge the court's decision, and has in fact already begun working on complying with the order. This is a positive step toward creating a sustainable fishery, which is good news for fish, fishermen and anyone who values the environment. It may be a small step, but it is definitely one in the right direction.

From the South Coast Today

Thousands of fish die as Midwest streams heat up

LINCOLN, Neb. — Thousands of fish are dying in the Midwest as the hot, dry summer dries up rivers and causes water temperatures to climb in some spots to nearly 100 degrees.

About 40,000 shovelnose sturgeon were killed in Iowa last week as water temperatures reached 97 degrees. Nebraska fishery officials said they've seen thousands of dead sturgeon, catfish, carp, and other species in the Lower Platte River, including the endangered pallid sturgeon. And biologists in Illinois said the hot weather has killed tens of thousands of large- and smallmouth bass and channel catfish and is threatening the population of the greater redhorse fish, a state-endangered species.

1So many fish died in one Illinois lake that the carcasses clogged an intake screen near a power plant, lowering water levels to the point that the station had to shut down one of its generators.

"It's something I've never seen in my career, and I've been here for more than 17 years," said Mark Flammang, a fisheries biologist with the Iowa Department of Natural Resources. "I think what we're mainly dealing with here are the extremely low flows and this unparalleled heat."

The fish are victims of one of the driest and warmest summers in history. The federal U.S. Drought Monitor shows nearly two-thirds of the lower 48 states are experiencing some form of drought, and the Department of Agriculture has declared more than half of the nation's counties — nearly 1,600 in 32 states — as natural disaster areas. More than 3,000 heat records were broken over the last month.

Iowa DNR officials said the sturgeon found dead in the Des Moines River were worth nearly $10 million, a high value based in part on their highly sought eggs, which are used for caviar. The fish are valued at more than $110 a pound.

Gavin Gibbons, a spokesman for the National Fisheries Institute, said the sturgeon kills don't appear to have reduced the supply enough to hurt regional caviar suppliers.

Flammang said weekend rain improved some of Iowa's rivers and lakes, but temperatures were rising again and straining a sturgeon population that develops health problems when water temperatures climb into the 80s.

"Those fish have been in these rivers for thousands of thousands of years, and they're accustomed to all sorts of weather conditions," he said. "But sometimes, you have conditions occur that are outside their realm of tolerance."

In Illinois, heat and lack of rain has dried up a large swath of Aux Sable Creek, the state's largest habitat for the endangered greater redhorse, a large bottom-feeding fish, said Dan Stephenson, a biologist with the Illinois Department of Natural Resources.

"We're talking hundreds of thousands (killed), maybe millions by now," Stephenson said. "If you're only talking about game fish, it's probably in the thousands. But for all fish, it's probably in the millions if you look statewide."

Stephenson said fish kills happen most summers in small private ponds and streams, but the hot weather this year has made the situation much worse.

From USA Today

Trying To Tame The (Real) Deadliest Fishing Jobs

Boat captain Joe Neves remembers when a crew member got knocked overboard. "We heard him screaming 'Help me!' " Neves says, grimacing. "But you know, on the water at night, your head is like a little coconut." They didn't find him.

Mike Gallagher discovered a friend who was entangled in still-running hydraulics. "I knew right away he was dead," he says.

And Fred Mattera was fishing 125 miles off the coast of Cape Cod when the 21-year-old son of a close friend succumbed to poisonous fumes in a nearby boat. "That was a brutal week in this port," he says.

The Deadliest Catch

The Bureau of Labor Statistics ranks commercial fishing as the deadliest job in the United States. And despite the popular notion from reality TV's *Deadliest Catch*, which features Alaskan crab fishermen, the most dangerous American fishery is in the Northeast.

From 2000 to 2009, workers in the Northeast's multi-species groundfish fishery (which includes fish such as cod and haddock) were 37 times more likely to die on the job as a police officer. A National Institute for Occupational Safety and Health report shows that 70 percent of those deaths and those in the second-deadliest fishery, Atlantic scallops, followed disasters such as a vessel catching fire, capsizing or sinking. Most of the rest came from onboard injuries or falling overboard — often caused by heavy overhead equipment. Not one of those who fell overboard and drowned was wearing a life jacket.

An investigation by the Center for Public Integrity, NPR News and WBUR in Boston found that despite earning the odious ranking as America's deadliest job, commercial fishing in the Northeast operates in a cultural tradition and regulatory environment that thwarts promising safety measures.

Out To Sea, Out Of Mind

Despite the strikingly high fatality rate in the fishing industry, pushes for reform have taken decades to come to fruition. In 1988, Congress required fishing boats to carry life boats, personal flotation devices and other safety equipment. Yet while the Coast Guard mandates seaworthiness inspections of passenger ferries and other commercial vessels, fishing boats are not inspected. "We've ... requested authority to do inspections on vessels," says Jack Kemerer, chief of the fishing vessels division of the Coast Guard. Congress did not include that power in the U.S. Coast Guard Authorization Act of 2010. "So I can't answer why or why not," Kemerer says. "But, you know, it's not that we haven't asked for it in the past."

The Last Of The Ocean Cowboys

Most fishermen don't want to be supervised. Some are fatalistic about their life on the seas. New England fishermen used to buy steel-toed boots, believing that if they fell into the frigid Atlantic, it was better to drown faster. Others espouse a rugged individualism and see themselves as the last cowboys on the ocean. At Chatham Harbor on Cape Cod, Bill Amaru runs one of the last cod-fishing boats from a harbor that used to be so prolific, fish markets labeled cod Chathams. Now, strict federal rules limit how much he can catch. Many other cod fishermen have gone out of business. Amaru doesn't like the idea of the feds inspecting his boat. "If there's a resentment to these kinds of rules," Amaru says as he moors his boat in the harbor, "it's based on the overall huge number of regulations that have come down on our industry in the last decade — so much federal 'nanny state,' kind of telling us how to operate — when I think I have a pretty good understanding of what I need to do to keep safe." Still, the 2010 law requires boat owners like Amaru to prove that their safety equipment is up to date. Coast Guard checks have forced many fishermen to throw out old and disintegrating life rafts, and replace the expired batteries from their emergency signal beacons. But just because a boat has updated safety gear doesn't mean the crew knows how to use it.

'We Will Make This A Safer Industry'

When Fred Mattera raced his boat to help fishermen overcome by poisonous fumes in a nearby boat in 2001, he didn't know exactly what to do to help them. The radio was no help, either. "What I heard there was this hodgepodge [of] try this, try that," Mattera remembers. "And nobody knew for certain." When 21-year-old Steven Follett, the son of a close friend, died, Mattera was frustrated. Some people in port called him a hero for trying. "Being a hero is ... someone survives," he says, shaking his head. Mattera told his friend he would make good come from the loss of life. "I just said, I promise you, we need to change the culture. We will make this a safer industry." The incident turned Mattera into a safety evangelist. Earlier this month, he helped the crews of two boats organize a disaster training and man-overboard exercise.

'Get Your Panic Out Now!'

In one exercise, crew members clumsily put on bright orange-red survival suits. Insulated, watertight and buoyant, the suits cover each fisherman from head to toe; only their faces are exposed. They step off the boat into the calm dockside water. But even in these conditions, wearing what some guys call a "Gumby suit" feels claustrophobic to some, and they thrash around until they get their bearings. "Get your panic out now!" Fred Matter shouts from the deck. The crew members are practicing abandoning ship in the case of a fire or capsizing. The immersion suits are designed to keep them alive and afloat in the icy Atlantic until someone can rescue them. Mattera coaches them to link up with each other back-to-back and paddle together over to a life raft and climb in. When it's all over, the crew looks winded.

"There's a 'Holy crap!' issue to it," boat captain Norbert Stamps says of the training. "You jump in, you kind of realize that this isn't fun and games. This is real serious stuff. And you gotta practice, and you gotta know what to expect." Crew member Mike Gallagher says fishermen-organized trainings are becoming more common. "To be honest with you," he says, "the safety thing hasn't really been paid much attention to until the past several years. Really, it's been overlooked."

Learning From Alaska

Alaskan waters had been viewed as the most hazardous place for commercial fishing — that is, until a closer focus on safety reduced the number of fatalities in those fisheries. "I believe that fishermen want to be safe," says National Institute for Occupational Safety and Health epidemiologist Jennifer Lincoln, who's based in Alaska. "They just want things to be practical. They want the solutions to really address the hazards that exist." In Alaska, fishermen, state regulators and the Coast Guard have worked together to make fishing less deadly:

Bering Sea crabbing boats now transport fewer crab pots when they head out to sea. In turn, that weight limit prevented capsizing. Fatalities fell by 60 percent.

Because capsizing often occurred in deaths of Alaska's salmon fishermen, skiff operators are now allowed the option of leaving immersion suits off their small boats, as long as they wear a life preserver at all times.

Pilot projects with life preservers designed for their working conditions encouraged scallop boats to require crew members to wear them.

That kind of safety progress is what Fred Mattera and others want to replicate in the Northeast, the home of today's deadliest catch. Since that deadly accident in 2001, Mattera has trained hundreds of fishermen at Point Judith in Narragansett, R.I. But he's not done. "I'm just a fisherman," Mattera says. "That's what I loved, and that's what I did for a long time. I promised a family we'd make a difference. [As long as] I'm still breathing, that's what we're going to strive to do." Mattera hopes that someday, the deadliest job in America will only be as dangerous as it has to be, and not one bit more.

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