

From Jonah to NOAA: Women in the Fisheries Professions

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In her book *The Hungry Ocean*, Linda Greenlaw periodically discusses her experiences as one of the only female swordfish boat captains on the Eastern Shore of North America. Greenlaw mentions that one traditional aspect of commercial fishing consists of using superstitions to psychologically combat the vagaries of nature inherent in the trade. She states that, "Of the many superstitions of which I am aware, the only one that I flat-out refuse to embrace is that women are 'Jonahs' (bad luck aboard boats). For seventeen years

affected by these. For instance, women are often thought of as avoiding study topics that require fieldwork. Hiring trends in some government agencies suggest that women have been hired, but are less likely to be promoted into decision-making levels (Gessner et al. 1993). Historically, individuals engaged in fisheries management were white men who grew up with recreational hunting and fishing—and the programs supported by agencies have tended to reflect the interests of this constituency (Baker 2000). However,

U.S. Commission of Fish and Fisheries, arrived in Woods Hole, Massachusetts, to establish what would become a premier fisheries research facility. This institution initiated the careers of a number of women and minorities from the U.S. and other countries. As early as 1927, the first black woman to receive a Ph.D. in zoology, Roger Arliner Young, was conducting research at the Marine Biological Laboratory in Woods Hole. The Commission of Fish and Fisheries eventually became the National Marine Fisheries Service of

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(AFS 1996). In addition to a changing
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from entering these fields. The 1999-2004 Strategic Plan of the American Fisheries Society defines professional diversity as "the number and heterogeneity of members in terms of academic discipline, occupation, employer, subject matter expertise, educational background, and work experience." Social diversity is defined as "the number and heterogeneity of members in terms of race, ethnicity (region of origin), gender, physical and mental ability, and beliefs."

Stereotypes often affect professional and social diversity, and in turn, are

including urban fisheries, relationships between fish health and human health, and Native American fishing rights (Baker 2000). These new issues and management topics not only are attracting non-traditional groups to the profession, but also may require the new perspectives that these individuals bring with them.

Over the past century women have gradually but convincingly proven themselves in agencies and institutions around the world. In 1871, Spencer Baird, Secretary of the Smithsonian Institution and first commissioner of the

about them in books. A recent survey of information on women in the fisheries and aquatic sciences that was available in local libraries and on the internet suggests that readily accessible role models fall into only a few categories (White 2000). Information available to the public on aquatic sciences often shows researchers involved in deep sea explorations (such as Sylvia Earle); species perceived to be dangerous, such as sharks (Eugenie Clark); laboratory research (Roger Arliner Young); and environmental sciences (Rachel Carson). The stories of these women reveal the challenges and triumphs of

being a woman in what were traditionally considered men's fields.

Information on early achievements of women in aquatic sciences consists largely of accounts of individuals engaged in laboratory research. Roger Arliner Young was the first black woman to receive a doctoral degree in zoology, obtaining her Ph.D. from the University of Pennsylvania in 1940 (Brown 1995-2000, Greene 1946). In the early 1920s, working with her mentor, black researcher Ernest Everett Just, she made a significant contribution to the study of structures that control salt concentration in *Paramecium*. She later published several notable studies on the effects of radiation on sea urchin eggs. Young had little help advancing her research and teaching career, yet she demonstrated a substantial commitment to quality in scientific research despite personal and professional obstacles. From the 1930s to the 1950s, she taught at Howard University and several historically Black colleges in North Carolina, Texas, Louisiana, and Mississippi. Even so, while Just is frequently cited in books as an example of an early African-American scientist, Young is rarely mentioned.

Perhaps one of the most famous modern conservationists—and often the only woman mentioned in litanies of environmental leaders—was Rachel Carson. When Carson's father and older sister died, she and her mother were left to care for her two young nieces (Yount 1999). To support the family, she accepted a position as Junior Aquatic Biologist for the U.S. Bureau of Fisheries. She was one of the first two women employed at the agency for any type of work other than clerical duties. In 1947, Carson became editor in chief of the publication division for the U.S. Fish and Wildlife Service. She wrote the best seller *The Sea Around Us* in 1961. The book was written over three years, drawing on information about oceanography that the govern-

ment had obtained during the war. Several other books followed, including *Silent Spring*, which she developed after four years of intensive research on the effects of pesticides. Reporter Adela Rogers St. Johns wrote that *Silent Spring* "caused more uproar... than any book by a woman author since *Uncle Tom's Cabin* started a great war." Publicity surrounding these events portrayed Carson as an emotional female with no scientific background, ignoring her master's degree and years as an agency biologist. However, many scientists supported Carson's views, as did the recommendations made by a special panel of President John F. Kennedy's Science Advisory Committee, which was appointed to study the issue. Most important, Carson's work reshaped the way the American public viewed nature. As one newspaper editorial put it, "A few thousand words from her, and the world took a new direction."

Another woman who could serve as an early role model from government and resource management is J. Frances Allen. She is a native New Yorker, received her Bachelor's degree from Radford College, Virginia, which was then the Women's Division of Virginia Polytechnic Institute. After earning her M.S. and Ph.D. degrees from the University of Maryland, she was hired as an Assistant Professor of Zoology at the same university, teaching courses in fisheries and conducting research in the Chesapeake Bay. In 1958, she served as Associate Program Director for Systematic Biology at the National Science Foundation. From 1967 to 1973, she was Chief of the Water Quality Requirements Branch for the Federal Water Pollution Control Administration (later renamed the U.S. Environmental Protection Agency). The branch was responsible for research programs for four water quality laboratories across the country, in addition to five associated field stations. Allen provided leadership in marine fisheries

research and pollution control, and was a featured speaker at several international conferences. She has received several commendations for her professional work, including the Sustained Superior Performance award from the National Science Foundation

Women have long contributed to the arena of international fisheries research and management, as well. Born in Spain in 1916, Angeles Alvarino was an intelligent and curious child, often exploring her father's library and especially enjoying his books on natural history (Saari and Allison 1996). She completed a Master's degree in 1941 and taught for seven years until accepting a position with the Spanish Department of Sea Fisheries in Madrid. Although the Spanish Institute of Oceanography in Madrid officially banned women, Alvarino conducted research and studied oceanography there. The quality of her work persuaded officials to admit her in 1950. She received a doctoral certificate the following year. In 1956, she was awarded a Fulbright Fellowship for research at Woods Hole Oceanographic Institute in Massachusetts. The president of the first U.S. Oceanographic Congress, Mary Sears, was impressed with Alvarino's work and recommended her for a position at Scripps Institute of Oceanography in La Jolla, California. In 1970, Alvarino became a Fisheries Biologist with the Southwest Fisheries Science Center, a division of the newly formed National Marine Fisheries Service. She became the first woman to serve as a scientist on a British research vessel. Since official retirement in 1987, she has continued her work, adding to the body of knowledge on zooplankton.

Even fewer women are portrayed as commercial fishermen. Recent publicity around the book *The Perfect Storm* by Sebastian Junger, and the subsequent movie, put swordfish boat captain Linda Greenlaw in the spotlight. The book described Greenlaw as "one of the

best sea captains, period, on the East Coast.” The publication of *The Perfect Storm* led her to write her own book in response to the attention she was receiving. In her book *The Hungry Ocean*, she talked about her perceptions of being a lone woman in the field. She stated that, “I never anticipated problems stemming from being female, and never encountered any. I have been surprised, even embarrassed, by the number of people who are genuinely amazed that a woman might be capable of running a fishing boat. . . People, women in particular, are generally disappointed when they learn that I have not suffered unduly from being the only woman in what they perceive to be a man’s world. I might be thick-skinned—or just too damn busy working to worry about what others might think of me,” (p. 58). Rather than being intimidated by the competition, she creatively used old stereotypes to enhance the success of her crews. Greenlaw stated that “No self-respect-

ing fisherman will allow himself to be outworked by a woman; it is a fact that brought the best out of my crew for years,” (p. 7).

The Role of Professional Societies in Facilitating Diversity

Professional societies can play a significant role in facilitating the transition of the fisheries professions to a level of diversity that reflects the particular constituencies of fishing and resource conservation, as well as society as a whole. Founded in 1870, the American Fisheries Society (AFS) is the oldest and largest professional society representing fisheries scientists. The mission of the American Fisheries Society is “to improve the conservation and sustainability of fishery resources and aquatic ecosystems by advancing fisheries and aquatic science and promoting the development of fisheries professionals.” Currently, three sections of AFS address diversity issues, includ-

ing the Equal Opportunities Section, the Native Peoples Fisheries Section, and the International Fisheries Section. A Disabilities Advisory Committee ensures that steps are taken to provide services at annual meetings for disabled members.

Efforts of the Society to address diversity issues are outlined in the strategic plans of the AFS, and particularly implemented through activities of the Equal Opportunities Section. Examples of Society activities that promote inclusion of women in the fisheries profession are: tracking the participation of members in various activities by gender; offering awards to recognize outstanding promise in early professional development among women students; providing travel awards and mentors at annual meetings; disseminating information on the historical contributions of women; facilitating linkages between programs that support the professional development of women and inclusion

of minorities; and encouraging the nomination of qualified female leaders at all levels in the organization.

Dr. J. Frances Allen examining clams at the Seafood Processing Laboratory.

Photo courtesy of J. Frances Allen.



Women Are Increasing in the Fisheries Profession

The Society has moved forward in tracking the diversity of its membership. There has been a dramatic increase in the participation of women among new professionals. Less than 2% of the individuals who have been members of AFS for longer than 50 years are women. However, women currently comprise over 12% of members based on optional reporting (over 1,400 female members). In 1997, a society-wide survey was conducted to address various issues related to membership services and expectations, including several aspects of diversity. About 35% of new members (two

years or less) were female, according to this survey. If these new members are retained in the profession, gender diversity will continue to increase.

In the earlier days of the 130-year history of the American Fisheries Society (AFS), women were periodic but significant leaders. J. Frances Allen began her service for AFS in 1958, when incoming President W. Mason Lawrence appointed her to the Resolutions Committee. She recalls that he said he "believed that women deserved an opportunity to participate in the Society's activities," (J. Frances Allen, Roxbury, NY, personal communication). Allen represented AFS at the American Association for the Advancement of Science and was an active member of the American Malacological Union and Executive Committee of the Sport Fishery Research Foundation. She served as Chair of the first AFS Board of Professional Certification, beginning in 1967. Allen was actually the second woman to hold an elected office in the Society. The first was Emmeline Moore (1872-1963) who served as President of the Society from 1927-1928 and was employed as the Chief of Fisheries for the state of New York. Three women have held the office of AFS President since, including immediate past-president Christine Moffitt of the University of Idaho.

Women are currently represented among the leaders of the Society in proportion to their membership numbers. Women constitute over 15% of the leadership of the society-wide leadership (sections, divisions and governing board combined). Women have recently led several vital task forces, including the strategic planning committee, program committees for several national conferences, publications overview, and resource policy committees. However, the profession as a whole still has a long way to go to meet the goal of accurately reflecting half of the human population.

Recruitment and Retention Strategies

The strategic plan of the AFS presents the goal of providing opportunities and vehicles to achieve diversity and create a climate in which all people are welcomed, acknowledged and appreciated. The plan suggests that ecosystem-based and participatory management will benefit from integration of more disciplines and social groups in fisheries research and management. While the organization's goals clearly support increased diversity, not all members are in agreement regarding the most effective and fair approach. Concerns within the AFS reflect those of society at large, such as whether there should be definite targets for recruitment, or whether overtures should be made exclusively to members of certain groups.

To achieve diversity in its membership, the AFS strategic plan outlines three broad areas of recruitment, retention, and awareness. The Society must promote an understanding of the benefits of a diverse workforce, identify individuals from underrepresented groups who have an interest in fisheries, effectively cultivate their goals and aspirations, and make them feel welcome as professionals within AFS (Keefe and Young-Dubovsky 1996). The organization has committed itself to recruiting females, minorities, and members of various disciplines into leadership roles to better reflect the diversity of the organization's membership. The AFS is working to establish relationships with other groups that foster diversity, such as the Native American Fish and Wildlife Society, international fisheries organizations, and diversity initiatives of other professional societies. Diversity builds on itself. The climate becomes more welcoming when individuals see others like them represented in the group.

The AFS promotes integration of women in the fisheries profession through several targeted activities of the

Equal Opportunities Section and other units. The J. Frances Allen Scholarship has been presented annually since 1986 to a female doctoral student who is studying any aspect of fisheries science. This award provides these students with a monetary gift of \$2,500 and recognition for their early professional development. Many of these individuals have gone on to serve the Society and profession in various leadership capacities. Agencies, private donors, and sections of the Society contribute to several travel scholarships that provide funding for attendance at regional and national meetings by students who are women or from underrepresented ethnic groups. Mentors are paired with these students at the annual conference to assist them in meeting other professionals and making the most of a conference experience.

The AFS has recently developed a new program to attract underrepresented segments of the population into careers in fisheries at critical stages when youth are making career choices. Most efforts to attract women and minorities have focused on undergraduate university students and have had limited success (Fritz 2000). Educators suggest that more emphasis must be placed on attracting students before they enter college. Next summer, the AFS plans on placing the first group of high school students from minority groups in agency internships through the Junior Fisheries Biologist Program, supported by the Robert F. Hutton Fund. The program will provide students with a professional mentor and a summer-long, hands-on experience in fisheries science in either a marine or freshwater setting.

Future Challenges

Like society as a whole, the AFS has found that barriers related to gender might be much more tractable than dealing with the multiple issues related to other aspects of social diversity. Women are easily identifiable for the purposes of offering support. Other

aspects of social diversity may rely on self-identification with less obvious groups and may be more variable in their experiences. The proportion of women in the fisheries profession has historically and clearly been significantly lower than the ratio of women in the general population. Stereotypes related to women working in the fisheries professions are perhaps more apparent and easier to address than barriers related to other aspects of social diversity.

AFS is taking action to become more skilled at identifying and addressing challenges related to other aspects of diversity. The Equal Opportunities Section is implementing a survey to identify barriers to career development for women and minorities who are in the fisheries profession. Issues addressed by the survey include aspects such as interruptions in a career to care for family members; mentoring relationships with professors and peers; discrimination by colleagues or clients; opportunities for promotion; and role of the professional society in career development. These results should provide more specific information regarding the issues that women and minorities face in achieving their professional goals without sacrificing their personal or cultural values.

As the AFS develops experience with attracting and recruiting women and minorities, historical and nontraditional allies in the quest for diversity will have to continue to work together to achieve greater understanding and better representation in the fisheries profession. As Alfred G. Fischer stated in the Forward to *Privileged Hands: A Scientific Life*, "Each scientist brings a somewhat different perspective to any problem, of course, conditioned by his or her own genetics and experience, and that is what keeps science lively and moving." Members of the fisheries profession and their clients will benefit greatly from

this rich potential through continued creative efforts to attract and retain a diverse professional corps.

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