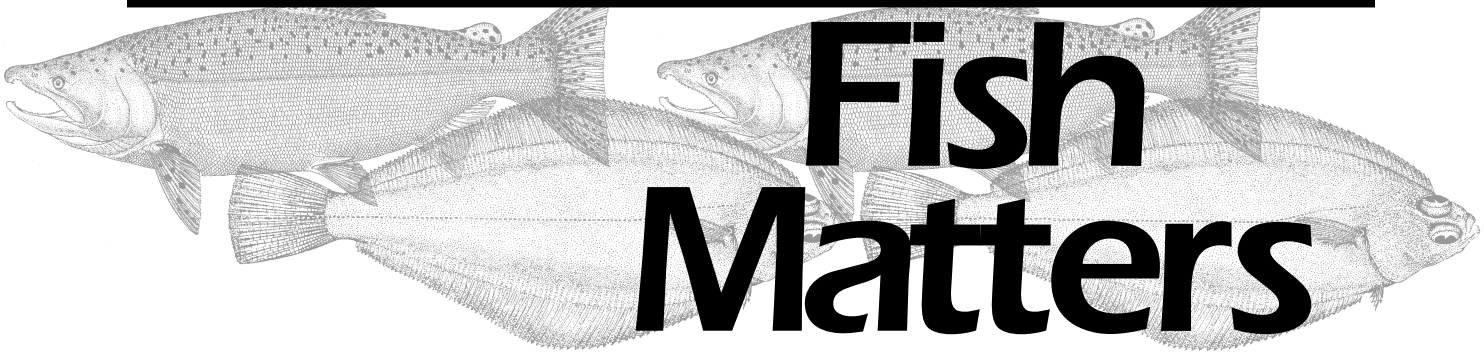
Northwest Fisheries Science Center



Fish Matters

Educational & Career Opportunities Abound

Keri Baugh started as a work-study student in the Marine Biotoxin Program. She is presently employed full time at the Center.

Northwest Fisheries Science Center

National Marine Fisheries Service

National Oceanic and Atmospheric Administration

U.S. Department of Commerce

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September 2000

The Northwest Fisheries Science Center (NWFSC) in Seattle, WA is one of five research centers of the National Marine Fisheries Service (NMFS), which is part of the National Oceanic and Atmospheric Administration (NOAA) Fisheries. In support of NOAA Fisheries' mission to conserve living marine resources and their habitat, more than 250 scientists and support staff conduct basic and applied research at the Center's six facilities in Washington and Oregon.

The NWFSC also establishes and maintains formal and informal agreements with universities, federal and state agencies and tribal organizations to conduct collaborative research and provide educational opportunities. The research setting at the NWFSC and the arrangements with these agencies and organizations, provides excellent career opportunities for visiting scientists, Postdoctoral Research Associates and undergraduate/ graduate student interns. Other career and educational options include possible participation in the work-study or federal Student Career Experience Programs.

Dr. Usha Varanasi, Science and Research Director of the NWFSC, enthusiastically supports these programs. "During the past 25 years, these undergraduate and graduate student interns and postdoctoral programs have been very beneficial to our organization," said Varanasi. "I came into this country as a student and received a lot of support from my mentors. It's very rewarding that we are now mentoring these students and developing future scientists."

Postdoctoral Research Associateship Programs (PRAP)

The National Research Council (NRC) administers this program for 30 federal laboratories in over 100 United States and overseas locations. There are two types of PRAPs. The Research Associateships are awarded to individuals who have held a doctorate degree for less than five years at the time of application. The Senior Research Associateships are awarded to individuals who have held a doctorate degree for five years or longer. These PRAPs are usually one year in duration, however, extensions may be granted.

Each PRAP applicant is required to submit a research proposal to the Associateship Programs

Gathered in front of the auditorium with Dr. Usha Varanasi are Postdocs and student interns working at the Center this summer. Pictured from left are: Dr. Michelle Moore, Dr. Alison Geiselbrecht, Mike Molta, Dr. Varanasi, Alex Kang, Andrea Cook (in back), Gail Bastrup, Dr. Munetaka Shimizu, Dr. Kerry Naish, and Dr. Briony Campbell.

office that relates to a specific research opportunity at NOAA. This proposal is then submitted for approval to a Research Advisor of the sponsoring laboratory. The primary objective of the Associateship Program is to provide a mechanism for new ideas and an opportunity for doctorate-level scientists to bring their research talents or special knowledge to the host laboratories.

An Associate receives a stipend and a travel budget from the Research Council while conducting their research. Furthermore, the NRC provides funding support for relocation, if the Associate must move to a laboratory beyond commuting distance.

Currently, there are five NRC Research Associates at the NWFSC. The majority are working on projects related to the conservation and recovery of declining Pacific Salmon populations and their designation under the Endangered Species Act. Other areas of research include salmon genetics, juvenile fish passage at dams and reservoirs, culture of marine and anadromous fish, and ocean / estuarine ecology.

Dr. Kerry Naish, who received her doctorate from the University of Wales in the United Kingdom, spoke about her postdoctoral research in the Conservation Biology (CB) Division. Dr. Naish's work integrates molecular and quantitative genetic approaches to understand the evolution and maintenance of fitness traits (such as growth rate and age at maturity) in salmon populations. "I'm fortunate to have an opportunity to work at this Center," Naish said. "The fish genetic research work accomplished at the Center is well-known both nationally and internationally. Additionally, there are a large number of scientists from a wide range of disciplines working on common problems such as salmon conservation. The opportunity to collaborate is significant."

Another Research Associate is Dr. Michelle Moore, in the Resource Enhancement and Utilization Technologies (REUT) Division. She holds a doctorate in Veterinary Medical Sciences from Louisiana State University. Bacterial kidney disease (BKD) is one of the most significant diseases of salmonids worldwide. Dr. Moore's current research is directed at gaining control of BKD through a better understanding of the salmonid immune response against the pathogen that causes this disease.

"As a graduate student, I was very familiar with the academic side, but was also interested in having an opportunity to work in a federal

government laboratory," said Moore, now in her third year. "Working in Dr. Mark Strom's Fish Health / Microbiology Team, I have seen that the quality of the science in a federal laboratory is equal to that found in academia."

The NRC has a web site that contains information about the Postdoctoral Research Associateship Programs. The address is http://www4.nationalacademies.org/osep/rap.nsf

Undergraduate and Graduate Student Internships

The NWFSC has established programs for funding graduate and undergraduate research in collaboration with local colleges and universities and is in the process of developing new programs. University of Washington (UW) students may participate in opportunities offered with the Cooperative Education and Research Program (CERP). This program is coordinated with the UW's School of Aquatic and Fishery Sciences, and by the UW's Offices of Graduate and Undergraduate Education.

Students from Oregon State University (OSU) may collaborate with the NWFSC's Newport Field Station under the Cooperative Institute for Marine Resources Studies (CIMRS), which is located at OSU's Hatfield Marine Science Center in Newport, Oregon. Other cooperative educational research efforts include studies at the Oregon Graduate Institute (OGI). The applicable web site address for this program is the following: http://www.washington.edu/research/urp/beyond.html#fish

Additionally, the Center offers funded undergraduate and graduate student internships. A number of the Center's scientists hold courtesy faculty positions that bring them into contact with students. This contact can lead to the mutual development of student's career interests.

Currently, there are nine undergraduate / graduate students at the NWFSC's Montlake facility. Gail Bastrup is a senior at the UW, majoring in cell and molecular biology. She has worked in the DNA laboratory in the CB Division for 18 months and has assisted on a number of projects. The first was in developing molecular markers to study genetic variation in Pacific salmon populations. Her next project was in the identification of prey items in seal feces using genetic techniques.

Bastrup's current research involves the complicated mapping of the chromosome structure of specific salmon species. When asked if the tasks were challenging, she responded in the affirmative. "I'm definitely happy with my projects and have been given considerable independence. I would really enjoy working here after graduation next March," replied the 21-year-old student. "Before I started working at the Center, no one would hire me because I didn't have any prior work experience. Fortunately, both Drs. Linda Park and Paul Moran gave me a chance."

One example of collaborative research with college students is described by Herb Sanborn, Coordinator for the Fishery Resource Analysis and Monitoring (FRAM) Division. "This program is currently in place at both the UW and OSU and is primarily intended for college seniors or graduate students," said Sanborn. "The funding for these students are NMFS grants that have been awarded to a university department chairman or professor for a significant fisheries research project, such as West Coast Groundfish. The projects could range from fish stock assessments or biological structure of a particular species, to reviewing data from past population surveys."

Sanborn continues in describing these opportunities. "We're specifically interested in college seniors or graduate students because they may have a particular research focus or interest that involves the mathematical side of fisheries management. A successful candidate may not necessarily have a degree in fisheries biology, or ecology. They could have degrees in either math or statistics," said Sanborn. "We do a variety of research in our Division, including fish stock assessments. Basically these assessments are mathematical models, that analyze abundance and mortality of a particular species."

Gail Bastrup, a senior at the University of Washington, at work in the Center's DNA laboratory.

Sanborn also mentioned that the NMFS headquarters has made it a priority in trying to promote more stock assessment staff. "These individuals are a limited commodity and can demand top salaries. All of the five NMFS research centers are scrambling to find people with these skills."

Sanborn may have found one of those individuals. Andrea Cook, who is a senior at the UW recently started a three-month summer internship. Her specialized degree will be as an Applied Computational Mathematical Scientist. "I enjoy working with applied math and spatial statistics," said Cook. "My current project is conducting a spatial analysis of groundfish, using logbook data. I'm pleased to be here."

The Center also employs several people who have completed these respective programs. One of them is Anna Kagley, who began her NMFS career in 1987. As a high school senior, she started from the bottom rung of the federal career ladder as a GS-1 student intern.

Upon graduation from high school in 1989, one of Kagley's first projects was to analyze bile samples taken from Alaska salmon and other fish species that were contaminated with oil from the *Exxon Valdez* spill. Operating high-performance liquid-chromatography equipment, she conducted an analysis of these samples to determine the aromatic hydrocarbon content.

During the next four years, Kagley continued to work at the NWFSC as a cooperative education student. This program enabled her to work 20 hours per week and full time during the summer, while she continued a Fisheries curriculum at the UW. "The best part of my summer employment was going on the month-long field trips," said Kagley. "On the NOAA ships, we collected a variety of samples off the coasts of California and Florida. It was hard work, sometimes 10-12 hours, all week long. However, it was also wonderful, because I got to see other parts of the country."

In 1993, Anna received her degree in Fisheries and continued her career in the Environmental Conservation (EC) Division. Then, in mid-1995, Kagley transferred to the Newport, Oregon field station. She currently works with Dr. Mary Arkoosh, examining the effects of various natural and anthropogenic factors on juvenile salmon from estuaries throughout Washington and Oregon.

Kagley summarized her current 13-year tenure with NMFS/NWFSC. "I spent six years in the student internship program and it was one of the most positive experiences in my life," commented Kagley. "College was fun, but I really wanted to work in this field. The NMFS internship gave me more career experience, than did the college education."

Other Educational Programs

The past Cooperative Education Program has been replaced with the Student Career Experience Program (SCEP). The SCEP provides work experience, which is directly related to the student's academic program and career goals. Students in this program may be noncompetitively converted to career or career-conditional appointments following completion of their academic and work experience requirements. For possible enrollment, students may contact their school guidance office or the Federal agency employment office where they are interested in working.

The Work Study Program (WSP) enables students to earn income to help meet their educational expenses for the academic year, as well as reinforce their educational and career goals. The WSP is a form of financial aid that is administered by the colleges. This program allows the NWFSC to employ undergraduates and graduate students, thereby providing many job opportunities, as well as giving students experience in applied sciences. Over the years, the Center has had many work-study students working on a variety of projects.

Keri Baugh commented about her work study experiences in the EC Division. "I was given a variety of challenging projects that enabled me to use my biology/math skills." Interested students should contact the financial assistance office of the institution of which they will be applying to or attending.

For additional information about the Northwest Fisheries Science Center or any of the previously mentioned educational opportunities, please call 206-860-3200. The Center's web site address is http://www.nwfsc.noaa.gov

--Article provided by Joe Rhodes