

WFRC Research News

(Lab News You Can Use — To Survive and Thrive)

Gary Wedemeyer & Dena Gadomski, Editors

Spring Issue, June 2008

—IN THIS ISSUE—

Lab News You Can Use

— *Lyman Thorsteinson*

WFRC Research Notes

Science at MFS: A True Collaboration

by Paul Hershberger, MFS

Salton Sea Report

by Mike Saiki, Dixon Field Station

The Santa Ana Sucker

by Mike Saiki & Barbara Martin, DFS

WFRC Research Staff Notes

— Visiting Scientist: Dr. Chang Hoon Moon

— The Invasive Species Section

Scott Smith

Deborah Reusser

— Movin' On Up

Reisinbichler Retires

Ranson Retires

Who's Who in the Admin. Section

— *Cindy Hansen, Klamath*

— *Bonnie Dotson, Seattle*

— *Henry Higgens, CRRL*

— *Lynne Casal, CRRL*

— *Liz Turpin, Seattle*

Columbia River Sturgeon Ball

— *Mike Parsley, CRRL*

Some Recent WFRC Publications

Lab News You Can Use

by Lyman Thorsteinson



I am pleased to announce that Steve Waste will be the new Laboratory Director at the Columbia River Research Laboratory. Steve joins the WFRC well-versed in Columbia River salmon and habitat issues

and needs having worked for the Northwest Power Conservation Council, Bonneville Power Administration, and NOAA Fisheries. Steve is uniquely qualified having a background in commercial fisheries, science and management, and policy levels of resource management. I believe his previous leadership and strategic planning roles with respect to regional science and monitoring needs for Pacific salmon and their habitats will be an invaluable asset to the USGS and this Center as we chart our futures in the Columbia River Basin. Of historical interest, this is the first time the Laboratory Director position has been filled through competition.

My travel schedule was full this spring. In March, I participated in a National Fish Habitat Action Plan "Science and Monitoring Needs Workshop" in Phoenix, AZ. We discussed restoration needs for river, lake, estuary, and marine habitats to help guide the national planning process over the next 3-5 years. One outcome of the workshop is that the Status and Trends Program decided to fund a new project in the lower Columbia River. Mike Saiki and I attended a Coastal and Oceans Workshop in Santa Cruz, CA with USGS and other DOI scientists to discuss

ongoing research and monitoring, capabilities, and explore new opportunities for integration of USGS efforts in the Santa Barbara Channel. The WFRC is currently investigating contaminants in rockfish as part of long-term research on the fish assemblages around oil and gas platforms in southern California. Following the March-held Northwest Area Managers meeting in Portland, I participated in a Western Water Science Conference at Portland State University. Scott Smith, our Invasive Species Section Leader, was an invited speaker and presented information about his programs and possible monitoring in the Columbia River Basin. Over the past several months, I visited the CRRL and Klamath Falls on several occasions as part of the Center's search for a new Laboratory Director, meetings with DOI partners, and review projects, coordinate planning, and meet with staff. In June, I will be traveling to Tulsa, OK for the 2008 Bureau Managers Meeting where I have been asked to give a presentation on how, from the Biology perspective, the USGS can successfully address Bureau strategic science goals with a reimbursable funding model.

Since our last newsletter, the Center has received visits from the USGS Director (Mark Myers), USGS Western Region Director (Anne Kinsinger), Acting Regional Executive (Carol Schuler), and a Biology ST Scientist (Charles Van Riper). The Director wanted to learn more about the Center and hosted a town-hall meeting so that he could discuss his goals for the USGS re-alignment. The Regional leadership convened an all-hands meeting with WFRC staff to roll-out USGS' 10-year strategic vision. In late March, the OMB Examiner for USGS (Mark Stern) visited the Pacific Northwest. Over the course of a week-long field trip, participating WFRC scientists were able to describe their work at Marrowstone Island, Nisqually National Wildlife Refuge, at Bonneville Dam, and in the Upper Klamath Basin. In May, Janet Cushing, an Assistant Program Coordinator (Fisheries, Aquatic, and

Endangered Resources Program) met with scientists in Seattle and at Marrowstone Island.

On the research front, two visiting scientists will be collaborating with Center researchers this summer. Dr. Fred Dobbs, Old Dominion University (VA), recently began his sabbatical in Seattle where he is conducting research with Jim Winton, Rusty Rodriguez, and Scott Smith on the microbial ecology of ballast water. Dr. Indergrit Singh, from the Norwegian School of Veterinary Science (Oslo), is working with Maureen Purcell on genetic expressions of innate immunology in rainbow trout.

In other news, I was part of a Review Team that reviewed proposals for Northwest Area Flexible Funding for integrated science projects in the Columbia River Basin. More than 20 proposals were received and two were funded. One concerns contaminants and food webs in the lower Columbia River and the other, sturgeon in Lake Roosevelt. CRRL scientists will be participating in both funded efforts. Also, Alec Maule was notified that the Global Climate Change proposal he and others developed will be funded as a "pilot" with focus on the Yakima River.

I want to mention some upcoming events of potential interest. In June, the WFRC will be hosting a workshop on the Upper Klamath Basin in Seattle. Preliminary results from the 2007 field season suggest that poor water quality and algal toxins in the lake during late summer are impacting condition and fitness of young-of-the-year suckers entering their first winter. We have hypothesized that this life stage may be a critical bottleneck in population recovery efforts and these early results suggest this possibility. I am working with our FAER Program Coordinator in planning congressional visits in late July and, at present, we are considering briefings on the effects of viral hemorrhagic septicemia virus on coastal and marine fisheries including resources in the Great Lakes, and the significance of large rivers research in the USGS.

This month we are losing two long-term employees to retirement and another has accepted a new position in the USGS. Judy Ranson and Reg Reisenbichler are retiring in early June. Judy has been one of the biotechnical mainstays of the Fish Health Section assisting virology studies and, more often than not, being a key ingredient, because of her language skills and personality, in making our foreign collaborations successful. Reg's "explosive" history is chronicled in this newsletter and he promises to remain active in an emeritus role. Rip Shively, former Klamath Field Station Leader, recently joined the Central Region and will be its new Approving Bureau Official. Rip (pictured here with a note of appreciation from a fan) has made pioneering contributions to the science, management, and leadership of USGS efforts in Klamath Falls. They are well appreciated and will be long remembered. I know I speak for the entire WFRC gang in congratulating these individuals for their many accomplishments and wishing them nothing but the best in retirement and new careers.



Several other significant personnel activities are of special note. Deputy Center Director David Woodson is currently on detail to the Northwest Area where he is serving as the Acting Regional Executive. Similarly, Dena Gadomski has accepted a 120 day detail with the Eastern Region where she will be its Acting Bureau Approving Official. In the wake of Rip's departure, Scott VanderKooi has stepped up to the Acting Field Station Leader position. Finally, I am very pleased to announce that Gary Scoppettone will be receiving a special award from Director, US Fish and Wildlife Service this June in appreciation for the collaborative research and support he provides to them.

Enjoy your summer!

Science at the Marrowstone Marine Field Station: A True Collaboration

by Paul Hershberger, Marrowstone MFS

Through the involvement of scientific partners, research at the Marrowstone Marine Field Station is currently advancing into a broader context of marine ecosystem health.



Researchers at Marrowstone have become proficient at rearing and handling Pacific herring in the laboratory, techniques that have previously posed major impediments to performing well-controlled, empirical studies on this important forage species. As a result, Marrowstone is fast becoming the centralized research facility for empirical studies on forage fish, and leading herring researchers from thousands of miles away are routinely traveling to our field station to become involved in collaborative studies.

Ongoing collaborative research projects are incorporating concepts of disease ecology (including population ecology, virology, parasitology, and immunology), fish ecology, and bioenergetics. For the past three years, researchers from the Pacific Biological Station (DFO) have made annual visits to Marrowstone to collaborate on investigations into the detrimental effects of endemic pathogens to populations of Pacific herring in the eastern North Pacific. Recent advancements indicate the susceptibility of early-stage herring larvae to viral hemorrhagic septicemia (VHS), and also provide evidence of immunocompetance in these early larval stages. A two-year herring bioenergetics project is currently underway at Marrowstone with researchers from the Ted Stevens Marine Science Center (NOAA - Auke Bay Laboratories) to parameterize herring energy allocations throughout the winter starvation period, and ultimately to determine the effects of decreased

over-winter condition on susceptibility of herring to endemic diseases. Additionally, two independent herring life history projects are slated to begin in 2008 with researchers from the University of Alaska, Fairbanks and University of Idaho.

In the first, we will be testing the compatibility of radio tagging techniques for Pacific herring to understand adult migration patterns, a major life history knowledge gap in Washington and Alaska.

In the second, we will be developing isotopic tagging techniques capable of marking millions of individuals by vertically transferring the tag from the mother to the eggs. Development of this technique in herring represents the first step in measuring the success of a proposed herring enhancement program in Prince William Sound, Alaska.

Additionally we are currently into the second year of the Prince William Sound Herring Disease Program, a large project that involves researchers from WFRC, University of Washington, Alaska Department of Fish and Game, and private industry, and is intended to develop predictive tools that can forecast and mitigate disease-related mortality events in populations of Pacific herring.

Finally, a collaborative research project is currently underway with the Columbia River Research Laboratory (Mike Parsley - lead PI and Bjorn Van Der Leeuw) to investigate the impacts of the increasing shad populations on the Columbia River ecosystem. Preliminary results from the disease ecology component at Marrowstone indicate a very high prevalence and intensity of a protozoan parasite among adult shad that are undergoing their riverine spawning migration. As a result of these findings, we are currently questioning the role of this introduced fish host as a vector for emergence of the parasite in fishes throughout the eastern North Pacific.

Marrowstone's involvement with local stakeholders is evidenced by our high profile role in technical assistance during the past several years.

We now communicate on a weekly basis with the Washington Department of Fish and Wildlife (WDFW) forage fish and ground fish units by providing infection and disease prevalence data that are incorporated into annual management plan for the state. During the past three years, a collaborative partnership has been established with the Point Defiance Zoo and Aquarium to transport their pregnant rockfishes to Marrowstone so we can rear the progeny larvae.

Additionally, we have been working with the USFWS Abernathy Fish Technology Center to develop specialty feed formulations containing protein substitutes for fish meal to successfully rear specific pathogen-free, immunologically naïve marine fish. Further, funding was provided for three college students during FY 2008, including one from Seattle Pacific University and two from Western Washington University. Through funding from the USGS Native American Intern Program, we hosted a student intern from North Kitsap High School (Port Gamble S'Klallam Tribe) who surveyed Puget Sound herring populations for viral erythrocytic necrosis (VEN), a blood disorder in marine fishes.

Additionally, Marrowstone staff provided in-kind staff and facility support for graduate students from the Washington Cooperative Fish and Wildlife Research Unit and Washington State University to conduct studies involving fish toxicology and larval herring feeding preferences. We have provided herring, herring tissues, and gametes to researchers at the University of Washington for investigations into regulation of herring MHC genes, NOAA-Fisheries (Northwest Center and Mukilteo Field Station) for investigations into regulation of herring immune response genes after exposure to PAHs, and Western Washington University for development of an EPA-certified herring embryo bioassay. During 2007 we also provided technical assistance to researchers from University of Maine, Virginia Polytech, and the Alaska Sea Life Center who visited our facility to learn rearing techniques for Pacific herring.

Salton Sea Report

by Mike Saiki, Dixon Field Station



The Imperial Irrigation District (IID) operates and maintains many agricultural drains in the Imperial Valley of California, some of which discharge directly into the Salton

Sea. Agricultural practices, such as water management and conservation, affect the quality of drain water.

The USGS Western Fisheries Research Center (WFRC) is collaborating with the USGS Columbia Environmental Research Center (CERC) to conduct a multi-year baseline selenium monitoring program on 29 agricultural drains operated by the IID that support or potentially support desert pupfish, (*Cyprinodon macularius*), a federally listed endangered species that occur in some of these drains.

Specific objectives of the project are as follows: (i) to document selenium concentrations in water, sediment, dietary components of desert pupfish, and tissues of surrogate fish species such as western mosquitofish (*Gambusia affinis*) or sailfin molly (*Poecilia latipinna*) if mosquitofish are not available; and (ii) to document other environmental variables such as water quality, total suspended solids, and sediment particle size. In addition, USGS will document the incidental capture of any pupfish caught during supplemental monitoring of fish species in the drains.

The study area is located along the southern shore of the Salton Sea in Imperial County, California, about 140 km east of San Diego, 110 km

west of Yuma, Arizona, and 45 km north of the U.S.-Mexico border.

In general, selenium body burdens in western mosquitofish and sailfin mollies were significantly correlated with waterborne concentrations but not with sediment-borne concentrations. In addition, selenium concentrations in mosquitofish and mollies were significantly correlated with selenium concentrations in particulate organic detritus and midge larvae (mollies only), but not with selenium concentrations in filamentous algae and net plankton. However, selenium concentrations in midge larvae were significantly correlated with those in net plankton and water. The significant correlations are generally consistent with the hypothesis that selenium originates in agricultural drainwater, then is bioconcentrated in algae and becomes especially enriched in detritus (the selenium measured in sediment is possibly an artifact caused by its detritus content), from where primary consumers such as plankton and midge larvae assimilate a portion of the selenium. When secondary consumers such as fish consume plankton and midge larvae, the fish also accumulate this element. Some enrichment of selenium seemingly occurs at progressively higher links of the food chain.

The Santa Ana Sucker

by Mike Saiki & Barbara A. Martin,
Dixon Field Station

We conducted a study to document the life history and ecological characteristics of the Santa Ana sucker, *Catostomus santaanae*, within its native range in southern California. Electrofishing surveys were carried out at 3-month intervals at one site on the San Gabriel River and two sites on the Santa Ana River. Suckers were captured in the San

Gabriel River (average, 6.6 fish/10 minutes electrofishing) and at an upstream Santa Ana River site (average, 2.3 fish/10-minutes electrofishing) but not at a downstream Santa Ana River site.

Length frequency distributions indicated that at least three year classes (modal groups) of suckers were present in the San Gabriel River, whereas one or two year classes were present in the Santa Ana River. Collection of 21-30 mm standard length (SL) juveniles in June in the Santa Ana River and in September in the San Gabriel River indicated that reproduction occurred over several months. In December, Age-0 suckers averaged 36-48 mm SL in the San Gabriel River and 63-65 mm SL in the Santa Ana River, whereas Age-1 suckers averaged 86 mm SL in the San Gabriel River and 115 mm SL in the Santa Ana River.

On average, suckers were in better body condition in the San Gabriel River than in the Santa Ana River. Highest abundance of suckers was associated with relatively pristine environmental conditions (especially low specific conductance) where other native fishes were also common or abundant.

Visiting Scientist

Dr. Chang Hoon Moon

by Gary Wedemeyer

Accompanied by his wife Hyun Hee Shin, daughter



Hye Yeon Moon (age 9) and son Jae Hyeon Moon (age 7), Dr. Chang Hoon Moon has arrived at WFRC to continue the very successful research

started by visiting scientist Dr. Jeong Woo Park who recently returned to the University of Ulsan, Korea.

Dr. Moon, affectionately known as “Moonch,” received his Ph.D. in 2006 from Ulsan University in Korea. Funded by a post-doctoral fellowship from the Korean government, Moonch has been at WFRC since November, 2007 working in the lab of Dr. Gael Kurath.

Moon’s area of interest is the molecular biology of the IHN virus, specifically the NV (non-virion) protein, and the role of virus-inducible (stress) proteins in IHNV infections. Unlike the mammalian rhabdoviruses such as rabies, the IHN virus has 6 genes instead of 5. The extra gene codes for the NV (non-virion) protein which is unique to fish rhabdoviruses. Significantly, Dr. Kurath did the original research on the NV protein while studying the molecular biology of the IHN virus back in 1984. The exact role of the “extra” gene in the IHNV is still unknown, but the non-virion protein it codes for is surmised to somehow help the virus evade the host immune system.

Since arriving at WFRC, Dr. Moon has been working with Dr. Maureen Purcell using the IHNV genetic types previously characterized by WFRC’s fish health section to study this important virus of salmonids. Specifically, he is investigating virus replication and host responses, employing an innovative technique using small pieces of excised fins. Using this “fin assay,” Dr. Moon has already generated interesting data on the virulence and host specificity of different strains of the IHN virus.

After “Moonch” completes the IHNV work, he will begin work on the VHS virus which is currently causing multi-host epidemics with high mortality in economically important fish populations of the Great Lakes.

Invasive Species Research Section

Scott Smith



Hi, I'm Scott Smith and Gary has finally succeeded in talking me into writing an introduction. Took him over a year, but he stayed on task until I finally relented!

I am the section leader for our relatively new Invasive Species Section. I came to the WFRC after 15 years with Washington Department of Fish and Wildlife (WDFW) where I was the State Coordinator for Aquatic Invasive Species. The transition to working for USGS was easy since I had worked with the WFRC for about 5 years on ballast water issues.

The Washington State legislature gave WDFW the authority to manage the discharge of ballast water into our state waters in 2000. California and Washington were the first states in the nation to manage ballast discharges. I started the Washington program and quickly discovered that I needed a research facility and researchers that were willing to take on evaluating the efficiency of ballast exchange and ballast treatment.

I made presentations to researchers at UW and two were interested, but I still needed a facility with access to seawater. They recommended that I call the WFRC and take a look at the Marrowstone facility. I called Frank Shipley, who was the Center Director at that time and presented the idea of conducting ballast water research that would help the State make sound regulatory decisions. Frank liked the idea and I thought Marrowstone was a great place to conduct this work, so off we went. Lyman took over after Frank and provided strong support for the project. We managed to get some funding, and did a number of great projects in collaboration with UW and the Northeast-Midwest Institute. Interest in aquatic invasive species research grew to a point that Lyman needed

someone to lead the effort and to make a long story short, here I am and glad to be here.

The rest of my past is filled with many different adventures. When I was about 8 years old I learned that "Biology" meant the study of life. I immediately knew that I wanted to be a biologist since I was very curious about all aspects of life and its origin. I went on to graduate from the University of North Carolina in Marine Biology, became a dolphin trainer, taught Transcendental Meditation, owned an apartment complex and two ice cream stores, was National Sales Director for Great Midwestern Ice Cream Company and finally went back to working in biology with Oregon Department of Fish and Wildlife, then on to WDFW and a masters degree in fisheries from the University of Idaho.

My wife and I have three children, with two of them currently in college. We love the Pacific Northwest and lots of outdoor activities. I look forward to getting to know more of you as time passes. I sometimes get to caught-up in my own world and forget to look around, so please drop by my office for a visit if you get a chance.

Deborah Reusser

I always wondered if the noise on New Year's Eve in 1955 prompted my arrival into this world. I don't personally remember that far back, but it must have been spectacular because people I don't even know still



celebrate on my birthday every year. My early years involved moving around quite a bit, so even though I've lived in many different places, was born in Oregon, started kindergarten in Norfolk, Virginia and finished high school in Vallejo, California, I consider Missoula, Montana home.

I became a wife and homemaker at 19 and settled down to have three beautiful children, each born in a different state. I really enjoyed my career as a homemaker, and developed a small cottage industry making dolls until a car accident made it impossible to sew for any length of time. In search of some replacement income, when the kids headed off to school I started my second career as a Tupperware lady. Not an easy task in North Carolina for someone that grew up in Montana and spoke like a northerner. I wore out several phone books building my business and learning to talk southern. The Tupperware distributorship gave me a brand new car to drive every two years, put my name on plaques at headquarters in Florida and showered me with gifts and awards. We bought a hundred year old homestead and began remodeling from the ground up. Life was grand. As the kids grew older though, I needed to be home in the evenings so I decided to go back to school and find another career.

College at 34 is a totally different experience than college at 18 I think. Perspectives and priorities are very different. Or maybe I felt kind of out of place because I was both old and white at an all black college full of young people. Either way, it was an enlightening experience both intellectually and culturally. At least I'd been in the south long enough to sound like a southerner.

I began my third career in the summer of 1991 when I accepted an internship position with the National Mapping Division (NMD) of USGS in Reston, VA, right after my first year in college. When I graduated from Elizabeth City State University in 1994 with a Bachelor of Science in Computer Science, I accepted a permanent position as a cartographer with NMD and moved to Virginia. My first projects were geared toward developing user interface tools for digitizing digital line graphs

(DLG) on VAX, DG, Intergraph, UNIX and Windows machines for the 1:2 million data updates. I had the unique opportunity to resolve some of the communication issues between experienced cartographers and computers. I also developed several tools for data access on distribution CD ROMs for DLG's and Digital Raster Graphics (DRG's). I started taking graduate classes at night and in January of 1995, my first grandchild was born.

In 1996, I was asked to assist in the development of a proof of concept for an update of the National Atlas of the United States, published by the USGS in 1970. I applied for and was awarded a USGS continuing education scholarship for the following year. I enrolled in the Master's degree program at George Washington University School of Computer Science and Mathematics and graduated with a Master's in Computer Science in 1997. My grandson spent many hours in my lap during my research and thesis writing. He was re-arranging my desktop icons with the mouse by the time he was a year old.

After graduation, I returned to the USGS full time and became the senior developer for the National Atlas MapMaker (<http://www.nationalatlas.gov/natlas/Natlasstart.asp>). It went live with 8 basic data layers available. Eleven years and over 3,000 data layers later, it still receives over a million hits a month from people making maps of everything from population density to the spread of purple loosestrife. I'm now working with the new developer on a major redesign for the mapping engine to improve reliability and performance with the latest technology.

In 1999, I moved to Battleground, Washington and became part of the USGS –Western Region Mapping Center in Menlo Park, California. I continued work on technology research for the

National Atlas program. I became interested in nonindigenous species during my work with the Southwest Exotic Species Plant Project in 2000. My interest shifted from terrestrial plants to aquatic invasive species in late 2002 when I began collaborating with EPA on developing the Pacific Coast Ecosystem Information System (PCEIS).

In 2003 I remarried and moved to Seal Rock, Oregon. In the summer of 2003 I attended Dr. James Carlton's workshop on invasive species in Coos Bay, Oregon. That was the beginning of my quest for my fourth career as a research scientist. I joined the Western Fisheries Research Center and their invasive species program on August 6, 2006.

My office is located in the EPA building at the Hatfield Marine Science Center in Newport and my studies towards a PhD in Geography at Oregon State University in Corvallis are ongoing. I am currently involved in a variety of interesting projects: The Whidbey Basin Marine GAP Pilot Project, the National Atlas Project, developing database templates for the collection of invasive species information for the Pacific Rim countries of Japan, Russia, China, Korea, Canada and the United States, regional benthic Indicator development, and my current research in modeling regional to global distributions of aquatic invasive species under a changing climate.

Outside of research and work, I like to write poetry or join my on-line friends to battle the dragons of Norrath in a never ending quest for victory against the dark forces of Everquest. Several of my children and some of my grandchildren (now there are eight) help slay the dragons on occasion.

I travel to Seattle regularly. If I haven't met you yet, don't be a stranger — drop me an email and I'll make sure I stop by your office and say hello next time I am there. My name is Debbie Reusser, and I'm looking forward to meeting you if we haven't met already.

Advances in Metadata: Visit the re-Designed NBII Clearinghouse Interface

by Vivian Hutchison, NBII

Have you visited the NBII Clearinghouse recently? If not (and why not?!?), you will see some significant changes! The NBII, in collaboration with Oak Ridge National Laboratory (ORNL), has recently released a new, enhanced version of the NBII Clearinghouse with powerful new search capabilities. (<http://mercury.ornl.gov/nbii>)



Let's explore the new Clearinghouse interface by thinking about a search. A scenario: A researcher is interested in grizzly bear data in Montana. To find relevant metadata records that describe such research, he can click on the "Advanced Search" area, enter the keyword "grizzly bear," and create a bounding box on a map of Montana. All the records in the Clearinghouse relevant to grizzly bears and Montana will appear on the Search Results page.

Now say this researcher has too many good records to choose from, and he would like to narrow his search. He can do this immediately by using specially designed "filters" on the Search Results page. Our researcher can click on a specific data provider to show only records provided to the Clearinghouse by that organization. Or our researcher can filter on the specific type of metadata records he is looking for. For example, since he is only interested in maps and data pertaining to grizzly research (and not publications or software and tools), he can click on the "Maps and Data" filter to further narrow his results. When viewing specific records, our researcher can choose between an abbreviated view or the traditional FGDC view. Additionally, the Clearinghouse is poised to display

ISO19115 metadata records once the standard is finalized.

Once our researcher is satisfied with his results, he can bookmark the page in “Internet Favorites” to return to at a later time, or email out the search results. If he has interest in seeing future results from this particular grizzly bear query, an RSS feed can be set up to alert him about new records that have been submitted to the Clearinghouse. The search is very successful for the researcher in our scenario because he goes on to discover new collaborators by contacting researchers he saw referenced in the metadata records who are working on projects similar to his own. This could happen for you! Try a search today!

NBII would like to thank ORNL for doing an outstanding job in creating the new Clearinghouse interface. Giri Palanisamy successfully led his team at Oak Ridge on the project and coordinated with Mike Frame and Viv Hutchison from NBII to achieve the results that you see today. Contact Viv at vhutchison@usgs.gov for further information about the Clearinghouse or to provide constructive comments.

Reisenbichler Retires!

Gary finally prevailed and got Reg to prepare an article for the Center’s newsletter. In an attempt to avoid boring you senseless, this narrative about Reg’s career includes some of the ancillary events that added spice to the mix.



Reg grew up and earned his B.S. degree (OSU) in Oregon, married, and then moved to Southeast Missouri to start a dairy farm with family. Artificial insemination and genetic improvement of the herd were among his specialties. He quit dairy farming and returned to Oregon in 1974 to start his fisheries

career as a Masters student with the Oregon Cooperative Fisheries Research Unit at OSU. He was privileged to meet and work with many top-notch ecologists including Chuck Warren, Jim Lichatowich, Jack McIntyre, and Jim Hall. Graduate student escapades across various parts of Oregon generated the “French Glen Bathhouse,” “Trout Creek Wood Rats,” Rouge River Laundry,” “Elk Creek Electroshock,” “Parr Norton Ranch Roundup,” and other stories that occasionally surface around the campfire even now.

After completing his degree, becoming a father, and working on stock assessment and streamflow studies in the Oregon Department of Fish and Wildlife’s research section for 1+ year, he took a job with the U.S. Fish and Wildlife Service (USFWS) at their Fisheries Office in Lander, Wyoming. One of the challenges was dealing with the contentious factions — ranchers, Indians, miners, and government employees. His work in Wyoming included summer horse-packing trips to sample nearly unfished trout populations in high mountain lakes of the Wind River Mountains, trips to Yellowstone National Park to help Bob Gresswell and others sample Yellowstone Lake and the Madison River, and round-the-clock mid-winter ice fishing in lowland lakes from snowmobiles to monitor burbot and lake trout populations. The latter was **cold** work. Water tossed into the air froze before hitting the ground; the fish became frozen bricks within minutes out of the water; the expanding, grinding ice on the lake bellowed like a bull. He developed a fisheries management plan for the Wind River Indian Reservation and designed a streamflow (IFIM) study to support litigation to allocate the waters of the Wind River.

He then moved to the USFWS Fisheries Office in Red Bluff, California where he worked with Chinook and steelhead populations and hatcheries, primarily in the Sacramento-San Joaquin River system. His work included experimental design and statistical power analysis for stock assessment studies, collaboration with Richard Hallock (one of

California Department of Fish and Game's legendary biologists) on several field studies (e.g., radio tagging adult Chinook with some of the first available radio tags, experimentally evaluating sources of mortality, such as Red Bluff Diversion Dam, for juvenile salmon in the river), and developing population dynamics models for Chinook to test for the effects of environmental change from water development projects and other causes. The radio tagging study provided motivation for Reg's blossoming expertise in fish sampling with firearms and explosives as a 12-gauge shotgun was used to retrieve experimental fish (not recommended). One surprising experience was when the staff from the local spawning channel quit talking to him because his suggestions that they account for production and research costs separately to highlight the attributes and economic efficiency of the program were perceived as threats to their jobs. And he learned other lessons — e.g., interaction with California's state government brought the realization that the feds certainly do not have the corner on bureaucratic inefficiency.

Jack McIntyre, the first section chief for Ecology, brought Reg to WFRC with its World War I vintage buildings and offices in December of 1980 when Al Fox was Director. The explosives repertoire expanded under the mentorship of Fox and the late Ted Bjornn (Idaho Cooperative Fisheries Research Unit) to include stun gun (electric dynamite blasting caps), and prima cord, and was used for collecting genetic and other samples in Olympic National Park and in Idaho. Fox's "mentorship" included firearms "training" (i.e., what not to do) and the use of olfactory booby traps. Such as sprinkling 'essence of skunk' into the garbage can in Reg's office. Unbeknownst to Fox, Reg was away at the library but many of the other employees suffered until the building aired out.

Despite these and similar events, substantial scientific work was accomplished at the Center. Reg's work includes completion of his California population dynamics and modeling work (while

earning a Ph.D. through the UW under the late Doug Chapman); investigation of factors leading to the decline of sockeye salmon in Karluk Lake, Alaska; biochemical genetic (allozyme) studies on genetic population structure of coastal (focus on Olympic National Park) and Columbia River salmonids; building a conceptual structure and testing for domestication and adaptive genetic differences between natural and hatchery populations of salmon and steelhead in Idaho and Oregon; developing a basis for jointly managing natural and artificial production of anadromous salmonids; testing for factors influencing the productivity of streams for Chinook salmon (temperature, conductivity) or for coho salmon (marine-derived nutrients); establishing the Center's otolith lab for the stream productivity work and for the current life history and estuary utilization work and, more recently, beginning population (e.g., bull trout) and ecosystem (eelgrass) work in Puget Sound and its estuaries. Reg has been an assistant or associate professor at UW since about 1989; has served on most of the Biological Review Teams for evaluation of west coast salmon and steelhead species/ESU's under the Endangered Species Act; and has been the Center's Field Diving Officer for more than two decades.

Reg's work has involved considerable interaction with Native American tribes, with experiences ranging from good to bad to ugly. The good included formal thanks and even a plaque from the Tulalip tribal council for technical assistance and support. The bad included blame from a Warm Springs tribal committee for all the past, perceived, and real transgressions of the entire federal government (especially Army Corps of Engineers and NMFS) against salmon in the Columbia River System. The ugly included an ambush at a professional meeting by tribal (CRITFC) biologists who took exception to his warnings about potential deleterious effects from hatchery supplementation programs. Years later, Steve Rubin and others still chuckle over the latter incident.

Few realize that Reg's legacy includes the Center's Suburban which he purchased only two decades ago (it's now about as old as his personal bicycle, pick-up truck, and some of you) and he must accept the blame for its lack of air conditioning. In the spirit of reduced cost and increased gas mileage, he demanded that the vehicle have no air conditioning, and thus earned his reputation as a cruel taskmaster. One of Reg's quirks is that he rides his bike to work year-round, rain or shine. He has logged 100,000 miles commuting to WFRC and the University of Washington by bicycle and continues to be an advocate for reducing our carbon footprint and consumption of fossil fuel.

Reg has had the pleasure of working with many terrific people over his career, including his current and past staff and colleagues (and even his supervisor Lyman, with the maverick definition of "nearshore") at the Center and field stations, and USGS, USFWS, National Park Service, Tribes, universities, state agencies, and beyond. He has enjoyed serving under four lab directors at WFRC — Al Fox, Al Marmelstein, Frank Shipley, and Lyman Thorsteinson. Reg especially enjoyed the singular day on an Idaho sampling trip (rainbow trout genetics) when he stumbled onto a highly effective fly pattern and seriously outfished Frank Shipley for an hour or two until the secret was revealed. He appreciates and thanks all of these colleagues and friends, and wishes them the best in their careers and in life.

Special recognition and thanks go to Reg's primary mentor, Jack McIntyre. Although highly respected, Jack had one notable failing. He could not tolerate Reg's falling asleep as a passenger on long car trips and would painfully restore wakefulness with physical or verbal disturbances. In the long haul however, rather than ever breaking Reg of the habit, he ultimately ended up adopting it himself. Perhaps as a result of the aging process.

Special recognition and thanks also go to my wife Kim for her patience, understanding, and

terrific support; to my current and past staff at WFRC including Steve Rubin, Kim Larsen, Lisa Wetzel, Jeff Duda, Carl Ostberg, Mike Hayes, Karl Stenberg, Angie Null, Dorothy Chase, Dave Beauchamp, Scott Corley, Joy Michaud, Steve Landino, Frank Leonetti, Gayle Brown (ever vigilant in searching out computer viruses), Craig Adams, Jay Hensleigh, Hilary Lamont, Stacey Slatton, Deanne Drake, and Molly Cobleigh; and to our former Section Chief, collaborator, and continued friend John Emlen. The various stories about these individuals will not be told here for fear of retribution.

Finally, special recognition and thanks also go to Penny Orr and Georgia Fountain who for years have visited my office daily without complaint despite the chaos and locker-room atmosphere, to Liz Turpin and her staff who always made sure that paychecks were paid and that administrative help was available when needed, to Mary Dunning and Robin Salling for patiently responding to numerous IT and other requests, to Kyle Sato and Rob Jackson for keeping the place and vehicles running and for their general helpfulness, and to Lyman for support, friendship, and enthusiastic leadership.

Reg will be handing the reins to Scott Smith and Steve Rubin for a smooth transition at the Center, and then the old dog will work at learning some new tricks and refreshing some old ones. Planned activities after retirement include development as a more complete naturalist (above and under water); travel (Slovenia, Egypt [Red Sea], and Turkey this fall after helping with WFRC dive surveys in the Strait of Juan de Fuca); study and exploration of possibilities for working on coral reefs; work on unfinished fisheries reports; volunteering for NGO's, national parks, wildlife refuges, or USGS; reading; crabbing/fishing; diving; development as a (new) grandfather, and not least, reducing clutter and making improvements at home. ><)))*)*>

Ranson Retires!

My Life in a Nutshell (Does that mean I'm a nut?)

I was born (1946) and raised in Clifton New Jersey, learned to fly an airplane as a seventh grader at age 13, and soloed a glider in 1963 at age 17 with my brother as flight instructor. I've always been interested in aviation and in those days, I read everything I could find on airplanes and flying. After High School, I attended Elmira College in upstate New York and graduated in 1968 with a degree in chemistry and a minor in math.



After graduation, I worked as research tech in clinical pharmacology for the University of Colorado, Health Science Center. We did some of the original work on the promising new anti-hypertension drug Rogaine. Who knew then that Rusty would be rubbing it all over his bod!

In 1973, I became a homeowner for the first time when I bought my first condominium in Aurora, Colorado and began working as a research tech at the Eleanor Roosevelt Institute for Cancer Research in Denver. We studied cell surface antigens related to human chromosomes 11 and 12. I enjoyed creating human-hamster hybrid cells, felt like something from sci-fi!

In 1975, I met and married my one true love, Gary who was a Captain in the USAF stationed in Denver at the time. In 1981 Gary graduated from the Conservative Baptist Seminary in Denver and accepted a Senior Pastor position in the Port Townsend area. And thus I arrived in Washington State.

In 1984, we bought land and built a house on Marrowstone Island and in 1989 Gary and I became involved with World Relief as volunteer sponsors for refugee families. To date, we have hosted more than 2 dozen (I lost count) refugee families in our home from countries torn with civil strife such as

Azerbaijan, Kosovo, Iran, Iraq, Afghanistan, Ethiopia, Liberia — even Turkish refugees from Russia. As a side effect, I now speak fluent Russian.

In 1991, I started working at the WFRC Marrowstone Island Field Station. It felt great to get back into the lab after ten years. I was pleased to find that I hadn't lost my touch. In my after work hours, Gary and I continued our humanitarian efforts and in the 1992-1997 period, I made 5 trips to Siberia, Russia and sent food, clothing, and medical supplies to an orphanage and hospital in Magadan, Russia.

In 1994, we moved to Renton and I started working at WFRC-Seattle wherever needed. Rusty rescued me and gave me a home at a lab bench. He taught me to do DNA extractions and PCR! I also joined in on the late Aldo Palmisano's work on heat-shock proteins. I loved learning new techniques, especially on our new qPCR machine! Next, I joined the virology team with Gael Kurath as my project leader. What a blast!

Now after nearly 19 wonderful years of hanging out with you all, I am ready to face my retirement (I think, maybe?) WFRC has been the friendliest environment to work in and the research projects really interesting to be involved in. Every morning I have looked forward to coming to work, have enjoyed doing my thing in the lab, and have gone home feeling happy.

What will I be doing next? Well, to begin with I dream of just relaxing at home, enjoying my garden, and soaking in the hot tub. Maybe I can teach my dog to fetch a ball? OK, so that will soon lead to total boredom and shriveled skin, albeit a happy dog. Both our sons are planning for their weddings this summer. There are a ton of half-finished projects around the house that I have been meaning to get to. Oh yes, then there are the rental properties that constantly need something done to them. I also am considering getting more involved with the refugees again. I also have a stack of vinyls that I

want to convert to CD's (before CD's become obsolete!).

But the trouble with retirement is that you never get a day off. You know, on second thought, I might just leave my coffee mug at WFRC... just in case.

Who's Who in the Admin. Section

by Liz Turpin, A.O. Seattle



The WFRC admin. family. Can you put names to faces?

In the last issue, I introduced you to Betty Gordon, Roz Lehner, Seok Wilson, and Loretta Slusher. In this issue, we are featuring Cindy Hansen (Klamath), Henry Higgins, Lyne Casal, and Betty Gordon (CRRL); and Bonnie Dotson (Seattle); plus a few words introducing myself.

Cindy Hansen (Admin. Op. Asst., Klamath).

I have been at the Klamath Falls Field Station for over a year now as the Administrative Operations Assistant. I live in Dorris, California and have three grown children and three grandchildren, Monique, Jack and Samuel. I spend my time spoiling the grandkids, gardening, reading, sewing, and enjoying home improvement projects. I have always been very involved in my community, having served as

Mayor Pro Tem on the City Council, Community Christmas Festival Committee, helping with the Butte Valley Stars Peewee Cheerleading, Big Brothers/Big Sisters, and with the Shasta View Church of the Nazarene. I like to travel and fish. I am known for my Mickey Mouse collection and for always having good candy at my desk. And for having a mellowing effect on Rip.

Bonnie Dotson (Budget Analyst, Seattle)

I was raised on the coast of Washington in the small town of Grayland. My parents were cranberry farmers. As children, my sisters and brother spent most of our waking hours at the beach, when we weren't building forts in Cedarville.

After graduating from high school in Westport, Washington, I spent several years wandering around Oregon, working in restaurants, visiting the sites, and just playing. I returned home to Washington where I met and married Richard.

I enjoy handicrafts of all sorts. At the moment, I am preoccupied with beadwork. We made our home in Port Angeles, Washington, where I went to work in a temporary appointment at Olympic National Park. After a year, I was made permanent and stayed there for nearly 15 years working in the area of finance. After Richard retired, we packed up the fifth-wheel and moved to San Juan Bautista, California.

After a year of working at Pinnacles National Monument, home of the California condor, in Paicines, California, as a budget analyst, our fifth wheel was becoming claustrophobic and we wanted to come back to the chill of Washington. I was lucky enough to be selected to fill the role of budget analyst at the Western Fisheries Research Center in Seattle. I want to say that is my pleasure to get this opportunity to work with all of you.

Henry W. Higgins (Account. Tech., CRRL)

I was born in Kinloch a suburb of St Louis, Missouri, which my great great grand parents to my brothers helped to build. I left in 1969 to join the military service following in the foot steps of my older brothers. After my tour ended in 1973, I started my first federal job in December of 1973. My 29 years of federal service includes jobs with the Veterans Administration and Hospital, Farmers Home Administration, Naval Hospital, US Post Office, Department Of Defense and now the USGS.

I have worked in California, Missouri, Ohio, Oregon, and Louisiana and now Washington. I like to write, love to talk trash — be it sports or anything I'm winning in — and cooking. My goals are to see my youngest son start college, get my 30 year pin and celebrate getting my 100th social security check which to me is not too much to ask.

Lynne A. Casal (Admin. Ops. Asst., CRRL)

I was born in Fallriver, Massachusetts but my father was in the military so we moved around a lot for the first 14 years of my life, before settling down in Southern California where I lived for 30 years. In 2006 my husband and I relocated to the Columbia Gorge where we could slow down and live a less complicated life. We are in the process of building a house and shop which are almost completed.

I started my federal career at age 18 with the Postal Service where I was employed in several positions and three different offices over a period of 23 ½ years. During the last 10 years of my postal career I attended college and earned a bachelor's degree which enabled me to leave the Postal Service for a position with a Forest Service fire research lab as a hydrological technician and GIS Specialist (trainee) on wildland fire and other major incidents in Southern California.

With impending layoff from the Forest Service I accepted a position with a county agency as a GIS

Specialist for a year while I continued my search for another federal position. In April of 2006 I accepted a temporary position with CRRL as a biological technician and then again in 2007 before accepting a position in February 2008 as an administrative operations assistant. My combined years of federal service total almost 29 years.

I am an animal lover and over the course of my 30 years in California adopted and cared for many endangered California desert tortoises. I love dogs and enjoy maintaining a saltwater reef aquarium, and koi ponds, gardening and landscaping as well as designing, building, and decorating our house, and I am blessed with a husband who lets me do whatever I want in those areas and who shares my passion for windsurfing, mountain biking, snowboarding, fishing, camping, nature, wildlife viewing, and Christian mission's work.

Liz Turpin (A.O., Seattle)

I grew up in Steilacoom, Washington, a small coastal town on the Puget Sound south of Tacoma. I spent my early years playing on the beaches and riding my bicycle around town. My father loved to fish, and every weekend in the summer we were camping on a lake, near a river or on the ocean. I remember times we would fish in the Sound and my Dad would drop my sister and I on Ketron or Anderson Island to dig clams then pick us up and we would go home to feast on salmon and clams. Very Northwest upbringing!

You probably all think I cycled before I could walk, however I didn't get my first bike until I was 8. Before that, I paid my brother 5 cents each time to ride his bike. I still owe him 25 cents (with inflation, that would be?). I married and moved away to the Midwest, and lived in the frozen tundra land known as Minnesota for 14 years. From there we thawed when we moved to Las Vegas, Nevada, where I worked for the Desert National Wildlife

Refuge. The job was great, the marriage not so great, so I looked to come back home. I was hired as a budget analyst for, of all places, the Western Fisheries Research Center!

I worked here for 3 years and then needed more money to support the daughter in the way she felt she needed to be accustomed to. I left and took a promotion as a program analyst at NOAA's Northwest Fisheries Science Center. After 6 years, the AO job opened up at the Center. I applied and low and behold you took me back after all those years.

I have two grown children, Joshua and Anna (former Girl Scout cookie peddler) who is just now graduating from college. I live in DuPont, which is about 7 miles from where I grew up in Steilacoom. My interests are cycling, gardening, traveling and volunteering with the Nisqually tribe stream watchers. I also volunteer and help maintain a mission church in Steilacoom that is over 150 years old.

My door is always open, and the candy dish is there for everyone (though it is more apt to have treats the beginning of the week). Stop by and see me anytime!

Sturgeon Are Having a Ball in the Columbia River!

by Mike Parsley, CRRL

White sturgeon are North America's largest freshwater fish, with records of some fish weighing more than 1,500 pounds and living well over 100 years. The tens of thousands of dormant white sturgeon found by the Army Corps of Engineers last February in a single aggregation downstream of the

Columbia River's Bonneville Dam may have contained 5-10 percent of all the white sturgeon in the lower Columbia River.

While similar winter "balls" or aggregations of sturgeon have been documented in the Columbia River and elsewhere, none have been as large as this aggregation downstream from Bonneville Dam. Scientists know that a number of temperate freshwater fish species become dormant during winter. During this time the fish become inactive, cease feeding, and reduce protein synthesis and growth. There may be benefits to this behavior that are not yet known.

USGS scientists at the Western Fisheries Research Center's Columbia River Research Laboratory have conducted a number of studies on the biology, ecology, and life history of white sturgeon. Their work has improved understanding of how dams have altered habitat for white sturgeon and they have shown that white sturgeon can pass upstream at dams if the fish ladders are constructed properly. They have continuously monitored the daily movements of white sturgeon to answer questions about how the fish use their environment.

For more information on recent white sturgeon studies conducted by scientists at the Columbia River Research Laboratory, visit <http://wfrc.usgs.gov/research/research.htm>. You can also contact Michael Parsley at 509-538-2299 x247 or mparsley@usgs.gov.

Some Recent WFRC Research

- Banish, N.P., B.J. Adams, R.S. Shively, M.M. Mazur, D.A. Beauchamp, and T.M. Wood. *In Press*. Distribution and Habitat Associations of Radio-Tagged Adult Lost River and Shortnose Suckers in Upper Klamath Lake, Oregon. *Transactions of the American Fisheries Society*.
- Brenkman, S.J., G.R. Pess, C.E. Torgersen, K.K. Kloehn, J.J. Duda, and S.C. Corbett. 2008. Predicting the patterns and interactions of non-anadromous and anadromous salmonids to the removal of the Elwha River dams, Washington State, USA. *Northwest Science* 82 (Special Issue):91-106.
- Burdick, S.M., H.A. Hendrixson, and S.P. VanderKooi. 2008. Age-0 Lost River sucker and shortnose sucker nearshore habitat use in Upper Klamath lake, Oregon: A patch occupancy approach. *Transactions of the American Fisheries Society* 137:417-430.
- Connell, L., Iszard, M., Redman, R., Craig, S., Scorzetti, G., and Rodriguez, R. 2008. Diversity of soil yeasts isolated from South Victoria Land, Antarctica. *Microbial Ecology, In press*.
- Connolly, P.J., and S.J. Brenkman. *In Press*. Fish assemblage, density, and growth in lateral habitats within natural and regulated sections of Washington's Elwha River, prior to dam removal. *Northwest Science*.
- Connolly, P.J., I.G. Jezorek, K. Martens, and E.F. Prentice. 2008. Measuring performance of two stationary interrogation systems for detecting downstream and upstream movement of PIT-tagged salmonids. *North American Journal of Fisheries Management*. 28:402-417.
- Connolly, P.J., I.G. Jezorek, K.D. Martens, and E.F. Prentice. 2008. Measuring the performance of two stationary interrogation systems for detecting downstream and upstream movement of PIT-tagged salmonids. *North American Journal of Fisheries Management*. 28: 402-417.
- Duda, J.J., J.E. Freilich, and E.G. Schreiner. 2008. Restoration of the Elwha River ecosystem through dam removal: Introduction to the special issue. *Northwest Science* 82 (Special Issue):1-12.
- Ellsworth, C.M., T.J. Tyler, S.P. VanderKooi, and D.F. Markle. 2008. Patterns of larval catostomid emigration from the Sprague and lower Williamson rivers of the Upper Klamath Basin, Oregon prior to the removal of Chiloquin Dam, 2004-2005 Annual Report. U.S. Bureau of Reclamation.
- Emmenegger, E. and G. Kurath. *In Press*. A DNA Vaccine Protects Ornamental Koi (*Cyprinus carpio koi*) against North American Spring Viremia of Carp Virus. *Journal of Vaccines*.
- Graham, J.H., A.J. Krzysik, D.A. Kovacic, J.J. Duda, D.C. Freeman, J.M. Emlen, J.C. Zak, W. R. Long, M.P. Wallace, C. Chamberlin-Graham, J.P. Nutter, and H. Balbach. *In Press*. Ant community composition of altered military landscapes in the Southeastern Fall-line Sandhills. *Southeastern Naturalist*.
- Graham, J.H., A.J. Krzysik, D.A. Kovacic, J.J. Duda, D.C. Freeman, J.M. Emlen, J.C. Zak, W.R. Long, M.P. Wallace, C. Chamberlin-Graham, J.P. Nutter, and H. Balbach. *Accepted*. Ant diversity in altered military landscapes. *Ecological Indicators*.
- Hershberger, P.K., C.A. Pacheco, J.L. Gregg, M.K. Purcell, and S.E. LaPatra. *Accepted*. Differential survival of *Ichthyophonus* isolates indicates parasite adaptation to its host environment. *Journal of Parasitology*.
- Hoy, M.S., and R.J. Rodriguez. *Accepted*. Development of a molecular diagnostic system to discriminate *Dreissena polymorpha* (zebra mussel) and *Dreissena bugensis* (quagga mussel). *Science*.
- Johnson, G.E., J.W. Beeman, I.N. Duran, and A.L. Puls. *Accepted*. Synthesis of Juvenile Salmonid Passage Studies at The Dalles Dam Volume II: 2001-2005. U.S. Army Corps of Engineers.

- Kloehn, K.K., T.J. Beechie, S.A. Morley, H.J. Coe, and J.J. Duda. 2008. Influence of dams on river-floodplain dynamics in the Elwha River, Washington. *Northwest Science* 82 (Special Issue):224-235.
- Kock, T.J., K.F. Tiffan, W.P. Connor, R.K. Steinhorst, D.W. Rondorf. *In Press*. Evidence for behavior thermoregulation by subyearling fall Chinook salmon in a thermally regulated reservoir. *Transactions of the American Fisheries Society*.
- Laing, K.J., M.K. Purcell, J.R. Winton, J.D. Hansen. *In Press*. A genomic view of the NOD-like receptor family in teleost fish: identification of a novel NLR subfamily in zebrafish. *BMC Evolutionary Biology*.
- Landis, E.D., M.K. Purcell, G.H. Thorgaard, P.A. Wheeler, and J.D. Hansen. *In Press*. Transcriptional profiling of MHC class I genes in rainbow trout infected with IHNV. *Molecular Immunology*.
- Lee, H., II., D. Reusser, J. Olden, S. Smith, J. Graham, V. Burkett, R. Piorkowski, J. McPhedran, and J. Dukes. *In Press*. Establishing an Integrated Monitoring and Information System for Predicting and Managing Aquatic Invasive Species in a Changing Climate. Special Issue: *Conservation Biology*, August 2008.
- Lind-Null, A., K. Larsen, and R. Reisenbichler. 2008. Characterization of estuary use by Nisqually Hatchery Chinook based on otolith analysis. USGS OFR-2008-1102.
- Martens, K.D., and P.J. Connolly. 2008. Lower Methow Tributaries Intensive Monitoring Study. U.S. Bureau of Reclamation.
- Mejia, F., M.K. Saiki, and J.Y. Takekawa. *In Press*. Relation between species assemblages of fishes and water quality in salt ponds and sloughs in South San Francisco Bay. *Southwestern Naturalist*.
- Mesa, M.G., J. Phelps, and L.K. Weiland. 2008. Sprint swimming performance of wild bull trout (*Salvelinus confluentus*). *Northwest Science*. 82: 1-6.
- Morley, S., J.J. Duda, H. Coe, K. Kloehn. 2008. Benthic invertebrate and periphyton in the Elwha River basin: current conditions and predicted responses to dam removal. *Northwest Science* 82 (Special Issue):179-196.
- Ostberg, C.O., S.D. Pavlov, and L. Hauser. *In Press*. Evolutionary relationships among sympatric life history forms of Dolly Varden inhabiting Kronotsky Lake, Kamchatka. *Journal of Fish Biology*.
- Parsley, M.J., N.D. Popoff, B.K. van der Leeuw, and C.D. Wright. *In Press*. Seasonal and Diel Movements of White Sturgeon *Acipenser transmontanus* in the Lower Columbia River. *Transactions of the American Fisheries Society*.
- Purcell, M.K., A.L. Murray, A. Elz, L.K. Park, S.V. Marcquenski, J.R. Winton, S.W. Alcorn, R.J. Pascho and D.G. Elliott. *In Press*. Decreased mortality of Lake Michigan Chinook salmon (*Oncorhynchus tshawytscha*) following bacterial kidney disease challenge: evidence for pathogen-driven selection? *Journal of Aquatic Animal Health*.
- Reusser, D. A., and Lee II, H. 2008. Predictions for an invaded world: a strategy to predict the distribution of native and non-indigenous species at multiple scales. *ICES Journal of Marine Science*, 65. (*ICES Journal of Marine Science*, Advance Access published February 28, 2008)
- Robinson, T.C., J.M. Bayer, J.G. Seelye. *In Press*. Olfactory Sensitivity of Pacific Lampreys to Lamprey Bile Acids. *Transactions of the American Fisheries Society*.
- Rodriguez, L.L., P.M. Roche, and G. Kurath. *In Press*. Fish Rhabdoviruses. Section for a chapter on *Rhabdoviridae* in a veterinary textbook [Editor E. Flores, University of Parana, Brazil].

- Rodriguez R.J. and Redman R.S. 2008. More Than 400 Million Years Of Evolution And Some Plants Still Can't Make It On Their Own: Plant Stress Tolerance Via Fungal Symbiosis. *Journal of Experimental Botany*, doi:10.1093/jxb/erm342.
- Rodriguez R.J., Henson J., Van Volkenburgh E., Hoy M., Wright L., Beckwith F., Kim Y., Redman R.S. 2008. Stress Tolerance in Plants via Habitat-Adapted Symbiosis. *ISME-Nature* 2, 404–416.
- Saiki, M.K., and F.H. Mejia. *In Press*. Utilization by fishes of the Alviso Island Ponds and adjacent waters in South San Francisco Bay following restoration to tidal influence. *California Fish and Game*.
- Tobias J. Kock, Scott D. Evans, Theresa L. Liedtke, and Dennis W. Rondorf. *In review*. Strobe lights do not reduce turbine entrainment of juvenile steelhead at Cowlitz Falls Dam, Washington. *North American Journal of Fisheries Management*.
- True, K., M.K. Purcell, and J.S. Foott. *In Press*. Development and validation of a quantitative PCR to detect *Parvicapsula minibicornis* and comparison to histologically ranked juvenile Chinook salmon (*Oncorhynchus tshawytscha*) from the Klamath River, USA. *Journal of Fish Diseases*.
- Wedemeyer, G.A., and R.S. Wydoski. *In Press*. Physiological Tolerance of some Economically Important Freshwater Salmonids to the Stress of Catch and Release Fishing. *North American Journal of Fisheries Management*.