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WFRC Research News

(news you can use to thrive and survive)

Editor, Gary A. Wedemeyer *Volume 2(3), Summer 2003*

In This Issue

News You Can Use From the Center Director's Meeting

by Lyman Thornsteinson

A Western Regional BRD Center Director's meeting was held in Palm Springs on 20-22 May 2003. Dominant meeting themes were FTEs, approvals for hiring waivers, full cost accounting and cost sharing, audit findings, and the FY 2003 budget. The current FTE limitations within the USGS reflect the Director's intent to control fixed costs and address the President's Management Agenda. The FY 2003 FTE ceilings and existing hiring control process reflect initial steps in the "glide path" intended to bring the USGS into compliance with OMB targets in the next fiscal year. The mid-year timing of this year's FTE allocations has been difficult for all the BRD centers, the WFRC not withstanding. Our official allocation of 155 FTEs, while good, was well below this Center's expected usage. As a result, our seasonal workforce was terminated and replaced with contract employees. The financial and scientific impacts have been greatest at the CRRL although the FTE reductions have affected us all. For those of you with personnel actions pending, I am happy to report some relief in the waiver approval process. I thank each of you for your patience, understanding and recognition of the need for meeting our Center allocation.

The results of the audit and our organization's need for improvement in its financial management and business practices are the driving forces behind many of the administrative changes, including the increased emphasis on internal controls, we are experiencing in FY 2003. "Improved financial management" is also one of the President's Management Agenda initiatives, and the USGS has already received two unfavorable audit opinions. There will be consequences if we don't improve our business practices and these may include decreased

funding from Congress, centralization of some fiscal management activities, and perhaps most seriously, erosion of our scientific credibility and relationship with DOI partners and other customers. Each of us has a role to play in rebuilding USGS's financial integrity and this requires careful attention to established federal rules and regulations. This year, the USGS managers are focusing attention on four areas of material weakness identified by the auditors as needing improvement: the annual property inventory, monthly review and quarterly certification of reimbursable agreements, billings, and advances at the cost-center level; adherence to established fiscal policies and procedures; and accuracy of unliquidated obligations and accruals. This year's audit is on an accelerated schedule and a "hard close" will be performed in late July to give the auditors a "snapshot of the books." In addition, an audit team conducted a field visit to CRRL on June 23 and 24 . The important take home message is to support your administrative staff as best you can and seek their counsel with any questions you might have.

The FY 2003 budget allocation is underway. It should come as no surprise to you that there have been glitches and these have lead to delays. Center staff is working to enter base, cyclical, and reimbursable funding into project accounts which must be completed by July 31st. The entry of budgets also includes review and approval by the Budget Fiscal Services office in Menlo Park. Upon receipt of this approval, Principal Investigators will be able to balance their net budgets in BASIS+. This too must be completed by July 31.

Seelye Sets Sail

by Gary Wedemeyer

After serving the federal government for nearly 30 years in limnology and fisheries research, Dr. Jim Seelye, supervisory fishery biologist and laboratory director of our Columbia River Research Laboratory since 1995, officially set sail into retirement on May 30th. Jim provided quality leadership during a period of expansion at CRRL and contributed greatly to the historically high quality of the research program there. He will be sorely missed. Before he came to WFRC, Jim worked as a research limnologist, project manager at the USACE, Waterways Experiment Station, and then as a supervisory fishery biologist/project leader in contaminant dynamics at the FWS Great Lakes Fishery Laboratory. In 1976 he was appointed supervisory fishery biologist at the Great Lakes Hammond Bay Biological Station, becoming station chief in 1982. He also served as senior scientist for the invasive species program conducted by the Great Lakes fishery Commission to manage sea lampreys

Although he was in a management position at the Great Lakes Lab. and at CRRL, Jim also maintained continuing personal research on the behavior of anadromous fishes and the effects of contaminants on aquatic ecosystems. He is credited with numerous scientific publications and reports and received numerous special achievements awards from the USFWS; several USGS star awards as well as a USGS Safety, Health, and Environmental Individual Achievement Award.

Jim and his wife, Irene, plan to relocate back to upper Michigan near Lake Huron where he will further enjoy his hobbies of woodworking, boating, fishing, hunting, photography, and gardening. Jim will be missed by all of us and we wish him a happy and prosperous retirement.

Jones Goes East

by Gary Wedemeyer

As most of you already know, our AO Joyce Jones has recently accepted an Administrative Officer position with the US Department of Agriculture, National Wildlife Research Center in Fort Collins, CO. She left us forever (sob) on July 9th.

Joyce began her government career with the Department of Interior and she has continued working with many of the same people over the years. In an exclusive interview with this reporter, Joyce stated that "my nearly 8 years with the WFRC and my time with the USGS has been full of many challenges and I'm sure the experience gained in those challenges will serve me well in my new

position. Even though we all have taken quite a ride on the roller coaster of change, I have admired the dedication and resolve of all employees during the reorganization and the change to Common Business Practices. I wish all of you the best in shaping the future of this organization. I hope to keep in touch with many of you, and invite any and all of you to contact me if you ever find you way to Fort Collins."

I know everyone at WFRC joins me in saying THANKS Joyce — for all your help and support.

Columbia River R&D

Historical Changes in the Columbia River Estuary Based on Sediment Cores: Feasibility Studies

By Jim Petersen, Reg Reisenbichler, and Guy Gelfenbaum, U.S. Geological Survey; Curt Peterson and Diana Baker, Portland State University; Peter Leavitt, University of Regina; Si Simenstad, University of Washington; Fred Prahl, Oregon State University

The importance of the Columbia River estuary to salmon, other fishes, migratory birds, and other species is well established. Relatively little is known, however, about long-term, historic variations in biological processes and conditions within the estuary. For example, have conditions varied greatly with climatic regime shifts and how has dam construction on the Columbia River influenced biological communities over time? We conducted a feasibility study to see if sediment cores from the estuary could be aged and whether biological or contaminant indicators can be identified. Such information may be useful in understanding long-term environmental variation and in restoration studies.

From a set of cores that were originally collected for a regional sediment study, we selected three for analysis, one each from Young's Bay, Gray's Bay, and Clatskanie Flats (floodplain). ^{210}Pb was used to age strata in these cores, with the oldest sediments being deposited in about 1850 (Gray's Bay, 150 cm core; Clatskanie Flats, 140 cm core). 137Cs activity was used to corroborate the predicted ^{210}Pb ages, with good success. Fitted second-order polynomials ($r^2 > 97\%$) were used to extrapolate ages prior to 1900 in the two deeper cores. Sections from cores (2 cm thick, taken about every 10 cm) were examined for 30 heavy metals, diverse algal pigments, percent organic content, diatom species, stable isotopes of C and N, a few organic contaminants, and grain size distributions. Smaller samples of cores were also examined for invertebrate parts and fish scales, although none were observed.

The Young's Bay core was the shortest of the three examined (80 cm) and contained sediment that was deposited from about 1910 to 2000. During this period, there appeared to have been a major change in the physical conditions and biological community at this site. Grain size distributions changed around 1940, along with a shift from primarily benthic freshwater diatoms early in the century to planktonic freshwater species after 1940. The shift at this time was also well represented in algal pigments. For example, diatoxanthin and beta-carotene declined five- to ten-fold, while alloxanthin and chlorophyll-a increased sharply. These changes suggest that there may have been an overall 400% reduction in algal standing crop. We cannot identify specifically the mechanism(s) that led to these changes, but mainstem impoundment or local alterations in the Young's River drainage might be suggested. The concentration of a few heavy metals such as lead showed slight increases between 1920 (14 ppm) and 2000 (21 ppm).

The core from Gray's Bay spanned the period from about 1853 to 2000, and there appeared to be less change in the biological community at this site, but significant accumulation of heavy metal contaminants. Throughout this period, the diatom community was dominated by benthic freshwater species (>82% of all identified species) and algal pigments showed few trends, although the percent organic matter doubled from ~3% prior to 1970 to ~6% after 1970. As in Young's Bay, the ratio of 13C to 12C (δ13C) was characteristic of planktonic carbon sources. This core, however, showed the strongest evidence of increasing heavy metal contamination beginning about 1960. Mercury

concentration, for example, was very consistent in sediments deposited between 1850 and 1950 (~0.03 ppm), but concentration increased steadily from about 1960 to the 1990s, with a final concentration of ~0.08 ppm. Lead, copper, zinc, and other heavy metals showed similar increasing accumulations during the last 40 years. Polynuclear aromatic hydrocarbons (PAH) also increased dramatically at Gray's Bay, rising from <5 ng/g dry sediment in the 1850s to almost 60 ng/g recently (see figure at left). PAH is a complex mixture of hydrocarbons derived from incomplete combustion and human activities such as aluminum smelting.

Sediments in the core selected from the Clatskanie Flats area were composed of finer, siltier material than the other two cores, and the base of this core extended back to about 1855. Diatom analyses were not conducted for this core, but shifts in algal pigments, decreased percent organic material, an increase in an ultraviolet index, and change in δ13C suggest some significant changes in the biotic community. A few heavy metal concentrations (e.g., lead and zinc) increased gradually over the last 150 years, while other metal concentrations remained fairly constant (e.g., mercury and copper).

In conclusion, we were able to successfully age the sediments within these cores. A variety of indicators suggested that major shifts in algal communities and contaminant levels have occurred either locally or regionally in the Columbia River estuary. These sorts of findings can be refined to assist with historical interpretations and hypothesis tests about mechanisms. Averages of indicators from deeper and older sediments often had small variances, suggesting they could be used in evaluating restoration actions, considering the impacts of dredging, or for detecting natural change. Overall measures of bioproductivity, such as total diatom concentration, might be used to compare the type of environment that juvenile salmon now encounter with the historical environment. Finally, a larger study may be useful in distinguishing the role of climate regime changes and human impacts on estuarine or freshwater conditions within the Columbia River Basin.

For further information, contact Jim Petersen, 538-2299 x236, jim_petersen@usgs.gov

Meet the Staff

Hi, I'm Andrea Woodward. Gary has been bugging me to contribute something about myself to the Western Fisheries Newsletter for many months and its time to get it off my conscience. I am a bit of a misfit at WFRC because I am actually a member of the Olympic Field Station of FRESC, located in Port Angeles, but am happily housed here at WFRC. Gary seems to think that I might need to explain myself.

I have a Bachelor's degree in Zoology from UW and two years in the Peace Corps in Sierra Leone. Those experiences combined to land me in the Animal Science Department of Cornell, which has a strong focus on international development. I earned my Ph.D. in Ethiopia studying the effects of plant defensive chemistry in rangeland plant species on the physiology of domestic animals (cattle, sheep, goats and camels). I am also proof that animal science departments are good places to pick up really practical skills like sheep shearing, goat milking, pig farrowing, and tail docking.

Eventually, I ended up at Olympic National Park, still studying plant-animal interactions (i.e., mountain goats and subalpine vegetation, elk and old-growth forest structure). Funding changed, agencies changed, time hurried on, and I wound up studying Global Climate Change in the subalpine, and now long-term ecological monitoring. You can think of me as a Jill-of-many-trades, but master of none. My role has its good sides and its bad sides.

The Olympic Field Station is in charge of helping local National Parks develop long-term ecological monitoring. We have been working with three large natural area parks (Olympic, Mount Rainier, and North Cascades) plus four small cultural and historic parks (Ebey's Landing, San Juan Island, Fort Clatsop and Fort Vancouver. Developing long-term monitoring has itself been a long and persistent process of determining potential monitoring projects, designing sample frames that are both feasible and statistically defensible despite difficult terrain, and reaching consensus among staff members of seven National Parks. My specific roles have included collecting pilot data for power

analysis of permanent vegetation plots, experimenting with cheap and easy ways to monitor forest processes as indicators of ecosystem "health", helping to articulate a strategic plan for developing monitoring in natural areas, and leading the parks through an exercise to set priorities for monitoring projects. Scientists often think of monitoring as being dull and boring, but it has some challenging aspects (especially the sociological ones), and it is hard to overestimate the value of long-term data sets for understanding ecology.

As for interactions with the rich and famous, I can't come close to competing with the WFRC staffer who saw the ex-president in his underwear, but I did meet Miss Lillian (Jimmy Carter's mother) in Ouagadougou. (We were both on the way to Timbuktu … but she got to fly!)

Antarctic Factoids: Part 1

by Rusty Rodriguez

Having recently returned from my second research trip to the Antarctic, people frequently ask me "Rusty, why is the South Pole so much colder than the North Pole?" As you already know, both polar regions of the earth are cold, primarily because they receive far less sunshine (that's solar radiation for you cognoscente) than the tropics and mid-latitudes do. At either pole, the sun never rises more than 23.5 degrees above the horizon and both locations experience six months of continuous darkness. Moreover, most of the sunlight that does shine on the polar regions is reflected by the bright white surface. What makes the South Pole so much colder than the North Pole is that it sits on top of a very thick ice sheet, which itself sits on a continent. The surface of the ice sheet at the South Pole is more than 9,000 feet in elevation — more than a mile and a half above sea level. Antarctica is by far the highest continent on the earth. In comparison, the North Pole rests in the middle of the Arctic Ocean, where the surface of floating ice rides only a matter of feet above the surrounding sea. The Arctic Ocean also acts as an effective heat reservoir for the north pole, warming the cold atmosphere in the winter and drawing heat from the colder air over the ice in the summer.

Open Letter On The FARMED SALMON COLOR ISSUE

By Jim Waknitz (NMFS)

Letter To The Attorney On Salmon Color Suit, 04/25/03. Mr. Lowney: My name is Bill Waknitz. I'm a Research Fisheries Biologist with the National Marine Fisheries Service. I work primarily with issues relating to ESA and salmon. I have some questions about your recent lawsuit against local supermarket chains. I often receive calls after articles on salmon farming are in the news, and I'd like to have the answers on hand. I am also providing you with some information to correct a few misconceptions in your press release.

Your suit states that the SalmoFan is used by salmon farmers to program the final color of their product. In fact, the SalmoFan can be used only to grade the product after harvest. Given the multitude of factors involved in carotenoid deposition in salmon (species, size, water temperature, carotenoid level in the diet, amount of diet fed per day to name just a few,), it is impossible to pre-select final color to a particular shade on the SalmoFan. In fact, the SalmoFan carries no instructions for doing this. It turns out that grading color in farmed salmon is very much like the process used in grading color in wild Alaska salmon. The Alaska Seafood Marketing Institute offers an "Alaska Salmon Buyer's Technical Kit", available from their web site. The kit includes color swatches for grading wild Alaska salmon. These color swatches are very similar to the color swatches on the SalmoFan. Therefore, the technology used by salmon farmers to grade their product after harvest is hardly new or unique. Also, the flesh of farmed salmon would not be gray without carotenoid added to the diet. It would range from a color similar to farmed rainbow trout to a color similar to pink or chum salmon. Speaking of farmed rainbow trout, are you going to include them in your lawsuit? Some of the rainbow trout sold locally is fed diets containing the same carotenoid additive, canthaxanthin, found in salmon diets. I've had several calls on this already this morning. Another caller asked me about the canthaxanthin routinely added to chicken feed to color their flesh and eggs. Since poultry diets are regulated by the same FDA rules as diets used in salmon farming,

are you going to include chicken in your lawsuit? My caller said he looked at packages of chicken and cartons of eggs this morning, and none carried a label stating "color added." This caller also asked about smoked salmon, to which color is often added at the processing plant. Will painted-on color in Alaska salmon products be part of your lawsuit? What about such products as imitation crab legs, which has Red Dye painted on during its journey down the conveyor belt.

I noticed that your web site stated that the USDA found that farmed Atlantic salmon had more fat than wild pink and chum salmon. What you didn't mention is that this same USDA report found that farmed Atlantic salmon had less fat than wild chinook and coho salmon. I should think you might want to correct this misconception before the court date. NMFS has recently published two reviews of salmon farming in the Pacific Northwest which examine many of the concerns expressed on your web site. They can be found on the list of pertinent web sites listed below. Also included below is a calculation I did last fall for Dr. Volpe concerning the amount of farmed salmon one must eat to ingest the same amount of canthaxanthin found to cause eye problems, which would be about 4 lbs per days for at least several weeks. As you can see, it would be virtually impossible for a human to eat this much.

If I can provide you with more information, please contact me. F. William Waknitz Research Fisheries Biologist, National Marine Fisheries Service, P. O. Box 130 Manchester, WA 98353 206) 842-5435 ex 8322. bill.waknitz@noaa.gov

Our Marrowstone Island Marine Field Station

by Nancy Elder

The WFRC Marrowstone Island Marine Field Station (MFS) is located on Puget Sound at the northern tip of Marrowstone Island at Fort Flagler State Park. It lies at the northeastern corner of the Olympic Peninsula. MFS was established in 1972 when the Western Fish Nutrition Lab (WFNL) in Cook, Washington (now CRRL) moved its Bowman Bay Field Station at Deception Pass to the present site on Marrowstone Point. The property had been “transferred without reimbursement” from the Coast Guard to the then Bureau of Sport Fisheries and Wildlife in the USFWS and consisted of 5.2 acres, a three-story house, one-car garage and a boathouse.

At the time, the BSFW had the responsibility, under the Anadromous Fish Conservation Act, to preserve and improve stocks of coastal anadromous fish species and the waters they inhabit. To this end, the development of a variable salinity field station at Marrowstone provided an important site for evaluating laboratory findings on transition of salmonids into the sea. Subsequent test results would identify nutritional and environmental factors influencing adaptation of anadromous fish to the ocean, would define physiological requirements for their conversion, and would provide specific guidelines for release of hatchery reared fishes by federal, state and private agencies. A feasibility study was conducted in 1972-73 with the outcome being that Marrowstone was made a permanent field station in 1974. The first biologist-in-charge was Clarence Johnson, who had transferred up from the Cook lab (then, the Western Fish Nutrition Lab). Around the same time, the WFNL closed and Marrowstone began its affiliation with our present lab in Seattle, at that time named the Western Fish Disease Laboratory.

The initial lab consisted of the old lighthouse serving as the analytical lab and office space, the garage being converted into a small wet lab and the boathouse becoming a shop. The City of Port Townsend, through Fort Flagler’s piping system, supplied fresh water that was dechlorinated at the lab. Seawater was pumped from a well 58 feet deep consisting of a six inch pipe dug right down at the tip of the point in an old gun embankment left over from Fort Flagler. Due to low salinities at this well, a seawater intake system was installed directly into Puget Sound in 1975. In the same year a new 3200 square foot wet lab was constructed. An additional intake system was added in 1985 enabling the lab to pump up to 200 gpm seawater from depth of 40 feet.

From 1990 to 1992 Marrowstone underwent an extensive 4 million dollar reconstruction. New additions to the lab consisted of an office/analytical laboratory building and a new wet lab/tank compound. The old wet lab was extensively renovated and a new and greatly improved seawater intake system was added. Marrowstone seawater pumping capacity more than doubled and water quality improved due to the increased depth of the intake. The facility also put in the equipment that allows researchers to either heat or chill fresh or seawater. In 1998 the water system was upgraded even further with the addition of sand filters, which in conjunction with the existing U.V. system provide premium quality, pathogen free seawater. At the present time tank capacity in our wet lab consists of 24 four-foot circular tanks (140 gallon), 141 three-foot circulars (70 gallon), 4 water circulating tables able to hold up to 20 ten-gallon aquaria each and space to allow researchers to construct experiment specific tank configurations. The old lighthouse building was just renovated and is used as a lunch and break room area for the station's staff and also as temporary housing for visiting researchers or summer volunteers.

While under the USFWS, research at Marrowstone was limited almost exclusively to juvenile salmonids. Programs at MMS addressed problems encountered by fish reared in a hatchery and then released to make their downstream migration. Most projects involved experimentally manipulating the fish or their living conditions in their fresh water stage and then monitoring the subsequent effects on the fish and their ability to adapt and survive in seawater. After the transfer to the WFRC, additional emphasis was placed on developing new and improved methods for anadromous fish disease control. Examples of early experiments at the lab involved testing the effects of disease medication on the smoltification process of juvenile salmon. A cooperative 8-year project with the University of Idaho looked at the effects of the antibiotic erythromycin in fish feed as a way to protect against *Renibacterium salmoninarum* (BKD) in the hatchery and the subsequent survival of the fish in seawater. Scientists at WFRC Seattle used the Marrowstone facility to look extensively into BKD problems in hatchery fish. One such experiment was designed to address the effects of stress encountered on the downriver migration through 8 dams on the Columbia River of Chinook salmon previously exposed to other BKD infected salmon. Experiments were also conducted looking into contaminants fish might encounter in their seaward migration. A study in the 80's looked at the impacts of selenium on early life stages and smoltification of anadromous fish in the Sacramento/San Joaquin River system. At the time information was a needed part of the database required to correctly assess disposal alternatives for selenium-contaminated agricultural wastewater from the San Luis Drain. A project in 1988-89, in cooperation with the Washington Dept. of Fisheries, looked at the effects on coho of exposures to effluents from two pulp mills and two sewage treatment plants on the Chehalis River and Grays Harbor estuary.

After the move into the USGS-BRD, the door was opened at Marrowstone for research into other species besides salmonids. Cooperative work began with the University of Washington characterizing the effects of contaminants on marine species and life stages, in particular the effects of Exxon Valdez crude oil on the disease susceptibility of pathogen-free Pacific herring when challenged by virus (Viral Hemorrhagic Septicimia). Subsequent work involved an important look into diseases impacting wild populations of Puget Sound forage fish, specifically Pacific herring and sandlance. These species are important food sources integral to the survival of Pacific salmon among other species. Because VHS virus is potentially a serious pathogen of Pacific herring a study was conducted to understand the degree of impact it could have on different age classes of wild forage fish populations in Puget Sound and to determine whether juvenile Pacific herring became more resistant to VHS as they aged. Work has also been conducted looking at the reduced survival potential of larval herring in Puget Sound, in particular the Cherry Point stock in northeastern Puget Sound. Once the largest stock in the state, now it is nearly extinct. Work at Marrowstone has shown that the larval herring at Cherry Point have significantly lower weight at hatch and significantly greater abnormalities than other Puget Sound stocks. Future work will help to understand why and how these differences are occurring.

At the present time Marrowstone is also becoming actively involved in looking into the problem of the introduction of invasive marine and other aquatic species to Northwest coastal waters via discharges from ballast water. Cooperators on this project come from a wide variety of agencies including the University of Washington, the Ecosystems Projects Northeast-Midwest Institute, Purdue University, Washington Department of Fish and Wildlife and the University of California-Davis. The emphasis is on prevention research, to determine the technologies and methods best suited to ballast water treatment prior to discharge from ships.

Over the years Marrowstone has also been available to a broad clientele to conduct their own short-term experiments requiring marine conditions. Researchers from a wide variety of agencies have used the facility, including USFWS Dworshak and Olympia Fish Health Centers, National Marine Fisheries Service, Northwest Indian Fisheries Commission, and the University of Washington. The International Pacific Halibut Commission in conjunction with the University of Washington used the facility for many years to conduct studies looking at the spawning and early life stage survival of Pacific Halibut in captivity. At one point Marrowstone was rearing up to 50 adult halibut, some as large as 80 pounds. Though many other interesting projects were being conducted at the lab, visitors were continually impressed with the halibut and how they would eat herring right out of staff members' hands. The project ended when the price of halibut dropped by 50% and the IPHC was forced to cut all extramural funding.

Exceptionally high seawater quality is the station's primary asset, and because the facility is one of only a few seawater laboratories in USGS, it constitutes a nationwide research asset. At the present time, the staff at MFS consists of Nancy Elder and Paul Hershberger (fishery biologists), and Allen Lawhon (maintenance). Due to our small staff and budget, most research at the Marrowstone Marine Station is cooperative in nature. Hopefully this will change in the future because the high scientific potential of this institution is now an integral part of a developing plan for multidisciplinary research by USGS in Puget Sound, to support coastal habitat restoration.

From the AO's Office

Getting Your Travel Expenses Paid

by Mary Dunning

Travel Submission Guidelines

Although most of you are familiar with the process and time lines for submission of travel, there might be some who have never traveled, or it might have been a while since you have. Here is some brief guidance on the process and time lines for travel.

Domestic Travel

As soon as you are made aware of any official travel, the following documents need to be prepared:

1. Complete a Travel Request form and have your supervisor sign.
2. If you are attending a meeting, complete a Form 9-1894, Request for Authorization to Attend Meeting, and have your supervisor sign.
3. If you are a volunteer who has never traveled before, complete a FMS 2231, FastStart Direct Deposit form. Official travel is reimbursed through direct deposit to your financial institution.
4. Give these signed forms to your administrative staff travel coordinator. If your limited open travel authorization will not cover this particular travel, a travel authorization will be prepared.
5. Book airline, hotel, or rental car reservations by calling Omega Travel at 877-434-1570.
6. If there is a registration or training fee, you will need to prepare a DI-1, Requisition, form. You can pay the fee on your Government credit card if you have purchasing authority. If not, you will need to find someone who does and charge the fee to their card.

Foreign Travel

In addition to steps 1-6 listed for Domestic Travel, you need to prepare the following:

Four to Six Months Before Travel Begins

Project any foreign travel you might have on the Projected Foreign Travel report. Any travel that is not projected on this report must have a justification memorandum prepared to accompany the DI-1175, Foreign Travel Certification Form. Travel to Canada for attendance at professional/scientific

meetings does not have to be projected on this report.

Sixty Days Before Travel Begins

1. Work with your travel coordinator to prepare a DI-1175. You will need to provide the following:
a. Dates of Travel
b. Place(s) of Travel
c. Purpose of Travel (including objective of trip, role of traveler, importance of trip to Bureau mission, and consequence if travel does not occur).
d. In-country contact (including name, address, and telephone number (and fax and e-mail if available)).
e. Any annual leave you plan to take during the trip.
f. Whether any other Bureau employee will be traveling to the same destination at the same time.

2. If a non-Federal agency will be paying for any portion of the trip, work with Mary to prepare a DI-2000, Report of Payment Accepted from a Non-Federal Source Under 31 U.S.C. 1353.
3. Request an Official Government Passport. Guidelines for applying for an Official Government Passport can be found at: http://geology.usgs.gov/usgs/admin/guide/internatl.html.
4. Work with your travel coordinator to obtain an entry/exit VISA if necessary.
5. If you will be in a travel status for more than 60 days, you will need to obtain a medical clearance.

Canadian Travel

Travel to Canada does not require a DI-1175; however, due to the September 11th attacks, it is now necessary to have an official government passport. Depending on the purpose of the travel, one of the three procedures below should be followed.

Participation in a Planning Meeting with Canadian Counterparts to Discuss Future Cooperative Projects – requires a Travel Authorization. The statement, "DI-1175 NOT REQUIRED under authority of DOI Memorandum, March 21, 1995 regarding travel to Canada", should be entered in item 10 of the authorization.

Attendance at a Professional/Scientific Meeting or Conference in Canada – requires a Travel Clearance Telefax that needs to be prepared 15 work days before travel begins. This should be sent through the Western Regional Office for approval before sending to Reston.

Conducting Field Work in Canada

Cross-border field work in Canada is defined as any collaborative research or data gathering by USGS scientists, including work done on marine research vessels or overflights by plane. To obtain clearance to conduct field work in Canada, the traveler(s) must prepare a letter to the Geological Survey of Canada (GSC) for signature by the Associate Director for Geology (P. Patrick Leahy) and forwarded to BSU for processing. The letter should be sent from BSU to the GSC 60 days prior to the travel date to give GSC officials time to obtain the necessary clearances from Canadian Immigration and Customs personnel.

Travel Reimbursements

For all travel, prepare a Travel Reimbursement Request form after you return and give it to your travel coordinator, along with your lodging, rental car, and airline receipts, and receipts for any purchase greater that $75. You have 5 workdays to submit your travel voucher for approval, or every 30 days if in an extended temporary duty travel status. For domestic travel, you should receive reimbursement within 5 days after supervisory approval of your voucher. Reimbursement for foreign travel will take approximately one week longer as the hard copy voucher needs to be mailed to Reston, Virginia, for approval.

If you have any questions or need any assistance, please see your travel coordinator as follows: CRRL – Linda Hazen; Reno – Mark Fabes; Seattle, Marrowstone, Klamath Falls, and Dixon - Loretta or Mary.

Alumni News

Dr. Douglas Anderson (class of 1973)

Privileges of Retirement: Adventures and Advice
by Douglas Anderson

After working 30 years for the U.S. Fish and Wildlife Service and Geological Survey, first at WFRC in Seattle, then at the Leetown Science Center, WV, I retired in 1994 and moved back to Seattle. First to a dream beach house in North Seattle for 8 years -- breathlessly wonderful, but

considerable upkeep, and now in a Belltown condo, smaller, but with a breathless view. My partner and I take some fascinating retirement-type, national drive-around trips mixed with international vacations. In between, work with family, community services, and apartments keeps us active and frustrated with life's regular and endlessly surprising problems. "It never ends."

The best part of retirement--a cliché and often said--is not having a boss, although I had some wonderful people as Directors: Drs. Rucker and Klontz at WFRC, and Wolf, Bullock, Herman, and Klontz at Leetown. They allowed me sections of research time for my creativity juices – which resulted in some outstanding research in fish immunology of which I remain proud. There were also some tumbling mistakes, and a couple of "why did I do thats?" At Leetown, as in Seattle, my incentive to get early to the laboratory seemed to be a strong cup of coffee with my colleagues before the flurry of morning lab activities, working a rigid 7 am – 4 pm governmental schedule. Now, a special retirement benefit is having time in the morning to read the newspaper.

Another benefit of retirement is keeping up with your work colleagues, still active and retired. Dr. Gary Wedemeyer and I play piano duets once a month, some classical, some Jazz, in his family room where he and his wife Rowena have two pianos. In the springtime we open the sliding doors and pretend we have more than a robin and rabbit for an audience. And by occasional visits to the WFRC where I can keep up on some of your excellent programs and research, sometimes giving my two bits of advice.

The internet was just intruding into the controlled regimen at Leetown when I retired; now I visit the Seattle laboratory and wonder how you researchers control your valuable time. Does anybody remember the blue mimeograph machine or when the telephone was answered by a live person (usually sweetly female)? In West Virginia it was a friendly "Good Morning, y'all." Also mid-20th century, our small laboratory was still quite paternally oriented--everybody had their place in the family. It's difficult for me to figure out the chain of command plan now --or is there a plan? During my years, my bosses – I mean in Washington, DC – were perpetually sending out dendeo-diagrams, showing who's position was where and what was the new the order of things. Are they still doing that?

Through all of this, my advice to the recent graduate or candidate who wants to get a career in fishery wildlife or ecology research remains the same. Almost regardless of your qualifications, just "get in and take anything," even cleaning jobs or part-time positions. Your supervisors have to know you can, number one, show up regularly and do the assigned jobs. From that point, your skills will be recognized, and with time, opportunities and advantages will arise. However, I never repeated the saying "If I had to do it all over again, I'd do everything the same." I hope I've learned from my mistakes of choosing too fast, saying the wrong thing, buying too late, and selling too early. But still making 'em. So in your life: enjoy every day!

A Little Light Reading

Journal Publications:

Duda, J.J., Freeman, D.C., Emlen, J.M., Belnap, J., Kitchen, S.G., Zak, J.C., Sobek, E., Tracy, M., and Montante, J., 2003. Differences in native soil ecology associated with invasion of the exotic annual chenopod, Halogeton glomeratus. Biology and Fertility of Soils. 38(2):000-000.

Duda, J.J., A.J. Krzysik, and J.M. Meloche. 2002. Spatial organization of desert tortoises and their burrows at a landscape scale. Chelonian Conservation and Biology 4(2):387-397.

Presentations at Meetings:

Krzysik, A.M., Anthony, J., Kovacic, D., Wallace, M., Graham, J., Zak, J., Duda, J., Emlen, J., and C. Freeman. 2003. Robust multivariate approaches for developing ecological indicators to classify landscapes on a military disturbance gradient. Ecological Society of America annual meeting, 2003.

Kovacic, D., Krzysik, A., Wallace, M., Duda, J., Freeman, C., Graham, J., Zak, J., and H. Balbach. 2003. Soil mineralization potential as an indicator of ecological disturbance. Ecological Society of America annual meeting 2003.

Graham, J., Hughie, H., Roth, S., Wrinn, K., Krzysik, A., Duda, J., Freeman, C., and J. Emlen. 2003. Effects of habitat disturbance on diversity and abundance of ants in the Southeastern Fall-Line Sandhills. Ecological Society of America annual Meeting 2003.

What the Critics are Saying About Lyman's new Rockfish book:

Review by Douglas F. Marklea, Department of Fisheries and Wildlife, Oregon State University, recently published in Copeia.

The stated reason for writing this book is that "rockfishes are cool, very cool." So is this book. I've never seen anything quite like it. It is a cornucopia of things rockfish-from art to history to humor to personal experience to science. Ray Troll's ROCK cover (look for the guitar) is a visual teaser for the lavish interior's 550 color photographs, 220 black-and-white illustrations, and 75 maps.

The book has three main parts, followed by references, maps, eight appendices, a glossary, and an index. Part 1 contains12 chapters covering the biology of rockfishes including taxonomy, development, behavior, growth, parasites, and fisheries conservation. The presentation is reminiscent of a textbook with a lot of detail summarized as an overview and with references at the end of sections. It is an informative, pleasurable read. Part 2 is the key, an updated version of Miller and Lea's (1972) key with annotated thumbnail sketches of each species.

The key is cross-indexed to Part 3, the species accounts, in which 12 additional authors collaborated. Almost every species is illustrated in color with one or more freshly caught specimens and four or more underwater photographs showing habitat and appearance under different light conditions. Each photograph is labeled with the developmental stage (young of year, juvenile, adult), which is especially important for species whose color patterns change with growth. The photographs and other illustrations are excellent and, as befits a book about rockfish, very colorful. The species accounts follow a standard format (Etymology, Colloquial names, Descriptions, Maximum size, Range, Life history, Fishery, Remarks, and References). The writing is concise and informative, with each species taking one to two pages of text.

The authors have been judicious in their choice of information, which should appeal to a wide audience from professional biologists to interested fishers. Readers wishing more detail may be overwhelmed by over 1000 references (33 p., including citations as recent as 2001) and the inclusion of many personal observations and personal communications in the species accounts. However, Appendix 1 is an annotated summary of important references, by species, and offers a convenient starting point into the literature of each species. Additional detail is found in other appendices which, include von Bertalanffy growth curves for 41 species, length-weight relationships for 52 species, length conversions, head spination patterns, meristic data, known parasites, and definitions of management agencies' rockfish groups.

Throughout the book, the authors have infused the pages with enthusiasm, including poems, legends, paintings, gyotakus, carvings, and tatoos of rockfish. Part of the enjoyment of this book is that it is just so much fun to read. At the same time, it will satisfy the needs of ichthyologists, fisheries biologists, and anyone with even a remote professional interest in rockfishes. This is a "must have" book for "fish heads"-it is just cool.