WATERLINES

NEWSLETTER OF THE WESTERN REGIONAL AQUACULTURE CENTER • WINTER 2004

Alaska • Arizona • California • Colorado • Idaho • Montana • Nevada • New Mexico • Oregon • Utah • Washington • Wyoming

Contents

NOMINATIONS

Ray RaLonde, Major Mover for Aquaculture

Ken Chew, WRAC Director, School of Aquatic & Fishery Sciences, University of Washington

In this issue of *Waterlines,* we highlight Ray RaLonde, Professor of Fisheries and Aquaculture Specialist in the Marine Advisory Program (MAP) at the University of Alaska, Fairbanks (UAF) since 1991. Recently, UAF Chancellor Marshall L. Lind stated that "Ray's service has helped UAF maintain its reputation as one of the top teaching and public service universities worldwide."

Ray also has served as Chair of the Extension Subcommittee for WRAC's Technical Committee for the past five years, and has been most effective guiding outreach and extension efforts in WRAC-funded projects.

Ray essentially has been the most visible person in Alaska for the promotion of aquaculture, particularly in the molluscan shellfish area. With the state's moratorium on marine fish farming, opportunities for expanding shellfish culture lie in reassessing designated essential habitat areas. Currently, most shellfish culture production is in southeastern and central Alaska, with limited designated areas in south-central Alaska at Kachemak Bay and Prince William Sound. Ray has been instrumental in speaking to state agencies and legislators and helping to open new areas for oyster cultivation.

Shellfish farming is poised to become one of Alaska's newest industries. Alaska Sea

continued on page 2

Michelle Ridgeway

Ray RaLonde (standing) sampling native clams on a beach near Pelican, Alaska

Funding provided by the US Department of Agriculture, Cooperative State Research, Education & Extension Service

Ray RaLonde *continued from page 1*

Grant and MAP are leading a statewide effort to help entrepreneurs take advantage of the potential of mariculture (marine aquaculture). As commercial fishermen are forced to drop out of the fishing industry, shellfish farming offers them a way to keep connected to the sea. And, demand for the product far outstrips supply.

Alaska has 56 bivalve shellfish farms to date, and many shellfish farmers presell their entire year's production in just one week! Thanks, in part, to Ray's dogged efforts on behalf of MAP, state regulations on tideland leasing for mariculture operations were recently adjusted to streamline the permitting process. In August 2003, Alaska Governor Frank Murkowski announced the availability of $900,000 for further development of the infrastructure needed to advance the state's shellfish mariculture industry.

Ray recently noted that "shellfish aquaculture is an enterprise that offers new opportunity to coastal residents of Alaska...the vast, protected, and productive shorelines offer the potential for a shellfish aquaculture industry worth hundreds of millions of dollars."

Ray earned a BS (1969) and BEd (1972) from Oregon State University, and his MS (1988) at the University of Idaho. He started his career as a science teacher in Portland, Oregon, in 1972. He held his next position, Assistant Professor of Fisheries at Sheldon Jackson College, from 1978-89. In 1989, he returned to Oregon as the Assistant District Biologist for the Salmon Enhancement Program with the Department of Fish and Wildlife, where he worked until he came to UAF.

Ken Chew

Ray RaLonde

Ray is recognized as one of the top extension specialists in the nation. He has taught numerous technical classes; presented at meetings, conferences, and workshops; and conducted field trips throughout the coastal areas of Alaska—from Ketchikan to Kodiak.

For many years, Ray has been an instructor and mentor in graduate education programs for teachers. He is the founder of the Alaska Future Farmers of America program in marine technology. At UAF, Ray team teaches fisheries courses, where he brings his MAP experience with real-life fisheries management and aquaculture development issues into graduate and undergraduate classrooms.

As an aquaculture specialist, Ray considers himself an environmentalist. He is a strong advocate for water quality and habitat protection for Alaska's marine and freshwater systems. Ray developed and teaches a salmon habitat education program at UAF, participates in stream rehabilitation projects, and serves as a technical advisor to several watershed councils. He was also principal instructor in the water-quality training program for the Alaska Native American Fish and Wildlife Society. More than 300 participants from over 90 villages statewide have taken part in this program since 1998. Village communities have already benefitted from their training on habitat assessment and water-quality monitoring.

Ray has published extensively on subjects related to shellfish culture: utilization and management, Paralytic Shellfish Poisoning (PSP), food safety, environmental safeguards, and aquaculture constraints. His current research interests include growout studies of the purple hinge scallop, Prince of Wales Island aquaculture, PSP outreach, shellfish marketing, and the Metlakatla Aquaculture Development Program, which focuses on native littleneck clams, intertidal geoduck clams, basket cockle clams, Pacific oysters, and PSP monitoring.

Ray is a tremendous asset to Alaska and its aquaculture industry. As noted by Dr. Brian Allee, Director of the Alaska Sea Grant Program, "Ray is truly...most critical to the Alaska Marine Advisory Program for his broad knowledge of marine issues and his ability to reach and assist user groups wherever and whenever possible." Congratulations to Ray for his great efforts in promoting aquaculture in Alaska! ≈

The National Animal Germplasm Program

Ken Chew, WRAC Director, School of Aquatic & Fishery Sciences, University of Washington

On a recent trip to Ft. Collins, Colorado, I visited the National Animal Germplasm Program (NAGP). Mandated in 1990, NAGP is part of the National Genetics Resource Program under the Agriculture Research Program (ARS) of the US Department of Agriculture. In 1999, a task force recommended that NAGP be located in Ft. Collins to capitalize on an existing central repository (mainly for plants) of the ARS National Center for Genetic Resource Preservation.

According to Dr. Harvey D. Blackburn, NAGP animal geneticist and operations coordinator, by 2002, NAGP had begun to shift to a repository mainly for livestock animals. Efforts centered around a basic question: "Are genetic resources at risk?" Addressing issues such as inbreeding, abnormalities, and susceptibility to disease, NAGP began to acquire and preserve genetic strains of germplasm through cryopreservation.

US livestock are produced in an array of environments, which require different management systems. Genetic combinations within and between breeds are the building blocks for these systems. Without genetic diversity, we lose the ability to adapt resources to new and potentially more efficient production systems. NAGP researchers are mandated to improve cryopreservation tools and to determine how population changes (genetic composition) can be preserved for the good of the livestock industry. NAGP researchers work in cooperation with federal and state agriculture institutions, universities, and private industry.

One focus of NAGP research is preserving genetic diversity—from the molecular to the phenotypical level. NAGP has acquired germplasm for dairy and beef cattle, swine, chickens, goats, and sheep. Collections of 42 breeds have been initiated with more than 1,500 animals represented. As of 2003, NAGP has cryopreserved more than 70,000 units of sperm germplasm.

Now, what does this have to do with aquaculture?

NAGP also has germplasm cryopreserved for catfish, sunfish, bluegill, tilapia, trout, and striped bass. For catfish alone, there are more than 2,000 varieties—and decisions need to be made about which ones to freeze.

Recently, ARS funded a geneticist position at the Hatfield Marine Center, Shellfish Broodstock Program at Oregon State University in Newport. This program for breeding shellfish and germplasm cryopreservation will be conducted in cooperation with NAGP.

Ken Chew

above: Dr. Harvey D. Blackburn showing a cryopreservation tank, which can hold up to 50,000 sperm samples

below: Dr. Blackburn with Dr. H. Randall Robinette, WRAC Board member

As I walked through the laboratory and storage facility, I saw evidence of security measures already in place. The handling of frozen sperm samples has become automated, and the samples are catalogued precisely. Most impressive to me was the large storage room with several series of cryopreservation tanks. Each tank is maintained at -196°C and can hold up to 50,000 samples!

Dr. Blackburn said, "Although NAGP is a relatively new effort, there are already several benefits," including:

- food security for the US consumer
- a source of genetic material for industry to respond to market or disease challenges
- a secure reserve for rare or endangered breeds
- tools to aid in managing genetic diversity
- an internet information system to evaluate a breed's production differences and population demographics: *http://www.ars-grin.gov*

For more information, contact Dr. Blackburn at *hblackbu@lamar.colostate.edu* ≈

Environmentally Friendly Fish

Excerpt from an article by Doreen Muzzi, Farm Press Editorial Staff, July 11, 2003

Fish life can be thankless. Consider the case of the tilapia at one hatchery—they spend their entire lives cleaning up after catfish only to be eaten by the catfish in the end. It's a system that seems to work for Louie Thompson of Thompson Fisheries in Holmes County, Mississippi.

Thompson uses tilapia to perform a myriad of duties at his catfish hatchery, which has 57 water acres of broodstock, 280 acres of fingerlings, and 10 acres of grass carp. Thompson holds the tilapia, a tropical fish, in 1,000-gallon water tanks at about a 90°F temperature.

Tilapia as cleaners

The tilapia clean the egg baskets, and Thompson knows from personal experience that this is no easy task. "I grew up cleaning these baskets," he says. "We used to have one person working the better part of a day spraying down and cleaning the baskets. With the tilapia, the cleaning takes only seconds." That's readily apparent as the tilapia rush to a dirty egg basket tossed by Thomspon into one of the tanks, causing the water to erupt with bubbles of activity. Within seconds, the basket is sparkling clean, with no remaining residue.

Thompson also keeps tilapia under the nets that hold newly hatched catfish; the tilapia clean-up any excess food that gets through the nets. This improves the water, he says, and helps keep the tanks clean. This system also helps to eliminate problems caused by excess feed in the tanks, including the development of high ammonia levels, fungus, and bacteria that can harm catfish. According to Thompson, "It improves overall fish health. A tilapia is like a freshwater hog. It will eat just about anything."

Tilapia as feed

When protein needs are high (when the brood catfish are building up their egg supply), Thompson uses the tilapia as feed. He says, "Tilapia are very prolific and multiply quickly during the summer months. Then, when the weather cools, they become sluggish and slow down enough so that the brood catfish can feed on them. The tilapia are a supplemental, high-protein food source for our breeder stock at exactly the right time."

According to Thompson, when spring rolls around, the tilapia have been completely eliminated from the ponds. He says, "There are no trash fish left come spring. If the brood fish don't get the tilapia, the cold weather will. Their whole system shuts down when temperatures become cooler. If we get a hard cold front, the tilapia die quickly. Ideally, we like to see temperatures cool slowly, giving the brood fish time to consume the slower tilapia."

Les Torrans at the Thad Cochran Warmwater Aquaculture Center in Stoneville, Mississippi, has researched the benefits of adding blue tilapia to supplement commercial catfish feed and he recommends the practice. Torrans says, "The group of catfish that was fed on tilapia in addition to the commercial feed had a higher spawning success and produced larger eggs with a higher hatch rate and larger fry. Overall, this group produced 15% more sac-fry per pond than the control group, and three times as many as the industry average.

Grass carp

Thompson uses another fish, the grass carp, in his fingerling and brood ponds as a biological grass control. The grass carp, also known as the white amur, was imported into the United States from Southeast Asia in the early 1960s for an experimental aquatic weed control method, according to Martin Brunson, fisheries specialist with the Mississippi Department of Wildlife and Fisheries.

Thompson says, "You're going to end up losing up to 90% of your fish if your pond gets choked with aquatic weeds. We don't use any herbicides. There are a lot of potential problems with using herbicides in fingerling and brood ponds. Also, you can experience severe oxygen problems if you kill too many aquatics at one time."

Brunson said, "Grass carp are a viable and economical means of controlling the growth and spread of certain aquatic weeds. For most farm ponds, where weeds are already a problem, five to 10 grass carp per surface acre will achieve desired weed control, without resulting in crowded conditions for the fish. In severely weed-choked cases, higher rates of 15 to 20 grass carp per water acre may be necessary to attain control." ≈

Raising White Sturgeon

Excerpt from an article by Audrey Seward, Fish Farming News, May/June 2003

Ken Beer's fish farm easily sticks out amid the lush vineyards and hay fields in a small central California agricultural town located just south of Sacramento. Dozens of rectangular ponds dot the landscape, and large circular fish tanks greet anyone who drives up into The Fishery.

A closer inspection of the water tanks might give most first-time visitors a jump when they see the small, shark-like dorsal fins protruding from the tanks. It's not "Jaws" that The Fishery is growing, though. It's white sturgeon, *Acipenser transmontanus*.

The prehistoric-looking fish are native to the Sacramento–San Joaquin River Delta, located a few miles from The Fishery. In the 1980s, the farm was the first commercial operation to successfully spawn the sturgeon, which have lived in the area for an estimated 300 million years.

The fish are grown both for their meat and their roe, which is earning acceptance as sustainably produced California caviar. Since the demise of the Soviet Union, populations of the famous Caspian Sea sturgeon have plummeted, due to overfishing and lack of regulation. Now, some of the sea's sturgeon stocks are near extinction, and many experts wonder if the Caspian will ever again be able to support a healthy commercial fishery.

But California sturgeon farms, with The Fishery in the forefront, have allowed chefs to continue serving the prized delicacy without the guilt associated with consumption of caviar harvested from threatened sturgeon species. Food critics from the *New York Times* to *Wine Spectator* have hailed the California caviar as comparable to the best high-class beluga.

Diversified farm

The Fishery grows three fish: sturgeon, hybrid carp, and channel catfish. The farm raises and sells about two million pounds of fish a year, half of that in sturgeon.

The carp and catfish, grown in some of the dozens of ponds on the farm, are almost all trucked live to small Asian markets in neighboring Sacramento or the San Francisco Bay area.

Some sturgeon are grown to "restaurant size," or about 3-years-old and 20 pounds. Another 4,000 females are kept until they reach 7- to 10-years old, just in time to produce eggs.

Although the farm is producing three fish species, Beer said the sturgeon market is growing rapidly. Still, he has no plans to give up on the carp and catfish. "I like the diversity, and keeping things interesting," Beer said. "We're always learning here. The industry—especially for sturgeon—is relatively new. The fish has been around for millions of years. We've just been here for a couple of decades."

Water reuse

The Fishery has the capacity to pump about 6,000 gallons of groundwater each minute, but uses eco-friendly water-recycling methods to make sure the aquifer doesn't shrink.

Reservoir ponds have been built at higher elevations than the catfish ponds and sturgeon tanks so that water moves with gravity power. Few polluting (and expensive) generators or pumps are used at the site to move water.

The water is used up to four times at The Fishery before its final discharge to nearby farms for feed crop irrigation. No water is expelled into nearby waterways or the delta itself. The water flows from sturgeon tanks to catfish and carp ponds and into canals where carp clean the waste from the water. The recycled water is at times mixed with fresh water before it is used again in sturgeon tanks.

"We have a responsibility to make sure we don't overpump the groundwater, and we try to make our water use as efficient as possible. The fish essentially clean the water so that we can use it over and over again," Beer said.

It seems to be working. Although nearby farming areas have been designated as critically overdrafted, the groundwater levels near The Fishery have stayed constant.

The Fishery is owned by Ken Beer, a Sacramento Valley native, along with minority share partners Ken Lawson, the farm manager, and Gary Gunderson, Beer's brother-in-law. ≈

Sturgeon, a prehistoric looking fish, is native to the Sacramento–San Joaquin River Delta in California

An Idea We Can't Throw Back

William Hogarth, Assistant Administrator for Fisheries, National Marine Fisheries Service, NOAA, The Globe and Mail, January 15, 2004

farmed salmon debate

A recently published paper in *Science* magazine has heightened the debate over the presence of contaminants, particularly PCBs, in salmon. There is no argument that wild and farmed salmon sometimes contain levels of PCBs that vary based on the type of salmon and what they've eaten.

What is not well explained in many media reports is that the levels of PCBs found in salmon should give no cause for alarm. They are considerably lower than the US Food and Drug Administration (FDA) tolerance levels (one-40th to one-80th the maximum level) and also well below the limits set by the Canadian Food Inspection Agency and the World Health Organization. Therefore, none of the wild or farmed salmon evaluated in the study would be considered to represent any increased risk for cancer by internationally recognized regulatory bodies.

Consumer confidence

However, the study again reminds us that several larger issues regarding seafood and human health and safety need to be addressed. The first is: *How can consumers be confident they have access to safe and healthy seafood?*

In fact, the standards for seafood health and safety in global markets, both wild and farmed, are already established through the United Nations Codex Alimentarius Commission and the World Health Organization. In the United States, the FDA is responsible for setting standards for antibiotics and contaminants and applying adequate safeguards to all food through import and domestic inspections.

Accessible scientific information

Another issue to consider is: *How can we ensure that consumers have comprehensive scientific information on which to base decisions?*

Consumers rely on the government and scientific community to help them make decisions on seafood quality and safety. Studies that have appeared recently in several publications do not provide the detail necessary to tell the whole story regarding the presence of contaminants in salmon and other species. It is important that researchers and responsible agencies work to ensure that the information given to the public is complete, accurate, and understandable to help consumers make purchasing choices.

Global demand

And last, but certainly not least, is: *Where will we get the seafood needed to meet global demand both today and in the future?*

Global consumption of seafood is estimated to be about 16 kilograms per person annually, according to the UN Food and Agriculture Organization. This demand is being met through global fisheries production of approximately 140 million metric tonnes, more than one-third of which is from aquaculture.

There is great potential for aquaculture development in North America. More than 75% of the seafood consumed in the US is imported (more than $US 10 billion), and much of this seafood is farmed. Developing an aquaculture industry through industry/government partnerships will help meet growing seafood demand, revitalize depressed coastal communities, and stem the growing tide of seafood imports. Aquaculture can be conducted in an environmentally sound manner that minimizes or eliminates past problems faced by other aquaculture-producing countries. When citing the mistakes of the past, we also have a responsibility to recognize the significant improvements that have been made as industries become more efficient, more environmentally responsible, and more compatible with competing uses for the ocean.

Seafood is one of the world's healthiest protein sources, with benefits that the medical community is only beginning to understand. Aquaculture has a place in ensuring the long-term quality and quantity of seafood the public demands. At the same time, we must recognize the need to balance food production with environmentally friendly production practices that deliver a product to consumers that is healthy and as contaminant-free as possible. It's a significant task, but one that can be accomplished with government, industry, the environmental community, and the public working together. ≈

Farm Fish Could Feed the World

Editorial comment, Financial Times, January 13, 2004

The latest food scare—about chemical contaminants in farmed salmon—has given shoppers yet another puzzle as they try to buy healthy and nutritious meals for themselves and their families. Beyond the alarmist headlines, the study (conducted by environmental researchers at Indiana University) helps focus attention on fish farming. With production increasing by 11% a year, fish farming is the fastest-growing sector of the world food economy, while attracting surprisingly little public scrutiny.

In principle, aquaculture sounds like a wonderful way to satisfy the growing global demand for fish while relieving the pressure on wild stocks, which are collapsing in many parts of the world. The fundamental problem is feeding all of those captive fish.

Carnivorous species such as salmon, trout, turbot, sea bass, and cod require a high-protein diet. Today, this is supplied mainly by feeding them fish meal made from cheap wild fish, including sardine, anchovy, and mackerel, which can still be caught in huge numbers near the ocean surface. Each kilo of farmed salmon is estimated to take three kilos of wild fish for feed.

This food chain has the unfortunate effect, from the point of view of human health, of concentrating dioxins and other cancer-causing pollutants consumed by surface-dwelling fish. Whether the contaminants identified in farmed salmon are hazardous enough to outweigh the benefits of eating fish is doubtful. Even so, salmon would be a healthier meal without them.

A more fundamental reason that fish meal should not drive the expansion in aquaculture is that it is ultimately unsustainable. Marine wildlife will suffer terribly if fish such as anchovy become uncommon.

Although aquaculture faces many environmental problems, such as the spread of pollution and disease to wild fish, the need to wean itself onto a vegetarian diet is paramount. A priority is to develop more vegetable sources of high-protein feed that can replace the fish meal used for carnivorous species. A more straightforward course is to grow more fish that are natural herbivores or omnivores, such as tilapia, catfish, and carp.

Governments should find ways of encouraging a sustainable system of aquaculture that can feed the world with fish while safeguarding the marine environment. ≈

Benefits Outweigh Risks

AScribe Newswire, January 8, 2004

The health benefits of eating salmon outweigh the risks named in a study published this week in the journal *Science,* says Charles Santerre, a Purdue University nutritionist and toxicologist.

Santerre, Associate Professor of foods, nutrition, and food science, has done extensive research on contaminants in fish. He says he agrees with the overall findings of the study, "Global Assessment of Organic Contaminants in Farmed Salmon" published in the January 9th edition of *Science* and on January 8th in *Science Express* on the World Wide Web. But the Purdue researcher says he disagrees with the study's conclusion that consumers should limit their intake of farmed salmon due to an increased risk of cancer from contaminants in the fish.

"The study demonstrates that farmed salmon is very low in contaminants and meets or exceeds standards established by the Food and Drug Administration and the World Health Organization," Santerre says. "The study also shows that the cancer risk from eating large amounts of salmon is significantly lower than the risk of developing heart disease from not eating generous amounts of the fish."

Santerre recommends farm-raised or wild salmon for pregnant and nursing mothers as an ideal source of nutrients for a developing fetus and infant. He also says salmon is one of the safest fish on the market.

Related web sites

Purdue Food Safety and Quality:
http://fn.cfs.purdue.edu

Charles Santerre:
http://fn.cfs.purdue.edu/fsdir/mergedirectory.asp?mode=displayperson&name=3 ≈

CSREES Workshop for Aquaculture Grants

Ken Chew, WRAC Director, School of Aquatic & Fishery Sciences, University of Washington

CSREES Mission

In cooperation with other partners and stakeholders, to provide strong research, technology development, and extension education programs to encourage and support the progressive development of the aquaculture industry in the United States.

Vision

to develop a globally competitive, technologically advanced, and environmentally compatible aquaculture industry in the United States.

In November 2003, a workshop was held in Washington, DC, to enhance information exchange among grant recipients, programs within the US Department of Agriculture (USDA), and other federal agencies regarding the objectives, accomplishments, and direction of non-competitive aquaculture-related programs administered by USDA's Cooperative State Research, Education, and Extension Service (CSREES).

The principal organizers were Meryl Broussard, CSREES Supervisory National Program Leader; Gary Jensen, CSREES National Program Leader for Aquaculture; and Max Mayeaux, CSREES Aquaculture Program Specialist.

The large number of currently funded grants emphasizes that aquaculture research and outreach is building within the USDA, and also at Sea Grant, the National Marine Fisheries Services, the Department of Commerce, and other federal agencies.

According to Broussard, funding from CSREES alone, including competitive and non-competitive grants, equals approximately $30 million annually. CSREES funds support aquaculture research, education, and outreach efforts. In addition, annual funding for aquaculture research from the Agriculture Research Services (ARS) of USDA exceeds $30 million.

At the workshop, Ralph Otto, Deputy Administrator of CSREES' Plant and Animal Systems, described the importance of non-competitive grants, emphasizing the growing awareness of aquaculture in all sectors of the country. Gary Jensen emphasized the importance of extension and outreach to user groups as a major part of all research.

Lewis Smith, Senior National Program Leader, described the efforts of the ARS National Aquaculture Program. With three centers and other locations throughout the country, ARS researches long-term problems such as genetic improvement.

Reports were also presented on two of the longest-running and best-funded multi-state/multi-university programs—the Shrimp Consortium Project (SCP), involving seven universities and non-profit organizations, and the Regional Aquaculture Center (RAC) program.

Ken Chew

Lewis Smith (top) and Meryl Broussard (bottom) speak to participants at the CSREES workshop

The SCP's principal focus is on the white shrimp, *Lycopenaeus vannamei*, with studies on hatchery and larval screening for disease-free stocks; health, nutrition, and feeds; genetics; grow-out systems; and other research and husbandry issues to assist the US shrimp culture industry.

The five RACs are responsible for organizing efforts to review industry needs and conduct research and outreach for the aquaculture industry. USDA funds are provided to each Center through its designated university affiliate, and are subcontracted out to various principal investigators and their institutions for studies authorized by the RAC Board of Directors.

For further information, please contact Max Mayeaux (CSREES) at *mmayeaux@csrees.usda.gov* or Lew Smith (ARS) at *lsw@ars.usda.gov*. ≈

WRAC Seeks Committee Nominations

WRAC is soliciting nominations for leaders in the aquaculture industry to serve as representatives on the Industry Advisory Council (IAC) and as members of the Technical Committee's (TC) Research Subcommittee. Nominations are invited from all sectors of the aquaculture community in the twelve states of the western region. *(You may nominate more than one individual for both IAC and TC.)*

Industry Advisory Council

Members are selected from all sectors of the aquaculture industry, including finfish and shellfish producers, suppliers of goods and services, and marketing and distribution personnel.

Technical Committee's Research Subcommittee

Individuals with extensive scientific expertise in any of the following disciplines are desired:

General fish culture
Diseases of shellfish
General shellfish culture
Shellfish nutrition
Broodstock management
Fish nutrition
Engineering
Marketing
Water quality
Genetics
Physiology
Product quality/preservation
Diseases of fish
Reproduction
Economics

To submit a nomination, provide the information requested below, specifying whether the nomination is for the IAC or TC. Please include your name, phone number, and email, in case further information is needed. Also, please include a short letter of support. Forward the information via:

email: cjn4@u.washington.edu
fax: 206-685-4674
mail: Carla Norwood, WRAC Administrative Office, School of Aquatic and Fishery Sciences University of Washington, Box 355020, Seattle, WA 98195-5020.

If you have questions regarding the nomination process, contact Carla Norwood: ph: 206-685-2479; email (see above)

NOMINATION DEADLINE IS FRIDAY, April 16, 2004

Please check one: ☐ Technical Committee ☐ Industry Advisory Council

Name of nominee _____

Address _____

Phone _____

Area(s) of expertise _____

Your name _____

Your phone _____

Court Ruling Affects Fate of Six Million Salmon Fry

Cook Inlet Aquaculture Association Staff

6,000,000 salmon fry

A decision in December by the 9th Circuit Court of Appeals enjoins or prohibits the Tustumena Lake sockeye salmon enhancement project in Alaska. Cook Inlet Aquaculture Association (CIAA) Executive Director Gary Fandrei said "The Tustumena Lake project is very important to CIAA and the Cook Inlet common property fishery. The project has been in operation since 1974 and has provided sockeye salmon to numerous users from Big Lake near Anchorage to Port Dick Lake on the outer coast."

In 1998, the Wilderness Society and the Alaska Center for the Environment brought a suit against the US Fish & Wildlife Service (USF&W) challenging the issuance of a permit for the Tustumena Lake enhancement project, in which CIAA releases six million salmon fry into Tustumena Lake and 3.5 million fry into three Lower Cook Inlet lakes—Leisure, Hazel and Kirschner lakes.

Initially, the plaintiff's legal arguments did not persuade the District Court in Anchorage, and the enhancement project permit was allowed to continue.

However, on appeal, the 9th Circuit Court of Appeals agreed with the plantiff's argument that the enhancement project is a "commercial enterprise" and, therefore, is prohibited by the Wilderness Act.

Ninth Circuit Judge Ronald Gould wrote that under the act, areas designated wilderness "must be left untouched, untrammeled, and unaltered by commerce."

To the surprise of many, the appeals court dismissed the USF&W's reliance on section 1315(b) of the Alaska National Interest Lands Conservation Act (ANILCA), which does not prohibit fishery enhancement projects in Alaskan refuge wilderness areas and, in fact, permits such projects.

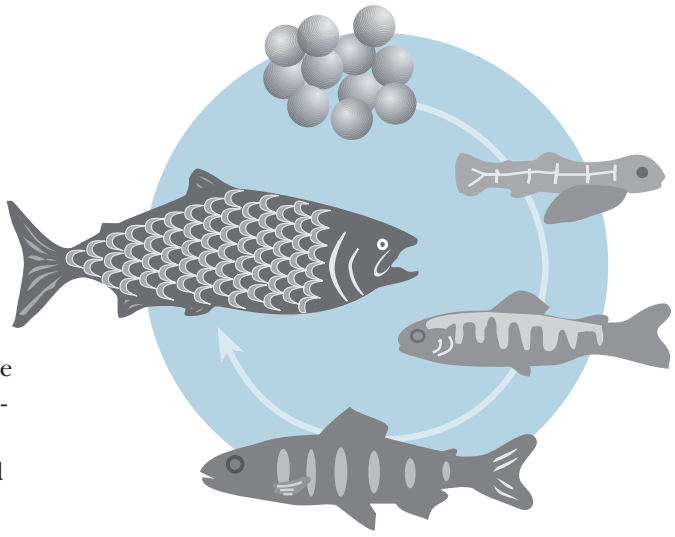
The CIAA staff and board of directors have met twice and are working to address two questions—what will be the fate of the Tustumena Lake fry currently in Trail Lakes Hatchery and how can CIAA continue to provide sockeye salmon to central Cook Inlet where the bulk of the users are.

CIAA Biologist Trent Dodson stated "We have submitted a request to release the fish currently in Trail Lakes Hatchery to Tustumena Lake and are hoping to receive a timely response. While the fish are not normally released until June, if we cannot release the fish to Tustumena Lake, we must have plans in place soon to secure all the necessary state permits for an alternative release site. We do not want to kill six million fry."

Also at issue is the future of the three Lower Cook Inlet Lakes projects. These highly successful projects contribute significantly to the Kachemak Bay sockeye fishery. Fish returning to Tustumena Lake have served as the broodstock for these projects since the 1980s. Developing a new brood source can be done, but it may require several years and is expensive. Fandrei reported, "Suddenly having to change broodstocks is very disruptive and may limit returns until the broodstock source is fully developed."

The CIAA board and staff are committed to finding a way to continue to enhance the Kasilof River return and provide eggs for the three Lower Cook Inlet Lakes projects ≈.

Salmon life cycle



US Trout Farmers Meet

Excerpt from an article by Mary Lee, Fish Farming News, Sept/Oct, 2003

The National Conservation Training Center, nestled beside the Potomac River just outside Shepherdstown, West Virginia, was the site of this year's US Trout Farmers Association (USTFA) midyear conference in October.

The USTFA board of directors held its meeting the opening day, discussing several current issues, including:

- EPA effluent guidelines
- marketing and promotional efforts for the industry with enhanced industry input
- setting up a technical advisory committee to handle interactions with the new National Center for Cool and Cold Water Aquaculture
- planning for the Aquaculture 2004 conference
- update on current National Aquaculture Association (NAA) activities

Conference highlights

The conference program got underway with a marketing panel discussion. Randy MacMillan, Clear Springs Foods; Betsy Hart, NAA; Richard Nelson; Dan Vogler, Harrietta Hills Trout Farm; and Gary Fornshell, University of Idaho Extension, each gave a short presentation, which then led to audience discussion.

In the afternoon, National Center for Cool and Cold Water Aquaculture researchers and staff gave presentations on their activities and a tour of the laboratories.

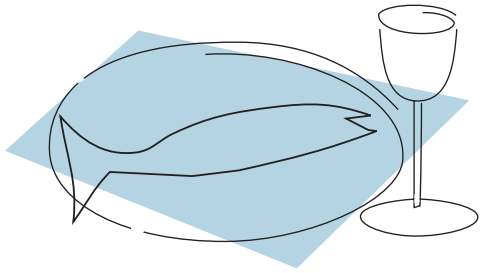
On the second day of the conference, Gary Fornshell opened the sessions with a presentation on the development of best management practices for trout production.

Freshwater Institute (FWI) staff gave presentations on technology, biosecurity, and water treatment, including: Steve Summerfelt's session on using intensive recirculating system technology in trout production; Julie Bebak-Williams' presentation on trout farm biosecurity; and Brian Vinci's talk about influent water treatment options for aquaculture facilities.

Ken Semmens of West Virgina University extension followed with a presentation on raising trout in West Virginia mine waters.

Other topics covered by speakers included: alternative protein sources; feed modeling techniques; developments in broodstock, research, and commercial programs; and risk management for trout farmers.

For those who stayed through Saturday there was a tour to the Freshwater Institute, the Aqua Green Trout Farm, and the Albert Powell State Hatchery. ≈



Recipe for Planked Fish

Washington Fish Growers Assoc., www.wfga.net, July 17, 2003

You will need some wood shingles. You can get them at any hardware store. Make sure they are cedar, pecan, or some other hardwood, not pine or something that will give the fish a turpentine taste. Get one for every serving planned, and extra for later. Soak the shingles in water for a couple of hours. *Recommendation: use fish fillets for this recipe as they will cook more evenly*. Prepare the fish fillets, using whatever spices you like, salt, and pepper.

Remove the shingles from the water and pat dry. Oil one side slightly in the center where the fish will go. Place one piece of fish in the center of each shingle. Then you will place the whole shingle, fish and all on a hot grill or over a charcoal fire close enough to the heat that the plank will smoke. It is best to have a heat source with a cover. Leave the plank on the heat source long enough for the fish to cook, until it flakes easily.

The plank will start to char on the bottom and edges—this is what smokes the fish while it cooks, and is ok. Serve the fish on the plank.

This recipe is great for the outdoors where a homemade camp "oven" can be used, no plates are necessary, and it's totally biodegradable. ≈

PSMFC Conference on Marine Aquaculture

Ken Chew, WRAC Director, School of Aquatic & Fishery Sciences, University of Washington

The Pacific States Marine Fisheries Commission (PSMFC) was developed and authorized by Congress in 1947. At that time, it was called the Pacific Marine Fisheries Commission; the name changed in 1989. Initially an agreement among three states—California, Oregon, and Washington—it was later amended to include Idaho and Alaska. The commission was established for interstate cooperation relating to better use of the Pacific Coast fisheries—marine, shell, and anadromous stocks.

The Commission promotes and supports policies and actions toward conservation, development, and management of fishery resources through a coordinated regional approach to research, monitoring, and use. Its early emphasis was on the states' mutual problems of fisheries resource management of capture fisheries. By the late 1970s, these problems had increased in number and complexity.

PSMFC promotes and supports policies and actions toward conservation, development, and management of fishery resources through a coordinated regional approach

Today, an urgent need exists for a solution to the economic, social, political, legal, and biological issues confronting fishery conservation and management. Concerns about sustainability, the significant reduction in traditional marine commercial fish stocks along the Pacific Coast, and growing interest in marine fish culture and the potential of near- and offshore fish farming emphasize the need for redefining existing priorities for future activities. How should the growing interest and efforts in marine aquaculture be incorporated into PSMFC's overall fisheries resource management plan for its member states?

These issues were presented and discussed at the PSMFC conference on *Marine Aquaculture: Effects on the West Coast and Alaska Fishing Industry* last November in Seattle. The National Marine Fisheries Service (NMFS) of the National Oceanic and Atmospheric Association (NOAA) provided assistance in organizing the conference.

Invited national and international experts spoke on pertinent topics such as sustainable seafood production; national policies; the effects of aquaculture on economies and water quality; environmental concerns; trade; commercial fishing industry perspectives; and diseases.

Randy Fisher, Executive Director of PSMFC, challenged all in attendance with the thought that we need to "understand the diversity of the audience and think about our position—should we oppose aquaculture? should we work to stop opposition to aquaculture? should aquaculture be stopped? can it be stopped? and, finally, can we (commercial and aquaculture interests) work together?"

Howard Johnson of Howard Johnson Associates, which annually publishes a *State of the Industry Report,* is a former president of the National Fisheries Institute and has spent 25 years in the fishing industry. He shared his thoughts on the strengths and weaknesses of and opportunities and threats to the seafood industry. Johnson remarked on the changes that are happening in the market and the blending of aquaculture and capture fisheries commodities. He reminded us that the US now imports more than 70% of its seafood.

Yves Bastien, Commissioner for Aquaculture Development in Canada, spoke on *Fishing and Aquaculture Equals Sustainable Seafood Production*. He described approaches that have been used in Canada to promote sustainability. He also informed us that Canada has cooperative marine culture agreements with Belgium, Norway, and other countries, but not with its closest neighbor—the United States.

Cortney Hough (Federation of European Aquaculture Producers in Belgium) spoke on the *European Union Overview*. He explained how the federation provides a forum for fish farmers in Europe. The federation is a member of the European Union (EU) Commission and on the Advisory Committee on Fisheries and Aquaculture. EU countries also import more food fish than they produce.

Conrad Mahnken, former Aquaculture Matrix Manager for NOAA, spoke on *The Need for New Legislation to Permit Commercial Aquaculture in the EEZ (Exclusive Economic Zone)*. NOAA recognizes the importance of aquaculture managed by topic areas, such as freshwater culture, saltwater culture, and habitat. Aside from

discussion on permitting process and policy on fish farming in the EEZ, there needs to be careful review and testing of operations already in place offshore.

Shellfish farming dates back more than 100 years. However, marine fish culture (including shrimp culture) is relatively new, having developed in the past half century. Most countries involved with marine aquaculture recognize its viable, economic potential; however, some countries continue to raise questions about the economic and environmental impacts, and competition with traditional fisheries.

The impact of farmed salmon on traditional capture salmon fisheries was a major topic at the conference, particularly for Alaska and British Columbia participants. Gunnar Knapp (Professor of Economics, University of Alaska) spoke about the *Changes, Challenges, and Opportunities for Wild Fisheries*. Knapp said that the global seafood industry is experiencing rapid and profound change. Key causes of the change include globalization of the world economy and growth of aquaculture production, which will continue to increase through technological innovation. These changes are leading to more pressure on the global seafood industry to increase efficiency and to respond to market demands, including the growing acceptance of farmed products.

Participants received a clear message that fish farming initiatives in the United States should be taken into the context of globalization. In the USA, seafood is second only to oil as a trade deficit. With the exception of Alaska, coastal fishery harvests are stagnant or depressed, while demand for seafood continues to increase. It is possible that the growing USA demand for seafood will be supplied by imports from countries that embrace aquaculture as a means to improve the lives of coastal residents. Additional constraints on fish farming in the USA will inevitably lead to increases in imports.

In Alaska, the salmon industry faces a severe crisis. The industry has responded with initiatives to increase sales by differentiating between wild and farmed products, increasing quality, exploring new markets, and developing fisheries management strategies that consider quality control and marketability. The Alaska presentations did not support an anti-salmon farming campaign, realizing that such a stance probably would have a negative affect on Alaska's marketing efforts.

Ken Chew

above (l to r): Courtney Hough, Colin Nash, Howard Johnson, and Dan Swecker gather during a break at the PSMFC Conference

left (l to r): Conrad Mahnken, Aquaculture Matrix Manager for NOAA, and Randy Fisher, Executive Director of PSMFC

The three-day conference opens the door for more dialogue and serious review of what needs to be done in specific areas of concern in both wild capture and culture fisheries.

For more information, contact Randy Fisher, Executive Director, PSMFC, 45 SE 82nd Drive, Suite 100, Gladstone, Oregon 97027-2522 or *randy_fisher@psmfc.org*. ≈

Growing Oysters Pits Tradition Against Innovation

Excerpt from an article by Luther Turmelle, Milford Bureau Chief, New Haven Register, December 2, 2003

tradition vs. innovation

A Connecticut company has figured out a way to farm oysters that it says will revolutionize the troubled industry. Mariculture Unlimited wants to raise oysters in submerged cages near the surface of Long Island Sound.

The company announced its plans in 2003 and the size of the proposal caught local officials and oyster farmers by surprise. The negative reaction was swift. The state Department of Environmental Protection (DEP) told the firm to scale back its plan; on December 15, the revised proposal was submitted.

The revisions are substantial according to Peter Francis, a DEP analyst. The combined area of the proposed project has been scaled down from 521 to 174 acres. And unlike the original application—which called for the deployment of all of the cages at once—the new proposal has the cages submerged over a three-year period.

The revised proposal doesn't sit well with oyster farmers who have plied Long Island Sound seedbeds for generations, or with local officials who don't want recreational waters pockmarked with submerged cages.

Independent oyster farmers are sensitive about anything that will impact their livelihood. Many have been through dramatic ups and downs over the years. The state's seedbeds—rented to independents and bigger companies—produce one of the biggest harvests of Atlantic oysters in the nation. In 1993, 890,000 bushels were harvested, a yield worth $45 million. The industry provided 400 jobs at the time according to Connecticut Sea Grant. Then, in 1998, disaster struck. A parasite called MSX wiped out 90% of the harvest. The yield plummeted to 179,563 bushels, worth only $9 million.

The industry has rebounded after Long Island Sound oysters slowly became immune to MSX and other parasites.

The cage culture method

"Raising oysters in cages is considered attractive for a number of reasons," said Anthony Calabreses, Chief of the Aquaculture and Enhancement Division of the National Marine Fisheries Services (NMFS) laboratory in Milford, Connecticut. He said, "You can get a lot more volume in a small space. There's a limited number of oysters you can get from the ocean floor. But if you raise oysters in a cage and stack one cage on top of the other, you're going to be able to get a lot more." According to Calabreses, the cages also protect the oysters from predators such as sea stars and crabs.

In addition, suspending the cages below the surface of the ocean makes it easier for the oysters to feast on the algae that make up their food source, said James Widman, a research fishery biologist at the NMFS lab. "They get to maturity in about half the time they would if they were raised in the traditional way," said Widman.

Mariculture is using long lines to keep its cages suspended between the surface and the bottom of the Sound. Widman said the long-line system typically uses a line submerged between two buoys. The oyster cages are connected to the line. The tension of the two buoys pulling on the long line and the floats attached at intervals along the length of the line keep the weight of the cages from pulling the line down to the bottom. The entire system is held in place by anchors that are attached to the buoys.

The Connecticut DEP will review the revised application to determine its compatibility with coastal management guidelines; it will send its recommendation to the US Army Corps of Engineers, which has the final say on whether to grant the permit.

Residents claim that the lines and floats pose safety hazards for boaters as well as threaten to reduce the real estate value of beachfront properties.

Success elsewhere

Sandy Shumway, an Adjunct Professor of Marine Sciences at the University of Connecticut in Groton, said that while she is not familiar with the particulars of the Mariculture Unlimited application, she doesn't think such arguments hold water.

"This is another example of not in my backyard mentality," said Shumway, who is also president of the National Shellfish Association, an industry trade group. "People want to eat the product, but they don't want to pay the price. There is support for raising oysters in submerged cages in other parts of the United States," Shumway said.

With the worst harvest in modern history facing oyster farmers who work the Chesapeake Bay, officials in Virginia are enlisting the help of waterfront residents to help raise a breed of Asian oysters. Scientists believe that Asian oysters, which are found in the Pacific Northwest, are the key to restoring Chesapeake Bay's oyster industry, which Shumway said has been ravaged by the effects of a mysterious disease and overharvesting.

Some rural Alaskan communities have also supported efforts to raise oysters in underwater cages, in part because of the jobs the industry helps create, she said.

The Army Corps already has issued 15 permits for non-traditional methods of raising oysters off of Connecticut's shore, Francis said. "Most of the 15 use cages," he said. ≈

Ken Chew

Hog Island Oyster Company

Excerpt from an article by Lisa Mann, Fish Farming News, Sept/Oct 2003

Among the three of them, long-time friends John Finger, Michael Watchorn, and Terry Sawyer had experience in almost every aspect of the oyster industry. Marine biologists, their collective background included stints at an oyster farm, a seafood distributor, an oyster bar, and the Monterey Bay Aquarium.

But even all that experience didn't prepare them for all they'd need to know to run a successful oyster farm. "We used to have a motto," laughed Sawyer, "'Strong backs; weak minds.' Sometimes I wish all we had to worry about were our backs. What we learned quickly was that we'd need to know something about everything—distribution, labor laws, health insurance, financing, regulations (lots of them), watershed management, you name it. We *wanted* to be farmers, but we *had* to be businessmen."

Hog Island Oyster Company has been in business in Tomales Bay since 1983, and has earned name recognition and a reputation for high quality that are hard to match. "We named the company after an island right here in Tomales Bay. People told me it was a terrible name—it would make people think of pigs, not oysters. But it has worked well. People call up and say, 'I want to buy some hogs.' Our name is pretty well known now."

The operation leases 140 acres, in three parcels. Each of the tidal leases has different watersheds, growth parameters, and closure regulations.

The company raises three kinds of oysters and Manila clams. Its trademarked Hog Island Sweetwater oysters are Pacific oysters raised in low-salinity beds. Its Hog Island Atlantic Oysters are Blue Point oysters started with hatchery grown seeds. The Hog Island Kumamoto Oysters are small mild oysters, originally from the Kumamoto area of Kyushu, Japan.

"The quality of the oyster starts with the water," said Finger. "We do everything we can to preserve and protect the quality of the shellfish each step of the way. But it all starts with the water.

The operation is a popular stop on the Northern California chef tour circuit; it's a field trip for the Kendall-Jackson Wine Estate's Culinary Exchange Program; it's been profiled on Martha Stewart's television show; and it's even starred in a Gateway computer ad.

Hog Island oysters are identified by name on the menus of some of the finest restaurants in the United States—from New York City's Grand Central Oyster Bar to John Ash in California. ≈

Aquaculture Engineering Society Holds 2003 Issues Forum

Ken Chew, WRAC Director, School of Aquatic & Fishery Sciences, University of Washington

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NOAA, NMFS

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Freshwater Institute

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Dr. Steven Summerfelt
Freshwater Institute

In November, the Aquaculture Engineering Society (AES) held its third Issues Forum in Seattle. Society members gathered to discuss advances in the field of aquaculture engineering and important issues facing them today.

Founded in 1993, AES serves as a voice for the aquaculture engineering community, providing an engineering perspective of the problems facing the aquaculture industry and proposed solutions to these problems. AES works closely with other professional societies to address aquaculture needs and issues. The Society publishes *Aquaculture Engineering,* a peer-reviewed journal that covers all aspects of unit process design, process control, bioengineering, and full-scale operations.

Close to 100 members from across North America attended the forum, which was sponsored by seven federal and state agencies and private corporations. The intent of the forum was to foster discussion of its members, present progress made on research studies, and identify areas that continue to need improvement. Presentation topics included: the design of shellfish hatcheries and nursery systems, marine biosecure facilities, algae and abalone culture systems, large-scale laboratory aquatic research systems, reuse systems for cold-water applications, flow-through salmon and trout culture systems, and netpens.

right (l to r): Barnaby Watten of USGS presenting the AES Award of Excellence to John Colt of NMFS

below: Officers of AES (l to r): Michael Timmons, President; Brian J. Vinci, Secretary/Treasurer; Steve Summerfelt, Past President; Kelly Rusch, 1st Vice President; Jon Colt, 2nd Vice President

Ken Chew

AES Award of Excellence

The AES Award of Excellence was presented to Dr. John Colt in recognition of his outstanding scientific and technical contributions to aquacultural engineering. Dr. Colt works at National Marine Fisheries Service (NMFS) in Seattle and has published widely in the areas of dissolved gas monitoring, ammonia toxicity, oxygen supplementation, and aeration. Currently, he is working on the development of rearing systems to improve the physiological and behavioral fitness of salmon. Dr. Colt is the long-time editor of *Aquacultural Engineering for the Americas* and is one of the founding directors of AES.

Tour

A tour of the NMFS Manchester Field Station was part of the three-day event. At the field station, participants observed the seawater system and marine fish culture of several species. The tour also included a visit to the Taylor Shellfish Company and its special "flupsy" nursery system, which grows seedling clams and oysters from its hatchery. The engineered "flupsy" operates effectively as an upwelled water system, bringing seawater and nutrients to the juvenile shellfish.

For more info

Visit *www.aesweb.org* or contact Dr. Brian J. Vinci at the Freshwater Institute, 304-876-2815 or *bvinci@freshwaterinstitute.org*. ≈

Remembering Marsha Landolt and Robert Busch

Edited by Marcus Duke, School of Aquatic and Fishery Sciences, University of Washington

On January 2nd, 2004, Marsha Landolt and Robert Busch lost their lives in an avalanche that engulfed their family cabin in Idaho. Those of us who worked with them know what a great loss this is to the scientific and academic communities. It is difficult to convey the breadth and scope of Marsha and Bob's contributions and accomplishments, and the tremendous, positive influence they had.

They are survived by Marsha's son, Nicholas Kocan, and her sister-in-law, Karen Adams; Bob's sisters, Barbara Busch Scheeler (brother-in-law Tom) and Sandra J. Solberg (both in Wisconsin); and his daughters, Jodie Wright (son-in-law Archie, grandchildren Brittanee, Jordan, and Isaiah) and Jenna Rovig (son-in-law Kelby, grandchildren Tucker and Emma), who live in Boise, Idaho.

Marsha Landolt, a long-standing member of the University of Washington community, served as a faculty member, Director for the School of Aquatic & Fishery Sciences, and Associate Dean of the College of Ocean and Fishery Sciences. Most recently she was Dean of the Graduate School and vice provost of the University.

Marsha's career was focused on fish disease and pathology. She was principal investigator for numerous research projects relating to marine and freshwater animal diseases: In the mid-1970s, she conducted investigations on oyster disease and genetics, and toxicity studies of flatfish, and WRAC projects on fish diseases and immunology studies. Later, she was involved in studies on bacterial kidney disease and its causative agent, *Renibacterium salmoninarum*, and the means to control the infectious hematopoietic necrosis virus. Marsha authored or coauthored over 70 scientific publications in the open literature.

Despite Marsha's professional accomplishments, she was proudest of her son Nicholas, about whom she told everyone. As Nick wrote, "From the moment she woke up until the moment she fell asleep, she was a devoted mother."

Robert Busch was a fisheries scientist and aquaculturist. At time of death, Bob was an independent aquatic health consultant. Bob conducted research on fish feed and aquaculture. After working for Clear Rangen, Inc., and Clear Spring Foods, focusing on aquaculture research, he became the general manager of Biomed, Inc., a developer and manufacturer of aquaculture bacteria used to immunize fish against disease. Most recently, he had been working for Alpharma, developing vaccines for commercial fish farming.

Ron Hardy, Director of the Aquaculture Research Institute at the University of Idaho, noted that Bob "was very active and very well respected and had the ear of about anyone he wanted to talk to."

David Powell, who worked with Bob at Biomed and Alpharma NW, observed that "Bob always asked for your best and led by example. He brought scientists together from around the world…to share ideas and build a vision of mutual benefit and accomplishment. He was constantly challenging assumptions and looking for the truth during our discovery process."

Ken Chew

naa news

NAA Close-Up

National Aquatic Animal Health Program

The National Aquatic Animal Health Task Force has been commissioned by the Joint Sub-Committee on Aquaculture (JSA) to develop a National Aquatic Animal Health Program (NAAHP). The objectives of the program are to:

- provide for the safe and efficient commerce of live aquatic animals
- protect our cultured and wild resources from foreign animal pests, diseases, and their causative agents
- help the United States meet its international legal obligations
- ensure the availability of diagnostic and certification services for public, private, and tribal entities.

Members felt the development of the program must involve scientists and managers who represent the interests of the stakeholders. Nominations of stakeholders were requested through national and species associations.

Working groups, composed of members of the Task Force and the appointed stakeholders, will assemble material and submit it to the JSA and other stakeholders for consideration. Initially, three working groups have been identified to address Chapters 4 and 5 of the NAAHP. The following NAA nominees were appointed to participate:

Group 1

Roles and responsibilities of health professionals

Dr. Roy Yanong, *Assistant Professor*
University of Florida Tropical Aquaculture Laboratory

Dr. Carole Engle, *University of Arkansas*
Pine Bluff Department of Aquaculture and Fisheries

Group 2

Reportable diseases and their surveillance

Jim Parsons, *Troutlodge, Inc.*

Dr. Ralph Elston, *Aquatechnics*

Group 3

Testing methodology for reportable diseases

Dr. Andy Goodwin, *University of Arkansas*
Pine Bluff Department of Aquaculture and Fisheries

Dr. Patricia W. Varner
Texas Veterinary Medical Diagnostic Lab

As future chapters are drafted, particularly those which discuss the management and control of diseases, additional working groups of species specialists will be convened.

NAA WEBSITE

http://www.natlaquaculture.org

NAA is a non-profit organization whose mission is to work with all segments of the US aquaculture community for the purpose of national representation of mutual interests. The US aquaculture industry comprises a diversity of species, including trout, shellfish, salmon, catfish, marine and freshwater shrimp, baitfish, hybrid striped bass, tilapia, crawfish, alligators, and ornamental fish. NAA provides a unified national voice that ensures aquaculture's sustainability, protects its profitability, and encourages its development in an environmentally responsible manner.

While NAA means to encompass the broadest base possible, it is a producer-based association. We are dedicated to the establishment of policies that further the common interests of its membership. We believe the private sector is capable of achieving a successful industry, working with government to create a climate conducive to its success, and doing so without compromising our nation's natural resources.

Surveillance for Spring Viremia of Carp

Veterinary Service, with the US Department of Agriculture's Animal and Plant Inspection Service (APHIS), completed its first sequence of epidemiological investigations of major koi carp and goldfish breeding farms in the eastern United States to determine if Spring Viremia of Carp (SVC) disease is present. No trace of the disease has been found. In 2002, a commercial koi carp and goldfish breeding farm was diagnosed with the country's first case of SVC.

Additional tests are being conducted on farms that either shipped fish to the SVC-affected farm; ship carp, goldfish, or minnows interstate or internationally; or have raised them during the past two years.

No distributors or end-users are being investigated. All sampling costs are being paid by APHIS/VS, which has spent approximately $6.5 million this year for SVC-related depopulation, disposal, clean-up and disinfection, surveillance, epidemiology, and diagnostic support and training for producers and veterinarians.

For more information on SVC visit:
http://www.aphis.usda.gov/vs/aquja/aquaphis.html

The many faces of the NAA

—Fish Farming News, Sept/Oct & Nov/Dec 2003

The motto of the NAA, which formed in 1989, is "One Industry, One Voice." Striving to fairly and effectively represent all segments of US aquaculture, the NAA volunteer board of directors comprises industry representatives spanning a wide range of species, geography, and culturing techniques. Here is some background information on four volunteer board members:

Ted Smith

Aquaculture consultant and educator, former producer
Smith Consulting, Alamosa, CO
State Representative for Colorado
Term: 2003–05

Significant industry activities: Chairman, Colorado Aquaculture Board; Board member & Past President, Colorado Aquaculture Association; member of WRAC Industry Advisory Committee

I've been witness and participant to numerous issues, constraints, and regulations, and the positive and negative impacts they have on our industry at the state and regional level. My roots are deep within the industry, and I never forget my roots. Being an NAA board member is important to me because it will enable me to work for, or against, issues affecting our industry at the national level.

Jim Carlberg

Hybrid striped bass grower
President, Kent SeaTech Corporation, San Diego, CA
Association Seat, Striped Bass Growers Association
Term: 2003–05

Significant industry activities: Member, WRAC Industry Advisory Committee; member, California Aquaculture Association; member, Fish Culture Section of American Fisheries Society; member, World Aquaculture Society & US Aquaculture Society; supporter of the national NADA Coordinator

There are many crucial issues impeding the development of a larger and more viable aquaculture industry in the United States. These include: regulatory constraints (EPA, FDA, APHIS, etc); economic constraints (high production costs); foreign competition; and setting research priorities for government-funded research (ARS, CSREES, Sea Grant, NMFS). The NAA provides a unique opportunity for each segment of industry to have a united voice and a much stronger influence over these important issues. We need all fish culturists to recognize the importance of NAA in helping promote our industry by joining the association as individual members.

Ken Cline

Owner & President, Cline Trout Farms, Inc., Boulder, CO
Active Past President
Term: Open-ended

Significant industry activities: Past-President, US Trout Farmers Association; Past-President, Colorado Aquaculture Association; member, Colorado Fish Health Board; member, Colorado Aquaculture Board; former member WRAC Industry Advisory Committee

Serving and supporting NAA is important to me because NAA is the best, most effective voice for the fish farmer on national issues. The NAA co-sponsored annual national aquaculture meeting and trade show is a great opportunity for fish farmers to become more informed about technology and about issues. The annual meeting provides an opportunity for fish farmers to network with other farmers and with aquaculture regulators, researchers, and suppliers.

Randy MacMillan

Vice President, research and environmental affairs,
Clear Springs Foods, Inc., Buhl, ID
President & Species Representative, Trout
Term: 2002-04

Significant industry activities: Member, JSA Working Group on Quality Assurance; member, US Trout Farmers Association; member, USDA Effluent Task Force; chairman, MUMS Coalition; member, AFS Task Force on Fisheries Chemicals; member, Alliance for Prudent Use of Antibiotics FAAIR II Expert Panel; member, Idaho Board of Environmental Quality

The NAA is the only national, broad-based aquaculture trade association capable of significantly impacting national aquaculture policy and development. Serving on the board allows me opportunity to ensure issues important to Clear Springs Foods, Inc., the domestic trout industry, and all of domestic aquaculture are addressed. It has also provided me opportunity to remain updated on the plethora of current and pending regulatory issues that may adversely impact Clear Springs Foods, Inc.

Publications

Online

http://aquanic.org
The Aquaculture Network Information Center is a gateway to the world's electronic aquaculture resources. The goals of AquaNIC are to provide access to all electronic aquaculture information at the national and international level; increase the quantity and quality of electronic information available to the aquaculture industry; provide self-paced aquaculture instruction to the aquaculture industry; and obtain user input in directing AquaNIC services.

http://aquaculturemag.com
Aquaculture magazine, which includes information on fish farming, processing, breeding, and raising aquatic species.

http://www.was.org
International association of researchers and businesses involved in aquaculture.

http://www.mda.state.md.us/aqua/org.htm
Directory of aquaculture-related associations and trade organizations.

http://www.teamaged.org/aquaculture
Aquaculture education: National Council for Agricultural Education initiative. Information on the fastest growing sector of US agriculture, and how it can be used as a successful tool to motivate, excite, and stimulate students to learn.

http://swann2.ansc.purdue.edu/jobs/index.asp
New address for the "jobs in aquaculture" website of the World Aquaculture Society and AquaNIC.

http://www.pacaqua.org
The Pacific Aquaculture Caucus, whose mission is to promote economically viable and environmentally responsible marine and freshwater aquaculture for the Pacific region through sound public policy and best available science.

http://www.globalchange.com/fishfarm.htm
Future of aquaculture, future of fish farming and related issues. Sustainable fish production. Health issues and future food sources.

http://www.aquafarm.com
Listing and brief descriptions of computer software for aquaculture planning, design, and management.

http://aquatext.com
Aquaculture dictionary—free on-line fish farming terminology with tables, diagrams, calculations, and pictures.

http://www.pcsga.org
Pacific Coast Shellfish Growers Association—an industry body representing shellfish growers from Alaska to Hawaii, involving issues of environmental protection, safety and health, research, and international marketing.

http://aquaculture.co.il
Aquaculture production technology (APT) provides complete technological packages for fish farming, tilapia, prawn, and shrimp, including design, construction, and operation of commercial fish farms.

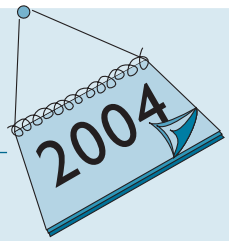
Books

Open Ocean Aquaculture: From Research to Commercial Reality
Edited by Christopher J. Bridger and Barry A. Costa Pierce
Proceedings of the 4th Open Ocean Aquaculture Symposium. The most comprehensive and up-to-date source of information available on the topic. Covers all scientific aspects of open ocean aquaculture (environmental, engineering, operations, and candidate species) and also marine policy, social, and economic topics.
WAS members: $45; non-members: $80; plus shipping and handling.
To order: Contact the World Aquaculture Society (phone: 225-578-3137; email: WASMAS@aol.com; FAX: 225-578-3493)

Aquaculture Europe '03: Beyond Monoculture
Edited by Thierry Chopin and Helge Reinerstsen
Compilation of papers presented in Trondheim, Norway in August 2003.
EAS/WAS members: $35; non-members: $40
To order: Contact European Aquaculture Society (EAS) email: *www.easonline.org*

Mussel Farming Technologies and Development
Compiled by John Bonardelli and Helge Reinerstsen
A handbook with extended abstracts.
EAS/WAS members: $35; non-members: $40
To order: Contact European Aquaculture Society (EAS) email: *www.easonline.org*

Calendar



April

1 **Farmed Fish Health Management Workshop**
Eastport, Maine
Contact: Kathy Villarreal at Maine Sea Grant
phone: 207-581-1435
email: *kvillarreal@maine.edu*
web: *www.seagrant.umaine.edu*

July

22–25 **5th International Conference on Recirculation Aquaculture**
Roanoke, Virginia
phone: 540-231-6805
email: *aqua@vt.edu*
web: *www.conted.vt.edu/aquaculture*

August

23–27 **19th International Congress of Zoology**
Beijing, China
There will be a session on "Molluscan Systematics, Evolution, and Population Genetics."
Contact: Dr. Ximing Guo
email: *xguo@hsrl.rutgers.edu*
web: *www.icz.ioz.ac.cn*

September

12–15 **Restore America's Estuaries: 2nd National Conference on Coastal and Estuarine Habitat Restoration**
Seattle, Washington
Contact: Nicole Maylett
phone: 703-524-0248
email: *nmaylett@estuaries.org*
web: *www.estuaries.org/2ndnationalconference.php*

October

12–14 **Annual Meeting of the NSA Pacific Coast Section**
Tacoma, Washington
Contact: Rich Childers
phone: 360-796-4601 x400
email: *childrkc@dfw.wa.gov*

20–23 **Aquaculture Europe 2004: Biotechnologies for Quality**
Barcelona, Spain
Contact:
email: *ae2004@aquaculture.cc*
web: *www.easonline.org/agenda/en/AquaEuro2004/default.asp*

November

15–19 **11th International Conference on Harmful Algae**
Cape Town, South Africa
Contact:
phone: +27 21 683 5522
email: *aecon.e@mweb.co.za*
web: *www.botany.uwc.ac.za/pssa/habj2004/*

December

3–4 **4th Northeast Aquaculture Conference & Exposition**
Manchester, New Hampshire
Contact: JJ Newman-Rode
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Printed on recycled paper using vegetable-based inks,

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