



ISSUE 21

July - August 2008

AQUATIC INVASIVE SPECIES NEWS IN A NUTSHELL

Joan Cabreza, Editor

This newsletter, like its EPA precursor, focuses primarily on regional and aquatic issues, but it also contains terrestrial, national and international invasive events of interest. Contents do not necessarily reflect views of the PSMFC. We welcome any questions, comments, and news items; direct them to the nutshell editor Joan Cabreza (Joan_cabreza@psmfc.org). Go to [<http://www.aquaticnuisance.org/newsletters.php>] to access all past Nutshell issues 1-20.

* * * * *

A Quote to Ponder...

“Extinction by habitat destruction is like death in an automobile accident: easy to see and assess. Extinction by the invasion of exotic species is like death by disease: gradual, insidious, requiring scientific methods to diagnose” - Professor Edward O. Wilson, Harvard.
(Thanks to Kevin Anderson)

This Quarter’s Off-The-Wall News

The multi-talented carp are the source of many stories. Here are two more:

First the Small Carp... Owners of Yvonne Hair and Nails, in Alexandria, VA, estimate 5,000 customers so far have tried their new pedicure treatment. Customers soak their feet in warm water filled with tiny toothless members of the carp family that nibble away dead skin while leaving healthy tissue unharmed (\$35 for 15 minutes and \$50 for 30 minutes).



The *Garra rufa*, or “doctor fish”, is a non-migratory freshwater fish found in rivers through much of Iraq, Israel, Jordan, Turkey and Syria. It lives and breeds in the outdoor pools of some Turkish spas, where it is said to feed on the skin scales of bathers, reducing illnesses such as neurodermitis. Spas already operate in several Asian countries, but the Alexandria spa claims to be the only one in the US, and has more than 1,000 fish, with about 100 in each individual pedicure tank at any given time. The owners hope to establish a network of Doctor Fish Massage franchises and are evaluating a full-body fish treatment that, among other things, could treat psoriasis and other skin ailments. State regulations apparently have no provision for regulating fish pedicures. *[Ed. Comment: But this all begs the question: where do the fish go to “retire” when the salon is done with them? (Los Angeles article in the TelegraphTV (Telegraph.co.UK) 22 Jul 2008)*

Then the Big Carp.....Darin Opel, a bowfisher for 25 years, bagged his largest catch ever in the Mississippi River near Alton, IL, in early May, when he shot a 92-pound, 8-ounce bighead carp with a compound bow and arrow. After fighting the fish for 10 minutes, he finally jumped into the muddy water, bear-hugged the fish and wrestled it to shore. *[Ed. comment: If you are one of those who still think Asian carp won't be a problem if they arrive in your area, ponder the size of this hummer!]*



(Paraphrased from an unknown source. Thanks to Kevin Aitkin, USFWS)

Zebra Mussel Updates

Senator Feinstein and Mussels. In July 22 letters to Interior Secretary Kempthorne and CA Governor Schwarzenegger, CA Senator Dianne Feinstein urged the U.S. DOI to launch a strong federal response to address the growing problem of quagga mussel infestations. She called for the DOI to designate a coordinator to lead the federal response and work with the relevant state and local agencies. She also requested that the Department develop an Invasive Mussel Control Plan that focuses on both infested and uninfested waters in the western US, and identifies priorities for research, prevention and removal strategies, short and long-term funding needs, potential economic and habitat impacts, threats to water quality, supplies and conveyance systems, and recommendations for federal action. (*Thanks to Mark Sytsma*)

Watercraft Inspection and Decontamination Training (WIT). Zebra and quagga mussels are spread on trailered watercraft moving from an infested to uninfested waterway. A number of national, regional and local program are in place to educate the public on how to avoid transporting them on their boats, including the PSMFC sponsored Watercraft Inspection Training (WIT) program. The PSMFC program, funded by the Bonneville Power Administration and USFWS, provides two levels of inspection training. *Level One WIT* focuses on how to inspect for and decontaminate trailered watercraft suspected of carrying zebra or quagga mussels, and it provides a good overview of the species and problems caused, It is directed at state, federal and local natural resource and boating agency personnel, water users of all types, law makers and border/lake inspection personnel. It includes information on outreach and education programs, basic mussel biology, distribution, transport vectors, and mussel impacts. The training has now been streamlined into three hours and one instructor, and consists of a new two-part education and training video, a question and answer session, and a hands-on watercraft inspection exercise. *Level One Training* is provided at no charge to Federal, State and Local Government agencies for groups of 20 or more, and at cost (\$500-\$1,000) for non government organizations. The host agency/organization provides the training facility and a trailered watercraft to be used for the hands-on inspection exercise. *Level Two training* is intensive and designed for professionals that expect to be actively involved in the inspection and decontamination of trailered watercraft and/or those who wish to become trainers within their state or work group. All Level Two trainings are held at Lake Mead, and include the use of portable (low-cost) temperature controlled power wash units and a large semi-permanent self-contained power washer. The training is offered at no charge. Graduates of this training will be certified by the 100th Meridian Initiative as lead incident responders and Level One trainers, and may be called upon to do either in their work area, in the future. The next Level Two Trainings are scheduled for **October 7-8, and November 4-5, 2008**. Three or four additional Level Two Trainings will also be scheduled in 2009. To schedule either training, contact Bill Zook at < Bjjook2@msn.com.>.

ID Zebra/Quagga Mussel Update. This summer, over 100 county, state and federal field personnel attended WIT programs held in Boise, Sandpoint, and Idaho Falls, ID. The ID Invasive Species Council also conducted trainings for ID Marine Academy and summer Beneficial Use and Reconnaissance Survey Crews. Targeted outreach activities included postcard mailings to all 90,000 ID registered boaters warning them of the dangers associated with bringing boats from mussel-infested waters into ID, resulting in numerous public responses to the mailing. Additional targeted outreach activities (i.e. transportation gateway displays for the traveling public) are ongoing. ID is also developing an in-state analysis program for quagga\zebra mussel veliger larvae. Individuals have been sent to PSU for training on identification of veligers, and this summer, staff from state, county and local governments and tribes collected zooplankton samples from 20+ higher risk lakes and reservoirs to analyze for veligers. *(Thanks to Amy Ferriter)*

Zebra Mussel Video Available. The two-part video, *Don't Move A Mussel*, an educational video produced by PSMFC, the USFWS, and Western State Fish and Wildlife Agencies, is now available. Part 1 of the video (29 minutes) provides background information on the origin, distribution, biology, life history and dispersal methods of zebra/quagga mussels and industry experts, resource managers and scientists describe their impacts on agriculture, power production, water supply, fisheries, shipping, recreation and the ecosystem. Part one is now available for viewing on-line in both Windows Media and Quicktime formats. Part 2 (17 minutes) is a watercraft inspection and decontamination training video that includes a detailed step-by-step demonstration of how to inspect trailered watercraft for mussels, and how to successfully decontaminate it if mussels are found. To order the video go to <http://www.aquaticnuisance.org/video.php>.

Other Invasions

New Insects and Snails in OR. Since 2007, state officials have identified 21 new insects and snails that have arrived in OR. (Given the size of most of these new invaders, there must be a lot of people with sharp eyes out there!) About half of the species seem to be from Europe, and 12 of them apparently already have established populations. The nurseries, zoo and port all seem to be areas worth watching for future introductions!

SCIENTIFIC NAME	COMMON NAME	ORIGIN	WHERE FOUND
<i>Assiminea parisitologica</i>	Snail	Asia	Coos Bay
<i>Balanococcus diminutus</i>	Phormium mealybug	New Zealand	Portland area nursery
<i>Cacopsylla fatsiae</i>	Fatsia psyllid	Japan	Oregon Zoo
<i>Crisicoccus</i> probably <i>azaleae</i>	Azalea mealybug	Japan	Chinese Garden, Portland
<i>Cydia coniferana</i>	Conifer bark-feeding tortrix	Eurasia	NW OR, Klamath Co.
<i>Nathrius brevipennis</i>	Longhorned beetle	Europe	Portland
<i>Planococcus citri</i>	Citrus mealybug	Australia	Portland area nursery
<i>Pseudaulacaspis</i>			
<i>Assiminea parisitologica</i>			
<i>cockerelli</i>	False oleander scale	Asia	Portland area nurseries
<i>Scolytus schevyrewi</i>	Banded elm bark beetle	Eurasia	Portland
<i>Stigmaeopsis</i> sp.	Bamboo spider mite	Asia	Oregon Zoo

<i>Tinocallis kawaluokalani</i>	Crape myrtle aphid	Eastern U.S.	Northwestern OR
Undescribed species? Of <i>Hemiberlesia</i>	An undescribed scale	Unknown	Oregon Zoo
<i>Aegopinella nitidula</i>	Waxy glass-snail	Europe	Portland industrial area
<i>Athysanus argentarius</i>	Leafhopper	Europe	Portland industrial area
<i>Cepaea nemoralis</i>	Banded wood snail	Europe	Portland industrial area
<i>Diaphnocoris chlorionis</i>	Honeylocust plant bug	Eastern U.S.	Willamette Valley
<i>Nebria brevicollis</i>	European gazelle beetle	Europe	Willamette Valley
<i>Philopodon plagiatum</i>	Weevil	Europe	Portland industrial area
<i>Psylliodes affinis</i>	Bittersweet flea beetle	Europe	Reed College, Portland
<i>Psyllopsis fraxinicola</i>	Psyllid	Europe	Portland, Salem
<i>Simplocaria semistriata</i>	moss beetle	Europe	Portland industrial area

(Thanks to Dan Hilburn, ODA)

Japanese Beetles in OR. State crews have been spraying for Japanese beetles at a golf course near Portland International Airport, and in July inspectors found more of the beetles on a United Parcel Service flight from Louisville, Ky. But funding for the efforts is so short ODA is already spending next year's budget on the fight.

New Australian Tunicate in San Diego. A new Australian tunicate (sea squirt) has been discovered in San Diego Harbor and Mission Bay. California Sea Grant is now funding a project to map its statewide distribution and genetic diversity, in order to prevent a costly control effort later. A year ago, there were only two known infestations along the entire West Coast, both in San Diego Harbor, but now the tunicate seems to be all around the harbor, and it has been identified recently for the first time in Mission Bay, a recreational waterway a few miles north of San Diego Harbor. It is unclear whether it will be added to the list of worst offenders, but tunicate invasions elsewhere suggest shellfish farmers have the most to lose from a full-blown sea squirt population explosion. Their sheer volume and weight on bivalves and shellfish nets can be so great that it becomes expensive and laborious to harvest the mussels. One goal of the Sea Grant project is to document the degree of genetic diversity of specimens from all infestation sites. High genetic diversity would suggest multiple inoculations from large ships; if the invasions are basically a monoculture, the sea squirt is probably spreading by hitchhiking on small boat hulls. (Thanks to CA Sea Grant. For more info, contact Christina Johnson <csjohnson@ucsd.edu>)

Assiminea Snail (Update). The snail species spreading northward up the coast from Coos Bay (see Nutshell issues #18 and 20 for previous info on this) now has a species name: *Assiminea parisitologica*. The snail is the primary host for the human lung fluke. (See Nutshell #18 for additional information on this snail.) (Thanks to Sam Chan, OSG)

ID Hydrilla Update. ID continues *Hydrilla* eradication efforts on the Bruneau River. Treatments this summer have included herbicide treatments, diver-assisted suction dredging, and careful hand-pull efforts in areas of low plant density. Surveys found that established populations are limited to geothermally influenced areas along 7 miles of river. Single *Hydrilla* plants have been found in scattered locations downstream of this area but they appear to have been introduced by this year's high water. A small private pond

approximately 1 mile west of the Hot Springs Bridge has also been found to have hydrilla. The pond is approximately ½ acre and has a very small outlet with a continuous flow. A diquat treatment followed by grass carp introduction is currently proposed for the treatment in this pond. No *Hydrilla* has been found downstream in CJ Strike reservoir or in the Snake River, but survey efforts are ongoing. A second *Hydrilla* population was identified in Boise this July. *Hydrilla* was found occupying 400 meters of a warm-water ditch running through back yards of a suburban neighborhood. The plant density was low, and the plants were removed by careful hand pulling. No *Hydrilla* was found in the irrigation ditch downstream or where the ditch enters the Boise River. Surveys are ongoing, and follow-up hand removal will be conducted in the coming months.

USGS has determined through DNA sequencing that both *Hydrilla* populations have been determined to be the dioecious biotypes. This biotype is found primarily in the Southern US, where as the monoecious biotype has been found in northern states such as WA and WI. This may explain the observed plant distribution in geothermally influenced areas. But regardless of biotype, a well-coordinated group of agencies and organizations is dedicated to the eradication of *Hydrilla* wherever it is found in ID. (Thanks to Thomas Woolf <twoolf@agri.idaho.gov>.)

US Signal Crayfish Invades the UK. The large American signal crayfish, *Pacifastacus leniusculus*, has entered parts of the Afon Llwyd River in Torfaen, resulting in a rapid decline in numbers of the white-clawed crayfish, the only crayfish species native to the British Isles. While not affected itself, the signal crayfish carries a disease that is virtually 100% lethal once it makes its way into the native population. The signal crayfish escaped from trout farms, particularly in the south of England, during the 1980s. They survived, reproduced, and eventually found their way into rivers across the UK. Although they have been a limited problem in Wales so far due to the relative acidity of the rivers, they require active control when found, and the Great Britain Non-Native Invasive Species Strategy and the Water Framework Directive Red list consider them as a high impact species. An extensive trapping program to control the species on the Wye is underway. (From August 28, Tim Lewis Western Mail Wales on-line article).

Atlantic Invasion: Lionfish. The red lionfish, *Pterois volitans*, one of the potentially most devastating marine invasions in history, is showing up everywhere, from the coasts of Cuba and Hispaniola to Little Cayman's pristine Bloody Bay Wall. Lionfish have even been spotted as far north as RI, on the US East Coast, in summer months. So far they are concentrated mainly in the Bahamas, in multiple habitats ranging from shallow and deep reefs, around piers and beaches and into the mangrove thickets that are vital habitats for juvenile fish. Some areas report a tenfold increase in lionfish just during the last year. An Indian and Pacific Ocean native, the lionfish is believed to have been introduced into the Atlantic in 1992, when Hurricane Andrew shattered a private aquarium and spilled six of them into Miami's Biscayne Bay. Biologists think the fish released floating egg sacs that rode the Gulf Stream north along the U.S. coast, leading to colonization of deep reefs off NC and Bermuda. Lionfish feed on grazing fish that keep seaweed from smothering coral reefs. Growing up to 18 inches in length, the lionfish uses its fan-like fins to corner fish and crustaceans up to half its size, then sucks them down in a violent gulp. One lionfish was

observed to eat as many as 20 small fish in less than 30 minutes. The grouper, which is rare in the lionfish's natural Southeast-Asian habitat, is one predator that will eat lionfish, and scientists are pinning long-range hopes on the establishment of new ocean reserves to protect grouper and other lionfish predators from overfishing. (*Excerpted from August 14, Tuscan Citizen article by David Mcfadden. Thanks to Dan Hilburn, ODA*)

Pacific Invasion: Seaweed. Seaweed intentionally introduced for aquaculture is now destroying coral reefs across the Pacific Ocean. For the last three decades, some of the world's poorest areas have been encouraged to grow inedible seaweeds that can be harvested for carrageenan, a fat substitute used in ice cream and other products. *Kappaphycus alvarezii* is most desirable because of its high carrageenan content; *Eucheuma denticulatum* is less valuable, but easier to cultivate. *Eucheuma* settles in reef crevices, driving out fish, and smothering coral. Within a few decades, the dead coral crumbles into rubble, allowing the full force of storm waves to impact the beaches.

Both species were introduced in 20 countries around the world, but due to low prices, unreliable purchasers, or cultural and other factors, results have generally failed, leaving coral reefs, local fisheries, and populations depending on those fisheries all damaged as a result. In the Pacific, the two algae were introduced to 10 countries and are said to be commercially cultivated in three: Kiribati, the Solomon Islands, and Tonga. Today, about 120,000 dry metric tons a year are produced, mainly in the Philippines and Indonesia, where the two algae originate. But in others, such as Kiribati, the industry has lost money almost every year. *K. alvarezii* invaded the Gulf of Mannar Biosphere Reserve in south India a decade after commercial cultivation began in nearby Panban. In Butaritari, an island of Kiribati in the South Pacific, an area about four miles long and a mile wide is affected. In Kaneohe Bay, HI, the seaweed also has spread out of control. One species now dominates Oahu's south end and the two others, mostly *Eucheuma*, have spread to about half of the coral heads of Kaneohe Bay. A new Super Sucker vacuum cleaner (See Nutshell #18 for more on this) can suck up 3,000 pounds of seaweed a day, but the seaweeds grow at a rate of 7 percent a week, so at the current rate, it will still require 10 years to clean up the bay. (*Excerpted from a July 8 Christopher Pala NY Times article; thanks to Jan Haertel, EPA*).

E. denticulatum



K. alvarezii



Other West Coast Activity

Chinese Frog in Container Highlights Current Response Problems. On August 1, a shipping container from China destined for the Port of Pasco, WA, arrived in the Port of Portland, OR, bearing a load of granite countertops, and at least two incidental hitchhikers in the form of a moth and an unidentified frog. What happened next made it apparent that procedures for dealing with aquatic invasive species in situations like this are still confusing and unclear at best; there appeared to be more questions than answers. The ensuing four week e-mail blitz following the frog's discovery ultimately involved individuals from at least 9 different agencies and entities, and raised numerous questions ranging from the general (jurisdiction and responsibility of individual agencies), to the specific (who are main contacts, role and authority of ports, available treatment options, types of fumigants used on containers, appropriate treatment for frogs, entity responsible for fumigation, procedures when pesticide labels is not approved for the target species, etc). It appears that WA has the only law prohibiting the release of either a prohibited or unclassified frog, and the importer volunteered to fumigate the container to prevent such release. The container was eventually fumigated with ammonium phosphide and sent to WA. A WDFW biologist inspected the container when it arrived in Pasco to confirm that no organisms survived the extended trip time or fumigation, and to collect specimen samples. Only one dead frog was eventually discovered (species still to be determined).

On the positive side, this was a great invasion "test case", because it became clear we currently have no standard procedure for handling such things. (It also brings to mind a similar incident a year or so ago when a hull-fouled ship docked in Seattle and wanted to scrape its hull into Elliott Bay. No clear procedures were available then either.) The broad support of everyone involved is also encouraging, and indicates a high level of awareness of the issue, even if the resolution required more effort and cost to the importer than expected. But the situation has highlighted the need to develop procedures to deal rapidly with incoming containers in the future, regardless of whether anything live happens to be noted within them when they dock.

Pacific Coast Collaborative Agreement. A new agreement establishing the Pacific Coast Collaborative (PCC) between British Columbia, WA, CA, OR and AK will forge a new partnership and a forum for leadership, cooperative action, and a common voice on issues affecting the Pacific coast region. The agreement was announced June 30 by the B.C. Premier and governors of WA, OR, CA and AK. The PCC will meet at least once a year, rotating the chair and the meeting location annually. These meetings will be a forum for information sharing and create the opportunity for collaboration on clean energy; regional transportation; innovation, research and development; enhancing a sustainable regional economy, emergency management; and other topics. Agreements between B.C. and CA, WA and OR to take action on climate change in 2007 have laid the foundation for further collaboration between the jurisdictions. (*From a June 30 multi-state press release.*)

West Coast Governor's Agreement and Action Plan. The WA, OR and CA governors have completed a 113-page action plan that sets out specific actions and deadlines to protect the Pacific Ocean and coastline. The plan outlines seven priority actions to address threats, including oil spills, climate change, declining fisheries and invasive species, and it includes two major initiatives for invasive species: preventing the future introduction of marine invasive species and eradicating non-native *Spartina*. It also seeks money to map the ocean floor along the coast and study the potential to tap the ocean for energy. The three governors also sent a letter to Congress requesting \$5 million for the ocean-protection efforts. (From a Beth Casper article in the 7/31/08 Statesman Journal; thanks to Lisa A. DeBruyckere)

ID Invasive Rulemaking. Earlier this year, the ID Legislature passed the ID Invasive Species Act of 2008, giving the ID Department of Agriculture the authority to regulate both aquatic and terrestrial invasive species in the state. ISDA is in the process of developing rules that will include the determination of which species are invasive and procedures for testing, sampling, inspection, permitting, compliance verification and recordkeeping. The draft rules were released July 22. A second draft will be out this month, and a public hearing will be held October 14, in Sandpoint. (Thanks to Amy Ferriter, IDA)

The Northwest Power and Conservation Council Draft Program. The NWPCC invites your review and comment on its draft amendments to its Columbia River Basin Fish and Wildlife Program. The draft includes new language on non-native species. Comments due 10/30/08. For further information go to <http://www.nwcouncil.org/library/2008/2008-11.htm>

Eastern ID Aquatic Prevention Program Launched. The ID Departments of Agriculture (ISDA) and Parks and Recreation (IDPR), launched a new invasive species prevention program in eastern ID aimed at preventing Eurasian watermilfoil and other invasive aquatic species from being inadvertently introduced to Henry's Lake in Fremont County. The high mountain lake is considered one of the best trout fisheries in the west, attracting thousands of anglers annually. The lakewide prevention program promotes education, early detection, and a voluntary boat and trailer cleaning program. Self-contained portable wash stations are located at the Fremont County boat ramp and at Henry's Lake State Park. The free wash facilities will be operated by independent contractors, agency staff, and volunteers. (Thanks to Amy Ferriter, ISDA)

ID Invasives Brochure. The ID Invasive Species Council is working with the ID Nurserymen and Landscape Association to develop materials and provide "alternatives" to weedy horticultural plants. Phase 1 of this project includes a brochure entitled *Invasive Aquatic Plants and Animals – what to look for, what to avoid, and possible alternatives*. This brochure highlights prohibited aquatic species, including possible contaminants, and is being distributed at ID retail nursery locations. It will also be placed on the ISDA website when it is next updated. Phase II of this project is a booklet providing alternative horticultural selections for species that the industry and the state agree should be phased out of the trade in ID, although they are not necessarily currently regulated. (Thanks to Amy Ferriter < aferriter@idahoag.us >)

Garbage as a Pathway. Although USDA APHIS does not regulate solid waste *per se*, it regulates the importation and interstate movement of garbage under 7 CFR 330.400 and 9 CFR 94.5, in order to protect against the introduction and dissemination of plant and animal pests and diseases. After APHIS received several requests to transport baled municipal solid waste via barge from HA to mainland landfills in ID, WA and OR, APHIS developed and released a regional programmatic environmental assessment related to the interstate movement of municipal solid waste from HA to the U.S. mainland. (March 13, 2008, *Federal Register*) . The assessment contains APHIS' review and analysis of impacts associated with, and alternatives to, such movements. The ID Governor requested that ID landfills be removed from consideration unless issues related to staffing and unintentional bale rupture can be adequately addressed, but APHIS subsequently issued a Finding of No Significant Impact. In response, ID sent a follow-up letter to the APHIS Administrator, indicating that the state's concerns were not adequately addressed in the subject FONSI. (Thanks to Amy Ferriter)

WA Invasive Species Plan Development. On June 5, the Washington Invasive Species Council released *Invaders at the Gate*, the state's first Strategic Plan to combat invasive species. (See previous Nutshell.) Now the Council has scheduled two workdays this fall, one in Pasco and one in Tacoma, to meet with experts from around the state to write a three-year implementation plan. Attendance is by invitation only, but the plan can be downloaded from: [www.rco.wa.gov].

WA Ballast Water Rules. Recognizing that the US Coast Guard does not have the laws or resources to fully protect state waters, the WA legislature has supported a state ballast water management program under the WA Department of Fish and Wildlife (WDFW) since 2000. In 2002, a Ballast Water Work Group (BWWG) was established to provide advice to the Department. In March, 2007, the workgroup produced a report to the legislature, and the legislature passed E2SSB 5329, "*An Act relating to aquatic invasive species enforcement and control,*" that implemented most of the report's nine recommendations. The BWWG has now reached consensus on a set of comprehensive ballast water management rules (authorized under RCW 77.120) that would implement E2SSB 5923. The new rules are expected to replace those currently under WAC 220-77-090 (ballast water management and control - Reporting and sampling requirements) and WAC 220-77-095 (interim ballast water standard approval process). Some of the specific proposed changes to WAC 220-77-095 include: a new subsection from splitting former subsection (2) to delete treatment technology evaluation process; a new paragraph identifying a Department of Ecology role in approvals, and other changes. The recommendations will be forwarded to the State Fish & Wildlife Commission, and the next step in the rulemaking process will be a briefing tentatively scheduled for their October meeting with a public hearing scheduled for their November meeting. For additional information, contact Allen Pleus, <pleusaep@dfw.wa.gov>.

Success Story...Awareness Efforts Are Working! WDFW has dropped a proposal to release the Rio Grande turkey (*Meleagris gallopavo intermedia*), a native to the Great Plains states, into Western WA for hunting. WDFW dropped the proposal after holding two public meetings. They received 93 written comments, 87% of which opposed the idea. "Without

question the most common concern was associated with the release of a non-native wildlife species and the potential impact on native plants and animals," biologist Mike Davison wrote in his memo to wildlife officials in Olympia. Farmers living near the proposed release site also feared roaming turkeys would eat their crops or otherwise damage their small operations. Congratulations to WDFW for a good decision. It looks like the education efforts are working! *(Thanks to Kevin Aitkin, USFWS). (Excerpt from a Kie Relyea article in Bellingham Herald)*

Gardenwise Booklets Now On-line. You can now find the new 2008 versions of the publication Garden Wise for both western and eastern Washington in PDF format on the Noxious Weed Control Board website at [<http://www.nwcb.wa.gov/>]. Follow the education tab from the home page. *(Thanks to Danielle Warner, WNWCB)*

New Portland Invasive Plant Strategy. In November, 2005, Portland, OR, held a Town Hall meeting to discuss invasive species. The meeting established the need for a long-term invasive species strategy, and as a result, the City Council passed Resolution 36360, which required the city to draft a three year workplan and establish 10 year goals to reduce noxious weeds within the city. A copy of the resulting invasive plant strategy is now available online at [<http://www.portlandonline.com/bes/index.cfm?c=47815>] *(Thanks to Lisa DeBruyckere, OISC)*

New Report on Invasives and Salmonids. The Independent Scientific Advisory Board associated with the NW Power and Conservation Council just issued its report on "Non-Native Species Impacts on Native Salmonids in the Columbia River Basin". Download it at [<http://www.nwppc.org/library/isab/isab2008-4.htm>]. Of particular interest is the primary recommendation that "the NW Power and Conservation Council and Fish and Wildlife agencies in the Basin elevate the issue of non-native species effects to a priority equivalent to that of habitat loss and degradation, climate change, and human population growth and development". *(Thanks to Paul Heimowitz, USFWS.)*

OR Invasive Species Summit and Awareness Surveys. Nearly 200 people gathered at the Northwest Viticulture Center outside Salem, OR, in July for an Invasive Species Summit hosted by OR Governor Kulongoski and partially sponsored by the PSMFC. This was the first comprehensive meeting of scientists and officials from all agencies and institutions at all levels to develop proactive strategies against invasive species. Participants brainstormed ideas for mounting a defense against the species that will be compiled into a report for the governor.

According to new results of surveys released at the meeting, most Oregonians already are on board: A June 2008 poll of OR voters found that 77% feel the Legislature should take action to stop the spread of invasive species, and 73% favored a law to discourage spreading invasive species, require greater prevention, and educate the public. The OSU poll found that 79 percent of Oregonians know what an invasive species is, and 65 percent want to learn more about them. *(Paraphrased from a Michael Milstein Oregonian article, July 22, 2008.)* For more information on the survey, contact Sam Chan <samuel.chan@oregonstate.edu>. *[Ed Comment: More states should conduct some basic surveys like this like this!]*

Establishing some baseline data will allow an evaluation of public awareness efforts, and also help future public awareness efforts.]

New Economics Report. *The Economics of Invasive Species*, a new report prepared for the OR Invasive Species Council by Chris Cusack and Michael Harte of OSU, is now available. It contains a number of economic case studies from Oregon, and contains some estimated numbers of costs incurred in OR and the US that may be of interest:

Estimates of the annual cost of selected invasive species in OR include:

USA general estimate	Total direct and indirect use impacts	\$140 billion/year (adjusted to 2007 \$)
Noxious weeds (21 species in Oregon)	Production losses, fire damage, control costs	\$120 million/year
Zebra mussels (Oregon) (projected)	Projected control costs to 13 hydropower facilities	\$25 million/year
Sudden Oak Death (Oregon)	Nursery production losses if established Control costs of current outbreak	\$79-\$304 million/year \$7 million/year
Invasive Plants (Portland, Oregon)	Complete removal and revegetation with native species over five year period	\$10-31 million/year

Estimates for US costs include:

Species	Description of economic impact	Annual cost (adjusted to 2007 \$)
USA general estimate	Total direct, indirect use impacts	\$140 billion
Aquatic weeds (U.S.)	Losses, damages, control costs	\$120 million
Purple loosestrife (U.S.)	Control costs, forage losses	\$49 million
Weeds (U.S.)	Control costs, production losses	\$30 million
Introduced rats (U.S.)	Consumption of stored grains, other materials	\$21 million
Invasive fish species (U.S.)	Depletion of natural stocks, other effects	\$6 million
Fire ants (Texas)	Damage to livestock, public health	\$328 million
Zebra mussels (U.S.)	Damage to infrastructure, control costs	\$1,093 million
Noxious weeds (21 species in Oregon)	Production losses, fire damage, control costs	\$120 million
Zebra mussels (Oregon) (projected)	Projected control costs to 13 hydropower facilities	\$25 million
Sudden Oak Death (Oregon)	Nursery production losses if established Control cost of current outbreak	\$79-\$304 million \$7 million
Invasive Plants (Portland, Oregon)	Complete removal and native species revegetation over five year period	\$10-31 million

To obtain a copy of the report, contact Lisa DeBruyckere, at < <lisad@createstrat.com > .

Weed Management, Insect Management and Plant Disease Handbooks. Each year WSU, OSU, and the UI cooperate to produce three PNW pest management handbooks. There is one on weeds, one on insects, and one on plant diseases. The 2008 weed management handbook just became available at [<http://pnwpest.org/pnw/weeds>]. The 2008 insect management handbook has not yet been posted, but the 2007 edition is available at [<http://pnwpest.org/pnw/insects>] and the plant diseases is available at [<http://plant-disease.ippc.orst.edu/>] [*Ed. Note: Unfortunately although you can browse the contents online, you cannot download the books. However, if you are willing to pay, you can order hardcopies. They are oriented more toward commercial users but as a Master Gardener, I can testify that I have personally found them very helpful!*]

Activity Elsewhere

Possible Round Goby Control. Since 1990, the round goby (*Neogobius melanostomus*), a bottom-dwelling invader, has been spreading throughout the Great Lakes basin and into the interior of North America. The round goby competes with native fish for spawning and foraging habitat, and if left unchecked, may have a big impact on the Great Lakes recreational and commercial fishing industry. As it continues to spread down the Illinois Waterway connecting the Great Lakes to the Mississippi River basin, consequences are likely on a larger scale. USGS researchers in La Crosse, WI, have discovered that bottom-release formulations of Bayluscide and Antimycin, two fish pesticides, are effective in controlling the round goby when released near the bottom of a river or lake, particularly where dissolved oxygen is low. Native species are unharmed. The bottom-release formulations may have some application for the selective removal of round gobies, and may be one of the few tools presently available to fishery managers to help limit the range expansion of this invasive fish. Scientists also evaluated the effect of dissolved oxygen concentrations on toxicity to determine if a modification of the current design of the Illinois Waterway could be an effective tool in the management and control of the gobies. Round goby can withstand low dissolved oxygen concentrations, and during lab tests gobies showed increased sensitivity to bottom-release fish pesticides at lower oxygen levels. Some portions of the Illinois Waterway have low oxygen levels and are mechanically aerated, providing an option to manage a segment of the waterway as an anoxic barrier. Maintaining a low dissolved oxygen zone that could be treated with selective fish pesticides may be an option to control congregations of the bottom-dwelling round goby. The full article, *Effectiveness of Piscicides for Controlling Round Gobies (Neogobius melanostomus)* is available from the author Theresa Schreier, at <tschreier@usgs.gov>. (*Excerpted from a September 2 USGS press release*)

Mock Rapid Response Exercise. On July 29 - 31, 2008, an Aquatic Invasive Species Rapid Response Mock Exercise was held in Erie, PA to test the responsiveness and effectiveness of the Great Lakes Regional Collaboration Aquatic Invasive Species Rapid Response. The Great Lakes Regional Collaboration, GLNPO, and PA Department of Environmental Protection tested their response readiness by conducting both a table-top and an on-the-water

exercise in and around the Presque Isle, PA area. The exercise included participation from a number of local, state, and federal agency officials, and a short media event was planned to increase awareness on preventing the introduction of invasive species in the Great Lakes basin (For more info, contact Bill Bolen (312-353-6316) or James Schardt (312-353-5085). *(Thanks to Vacys Saulys, EPA R5)*

US National Invasive Species Management Plan. At long last, on August 8, the National Invasive Species Management Plan was finally adopted. The plan was developed collaboratively by 13 federal departments and agencies and their partners. The 2008-2012 Plan replaces the 2001 plan, and is intended to be the primary focus for federal efforts to prevent and control invasive species over the next five years. Federal expenditures on invasive species are estimated to exceed \$1.3 billion annually. Download a copy at [<http://www.invasivespeciesinfo.gov/council/mp2008.pdf>] (DOI Press release 8/8/08).

New AZ State Invasive Species Management Plan. Gov. Janet Napolitano has just approved a new statewide invasive species management plan that addresses ways to prevent or manage the proliferation of invasive pests. The plan was developed by the AZ Invasive Species Advisory Council (AISAC), a multi-partner organization created by an executive order issued by the governor in 2007. To download a copy, go to [<http://www.governor.state.az.us/AIS/Documents/AISMP2008.pdf>].

New "Don't Move Firewood" Website. Moving firewood is a leading cause of the spread of invasive forest pests inside the US. But it is also one of the most preventable causes. To help spread the word on this important issue, several organizations have created the Don't Move Firewood website. Several short amusing videos help send the message that the emerald ash borer is spread by transporting infected firewood. Visit the site, at [<http://www.dontmovefirewood.org>]. It has fun videos, a blog, a firewood calculator, and even a MySpace page. Check out a video, and learn how to help prevent the loss of our native trees. *(Thanks to Leigh Greenwood, UC Davis, via Mandy Tu, TNC.)*

EPA Ballast Water Permit Appeal Denied. In late July, the 9th Circuit Court judge finally issued a long-awaited ruling, denying EPA's appeal of the ruling regarding the National Pollutant Discharge Elimination System (NPDES) permitting of vessel discharges under the Clean Water Act (CWA). The case has been in the courts for several years. Plaintiffs challenged a 1973 EPA regulation at 40 C.F.R. § 122.3(a), that exempted discharges incidental to the normal operation of a vessel (including ballast water), from the permitting under 301(a) and 402 of the CWA. The district court agreed, concluding that EPA exceeded its authority in exempting these discharges, and it vacated §122.3(a), effective September 30, 2008. EPA appealed. This denial of the appeal finally concludes this case. However, on August 28, at the request of EPA, the US District Court modified the vacatur deadline from September 30 to December 19, 2008.

Moratorium Bill Signed. On July 31, the White House announced that President Bush has signed bill S 3298, which provides a two year moratorium from (NPDES) permit requirement for specified vessels, and directs EPA to study the impacts of discharges incidental to the normal operation of vessels. This moratorium applies only to recreational water craft less

than 79 feet and fishing vessels. The NPDES permit for vessels greater than 79 feet is still being implemented. (Thanks to Stephen Phillips, PSMFC)

New Articles on Climate Change and Invasives. The June issue of Conservation Biology includes a special section on climate change and invasive species. Articles include: *Assessing the Effects of Climate Change on Aquatic Invasive Species*; *Five Potential Consequences of Climate Change for Invasive Species*; *Managing Invasive Aquatic Plants in a Changing System: Strategic Consideration of Ecosystem Services*; *Managing Aquatic Species of Conservation Concern in the Face of Climate Change and Invasive Species*; *An Assessment of Invasion Risk from Assisted Migration*; *Capacity of Management Plans for Aquatic Invasive Species to Integrate Climate Change*; *Integrated Monitoring and Information Systems for Managing Aquatic Invasive Species in a Changing Climate*; and *Current Practices and Future Opportunities for Policy on Climate Change and Invasive Species*. Genesis for these articles was an EPA forum in 2006. There is no link to the articles; you have to obtain the Journal

Biosecurity Seminar. On August 23, 2008, the OH Department of Agriculture held an Aquaculture Biosecurity Seminar that covered issues for a wide-range of aquaculture operations issues, including large open pond, nursery and hatchery operations; indoor intensive systems; and aquatic nuisance species. Topics covered included Farm Biosecurity Planning, Species Biosecurity, Best Management Practices and Biosecurity, and Aquatic Nuisance Species and Pathogens of Concern. It also provided updates on the Viral Hemorrhagic Septicemia virus, the OH surveillance and monitoring program, and Cooperative Agreements between state and Federal agencies. For more information, contact Leah Dorman <dorman@agri.ohio.gov>.

New HA Cargo Tax. Alien species are a \$400 million problem in HI. A new state law, expected to collect about \$6 million from additional taxes on cargo, will help the state prevent new species entries. The new invasive species bill that became law on August 1 requires a 50 cent tax on every thousand pounds of goods shipped via air cargo. New rules and regulations still need to be developed. (Paraphrased from Leland Kim, KHNL-TV July 24, 2008.)

Didymo in WV. *Didymosphenia geminata*, unaffectionately referred to as “rock snot” algae, has now been discovered in two more WV trout streams. Growing in abundant thick mats in cooler streams, it can threaten the ecological balance in a stream. Once present, it is almost impossible to eradicate, so the best way to deal with the problem is to prevent the spread. Like mudsnails and many other aquatic plants, it is spread largely by fishing tackle and gear. The WV DNR advises fishermen to thoroughly inspect and clean all gear after every fishing trip. Because felt-soled waders or wading boots are particularly likely to carry the Didymo spores, soaking the boots of waders in a saltwater solution or mild bleach is recommended to kill the spores that spread the algae. [Ed. Comment: This alga is also in the Pacific Northwest; anglers should be aware of the possibility of spore transmission, even when algae does not appear present, and clean their boots and gear accordingly.]

New Great Lakes Economic Study. A new University of Notre Dame study indicates foreign species introduced to the Great Lakes in ballast water cost the eight U.S. states on the Great

Lakes at least \$200 million a year. Sport fishing has taken the biggest hit: (\$123.5 million in 2006), and participation is 11 to 35 percent lower on the lakes than it would have been if fish populations hadn't dropped due to invasive species. Other impacted sectors include wildlife viewing (\$47.6 million loss); municipal raw water use, power plants and industry (\$27 million); and commercial fishing (\$2.1 million). Eighty four of the 185 exotic animals and plants established in the lakes have arrived since the 1959 opening of the St. Lawrence Seaway, which provided a navigational link between the lakes and the Atlantic. Fifty-seven species likely arrived via ballast water, including the round goby, the spiny water flea, Eurasian ruffe, and the well-known zebra and quagga mussels. (*Paraphrased from an AP article by John Flesher, July 17.*)

Upcoming Conferences, Symposia and Meetings

International Conference on Aquatic Invasive Species(ICAIS). The 16th international conference will be held on **April 19-23, 2009**, in Montreal, Quebec, Canada. Early registration is available at a reduced rate (save \$50) until **February 1, 2009**. The conference will include a forum on bullfrog control and eradication. All participants will need to register for the conference via the website at [<http://www.icaais.org/>]. For more info on the bullfrog seminar, contact Stan Orchard at <bullfrogcontrol@shaw.ca>.

OWEB Watersheds and Climate Change Conference. The major focus of the 2008 OR Watershed Enhancement Board Conference on **November 5-7**, in Eugene, OR, will be the effects of climate change on watersheds. The event also will feature concentrated workshop series on invasive species, organization management, community engagement and restoration project management. For more information, call 503-986-0178 or visit: [www.oregon.gov/OWEB].

Natural Areas Conference. This year's national Natural Areas Conference will be held on October 14-17, in Nashville, TN. It will focus on ecological management, with an emphasis on invasive exotic species issues, and consists of four full days of symposia, workshops, field trips and plenary sessions. For more information and registration, go to [http://www.naturalarea.org/2008ConferenceAnnouncement.asp].

Invasive Species Workshop. Registration is now open for the *Workshop on Invasive Species Prevention and Management: Spotlight on Salty Species*. The free three day workshop will be held **October 7-9th, 2008** in Silver Beach, VA. The workshop will highlight coastal and estuarine habitats, but the strategies and approaches used will be applicable to all sites and habitat types. Registration, travel and other meeting information are now posted at: [<http://tncweeds.ucdavis.edu/networks.html>]. A training session to learn how to use TNC's Weeds Information Management System (WIMS), will also be provided immediately following the workshop for any interested persons. (WIMS is an Access database application that tracks weed locations, patch size, and status and any management treatments, and can also be used for mapping in the field. Go to [<http://tncweeds.ucdavis.edu/wims.html>] for

more information on WIMS.) For more information on the workshop, contact Mandy Tu <imtu@tnc.org>.

Western Regional Panel. The 2008 meeting of the WRP will be held **September 9-11** in Fort Collins, CO. In addition to usual business and grant reviews, there will be a field trip to see a brook trout removal project and visit the USGS lab. For more info, contact Tina Proctor, <bettina_proctor@fws.gov>.

Colorado River Team, 100th Meridian Initiative. The next meeting of the Colorado River Team is scheduled for October 7, 2008 from 8:30 - 4:30 at the Utah Division of Wildlife Resources located at 1594 West North Temple, Salt Lake City, Utah. For further information contact Tina Proctor <bettina_proctor@fws.gov>.

Columbia River Basin Team, 100th Meridian Initiative. Pacific States Marine Fisheries Commission (PSMFC) hosted the last quarterly interagency workgroup meeting June 11, in Portland, OR. Minutes for previous 100th Meridian Initiative meetings, as well as additional information on the status of the western zebra mussel invasion, are available on the 100th Meridian website at [<http://www.100thmeridian.org>]. Find a very comprehensive bibliography on zebra mussels on this site as well! The next meeting of the CRB Team is scheduled for **October 15**. For more info contact <Stephen_phillips@psmfc.org >.

Minor correction to Nutshell #20 . Re the NAS database update: USFWS funding for spatially referencing data was provided to USGS (not WDFW).

Aquatic Invasive Species News In A Nutshell: Published by the Pacific States Marine Fisheries Commission, 205 SE Spokane Street, Suite 100, Portland, Oregon 97202 phone (503) 595-3100 fax (503) 595-3232. <http://www.psmfc.org/>. Executive Editor: Joan Cabreza (Consultant to the PSMFC), email- Joan_cabreza@psmfc.org. Managing Editor Stephen Phillips, ANS Program Manager, Pacific States Marine Fisheries Commission, email – Stephen_phillips@psmfc.org.