



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 10

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Informational Memo

Subject: Invasive News in a Nutshell #19:
Covering December 2007-March, 2008

From: Joan Cabreza
Regional Invasive Species Coordinator

To: R10 ETPA Management Team
ecc: Internal EPA mail group & interested outside parties

Regretfully, this will be the last Nutshell newsletter, as I am retiring as of March 28. I am pleased this newsletter has apparently been useful in fostering communication and exchange of invasive species knowledge. Since it has been a personal initiative, and not an official EPA publication, it stops when I do! But I wish you all lots of fun and games as you continue the invasives fight, and look forward to the time when invasive species routinely receive the funding and concern we all know they deserve!

EPA Activities

EPA Ballast Water Lawsuit (update). EPA filed a notice of appeal with the Ninth Circuit Court on November 16, 2006, and provided oral arguments to the court on August 14, 2007. As of March 5, there has been no response yet. *Documents related to the lawsuit are available at [http://www.epa.gov/owow/invasive_species/ballast_water.html]. For more information, contact Ruby Cooper (cooper.ruby@epa.gov).*

Ballast Water NPDES Permits (Update). EPA is moving ahead with permits and the next step will be to send a draft permits package to OMB. The goal is to issue draft permits for comment in April.

Climate Change and Aquatic Invasive Species Report: The final EPA report *Effects of Climate Change on Aquatic Invasive Species and Implications for Management and Research* will be posted on the EPA website sometime this month. It incorporates the results from national workshops held in Washington DC in June and October, 2006. Access it at [<http://cfpub.epa.gov/ncea/cfm/recordisplay.cfm?deid=180043#Download>] (Thanks to Britta Bierwagen, EPA HQ.)

Estimating Economic Impacts of European Green Crab. The EPA development of a bioeconomic tool for estimating economic impacts of aquatic invasive species, in this case green crab, is now being put into final form and should be available by the end of March. The tool estimates both market and non-market economic impacts, and the case study shows different impacts on U.S. east and west coasts. EPA offices are now

exploring whether/how the tool could be used to estimate economic impacts of other aquatic invasives. *(Thanks to Marilyn Katz, EPA HQ)*

Climate Change and Invasive Species Grants (update). EPA and USDA have finally selected grantees from the 109 applicants for the "Ecological Impacts from the Interaction of Climate Change, Land Use Change, and Invasive Species: A Joint Research Solicitation - EPA, USDA." EPA awarded four projects, and USDA awarded two. Projects selected include:

- Predicting Relative Risk of Invasion by Salt cedar and Mud Snails in River Networks Under Different Scenarios of Climate Change and Dam Operations in the Western United States (\$599,748 to Leroy Poff, CO State U)
 - Integrating Future Climate Change and Riparian Land-use to Forecast the Effects of Stream Warming on Species Invasions and their Impacts on Native Salmonids (\$588,257 to Julian Olden, U. WA)
 - Understanding the Role of Climate Change and Land use Modifications in Facilitating Pathogen Invasions and Declines of Ectotherms (\$599,353 to Jason Rohr, U of South FL)
 - Beach Grass Invasions and Coastal Flood Protection: Forecasting the Effects of Climate Change on Coastal Vulnerability (\$599, 980 to Eric Seabloom, OR State U.)
 - Elevated Temperature and Land use Flood Frequency Alteration Effects on Rates of Invasive and Native Species Interactions in Freshwater Floodplain Wetlands (\$598,107 to Curtis Richardson, Duke U.)
 - Interaction of Climate Change, Land use and Invasive Species: Tests of Contrasting Management Scenarios for Coastal Communities (\$595,852 to Robert Whitlatch, U. CN)
- (Thanks to Anne Sergeant, EPA HQ)*

Mid-Columbia Toxics Project. Mussel veliger sampling and exotic aquatic plant observations are being incorporated into a new Columbia River toxics survey. The Columbia River Basin was identified as one of seven Great Water Bodies in EPA's 2006-2011 Strategic Plan. There is limited toxics data on the mid-Columbia River, so a comprehensive sampling in this section of the river is needed to evaluate problems. This project builds on previous Environmental Monitoring and Assessment Program (EMAP) studies conducted in the Lower Columbia River, from Bonneville Dam to the mouth. Approximately 50 sites will be sampled between Bonneville and Grand Coulee dams over two summers. The data collected focuses on both ecological and human health, and includes fish tissue, water chemistry, and basic physical habitat data. Contact Gretchen Hayslip (hayslip.gretchen@epa.gov) for more information on the project. *[Ed. note: it is exciting to see that invasives have become sufficiently mainstreamed that they are rather routinely being included in a variety of new monitoring projects!]*

News From The Pacific Northwest

PNW Nutria Report. The *Report on Nutria Management and research in the Pacific Northwest*, by Trevor Sheffels and Mark Sytsma, is now completed. Based on proceedings from a regional nutria workshop held last fall, the report is available on the PSU website at [<http://www.clr.pdx.edu/publications/>] *(Thanks to Trevor Sheffels, CLR)*

Green Crab Meeting. The Pacific States Marine Fisheries Commission and Fisheries and Oceans, Canada hosted a meeting on March 11 -12 in Vancouver, B.C., to discuss West Coast green crab research, monitoring and control. Researchers and managers in Wales, Nova Scotia and Newfoundland, presented information to over two dozen biologists attending from CA, OR, WA, MD, AK, 3 Canadian provinces, and Wales. The meeting also included a number of interesting discussions and a field trip. Green crabs have spread on the west coast of Vancouver Island, and the DFO is currently conducting a trapping and tagging experiment in Pipe Stem Inlet (Barkley Sound) in an effort to learn more about their life cycle and the population density. Every embayment on the west side of the island appears to be infested, and there is concern that if they spread further north and around the island, they may be able to enter the U.S. (Puget Sound) via the Strait of Georgia. There are also concerns that the crabs will invade AK. The crabs potentially present a significant threat to shellfish culture. Presentations from the meeting will be posted on the Pacific States website [www.aquaticnuisance.org] in the near future. *For more information, contact Stephen Phillips (Stephen_phillips@psmfc.org).*

ID ANS Implementation Plan. In March, the ID ANS taskforce developed an ANS implementation plan, and it is now beginning discussion of the next steps. I understand there has also been some discussion concerning the possible formation of a regional, multi-state aquatic weed coordinating group. This is in preliminary stages, but sounds like a good idea! *For more information on either topic, contact Tom Woolf, at ID Department of Agriculture, (twoolf@agri.idaho.gov) .*

New Zealand Mudsail Workshop. The second workshop on hatchery control of NZ mudsnails will be held in Hagerman, ID, on May 13-14. Activities will include updates from researchers on hatchery control methods, demonstration of a hydrocyclonic separation system at the hatchery, and a group discussion of future studies. *For more information, contact Christine Moffitt (cmoffitt@uidaho.edu) or Paul Heimowitz, (paul_heimowitz@fws.gov).*

WA Ballast Water Rule. Ballast water rulemaking is moving forward, and the state hopes to have a draft rule out within a month or so. The proposed standards are expected to be stricter than the IMO standards. The next meeting of the Ballast water Workgroup is April 2. *Contact Alan Pleus (pleusaep@dfw.wa.gov) for more information on the workgroup).*

WA Legislation. Fourteen bills with implications for invasive species management have been proposed in the 2007 legislative session. Two have already passed: HB3186, authorizing creation of beach management districts, and SB6532, addressing management of aquatic lands for public marinas.

PSU Outreach Database is Now Ready. The Portland State University ANS Education and Outreach database is cataloging all of the available educational materials on invasive species. This will help people avoid having to “reinvent the wheel”, and it should provide some great new ideas for people who are considering developing publications as well. The database is still not complete, but students will be adding additional materials. If

anyone has materials to share, PSU would be glad to add them in! Check out the tool at [<http://www.clr.pdx.edu/projects/edoutreach/>] (*Thanks to Mark Sytsma, PSU*)

AK Hull Fouling Study. UW is starting a 2008 project for the Prince William Sound Citizens Advisory Committee. The project will sample various ship types (cruise ships, barges, tankers, ferries, fishing boats), to identify potential risk sources, and to categorize species now found in Prince William Sound. *For more information, contact Russ Herwig (herwig@u.washington.edu).*

WA Algal Grants Awarded. In 2007, the WA Ecology algae-control program began paying for laboratory tests to help local health officials identify toxic algae blooms (see previous Nutshell news for program details). Ecology's program has now awarded \$170,000 in grants:

-\$28,500 to Snohomish County, to work with residents in Cassidy, Ketchum and Loma lakes in to reduce nutrients that fuel algae growth, and to create an early detection system for toxic blue-green algae blooms;

-\$47,993 to Tacoma-Pierce County Health Department, to improve toxic algae bloom monitoring and communication in Pierce County lakes

- \$50,000 to Lakewood, to test the effectiveness of granulated CaOH in reducing phosphorus and blue-green algae in Lake Steilacoom; and

- \$43,507 to Jefferson County Public Health, to assess the ecology of Gibbs, Leland and Anderson lakes.

WA Aquatic Weed Management Grants Awarded. This year's awards include:

- \$38,194 and \$27,300 to WDFW, to control/prevent Eurasian water milfoil, purple loosestrife and yellow flag iris in Fio Rito Lakes and Mattoon Lake;

- \$24,000 to Spokane County Conservation District, to develop a weed management plan for non-native plants in Eloika Lake;

-\$10,800 to Pacific County Noxious Weed Control Board, to control milfoil and Brazilian elodea in Loomis Lake;

- \$9,899 to UW, to verify that current maximum application rates of the aquatic herbicide diquat (Reward™) do not harm juvenile rainbow trout;

- \$21,550 to Ilwaco to control milfoil and Brazilian elodea in Black Lake; and

- \$68,257 to the WA Department of General Administration, to test bottom barriers and milfoil weevil control methods in a pond adjacent to Capitol Lake. (*From 12/11/07 Ecology press release*)

USFWS Outreach Project (Update). The workgroup developing invasive species education modules expects a first draft of Module 1 this month. Modules will assist speakers with invasive species presentations. Module 1 is basic and discusses invasives in general, with a “why should I care” focus and a core message of biodiversity loss. Module 2 is a species-based module (featuring knotweed), that will be able to be used as a template for other species modules. *For more information, contact Doug Zimmer (Douglas_zimmer@fws.gov).*

WA Invasive Species Council (Update). The draft “Washington Invasive Species Council Strategic Plan” is available for public review and input at the council’s web-site. The plan contains strategies and action steps to address coordination of public and private efforts, access to invasive species information, prevention, early detection and rapid response, and regulation and restoration of key areas. It was developed through a collaborative process involving a wide variety of individuals and organizations. *Please note that the final version of the strategic plan will include an executive summary, definition of terms, graphics, side bars, case studies, and an appendix.* Public comments are solicited through **April 3**, and a final report will be submitted to the legislature on June 6. The plan, as well as meeting minutes, council members, and other information about the Council, is available on the new website at: [http://www.rco.wa.gov/invasive_species].

Award. The OR Wildlife Society awarded the Outstanding Service Award to Dr. Mark Sytsma and Arick Rouhe of PSU, for development of the OR Feral Swine Action Plan, which was adopted by the state Invasive Species Council in 2007. The award is granted to recognize outstanding contributions in wildlife management in the past year. *(From Lisa DeBruyckere, OISC Coordinator)*

WA Noxious Weed Permit. The reissued Aquatic Noxious Weed Permit is now final. Visit [http://www.ecy.wa.gov/programs/wq/pesticides/final_pesticide_permits/noxious/noxious_index.html] to see the final permit. *For more information, contact Kelly McLain (kelm461@ecy.wa.gov).*

Columbia River Carp Risk Assessment (Update). USFWS has completed a risk evaluation of Asian carp in the Columbia River Basin. An electronic version is available at the national Asian carp website [<http://AsianCarp.org/risks.asp>] *(Thanks to Paul Heimowitz, USFWS.)*

ANS Guide to the Columbia Basin (Update). The OR Sea Grant field guide, *On the Lookout for Aquatic Invaders; an Identification Guide for the Pacific Northwest* goes to the printer in April! This 70+ page booklet describes 30 of the more common freshwater, riparian and marine plants and animals found in the Columbia Basin. Each species is accompanied by a description, great pictures, and a discussion of the background, distribution, spread mechanism, impacts, and habitat. The guide’s purpose is to help community groups increase their understanding of aquatic invasive species and to stimulate monitoring efforts for species of most concern in their watersheds. The guide will be spiral bound, on waterproof paper, to facilitate use in the field. *For more information, contact Sam Chan (samuel.chan@oregonstate.edu).*

WA Puget Sound Tunicate Management Plan. The Puget Sound Partnership has entered into a \$300,000 contract with WDFW for tunicate management. They will survey all of Puget Sound, develop a tunicate management plan, and research eradication methods. WDFW has developed baseline survey protocols and used commercial and agency divers and drop cameras to survey at least 25 marinas to date. A draft management plan has also been completed. While it is not quite ready to be on the web yet, WDFW will gladly furnish a copy to anyone who wants it. *For more info, contact Pam Meacham, (meachpmm@dfw.wa.gov).*

AK Invasive Species Working Group (AISWG) Activity. In November, AISWG hosted an Invasive Species Conference in Fairbanks. Four national speakers added perspective on invasive species issues. The next AISWG meeting will be in Anchorage in May, 2008. This fall, AISWG will hold another joint meeting with the AK Committee on Noxious and Invasive Plants Management (CNIPM). Goals for 2008 include focusing on citizen networks, early detection /eradication, monthly teleconferences, creating an online 'one stop shopping' location for invasive species information, and continuing to seek support and participation from the State to continue the workgroup. *(Thanks to Michelle Hebert, UAF.)*

The 2008 OR 100 Most Dangerous Invaders List. The OR Invasive Species Council adopted the state's 2008 Most Dangerous Invaders list at the February 8, 2008, meeting. *See the list at [http://oregon.gov/OISC/most_dangerous.shtml].*

OR Proposed Amendment to the Noxious Weed Quarantine. OR Dept. of Agriculture proposes to add parrot feather (*Myriophyllum aquaticum*) and perennial peavine (*Lathyrus latifolius*), to the list of prohibited plants in ORS 603-052-1200. Restrictions would also be modified for English ivy (*Hedera helix/ hibernica*), butterflybush (*Buddleia davidii/ varabilia*), and Scot's broom (*Cytisus scoparius*). These changes would bring the noxious weed quarantine in line with the State Noxious Weed List maintained by the State Weed Board. The comment period closed January 15.

Regional HACCP Plan Review Network. The USFWS seeks feedback on a strategy to develop a regional review network for ANS Hazard Analysis and Critical Control Point (HACCP) plans. HACCP plans have been promoted as a tool for reducing invasives spread, particularly when introduction pathways are associated with natural resource management such as fish stocking or watershed surveys. The USFWS maintains a website [www.haccp-nrm.org] to support and post HACCP plans, but there is no large-scale system that provides external peer review, and in some cases, plans with significant errors and misapplied HACCP principles are being shared as models. Plans generated each year should be reviewed before finalization, and the number of new plans is increasing due to new initiatives and requirements for HACCP plans. USFWS wants to establish an informal regional "pool" of individuals with HACCP expertise that can help provide external HACCP plan evaluation. *Agencies or individuals interested in getting involved should contact Paul Heimowitz (paul_heimowitz@fws.gov).*

Watercraft Inspection Training (again). In April 2008, the Pacific States Marine Fisheries Commission (PSMFC) will provide a new round of training on inspecting and

decontaminating watercraft and equipment suspected of carrying zebra and quagga mussels. Level 1 training is directed at state, federal and local natural resource and boating agency personnel, water users of all types, law makers and border/access area inspection personnel. Level 2 training is more intensive and designed for professionals that expect to be actively involved in the inspection and decontamination of watercraft, and those who wish to become trainers or first responders within their state or work group. Graduates of this training will be certified as incident responders and Level One trainers by the 100th Meridian Initiative, and may be called upon to do either in their work area in the future. *For more information on watercraft trainings, contact Stephen Phillips (Stephen_phillips@psmfc.org). (Summarized from 3/8 NISC weekly report).*

ID Adds Quaggas to the Deleterious List. The Idaho Department of Agriculture has added the Quagga mussel (*Dreissena bugensis*) to the state's Deleterious Animal List. Both quagga and zebra mussels now are illegal to import or possess in ID. In addition to the official state listing, a multi-agency effort to monitor ID waters for quagga and zebra mussel began last summer and will continue. If introduced, these mussels could impact Idaho's water bodies and recreation, irrigated agriculture, power generation, and water suppliers. *(From a 3/12/08 press release. Thanks to David Britton.)*

Western Regional Panel (WRP). Minutes from the annual WRP meeting in Honolulu are now available on the Western Regional Panel website. They include links to all the powerpoint presentations from the meeting as well. Go to: [<http://www.fws.gov/answest/meetingminutes.htm>]. *(Thanks to Bettina Proctor, USFWS)*

Elsewhere Around The US...

National Invasive Species Legislation. Once again, we can possibly be cautiously optimistic that legislation may move forward this year. (But where have we heard that before?) Two bills seem to hold the most promise: S1578, the Ballast Water Management Act of 2007, and HR2830, the USCG reauthorization bill. The committee report on S1578 was just released, so the bill could move to the floor soon. HR2830 is similar to S1578, which still has some difficulties in it, may go to the floor in April. *(Thanks to John Lishman, EPA HQ)*

FICMNEW Update. The Federal Interagency Committee for the Management of Noxious & Exotic Weeds held a joint week-long meeting with the National Invasive Weeds Awareness Week (NIWAW) group. The purpose of the NIWAW meeting was to bring people and groups from across the country together to focus national attention on the severe impacts caused by invasive weeds. In addition, the meeting provided an opportunity for local, State, and private land managers to meet with their Federal Agency counterparts and members of Congress who are involved with weed management issues. The 16 FICMNEW member agencies are also re-examining their FICMNEW Charter to see if any updates are needed. If major changes are recommended for the Charter, the member Agencies may also consider updating the Memorandum of Understanding that formed the original FICMNEW in 1995. *(Thanks to Russ Jones, EPA HQ)*

New USFWS Policy. The U.S. Fish and Wildlife Service Pacific Region has just adopted a policy for those receiving fish passage funding. Starting this fiscal year, project funds will not be released until a HACCP plan has been developed to address any potential spread of aquatic invasive species by the project. Extending this non-voluntary approach to other regional USFWS funding or regulatory mechanisms is also being considered. *(Thanks to Paul Heimowitz, USFWS)*

National Invasive Species Management Plan. The first revision of the 2001 National Management Plan, as mandated by EO 13112, is nearly complete. The Plan addresses prevention, early detection and rapid response, control, restoration and organizational collaboration, and will provide direction, overall strategy, and objectives for Federal efforts for fiscal years 2008 – 2012. Although the comment period ended March 12, you can access the document at [<http://www.invasivespeciesinfo.gov>].

UT Zebra Mussel Legislation. The Utah Aquatic Invasive Species Interdiction Act recently passed the UT legislature in a unanimous vote. The act prohibits the possession, release, or transportation of a *Dreissena* mussel; prohibits the transporting of a conveyance or equipment that has been in an infested water without decontamination; requires a person who violates the chapter to reimburse the state's costs; establishes criminal penalties; authorizes the Division of Wildlife Resources to: stop, detain, inspect, impound, or quarantine a vehicles or vessels; conduct an administrative checkpoint; order decontamination; and inspect, restrict access to, or close a water body, facility, or water supply system. The act is available at [<http://le.utah.gov/~2008/bills/sbillint/sb0238s01.pdf>]. *(Thanks to Larry Dalton)*

MD Oyster Advisory Commission (OAC) Report. On January 16, MD's Oyster Advisory Commission submitted its 2007 Interim Report on the Chesapeake Bay Oyster Management Program. The report contains findings on the status of MD's oyster population and oyster bar habitat, and also provides potential future direction for sanctuaries, oyster fisheries, managed reserves, economics, and enforcement of closed oyster areas. The findings include:

- A successful self-sustaining, ecologically strategic, and enforced large oyster sanctuary program is essential to restoring the ecological function of oysters in Chesapeake Bay.
- More restrictive harvest measures, including a moratorium, alone will not restore oysters and their ecological benefits, without a significant, sustained commitment of resources for habitat restoration and addressing water-quality issues.
- It is possible for the State to provide incentives and resources to facilitate the transition of MD's traditional state-private and largely "put-and-take" oyster fishery to a privatized industry. *Contact: Peyton Robertson, 410-267-5652. (Thanks to Brian Melzian, EPA).*

Environmentalists Sue Over Rules Protecting Striped Bass. In January, environmentalists filed suit against the CA Fish and Game Commission and Department of Fish and Game, claiming they violated federal law by protecting a nonnative striped bass, which preys upon threatened fish populations. Environmentalists say state laws protecting the bass go against the federal Endangered Species Act, and have helped to crash the population of the threatened delta smelt. Striped bass feed on Sacramento River chinook salmon, Central Valley chinook salmon and steelhead, and delta smelt. *(AP, January 29)*

(But even bass don't *always* win: Concurrently, the Sam Rayburn Reservoir in Texas, famous for its bass fishing, was confirmed to be infested with giant salvinia, an invasive aquatic fern considered to be one of the world's most invasive aquatic plants. If this is not eradicated, bass will likely be the losers in this reservoir. (*Jasper Newsboy, January 28*))

Fine for Illegally Transported Crayfish. In late January, Colorado Fisheries, Inc., a company selling fish to high-end ranches and fishing lodges, was fined \$100,000 for illegally transporting rusty crayfish into WY. The crayfish were imported into ponds at three private WY ranches as a forage base for fish. In May, 2006, a ranch owner contacted Game and Fish for a permit to move some crayfish from one pond to another, and fish biologists requested the identification of the crayfish prior to any movement between ponds. Upon investigation, they found it to be the prohibited rusty crayfish, a species not previously found in WY. The ranch was determined to be an unknowing victim of the illegally stocked crayfish. Biologists also discovered crayfish had entered a tributary of the North Platte River, and took immediate eradication efforts. Restitution will pay for expenses incurred to eradicate the illegal crayfish. (*WDFG press release, January 30, Thanks to Robin Kepple (Robin.Kepple@wgf.state.wy.us)*).

Chesapeake Bay Report. The Environmental Law Institute has published "Halting the Invasion in the Chesapeake Bay: Preventing Aquatic Invasive Species Introduction through Regional Cooperation". This report by Read Porter examines coordination on aquatic invasive species (AIS) prevention among the Chesapeake Bay states. It focuses on prevention-related legal authorities in VI, MD, and PA in particular, and recommends actions to improve regional cooperation both within the existing regulatory frameworks and through potential amendments to state laws and regulations. The report also examines the primary pathways leading to the introduction of invasive species in the Chesapeake Bay and describes regulatory mechanisms used by Bay states to combat AIS introduction. Porter concludes AIS prevention in the Chesapeake Bay could be improved by amending existing AIS prevention laws and regulations and enhancing interagency coordination on a regional level. The report also provides recommendations for states and regional bodies. The report is available at [http://www2.eli.org/research/landbio_pubs.htm#invasive]. (*From ELI Press Release*)

NY: New Mitten Crab Found. On October 29, 2007, a juvenile female mitten crab was found in Cold Spring, NY. Eleven mitten crabs have now been confirmed in the Mid-Atlantic region of the U.S from 2005-2007. In Chesapeake Bay, one mitten crab was caught in both 2005 and 2006, and two crabs were caught in 2007. Four crabs from Delaware Bay and two from the Hudson River were caught in 2007. With the most recent mitten crab from the Hudson River, one female has now been found in each of the three areas. Additional mitten crabs were reportedly captured in Chesapeake and Delaware Bay. This is the first appearance of a juvenile mitten crab, but a self sustaining population in the Mid- Atlantic region cannot yet be confirmed; continued monitoring is needed to better understand the population. To join the mitten crab network, or to see the newsletters, contact the mitten crab hotline at [SERC MittenCrab@si.edu]. (*From the SERC Mitten Crab Newsletter, December, 2007. (Thanks to Kevin Aitkin, USFWS)*)

National Cooperative Weed Management Area (CWMA) Conference. The National CWMA Conference will be held **April 15-17, 2008** in Reno, NV. Representatives from all 50 states will gather to focus on CWMA funding and logistics, working with volunteers, early detection and rapid response, awareness and outreach, and state and national initiatives. The conference will conclude with an all-day field trip to sites in the Reno area. Go to [http://www.weedcenter.org/CWMAconf/cwma_conf.htm] for more information (*Thanks to Barb Okorn, EPA R8*)

Online Training. The National Wildlife Refuge System and the Center for Invasive Plant Management have designed an online training course for people interested in fighting invasive species. This website includes video, text and photos that provide and information about the science and management of invasive plants and background on the Refuge System. Go to [<http://www.fws.gov/invasives/volunteersTrainingModule>]. (*From New England Invasive Plant Newsbriefs #37, (Cynthia_boettner@fws.gov).*)

Asian Bittersweet Identification and Fact Sheet. The USGS has developed a new fact sheet on Asian bittersweet (*Celastrus orbiculatus*) that provides a very useful key for distinguishing it from *Celastrus scandens*, the American bittersweet. A companion paper will be released soon in the Journal of the Torrey Botanical Club. Get the fact sheet at: [http://www.glsc.usgs.gov/_files/factsheets/2007-%20Identifying%20Bittersweet.pdf] *Contact Noel Pavlovic (npavlovic@usgs.gov) for more information.*

Global Analysis of Invasives in Freshwater Systems. As many as one in four fish species inhabiting lakes and rivers near human settlements is non-native, according to the first global analysis of invasive species in freshwater ecosystems. The new study, led by Fabien Leprieur and Olivier Beauchard, published in the Public Library of Science, found that in 1,000 river basins studied, the population density, degree of urbanized land, and the area's gross domestic product were most clearly related to the number of invasive fish. The study authors warned that rivers still relatively unharmed are unlikely to remain so, as more developing nations modernize, and world population continues to grow. [<http://www.thedailygreen.com/environmental-news/latest/invasive-fish-47020405>].

New Paper on Marine Invasions. *Assessing the global threat of invasive species to marine biodiversity*, a new paper by Jennifer L Molnar, Rebecca L Gamboa, Carmen Revenga, and Mark D Spalding, is now available in *Frontiers in Ecology and the Environment*. 6, doi:10.1890/070064, or download the paper at [<http://conserveonline.org/workspaces/global.invasive.assessment>] (*By Jennifer Molnar, (jmolnar@tnc.org), and forwarded by Brid Nowlan.*)

Aquatic Plants Field Guide. Early feedback to the newly updated and expanded *Maine Field guide to Invasive Aquatic Plants*, has been overwhelmingly positive. Produced by the Volunteer Lake Monitoring Program at the ME Center for Aquatic Invasive Plants, the 160-page reference, spiral bound and printed on tear-resistant waterproof paper, focuses on the eleven invasive aquatic plants currently listed as imminent threats to ME waters, and contrasts them with over 60 native aquatic plants commonly confused with these invasive species. Photographs, illustrations and narrative descriptions accompany

each of the featured species, along with a variety of cross-reference tools for comparison with similar species. Go to:

[www.mainevolunteerlakemonitors.org/mciap/FieldGuide.pdf] to download or view the guide. (*Roberta Hill and Scott Williams, thanks to Tina Proctor*)

New Invasive Plant Journal. The Weed Science Society of America (WSSA) has announced the launch of *Invasive Plant Science and Management (IPSM)*. This quarterly journal will focus on fundamental and applied research related to invasive plant biology, ecology, management and restoration of invaded non-crop areas. . It will regularly feature research and education, case studies, reviews, symposium papers, and notes and commentaries. The journal will be available in print as well as online, and is a benefit of membership in WSSA For more information, go to: [<http://www.wssa.net>]. And if that doesn't work, try [<http://www.wssa.net/WSSA/Pubs/IPSM.htm>] (*Excerpted from 2/21/08 Dairy Herd News; Thanks to Elaine Somers, EPA*)

New Global Database. A new global database containing a variety of information on over 330 marine invasive species is now available. It includes non-native distributions by marine ecoregion, invasion pathways, and ecological impact and other threat scores. This is an ongoing project, and the database will be updated periodically. Access the global database at [<http://conserveonline.org/workspaces/global.invasive.assessment>].

New NOAA On-line Database. On January 18, NOAA announced activation of the Great Lakes Aquatic Non-indigenous Species Information System (GLANSIS), a “one-stop” information source for established non-indigenous aquatic species in the Great Lakes. GLANSIS is a Great Lakes node of the USGS national NAS database, allowing access to enhanced features and search capacity for Great Lakes-specific invasive species information, while seamlessly linking to the national database. GLANSIS currently contains full profiles and distribution maps for more than 70% of the 185 non-indigenous aquatic species in the database (most exceptions being vascular wetland plants). GLANSIS was developed as a partnership between NOAA and the USGS Florida Integrated Science Center. Visit the new ANS database site at: [<http://www.glerl.noaa.gov/res/Programs/nrais/glansis.html>] (*Press release, January 18, 2008.*)

Western US Invasions

New Pacific Northwest Alerts. This quarter, the USGS NAS alert system has generated several new invasive species alerts in the PNW:

ID - *Pistia stratiotes* (water-lettuce) and *Hydrilla verticillata* (hydrilla) have been found for the first time in ID, in the geothermal area SE of Bruneau, in Owyhee County. The Hydrilla is particularly unwelcome, as there is an easy connection to the Snake River, which eventually flows into the Columbia River.

WA - *Myriophyllum heterophyllum* (two-leaf water-milfoil) was found in for the first time in Clear Lake, Pierce County, WA.

ID - *Azolla pinnata* (feathered mosquito fern), was found in for the first time in January, in the Middle Snake-Boise, in Ada County at the lawn and garden center.

WA - *Myriophyllum aquaticum* (parrot-feather) was found in a new drainage in Grays Harbor

If you wish to receive alerts for a specific organism(s) or state(s) from the USGS system, go to: [<http://nas.er.usgs.gov/AlertSystem/>].

Quaggas in Arizona. On December 17th the AZ Department of Fish and Game responded to a call from the Dry Dock / Repair facility at Pleasant Harbor Marina in Central AZ, where a boat inspection revealed small mussels on the bottom of the hull, outdrives, and the bottom of the trim tabs. The boat had been in a slip at Pleasant Harbor but was removed for inspection and repair. Inspection of floats on the docks at the slip and neighboring slips, similar floats in other portions of the marina, as well as courtesy docks at boat ramps immediately south of the marina and across the lake from the marina, also revealed small mussels. The boat was quarantined pending cleaning, and a letter has been developed for all marina slip holders, informing them of the risks of mussels to their equipment and the risks of violating state law if they transport live Quagga mussels. They are also working with Lake Pleasant Regional Park, the Central Arizona Project, and the Bureau of reclamation. (*From Lawrence M. Riley, ADFG*)

Zebra Mussels Reach Colorado. January sampling at Lake Pueblo State Park detected two adult mussels and one immature specimen on substrate sampling gear, and a veliger larva was also found by performing plankton tows. Additional sampling at the Park is planned for this spring to determine the degree of infestation. The Pueblo State Fish Hatchery, which receives its water supply from Pueblo Reservoir, will also undergo an assessment regarding options to prevent the spread of adult mussels and/or veligers. To date, sampling inspections have not detected zebra mussels or larvae in the hatchery unit. No fish from the Pueblo Hatchery are planned to be stocked until April, and effective water treatment options exist to eliminate mussel adults and/or veligers prior to the fish being stocked. (*From Lake Pueblo State Park press release 1/17/08*). Two weeks of additional underwater sampling in early March found no new specimens (*Denver Post 3/4/08*), but the mussels have been confirmed as zebra, not quagga mussels, indicating this is a new infestation rather than an expansion of the Lake Mead quagga infestation.

Copepod Invasions in the Columbia-Snake River System. Nine Asian copepods have been introduced into the NE Pacific, and several of these have recently invaded the Columbia-Snake system in WA. In addition to *Pseudodiaptomus inopinus*, which appeared in the 1980s, the Columbia River now has populations of *P. forbesi*, *Sinocalanus doerrii*, and *Limnoithona tetraspina*. Zooplankton samples from ships in Puget Sound suggest that ballast water from CA is a major source of the introduced copepods, and that the Columbia River itself may now be a new source of ballast-introduced copepods. A new article by Jeffrey Cordell, Stephen Bollens, Robyn Draheim and Mark Sytsma discusses these recent copepod invasions. (Excerpted from an abstract in the ICES Journal of Marine Science Advance Access, February 1, 2008, at [<http://icesjms.oxfordjournals.org/papbyrecent.dtl>]).

International Happenings

Canary Islands Catalogue. The Canary Islands recently passed the Spanish Law on Natural Heritage and Biodiversity. This law creates a Spanish Catalogue of Invasive Exotic Species and also allows establishment of regional catalogues as well. The articles of interest are: 61; 62.3 e) and i); 76.1.f); 77.4.a) and b). To download the law, go to: [<http://www.boe.es/boe/dias/2007/12/14/pdfs/A51275-51327.pdf>]. (Thanks to Juan Luis Rodríguez Luengo (jrodlue@gobiernodecanarias.org) via *aliens listserve*)

Spartina in China. In February, OR Public Broadcasting's Oregon Field Guide produced a media segment on *Spartina* and other invasive species in China, and discussed the efforts of Pacific NW scientists to share their experiences in dealing with these issues. Sam Chan (OR Sea Grant) is prominently featured. You can watch the segment at: [<http://www.opb.org/programs/ofg/videos/view/72-China>].

Canadian Green and Mitten Crab Assessments. The Department of Fisheries and Oceans Canada is conducting assessments of the risks posed by the European green crab, *Carcinus maenas*, and the Chinese mitten crab, *Eriocheir sinensis*, in Canadian waters. Part of the invasive species risk assessment process is an expert opinion survey to identify important vectors and impacts of the species, worldwide. In December, they requested comments via a web survey. DFO has recently completed biological synopses (extensive literature reviews) on green crab and mitten crab. The results of the survey were summarized in early January, and the risk assessments were reviewed at a February meeting in Montreal. Access the citations at: [http://www.surveymonkey.com/s.aspx?sm=d5xZnKNPpf_2fn1nvn1Y7OZQ_3d_3d]. (For more info, contact Andrea Locke (LockeA@dfo-mpo.gc.ca)).

The US Can Apparently Give as Good as it Gets... Saskatchewan (Canada) Province reports stopping a boat and trailer with NJ license plates at the US-Saskatchewan border on October 18. The boat was carrying a new invasive mussel, *Mytilopsis leucophaeata*. Also known as Conrad's false mussel, black false mussel, or platform mussel, it is believed to be native to the Black Sea. The trailer was being pulled by an individual from Alberta who had purchased the boat, and indicated that the boat was eventually destined for BC. The boat was clean when it got to Alberta. (Thanks to Gary Caine, *BC Min. of Ag & Lands*)

Pacific Islands Invasives Website. PIER (Pacific Island Ecosystems at Risk), a Institute of Pacific Islands Forestry website, contains listings and descriptions of plant species threatening ecosystems of the Pacific Islands. It also lists many other invasive and potentially invasive plant species present in and around the Pacific region. See it at [<http://www.hear.org/pier/index.html>].

Ireland Website. The new Ireland website [www.invasivespeciesireland.com], is now live. The website will act as a gateway to the Invasive Species in Ireland Project and the invasive species problems in Northern Ireland and the Republic of Ireland. If you have any comments or suggestions feel free to contact John Kelly (j.kelly@qub.ac.uk).

New Zealand Online Weed Control Manual. The Auckland, NZ, Regional Council has launched an online weed control manual. It contains species that are banned from sale in Auckland and/or New Zealand, species commonly confused with these species, and other nuisance species and common weeds. Over 250 species with photos and control methods are searchable by common or scientific name. Since the NZ climate is similar to that of the Pacific NW, this manual may be of interest to folks in WA and OR. Go to: [www.arc.govt.nz/plantsearch] (*Thanks to Jonathan Boow, NZ*)

The Top 100 Invasive Species. You may all be familiar with the Global Invasive Species (GIS) Database “100 of the world’s worst invasive alien species” list. But did you know that the Conservation Science Institute (CSI) website contains a list with the same species, but it also provides a short helpful description of each organism, something that is lacking in the ISSG list? Unfortunately, CSI lists the species alphabetically by scientific name, rather than by the ISSG’s taxonomic groupings, which makes it difficult if you are not familiar with the scientific names. So each listing has its own benefits. For the GIS list, go to [www.issg.org/booklet.pdf]. For the CSI list, go to: [http://www.conservationinstitute.org/invasivespecies.htm#The%20Top%20100%20Invasive%20Species].