



ISSUE 24

March - May 2009

## 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>. To access all past Nutshell issues 1-23, go to [<http://www.aquaticnuisance.org/newsletters>]. To subscribe or unsubscribe from this newsletter please email <[joancabreza@msn.com](mailto:joancabreza@msn.com)>.*

### Quotes To Ponder...

“It [invasive species] costs the world economy an estimated US\$1.5 trillion per year in environmental and economic damage.” - The Crawford Fund, March 11, 2009

### This Quarter's Weird News

**Leaping Carp Throws Man From Jet Ski.** Officials in central Illinois say they've conducted their first carp-related rescue. Twenty two year-old Tad Newell was riding his new jet ski on the Illinois River when he collided with a large, leaping Asian carp. He was thrown from the jet ski, and when it started taking on water, he couldn't get it started up again. Newell was uninjured and called for help on a cell phone he had with him. (*From Associated Press, May 7*)

**New Weapon Against Invaders?** In Tuscarora, Nevada (population ~13), residents are preparing to use heavy metal music to repel hoards of Mormon crickets (*Anabrus simplex*). The crickets hatch in April, rapidly growing into voracious two-inch long insects that migrate in columns. They move across the landscape eating everything in sight, and in peak years, the columns can be up to two miles long and a mile wide. When they swarm on roads, cars turn them into accident-causing slicks; last year they piled up so deep on a highway in Elko, NV, that snowplows were used to scrape them off. After trying poison bait, smothering them with chalk dust, and soapy water to protect vegetation, in 2006, the town discovered that an array of boom boxes blasting heavy metal music diverted many of them. Now they are readying their

defenses again, with backup plans for lawn mowers and Weed Whackers. (*Ed. Comment: The crickets are native to North America, but that doesn't make their "invasion" any more palatable. But perhaps this has some applications elsewhere?*) (Excerpted from a Seattle Times article by Jim Carlton, April 2009)

## **Lights At The End Of The Tunnel**

**Pheromones And Sea Lampreys.** Scientists have found another promising weapon against sea lampreys (*Petromyzon marinus*), a parasitic fish that attaches onto other fish, usually killing the host. One lamprey can consume up to 40 pounds of fish in its lifetime. Able to live in both fresh and salt water, lampreys entered the Great Lakes from the Atlantic Ocean in the 1920s through canals and locks built to by-pass Niagara Falls. By the early 1950s, about 3 million lampreys inhabited the Great Lakes, where they devastated several economically valuable species including lake trout and whitefish populations. In 1957, a bi-national effort between the U.S. and Canada funded testing of about 6,000 chemicals, and resulted in discovery of the chemical TFM, a lampricide that kills lamprey larvae in streams leading to the lakes. The lamprey population has since dropped to about 450,000, and officials believe TCM is the main reason the \$7 billion-a-year Great Lakes sport fishing industry has been revitalized. But the number of lampreys in the Great Lakes is still too high, and this year, the U.S. and Canada will spend about \$10 million and \$8 million respectively, on research and control efforts. Now Michigan State University researchers have begun field tests on a chemical compound that tricks the lampreys and lures them into traps. Male lampreys release a pheromone that attracts females during mating, and researchers identified the pheromone structure, and discovered how to imitate the pheromone and use it to manipulate the lampreys' behavior. Pheromone-laced traps are, on average, about twice as effective as the traps without it, and the traps could lower use of the expensive lampricide. This summer the Great Lakes Fishery Commission [<http://www.glfsc.org/>] is expanding testing of the new technique. In Michigan, four tributaries to Lake Superior, four tributaries to Lake Michigan and two to Lake Huron, will be fitted with pheromone-laced traps this summer, and ten more streams will be tested in Canada in 2010. After this summer, researchers hope to have a really good idea of the chemical's effectiveness. (*Excerpted from article by Jack Johnson [Lansing MI] County Press, April 22*)

**Carp Barrier Finally Activated.** A \$10 million electronic barrier meant to keep Asian carp out Lake Michigan was turned on for the first time on April 8, 2009. (The new barrier is a stronger version and a backup to a weaker barrier that has been operating on the canal since 2002.) It runs across the Chicago Sanitary and Ship Canal, and was completed three years ago, but was not activated because of fears it might hurt or damage barge operators or recreational boaters. The electronic barrier will undergo further testing to find a proper voltage that keeps the fish away but is safe for boats and barges.

## **Zebra Mussel Invasion Updates**

Zebra mussels were first found in the United States in 1988; they have since spread to 24 states from MI to WV, and from OK to CA.



A section of PVC pipe (above) left in Lake Mead on the Colorado River for 90 days illustrates the damage quagga (*Dreissena bugensis*) and zebra (*Dreissena polymorpha*) mussels can do to water and irrigation systems. U-B photo by Andy Porter (Thanks to Stephen Phillips)

**Infested Boat Intercepted:** On May 19, 2009, acting on a report from a keenly observant citizen, the Idaho State Department of Agriculture (ISDA), in conjunction with Washington and Utah state officials, were able to track and detain a mussel-fouled 26-foot cabin watercraft, named “HELLO.” The vessel originated at Lake Mead, Nevada. A Utah resident spotted the vessel traveling north towards the Idaho state line on Interstate 15. For further information go to: <http://www.aquaticnuisance.org/wordpress/wp-content/uploads/2009/01/infested-hello-boat-detained-in-spokane-5-20-091.pdf> and <http://www.missoulian.com/articles/2009/05/20/bnews/br55.txt>

**Third Rapid Response Exercise.** The 100<sup>th</sup> Meridian Initiative held the third interagency exercise for the "Columbia River Basin Interagency Invasive Species Response Plan: Zebra Mussels and Other Dreissenid Species" last month. The exercise scenario included a confirmed finding of dreissenid veligers in Lucky Peak reservoir near Boise, Idaho. The exercise was conducted over two days. April 29 consisted of field training for divers deployed to detect the presence of adult mussels following the find of veligers. April 30 consisted of a two-part table-top exercise. In the morning session, state subject matter experts assessed the dreissenid find and developed treatment strategies. The recommendations developed from this session were presented to policy makers for discussion and approval during the afternoon session. (Thanks to Stephen Phillips)

**New Invasive Mussel Listserve.** California Sea Grant has setup a new listserv, *CA-mussel*, to facilitate sharing of information related to invasive Eurasian zebra and quagga mussel species in CA. The list is moderated by Jodi Cassell and messages will be reviewed before being posted. To subscribe send an e-mail to <listproc@ucdavis.edu>. The body of the message should consist of a single line format (with no subject or other text in the email) as follows: sub ca-mussel <first name> <last name>. Messages related to research, status, management, and events focusing on invasive Eurasian mussels in CA or neighboring states are encouraged. Any information related to possible mussel sightings will be forwarded to the CA Department of Fish and Game for investigation and confirmation before posting to this list. They wish to limit this list to CA-related information in order to limit the email traffic. Email or call Jodi at: [jlcassell@ucdavis.edu] or (925) 646-6127 if you are having issues accessing the list.

**Zebra Mussel Response Podcast.** The U.S. Fish and Wildlife Service Pacific Region public outreach staff have begun a new podcast program. Paul Heimowitz has contributed a podcast on the 100th Meridian Initiative’s rapid response planning effort in the Columbia Basin - it’s now posted at

[<http://www.fws.gov/pacific/podcastingcenter/audio.html>].

**Citizen Outreach Works!** For the fifth time in four years, an alert citizen has assisted Texas Parks and Wildlife Department (TPWD) and the Oklahoma Department of Wildlife Conservation (ODWC) in their efforts to keep zebra mussels from invading Lake Texoma (Red River). On April 3, an employee of a private landowner on the south shore of Lake Texoma, reported a suspected zebra mussel underwater on a boathouse communication line. This is the first time the mussels have been found living in Lake Texoma, but they are known to occur at several other sites in OK. TPWD personnel confirmed the identification and inspected the boathouse, but found no additional specimens. In 2006, 2007, 2008 and 2009, zebra mussels were found on boats brought from Wisconsin or the Ohio River, and all four times, specimens were discovered by marina employees who stated that they were previously aware of the zebra mussel threat, and made a practice of watching out for them. *(Ed. Comment: Since an adult was found, the lake is likely infested, though no other mussels have been found to date as far as we know. Regardless, the number of interceptions shows the value of education and outreach programs)(Excerpted from an April 21, TPWD news release)*

**Montana Legislation.** MT is expanding its efforts aimed at curbing proliferation of the zebra and quagga mussels that have caused huge damage in other parts of the country. Governor Schweitzer signed the Montana Aquatic Invasive Species Act on May 4. The law will expand ANS education and outreach efforts in preventing mussel invasions in MT, and appropriates over \$300,000 for implementation statewide. *(From the Flathead Lakers website [<http://www.flatheadlakers.org/>], thanks to Stephen Phillips)*

**Quagga/Zebra Mussel Monitoring Manual** A new publication, *Early Detection Monitoring Manual for Quagga and Zebra Mussels*, is now available from the California Sea Grant Extension Program and UC Cooperative Extension. This manual was developed to help direct early detection monitoring efforts for small lakes, reservoirs and streams in CA that are believed to be free of invasive quagga and zebra mussels. The methods presented are intended for citizen volunteer groups involved with or interested in monitoring aquatic organisms. While the manual addresses the situation in CA, the majority of the information is broadly applicable to other states and countries. Authors hope that the manual will facilitate proactive measures that minimize the impacts of these and other aquatic invasive species in CA and elsewhere. This 46-page publication is printed in color on a semi-gloss paper stock, and available for \$10.00 plus tax and shipping, from the CA Sea Grant Online Bookstore at: [<http://anrcatalog.ucdavis.edu/Items/SG027.aspx>] *(Thanks to Stephen Phillips)*

**Colorado Big Thompson Lakes Mussel Facility Assessment** . Two final reports on the Colorado Basin zebra mussel invasion have been completed: (1) *Assessment of the Potential Impact of Invasive Mussels on Water System Facilities and Structures and Recommendations for Control – Pueblo Reservoir, Fryingpan- Arkansas Project*, and *Assessment of the Potential Impact of Invasive Mussels to Water and Power System Facilities and (2) Structures and Recommendations for Control –Willow Creek Reservoir, Granby Reservoir, Shadow Mountain Reservoir, Grand Lake, and Lake Estes ,Colorado-Big Thompson Project*. Obtain copies by contacting Elizabeth Brown at <[elizabeth.brown@state.co.us](mailto:elizabeth.brown@state.co.us)>, or go to [<http://www.aquaticnuisance.org/articles>] and look under “Zebra Mussel”

**New Idaho Invasive Species Legislation.** ID recently passed two new pieces of legislation: The first: *Relating to vessels; amending chapter 70 title 67* provides for additional fees for specified vessels,

provides for Invasive Species Stickers (see below), and provides for collection and deposit of fees in the invasive Species fund, and declaring an emergency. The second: “*Senate Concurrent Resolution #109*, a resolution stating the legislature has resolved that a condition of extreme peril exists in and around the water bodies in ID, and asking that Deficiency Warrant Funding authorized by the ID Invasive Species Act of 2008 be used by the ID Department of Agriculture for all activities associated with zebra and quagga mussel prevention, and development and implementation of incident response plans and interagency agreements. (*Thanks to Clover Lockhard*)

**Idaho Invasive Species Fund Stickers.** ID Invasive Species Fund stickers are now available for purchase online. You can choose to buy online and pay the convenience fee, at [<http://parksandrecreation.idaho.gov/stickerpurchase.aspx>] or mail in your order with payment. (*Thanks to Amy Ferriter*)

**Western U.S. Mussel Plan.** The Western Regional Panel (WRP) of the national Aquatic Nuisance Species Task Force (ANSTF) has drafted a Quagga-Zebra Mussel Action Plan (QZAP) for western U.S. waters. At their fall 2008 meeting, the ANSTF asked the WRP to prepare a plan for the expanding Southwest mussel invasion. The WRP formed a steering committee to guide plan development, supported with financial and staff resources from the U.S. Fish and Wildlife Service. The primary objective of the QZAP is to underscore the highest priority actions and resources needed to minimize impacts of dreissenid mussels to native species, water delivery infrastructure, and other vulnerable resources in the West. The draft plan was discussed at the ANSTF spring meeting (May 19-21 in Bozeman, Montana). The draft plan is now undergoing further review by the ANSTF and WRP. For more information, contact WRP chair Eileen Ryce at <Eryce@mt.gov> or WRP coordinator Erin Williams at <erin\_williams@fws.gov>. (*Thanks to Paul Heimowitz*)

## **Other Pacific Northwest Activity**

**Washington Invasive Animal Permit.** The WA Department of Ecology is proposing to develop a general permit for the control of non-native invasive aquatic animals and non-native invasive marine algae. This permit will cover control activities that result in the discharge of chemicals and other control products into WA surface waters. Ecology has determined this proposal is likely to have a significant adverse impact on the environment, so an environmental impact statement (EIS) will be prepared under RCW 43.21C.030 (2)(c). Ecology invites public comment on the scope of the EIS, and the official public comment period is May 14-June 5, 2009. You may comment on alternatives, mitigation measures, probable significant adverse impacts, and licenses or other approvals that may be required. See the entire scoping notice at [[http://www.ecy.wa.gov/programs/wq/pesticides/invasive\\_species.html](http://www.ecy.wa.gov/programs/wq/pesticides/invasive_species.html)]. Contact Kathy Hamel <kham461@ecy.wa.gov> for submission of written comments, questions, or to add your name to the mailing list.

**Oregon Noxious Weed Control Grant Applications.** The OR State Weed Board (OSWB) will accept grant applications for noxious weed control projects related to the protection and enhancement of watersheds, and fish and wildlife until July 10, 2009. This will be the first cycle for the 2009-11 biennium and the 20<sup>th</sup> cycle overall. Specific criteria are outlined in the grant application. (NOTE: OSWB has new

requirements on application submission.) The grant application is available in Microsoft Word format at: [<http://www.oregon.gov/ODA/PLANT/WEEDS/grantindex.shtml>]. Hardcopies of the grant application are available upon request. For questions on applying for OSWB grant funds or the OSWB criteria, contact Shannon Brubaker, at 503-986-4622 or <[sbrubaker@oda.state.or.us](mailto:sbrubaker@oda.state.or.us)>.

**Washington AIS Watch List.** The WA ANS Committee has added flowering rush (*Butomus umbellatus*) and smooth cordgrass (*Spartina alterniflora*) as new Class A noxious weeds, on the state Watchlist. To obtain a copy of the Watchlist, contact Allen Pleus at <[Allen.Pleus@dfw.wa.gov](mailto:Allen.Pleus@dfw.wa.gov)>.

**King County WA Noxious Weed Workshops** This May, King County held annual noxious weed workshops for vegetation management crews and others who need to identify and manage noxious weeds. Topics included updates and refreshers on identifying and controlling priority noxious weeds, a presentation on the "Keys to Legal Pesticide Applications and Record Keeping", updates on using biocontrol in the county, and a special training session on using stem-injection guns to control knotweed.

Participants in the stem-injection training can apply to borrow stem-injectors from the noxious weed program for controlling knotweed in their own projects. For those interested in knotweed stem-injection training, the County will also be offering evening knotweed control workshops in June and July for county residents. Classes are free and open to the public, but space is limited. Four WSDA pesticide license recertification credits have been requested for these classes. Register at 206-263-6468 or <[sasha.shaw@kingcounty.gov](mailto:sasha.shaw@kingcounty.gov)>. Please provide your name, agency or company, phone number and email. (*From the KC Weed News, Sasha Shaw*).

**2008 Annual Progress Report for Noxious Weed Control** The King County (Washington) Noxious Weed Control Board 2008 Annual Report summarizes work and analyzes the performance measures used to track progress toward minimizing the impacts of noxious weeds to the environment, recreation, public health and the economy. The Annual Report and its appendices are available online. For a printed copy of the annual report, contact 206-296-0290 or go to [[noxious.weeds@kingcounty.gov](mailto:noxious.weeds@kingcounty.gov)]. (*Thanks to KC Weed News, Sasha Shaw*)

**Griffin's Isopod Continues Spreading.** In Northwest estuaries, mud shrimp play an important ecological role, filtering as much as 80 percent of the water in some estuaries each day during their feeding. They are also valuable prey for birds, fish, and other estuarine animals, and some ecologists believe they have played a historically important role in the health of salmon runs by providing a steady food source for ocean-bound juvenile coho and Chinook. But in 2005, scientists reported that mud shrimp populations were rapidly declining, and they identified *Orthione griffenis*, an invasive parasitic isopod, as the cause. The isopod enters the shrimp gill chamber under the carapace and destroys the shrimp's ability to reproduce by sucking its blood. Surveys in 2008 and 2009 indicate the losses are epidemic; the isopod has all but decimated mud shrimp populations in coastal estuaries ranging from British Columbia to northern CA, with the exception of a handful of locations in OR from Waldport to Tillamook. The surviving mud shrimp all are heavily infested with the parasite. John Chapman, of Oregon State University's Hatfield Marine Science Center, says "From Bamfield, Canada, down to Willapa Bay, WA, mud shrimp are either gone, or the populations are severely depressed. There are areas along the central to northern OR coast where mud shrimp are still abundant, but the parasite is also abundant, and nearly all of these remaining shrimp populations are declining." The last significant CA population appears to be in Morro Bay, the southernmost range for the shrimp, and Morro Bay shrimp

are infested. Researchers have begun monitoring northwest estuaries to assess shrimp populations and gauge the effects of their presence on ecological services in those estuaries. They are also studying the parasite's complex life history and its use of copepods (zooplankton) as temporary hosts before settling in on the mud shrimp. (*Excerpted from an article in the Newport News-Times, March 11*).

**Fairhaven Shipyards Tries Ballast Water Treatment.** Fairhaven Shipyards in Bellingham, WA, purchased a barge, intending to tow it from China, refurbish it, and use it as a submersible dry-dock. The barge's 435 ft long by 132 ft wide ballast tanks contained an estimated 11,500 m<sup>3</sup> - 19,000 m<sup>3</sup> of ballast water, plus heavy, thick mud and sediment that accumulated during years of operation in Chinese waters. Rather than conduct an open-sea exchange, to deal with invasive species in the water and sediments, Fairhaven decided upon treatment. Hyde Marine, Inc. offered the shipyard courtesy use of the Hyde Guardian, a system previously approved for use by two cruise ships in state waters. The Guardian uses no chemicals, has a filtration system to effectively facilitate removal of all sediment, and a UV treatment system to prevent discharge of viable foreign organisms. Treatment began during the week of January 13, 2009 and took approximately two weeks to complete, due to the external application and other complexities. Normally, a treatment system would be installed as an integral part of the barge, allowing ballast water to be processed as it is taken on and discharged. The Guardian system was operated 12 hours per day or more, and performed more than 450 backwash cycles. The only technical challenge encountered was a malfunctioning pressure differential switch, which froze due to the low ambient temperatures. After offloading was complete, the Guardian was used to dewater the filter backflush slurry and to treat local water used to flush out the remaining tank sediment. (*Thanks to Kevin Anderson, and excerpted from Maritime Reporter and Engineering News March 17*)

**Idaho Invasive Species Awareness Week.** The Governor declared April 27-May 3, 2009 as "Invasive Species Awareness Week". That same week, ID hosted the Columbia River Basin "Quagga Drill" (see previous story), using the Boise-based exercise to build awareness about the importance of proper boat inspections and decontaminations. (*Thanks to Amy Ferriter*)

**Puget Sound Marine Invasive Species Monitoring Program (MISM).** MISM is a science-based, multi-species monitoring program that uses trained volunteers to conduct shoreline sampling throughout WA inland marine waters. It is sponsored by WA Department of Fish and Wildlife, and depends on a broad collaborative network of organizations. It serves an important role in educating and training a large base of public volunteers that provide early detection of new high-risk species and document the distribution of known invaders. The program currently targets 32 exotic marine/estuarine species, 24 of which are known to occur in Puget Sound. MISM has over 200 sites on record, and is in the process of training both existing and new volunteers to cover as many sites as possible. As of 2008, over 120 citizens have been trained, and 60 were registered to monitor using a new monitoring protocol. MISM is one of the first in a new generation of citizen science programs utilizing a web-based data-entry portal with site specific mapping capability, site characterization, photo documentation, and volunteer management features, at [<http://vmp.bioe.orst.edu>]. In addition to data entry, the program website offers training and resource materials, registration forms and useful links to informational websites. This innovative web portal was created in cooperation with Oregon State University.

Volunteer monitors are still needed throughout Puget Sound, the San Juan Islands, Hood Canal, and the Straits of Georgia and Juan de Fuca. All volunteers are trained and responsible for monitoring one or more shoreline sites 3 to 6 times per year, depending on the selected monitoring method. In April, MISM held volunteer trainings in Tacoma, Friday Harbor, Padilla Bay and Port Angeles. If you would like to participate in this program but were unable to attend the trainings, to request a training workshop in your area contact Ann Eissinger at Nahkeeta Northwest at <nahkeeta@fidalgo.net> or call 360-770-6012. (Thanks to Ann Eissinger.)

**Proposed WA Ballast Water Rules.** The new proposed ballast water rules will implement E2SSB 5923 “*An Act Relating to aquatic invasive species enforcement and control*”, (effective July 22, 2007). The 2009 ballast water rulemaking will be conducted in two phases. “Phase 1” includes all WAC sections except 220-150-050 (treatment standards and implementation timelines). “Phase 2” chronology has not yet been determined and will be specific to WAC 220-150-050. A Fish and Wildlife briefing and public hearing were held May 8-9, and the Fish and Wildlife Commission will consider rule adoption on June 5-6. (For more info, contact Allen Pleus at <Allen.Pleus@dfw.wa.gov>).

**Chinese Frog** (Update) In August, 2008, at the Port of Portland, OR, during a routine inspection of container packing material, a frog was discovered in a shipping container from Asia. The container was destined for Pasco, WA, so over the next several weeks, a number of federal and state entities from WA and OR discussed authority and jurisdiction to intervene in the ultimate disposition of the shipping container and contents. Because of the number of entities involved and the length of time it took to ultimately resolve the issue, the USFWS sponsored a workshop on April 2, 2009 to review the chronology of events subsequent to the discovery of the frog. They assessed whether actions taken were conducted in accordance with pertinent regulations, identified possible gaps in regulations, and made suggestions on how to improve inter-jurisdictional interdiction activities. The outcome of the workshop was a mutually agreed upon protocol that all agencies and entities would follow for any similar incidents that occur in the future. An INVADER ALERT listserv for Oregon has now been created that will be used to notify potentially affected organizations in similar incidents, and prevent the amount of down-time and confusion that took place last time. For further information contact Lisa DeBruyckere, Oregon Invasive Species Council Coordinator, at <Lisad@createstrat.com> (Thanks to Lisa DeBruyckere)

**NAS Pacific Northwest Alerts.** The NAS Database has reported that *Butomus umbellatus* (flowering rush) has been found in a new Montana County. It was discovered in Noxon Reservoir, in the Lower Clark Fork drainage of Sanders County. For more information on this specimen, go to [<http://nas.er.usgs.gov/queries/specimenviewer.asp?SpecimenID=260771>] and for more information on this species, go to <http://nas.er.usgs.gov/queries/SpeciesList.asp?SpeciesID=1100>].

**Columbia River Brochure (Update).** With support from the Lower Columbia River Estuary Partnership, the USFWS has produced a new outreach brochure and associated “*Intruders Among Us! Nonnative Aquatic Species in the Columbia River Basin*”. This outreach project of the 100th Meridian Initiative's Columbia Basin Team aims to complement the numerous prevention/detection-oriented outreach materials, by providing the "back story" about nonnative aquatic species already in the Pacific Northwest. To order copies of either publication, contact Shirley Donnelly at <shirley\_donnelly@fws.gov> or call 503-872-2763. (Thanks to Paul Heimowitz)

**New Report: Invasive Species The Greatest Threat to Northwest Salmon?** Most discussions about the causes of declining salmon runs for the 13 threatened or endangered salmon stocks in the Northwest focus on the four H's: habitat, hatcheries, harvest and hydropower. But a new NOAA Northwest Fisheries Science Center report (Beth Sanderson, lead author) says the most important factor may be invasive species, and a greater amount of the money dedicated to should focus on invasive species. The study, published in *Bioscience*, is controversial because much of the Northwest's multi-billion dollar salmon recovery work centers on improving habitat, mitigating the damage of power-producing dams, and restricting commercial or recreational fishing. This report argues the greatest threats to fish are non-native species like crappie or bass, which eat migrating juvenile salmon. "On a per-run basis, the mortality attributed to [invasive species] predation may be similar to that associated with juvenile passage through each of the eight dams on the Columbia and Snake rivers, estimated at approximately 5%-15% per dam," the study says. The spawning population of non-native American shad in the Columbia River is about 5,000,000, five times more than the annual salmon run on the river, but "no studies have quantified the impacts of shad on salmon ecosystems." For a PDF of the report, go to [http://blog.oregonlive.com/environment\_impact/2009/03/Invasive%20species\_1.pdf]

*(From a Matthew Preusch article in the Oregonian, March 5, 2009)*

**Washington Wilderness Hay Certification Program.** (Update) In 2008, the WA State Noxious Weed Board (NWB) started a pilot program called Washington Wilderness Hay and Mulch (WWHAM), which certifies hay and straw as weed-free according to North American Weed Management Association (NAWMA) standards. A big motivation for this program was the Forest Service requirement to only use weed-free certified hay and mulch on forest lands in the Pacific Northwest. For more information on this go to [http://www.fs.fed.us/r6/weeds/weed-free/4-Weed-Free-Q-A-final-2007.pdf] . Pellets are also allowed for feeding backcountry horses and other livestock, but if you prefer to use hay, you need a source for certified material. Short of driving to MT or parts of OR, backcountry riders had few options. After working with WA hay growers and other stakeholders, the NWB developed a set of standards and protocols for counties to begin certifying hay fields. The WWHAM program meets the NAWMA standards as well as the Forest Service requirements for weed-free hay and mulch. Several counties began certifying fields in 2008 and the number is expected to increase in 2009. The NWB website has answers to many questions about the WWHAM program, including a list of growers who had hay certified, a Frequently Asked Questions page, and a WWHAM brochure. Although there are currently no certified hay growers in King County, WA is working to implement a King County certification program this year. To find out more about getting hay certified, contact Sasha Shaw at 206-296-0290. Since fields need to be certified before they are cut, it is important to get the ball rolling as soon as possible if you are interested in this program. *(From KC Weed News, thanks to Sasha Shaw)*

**Felt Waders Banned In Alaska.** Beginning January 1, 2011, felt-soled waders are prohibited from use in the fresh waters of Southeast AK. Although not documented in AK, travelling anglers have been found to transmit fish diseases elsewhere, and there will be a concurrent education and awareness campaign to bring the issue to light. *(From ADF&G News Release "New Sport Fishing Regulations in Southeast Alaska for 2009", thanks to Whitney Rapp)*

**OR Invasive Species Legislation.** As of April 24, all 14 invasive species-related bills introduced in the 2009 legislative session were alive and well! The highlight was definitely seeing House Bill 2020 pass

unanimously out of the House Committee on Agriculture, Natural Resources, and Rural Communities. The bills cover a variety of subjects:

\* HB 2020 - Establishes a \$5 million Invasive Species Rapid Response Fund using lottery bonds.

Download this at: [<http://www.leg.state.or.us/09reg/measpdf/hb2000.dir/hb2020.a.pdf>] and *for a more recent story on this important legislation go to:*

<http://www.statesmanjournal.com/apps/pbcs.dll/article?AID=2009305260001>

\* HB 2212 - Consolidates Oregon's plant quarantine laws.

\* HB 2213 - Clarifies the Oregon Department of Agriculture as the fiscal agent for the Oregon Invasive Species Council, and adds two seats to the Council

\* HB 2220 - Makes it a crime to unlawfully use aquatic invasive species or avoid aquatic invasive species check stations, and gives OR State Police the authority to stop recreational or commercial watercraft if aquatic invasive species are suspected on-board

\* HB 2221 - Makes it a crime to knowingly allow feral swine to roam on private land or to sell or purchase hunts for feral swine. *On May 26 this bill moved out of the Senate Environment and Natural Resources Committee with a "do pass" recommendation.*

\* HB 2424 - Expands the role of the Adopt-A-Highway program to include weeds. *On May 26 this bill moved out of the Senate Environment and Natural Resources Committee with a "do pass" recommendation.*

\* HB 2583 - Prohibits a person from launching a boat into OR waters if there are visible aquatic species on the hull, trailer or other related equipment, or any invasive species inside the boat.

\* HB 2625 - Amends an existing statute to provide explicit DEQ authority for vessel boarding, inspections and collection of ballast water samples for compliance verification

\* HB 2714 - Continues the Shipping Transport of Aquatic Invasive Species Task Force.

\* HB 2984 - Authorizes state Departments of Police, Fish and Wildlife, and the Marine Board to require persons transporting recreational or commercial watercraft to stop at checkpoint for inspection of watercraft for presence of aquatic invasive species.

\* HB 3105 - Adds exception to requirements regarding ballast water discharge. Allows the Environmental Quality Commission to adopt rules regarding ballast water discharge, and creates a Shipping Transport of Aquatic Invasive Species Task Force

\* SB 105 - Increases maximum civil penalty for non-compliance with ballast reporting and discharge requirements from \$5,000 to \$25,000.

\* SB 571 - Increases penalty for releasing or attempting to release live fish into a body of water without a permit to a maximum of five years imprisonment, \$125,000 fine, or both. It requires revocation of all angling licenses and tags for persons convicted of releasing live fish without a permit, and allows instigation of lawsuits for recovery of damages for control or eradication of fish released without a permit. *(Sent to the Governor for signature on May 21)*

\* SB 629 - Requires the State Department of Agriculture to establish a grant program for county noxious weed control, allocating lottery funds for the 2009-2011 biennium, for purpose of carrying out a grant program. *(Thanks to Lisa DeBruyckere, OISC)*

**OR Invasive Weed Awareness Week.** May 17 – May 23, 2009 was OR Invasive Weed Awareness Week. This year's theme was: T.E.A.M. "Together Everyone Achieves More." On May 18<sup>th</sup>, ODA, Oregon County Weed Control Association, BLM and USFS hosted the Central Oregon Weed Wagon at the State Capitol Building in Salem. This was a great opportunity to increase awareness of invasive and noxious weeds to Legislators, agency staff and the public by having the Weed Wagon parked in front of

the Capitol for the day, and was a good kick off for “Oregon Invasive Weed Awareness Week” as proclaimed by Governor Kulongoski. (*Thanks to Tim Butler*)

**New Remote Sensing Publication.** The first peer-review publication of the Pacific Northwest Aquatic Monitoring program (PNAMP) is now available. *Remote Sensing Applications for Aquatic Resource Monitoring*, is the result of a PNAMP special session at the 2008 American Society for Photogrammetry and Remote Sensing Annual Conference. The publication focuses on current applications of remote sensing tools used in aquatic resource monitoring, and includes 11 chapters presenting examples of current applications, a summary of the session's expert panel discussion, and recommendations and guidelines for use of these techniques and needs that were identified during the session. Go to: [<http://www.pnamp.org/web/workgroups/General/documents/General/PNAMP2009RemoteSensingPub.pdf>] for an electronic copy. To be added to the PNAMP remote sensing mailing list, contact Jacquelyn Schei <[jschei@usgs.gov](mailto:jschei@usgs.gov)>.

**New Idaho Decontamination Procedure.** IDEQ's Equipment Decontamination Procedure is finalized and now available online. It can be accessed from a number of locations on our site where it is featured as a "what's new" item. Access it directly in the Surface Water section at: [[http://www.deq.idaho.gov/water/data\\_reports/surface\\_water/monitoring/overview.cfm#invasive](http://www.deq.idaho.gov/water/data_reports/surface_water/monitoring/overview.cfm#invasive)]

**Oregon Database User Survey.** The OR Invasive Species Council is conducting a brief database user survey as part of a larger effort to identify all invasive species database systems used in OR, and to develop tools to improve access to invasive species data (where appropriate). To achieve the project goals, the Council has developed a database user survey that will foster the development of tools to make your work easier and more efficient. The results of the survey will be shared with survey participants at the statewide invasive species summit this fall and via the invasive species network. (*From Lisa DeBruyckere*)

**Spartina Agreement.** In September 2006, OR Governor Kulongoski, CA Governor Schwarzenegger, and WA Governor Gregoire signed the *West Coast Governors' Agreement on Ocean Health*, demonstrating their commitment to protecting the health of marine ecosystems and the economies that depend on them. The agreement includes a three-state effort to eradicate *Spartina* from the west coast by 2018. A draft spartina action plan has been completed and will be available for public comment on May 27. Go to [[www.westcoastoceans.gov](http://www.westcoastoceans.gov)] for further information. (*Thanks to Mark Sytsma*)

**Flathead Lake Invasive Species Plan.** The Flathead Basin Commission and Flathead Lakers in Montana are joining forces with local, state, federal and tribal governments in an effort to keep Flathead Basin lakes and rivers free of invasive aquatic species. They have partnered with the Confederated Salish and Kootenai Tribes, Flathead Conservation District, Flathead Lake Biological Station, Glacier National Park, Lake County, the Montana Department of Agriculture, U.S. Geological Survey and the Whitefish Lake Institute, to draft a prevention, education and monitoring plan. The Flathead Basin stretches from southern Canada to just north of Missoula, and includes all the lakes on the west side of Glacier Park, plus Flathead, Whitefish, Ashley and Swan Lakes, Hungry Horse Reservoir, and dozens of smaller lakes and other rivers. It would be cost-prohibitive to place boat-washing facilities at every boat launch in the basin, so the group is looking at establishing eight or nine volunteer-run checkpoints for people towing boats. If there is any evidence or suspicion of invasive species, the boats and trailers would be power-

washed before being sent on their way. (*Excerpted from a Vince Devlin Missoulian article, April 1.*)  
[<http://missoulian.com/articles/2009/04/01/news/mtregional/news09.txt> ].

**Spartina Habitat Report.** The final 60 page report, "*Modeling habitat suitability for the invasive salt marsh cordgrass Spartina, using Shore Zone coastal habitat mapping data in Southeast Alaska, British Columbia, and Washington State*", authored by Jodi Harney of Coastal and Ocean Resources Inc., is now available. For a copy, or for further information, contact Tammy Davis at <tammy.davis@alaska.gov> or to see the report on line go to:  
[[http://www.coastalandoceans.com/downloads/Spartina\\_Habitat\\_Suitability\\_Report\\_Harney\\_Dec08.pdf](http://www.coastalandoceans.com/downloads/Spartina_Habitat_Suitability_Report_Harney_Dec08.pdf)] .  
(Thanks to Kevin Anderson)

**New Aquatic and Riparian Effectiveness Monitoring Report.** The U.S. Forest Service report, *Aquatic and Riparian Effectiveness Monitoring Program: Interagency Monitoring Program-Northwest Forest Plan Area*, by Peter Gruendike and Steve Lanigan, discusses USFS and BLM efforts in western parts of WA, OR and CA during the 2008 field season. The report is now available at  
[<http://www.reo.gov/monitoring/watershed-overview.shtml>] (*Thanks to Jacquelyn Schei*)

**Alien Lice Impacting Deer.** In 2002, the Washington Department of Fish and Wildlife began receiving reports of black tailed and mule deer with Hair Loss Syndrome (HLS) in the lower Manastash area. Later, as the syndrome spread, deer carcasses with the same problems were found in other areas. The deer population began declining around 2004, and WDFW officials estimate about 50 percent of the deer population in Yakima and Kittitas counties has been depleted since 2004. Not all the causes behind this sudden sharp drop in numbers are known, but according to a WDFW report, the general consensus is that an exotic species of chewing louse, *Bovicola tibialis*, is to blame. This variety is normally found only on fallow deer in Europe. Fallow deer have been farmed in central WA, and it is believed that some may have escaped, introducing the lice into the general population. (*Excerpted from Stop Aquatic Hitchhikers article, February 13*)

**If You Can't Beat 'Em, Eat 'Em' Campaign Rolls Out In VA.** Garlic mustard plants rooted from the Winooski River floodplain on Saturday are on the menu for Sunday brunch at nearby On the Rise bakery. Richmond Land Trust's "If you can't beat 'em, eat 'em" campaign to reclaim the Winooski riverbank from invasive species like garlic mustard and Japanese knotweed, hopes to teach locals that some invasives are welcome in the kitchen. Raw, the garlic mustard leaves have a bite, more like broccoli rabe or arugula than garlic, and garlic mustard can be turned into pesto or salsa. In the bakery, Pesto is served in wraps and savory crepes on Sunday morning. A garlic mustard eradication walk will take volunteers out with trowels and plastic bags, and they will go home with bags of garlic mustard and a sheet of recipes. The bakery is already thinking ahead for what to make with deliveries of rhubarb-like Japanese knotweed when those shoots are rooted out by Richmond volunteers. (*Excerpted from the Burlington Free Press, April 29*)

**Carp As Fish Protein Source** In Peoria, Illinois, Heartland Processing, LLC, is transforming Asian carp into Omega-3 oil for the pharmaceutical world, and a fine, brown powder protein supplement for cattle, hogs and dogs. The fresh fish are weighed and put into an industrial-sized meat grinder. From there, the loose-meat mix is baked into a brown, sawdust-like material and then squeezed through a press to extract the Omega-3 oil. The overall goal is twofold: to reduce the Asian carp population so other methods of controlling their numbers can have some effect, and to provide locally made livestock feed in an environmentally friendly way. Unlike traditional rendering plants, the flagship facility doesn't create

wastewater or a foul smell as the fish are processed, and when the IL Environmental Protection Agency tested the facility's steam exhaust recently, they found only water. The plant estimated a start date of May 1, and estimates it will process about five tons of carp a day. Eventually, the facility will be outfitted with a larger processing machine able to do 40 tons of fish a day. The owners feel it is a win-win proposition all the way around, as nothing goes to waste." (From a David Zalaznik, *Journal Star* article, April 18.)

**Lionfish Rodeos?** Lionfish (*Pterois volitans*), a species native to the western Pacific, were probably introduced on the Atlantic coast in 1992 when Hurricane Andrew damaged outdoor aquariums in Miami. Then the warm Gulf Stream currents helped them spread northward. First, a handful of lionfish were spotted off North Carolina in 2000, and then the lionfish population exploded. They are appearing in huge numbers from NC southward into the Caribbean, and are so plentiful that divers off the NC coast routinely find up to 100 on a single shipwreck. Lionfish dwell primarily in the warm waters of the Gulf Stream, miles offshore, and are found mostly at depths of 100 feet or more. They compete with already struggling popular commercial reef fish such as grouper and snapper, by stealing their food, seizing their turf and eating their young. The population density appears to be several times the norm in their native waters, and it doesn't seem to have peaked. There are so many lionfish off NC already that scientists don't think it's possible to eliminate them, but hope there may be ways to at least control the population. Researchers are joining forces with sport divers and culinary instructors from Carteret Community College to see if they can be kept in check with spears, nets and tartar sauce. Lionfish have a sweet, white meat similar to the groupers and snappers they are threatening. Dive Centers in Morehead City, N.C., are recruiting sport divers for a series of "lionfish rodeos" during the summer dive season. For the first rodeo, divers will learn how to collect lionfish, and then dine on the catch. It will also give scientists a chance to study later how quickly lionfish repopulate a given site that is cleared. Later rodeos likely will also involve researchers and representatives of the culinary school. Rodeo divers will gently shoo the fish into a net while wearing the kind of puncture-proof gloves worn by workers who handle used hypodermic needles and other medical waste. The scientists and divers hope to persuade area restaurants to start serving lionfish, and possibly create a food market for them. That might help keep them in control and take the pressure off some other species. (Excerpted from *The News & Observer* (Raleigh, N.C.) April 23rd, 2009 by Jay Price)

**Biofuel Risk Study.** Researchers with the University of Hawaii Pacific have examined the impact of unregulated planting of biofuel crops for potential invasiveness, and raised concerns about the impacts on HI's environment. Despite the potential benefits, researchers say biofuel crops actually might be aggressive invasive plants grown under the guise of beneficial crops. Their findings, published in the open-access, peer-reviewed journal *PLOS ONE*, conclude that biofuel crops proposed for use in the HI are two to four times more likely to establish wild populations or be invasive in HI and in other tropical areas than a random sample of other introduced plants. Biofuel crops are often considered as a "green" solution to U.S. dependence on foreign oil, and have been promoted for stimulus package "green jobs". The researchers used a weed risk assessment that examines a plant's biology, geographic origin, pest status elsewhere, and published information on its behavior in HI, to identify plants with a high risk of becoming invasive pests in HI or other Pacific islands. Despite their findings, they say some high risk biofuel crops could be grown if measures are implemented that reduce their risk of spreading out of control and causing unintended problems. "By identifying the species with the highest risk, and pushing for planting guidelines and precautionary measures prior to widespread planting, we hope to spare the Hawaiian Islands and similar tropical ecosystems from future economic and environmental costs of the worst invaders while encouraging and promoting the use of lower risk alternative crops," said Christopher

Buddenhagen, co-author of "Assessing Biofuel Crop Invasiveness: A Case Study." [http://dx.plos.org/10.1371/journal.pone.0005261] For more info, contact Christopher at <cbuddenhagen@gmail.com>. (Excerpted from a *Aliens* posting, Thanks to Mark Sytsma, PSU)

**Algae As Biofuels.** San Diego-based Kent SeaTech, once the world's largest producer of hybrid striped bass, recently sold the last of its fish to enter the highly speculative but potentially lucrative race to commercialize algal biofuels. The company, now called Kent BioEnergy, said its decision to leave the fish-growing business was based purely on economics. It now seeks to expand its pilot algal production facility at the same site where over the course of three decades, it raised about 50 million pounds of its trademark "California farmed striped bass." "We are still in the aquaculture business," says Jim Carlberg, of Kent BioEnergy. "We are just now growing algae instead of fish." Both of the projects underway at Kent BioEnergy are spinoffs of technologies developed to manage and conserve water at the old fish farm. In one project, funded by the state of CA, algae are being used to soak up nitrogen in agricultural runoff destined ultimately for the Salton Sea. In the other, algae are being used to remove nutrients in landfill leachate. The company now hopes to build its algal operations into a demonstration-scale biofuels and remediation facility. But there are at least two major research areas that have to be tackled to make algal biofuels economically plausible for anyone. One is to develop algal strains with significantly higher lipid content. The other is to develop low-cost techniques for extracting oil from the cell. The University of California will soon announce the creation of a regional center for algal biotechnology with both academic and commercial partners, including Kent BioEnergy. For more info, contact: Christina Johnson, <csjohnson@ucsd.edu> or see [http://www.kentBioEnergy.com] (*Thanks to CA Sea Grant*).

***Ed. Comment:*** *Whether eating them, processing them, or growing them, the previous five items show people are finding ways to use invasive species. WHAT DO YOU THINK? If eradication seems impossible, should we try to find legitimate uses for invasive species, or will that just promote their propagation or even possible protection? Send me to your thoughts and I'll put them in the next newsletter.*

## **National & International Activity**

**Correction: Asian Tapeworm.** In Issue 23 (Nov 2008-Jan 2009) of *Aquatic Invasive Species News in a Nutshell*, we quoted a story from the *Muskegon Chronicle* that described a plague of Asian tapeworms in Great Lakes walleye. Unfortunately, the author of that article was confused, and the article contains several inaccuracies. A report published by Dr David Marcogliese (J. Great Lakes Res. 34:566-569, 2008) describes the discovery of a single Asian tapeworm in a minnow sampled in the Detroit River in 2002. There have been no other reports of Asian tapeworms in the Great Lakes. In his Chronicle article, Jeff Alexander confuses the Asian tapeworm with an entirely different tapeworm species (*Bothriocephalus cuspidatus*) that is native to the Great Lakes and prefers walleye as a host. There are reports of this walleye tapeworm in the Great Lakes that go all the way back to the 1800's. There are many tapeworms native to fish of the Great lakes, but there is no outbreak of Asian tapeworms: just one worm in one fish, way back in 2002. (Thanks to Andy Goodwin, David Marcogliese, and Duane Chapman for noting the errors.)

**Pest-Infested Fencing Shipment Stopped** U.S. Customs and Border agents detained 11 shipments of reed fencing from China infested with a variety of plant pests and diseases. The first shipment of reed fencing arrived at International Falls, MN, infested with Cecidomyiidae flies and *Phoma spp.*, a fungal pathogen. Cecidomyiidae, known as gall midges or gall gnats, feed on plant tissue, causing abnormal gall growths to develop on the plant host. *Phoma spp.* cause blight disease in a wide variety of nursery stock, trees, and agricultural crops. Noctuid moths and the Striped Rice Borer, *Chilo suppressalis*, were also found on some of the fencing. Noctuidae eat away the bases of plants such as lettuce and broccoli, and *Chilo suppressalis* is a stem-feeding beetle considered to be one of the most serious economic pests of rice crops in Asia. A similar infested shipment of reed fencing arrived in Seattle. Border patrol agents found the same shipper was shipping similar products through various ports on the east and west coasts and across the U.S.- Canada border, and issued a nationwide alert. All 11 shipments were either fumigated or re-exported. The border patrol says they could have cost the U.S. hundreds of thousands of dollars in lost crops and treatment. (From a May 5 Gary Chittim article in King5 Environment Northwest [king5.com/localnews] )

**EPA Vessel General Permit (Update).** EPA held a conference call on the EPA Vessel General Permit (VGP) on March 9, covering a number of permit-related issues. The EPA remains convinced that no state has NPDES authority, and asked states to decide whether they want to be delegated permitting authority; EPA could veto any NPDES permit issued by a state which they believe is not delegated, but they explicitly stated that many states have authority under their own laws to permit vessel discharges. Some states are considering requesting delegation, but CA still insists that they are already delegated. EPA also has a plan for evaluating discharges from all fishing vessels and commercial vessels under 79 feet; a report should be available for comment by late summer. EPA will be evaluating treatment for vessel discharges and assessing reports, monitoring, and compliance; the consequence may be a reissuance of the VGP. States would have 401 certification responsibilities and ability to insert their own conditions.

Ballast water treatment is EPA's top priority for evaluation. Preliminary data reviews show current treatment technology to be much more effective than exchange. The treatment data will be peer-reviewed and treatment systems likely designated as "best available technology" (BAT). The next issuance of the VGP would then require use of BAT treatment systems (probably according to a time schedule). EPA would also like to receive data from states that have evaluated ballast water treatment, and will form a work group to flesh out an implementation plan. The work group will include the Office of Enforcement and Compliance Assurance (OECA), USCG, the shipping industry, and states wishing to participate.

Notifications of Intent are due June 19 - Sept. 19, 2009, and EPA plans to make them available online. EPA has also offered to setup an FTP server to facilitate information sharing. *(Thanks to Randall Marshall for this summary)*

**CA Invasive Species Council.** California now has a cabinet-level Invasive Species Council [<http://www.iscc.ca.gov/>] which will be tasked with making recommendations to prioritize an invasive species rapid response plan. The Council will cover both terrestrial and aquatic invasive species, and will appoint a California Invasive Species Advisory Committee (CISAC) tasked with making recommendations to prioritize an invasive species rapid response plan. The committee will take input from local government, tribal governments and federal agencies, as well as environmental organizations, academic and science institutions, affected industry sectors and impacted landowners. Two of the invasive species currently threatening CA are the quagga mussel and the Asian citrus psyllid (*Diaphorina citri Kuwayama*). The citrus psyllid, a small, aphid-like insect, can carry citrus greening disease, which has already killed tens of thousands of acres of trees in Florida and Brazil, and wiped out entire citrus industries in China, India, Saudi Arabia and Egypt. More than \$11 million in state, federal and grower funds are being used to protect California's \$1.3 billion dollar industry from the psyllid. *(CDFA news release #09-007; thanks to Mark Sytsma)*

**Great Lakes Regional Collaboration Strategy.** Cleaning up the Great Lakes and tributaries and keeping them healthy is expensive. President Obama, building on blueprints authorized by then-President Bush in 2004, has shown a commitment to the plan known as the Great Lakes Regional Collaboration Strategy. Obama has pledged \$475 million to the strategy for the coming fiscal year, more money, than any White House predecessor. Now, if Congress approves the \$475 million, keeping out or removing invasive species will receive \$60.3 million, or 13 percent. The U.S. Fish and Wildlife Service will control the largest share, nearly \$20 million, with agencies including EPA (\$8.3 million) and Great Lakes Fishery Commission (\$7 million) also playing major roles. The remainder will go to cleaning up toxic substances and "areas of concern" (\$146.9 million, or 31 percent); near-shore health and pollution prevention (\$97.3 million, or 20 percent); habitat and wildlife protection (\$105.3 million, or 22 percent) and accountability and monitoring (\$65 million, or 14 percent). It is impossible to predict when the House and Senate will approve their spending bills, but the EPA nevertheless wants agencies to issue requests for grant proposals by early this summer, even before Congress has approved appropriations, so work can begin soon after the next fiscal year starts. The first grants could be issued as soon as December, according to the EPA. Looking ahead, the EPA wants the Great Lakes Interagency Task Force to develop a draft plan by September for restoration efforts that would begin in fiscal year 2011. *(From a Steven Koff article in Cleveland.com, May 13)*

**More Help For The Great Lakes.** Congress has granted nearly \$1million to help slow the spread of invasive species into the Great Lakes. President Obama signed the bill into law this week, which will help researchers test various ways to treat ballast water before it's discharged into the lakes. The funding will go towards the Great Ships Initiative, whose goal is to try to find ballast water treatment methods so that the water can be cleaned or sterilized before it is transported between one place to another. "The research facility is the only freshwater testing facility in the world. A team of researchers at the University of Wisconsin Superior consistently test treatment systems to see how ballast water can be treated and safely released into the lake. They are currently working on five or six treatment systems, and each takes a month to a month and a half to test. *(From KBJR-TV, March. 15.)*

**Songs Raise Awareness About Aquatic Invasives** A new University of Wisconsin-Madison initiative is using music to raise public awareness about aquatic invasive species. Bret Shaw at UW-Madison and environmental communication specialist for UW Extension, recruited a group of award-winning songwriters to focus on preventing the spread of aquatic invasive species. Their songs communicate messages such as the importance of cleaning boats when moving them between bodies of water, and not moving bait minnows from one lake to another. Natural resource professionals reviewed the lyrics of each song to assure scientific accuracy and consistency with current WI laws. The primary target audience is 35- to 55-year-old fishermen, and the music, with a focus on classic rock, country and folk, was also designed to appeal to this demographic. The songs have received exposure on a number of radio stations, and are also being distributed with help from the UW-Extension Lakes Program, the WI Department of Natural Resources and the WI Association of Lakes. To listen to these songs and learn more about this initiative, visit [<http://www.uwex.edu/erc/music>]. (From May 6, U WI Public release. For more info, Contact: Bret Shaw <[brshaw@wisc.edu](mailto:brshaw@wisc.edu)>).

**Didymo Expanding Its Range In New Zealand.** Didymo (*Didymosphenia geminata*) algae used to be mainly confined to cold streams at higher altitudes, but it is moving into warmer water, and into still water, raising fears it will invade NZ North Island waterways. Also known as "rock snot", it forms a thick fibrous mat that blocks water intakes, clogs waterways and makes fishing and other recreational activities unpleasant. First found in Southland five years ago, it has now infected 132 rivers and six lakes in the South Island. New genetics research has suggested there may have been two original invasions of didymo, from both North America and Canada. (Excerpted from a Paul Easton, Dominion Post article, March 11 at [[www.stuff.co.nz](http://www.stuff.co.nz)].)

**Channeled Apple Snail Spreading.** Native to the Amazon basin, the voracious channeled apple snail (*Pomacea canaliculata*) can grow to the size of a man's fist, multiplies quickly, and has become a major drain on Asian rice yields. It is one of the most important pests in Philippine and Indonesian rice production, and it is also in the Dominican Republic, where it caused substantial rice yield losses the first three years after its introduction. The snail was first found in Texas in 2001 and then discovered in Louisiana in 2006. It hasn't impacted the TX rice crop, but most of TX crop is in a drilled-seeded system, so rice doesn't have water on it until it's quite large. The potential for this snail on LA rice is unknown, but LA has much more water-seeded acreage which would seem susceptible. Fortunately, the snail hasn't been found in a LA rice field yet, but ditches near Plaquemines Parish alongside citrus groves had "incredible" numbers. The snails apparently arrived in LA through the pet trade, and there seem to have been multiple releases. They are popular aquarium pets because they have a large handsome shell and they are fun to watch because they're so active.

Several features make the channeled apple snail a particularly formidable pest. One is an operculum, which allows the snail to seal the shell shut and go dormant for months. In addition to a gill, the snail also has a lung that it can use when water quality gets poor. Females are capable of laying fertilized eggs for months, and each egg cluster holds 200 - 600 eggs. The adult snails live underwater but the eggs are laid above it, so control program must target both. The eggs are highly visible and look like a chewed piece of pink bubblegum, and usually lie only a foot or two above the waterline. There are few predators of the snail and no snail-specific pesticide. But several new chemicals show promise, including saponin, a naturally-occurring toxin that's soap-like and breaks down membranes. Hawaii is the most advanced of the states trying to control this snail, and their best control was a multi-pronged effort using carnivorous ducks and other predators, allowing fields to lie fallow for a year or two, drying out the ground, and using

chemicals, and anything else they could think of. That allowed them to get the snail to more manageable numbers in the higher taro production areas. Florida uses volunteers to wade into waterways to knock snail eggs off and crush them, and scoop up the adults with nets. But this labor-intensive process must be repeated every few months. (*Excerpted from a March 3, article by David Bennett in the Farm Press*)

**Dogs As Invasive Species?** Roaming dogs and cats could be considered “invasive species” under the wording of a bill now being considered by the Texas legislature. The bill, SB 691, is intended to control, prevent and eradicate “invasive species” that threaten the economy, the environment or human health. But the language of the bill is so vague that dogs and cats could fall under it, leading to them being impounded or killed, according to the Texas Humane Legislation Network. While the bill makes clear that livestock are exempted, it does not exempt dogs and cats. The bill is now before the Senate Committee on Agriculture and Rural Affairs. THLN is urging citizens to contact committee members, requesting that dogs and cats be exempted from the law. (*From [www.ohmidog.com], April 22, thanks to USDA Invasive Species News*)

**Bait Shops Linked To Pathogens.** The commercial amphibian bait trade may be a source of 'pathogen pollution'. Larvae of tiger salamanders (“waterdogs”) are used as live bait for freshwater fishing, but salamanders in bait shops in Arizona, Colorado, and New Mexico are infected with ranaviruses, and those in AZ with a chytrid fungus called *Batrachochytrium dendrobatidis* (Bd). These diseases have spread with the global trade in amphibians. Researchers James Collins and Angela Picco screened tiger salamanders in the western U.S. bait trade for both ranaviruses and Bd, and conducted surveys of anglers to determine how often tiger salamanders are used as bait, and how frequently the salamanders are released in fishing waters. Results of the research show that 26 to 73 percent of fishers used tiger salamanders as bait; 26 to 67 percent of anglers released tiger salamanders bought as bait into fishing waters; and four percent of bait shops put salamanders back in the wild after they were housed with infected animals. Millions of kilograms of amphibians and reptiles may be shipped across the U.S. border each year, many of them carrying ranaviruses and Bd.

Salamanders have been used as bait for at least 40 years; in 1968, 2.5 million tiger salamander larvae were sold as bait in the lower Colorado River area alone. From March to October of 2005, researchers collected salamanders from AZ bait shops, and 85 percent of the bait shops sampled sold at least one ranavirus-infected tiger salamander. In 2006, ranaviruses were detected in the tiger salamander bait trade between May and October in AZ, NM, and CO, but were not found in the few bait shops sampled in Nebraska and Texas. Three of nine shops tested in AZ in 2007 had animals with Bd. "If the presence of a pathogen in bait-trade salamanders is narrowed to several distributors, the movement of animals from these dealers could be stopped. A quarantine program would help prevent the introduction of non-native pathogens into threatened, susceptible populations," said Collins. Collins and Picco report their findings in Volume 22, Number 6, of the journal *Conservation Biology*. (*From a National Science Foundation Press Release April 6; Thanks to Kevin Aitkin*)

**Arkansas Snakehead Eradication.** Over 130 personnel from six agencies participated in the Northern Snakehead (*Channa argus*) Eradication Project in AR. From March 20-27, over 39 miles of main stem Piney Creek, 2800 acres of creek backwater, and 400 miles of ditches, were treated with 3000 gallons of liquid rotenone and ~15,000 lbs. of cube-powder rotenone. Post-treatment assessments indicated very good fish kills in all assessed treatment zones. University of Central Arkansas, which was contracted to evaluate the impact of northern snakeheads on the Piney Creek fish community, collected over 800 adult

and juvenile northern snakeheads, and a large proportion of the recovered snakeheads were juveniles. Recovered fish represent only a portion of the total kill, which is expected to easily number in the thousands. The large proportion of juvenile fish is troubling, and suggests the snakehead population was poised to rapidly expand their range. Final cost of the project will be somewhere near \$750,000. A video of the project should be posted on the on the AGFC website soon. For more info, contact <marmstrong@agfc.state.ar.us>.

**Plans For Non-Native Oysters In Chesapeake Bay Dropped.** Proposals to use foreign oyster species to restore Chesapeake Bay's depleted oyster population were essentially scrapped in early April due to unacceptable ecological risks. Maryland, Virginia, and federal agencies agreed to focus on bringing back the native oyster, ending years of debate about whether to introduce an Asian oyster into the bay, and this concludes nearly five years of formal study, costing \$17 million. An earlier administration had pushed for seeding the Chesapeake with the fast-growing Asian oysters because they resist the diseases that have nearly wiped out the Bay's native shellfish, but fears that alien species could create ecological problems caused a subsequent administration to abandon that stance. In VA, the seafood industry sought to farm Asian oysters bred to be sterile, and the state supported seven years of "field trials" in which businesses grew batches of the sterile shellfish in cages. But the state later relented in the face of widespread scientific concerns that, despite safeguards, some Asian oysters eventually would reproduce in the bay and their offspring would spread. An April 6 joint agency statement left open the possibility that small, carefully controlled studies might still be approved, but any research in open bay waters would require approval from all parties, which is unlikely. The governments now plan to craft a strategy for replenishing oyster reefs and seeding them with native hatchery-bred oysters. But scientists caution that unless native oysters develop a resistance to the diseases killing them, replenishing the bay's wild population could be time-consuming and costly. Large-scale restoration could require as much as \$50 million a year over the next decade - 10 times what has been spent so far, officials estimate. The federal government has committed \$6.6 million in the coming year. MD and VA have committed \$5 million up to \$1 million respectively, and the two states are seeking \$24 more million in federal economic stimulus funds to apply to oyster restoration efforts. The decision was hailed by environmental groups, including the Nature Conservancy and the Chesapeake Bay Foundation, which had threatened to sue if the governments authorized using non-native oysters. (*Excerpted from an article by Timothy B. Wheeler in the Baltimore Sun [BaltimoreSun.com] April 7*)

**Risks Posed by Non-Native Freshwater Fishes.** Last year, a paper in *Fish and Fisheries* made the general argument that the majority of intentional fish introductions have not resulted in negative ecological effects. (Gozlan, R.E., 2008, *Introduction of non native freshwater fish: is it all bad?* Fish and Fisheries 9, 106-115.) This paper received an enormous amount of press. A "rebuttal" paper was recently published. (*Scientific uncertainty and the assessment of risks posed by non-native freshwater fishes*, by F Leprieur, S Brosse, E Garcí a-Berthou, T Oberdorff, J D Olden & C R Townsend, *Ghoti papers*, Fish and Fisheries, 2009, 10, 88-97) Abstract: Although not all introduced species become established, and the fraction of those that do often have little appreciable effect on their new ecosystems, many others exert significant ecological, evolutionary and economic impacts. Stimulating further debate, Gozlan argued that the majority of intentional freshwater fish introductions associated with aquaculture (fish species providing societal benefits) have not been reported as having an ecological impact. But do we have an adequate understanding of the ecological risks associated with fish introductions to support such decisions? Resource managers and decision makers require some scientific knowledge to support their management actions; without this information, a precautionary approach is the only sensible course of

action. The precautionary approach implies that the lack of scientific certainty is reason enough for postponing intentional introduction of nonnative species to avoid potentially serious or irreversible harm to the environment. Authors suggest that we actually know very little about ecological impacts associated with fish introductions and that it would be therefore wholly inappropriate to equate a lack of data with a conclusion of 'no impact'. They discuss four major challenges for enhancing the assessment of risks posed by non-native freshwater fishes in the face of scientific uncertainty, and highlight research opportunities and alternative approaches for confronting these challenges. (*Thanks to Julian Olden*)

**Algae “Supersucker”.** (Update). There is some wonderful video coverage by the *New York Times* about Hawaii’s “supersucker” that is cleaning invasive algae from the reefs of Kaneohe Bay, Hawaii. To see the video go to: <http://video.nytimes.com/video/2009/02/19/science/1194837960943/vacuuming-the-reef.html>]  
(*Thanks to Kevin Aitkin*)

**News from the Global Invasive Species Team (GIST).** As a result of the budget cutbacks announced in February, The Nature Conservancy’s Global Invasive Species Team has been disbanded and will close down much of its work over the next few weeks and months. However, recognizing the teams’ web site was of value to conservationists, its former content is graciously being housed at <http://tncinvasives.ucdavis.edu/>. Also, the Forest Health work focused on preventing and containing forest pests and pathogens is fully funded, and will continue. In addition, many Nature Conservancy state and country program staff who work on invasive species and make up the extended Team will continue their work. Over the next few weeks they hope to modify their communications network to ensure that the folks who continue to work on invasive species across the Conservancy can communicate, share information and work together. For now, the Forest Health group ([http://www.nature.org/initiatives/forests/strategies/forest\\_health.html](http://www.nature.org/initiatives/forests/strategies/forest_health.html) ) will remain in the Conservation Strategies Division. (*Thanks to Barry Rive via Mandy Tu*)

**Global Industry Alliance On Ballast Water.** Ships carry an estimated 10 billion tons of ballast water around the globe each year, transferring more than 3,000 species of plants and animals every day. This poses a serious environmental threat to new ecosystems which may not be able to deal with them. The damage done by these alien species currently costs the world billions of dollars. Now a Global Industry Alliance (GIA) has been launched to tackle the threat of marine bio-invasions caused by ships' ballast tanks. The Alliance, made up of an “innovative partnership” between International Maritime Organization (IMO), the United Nations Development Programme (UNDP), the Global Environment Facility (GEF) and four major private shipping corporations (APL, BP Shipping, Daewoo Shipbuilding and Marine Engineering, and Vela Marine International) aims to harness the different skills and expertise brought by these groups to develop concrete solutions to this global environmental hazard. An agreement forming the GIA, was signed March 2 at the (IMO) London Headquarters. IMO says additional shipping corporations have expressed interest in joining. The Alliance will contribute to research and development of cost effective ballast water treatment technologies that can be fitted onboard ships. In addition, it will assist in exploring new ship design options such as 'flow thru' ballast tanks and 'ballast-free ships'. The Alliance aims to promote the transfer and diffusion of technology within the industry by opening a ballast water information exchange mechanism, developing training tools targeted at the maritime industry and establishing an industry dialogue forum. (*Excerpted from Maritime Global Net, 03 March 2009, [http://www.mgn.com/newsletter.cfm?#story9697]; Thanks to Stephen Phillips*)

## **Upcoming Major (Invasive) Meetings**

**August 24-27, 2009** - Portland, OR. Sixth International Conference on Marine Bioinvasions  
[<http://www.clr.pdx.edu/mbic/>] Registration is now open.

**September 8-10, 2009** Seattle, WA. Western Regional Panel Meeting  
[<http://www.fws.gov/answest/>]

**November 1-5, 2009** - Portland, OR. Coastal and Estuarine Research Foundation (CERF, formerly ERF).  
[<http://www.erf.org/>]. Abstract deadline May 15.

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*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- [joancabreza@msn.com](mailto:joancabreza@msn.com). Managing Editor Stephen Phillips, ANS Program Manager, Pacific States Marine Fisheries Commission, email – [Stephen\\_phillips@psmfc.org](mailto:Stephen_phillips@psmfc.org)