



Northeast Aquatic Nuisance Species Panel

Resource Digest – February 1, 2004
Volume 3, Issue 1

Please send items and postings for the NEANS Panel Digest to ans@ecologyaction.ca.

=====

Index

A. News

NECIS Call to Action on Invasive Species
A Call to Question? Cohen Respectfully Critiques NAISA
Move Over Snakehead, Here Comes the Spiny Water Flea
It Came From Down Under
Shear Force: Volunteers get Weeds to Cease and Desist
Absinth of Malice
Bioinvasion Birthday Party
One Fish, Two Fish, Redfish, *Glofish*???
STEP up and Treat Ballast Water
An Early Valentine from NOAA and US FWS: Funding for Ballast Technology Research
Musseling Out Shrimp
Asian Carp Escape the Net
One, Mississippi!
Free Trade, Ecological Tariff
Anchors Away! Ballast Rules for the Yachting Set
Oyster Immunity a Two Way Street
Talk About Niche Markets
Banning Sale of Invasive Plants Nettles Industry

B. Reports, Publications, and Web-based Resources

No Species is an Island: The Complexity of Protecting Island Endemics
Warm, Fuzzy, and Invasive
OK Everyone! Take a Deep Breath and Say *Pfeisteria*
S is for Spreading, T is for Tunicate, U is for Unwanted, and W is for Web-site
The Long and Weedy Road
Talk About Niche Markets
Who's That Knocking - DFO Responds to *Uninvited Guests*
Good Neighbors Don't Spread Bioinvaders
ANS Humanities 101
Something to Chew On
Cane Toad is a Snake in the Grass
Advice to Conservation Biologists: It's Our Funeral!

C. Upcoming Conferences and Events

2004 Annual Meeting of the New York State Chapter of the American Fisheries Society

Diplomatic Conference on Convention for the Control and Management of Ships' Ballast Water and Sediments

5th National Weed Awareness Week

55th Annual Meeting of the American Institute of Biological Sciences (AIBS) - "Invasive Species: The Search for Solutions"

Coastal Zone Canada 2004 Meeting

XIIth International Conference on Weed Biology

2nd National Conference on Coastal and Estuarine Habitat Restoration

13th International Conference on Aquatic Invasive Species

3rd International Conference on Biological Invasions NEOBIOTA - From Ecology to Control

=====

A. News

NECIS Call to Action on Invasive Species

In recognition of the ten-year anniversary of the landmark Office of Technology Assessment (OTA) Report, *Harmful Non-Indigenous Species in the United States*, the National Environmental Coalition on Invasive Species (NECIS) has initiated a Call to Action on invasive species. The NECIS recognizes that significant advances have been made since the OTA report, but also admonishes that there has been a lack of progress on key issues. The NECIS is asking scientists to sign their names to a Call for Action on six key points, including the immediate adoption of the National Aquatic Invasive Species Act, funds for rapid response to invasive species, and screening organism for invasive potential before they are imported. For more information or to add your voice to the Call to Action, please see http://www.ucsusa.org/global_environment/invasive_species/page.cfm?pageID=1275.

A Call to Question? Cohen Respectfully Critiques NAISA

The NECIS Call to Action, which urges the adoption of the National Aquatic Invasive Species Act, has been a touchpoint for dialogue about the efficacy of regulating ballast water through the Department of Commerce. According to Andrew Cohen, ballast water would be regulated more effectively under the Clean Water Act, administered by the Environmental Protection Agency. Cohen believes that ballast water should be regulated by a body whose stated mandate is to protect the environment and that it should be treated like oil or chemical pollutants. Cohen is critical of the current regulatory scheme which, he says, relies on self-monitoring by industry. His comments, and the response of the authors of the Call to Action can be found at: <http://csf.colorado.edu/forums/consbio/2003/msg00151.html> and <http://csf.colorado.edu/forums/consbio/2003/msg00157.html>.

Move Over Snakehead, Here comes the Spiny Water Flea

Woe to Wisconsin! First it was the snakehead, now it's the spiny water flea. Although it might not be as dramatic as a fish that can "walk," the spiny water flea (*Bythotrephes cederstroemi*) may have drastic effects on the food webs in Wisconsin's lakes. The small invader, measuring about half an inch in length, was flagged by Pieter Johnson, a University of Wisconsin-Madison zoology student, who found it while sampling as part of his research. The Department of Natural Resources fears that the spiny water flea, which competes with small fish for zooplankton and could affect fisheries, will spread to other lakes in the state. They hope to stop the spread of the water flea by educating boaters and anglers on techniques to stop the spread of invaders like boat inspections. For more information see <http://www.dnr.state.wi.us/org/caer/ce/news/on/2003/on2003107.htm#art2>.

It Came From Down Under

Watch out clubbed tunicate – your days are numbered! At least, that’s the Prince Edward Island (PEI) Aquaculture Alliance is hoping a new technology imported from New Zealand will mean for the invasive tunicate that has been fouling aquaculture lines and other structures in the province since 1998. The tunicate-killing machine works on principles that are protected by intellectual property laws, but its makers say the mystery technology has been successful in New Zealand. The PEI Aquaculture Alliance has obviously taken them at their word: in their desperation to fight the tenacious ascidian, they have invested \$100,000 in one machine and will spend another \$50,000 testing the technology, with hopes of making their own tunicate-killing machines in the future. For more information, see http://pei.cbc.ca/regional/servlet/View?filename=pe_tunicate20031121.

Shear Force: Volunteers get Weeds to Cease and Desist

University of Maryland students are using shears, pitchforks, and elbow grease to battle weedy unwanted. The student volunteers, headed up by Marc Imlay of the Sierra Club, are trying to rid places like Ruth B. Swann Memorial ark of the Asian bittersweet, a non- native vine that chokes out other native species. Imlay’s efforts, and those of his volunteers have been successful in eradicating non-native Asian bitteraweet, Japanese stiltgrass, and honeysuckle from certain areas, giving him hope that we can turn the tide on some invasive species. For more information, see <http://indaba.iucn.org/archives/aliens-l/2003-11/00004857.htm>.

Absinth of Malice

Where most ecologists see a waterway-choking pest, Allan Stewart sees potential. Through his work with Hydromentia, Inc., Smith has been attempting to use the water hyacinth’s massive growth potential to remove high levels of nutrients like phosphorus from storm runoff. Not only does the system promise to clean the water, it is also cheap, although quite labor intensive to maintain. The weeds are harvested every week, mixed with algae, and fed to cattle. The state of Florida will be spending two million dollars to test the cleansing capacity of the weed. For more information, see <http://www.heraldtribune.com/apps/pbcs.dll/article?AID=/20031026/NEWS/310260492/1200>.

Bioinvasion Birthday Party

In honor of their tenth anniversary, the North of Smokey Fishermen’s Association hosted a conference of the subject invasive species. The event, which was held in Ingonish, Cape Breton, Nova Scotia was well attended by fishermen in their area, and served to highlight the increased profile this issue has received because of bioinvaders like MSX and green crab. Invited speakers from Department of Fisheries and Oceans, Nova Scotia’s Department of Agriculture and Fisheries, and the Ecology Action Centre were invite to speak on invasive species found in the region, impacts on fisheries, ballast water regulation, and the oyster parasite, MSX. For more information, please contact Gretchen Fitzgerald at (902) 429-2202.

One Fish, Two Fish, Redfish, Glofish???

The genetically altered zebrafish known as the Glofish has come under considerable scientific and media scrutiny of late. The fish, which was originally conceived as a means of detecting pollutants has captured the imagination of aquarium owners, and is now being marketed as an unusual pet. There are concerns that the Glofish, which would be unlikely to survive in cold waters on the Northeast, is merely a precursor for unregulated marketing of other genetically modified organisms like salmon. In January, the Centre for Food Safety announced it was suing the US Food and Drug Administration for failing to regulate trade of the Glofish. California has banned the sale, transport, and possession of the fish and Florida has convened

a task force to address the safety of genetically modified organisms. On the bright (if not exactly “*glo-ing*”) side, the Glofish website recommends that Glofish owners abstain from releasing their genetically modified pets into the wild. The fish was also featured in a great summary article in the journal *Nature* (November 27, 2003, **426**: 372).

For more information, please see:

<http://www.glofish.com/>,

<http://www.fda.gov/bbs/topics/NEWS/2003/NEW00994.html>,

<http://www.biomedcentral.com/news/20040107/01>, and

<http://www.miami.com/mld/miamiherald/news/local/7742776.htm>.

STEP Up and Treat Ballast Water

On January 5th, the US Coast Guard announced it was accepting applications from domestic and foreign vessels for its Shipboard Technology Evaluation Program (STEP) program. The program seeks to address industry concerns about investing in technologies which may, at some later date, not meet regulatory standards. Applications can be found at <http://www.uscg.mil/hq/g-m/mso/mso4/bwm/step.htm>. See below for another opportunity for funding of ballast water technology research.

An Early Valentine from NOAA and US FWS: Funding for Ballast Technology Research

The National Oceanographic and Atmospheric Association and the US Fish and Wildlife Service are now accepting pre-proposals for ballast water technology projects (69 FR 2577, Jan 16, 2004). Amongst other considerations, proponents must show how their technology will make the transition to a commercially viable product. It is hoped that U.S. Maritime Administration (MARAD) ships will be made available as test platforms for technological research. Pre-proposals are due February 13th, 2004 and final proposals are due February 17th, 2004. Please note that only projects that submit a pre-proposal are eligible for funding. For more information, please see

<http://www.nsgo.seagrant.org/research/nonindigenous/ballast/index.html>, and

<http://www.nsgo.seagrant.org/research/nonindigenous/ballast/69FR2577.pdf>.

Musseling Out Shrimp

Reduction in the size and abundance of fish like whitefish in parts of Lake Erie, Lake Michigan, Saginaw Bay, and Lake Ontario has been linked to the invasive quagga and zebra mussels in these lakes. Scientists believe that invasive mussels are out-competing *Diporeia* sp., also known as the freshwater shrimp, for food. As a result of the lower abundance of *Diporeia* sp., fish are switching to eating mussels, which are not as high in fats as shrimp. More evidence is needed, however, to confirm the theoretical effects of this dietary shift, since surveys have shown that shrimp and mussels are sometimes abundant in the same areas, evidence that counters the hypothesis that these species are competitively exclusive. For more information, please see

<http://www.publicaffairs.noaa.gov/releases2001/jun01/noaa01r505.html> and

<http://www.timesleader.com/mld/timesleader/news/7521816.htm>.

Asian Carp Escape the Net

The Protect Your Waters initiative would like resource managers to link their efforts with the human dimension of biological invasions, including commercial interests. In the News section of their web-site, www.protectyourwaters.com, an advertisement for live carp is provided to demonstrate that even though resource managers have clearly communicated the ecological risk of introducing this fish, they have to work harder to connect these concerns with market forces and the general public. For more information, see

<http://www.protectyourwaters.com/news/display.php?id=909>

One, Mississippi!

The Mississippi River Basin Panel Meeting was held in New Orleans, January 8-9, 2004. Subjects discussed included the production of an Executive Board report, issues pertaining to round goby, white perch and Asian carp, bighead and silver carp risk assessments, using Hazard Assessment Critical Control Points (HACCP) to control nuisance species that enter via hatcheries, the Asian carp barrier feasibility study, and national and state ballast water regulations. For more information, see

<http://a257.g.akamaitech.net/7/257/2422/14mar20010800/edocket.access.gpo.gov/2003/pdf/03-31211.pdf>.

Free Trade, Ecological Tariff

At the December 4th, 2003 meeting of the Joint Public Advisory Committee (JPAC) of the Commission for Environmental Cooperation (CEC) of North America, a roundtable was convened on the subject of trade and invasive species, entitled: "An Unwelcome Dimension of Trade: The Impact of Alien Invasive Species in North America." JPAC recognised that the problem of invasive species is "severe and potentially devastating." JPAC recommended that the CEC make invasive species a high priority, develop tools to evaluate risk and policies to increase understanding of impact of invasive species, include invasive species in talks between trade and environment ministers, promote harmonisation of inventories and databases, continue to engage experts, industry and policy makers on this issue, and increase public education. For more information on the JPAC meeting, please see:

<http://www.cec.org/news/details/index.cfm?varlan=english&ID=2587>.

Anchors Away! Ballast Rules for the Yachting Set

The International Sailing Federation (ISAF) is asking the International Maritime Organization to approve simplified rules for ballast water management that will apply to small pleasure and rescue craft. Any comments from yachtsmen, ISAF national associations, builders, and others will be most welcome. Because the new IMO convention on ballast is up for ratification early this February, time is of the essence. Please see

http://www.sailing.org/Article_content.asp?ArticleID=6189

Oyster Immunity a Two Way Street

Scientists at the Virginia Institute of Marine Science (VIMS) have used DNA analysis to identify a pathogen that was found in 60% of Asian oysters (*Crassostrea ariakensis*) sampled from two sites in North Carolina. Researchers are exploring what the source of the parasite is and how much damage it will do to the oysters. Parasites of the same genus (called *Bonamia*) cause disease in oysters in New Zealand and France. The introduction of *C. ariakensis* is being considered to replace Atlantic oysters that have been decimated by diseases known as MSX and Dermo. According to Dr. Eugene Burreson of the VIMS, the newly-identified disease was probably present in they area before, but it is feared that the *C. ariakensis* will not have resistance to the parasite that native species do. Please see

<http://www.vims.edu/newsmedia/bonamia/index.htm>.

Banning Sale of Invasive Plants Nettles Industry

According to Dana Sampson of the University of New Hampshire, something needed to be done to protect New Hampshire's wild spaces from the spread of invasive plants. The New Hampshire government took the first steps in this direction by banning the sale of 18 plants and 15 insects including milfoil, *Hydrilla*, and water chestnut. Nursery owners estimate the

ban, which will come into force in 2007, will cost their industry 19 million dollars in business. They claim the rule is unfair because it targets their industry while neglecting the thousand of invasive plants that are already established in the state. For more information, see http://www.cmonitor.com/stories/news/state2003/invasives_121703_2003.shtml

B. Reports, Publications and Web-Based Resources

No Species is an Island: The Complexity of Protecting Island Endemics

Controlling invasive species can be a complicated affair. For instance, California's island fox is currently threatened by increased predation by golden eagles. Two of the six sub-species of the fox are now extinct, and a third, found on Santa Cruz Island, is endangered. The number of golden eagles on the island has soared because of increased prey abundance in the form of introduced feral pigs. Golden eagles have been translocated off the island in an effort to protect the foxes, but complete eradication has not been possible. The next logical step might be to remove the feral pigs, a simpler matter than eradicating eagles, which are considered threatened and are protected by the Migratory Bird Treaty and the Bald Eagle and the Golden Eagle Protection Act. However, in their model submitted to November's *Science* magazine, Courchamp, Woodruffe, and Roemer demonstrate that removing the pigs will result in increased predation on the foxes as the eagles' primary food source is removed.

Courchamp, F., R. Woodruffe, and G. Roemer. 2003. Removing protected populations to save endangered species. *Science*. 302: 1532. The article is available online at <http://www.ese.u-psud.fr/epc/conservation/PDFs/BreviaFox.pdf>

Warm, Fuzzy, and Invasive

The control of invasive mammals can be complex and challenging. Yet, it is often critical to control or eradicate these animals in order to preserve biodiversity. This is particularly true on islands, where endemic species are threatened by impacts of invasive mammals such as rats, cats, pigs, and goats, animals they have not co-evolved with. Courchamp, Chapuis, and Pascal review management measures for invasive species on islands, describe possible outcomes of eradication, and suggest methods that will help ensure eradication of invasive mammals will have the desired results.

Courchamps, F., J.-L. Chapuis, and M. Pascal. 2003. Mammal invaders on islands: impact, control, and control impact. *Biological Reviews*. 78: 347-383. The article is available online at: <http://www.ese.u-psud.fr/epc/conservation/pages/ReprintFranck.html>

OK Everyone! Take a Deep Breath and Say *Pfeisteria*

According to a report in the journal *Science*, some of the tension regarding research of the toxic algae known as *Pfeisteria* was eased this December at the Second Symposium on Harmful Algae in the US held at Woods Hole. Debate over the biology of the organism and the threat it poses to fish and humans has been intense over the past few years. It is hoped that agreements to work cooperatively will settle disputes over the life history and toxicity of the mysterious dinoflagellate. Luckily, scientists were given some breathing room by the contentious critter, as the Centers for Disease Control and Prevention reported at the same meeting that a \$9 million study that surveyed 700 fishers from Virginia, North Carolina, and Maryland did not record any human illnesses or fish kills due to *Pfeisteria* outbreaks over the past five years.

Kaiser, J. 2003. MICROBIOLOGY: The *Pfeisteria* Conundrum: More Study, Less Certain. *Science*. 303: 25-26.

S is for Spreading, T is for Tunicate, U is for Unwanted, and W is for Web-site

Unless you, too, have been covered beneath a layer of fouling tunicates, most of you will have heard by now that the invasive tunicate *Didemnum vexillum* was recorded covering more than 90 percent of some substrate sections surveyed on Georges Bank this November. It is feared that the tunicate will impact important commercial species on Georges, like the valuable scallop fishery. The Woods Hole Oceanographic Institute has launched a website which they hope will become a clearinghouse for information on the troublesome tunicate:
<http://woodshole.er.usgs.gov/projectpages/stellwagen/didemnum/index.htm>.

The Long and Weedy Road

If you want to know what your state is doing to combat weeds that invade roadsides, check out the National Roadside Vegetation Website at
<http://www.ecoseeds.com/roadside.web.html>
No entries for the Northeast ... yet!

Talk About Niche Markets

Here is a site that shopaholic weedsters will not be able to resist. Most of the merchandise is related to terrestrial and aquatic plants – my favorite is a baby bib that says “Japanese Knotweed Makes Me Spit up!” - but maybe someday we will see snakehead slippers or *Codium* stationary. Please see <http://www.cafeshops.com/cp/store.aspx?s=InvasiveSpecies>.

Who's That Knocking - DFO Responds to *Uninvited Guests*

On October 29th, the Canadian Department of Fisheries and Oceans (DFO) released its response to the 4th Report of the Standing Committee on Fisheries and Oceans, entitled *Aquatic Invasive Species: Uninvited Guests*. The multi-party Standing Committee had been unanimous in its scathing assessment of efforts on the DFO to address the problem of aquatic invasive species. In its response, the DFO recognized its responsibility to take on aquatic invasive species and committed to addressing the challenges of reducing ballast water-mediated introductions. The DFO also noted that some actions are being taken by the Department, although it pointed out that Environment Canada is the lead agency for invasive species issues in Canada. The full response of the Department of Fisheries and Oceans can be found at http://www.dfo-mpo.gc.ca/communic/reports/aquaspec-espauqua/index_e.htm. The report of the Standing Committee can be read at <http://www.parl.gc.ca/InfoComDoc/37/2/FOPO/Studies/Reports/foporp04-e.htm>.

Good Neighbors Don't Spread Bioinvaders

As pointed out by Jim Carlton at the NEANS Panel meeting last December, we must begin to see ourselves as sources of invasive species, and take measures to prevent the export of pests to other areas of the globe. Australia's Commonwealth Scientific and Industrial Research Organization (CSIRO) has compiled a list of potential invaders which includes many species found here in the Northeast. Potential invaders found here in the Northeast include the toxic alga *Pseudo-nitzschia seriata norvegica*, the Asian shore crab and the common soft-shelled clam. The full report on invasive species can be found at <http://crimp.marine.csiro.au/npl.htm#hemigrapsus2>.
Hayes, K.R. and C. Sliwa. 2003. Identifying potential marine pests – a deductive approach applied to Australia. *Marine Pollution Bulletin*. 46: 91-98.

ANS Humanities 101

The link between biological invasions and the socio-economic forces of trade, population growth, intensification of monocultural farming, and global politics is an under-current not usually overtly addressed in invasive species circles. Perrings and his co-authors argue that

solutions to the invasive species problems are primarily socio-political rather than scientific. They contend that, as with disease epidemics, policies adopted by the most lax (and often the least affluent) societies determine the effectiveness of policies adopted all societies. In their article in *Conservation Ecology* (now known as *Ecology and Society*), they argue that invasive species should be tackled as a human problem, incentives be created to change activities that cause invasions to occur, and that an international approach be taken to the issue in order help less affluent societies adopt measure that will protect all of us from invasive species. Perrings, C., M. Williamson, E. B. Barbier, D. Delfino, S. Dalmazzone, J. Shogren, P. Simmons, and A. Watkinson. 2002. Biological invasion risks and the public good: an economic perspective. *Conservation Ecology*. 6(1): 1. The article and responses to it are available online at <http://www.ecologyandsociety.org/vol6/iss1/art1/>.

Something to Chew On

In California, cattle are often used to reduce the abundance of non-native grassland plants such as the European *Erodium cicutarium*. Unfortunately, this form of biological control has shown to be ineffective because non-native plants have evolved in concert with grazers and therefore have mechanisms to withstand grazing, whilst native species do not compensate being clipped with increased growth and reproduction. The experiment demonstrates the importance of looking at the evolution and biology of non-native species when attempting to control their spread.

Kimball, S. and P.M. Schiffmann. 2003. Differing effects of cattle grazing on native and alien plants. *Conservation Biology*, 17: 1681 – 1693.

Cane Toad is a Snake in the Grass

Australians have long speculated that the toxic cane toad might be the poison pill for native snake species which normally consume frogs. Researchers looked at the ability of native species to ingest the toads and their capacity to withstand the toad's toxins to determine if cane toad populations would be expected to cause declines in snake populations, some of which are considered rare or endangered. Unfortunately, their research showed that up to 30% of native snake species of snakes would be expected to decline because of the prevalence of the toxic invasive amphibian.

Phillips, B.L., G.P. Brown and R. Shine. 2003. Assessing the potential impact of cane toads on Australian snakes. *Conservation Biology*. 17: 1738-1747.

Advice to Conservation Biologists: It's Our Funeral!

In a survey of scientific research on invasive species, Josh Donlan and his colleagues showed that there is a dearth of understanding of how to effectively eradicate invasive species, even though eradication of invasive mammals from islands has been successful around the globe. In a search of the journal *Conservation Biology* between 1991 and 2002, they found that only eight out of 100 articles on invasive species discussed strategies for managing bioinvaders and none evaluated methods of control and eradication. Unless this critical research is carried out and made available to managers and other conservation practitioners, Donlan et al. (2003) warn that species will continue to die out while scientists are content to sift through the ashes of their destruction.

Donlan, C.J., R. Bernie, K. Campbell, and F. Cruz. 2003. Research for Requiems: the Need for More Collaborative Action in Eradication of Invasive Species. *Conservation Biology*, 17:1850 - 1851.

C. Upcoming Conferences and Events

February 5-6, 2004, Corning, New York

2004 Annual Meeting of the New York State Chapter of the American Fisheries Society

The topic of this year's meeting is "Emerging Fishery Management Challenges: Proactive Approaches for Aquatic Nuisance Species and Fish Diseases." The second day of the meeting will cover other fisheries-related topics. For more information, contact Scott Jones at (315) 463-5013.

February 9-13, 2004, London, England

Diplomatic Conference on Convention for the Control and Management of Ships' Ballast Water and Sediments

The Marine Environment Protection Committee of the International Maritime Organization will be convening in hopes of ratifying the Convention for the Control and Management of Ships' Ballast Water and Sediments. For more information on the convention, please see <http://www.imo.org/home.asp>.

February 23-27, 2004, Washington, D.C.

5th National Weed Awareness Week

The Invasive Weeds Awareness Coalition is hosting this week of education and information on invasive species. Local events will be happening across the US to mark the occasion. To become involved, please see http://ficmnew.fws.gov/iwac/niwaw_v/index.html.

March 16-18, 2004, Washington, District of Columbia

55th Annual Meeting of the American Institute of Biological Sciences (AIBS) - "Invasive Species: The Search for Solutions"

This year's meeting of AIBS will focus on invasive species. Topics will range from ecology to policy to public health to economic issues. Some great speakers, including David Simberloff and David Lodge, are scheduled to give plenary talks. For more information, see <http://www.aibs.org/annual-meeting-2004/>.

April 6-8, 2004, Baltimore, Maryland

Experts Meeting on the Implementation of a Global Invasive Species Information Network

In order to foster worldwide collaboration on invasive species, technical experts on invasive species data-sharing are invited to attend a meeting in Maryland this spring. Desired outcomes of the meeting will be creation of an electronic information network, agreement on common data sharing methods, a proposal funding toolkit, a list of online invasive species databases, and proceedings, including a summary of regional invasive species information. Pre-meeting details are being discussed this February, for those who wish to become involved. For more information, see <http://gisin.infointl.com>.

Even if you cannot attend the meeting, you become a part of this invasive species information community via the National Biological Information Infrastructure portal at <http://my.nbio.gov>.

June 27 - 30, 2004, St. John's, Newfoundland

Coastal Zone Canada 2004 Meeting

The theme of this year's meeting is "All Within One Ocean: Co-operation in Sustainable Coastal and Ocean Management". Sub-themes include Challenges, Strategies, Tools, and Managing Shared Waters. The meeting will be held in St. John's, Newfoundland. Deadline for abstract submission was January 16, 2004. For more information, see <http://www.czca-azcc.org/index2.htm>.

August 31 - September 2, 2004, Dijon, France

XIIth International Conference on Weed Biology

The XIIth International Conference on Weed Biology will be held Aug 31 - September 2, 2004

in Dijon, France. Proposals for paper and poster presentations are due December 15, 2003. Information on the conference can be found at <http://www.dijon.inra.fr/malherbo/AccueilF1.htm>.

September 12-15, 2004, Seattle Washington

2nd National Conference on Coastal and Estuarine Habitat Restoration

The goals of this year's conference are to expand our ability to restore habitat, build the restoration industry, and catalyze multi-sector collaboration. The schedule includes all-day workshops and field sessions. Poster and presentations will be accepted that fit the following themes: people, practice, science, strategy, policy and funding, evaluation, and a few additional selected topics. The deadline for submissions is February 2, 2004. For more information, see

<http://www.estuaries.org/2ndnationalconference.php>.

September 19–23, 2004, Ennis, Ireland

13th International Conference on Aquatic Invasive Species

The 2004 International Conference on Aquatic Invasive Species will be hosted by Institute of Technology, Sligo, in Ennis, County Clare, Ireland. The conference will cover subjects ranging from policy to invasion ecology to education. Deadline for abstract submission was December 31, 2003. For more information, visit

<http://www.aquatic-invasive-species-conference.org/>

September 30–October 1, 2004, Bern, Switzerland

3rd International Conference on Biological Invasions NEOBIOTA - From Ecology to Control

The topics covered at the upcoming meeting of NEOBIOTA are the ecology of invasive species, impact and risk assessment, and prevention as control. NEOBIOTA is a multidisciplinary group that links researchers with policy makers and conservation groups on issues pertaining to the introduction of alien species. Its focus is mostly on invasive species issues in Central Europe. For more details on the conference, see

<http://www.neobiota.unibe.ch>.