

BALLAST exchange

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VOLUME TWO ■ SPRING 2000

U.S. COAST GUARD TESTS BALLAST FROM FOREIGN WATERS

By Cmdr. John W. Koster, USCG

Since July 1, 1999, U.S. Coast Guard Marine (USCG) Safety field offices have been randomly examining the ballast water carried in vessels that arrive from outside the U.S. Exclusive Economic Zone ("200-mile limit").

These on-board examinations are designed to "ground truth" the accuracy of the vessels' Ballast Water Management (BWM) reporting. They are conducted in accordance with the provisions of the National Voluntary Guidelines for BWM, which are the federal regulations implementing the National Invasive Species Act of 1996 (or "NISA"). The requirements of the Guidelines include mandatory reporting of ballast water management practices and voluntary exchange of ballast water with deep-ocean water. The examinations include interviewing ships' personnel about their BWM practices, education on the provisions of the program, inspection of shipboard records, and the drawing of small amounts of ballast water for simple salinity testing (an indicator of the adequacy of exchange).

In order to assess both the level of compliance and effectiveness of the voluntary guidelines, the USCG is collecting and analyzing the BWM reports required to be submitted by vessels' operators. This is being done in conjunction with the National Ballast Water Information Clearinghouse (NBIC). The NBIC was established by NISA at the Smithsonian Environmental Research Center in Edgewater, Maryland, and acts as the agent for the receipt of ships' BWM reports, data entry, data base management, and other functions related to the implementation of NISA.

In addition to providing field program support, the USCG Headquarters BWM staff are expanding their efforts to find environmentally sound alternatives to ballast water exchange (as this method of BWM is universally viewed as only an interim solution). Technology has yet to catch up with the problem. As the chair of the Aquatic Nuisance Species Task Force (ANSTF) committee on Ballast Water and Shipping, the USCG is working with a variety of interests to explore promising technologies. Among these are filtration, centrifugal separation, ultraviolet radiation, and heat treatment.

(continued page 11).

WELCOME

Welcome to the 2nd edition of Ballast Exchange, the biannual newsletter of California Sea Grant Extension's West Coast Ballast Outreach Project.

This edition marks the first year anniversary of the Ballast Outreach Project. Over the past year, our project has made significant contributions to improving communication and information exchange between the diverse groups involved in ballast management and aquatic nuisance species issues.

Our major achievements during the first year of the project have included sponsorship or co-sponsorship of six forums or workshops in locations ranging from Alaska to Vallejo, California. These forums have brought together maritime industry representatives, agency staff, marine architects, researchers, and environmentalists to learn about and discuss ballast management issues. Through formal presentations, participants learned about the latest developments in ballast technology and regulation. The lively discussions and debates at the forums also undoubtedly increased everyone's understanding and appreciation of the complex issues associated with ballast management (continued page 12).

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PUGET SOUND: SHIPPING PATTERNS AND SITING BALLAST EXCHANGE ZONES

By Kevin Anderson, Puget Sound Water Quality Action Team

A new report from the Puget Sound Water Quality Action Team highlights the complexity of ballast water exchange and encourages further study and coast-wide coordination of ballast water management. Following are highlights of the report.

The Puget Sound Action Team coordinates federal, state, tribal and local programs that affect Puget Sound water quality and biological resources. For its 1999–2001 work plan, the Action Team identified aquatic nuisance species (ANS) as a priority issue. Currently, the Action Team is developing an ANS program for the updated Puget Sound Water Quality Management Plan, to be completed in fall 2000.

The Action Team support staff commissioned a report on ballast water management in Washington and British Columbia because ballast is a potentially significant ANS vector to the Sound. The report focuses on alternative zones for ballast water exchange. Jessica Gramling, a master's degree candidate at the University of Washington School of Marine Affairs, wrote the report as an intern with the Action Team.

In preparing the report, Gramling drew on current literature and on interviews with industry, scientific and government experts. The report provides important information about Puget Sound shipping, institutional arrangements and considerations for siting exchange zones. In addition, the report suggests follow-up studies and encourages further interjurisdictional cooperation.

An analysis of shipping information shows a high potential for ballast water discharge in the Puget Sound region. During 1998, a total of 3,861 vessels called on Puget Sound ports. The most common previous port of call was Japan, followed by California, Alaska and other Washington ports. Fifty-four percent of these vessels were

engaged in coastwise trade and most likely could not conduct an exchange of their ballast water in the open ocean. The estimated ballast water arrival volume for these vessels was almost 21 million metric tons.

Seventeen percent of all ships entering Puget Sound in 1998 loaded, but did not off-load, cargo. They most likely discharged ballast water during the loading process. About 70 percent of these vessels originated from other Pacific coast ports and therefore did not enter the open ocean.

The estimated ballast water capacity of these vessels was 9.4 million metric tons. Bulk carriers and tanker vessels accounted for over 90 percent of this capacity.

Vancouver is the largest port in the Georgia Basin. It received 2,743 vessel calls in 1998. Most calls were for exports—62.4 mil-

lion metric tons were exported while only 5.5 million metric tons were imported. Eighty-four percent of the cargo handled by the port was bulk cargo, primarily coal and grains. It is reasonable to assume that the majority of vessels arriving at the port discharged ballast water before loading cargo. The principal trading partners with the Port of Vancouver are Brazil, China, Great Britain, Indonesia, Italy, Japan, Mexico, South Korea, Taiwan and the U.S. Fortunately, most of the vessels arriving from these countries are able to conduct an open-ocean ballast water exchange to minimize introducing ANS upon arrival.

Siting alternative ballast water exchange zones is one management option for reducing the risk of introducing ANS into Puget Sound. Alternative zones could be used by coastwise vessels that never reach the open ocean and by transoceanic vessels that are unable to exchange ballast water in the open ocean for safety reasons. The Port of Vancouver has already designated such an exchange zone in the Strait of Juan de Fuca.

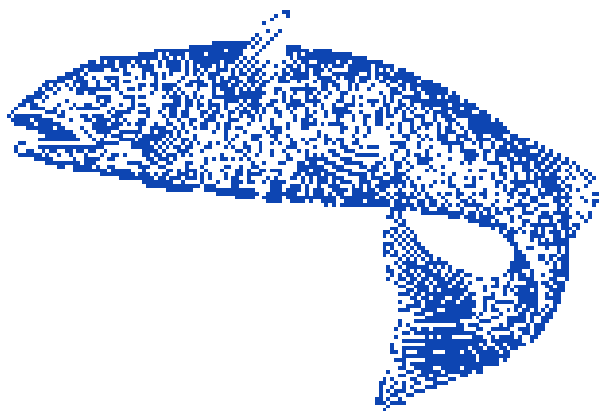




To ensure that alternative exchange zones are appropriately located and successfully used, the report suggests that the following be considered in siting such zones:

- Institutional constraints, such as existing laws and agreements and the location of military or restricted areas;
- Operational considerations, such as vessel and crew safety and the amount of time required to complete an exchange;
- Practically, exchange zones would be located within already established trade routes and shipping lanes;
- Oceanography, including local and regional circulation patterns, and scales of variability; and
- Biology, including the location of sensitive biological areas (aquaculture sites, fisheries, marine protected areas and endangered species habitat).

The report finds that the best short-term solution to the ballast water problem is open-ocean exchange of ballast water. But experts agree that this is only an interim solution.



Ideally, ballast water should be treated prior to intake, onboard the vessel, or at the time of discharge.

A number of actions can be taken to follow up with recommendations in the report. These include:

- Improving coordination between entities participating in West Coast ballast water management, including British Columbia and Alaska;
- Examining the suitability of the current Port of Vancouver exchange zone;
- Siting alternative exchange zones for vessels entering Puget Sound;
- Encouraging the use of best management practices to reduce the probability of taking on organisms during ballasting;
- Encouraging on-board or on-shore treatment of ballast water;
- Using the Coast Guard/Smithsonian Environmental Research Center database to assess the risk and effectiveness of the current management strategy;
- Investigating ballast water and shipping patterns for vessels engaged in coastwise trade;
- Encouraging continued studies of treatment technology and shipping patterns, and additional research on how ballast water behaves once discharged; and
- Investigating the use of a matrix to evaluate the risk that a vessel will discharge ANS in its ballast water based on individual vessel characteristics, port of origin and other criteria.

For a complete copy of the report, call the Action Team at 360.407.7300 or visit the web at http://www.wa.gov/puget_sound

The Puget Sound Water Quality Action Team works with federal, state, tribal and local governments, businesses and citizens to develop and implement two-year work plans that protect Puget Sound's water quality and biological resources. The biennial work plans are based on the Puget Sound Water Quality Management Plan. The management plan outlines a long-term strategy for protecting Puget Sound. It also implements the national estuary program requirements.

Members of the Action Team include the heads of 10 state agencies, city, county and tribal representatives and the regional heads of the U.S. Fish and Wildlife Service, U.S. Environmental Protection Agency and the National Marine Fisheries Service.

COPEPODS INVADE THE SAN FRANCISCO ESTUARY

By Sean R. Avent¹, Stephen M. Bollens¹, Wim Kimmerer¹, and Jeff CORDELL²

Copepods are tiny crustacean zooplankton that are essential to the food web in estuaries. They form a critical link between the phytoplankton and bacteria at the base of the food web and higher levels. For instance, copepods can be a major component in the diet of commercial and sport fishes and crustaceans like shrimps and crabs, at least during some phases of their life cycles.

Copepods are both small (typically < 3mm) and abundant (e.g., > 500 per liter), making them easily pumped into ballast tanks, especially within estuaries. Some species can tolerate harsh or variable environmental conditions and can even alter their metabolism or produce resting eggs. Thus they can reduce their need for food and other resources until conditions are once again favorable. These strategies enable some copepods to survive a trip across the Pacific Ocean and allow them to exploit favorable conditions and proliferate upon being released into a new, distant estuary.

The San Francisco Estuary has been called the most invaded estuary in the country and maybe even the world (Cohen and Carlton, 1995). Most of these species introductions can be attributed to increasing ship traffic and ballast water releases (Cohen and Carlton, 1998). As a result, at least eight introduced species of invasive copepods have been identified in the estuary so far (Table 1). An additional copepod, *Eurytemora affinis*, is of unknown origin and may have been introduced along with the striped bass from the Hudson River in the late 19th century.

Over the past 20 years, a dramatic change has occurred in copepod community composition in both the Sacramento/San Joaquin Delta and Suisun Bay. Especially in the last 12 years, there has been an increase in the abundance of introduced species and a decrease in native species (Orsi, 1995; Kimmerer and Orsi, 1996). Introduced species are now more abundant than native species during the summer and fall in the upper estuary and delta (Orsi, 1995, 1999).

In the seaward reaches of the estuary, copepods are the most abundant of the zooplankton (median 92 %, Kimmerer et al., 1999). Since the last comprehensive zooplankton study two decades ago (Ambler et al., 1985), the zooplankton community composition has changed dramatically with the introduction of at least four copepods. The smaller cyclopoid copepods, *Oithona davisae* (introduced prior to 1963) and *Limnoithona tetraspina*, now dominate the community with peak abundances in excess of

500,000 per cubic meter each (Bollens et al., 1999). Also abundant are *Acartia* spp. (native), *Pseudodiaptomus marinus* (introduced), *Paracalanus quasimodo* (native), *A. sinensis* (introduced), and the larger and carnivorous introduced *T. dextrilobatus* (Fig. 1) (Kimmerer et al., 1999).

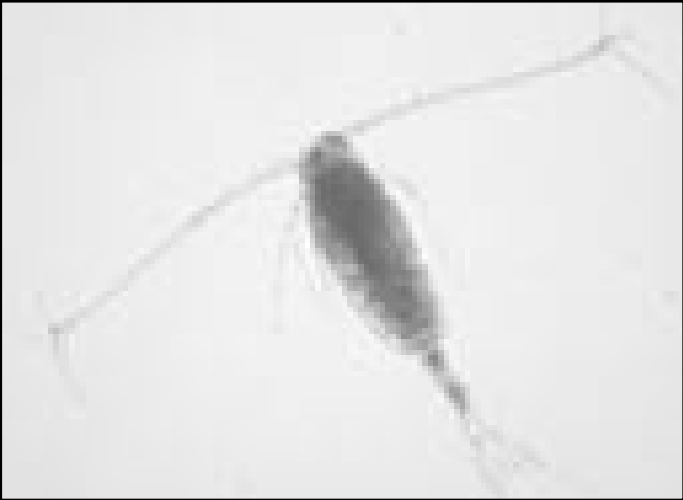


Figure 1. Adult female *Tortanus dextrilobatus*, an invasive, carnivorous copepod whose impact on the planktonic trophic dynamics of San Francisco Estuary is unknown, but suspected to be significant. Total length = 1.8 mm.

The ecological and economic implications of these copepod invasions into the San Francisco estuary are not as well understood as for some other, larger invasive species (e.g., the Chinese mitten crab), but they may nevertheless be substantial. Although invasive copepods may not cause direct economic impacts (e.g., ship fouling, wood boring, or structural habitat changes), they are likely to change the

Table 1 - List of introduced copepods in San Francisco Bay and th

<u>Taxon</u>	<u>Country of Origin</u>	
<i>Cyclopoida</i>		
<i>Oithona davisae</i>	Japan	Prior to 1970
<i>Limnoithona sinensis</i>	China	1970s
<i>Limnoithona tetraspina</i>	China	1990s
<i>Calanoida</i>		
<i>Eurytemora affinis</i>	Atlantic Coast, USA ?	1870s
<i>Sinocalanus doerrii</i>	China	1970s
<i>Pseudodiaptomus marinus</i>	China	1980s
<i>Pseudodiaptomus forbesi</i>	China	1980s
<i>Acartiella sinensis</i>	China	1990s
<i>Tortanus dextrilobatus</i>	Korea or China	1990s



structure of the plankton communities and the estuarine food web, which may in turn have adverse effects on higher trophic levels such as fishes and birds:

- Direct competition between invasive and native copepod species can result in lowered native copepod abundances and biodiversity.
- Introduced copepods, especially small cyclopoids, may be less available as prey for fishes compared to native copepods (Kimmerer, 1991; Meng and Orsi, 1991) and other zooplanktivorous animals (e.g., the Asian clam *Potamocorbula amurensis*, Kimmerer et al., 1994), decreasing trophic energy transfer.
- The appearance of *T. dextrilobatus* may represent a functional shift in the zooplankton community towards greater carnivory in the planktonic food web.

In order to understand in detail how these invasions affect the native copepod populations and planktonic food webs, more research is required on the basic ecology (i.e., feeding, growth, reproduction, predation, physiological responses/tolerances) of both the invasive and native species, including their interactions. Monitoring of both ballast and estuarine waters to resolve the issues of origin and ballast survival of organisms will also be necessary to help determine ways to prevent the release of viable invaders in the future.

Unless ballast water discharges are controlled, the San Francisco Estuary zooplankton community will continue to change as new species are introduced. These changes are expected to be conveyed to higher trophic levels, in ways that are unpredictable, but which may lead to negative economic impacts and loss of biodiversity and resources within the estuary.

e San Joaquin/Sacramento River Delta.

Introduction Date	Reference
r to 1963	Ferrari and Orsi, 1984
9	Ferrari and Orsi, 1984
2	Orsi and Ohtsuka, 1999
9 ?	Orsi, 1995
8	Orsi et al., 1983
6	Orsi and Walter, 1991
7	Orsi and Walter, 1991
2	Orsi, 1995; Orsi and Ohtsuka, 1999
2	Orsi, 1995; Orsi and Ohtsuka, 1999

FOOTNOTES

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OREGON INITIATES BALLAST PROGRAM

By Paul Heimowitz, Oregon Sea Grant Extension

As California and Washington steam ahead with ballast water legislation, interest has grown in managing Columbia River ballast discharges. On March 13, 2000, U.S. Senator Ron Wyden from Oregon announced a joint initiative by the Ports of Portland and Astoria to create a regional ballast water consortium.

The consortium also will involve Oregon Sea Grant, Portland State University, the Pacific States Marine Fisheries Commission, the Marine Environmental Research and Training Center, Clatsop Community College, the Columbia River Steamship Operators Association, the Coast Guard, Senator Ron Wyden, Congressman David Wu and others who have agreed to come together in an effort to begin the development of a ballast water management plan for the lower Columbia River.

While the Columbia River needs further study, non-native residents like the Asian copepod *Pseudodiaptomus inopinus* are likely examples of ballast water introductions. Oregon currently lacks any significant initiative designed to combat this serious problem. The consortium's proposed approach will be two-fold.

In the short term, a task force headed by the Pacific States Marine Fisheries Commission will act as a coordinating, data gathering and funding vehicle for the consortium. The consortium will also pursue support to analyze alternatives for the economic and effective treatment and management of ballast water in the lower Columbia. Some members of the consortium may also seek the introduction and enactment of a bill in the Oregon Legislature that will give special emphasis to preventing the introduction and spread of aquatic nuisance species from shipping vessels in Oregon waters.

In the long term, the consortium will use the findings of its alternatives analysis to examine the need and feasibility of establishing a ballast research and development center. This center could be located in Astoria or another lower Columbia River site and could provide a focal point for West Coast and national ballast water research. Consortium members plan to begin exploring these opportunities during a ballast water research forum sponsored by the Pacific Ballast Water Group, along with Oregon and California Sea Grant, in Portland on July 13, 2000 in conjunction with The Coastal Society annual conference.

REGULATOR

CALIFORNIA'S BALLAST WATER PROGRAM

By Maurya B. Falkner, California State Lands Commission

In October 1999, California's Governor signed Assembly Bill 703, creating the Ballast Water Management for Control of Nonindigenous Species Act (Act), which became effective Jan. 1, 2000.

The Act addresses the growing problem of nonindigenous aquatic species (NAS) being introduced into state waters through ballast water discharges. These introductions have created ecological, operational, and engineering disasters in many areas of the world. NAS are commonly reported in San Francisco, Los Angeles, San Diego and smaller harbors throughout California.

The Act established a program involving the California State Lands Commission (CSLC), Department of Fish and Game (CDFG), State Water Resources Control Board (SWRCB) and the Board of Equalization (BOE). The CSLC is responsible for developing, implementing and evaluating the ballast water inspection and monitoring program.

The Act requires vessels to: adopt "Good Housekeeping Practices" to minimize the uptake and discharge of NAS; develop and maintain a vessel-specific Ballast Water Management Plan; and provide training for their crews. All vessels carrying ballast water and/or associated sediments into state waters after operating outside the Exclusive Economic Zone* (EEZ) must employ one of these ballast management practices: (1) conduct a mid-ocean ballast water exchange before entering state waters; (2) retain ballast water on board; (3) use an alternative method approved by CSLC; (4) discharge all ballast water to an approved shore-side facility; or (5) conduct a ballast water exchange within an area agreed to by the CSLC. All vessels must report their ballast practices per voyage and retain this information on board for two years.

To reduce the paper work burden on vessels, the CSLC has adopted the U.S. Coast Guard's Ballast Water Report Form. The program includes: a \$400 per voyage fee; the collection of ballast data; field inspection of ballast water and sediments from vessels;

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analysis of data to evaluate the effectiveness of the program; and enforcement through the imposition of administrative civil penalties.

The CDFG, Office of Oil Spill Prevention and Response (OSPR), is responsible for conducting research to determine the location and extent of NAS populations in state coastal and estuarine waters. This research is scheduled to begin in the summer of 2000. Data will be used for siting alternative discharge zones, delineation of environmentally sensitive areas to be avoided for uptake or discharge of ballast, and assessing the long-term effectiveness of discharge control measures.

The SWRCB is responsible for conducting studies to evaluate alternatives for treating and otherwise managing ballast water. These studies will determine the best available technologies that will provide the greatest reduction in the number of NAS, the relative effectiveness of those technologies, and the cost of implementing those technologies.

Finally, the BOE is responsible for collecting fees into the "Exotic Species Control Fund," which will be used to support the statewide programs.

During the first quarter of the program's implementation, 1,679 vessels statewide were subject to the law. Approximately, 67% of those vessels submitted the required report to CSLC prior to leaving their first port in the state. CSLC inspectors boarded approximately 25% of the vessels to verify compliance. The CSLC staff is conducting extensive outreach to educate the maritime industry about ballast water issues, NAS introductions and requirements under the new California law. Additionally, the CSLC is working closely with state and federal agencies and industry representatives to identify alternative discharge zones and develop criteria for evaluating alternative ballast water management technologies.

** The U.S. Exclusive Economic Zone (EEZ) extends from three to 200 miles off shore.*

WASHINGTON PASSES BALLAST WATER MANAGEMENT BILL

By Erin Williams, CA Sea Grant, and Scott Smith, WA Department of fish & Game

The state of Washington recently became the second state, following California, to regulate the discharge of ballast into state waters. Governor Locke signed Substitute House Bill 2466 (SHB 2466) on March 24, 2000. The bill will become law 90 days after it was signed.

The purpose of the bill is to enable the maritime industry, Washington Department of Fish and Wildlife (WDFW) and the U.S. Coast Guard to form a partnership to reduce the risk of introducing nonnative species from ballast water.

Major provisions of the bill include a requirement that all ships entering a Washington port and planning to discharge ballast water (BW) perform BW exchange a minimum of 50 miles from shore (prior to entering the port). Reporting of ballast water operations is also mandated. Vessels that intend to discharge ballast water are required to sample and test their ballast water according to protocols set by Washington Department of Fish and Wildlife. Implementation of SHB 2466 will be funded by the maritime industry, federal funds and existing resources within WDFW.

Since ballast exchange cannot always be accomplished safely, an exemption to the BW exchange requirement is provided in cases where weather or other conditions prevent exchange beyond 50 miles. However, after July 1, 2002, all ships will be required to exchange or treat their BW. To facilitate the development of new technologies as an alternative to BW exchange, the bill requires initiation of a pilot project to develop new equipment or methods to treat ballast water. Washington hopes this project will create incentives for the private sector to invest in the development of effective technology for ballast water treatment in Washington, which may then expand to a global market.

The U.S. Coast Guard ballast water exchange program is currently voluntary, with mandatory reporting in other areas of the United States. The Washington state ballast exchange requirement is mandatory, similar to California law. Vancouver, B.C., and the Great Lakes region also have mandatory ballast water exchange requirements. Washington has included coastal, port-to-port shipping in their BW requirements, which is not presently required by the Coast Guard and California programs. The requirement for coastal vessels to exchange ballast water could reduce the risk of spreading destructive species, such as the Chinese mitten crab, to Washington.

Noncompliance with SHB 2466 provisions will result in civil penalties. Washington is allowing access to BW reporting documents to Washington marine trade associations to encourage compliance among their members.

BALLAST WATER MANAGEMENT

By James Walsh, Carnival Cruise Lines

Ballast water is exchanged to maintain safe operating conditions throughout a ship's voyage. This practice reduces the stress on the hull, provides transverse stability, aids propulsion and maneuverability, and compensates for weight lost from fuel and water consumption. As ballast water tanks are adjusted, depending on where the ballast water is exchanged, nonnative organisms may be introduced into the environment.

There is a global concern regarding the impact of Ballast Water Management Practices, since the ballast tanks can transport various organisms and release them into areas where they are not native. These organisms threaten aquatic flora and fauna in many of the world's coastal regions.

Carnival Cruise Lines (CCL) ships have a standard Ballast Water Management Plan. However, since regulation and restrictions vary between ports, states, and countries, CCL also has specific programs in place. In addition, CCL has ongoing technology review programs that are performed on an internal basis, as well as programs in conjunction with other cruise lines through Environmental Roundtables.

The state of California enacted its Ballast Water Management Program on January 1, 2000. Consequently, the requirements for Carnival's California-based vessels have been updated. All ships that pick up ballast in foreign waters must conduct an open ocean exchange at least 200 nautical miles offshore before discharging their ballast in California waters.

Voluntary open-ocean exchange of ballast water is currently the favored management practice for reducing the transfer of non-native organisms. CCL will continue to incorporate this plan as well as to review various technologies as part of its Ballast Management Plan. CCL is currently reviewing ultra-violet treatment technology, gray water purification systems to yield near potable quality water to be used as ballast water, as well as other technologies that do not use chemicals as the vehicle to control organisms.

IN PRINT

[Ballast Water and Aquatic Nuisance Species: Setting a Research Agenda for the Great Lakes](http://www.glc.org/ans/anspubs.html)

Executive summary and proceedings from the April 1999 Great Lakes Panel on Aquatic Nuisance Species Symposium available at <http://www.glc.org/ans/anspubs.html>

Also the focus of the feature article in the latest issue of the Panel's ANS Update newsletter, available online at <http://www.glc.org/ans/ansupdate/ansupdate.html>

[Biotic Invasions: Causes, Epidemiology, Global Consequences, and Control](http://esa.sdsc.edu/issues5.htm)

Issues in Ecology Series, #5, Spring 2000
<http://esa.sdsc.edu/issues5.htm>

["Pollutants Without Half-Lives: The Role of Federal Environmental Laws in Controlling Ballast Water Discharges of Exotic Species"](#) by Brent C. Foster.

Available in *Environmental Law* (published by Lewis and Clark's Northwestern School of Law) 30 *Envir. Law* 99 (2000)

ON LINE

[California State Lands Commission](http://www.slc.ca.gov)
<http://www.slc.ca.gov>

[Canadian Department of Fisheries and Oceans](http://www.ncr.dfo.ca/)
<http://www.ncr.dfo.ca/>

[Great Lakes Panel on Aquatic Nuisance Species](http://www.glc.org/ans/anspanel.html)
<http://www.glc.org/ans/anspanel.html>

[National Ballast Water Information Clearinghouse - SERC](http://www.serc.edu/invasions/ballast.htm)
<http://www.serc.edu/invasions/ballast.htm>

[Nonindigenous Aquatic Species Site](http://www.nas.er.usgs.gov/)
<http://www.nas.er.usgs.gov/>

[Pacific Ballast Water Group](http://web.pdx.edu/~sytsmam/pbwg/pbwg.html)
<http://web.pdx.edu/~sytsmam/pbwg/pbwg.html>

[Sea Grant Nonindigenous Species Site](http://www.ansc.purdue.edu/sgnis)
<http://www.ansc.purdue.edu/sgnis>

[U.S. Coast Guard Ballast Water Program](http://www.uscg.mil/hq/g-m/mso4/contents.htm)
<http://www.uscg.mil/hq/g-m/mso4/contents.htm>

[West Coast Ballast Outreach Project](http://ballast-outreach-ucsgep.ucdavis.edu)
<http://ballast-outreach-ucsgep.ucdavis.edu>

CORRECTION

The photograph of zebra mussels on a native unionid mussel in the first edition of *Ballast Exchange* should have been credited to Fred Snyder at Ohio Sea Grant. Our apologies to Fred.



INDUSTRY

PORT OF STOCKTON ADOPTS BALLAST WATER PROGRAM

By Jay Jahangiri, M.S., REM, REA, Director of Environmental and Regulatory Affairs, Port of Stockton

The Port of Stockton's environmental management policy is to support and participate in regional, statewide and national efforts to minimize the risk of introduction of exotic/nonindigenous species into the San Joaquin Delta and its tributaries.

In January 1999, the Port adopted its Ballast Water Tracking (BWT) program, which the Port's departments of Maritime Affairs (MA) and Environmental and Regulatory Affairs (ERA) collaboratively developed. The BWT program has the following components:

- **Advisory Notice and Survey Form:** The Port provides a written Ballast Water Advisory Notice to all vessels calling at Stockton. The advisory notice instructs all vessels to exchange their ballast water in the open ocean prior to entering the EEZ (200 nautical miles offshore) as required by state Assembly Bill 703.
- **Data collection and tracking module:** The Port's Dock Superintendent distributes the Ballast Water Survey Form to each vessel crew. The vessel crew completes the form, signs and returns it to the Dock Superintendent.
- **Data entry and management:** The ERA and MA departments collaborate on data entry and management. The data is then maintained and analyzed by the ERA for future use. The following information is entered into an integrated BWT database:
 - Vessel Name
 - The quantity (metric tons) and type of ballast water (salt, fresh or estuarine) that is discharged at the Port.
 - The origin of the ballast water, its date of discharge into the Port's waters and its specific gravity.



The Port is currently working closely with the State Lands Commission (SLC), allowing SLC staff access to the various Port dock areas for the purpose of taking representative samples of ballast water discharge from vessels. Port Director LeRoy Hieber believes that the Port's ballast water management policy is a positive and fundamental step toward educating all vessel crews about their regulatory obligations.

Any questions regarding the Port of Stockton ballast water program may be directed to Port Director LeRoy Hieber or Jay Jahangiri at 209-946-0246.



O N T H E M O V E

COMING EVENTS

PACON 2000: The Ninth Pacific Congress on Marine Science and Technology

Honolulu, Hawaii
June 5–9, 2000

Multidisciplinary/multiregional discussion of the role of marine science and technology in the economic development of Pacific Basin resources

For more information see <http://www.hawaii.edu/pacon>

3rd Annual Port of Stockton Environmental Awareness, Multi-Media Pollution Prevention, Storm Water Management & Best Management Practices Training Workshops

June 8, 9, 15, or 16, 2000 (one day workshops)

A review of universal Best Management Practices (BMP's) applicable to Industrial/Municipal Storm Water Management Permitting Programs including Water Transportation/Port specific BMP requirements.

Contact: Rita Koehnen at rkoehnen@stocktonport.com

Introduced Species Workshop

Bodega Marine Laboratory, Bodega Bay, CA
June 19–20, 2000

Free two-day workshop funded by University of California Cooperative Extension will provide hands-on education about Central California's most common invasive estuarine and near shore marine species. Participants will include Dr. James Carlton (Williams College), Dr. Gregory Ruiz (Smithsonian Environmental Research Center), Dr. Jon Geller (Moss Landing Marine Laboratory) and others.

Contact Ted Grosholz at tedgrosholz@ucdavis.edu

A Ballast Water Research Agenda for the 21st Century

Portland, Oregon
Thursday, July 13, 2000

Following the Coastal Society's 17th International Conference, this forum will develop regional ballast water research priorities. Sponsored by the Pacific Ballast Water Group, Oregon Sea Grant, and California Sea Grant.

Contact Paul Heimowitz, 503.722.6718 or
<http://www.oce.orst.edu/mrm/tcs17/fieldtrip.html#Ballast>

Prevention First 2000

Long Beach, California
August 29–30, 2000

An onshore and offshore spill prevention symposium and technology exhibition presented by the California State Lands Commission.

Call 800.858.7743 to register.
Early registration fee - \$150; After August 8 - \$195

Annual Meeting of the Western Regional Panel of the Aquatic Nuisance Species Task Force (ANSTF)

Oakland, California
September 26–27, 2000

Rooms available at the Washington Inn 510.452.1776.

PAST EVENTS

Great Plains Zebra Mussel Info & Monitoring Workshop

March 7–8, 2000

A discussion of concerns in western states where zebra mussels have not yet been detected and information on monitoring and control specific to the electric utility, municipal water, irrigation, and aquaculture industries. Preceded the [100th Meridian Initiative Strategy Meeting, held March 9, 2000.](#)

Seatrade Cruise Shipping Convention

Miami Beach, Florida
March 7–11, 2000

<http://www.seatrade-events.com/>

Alaskan Aquative Invasive Species and Ballast Water Workshop

Anchorage, Alaska
March 23–24, 2000

Sponsored by California Sea Grant, US Fish and Wildlife, and PWS Regional Citizens' Advisory Council.

Contact Karen Hart, West Coast Ballast Outreach Project/CA Sea Grant at 510.622.2398 or kdhart@ucdavis.edu

Biological Invasions! The Quiet Global Change

The 61st Annual Biology Colloquium at Oregon State University
Corvallis, Oregon
April 12, 2000

A discussion of the economic, social, ecological, evolutionary, and human health consequences of nonnative species, as well as the problems involved in control. Hosted by Oregon Sea Grant and Oregon State University's Office of Research and the Colleges of Agricultural Sciences and Forestry.

Contact: Christi Sheridan at 541.867.0367
<http://seagrants.orst.edu/colloquium/index.html>

Vessels & Varmints: A Workshop on Next Steps for Ballast Water Management in the San Francisco Estuary

Elihu Harris State Building, Oakland, CA
May 11, 2000

Sponsored by San Francisco Bay Regional Water Quality Control Board, Port of Oakland, Center for Marine Conservation, and Pacific Merchant Shipping Association.

Contact: Steve Moore, San Francisco Bay RWQCB at 510.622.2349/sm@rb2.swrcb.ca.gov or Jody Zaitlin, Port of Oakland at 510.627.1179

California Sea Grant Ballast Water Video Conference

May 16, 2000

Six U.S. sites and one in Canberra, Australia linked together to exchange information on each country's approach to the ballast water (BW)/aquatic nuisance species (ANS) issue. ANS introduction impacts, BW regulations, operational implementation of regulatory measures and BW treatment technologies were some of the topics discussed in this three hour forum.

Contact Erin Williams at 650.871.7559 or Karen Hart at 510.622.2398 for information or to borrow a videotape of this event.

U.S. COAST GUARD TESTS BALLAST FROM FOREIGN WATERS (CONT)

The Coast Guard's BWM program is currently funded at approximately \$3.4 million annually. This includes 39 field positions (22 of which were created in the spring of 1999) and three Headquarters' positions (two of which were new in 1999.)

In carrying out the nation's BWM program, key USCG activities will include:

- Remaining an active member of the ANSTF and tracking activities of the Invasive Species Council as they relate to BWM;
- Chairing the ANSTF's Ballast Water and Shipping Committee, which is developing a protocol for testing and approving alternative BWM technologies;
- Pursuing BWM research using cooperative research and development agreements to the maximum extent possible;
- Maintaining the National Ballast Water Information Clearinghouse at the Smithsonian Environmental Research Center, with whom the USCG will synthesize and analyze the data collected from both USCG field activities and industry's BWM reporting;
- Playing a major role in the development of international BWM regulations through the International Maritime Organization and chairing the interagency working group responsible for preparing the U.S. negotiating position;
- Participating in regional forums (e.g., ANSTF Western Regional Panel Coastal Committee, the Pacific Ballast Water Group, Canada's West Coast Ballast Water Group, and California Sea Grant's West Coast Ballast Outreach Project);
- Cooperating to the extent feasible with states that have enacted their own BWM legislation (such as California with its Assembly Bill 703).

Two pertinent web sites are the USCG's

<http://www.uscg.mil/hq/g-m/mso4/First.htm> (which contains the Voluntary National Guidelines for BWM) and the National Ballast Water Information Clearinghouse at <http://www.serc.si.edu>

While the initial results of the National Ballast Survey appear promising, it is still too early in the life of the program, statistically speaking, to draw meaningful conclusions about the level of compliance with the National Voluntary Guidelines for Ballast Water Management. Once a substantive set of data has been compiled, a narrative analysis will be provided, perhaps on a yearly basis.

For more information, contact Cmdr. John W. Koster, USCG Pacific Area/Eleventh District Ballast Water Management Program Coordinator, at 510.437.2956.

CONTACTS

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WELCOME (CONT)

Karen and I also were able to participate in several industry-sponsored meetings, including Transportation Challenges 2000 in Long Beach, California, the Seatrade Cruise Shipping Convention in Miami, Florida., and the Society for Naval Architects meeting in Monterey, California, where we hosted booths and/or provided information on ballast issues to participants.

As we move into the second year of our project, we have a number of upcoming events and goals. First, we will continue on our schedule of forum events in various locations throughout the Western and Pacific regions. Upcoming planned meetings include events in Australia (video-conferenced to the U.S.), Hawaii, and Oregon (see Events section for more details).

We are also looking forward to the publication of our project poster and brochure, which includes some wonderful artwork by Ed Lindloff. The poster "sub-project" has been a bit slower than we expected, but we think it will be worth the wait. Look for your complimentary copy in the mail within the next two months (and feel free to contact us if you would like additional copies). Finally, with the hiring of our new project staff, Erin Williams (welcome Erin!), we expect to have our website up and running by the end of June. For those of you that have visited us in cyberspace previously and been dismayed by our "Under Construction" sign, please try us back again toward the end of June at <http://ballast-outreach-ucsgcp.ucdavis.edu>

In closing, we would like to once again thank our sponsors, the National Sea Grant College Program and the CalFed Bay-Delta Program, without whom this work would be impossible. We have enjoyed working with our partners and participants in the project over the past year, and look forward to the exciting events of the coming year. And we would like to once again encourage your active participation and feedback on the Ballast Outreach Project or any of its components. We are just a fax, phone call, or email away and always appreciate any comments or suggestions.

*Jodi Cassell,
California Sea Grant Marine Advisor*

*Karen Hart,
Ballast Outreach Project Coordinator*



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