

Exotic Invertebrate Species Research Shows Big Changes for Morro Bay Estuary

Exotic species are those that have been transported by human activities into a region in which they did not previously occur. Such species are also often called non-native, non-indigenous and nuisance species. It is important to study and track invasive species because they can cause habitat destruction and loss of biodiversity, as well as severe economic impacts. NOAA estimates that aquatic nuisance species have an annual economic impact in the 100 millions of dollars in the United States alone.

At the State of the Bay conference in October, Lisa Needles, a doctoral student at UC Santa Barbara,

presented the results of important new research on the existence and distribution of exotic species in Morro Bay Estuary. Needles's work focused on the species found on hard substrates like boat hulls, piers, and rocks.

Exotic species can be introduced into bays and estuaries through a variety of sources including ballast water, floating marine debris, hull fouling, aquariums, and even research and education. In large harbors, ballast water from ships and barges is thought to be the most significant source of introduced exotic species. Because Morro Bay harbor is too small for the

large ships that release ballast water, the most likely mechanism for introduction of exotic aquatic species into Morro Bay Estuary is hull fouling.

With this in mind, Needles compared the percentage of native and exotic species found in Morro Bay to research results for larger bays including San Francisco Bay and Los Angeles Harbor. In Morro Bay 79% of the species encountered were native species, compared to only 30% for San Francisco Bay and 50% for Los Angeles Harbor. Overall, this data suggests that Morro Bay contains a low percentage of exotic invertebrate

continued on page 3

State of the Bay Event Draws Diverse Crowd

Community members, researchers, resource managers and other Estuary Program partners turned out at State of the Bay 2006 on October 13th and 14th to learn about a variety of topics related to the Morro Bay Estuary and watershed.

A series of technical presentations made by researchers involved in San Luis Obispo Science and Ecosystem Alliance (SLOSEA), drew a crowd on Friday afternoon. SLOSEA is a newly formed group of scientists, managers and stakeholders conducting management focused science and monitoring in the

Morro Bay and Estero Bay ecosystems.

Saturday afternoon a series of field trips, including a boat ride to discuss eelgrass bed monitoring efforts, a walking tour of the Chorro Creek Ecological Reserve and a tour of the Morro Bay Marine Mammal Center facility also proved to be very popular.

The next State of the Bay will be held in 2009. Estuary Program staff plan to offer additional field trips



Annie Gillespie, Volunteer Monitoring Program Coordinator, shows off a few blades of eelgrass on the Morro Bay's Hidden Habitat field trip.

and interactive activities next time round. If you have ideas of your own, contact Cheryl Lesinski at 805.772.3834.

Morro Bay Volunteer Monitoring Program Wins \$550,000 State Grant

The Morro Bay National Estuary Program's Volunteer Monitoring Program (VMP) has been awarded \$550,000 in state grant funds for a three year program to monitor the health of the Morro Bay Estuary and the streams that drain to it, and to evaluate the effectiveness efforts to improve water quality in the State and National Estuary. The VMP recruits and trains local citizens to conduct environmental monitoring in the Morro Bay watershed.

The VMP is one of a few dozen programs selected in a competitive process to receive a total of \$43 million. The source of the funding was the Proposition 50 Coastal Nonpoint Source Pollution Control

Program, a \$3.44 billion bond passed by California voters in 2002 to restore and protect the water quality and environment of our coastal waters, estuaries, bays and groundwater.

VMP data will be used to track the health of the estuary, and to assess the effectiveness of water quality improvement efforts including derelict boat removal on the bay, stormwater management, riparian fencing on grazing lands, land management to reduce erosion from farms and ranches, and floodplain restoration. The results will be used by the Estuary Program and others to guide and improve resource management.



The VMP's efforts will also benefit from close coordination with the San Luis Obispo Science and Ecosystem Alliance (SLOSEA) program centered at Cal Poly. SLOSEA is conducting a series of scientific initiatives focused on the estuary and surrounding ocean, with funding from the Packard Foundation, the California Ocean Protection Council, the Resources Legacy Fund Foundation and the Morro Bay National Estuary Program.

Meet Our New Watershed Restoration Coordinator

In August, Jon Hall was hired on as the Estuary Program's Watershed Restoration Coordinator. Jon has already started work on several important projects including the Walters Creek Phase II restoration and identifying locations for cattle exclusion fencing.

Jon grew up in a small town at the base of majestic Mount Diablo. His childhood consisted of daily adventures fishing, mountain biking, surfing and exploring the many open spaces around the San Francisco Bay Area.

After High School he received a Bachelor's Degree from Cal Poly in Ecology and Systematic Biology with an emphasis in wildlife biology. Upon completing his

degree, Jon spent a year traveling and surfing. He eventually found himself spending 6 months in the Aleutian Islands working with Sea Otters. In 1998 Jon returned to Cal Poly and received a Master's Degree in Agriculture, focusing on invasive species ecology.

While pursuing this degree, Jon worked for the SLO County Agriculture Department and as a Research Associate at Cal Poly developing climatic models used for invasive species risk assessment. During this time Jon also served on the Board of Directors for the California Invasive Plant Council (Cal-IPC).



Before coming to the Estuary Program, Jon was living on Catalina Island helping the Catalina Island Conservancy start their Invasive Plant Program. Jon has lived on boats in Morro Bay off and on since 2000. He currently lives in Baywood with his wife Rose and their dog Maverick.

Federal EPA Review of MB Estuary Program Highlights Multiple Strengths

The US Environmental Protection Agency (EPA) oversees each of the 28 National Estuary Programs, including the Morro Bay NEP. EPA provides significant grant funding to each program, reviews and approves annual work plans, and conducts a triennial review of each program's progress in protecting and restoring our National Estuaries.

In February of 2006, the Estuary Program staff submitted a three year progress report to EPA, and in June the Estuary Program hosted a group

of EPA staff from Washington D.C. and San Francisco as part of the triennial review process. The team spent two days touring project sites and meeting with staff and project partners, as well as the Program's Executive Committee.

This fall a formal letter was issued presenting the review findings.

The letter applauded the Estuary Program's work, and highlighted the following strengths in particular:

- Extremely effective coordination with a diverse group of partners.

- Notable watershed restoration projects funded via multiple funding sources.

- Successful Volunteer Monitoring Program that is an important leader in the monitoring arena.

- An effective and high-quality education and outreach program.

The Estuary Program would like to thank all of our partners for their contributions to this very successful program. We look forward to another year full of community support and achievements.

Big Changes in a Small Bay continued from page 1

species (around 21% of all species observed) and compared to larger harbors we are in good shape.

Unfortunately, it is necessary to take another look at the possible impacts of exotics in Morro Bay. The above results reflect the number of species, but not their relative abundance. Additional research and analysis by Needles shows that while the number of different invasive species may be relatively low, the impact of those exotic species is big.

Needles submerged ten plates one-meter below the water's surface in Morro Bay from February through October of 2005. The percent coverage of each native and exotic invertebrate species growing on the medium was then documented. Needles found that 88% of the coverage was by exotic species. Exotic species accounted for 17% of the diversity of species in the study, yet they were dominating the

available space, to the detriment of native organisms. In fact, just three of the exotic species covered a majority of the habitat: *Watersipora subtorquata* 35%, *Schizoporella unicornis* 33%, and *Botrylloides violaceus* 9%.

Did this dominance by exotics occur only on the experimental plates, or was it an accurate reflection of conditions throughout the bay? Armed with a remotely operated vehicle and video camera, Needles documented the sides of sixteen pilings at the two T-piers and, unfortunately, found similar results. Once past the upper zone of barnacles, she found nearly 100%

A view of one of Needles's study plates showing an invasion of non-native species.



Watersipora. She cautions that this video represents qualitative observation, not detailed quantitative research. She also noted that there are organisms living within and on top of *Watersipora* and that the video was taken at one point in time.

With so much space being occupied by three exotic species, who is losing out? Additional research is needed, but Needles indicated that two mussel species that were very common in 1986 research are now rare. Plans for the future include additional research in the bay and in the mudflats and work with the Morro Bay Volunteer Monitoring Program to development an early detection program to watch out for new invaders that could further impact the estuary.

For more information on this study visit our website at www.mbnep.org and download Lisa Needles's full presentation in Adobe Acrobat.

NEW Guide Offers Tips on How You Can Keep the Estuary Healthy

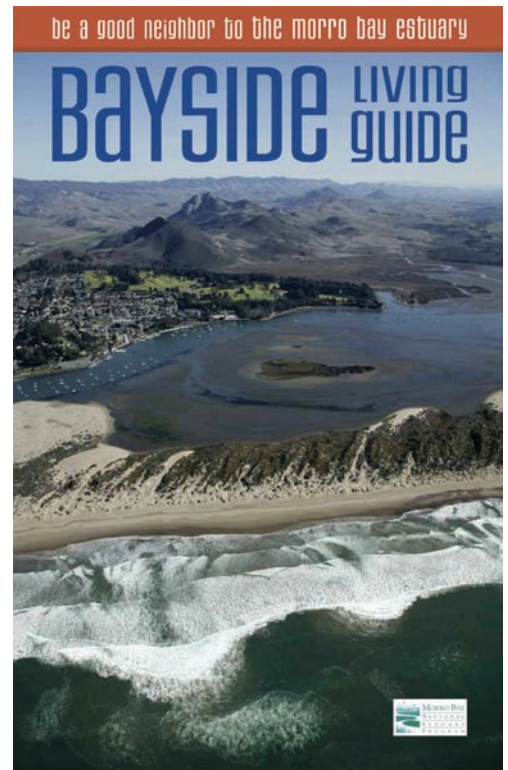
Want to help support a healthy and productive estuary, all from the comfort of your home? The Estuary Program is pleased to announce the release of a new reference guide that can help bayside residents learn new ways to contribute to protection of the estuary. The *Bayside Living Guide* is a colorful and friendly booklet that outlines how to make your home, automobile, pets, and garden bay-friendly.

Inside you will find information about proper disposal for household cleaners and chemicals, photos of native plants for your landscaping and where to buy them, tips on how

to keep your septic system in good working order, and more than 40 websites and phone numbers to use to learn more.

If you would like a FREE *Bayside Living Guide* mailed to your home and you live in Morro Bay or Los Osos, simply call 805.772.3834 with your address.

If you would like to reduce your impact on your local environment, but do not live bayside you can download a copy of the *Bayside Living Guide* from our website.



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The Morro Bay National Estuary Program is a local non-profit working to protect, preserve and restore the Morro Bay estuary and its watershed. The MBNEP is funded by the U.S. Environmental Protection Agency.

“Turning the Tide” is a free quarterly newsletter. To subscribe, call the MBNEP office or visit our website.



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