



# NOAA OKs Survey of Invasive Snails

By John Bragg, Coastal Training Coordinator

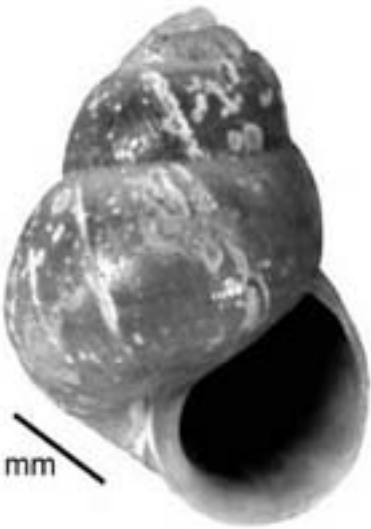
The South Slough Management Commission will be asked to approve a \$100,000 research proposal to learn more about a non-native, invasive snail first seen in Coos Bay last summer.

Last October South Slough staff requested NOAA's Aquatic Invasive Species program for funding to conduct surveys for the snails, thousands of which were found last July in brackish waters of the upper and middle bay. In February NOAA approved South Slough's request.

"The project will test the feasibility of establishing a coordinated, multi-organization early detection program for non-indigenous marine species in Oregon estuaries," said manager Mike Graybill. "To accomplish this, we will establish and test a cooperative agreement between NOAA, the South Slough National Estuarine Research Reserve and the Confederated Tribes of the Coos, Lower Umpqua and Siuslaw Indians, one of the three federally-recognized Indian tribes on the Oregon Coast."

Graybill said the partners will survey the Coos estuary to learn how widely snails have become established in the brackish areas of the bay. At the same time they will try to learn more about how widely native snails are distributed as well.

The researchers



*Assimineia parasitologica*

Continued on page 2

# SSNERR Searches for Bacteria at Sunset Bay State Park

By John Bragg, Coastal Training Coordinator

Sunset Bay State Park is one of the most popular swimming beaches on the southern coast of Oregon. However, the beach and surf zone are often the subject of water contact advisories indicating that high levels of *Enterococcus* bacteria have been detected at the beach. Detecting *Enterococcus* bacteria means that more-harmful fecal coliform also is likely to be present, according to Steve Rumrill, SSNERR research coordinator.

"We find elevated levels of *Enterococcus*, the indicator bacteria, in the marine waters and in the fresh water that flows into the bay via Big Creek," Rumrill said. "For example, 20 percent of 112 water samples collected from Sunset Bay in 2006 exceeded Oregon's maximum allowable levels for *Enterococcus*," which limits contamination to no more than 158 colony forming units of bacteria per 100 milliliters of water. There's been broad speculation among local residents and park managers about the source of the bacteria. Possible sources include failing septic systems, elk or deer, or even geese that graze upstream

Continued on page 2

**INSIDE THIS ISSUE**

**Cover Feature**

- NOAA OKs survey of invasive snails
- SNERR searches for bacteria

**Research & Stewardship**

- Placing woody debris - Pg 3

**Education**

- Exploring the estuary project - Pg 5

**FOSS News - Pg 6**

- Bookstore recent arrivals
- Members wanted
- Boat raffle winners

**Miscellaneous - Pg 7-8**

- Volunteer earn service awards
- A volunteer viewpoint
- Shorebird festival

# RESEARCH AND STEWARDSHIP NEWS

NOAA continued from page 1

will also try to measure the non-native snails' reproductive capacity in order to estimate the size of their breeding population. They will also begin searching for the invasive snails in the Umpqua River and Siuslaw River estuaries.

Tentatively identified in July 2007 as *Assiminea parasitologica*, the detection alerted researchers to a major, new, invasion by a previously-undetected marine species, Graybill said.

"It very likely hails from Asia (Japan or China, perhaps) where very similar looking species occur. It was likely introduced with shipping," said James T. Carleton, Professor of Marine Sciences at Williams College, Williamstown, Connecticut. Carleton is a world authority on the unintended migrations of non-native marine species. The movement of invasive marine species to new habitats, which often occurs during shipping, can disrupt local ecosystems and displace native species, or significantly alter waterways or landscapes.

Carleton said the *Assiminea* were found "by the thousands per square meter" in brackish water and on emergent mud banks of Coos Bay. Lower down on the same shore, on submerged stones, the snails were found mixed with another invader—the New Zealand mud snail, *Potamopyrgus antipodarum*. Carleton cautioned against confusing the two.

Carleton found *Assiminea* snails while surveying an upper estuary slough of Coos Bay last July 5. "This is an estuarine, brackish-water snail found in Coos Bay, (but it) may be more widespread in bays and estuaries along the coast," he said. In the middle of the Coos Bay

estuary, Carleton said he found *Assiminea* snails in saltier waters, on supralittoral emergent shores, and in salt marshes, where it was mixed with the native snails *Assiminea californica* and *Littorina subrotundata*, and with another the non-native snail, *Myosotella myosotis*.

Scientists don't know the full range of salinity that *Assiminea* snails can tolerate. The snail is small, about 5 mm long, with bulbous whorls, a broad inner aperture lip, light yellow bands at the top and bottom of the body whorl in younger shells, and with a highly eroded shell as the animal matures.

Carleton said a related native snail, *A. californica*, is smaller, narrower (less bulbous whorls), has a narrow inner lip, does not erode significantly as an adult, does not typically penetrate into very low salinity sloughs and does not occur in large, dense concentrations on supralittoral mud banks.

The work will begin in August.



Researchers tracking bacteria in Sunset Bay

Bacteria continued from page 1

from the bay; gulls and dogs on the beach itself, or from the thousands of marine mammals that populate near by reefs and rocks.

To learn more, Rumrill and researcher Ben Grupe collaborated with scientists from Oregon State University, Oregon Sea Grant Extension, the Oregon Department of Environmental Quality and the University of Oregon's Oregon Institute of Marine Biology to learn more about how water circulates and flows in and out of Sunset Bay.

"We wanted to determine whether the sources of the *Enterococcus* bacteria were terrestrial or marine in origin; determine the extent and duration of high bacteria levels when state and federal health standards are exceeded, and describe the range of environmental variables—such as rainfall, tidal height and wind direction—that are correlated with elevated bacteria levels," Rumrill said.

A series of sampling stations were

Continued on page 3

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# RESEARCH AND STEWARDSHIP NEWS

*Bacteria continued from page 2*  
established in the Big Creek watershed and Sunset Bay, where the scientists collected 244 water samples on 26 days over the period from November 2006 to October 2007. Some trends are beginning to come clear:

Concentrations of *Enterococcus* bacteria are consistently greater at the mouth of Big Creek than they are lower down in the bay. That indicates that the primary source of fecal indicator bacteria is entering the water via Big Creek, and not from the open ocean.

Water samples collected in Big Creek and Sunset Bay are more likely to contain high counts of *Enterococcus* bacteria after heavy rainfall. Tides generally flush the bacteria out of the bay with 72 hours, however.

High counts of *Enterococcus* bacteria were also observed in the sediments and sandy shores of the bay.

When the water becomes contaminated, the amounts of bacteria can vary considerably from sample to sample, or from one area of the bay to another, and the single-sample method often used to determine whether maximum safety limits have been exceeded may not always be accurate. The greatest levels of contamination seem to occur in the freshwater drainage system of Big Creek rather than from marine sources.

*Enterococcus* bacteria do not appear to survive well in salt water, so it is unlikely that the thousand of marine mammals and seabirds that defecate in the nearshore waters are

responsible for the outbreaks of contamination.

To understand how the currents move bacteria around the bay, Grupe paddles about the bay in a kayak, dropping numbered oranges into the surf and using a grid imposed on a map of the bay to chart the oranges' movements. Oranges float low in the water, out of the wind, and are easy to spot even in foggy weather or choppy surf as they drift on the bay's gentle currents. To learn more detail about how water moves at lower depths, Grupe and Rumrill employ



*Swimmers in Sunset Bay*

an instrument called an acoustic doppler sonar transponder. This device rests beneath the waves on the floor of the bay. It bounces echoes off of particles floating in the water. These measurements provide clues that reveal how the water is moving at different depths directly above the instrument.

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## PLACING WOODY DEBRIS IN TIDAL CHANNELS MAY IMPROVE SALMON HABITAT

*By John Bragg,  
Coastal Training Coordinator*

Placing large pieces of wood—preferably entire trees complete with their branches and roots—at strategic locations in tidal channels appears to improve the odds for young salmon foraging for food, researchers at the South Slough National Estuarine Research Reserve have learned.

Trees that drift into the estuary may become lodged in channels or on banks, where they might help to scour deep holes that fish might hold in, or else the trees may drift about the estuary with each tide or storm. The scientists found higher densities of juvenile salmon at locations where trees had been placed in tidal channels, compared to similar habitats with no woody debris.

In a project funded by the Oregon Watershed Enhancement Board, South Slough researchers collaborated with the Coos Watershed Association and the Oregon Department of Fish and Wildlife in a unique experiment. They want to understand what happens to fallen trees that are carried by streams to the tidal marshes, and how the presence of the wood affects salmon.

Since placing the tree more than three years ago, the scientists have been monitoring the movement of both the trees and of juvenile salmon swimming around them. Some of the trees have drifted about the estuary in a generally downstream direction; others were tethered into place.

The project offered a unique opportunity to address key habitat recovery questions associated with

*Continued on page 4*

# RESEARCH AND STEWARDSHIP NEWS

*Place woody debris continued from page 3*

placing large wood in estuarine habitats. South Slough Stewardship Coordinator Craig Cornu said research and restoration monitoring projects from Pacific Northwest estuaries have clearly established the importance of estuaries in the life histories of Pacific salmon.

“Placing large, woody debris at the mouths of tidal creeks creates staging areas where fish may hold before swimming up tributary tidal creeks to forage during flood or ebb tides,” said Cornu.

In 2004, S S N E R R partnered with the Coos Watershed Association to place 40 large Sitka spruce trees, complete with roots and branches, in 29 locations in South Slough’s upper estuary. The trees were donated to the South Slough reserve by the Oregon Parks and Recreation Department as

part of project to repair a damaged section of highway near Cape Arago. When it became apparent the trees must be removed to make way a new roadbed, the parks department offered to make the trees available for a salmon restoration project. To determine whether placing the trees in streams or tidal channels would provide the most benefit for fish, South Slough consulted with its Estuarine Wetland Restoration Advisory Group. Once a plan had been agreed upon, South Slough employed the services of a large helicopter to lift the trees from a nearby highway construction site, ferry them to the research reserve, and then drop them precisely into the slough.

Scientists have since closely monitored the effects of their work, using underwater videography and acoustic tracking devices to determine how estuarine fishes, juvenile salmonids in particular, are responding to the changes. The presence of wood in the channels appears to have increased the kinds and availability of prey for the fish. While placing large wood in tidal channels creates changes in the morphology of the channel, it is

too soon to make judgments about the quality of the habitat that is being created, Cornu said.

“The most preferred juvenile salmonid habitat was that of the Dalton Creek mouth,” Cornu said. At that site the placement of the wood, combined with the complexity of the channel and the flow of tidal currents seemed to favor fish production. “Our group hypothesizes that this habitat allowed for optimal cover, prey availability, feeding lanes, and refuge from rapid currents,” Cornu said.

The project was funded by a grant from the Oregon Watershed Enhancement Board. Project partners included the Coos Watershed Association and Oregon Parks and Recreation Department, with assistance from Stan van de Weterering and Ryan French of



*Large woody debris shapes habitat*

the Confederated Tribes of the Siletz Indians, Bruce Miller of the Oregon Department of Fish and Wildlife, former South Slough staff members Ayesha Gray of Cramer Fish Sciences, and Michele Koehler of Watershed Sciences, Inc., and Jena Lemke of ABR, Inc.

A complete summary of the project can be found on South Slough’s website at: <http://www.oregon.gov/DSL/SSNERR/docs/woodydebris.pdf>





## EXPLORING THE ESTUARY

By Tom Gaskill

If someone sent you out the door to go explore an estuary, you might start by turning right around and going back in to find a dictionary and discover what an estuary is in the first place. You would find that estuaries are located along the coast at the mouths of rivers where salty ocean tides meet with the fresh water flowing downstream to the sea. A bit more searching might uncover the familiar term, bay. Bays are partially enclosed by land, and along the edge of the bay, tidal marshes often form. Tidal marshes, made up of salt-tolerant plants, and mudflats, which appear largely un-vegetated, are common habitats found in estuaries. At low tide, channels of open water remain, providing an aquatic connection between the river and the ocean.

So now that you have a fix on where these estuaries occur and a rough idea of what they might look like, you are better prepared to explore and learn more.

The South Slough Reserve National Estuarine Research Reserve, dedicated in 1974, has long provided a place to learn about estuaries. Research and education provide a window to further our understanding of the watershed-estuary-ocean connections that are so vital to coastal life in all of its many forms. New to the Reserve in 2008 is the “Explore Your Estuary” project, funded by Trust Management Services LLC. This project evolved from a growing awareness that visitors to the South Slough Reserve might benefit from a deeper understanding of the estuary and the distinctive values a research reserve provides. While many people come to South Slough simply for recreation, the purpose of the South Slough Interpretive Center and trails is to teach visitors about the value of estuaries and the importance of caring for them.

Key estuary concepts are incorporated into publications, interpretive signs, brochures, and educational materials produced by the Reserve, yet many informal trail and waterway users are not aware of the special nature of the Reserve. They also may miss the connections between the research and education work

going on at South Slough NERR and how those lessons apply to other Oregon estuaries and coastal watersheds. It is vital for visitors to see improved stewardship of estuaries as an important and achievable action and understand the role they must play in attaining that goal.

The Explore Your Estuary project is designed specifically to address that opportunity by offering ways for visitors to collect observations and data and share their findings with others. By breaking research concepts into more manageable elements, such as observation, description, and interpretation, the reserve will be encouraging visitors to participate in the scientific process that begins with the careful, thoughtful collection of data. A natural fit exists here, since the foundation of science begins with a carefully crafted question and visitors often bring many excellent questions.

The Explore Your Estuary project will focus on the new North Creek Trail as a special site where visitors will be encouraged to become the investigator. The trail is designed to heighten awareness of wildlife and affords unique opportunities to observe wetland habitat from sheltered locations. Pet walking will be prohibited on this particular trail to enhance the



*Exploring the estuary project*

potential for wildlife viewing.

Visitors will be encouraged to borrow an Explorer Backpack and use the equipment and activities in it to collect data and record their observations while learning about the South Slough. Their observations will be collected and shared back at the Interpretive Center and kept as part of an on-going log of data and observations for the area. In this way, visitors become the observers and investigators seeking to understand how the estuary and watershed work.

We can't say for sure, where this project will lead, but we can surely hope that the journey to get there will be a fun, interesting, and educational one! Look for Explore Your Estuary activities in the South Slough's summer calendar.

For more information about this project and to become involved, please contact Tom Gaskill at [tom.gaskill@state.or.us](mailto:tom.gaskill@state.or.us).

# FOSS NEWS

## RECENT ARRIVALS AT THE SSNERR BOOKSTORE/GIFT SHOP

By David Lunde, Book Store

New books are available at the Friends of South Slough Bookstore & More. Among them, *The Unforgiving Coast*, a history of shipwrecks on the Pacific Northwest coast, should be of particular interest, given the work being done to remove one wreck from Oregon's beaches, and the disinterment and gradual reburial of the *George L. Olson*, which recently was exposed by erosion during a storm.



*The First Oregonians*, another book of history, focuses on the original peopling of this area of coastal Oregon.

Other new books highlight regional hiking and exploring. They include: *Waterfall Lovers Guide*, *Bicycling the Pacific Coast*, *75 Scrambles in Oregon*,

*75 Hikes—Oregon's Coast Range & Siskiyou's*, and the *Oregon South Coast Canoe & Kayak Guide*.

The bookstore is located at the Interpretive Center on Seven Devils Road and is open during regular business hours.

## FOSS MEMBERS WANTED

Rich Hamel, President

The Friends of South Slough are always looking for new members.

"By becoming a Friend of South Slough you become eligible for many benefits," said Deborah Rudd, South Slough volunteer coordinator. "Friends are eligible for a 15 percent discount on books, clothing or other items purchased from the Friends of South Slough Bookstore & More, located in the Interpretive Center on Seven Devils Road. Friends are also eligible to attend Friends-sponsored potlucks and other special events at reduced cost. Friends also have voting privileges, receive a semi-annual newsletter, and have wonderful opportunities to make a difference at South Slough through their volunteer and gifting activities."

Friends of South Slough assist with education and interpretive activities, and bookstore sales. Their most important task is to raise money to support South Slough's research, trail construction, newsletter and brochure publishing, and other work. To that end, over the last five years, the Friends have raised about \$86,000.

To learn more about the Friends of South Slough, contact Rich Hamel, [r.a.hamel@mycomspan.com](mailto:r.a.hamel@mycomspan.com) or Deborah Rudd, [deborah.rudd@state.or.us](mailto:deborah.rudd@state.or.us)

## BOAT RAFFLE WINNERS

By Deborah Rudd, Public Involvement Coordinator

On a recent sunny afternoon a group of South Slough Friends and staff followed Friends of South Slough President Paul Van Natta as he towed the Little Gem rowing skiff to the home of the winners, Mr. and Mrs. Blair Sneddon of Reedsport. The Sneddons live at the top of a steep driveway in a cozy hillside glen that provides expansive views of Reedsport and the lower Umpqua River.

The couple was waiting in their charming garden decorated with all kinds of whimsical crafts. Paul Van Natta's Buick actually pulled the boat and all the passengers fit quite nicely! (Mr. Sneddon had a similar Buick in the carport.) After John Bragg took some



Winners! The

photographs, we unloaded the boat and placed it in the location Mr. Sneddon prepared. South Slough manager Mike Graybill shared stories about the boat's building and refurbishing.

The Sneddons were thrilled to learn that members of FOSS and South Slough's managers and some employees delivered the boat personally. A reporter from the Umpqua Post also took pictures of the boat and interviewed the Sneddons for the Reedsport newspaper.

Despite all the excitement, the Sneddons were probably glad to see everyone leave. They said they planned to get their new boat out on the water as soon as possible.

First cruise? That will be in a favored lake located near Florence in Honeyman State Park.

# MISCELLANEOUS NEWS

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## VOLUNTEERS EARN SERVICE AWARDS

The South Slough Management Commission recognized seven volunteers for “unique and significant” contributions to South Slough Reserve last year.

Volunteer Joe Neill helped refurbish a rowing skiff that was raffled during the FOSS open house and annual meeting February 23. Neill also helped out by selling raffle tickets for the boat. Volunteers Norman Leeling and Bob Sleeth were recognized for their work to help complete the North Creek Trail. Susan Brawnlyn was recognized for her assistance with many educational programs, especially Estuary Soup. The commission recognized Valerie Cooley for her help with paddle trips and collecting marsh vegetation samples that are used to monitor habitat restoration sites. Also recognized for their scientific assistance in monitoring marsh vegetation were Karen Sparks and Dennis Phillips. All were recommended by South Slough staff for special recognition for their work.

Volunteers who contributed more than 10 hours in 2007 received a letter of thanks from Louise Solliday, the chair of the South Slough Management Commission. They included: Gerald Berg, Susan Brawnlyn, Judy Brown, Cathy Chisolm, Eric Clough, Glenda DeJong, Margot Hessing-Lewis, Alix Laferriere, Randal Lau, Norman Leeling, Patricia McKillip, Ann McMann, Charlis Meador, Joe Neill, Dima Orel, Jenny Prichard, Heather Randolph, Jason Randolph, Brenda Rioux, Liz Roden, Lester Rumrill, Dixie Sheldon, Bob Sleeth and Lora Wehner. Both Meador and Randolph serve on the Friends of South Slough Board of Directors.

In addition, people who volunteered for more than one year received certificates marking their on-going contributions in 3-year increments, including Amanda Rudd, Nina Rudd, Mary Ann Sherlock, Ronald E. Stuntzner, P.E., Norma Van Natta, Paul Van Natta and Louise Whitehead. Both Paul Van Natta and Norma Van Natta are Friends of South Slough board members.

Individuals who have volunteered for three or more years include Anterra, Dr. George Boehlert, Valerie Cooley, James S. Fereday, Jeannine Filsinger, Jody Hamel, Jeannine Huffman, Katie Koval, Dan Krossman, Jan Long, David Lunde, Marshall Pease, and Craig Young. Young, Krossman, Fereday and Boehlert serve on the South Slough NERR Management Commission. Filsinger, Hamel, Huffman and Lunde are present or former Friends of South Slough board members.

Finally, Robert Emmett, Rich Hamel, Terry Huffman, Dennis Phillips, Myrna Rose, and Karen Sparks were honored for providing six or more years of volunteer

service to South Slough. Emmet is a member of the South Slough NERR Management Commission; Rose and Huffman are former Friends of South Slough board members.

For more information about volunteer opportunities at South Slough NERR, call Deborah Rudd, public involvement coordinator, at 541-888-5558.

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## VOLUNTEER VIEWPOINT ON SEAGRASS MONITORING

By Eric Clough, SSE Volunteer

If you are fortunate enough to be on the volunteer email list you then you know about the variety of opportunities at the South Slough. For me, I like the science and the learning of what makes the estuary a refuge of harmony and alive with natural processes. Working with the ECOS Lab staff monitoring the eelgrass (*Zostera marina*) in time-lapse fashion near Valino Island gets me close in to the sticky heart of the estuary.



*Monitoring eelgrass*

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We slog delicately through exposed sub-tidal mud to the three monitoring transects once every three months to measure the fragile sea grass that performs so many important functions for us in the estuary. We see how channel morphology changes from the powerful forces of flowing water.

It is cold, wet, and dark in the winter; fresh, alive, and flowering in the spring and summer. It is fun and it is learning—hands on style. I say thank you to the ECOS Lab staff for allowing volunteers to participate in your work.



South Slough National Estuarine Research Reserve  
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Charleston, OR 97420

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## Festival to Celebrate Shorebirds

The 22<sup>nd</sup> annual Oregon Shorebird Festival will be held the weekend of **August 29-31, 2008**, sponsored by the U.S. Fish and Wildlife Service.

"Mark the date and join us as we celebrate 22 years of watching shorebirds during their fall southbound migration," said interpretive specialist Dawn Grafe.

Birdwatchers of all skill levels are encouraged to attend, so bring your best pair of binoculars and go afield with experienced trip leaders to the hottest migratory stopover sites in Bandon and Coos Bay.

There will be a pelagic tour **Saturday, Aug. 30**, sponsored by Bird Guide, Inc.

*For more information* or to register for the festival, visit the fish and wildlife service Website at [www.fws.gov/oregoncoast/shorebirdfestival.htm](http://www.fws.gov/oregoncoast/shorebirdfestival.htm), or call Grafe at (541) 867-4550.