



WASHINGTON STATE UNIVERSITY
ISLAND COUNTY EXTENSION

Beach Log

NOVEMBER 2007

*Education,
Research,
Stewardship*



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Taking It All Off: Choreography of a Crab Molt

During an August tidepooling expedition to West Beach, Jan Holmes and I came across a newly molted red rock crab next to the outgrown exoskeleton* it had just climbed out of. It was interesting to see how much larger the new exoskeleton was compared to the castaway cuticle and to feel how pliant it was. This inspired me to hit the books to find out more about the molting process.

The first thing I discovered is that there is a scientific term for molting; it is "ecdysis". Additionally I learned that beneath the calm outward appearance of our crabs, they are always in one of four phases in relation to molting: intermolt, premolt, ecdysis, and postmolt.

The intermolt is the period between molts. It tends to be shorter in young crabs as they are growing rapidly and evolving through short lived larval stages. Mature crabs do not grow as fast because they have shifted their resources away from growth and more toward reproduction so their need to molt is less frequent.

The intermolt phase is controlled by hormones. The cryptically named X organ is located on the eyestalks of crabs and produces a neurohormone known as molt inhibiting hormone (MIH). The function of MIH is to suppress an endocrine gland, the Y organ so it will not produce ecdysone, the hormone that launches the molting process. Several conditions can bring the intermolt phase to an end including growth, a need to replace lost limbs, reproductive cycles, and seasonal changes such as length of daylight. These triggers signal the X organ to cut back on MIH production and a dip in those levels unleashes the Y organ to start kicking out ecdysone thus initiating the premolt process.

Beneath the exoskeleton and away from our inquiring eyes, there's a lot going on during the period of premolt. Enzymes dissolve away the inner layers of the outgrown exoskeleton creating a space between it and the

underlying epidermis. And into that space, the epidermis then secretes a new exoskeleton. Missing limbs are also regenerated during the premolt phase.

The actual ecdysis or molt is a relatively quick process. The crab absorbs water, causing it to swell and split the old exoskeleton along specialized areas of weakness. The crab



Mary Jo Adams Photo

Molt: A molt can be triggered by growth, a need to replace lost limbs, reproductive cycles, or seasonal changes. This is the molt of a small Dungeness crab

then backs itself out of the outgrown cuticle leaving behind the discarded exoskeleton including outermost surfaces of the eyes, gut, and gills. Because the crab is so vulnerable during the actual molting, it usually hides in a protected place as the molt takes place.

During the postmolt phase, the crab continues to absorb water, swelling its body and stretching the soft new exoskeleton so as to open up space that will give the animal room to grow. The new fully expanded exoskeleton then adds layers of protein and chitin (a polysaccharide similar to cellulose) to form a tough



Crab molt continued...

matrix and reinforces that with calcium salts from seawater thus hardening it and turning it into a real coat of armor.



Mary Jo Adams photo

Soft shell red rock and molt: A newly molted and still soft red rock crab is shown below its outgrown and cast off old exoskeleton.

The next time you see “just a crab molt” lying on the beach, stop and appreciate the complicated cascade of events that produced it. Check out the interior of the molt to see how the outermost layer of the gills was shed along with it. Look at the thin transparent membrane that covered the eyes. Consider the energy reserves that were expended by the crab to accomplish the molt and the danger it was exposed to during and immediately after when it lacked its normal layer of protective armor. What is “just a crab molt” to us was a big deal for that crab!

Mary Jo Adams, BW Class of 1999

**In the course of researching information about this subject, I learned that the scientific term for the molted exoskeleton is “exuvia”, derived from a Latin word meaning “to take off”. It seems to me that this is a handy word to know if you’re a Scrabble player as I figure that with an x (8 points), a v (4 points), and four vowels at 1 point each, this nifty word will fetch you 16 points!*

Logging Those Hours

“Someone” at my house kept bugging me to log my Beach Watcher hours and I kept putting it off, thinking it would be too big of a hassle. After logging Master Gardeners hours for the last few years, I knew how long it could take.

Whoa– was I wrong. Thanks to Connie and Neal Clark, entering BW hours online is a piece of cake. I’m not the most computer literate person around (my colors are wrong), but this program is friendly, easy and fun. I mentioned my delight to Connie the other day and told her my only problem was I could not find “beach monitoring” in the program (it is called “intertidal monitoring”) and the next day she improved the program. So now, if you couldn’t figure this out, just type “beach mon” into the program and the hours go into the proper category.

So please, for anyone who hasn’t logged hours for awhile, give it a try. It will help keep our program alive.

Melissa Merikel, BW Class of ‘07

Silent Auction Items Needed for Holiday Party 12/13.07!

We would like to conduct another Silent Auction at this year’s Holiday Party. It’s a fun activity and can very easily raise thousands of dollars for Beach Watchers.

Please consider donating actionable items – think about TANGIBLE ITEMS such as your special art, tools, spirits, crafts, and precious “treasures” you need to get rid of. Consider those EXPERIENCES that you can uniquely offer like a gourmet dinner, boat ride, fishing trip, or guided tour.

And don’t forget the BUSINESS SKILLS you can offer such as computer help, tax preparation, construction/landscaping help, a B&B stay, a massage, or private lessons. Perhaps a neighbor, friend, or boss can add a special item.

Now’s the time to be really creative and contribute something special as a Beach Watchers fundraising item, and add to the party’s festive atmosphere.

Please contact Rudy and Barbara Deck with information about your donation(s), or any questions, at 360-678-4302 or deck@whidbey.net.

Rudy Deck, BW Class of 2000



"Project Title: Town of Coupeville Climate Protection and Sustainable Community Project

Description: To do its part in addressing the most pressing environmental problems facing this generation, global climate change and sustainability, the Town of Coupeville has committed to implementing their Climate Action Plan which will reduce emissions by 20% below 2000 levels by 2020 and to begin charting a course that will lead its residents into directions that bring about sustainable practices at the individual and municipal levels.

A partnership with WSU Extension of Island County will implement the tasks needed to accomplish this plan.

Work Program: This effort is being developed with the idea that it will help foster other towns and cities to take on similar efforts. Hence, the materials developed and perfected in this project will be created such that they will be transferable."

Words straight from the contract being developed between the Town of Coupeville and WSU Beach Watchers. Have I piqued anyone's interest yet? I sure hope so! In the next year interested Beach Watchers will be working with a passionate and energetic group of Coupeville citizens to help them engage their community and implement projects and programs that will help reach the goal of emission reduction 20% lower than the 2000 levels. What an awesome goal and who better to help them achieve this than this knowledgeable, creative, enthusiastic crew of Beach Watchers!

If you are feeling excited or even interested in this new project but feel a little less prepared than you'd like, then join WSU Beach Watchers from Skagit & Island County, and anyone else interested at Padilla Bay Reserve for an in-depth 12 hour training to become a "Climate Steward" in February 2008. If you have any questions or want to be a part of this project please send me an email or give me a call. kcooley@wsu.edu
(360) 679-7391

Kristen Cooley, Program Coordinator

New Library Books!

"Living Green, A Practical Guide to Simple Sustainability" by Greg Horn

&

"Garbage Land, on the Secret Trail of Trash" by Elizabeth Royte

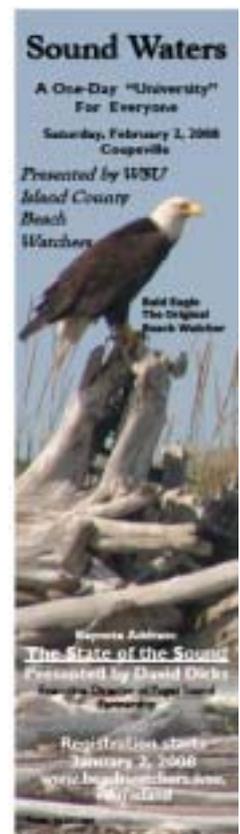
Check out these great books and many more at the Lighthouse Library!

SOUND WATERS – 2008 PREVIEW

It is time to start thinking about reserving February 2d for the 14th annual "Sound Waters – A One Day University" presented by WSU Beach Watchers of Island County. This one day program will be held in the brand new Coupeville High School. Of the 50 plus programs 25 will be new including Island County kayaking, emergency planning, climate change, local algae blooms, backyard wildlife, the Pigeon Guillemot study, Whidbey watersheds, salmon in the pocket estuaries, tidal energy, nuclear energy, community reduction of carbon emissions in addition to many of the most popular programs and presenters from years past including Jill Johnson with a new "Ferry Tales". Thanks to Don Meehan and Linda Lyshall the keynote address will be presented by David Dicks the new Executive Director of the of the Puget Sound Partnership.

The committee has been hard at work on the program for a number of months and we hope you will attend and, if possible, help with the logistical support along with us. The actual registration will go online and in the mail after Christmas. If you have questions or are interested in helping contact Jim Somers (jmsomers@hughes.net) or Kristen Cooley (kcooley@wsu.edu).

Jim Somers '04





Dates to Remember

Upcoming Camano Island and Whidbey Island Events and Other Items of Interest



Events on Camano:

Monday, November 5, 9 a.m. Camano Monthly Meeting - 141 N.E. Camano Drive, Camano Island,

Thursday, November 8, Camano Library Presentation about Beach Watchers - Camano Island Library

Tuesday Nov 13, FOCIP Leaf Rake and Lunch - Camano Island State Park

Wednesday, November 28, 10:15 a.m. Camano Steering Committee Meeting - Camano BW Office

Events on Whidbey:

Thursday, November 1, 11 a.m. Naturalist Training Planning Meeting - 11768 Westar Ln. Suite A, Burlington

Friday, November 2, 8:30 a.m. Breakfast With Beach Watchers, Whidbey General Hospital Cafeteria

Friday, November 9, 8:30 a.m. Breakfast With Beach Watchers, Neals Clover Patch in Bayview, Whidbey Island

Wednesday, November 14, 10 a.m. Sound Waters Committee Meeting - Rm 116

Thursday, November 15, 6:30pm Evening Educational Series, Trinity Lutheran Church, Freeland. Dr. John Bower from WWU will talk on bird decline.

Tuesday, November 20,

11 a.m. LEP Meeting - 101 NE 6th St., Coupeville, WA

1 p.m. BW Advisory Council Meeting - 101 NE 6th St., Coupeville, WA

* Don't forget to check the Island Co. Beach Watcher website for all current events!



Looking Ahead to the Holidays

There will be Beach Watchers Holiday Parties on Camano and Whidbey Islands again this year. What a great time to plan to meet the rest of the family. Check out the dates and put them on your calendar:

The Camano Island Beach Watcher's Holiday Party, Friday, December 7th from 5:30-11:00 at the Camano Country Club. The Camano cousins would like to extend an invitation to Whidbey Island Beach Watcher's to join us in the festivities.

Whidbey Island Holiday Party, Thursday, December 13th from 5:30- 9:00 pm



Sinatra and Me

I know Frank Sinatra was more famous than I am, because I am not at all. And he was richer than I am. And he could sing better than I can. That's the hardest one for me to admit. But we have one thing in common. We just keep retiring, over and over again. The difference is that every time he came out of retirement to do another "last concert," his fans went nuts. O well.

So, I am going to retire again. But I am leaving this job on the WSU staff a bit better informed about the political environment Beach Watchers live in. What I can see is that it is very hard to be actively involved and not become *activist*. But we are not activists. And that may be disappointing to some who join Beach Watchers. It is hard to interact with the political arena and not become political. But "*we are not a political organization.*" I'm not sure that's a claim any community serving organization can actually make stand.

What we are is an organization that majors in training citizens to be a calm voice advocating for our voiceless marine and shoreline environment. And we do it by *Education, Research, and involved Stewardship*. Above all, the best thing we do is train, teach, educate.

Well I learned all that when I went through training. But what I didn't realize was how timely the existence of Beach Watchers is. Puget Sound is a habitat that is under threat. And the threat is being confronted pretty aggressively right now. Call it what we want, coincidence I suppose, or maybe visionary. The fact that the Puget Sound Partnership is seeking to collaborate with organizations that already exist, as they say "on the ground", means that Beach Watchers is positioned to make a big difference, and do it our own unique way--through education, research, and stewardship.

If I ever thought that Beach Watchers would be a kind of fun organization of folks keeping our beaches pristine, I can see now that I have been on the inside of the loop that we are that and much more. We have a special power in our hands. And that power is education, and the opportunity to continue educating people. This is not just so they can know a lot of stuff, but so that they, with us, can make a difference. Because morally, or Biblically for those who have that perspective, we have the responsibility to tend to ecosystem in which we live.

That's what I've learned, living inside the loop. So now I'm going to retire again. But I will remember, I am responsible, and so are you.

Stewart Congdon, BW Class of 06



Photo by Sarah Schmidt

Standing beneath the latest project at Nichols Brothers Boat Builders.

Nichols Bros. Boat Builders

What an excellent and educational fieldtrip over 40 Beach Watchers were treated to on Friday, October 5th! Donning hard hats and safety glasses some very excited volunteers followed Matt Nichols the second of three generations to run this local Freeland business.

The part I was most surprised and impressed by was not the humongous ships and great feats of engineering that this company accomplishes (although that was mightily impressive). It was the giant strides Nichols Bros has recently taken to minimize their environmental impact through a cutting edge, state of the art, and might I add, VERY expensive, water quality treatment system.

The short story is that the new system can handle a ridiculous amount of water, 10 twenty-four hour storms back to back is it's handling capacity. It cleans the water of heavy metals through electrical coagulation which makes the smaller metal particles that would pass through the best of filters attract to each other and form particles big enough to filter out. After each molecule of water has been through filtration, separation, settling and more filtration it has to pass through a live monitoring sensor that tests for turbidity, pH, and will soon test for copper. If the water fails it is re-routed through the entire system again until it passes the test. Preliminary sampling through a non-state certified lab has been promising to say the least. The legal regulations for copper in surface water run off is 4.8 ppb. The initial test are showing less than 1 ppb! To find out more you'll need to arrange another tour, which I'm sure they'd be happy to give. It's great to see a local business taking responsibility for the health of our local marine environment and we should be encouraging and congratulating them for these courageous steps forward.

Kristen Cooley, BW Class of 06



Your Writing Talents Are Needed



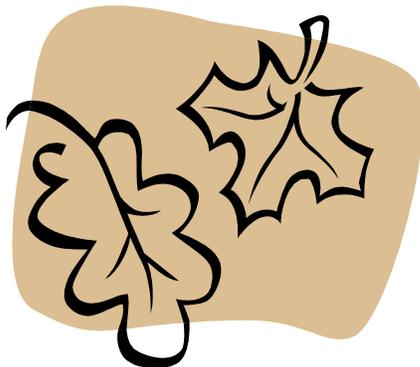
For all you Beach Watchers that are talented in prose and poetry we have the perfect venue for you. The Island Co website has a webpage titled 'Essays From Nature' where we have been publishing articles written by our members and friends of our members about nature. This has included animal and plant species but also has included articles that are informative narrative about our environment, like creosote logs-what's

not good about them. Take a look at your website to get the flavor or what these articles can be like

www.beachwatchers.wsu.edu/island/essays/essays.htm

Usually we put a photo with the article which can be another opportunity for a BW photographer to go public. The Camano Island website team has taken on the responsibility for this page presentation and would like to offer new material more often. So here is your chance to show your talents. If you have an article you'd like to offer for the website, get in touch with Judi McDougall (see your BW email list) or pass it on to Kristen for forwarding. Our team will work with you for content accuracy if needed. Happy writing!

Judi McDougall BW class 2003



Ways of Whales workshop

Saturday, January 19, 2008

9 am - 4 pm

Coupeville Middle School Performing Arts Center

501 S. Main St, Coupeville

Whidbey Island, WA



Join Orca Network for a day of learning about

*the wonders of Pacific Northwest whales -
who they are, what they eat, threats to their*

habitat and health, and more.

Mark your calendar now, and don't miss this opportunity to hear from the region's best experts on our fascinating finned friends. Educational displays and materials will be available throughout the day as well. If you are part of an environmental organization and would like to bring a display, please contact Orca Network to reserve space.

Cost of the workshop is \$20. Lunch available on-site. More information & registration online at: <http://www.orcanetwork.org/news/events.html> or by contacting Susan Berta & Howard Garrett Orca Network



From the Stanwood Camano News:

Communication center stage at town hall meeting

Published October 30, 2007

By RICK WOOD
Staff Reporter

When some people think of a “town hall” meeting, it conjures up images of civic leaders standing in front of a crowd, pontificating about how wonderful a job they are doing.

Sitting among constituents and listening to what was being said, John Dean, Island County commissioner, wanted residents to know he was first and foremost a Camano islander during Thursday night’s open house.

Dean continued the tradition of holding regular public forums soon after being elected last November.

Dean was accompanied by Elaine Marlow, Island County budget director, and Judy Feldman, 4-H program coordinator for Washington State University Extension.

Feldman started by shaking up preconceived ideas about public meetings, by conducting an exercise to help develop productive listening skills.

Audience members were paired off and asked, “What makes you happy?”

The simple exercise was designed to start a constructive dialog with active listeners, said Feldman.

The idea of a citizens’ academy is to empower people with the knowledge and tools to work with their government to shape policy through intelligent input, said Feldman.

The democratic process is not static, she said.

“It’s not something you are given,” said Feldman. “It’s something you have to practice.”

While Marlow detailed the budget process, Feldman asked members of the public if they understood what had been said and helped to prompt questions.

Marlow started with Island County in 1995 and is clerk of the board of county commissioners, in addition to her duties as budget director.

For Marlow, the chance to converse with islanders and answer their questions was one she could not pass up.

“I want to give good information that leads to good decisions,” said Marlow. “It’s important that people understand the numbers behind the government.”

A budget provides accountability and helps to evaluate the results of policy, she said.

Developing a budget is no quick feat, however.

“We start in July, calling for revenue and expenditure estimates from all of the departments,” she said. “By the first Monday in November, they have to have a preliminary budget ready.”

Roy Leshner, of Camano Island, asked Marlow about the state of budget reserves earmarked for emergencies.

“The board of county commissioners controls reserves for Island County,” said Marlow.

“There is \$2.2 million in unrestricted funds available for emergencies in the county.”

Keeping an eye on where funds are going has not been much of a chore, said Marlow.

“I’m very fortunate,” said Marlow. “Island County is very frugal with your tax dollars.”

A key element of open government is having the budget available for public viewing.

Marlow contends, however, people with specific questions should contact her directly.

The full budget report is over 300 pages long and contains amounts without details, said Marlow.

“I’d much rather have conversations with you and find out what you’re trying to learn,” said Marlow.

Marlow also reminded audience members that much of the information typically sought-after can be found on the county’s Web site.

Towards the end of the forum, a woman in the audience expressed gratitude towards the meeting’s hosts.

“I’ve learned a lot from Elaine tonight,” she said. “This was a valuable experience.”

To contact Elaine Marlow call 360- 679-7397 or visit www.islandcounty.net.

Reporter Rick Wood: 360-629-2155 or rwood@snews.com.





Congratulations Graduates!

Twenty-three amazing people joined the Island County Beach Watcher family this Tuesday. It was an inspiring, exciting, and tearful day of presentations, celebrations, speeches and Kapaw's ice cream! Thank you to everyone who was involved. A special thanks to Ingri Johnson for coordinating the festivities and to Mayor of Coupeville, Nancy Conard and Commissioner Phil Bakke for being our honored guests.



Photo by Dan Pedersen

Graduates play a fun critter ID game designed by Debbie Bitts as part of the presentations.



If you would like to learn more about the Beach Watcher Program, please contact Kristen Cooley, Program Coordinator at 360-679-7391 or kcooley@wsu.edu.

THANKS! To all the Beach Watcher Volunteers who contributed articles, typed, edited, and prepared the Beach Log for mailing. Kudos to Cheryl Bradkin, Kristen Cooley, and Stewart Congdon who help pull it all together this month.

***“In the end we will conserve only what we love;
We will love only what we understand;***

We will understand only what we have been taught.”

~Baba Dioum, Senegalese ecologist



**DEADLINE FOR NEXT BEACH LOG
November 15, 2007**