Christina DeWitt to Head Astoria Seafood Lab

By Tiffany Woods, 541-737-2940, tiffany.woods@oregonstate.edu

ASTORIA, Ore. – Oregon State University has hired an alumna who is a food chemist at Oklahoma State University to head its seafood research center in Astoria. Christina DeWitt, who has doctoral and master's degrees in food science from Oregon State University, will start work at the Seafood Laboratory on Dec. 30. The native Texan was a graduate research assistant at the lab from 1997-99.

Created in 1940, the Seafood Laboratory conducts research to help the industry develop and improve products and processing techniques. The 21,000-square-foot facility also hosts OSU's annual Surimi School in which participants from around the world learn to turn low-value fish into products that taste like expensive seafood delicacies. The lab, which collaborates with OSU's food science and technology department, is part of the university's Coastal Oregon Marine Experiment Station.

As part of her duties, DeWitt will oversee the budget and staff, build community relationships, identify issues of concern to the seafood industry and conduct research that addresses those topics.

"What I would like to see is when the industry needs a problem solved, they think of the Seafood Laboratory in Astoria," DeWitt said. "It already has a good reputation nationally and internationally. Its researchers are known throughout the U.S. and abroad. I want to keep that momentum going and improve it as much as possible."

On the research side, DeWitt said she would like to find ways to reduce the amount of salt and phosphates added to seafood but still maintain products' moisture and flavor. Processors inject the substances into everything from fillets to scallops to enhance the taste and keep the food from drying out. One possible alternative, DeWitt said, is to inject seafood byproducts, like collagen, into fish to help it retain water when it's frozen or on display.

Another area of research might involve using DNA profiling to make sure consumers really are getting the seafood they think they're buying, she said.

"A lot of products out there might not be the fish they profess to be," DeWitt said. "Someone might pass off a farmed salmon for a wild salmon. There's no quick way to determine this. People have been trying to come up with more rapid detection systems and there are some interesting new technologies in development based on DNA detection."

Christina DeWitt to Head Astoria Seafood Lab, continued

DeWitt joins a team that includes food scientists Jae Park, known for his work with surimi and fish proteins, and Yi-Cheng Su, whose research has focused on reducing pathogens in seafood. She replaces Michael Morrissey, who moved to Portland to head OSU's Food Innovation Center there.

At Oklahoma State, DeWitt is a professor in the animal science department and her research has included studying ways to reduce additives in beef and pork to make the meat healthier. She said she'll bring what she has learned from working with the meat industry to her new job.

"This background will help me think more outside the box with regards to the seafood industry," she said. "When you come from the outside, sometimes it brings a different perspective."

The coincidence of working for two universities with the same acronym and colors hasn't escaped DeWitt.

"It's kind of strange how my life has been circling around orange and black and OSU," she said. "Luckily my wardrobe doesn't have to change too much."

Surfin' Salmon: Graduate Research by a Markham Scholar

by Jose Marin Jarrin, Ph.D. Student, OSU's Department of Fisheries & Wildlife
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Sandy beach surf zones occur along 70% of the Oregon coastline. These high energy environments are considered 'semi-enclosed' because there is limited exchange of waters between these zones, which extend from the shoreline to the outermost breaker, and offshore waters. Several fish species, including English sole, Northern anchovy, and Staghorn sculpin inhabit surf-zones, especially when they are juveniles, because it provides an abundant supply of potential prey and shelter from predators. Although juvenile Chinook are thought to migrate from estuaries directly to the open ocean, juveniles have also been collected within Oregon's surf zones.

My M.Sc. research project at the Oregon Institute of Marine Biology suggested that surf-zones provide an intermediate habitat for Chinook salmon between the estuary and the open ocean. For my Ph.D. research project working at Hatfield Marine Science Center with Dr. Jessica Miller, I am evaluating the role of surf-zones as a habitat for juvenile Chinook salmon. We are studying the presence, distribution, densities, growth and diet of juvenile Chinook salmon in surf-zones. At present, using a beach seine, we have collected over 400 juveniles at eight different beaches along the Oregon coast. Presence and distribution of the juveniles is related to whether the beach is located in a littoral cell, which is a defined stretch of sandy beach that is bordered by rocky headlands that contain estuaries with local Chinook salmon populations. There are also more juveniles present along sandy beaches adjacent to estuaries. Densities of juveniles in the surf zone vary widely and are positively related to estuarine water temperature, suggesting that higher temperatures may influence movement and prompt juveniles to exit the estuary. In surf-zones, juveniles grow at an intermediate rate when compared to the estuarine or offshore waters. They achieve this growth by feeding on a diverse diet composed of crustaceans, insects and fish.

This research has been supported, in part, with two Mamie Markham Research Awards, a Lylian Brucefield Reynolds Scholarship, a Wick Marine Fisheries Award, and with assistance by the Community Service Consortium 2009 Natural Resource Crew (see photo).

Scientist seeks safer oyster

By Deeda Schroeder / The Daily Astorian, published: October 11. 2010 4:00AM PST

ASTORIA — Yi-Cheng Su knows how much people enjoy eating a briny, cold, fresh raw oyster.

But as tasty as the cocktail sauce-doused treat can be, shellfish can carry bacteria that will wreak havoc upon your digestive tract — at least for a few days — and has even been known to be a killer.

So Su, an associate professor at Oregon State University's Seafood Research Lab in Astoria, has been at work for two years to chill the bacteria — known as vibrio parahaemolyticus — into submission.

Of course, Su knows that cooking the shellfish would stomp out any of the tiny troublemakers — but that's not a real option for many die-hard oyster fans.

"When seafood is fully cooked, the process will kill the bacteria. But people like to eat raw oysters, even though there have been several outbreaks in the past," Su said.

It's a three-year, almost $400,000 undertaking, funded by the U.S. Department of Agriculture's National Institute of Food and Agriculture's Agriculture and Food Research Initiative Food Safety Program.

Su specializes in seafood microbiology and safety at OSU's Seafood Research and Education Center, a lab that was established in 1940 to meet the increasing scientific needs of the seafood industry.

To give people safer oysters, a few processors in the area, like Goose Point Oysters in Bay City, Wash., use expensive high-pressure systems to snuff out the bacteria. But the current treatment, which is optional, ends life for everything between the tightly-sealed shells.

"Most of the processors don't do anything," Su said.

Because the pathogen thrives when water temperatures rise, Su thought that if oysters could flush cold water through their systems — mimicking the natural process called "depuration" — for a set amount of time, that might just do the trick. Su's process has been homing in on an optimal time and temperature for the cold water to flow through the oysters.

"The oyster will remain alive, which will give the farmer a value-added product," he said.

Take the stairs down to the laboratory from Su's office, and you will hear the water bubbling. It's rushing through small white crates filled with clean water and about a dozen oysters.

He and his students have rigged a small "pilot lab" within their larger laboratory, exposing a handful of oysters to a constant stream of chilled water, filtered and purified by a UV light.

After two years of experimentation on the effects of various times and temperatures, Su is ready to test his process on a much larger setup, one that more closely resembles the size and scale that would be found in a commercial processor's warehouse.

Soon, his work space at the Seafood Lab will expand and move into a new room across the hall, including a 10- by 22-foot pop-out into the nearby parking lot, and redesigned specifically for his research.

Su received his bachelor's degree in fishery technology from the National Taiwan Ocean University, his master's in food science and technology from the University of Nebraska and his doctorate in food science from the University of Wisconsin-Madison. He joined the OSU Seafood Laboratory in 2001.

Su's research has been focused on preserving quality, reducing bacterial contamination and improving the shelf life and safety of seafood.

The USDA has already tapped him for another three-year job once this one is complete.

Chris Langdon & Team Receive Ocean Acidification Funding

Chris Langdon, in collaboration with George G. Waldbusser, Brian A. Haley, and Burke Hales, has been awarded a National Science Foundation grant of $1,996,833 for support of the project entitled "Ocean Acidification Category 1: A mechanistic understanding of the impacts of ocean acidification on the early life stages of marine bivalves." The award, effective October 15, 2010, expires September 30, 2014.

COMES Advisory Board meeting, November 4, Astoria

The next Advisory Board meeting for the Coastal Oregon Marine Experiment Station will be held at the Holiday Inn Express in Astoria on Thursday, November 4th.

Susan Hanna (recently retired), the morning's guest speaker, will provide a perspective on her 30 years of work (15 with COMES) on West Coast and national fisheries and emerging fishery issues

Jae Park and Yi-Cheng Su, Astoria Seafood Research Center, will give presentations on their seafood research programs. Jae is founder and director of the international Surimi School and annual Surimi Industry Forum, which will be celebrating the 30-year production of Crabstick in April 2011. In 2010, the Surimi Forum successfully featured "Fried Surimi Seafood - Better Taste and Less Filling."

Yi-Cheng's work with oysters is well-known; he recently received $400,000 three-year funding for this research. For more information, see the article on page 3, "Scientist seeks safer oyster."

Recent Student Defenses

Londi Tomaro - October 1, 2010. Year-class regulation of mid-upper Columbia River spring Chinook salmon *Oncorhynchus tsawytscha:*the role of juvenile size, growth, and migratory behavior. (Jessica Miller/Fisheries & Wildlife, MS)

Rebecca Baldwin - September 21, 2010. Using parasite community data and population genetics for assessing Pacific sardine (*Sardinops sagax)* population structure along the west coast of North America. (Michael Banks/Fisheries & Wildlife, PhD)

Scientist seeks safer oyster, continued

When the $70,000 expansion and remodel is complete, the room will hold several of the full-size units, which resemble whirlpool hot tubs. The one Su is working with now is a bold blue cube with a tangle of pipes and contraptions at one end that uses the same idea as the smaller tank. This time, it will circulate 765 gallons of chilled, purified water through several hundred dozen oysters.

Su said the idea isn't necessarily to create a machine that can be patented, but rather to build a process that the USDA will use as its standard for processing in the future. For a short time during the Gulf oil spill crisis, oysters from the affected area had to be processed to kill toxins. That restriction has now been lifted, but regulations will likely be adopted in the future, Su said.

The goal is to help oyster farmers and suppliers like David Nisbet, owner of Goose Point Oysters, give customers a safer, fresher product. Nisbet's farm, founded in 1975, uses more than 500 acres of tideland on Willapa Bay. The company employs 70 people full-time and processes more than 2 million pounds of shellfish annually.

Nisbet is thrilled with the prospect of a new way to reduce the toxins without killing the oyster.

"It ensures a nice summer oyster," he said. He's looking forward to seeing Su complete his project so his company can adopt the practices, adding value to his product year-round.

"It's a big deal," Nisbet said.