

3rd Annual
Heceta Head Coastal Conference
“Oregon’s Ocean: Resources and Opportunities”
Florence Events Center ~ October 27, 2007

SUMMARY OF CONFERENCE PROCEEDINGS

Master of Ceremonies: **Dr. Jane Lubchenco**, Distinguished Professor of Zoology, Oregon State University

Panel I: The Future of Groundfish Trawlers

Brad Pettinger, Director, Oregon Trawl Commission

Dr. Mark Hixon, Professor of Zoology, Oregon State University

As a long-time fisherman, boat owner, and major player in establishing Oregon’s ocean policy, Pettinger represented a knowledgeable voice for the fishing industry. He described Oregon’s trawl fleet as mostly multi-fishery vessels—shrimp/drag/crab, shrimp/drag, and drag/tuna outfitted. They are 40 – 100+ feet in length, consisting of a skipper and two-man crew. Traditional bottom trawl trips last one to four days, although whiting trips are usually one day.

The Pacific Fisheries Management Council manages the trawl industry by setting quotas on species, arranging observer coverage, and conducting vessel monitoring systems.

Steady decline in the last decade of groundfish trawl vessels along the West Coast, from almost 700 vessels in 1990 to about 200 today. Similarly, the catch has declined from close to 200 million pounds to 50 million during the same period.

In 2003, PFMC voted to move toward IFQs with final action in 2008 which will result in—

- Dramatic reduction in discards
- 100% observer coverage (person or camera)
- Eliminating early closures, and market interruption
- Allowing fishermen and processors to plans long-term
- Placing caps on vessel and individual ownerships
- And providing more specialization.

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Hixon gave a natural science view of groundfish trawling. Bottom-trawling, in which heavy nets are dragged along the seafloor by vessels, is a major fishery off the coast of Oregon. The future of this fishery is best examined in the context of the past in terms of effects of groundfish trawling on target species (intended catch), bycatch species (unintended catch), and seafloor habitats (both living and nonliving).

Regarding target species, the West Coast ground-fishery was declared an official disaster by the Secretary of Commerce in 2000 due to 9 species crossing the "overfished" status threshold (two of these species have subsequently recovered due to unusually strong 1999 year classes). Since that time, rebuilding plans for overfished species have been in place, some of which are projected not to be completed until late this century. Trawler fleet size has been reduced by a federal vessel buy-back program, and temporary, variable closed areas are in place to avoid catch of overfished species.

Only time will tell, Hixon said, whether ground-fishery management will shift from such reactive emergency responses focusing on single species to a more proactive, holistic, and sustainable approach involving ecosystem-based tools.

Regarding bycatch species, Hixon stated that in the past bycatch and at-sea discards of seafloor life and non-targeted fish species was immense. There is now a federal observer program to monitor bycatch, and some

attempts to modify trawl gear to minimize bycatch. Time will tell whether bycatch and discards remain substantial.

Regarding seafloor habitats, Hixon said that in well-documented, peer-reviewed scientific literature (including a nation-wide study by the National Research Council and a book by the American Fisheries Society) that groundfish trawling has major effects on both rock and mud seafloors, especially the living habitat provided by seafloor invertebrates (such as sponges and corals). Recent trawl gear modifications and Essential Fish Habitat designations have resulted in most trawling off Oregon now being over mud seafloors, yet there has thus far been no effort to conserve some portion of this habitat and the ecosystem it supports.

Panel II: Oregon's Ocean Policy

Bob Bailey, Program Manager for the Ocean and Coastal Management Program, State DLCD

Jessica Hamilton, Natural Resources Policy Advisor to the Governor

Representative Deborah Boone, Chair, Legislative Coastal Caucus

Providing an “historical view” of ocean management in Oregon, Bailey gave credit to Governor Oswald West for the start of coastal conservation with the public beach law of 1913. He recounted the important legislation of the 1970s resulting with NOAA approval of Oregon Coastal Management Program in 1977.

Thereafter a series of legislation has made Oregon a leader in state ocean management. In particular is Statewide Planning Goal 19 on ocean resources, adopted 1977, and substantially revised 2000, which addresses the state waters 3 nautical miles wide.

Bailey raised the question of climate change—an uncertainty about the function and health of the ocean. He cautions that in order to meet our ocean goals, “Oregonians must set aside cherished opinions, revisit strongly held views, listen to each other, and keep the big picture in mind.”

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Representing Governor Kulongoski's views for a sustainable coast and ocean, Hamilton reported his goal is to secure the long term health and stewardship of Oregon's ocean ecosystems, resources, and ocean-related economy. He believes that is consistent with the findings of the two national ocean commissions on the need for a regional, ecosystem-based approach. Accordingly, Oregon has joined Washington and California in a regional ocean pact which addresses a number of priority issues.

Hamilton explained some of the science behind marine reserves on a global inventory: there are 124 sites in at least 45 countries. Marine reserves have been under study for several years in Oregon. In 2002 after two years of research, discussion, and public meetings, the Ocean Policy Advisory Council recommended a “limited system of marine reserves in order to test and evaluate their effectiveness.”

In June 2007, the Governor provided specific guidance to OPAC regarding development of a public process to establish Oregon's marine heritage sites. OPAC has given this definition: “A marine reserve is an area within Oregon's state territorial sea that is protected from all extractive activities, including the removal or disturbance of living and non-living marine resources, except as necessary for monitoring or research to evaluate reserve condition, effectiveness, or impact of stressors such as climate change.”

Hamilton reported the public nomination of marine reserves to begin next January and OPAC to advise the Governor by Fall 2008. Following that will be state agency rulemaking in order to report to the Legislature by January 2009.

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Based on her work at the last legislative session, Boone declared Oregon has the potential to become a national leader in alternative energy legislation. She said her aim is to create more job opportunities in rural Oregon while reducing dependence on fossil fuels—jump starting alternative sources such as wave energy.

Boone said the last session passed laws that will help our state prepare for emergencies such as natural disasters. The Coastal Caucus—composed of eight legislators from the coast—met regularly to discuss, then

introduce, legislation to protect fisheries and local economies. During the interim, Boone said she will continue to work with the Governor on sea floor mapping, and on other ocean issues in her capacity as chair of the interim committee on emergency preparedness and ocean policy.

Keynote Address: “The Opportunities and Challenges of Marine Aquaculture”

Dr. Gil Sylvia, Superintendent, Coastal Oregon Marine Experiment Station, Hatfield Marine Science Center

“Aquaculture is a major food industry worldwide and Oregon is a major producer,” declared Sylvia. He defined it as the “propagation and rearing of aquatic organisms in controlled or selected environments for any commercial, recreational, or public purpose.” Simply stated, it is farming and ranching—it is agriculture.

The history of aquaculture goes back 4,000 years to China and Egypt. Today, it accounts for 40% of all seafood intended for human consumption; by 2020 it is expected to reach 60%, and provide 90% by the end of the century. Today, China is the top producer with 67% of total production, followed in the rankings by India, Thailand, Indonesia, Vietnam, Bangladesh, Japan, Norway, and then the U.S.

Sylvia described some of the benefits as jobs, exports, animal protein, and utilizing existing infrastructure, while listing some of the challenges as pollution, impacts on sensitive marine environments, fish disease, escapees, and competition for space.

In Oregon, while no offshore aquaculture occurs, ranching of estuarine shellfish and freshwater trout are practiced. Sylvia cites today’s economic impact to range from \$500 million to \$1 billion.

At the national level, Sylvia said there is a need to increase domestic seafood production to complement wild harvest. Further, there is the motivation to shrink the \$6-8 billion seafood trade deficit. Accordingly, a bill was submitted to Congress in June 2005, and amended this year, which would authorize offshore aquaculture permits in U.S. waters. It would establish environmental requirements and exempt aquaculture from the legal definition of fishing.

Sylvia concluded by stating that marine aquaculture is a complex challenge and opportunity. Oregonians must face coastal issues such as spatial planning, globalization, industry consolidation, and limits on traditional seafood production. Sylvia said there is no immediate need for action, and recommended a continuation of our research and public policy planning.

Panel III: The Power of Ocean Waves

Robin Hartman, Chair, Wave Energy Working Group, Ocean Policy Advisory Council

Justin Klure, Interim Director, Oregon Wave Energy Trust

Kevin Bannister, Vice-President for Development, Finavera Renewables

Betsy Macmillan, Oceanlinx of Energetech America; read by Robin Sullivan, HHCC Board Member

Ron Yockim, Legal Counsel to Douglas County

Hartmann began by citing some of the criteria used by the Electric Power Research Institute in a 2004 study of potential offshore wave energy sites, which include: characteristics of deep water vs. close to shore; bottom characteristics; grid interconnection points, and minimal conflicts with existing uses.

To preserve fishing and crabbing, industry interests want to protect sandy bottoms which are best for crabs (25-30 fathoms), where gear is safer at those depths, and easier to get to where efficiency is important due to early season harvest.

Describing the permitting process, Hartmann said the Federal Energy Regulatory Commission (FERC) has the authority to site wave facilities. The role played by the state lies with the Department of State Lands which issues rules for leasing the seafloor, which addresses the compatibility of existing uses, biological and ecological effects, and the geological hazards.

Some counties have shown interest in siting, and Hartmann pointed to three counties. In the Lincoln County model, an application for a preliminary permit would be required, although FERC now exercises that role; their second approach to involve fishermen in proposing sites for test buoys under FERC jurisdiction.

Douglas County wishes to use a “municipal preference” model and partner with a company. Tillamook County proposes to partner with the local PUD.

Some of the siting problems identified by Hartmann include the effect of mooring cables on marine mammals, structures which may result in new migration corridors, and the attraction of new predators.

In conclusion, among other considerations, Hartmann group is at work on several fronts: identifying and protecting sensitive sites from future development; developing a coast wide framework for wave energy, and conducting a cumulative effects study.

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Speaking for the recently formed Oregon Wave Energy Trust, Klure began by citing the tremendous increase in world energy consumption, together with projections of even greater demands in the foreseeable future. In the U.S., while we diversify with coal, natural gas, hydro, oil and nuclear, only 1% is from renewables. And Oregon, in particular, depends mostly upon hydro and coal, with wind and geothermal power providing about 1%.

Klure then declared the ocean to be the largest, most concentrated source of renewable energy on earth. Furthermore, ocean energy has the potential to supply 10% of the world’s electricity needs.

The intensive interest in developing wave energy off the West Coast is emphasized by twelve projects underway, seven of which are in Oregon, namely: Finavera Renewables has interest in Coos Bay and is testing off Newport; Oceanlinx off Florence; Ocean Power Technologies at Newport, Reedsport, and Coos Bay; and intentions filed by Lincoln County and Douglas County.

Klure’s Trust intends to demonstrate new wave energy technologies by assisting with funding to support activities at Oregon State University’s Wave Energy Center. They also intend to site one 2-megawatt commercial project by 2009.

As one of the companies working with the Trust, Ocean Power Technologies was identified by Klure in the Federal Energy Regulatory Commission’s licensing process which can take two to three years.

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Bannister stated that Finavera’s patented wave energy converters are based on proven, survivable buoy technology. Clusters of these small, modular devices called AquaBuOYs are moored several kilometers offshore where the wave resource is the greatest. The power plants are scalable from hundreds of kilowatts to hundreds of megawatts. Finavera power plants are designed to provide clean, renewable energy to large population centers. The offshore plants are suitable for distributing the generation and load balancing at coastal transmission points.

Energy transfer takes place by converting the vertical component of wave kinetic energy into pressurized seawater by means of two-stroke hose pumps. Pressurized seawater is directed into a conversion system consisting of a turbine driving an electrical generator. The power is transmitted to shore by means of a secure, undersea transmission line.

A cluster of AquaBuOYs would have a low silhouette in the water. Located several miles offshore, the power plant arrays would be visible to allow for safe navigation and no more noticeable than a small fleet of fishing boats.

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Oceanlinx Technology converts wave vertical motion to air flow, pass through a turbo-generator to produce electrical energy, which is transmitted ashore by sub-sea cable. The technology was invented in 1990 and promoted by Energetech Australia with head offices in Sydney. This year, the company changed its name to Oceanlinx. A regional office in Connecticut works to establish partnerships in America.

Oceanlinx’s unit is a floating steel frame structure that uses a patented technology to perform as an oscillating water column device. It converts wave energy into electricity with efficient variable-pitch blades on a turbine which allows it to spin at the optimum speed in one direction, despite the bi-directional air flow from the water column. Simplicity with very few moving parts, all above waterline, minimizes the likelihood of breakdown.

One Oceanlinx unit produces 1.5 mw—which can serve about 1500 homes. Advantages to the environment are: low visibility; positive impact on marine life; low noise (75 dBA); several kilometers offshore; and a natural reef.

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Douglas County applied to FERC in August 2006 for a permit to site a wave energy installation on the jetty at the mouth of the Umpqua River. Yockim said a preliminary permit was issued in April 2007.

The technology is supplied by Wavegen, a Voith & Siemens Company located in Scotland. The oscillating water column technology provided by the stationary structure is different than the buoys proposed by other companies. Describing a structure to be fitted into the rock jetty, Yockim said wave action forces a surge into the housing that causes turning a turbine to produce electricity.

Yockim explained that Douglas County already has experience in generating electricity with a coal-fired installation. Electricity produced by this venture would serve the Reedsport area, replacing power now produced by conventional means.

Douglas County is exploring one to three units having installed capacity of 1 – 3 mw. A measured approach to this venture is being taken with the expectation of seeing results in 2-3 years.

Lecture: “Monitoring Oregon’s Coastal Ocean with the Autonomous Underwater Glider”

Dr. R. Kipp Shearman, Assistant Professor, College of Oceanic and Atmospheric Sciences, OSU

Oceanographic scientists are using new, high-tech gliders to monitor Oregon’s ocean with results that are both faster and cheaper than by manned vessels. The autonomous underwater vehicle is a robot. It flies through the sea by changing its buoyancy—taking on water to become heavy and sink, then expelling the water to become light and rising. Small wings turn vertical motion into forward motion, so that the glider moves without propulsion.

Shearman not only brought visuals of the 7’ long glider at work, but had one on display. He said they use GPS for positioning, and Iridium satellite phone for communication. Not least important is the fact that gliders—there are two currently in use—can collect data at a fraction of the cost of a research vessel.

According to Shearman, the tracking information gives them data on the structure of the upwelling of the ocean, as well as the hypoxia on the Oregon shelf. Understanding the circulation of currents and the patterns of upwelling which bring deep water that is cold, nutrient rich and oxygen poor, aids scientific analysis of the ecosystem. Further research will provide a better understanding of an ocean constantly in motion.

Workshop: By consensus, round-table discussion groups prepared short statements on the Panel issues. Here follows a representative sampling:

Groundfish Trawling

- The groundfish trawl fleet is in denial about the impacts on marine species and habitats. Observer coverage should be 100% at all times, with harsh penalties for violations of regulations.
- Important concerns: Habitat destruction—further research concerning before and after trawling, and the effect on the foodweb. Bycatch—make incentives for gear modification; Monitoring—increase random observer visits; Data—establish reliable, consistent, and viable data collection methods.

Wave Energy

- Thorough exploration of costs and benefits should be made before implementation, including participation by all stakeholders. Any revenue generated should be shared directly with the state and counties.
- All jetties should be considered for use; offshore locations need more study; incorporate wind/solar potential; concept of artificial reefs should be explored.
- Oregon is meeting the issue of energy alternative needs head on...doing it in a proud Oregon tradition of leadership and stakeholder involvement.

- We support expediting the wave energy permits, and suggest that applied research, like the seafloor mapping project, be completed concurrently with the permitting process.

Marine Reserves

- The purposes and goals of each reserve (i.e., test hypotheses) should be developed, utilizing science, community involvement; baseline monitoring, and results analysis.

Ocean Policy

- Oregon must have consistency in making policy in order coordinate all potential uses; this means not changing policy direction so frequently, e.g., referring to wave energy as a “threat,” then an “opportunity.”
- A process to clearly define and address (old and new) issues is needed. (More publicity on OPAC? Ed.)
- Coastal policy has not been translated by the science community in such a way to obtain adequate funding.
- Map the ocean floor, then within a year, locate best areas for wave energy, sanctuaries, and reserves.
- Marine protected areas and marine reserves should be placed before wave energy sites are designated.
- We must slow down, take time to address the issues through science, careful methodology, and stakeholder participation. To meet the “25 by 2025” goal, we must recognize the tradeoffs.
- Entities must work together with all partners...socio-economic effects of all projects must be considered collectively...there needs to be a balance among all users and uses...the potential siting of marine reserves and wave energy facilities in the same location must be considered...off limit designated areas must not be permanent but rather the process should be evaluative and flexible over time.

Videotaping The Keynote Address on *Aquaculture* and the afternoon panel on *Wave Energy* will be televised on Channel 10 – Florence beginning November 3. A DVD covering approximately three hours of the program is available from Campbell Productions (541-997-8653) at \$15 plus \$3 handling.

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The Heceta Head Coastal Conference, Inc. is a nonprofit corporation whose mission is to inform and educate the public of the need to ensure healthy, productive, and resilient marine ecosystems of the Pacific Ocean off the Oregon coast. Visit us at: www.HecetaHeadConference.org.

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