*4th Annual*

# *Heceta Head Coastal Conference*

*"Oregon's Ocean: Changes & Consequences"*
*Florence Events Center ~ October 24-25, 2008*

# SUMMARY of CONFERENCE PROCEEDINGS

Master of Ceremonies: Craig McMicken, Chairman, Heceta Head Coastal Conference, Inc.

## Friday, October 24

### *"Marine Reserves: The New Zealand Experience"*

[This Abstract combines this Lecture and the Keynote Address]

**Dr. W. J. Ballantine,** Leigh Marine Laboratory, University of Auckland, Warkworth, New Zealand

Highly-protected Marine Reserves are areas of the sea in which human disturbances are minimized so that the full natural biological diversity is maintained or, more often, allowed to recover to a more natural state.

Europe has very few Marine Reserves, they are very small and almost all are in the Mediterranean. There are at present no official plans to create effective systems of Marine Reserves.

Europe has many so-called Marine Protected Areas (MPAs). These are marine areas with some extra regulations or planning procedures. MPAs are user-oriented, knowledge-based, locality-dependent, problem-solving extensions of standard marine planning and management.

Marine Reserves are quite different. All extractive and potentially-disturbing human activities are prohibited. The burden of proof is reversed; no evidence of damage or danger to particular species or habitats is required; all marine life is protected on principle.

The concept of Marine Reserves is simple and practical, but because it is new, different and additional to existing marine management, the idea is seen by many as revolutionary.

Basic biological principles and practical experience in many countries make it clear that Marine Reserves are important to science and education, essential for conservation, and useful in resource management. These features apply in all regions and ecosystems. They are independent of climate, biogeography, current human activities, and the present management. Representative and viable systems of Marine Reserves are needed in all regions.

Fishing and other human disturbances have been widespread and intensive for so long that it is very difficult to predict the stages of recovery that occur in Marine Reserves. Furthermore, while some features change rapidly (e.g. numbers of previously targeted species), recovery continues for a long time (e.g. 5th and 5th order trophic and structural changes after >25 years).

None of this alters the fact that in scientific terms, Marine Reserves are controls not manipulations. Such controls are required if scientists are to understand the intrinsic processes and obtain data that are not confounded by human activities (e.g. separating natural variation from fishing effects).

No significant progress will be made to establish Marine Reserves until scientists speak out strongly and clearly on the issue. We consider it is part of our professional duty as marine biologists to state publicly and frequently the need for a representative, replicated, networked and sustainable system of highly-protected Marine Reserves. We doubt if our grandchildren will accept any excuses if we fail.

[DVD available; see back page]

## Saturday, October 25

## Panel I. ***"Ocean Climate Change and Ecosystem Resilience"***

**Dr. Scott Heppell,** Assistant Professor, Oceanic & Atmospheric Sciences, OSU,
speaking on behalf of **Dr. Selina Heppell,** Assistant Professor, COAS

*Fisheries.* Scientists agree that climate change is happening and will affect Oregon's nearshore. It is not clear how dramatic the changes will be, or what species may benefit or lose as ocean currents, upwelling patterns, and temperatures affect the food web.

Extensive studies in terrestrial and intertidal ecosystems indicate that diversity plays an important role in how well a system can recover or adapt to perturbations. Systems with more species, more habitat, and more variability in the life cycle patterns of individuals are naturally able to withstand or recover from impacts. This "resilience" is of critical importance to coastal communities that rely on natural resources and productivity of our coastal ecosystems.

Oregon's nearshore is highly dynamic, so its species and habitats are naturally resilient; conserving diversity and monitoring food webs for "early warning" indicators should improve our chances of retaining a highly productive and beneficial coastal ecosystem.

**Dr. Jan Hodder,** Associate Professor, Oregon Institute of Marine Biology, U of O

*Ornithology.* Marine birds live a long time, have small numbers of young each year, take a long time to raise their young and are slow to breed. These features provide them with a measure of resilience to ocean climate change. They have two phases to their life cycle. During breeding they are tied to land and nest on islands and mainland cliffs, and during their non-breeding season they move out to sea. Some stay in Pacific Northwest waters, others utilize the entire Pacific Ocean as part of their life cycle.

Marine birds are apex predators and as such are affected by changes in any part of the food web. Inter-annual cyclical events such as the El Nino/Southern Oscillation cycles provide an example of how changes in food availability due to an alteration in oceanographic processes can result in reduced reproductive success in marine birds. Marine birds however, are resilient to these cyclical changes as a result of their life history characteristics.

Long term changes in food webs that may result from ocean acidification or changes in oceanographic parameters are unlikely to be cyclical so that resilience and the ability of marine birds to respond to this type of linear change is not as clear. Because marine birds need nesting sites free from mammalian predators they are restricted to breeding on islands and steep mainland cliffs. Sea level rise, resulting from a warmer ocean and increasing ice melt, will impact the amount of habitat available for marine bird nesting sites.

**Dr. Burke Hales,** Associate Professor**,** Oceanic & Atmospheric Sciences, OSU

*Oceanography.* The Oregon coastal ocean is a unique upwelling system that, when operating 'properly' supports high plankton growth rates—which ultimately are the basis of our rich coastal fishery. This upwelling draws carbon dioxide out of the air, sequestering carbon in the deep ocean, evading hypoxic and acidic conditions.

This system is extremely sensitive, however, to slight perturbations in the nature of upwelling. Upwelled waters are, and probably have long been, naturally very low in oxygen concentrations and high in carbon dioxide. If only a small fraction of the organic carbon produced by the phytoplankton blooms is degraded in coastal waters, hypoxic and corrosive acidified conditions can result.

Likewise, if upwelled source waters are slightly more oxygen depleted and CO2 rich, these conditions can be worse. Evidence of both changing upwelling wind conditions and upwelled water characteristics has been observed in recent years, and appears to have made harmful conditions more persistent.

## Panel II. ***"Building and Ocean Legacy of a Healthy Marine Ecosystem"***

**Peter Huhtala,** Director of Governmental Affairs, Pacific Marine Conservation Council

Ecosystem-based management of the ocean builds upon our knowledge of natural systems and human interactions. This approach is essential as we face the realities of climate change, sea level rise and acidification of marine waters. Competing demands for ocean resources and space are accelerating. Offshore aquaculture, wave energy, fossil fuel extraction, shipping and terminal operations are just a few potential uses that implore comprehensive ocean use planning.

Identifying ecologically important areas to set aside as marine reserves is a prudent conservation step in the early stages of ocean use planning. Preserving sustainable fishing opportunities can be accomplished with designation of marine protected areas that allow some types of fishing but bans non-compatible activities.

Fisheries could improve with closer matches of management units with the scale of fish populations, subpopulations, and ecosystem functions. Along the west coast of the United States, major capes such as Cape Mendocino and Point Conception are significant bio-geographic boundaries for many offshore groundfish populations and can be used to define management units that make more sense than managing coastwide.

Improved stock assessments will ultimately allow even finer scale management for some nearshore fish populations. Finer scale management may also be desirable for social reasons.
Management at smaller scales can protect fishing communities from closures due to overfishing in distant regions, rewarding effective conservation. Community based marine research and cooperative management can accelerate progress toward approaches that match natural ecosystems with human reliance upon access to the resource.

**David Fox,** Marine Resource Program, Oregon Department of Fish & Wildlife

*The State's Fisheries Management View.* State resource managers face a number of challenges in implementing a course of action to ensure sustainability of Oregon's nearshore ocean resources. The nearshore area extends from the shoreline to approximately 60 m. water depth and includes the state's Territorial Sea. Key challenges include:

- a large number of species to manage,
- the convergence of numerous and sometimes conflicting human uses of the nearshore,
- the lack of stock status and monitoring information needed to manage many fishery species,
- the lack of ecological and socio-economic information needed to implement aspects of ecosystem-based management, and
- the lack of a funding structure to allow development of needed information.

The Oregon Department of Fish and Wildlife is making progress toward meeting these challenges by developing a comprehensive Nearshore Strategy to guide management of nearshore resources. The Department is conducting several research and monitoring efforts to gather necessary natural resource information, developing partnerships with coastal communities and ocean users to develop collaborative research and management solutions. And finally, it is considering new funding mechanisms to provide the ability to address resource management needs.

**Leesa Cobb,** Executive Director**,** Port Orford Ocean Resource Team

*A Stakeholder's View.* There is a growing interest in the use of community and ecosystem-based ocean management approaches. Port Orford Ocean Resource Team (POORT) integrates these approaches in the Port Orford Stewardship Area.

POORT, a community-initiated and an inclusive organization, was founded in 2001 and focuses on a sustainable fishery and healthy ecosystem. We seek to combine the best science and experimental

knowledge available in order to make decisions that: 1) sustain and improve the habitat and population base of fish; 2) provide high quality, high value seafood products to consumers; and 3) support the economic viability of Port Orford.

As a local non-profit organization, POORT works to empower fleet members and other citizens to participate in bottom-up ocean management efforts. These activities include a significant focus on collaborative science and stewardship.

The community-based management model can offer a number of significant benefits as a complement to existing state and federal management structures. Foremost among these is an enhanced level of stewardship for ocean resources among community participants.

The Port Orford Stewardship Plan, developed by POORT through an extensive consensus-building process, provides a vision for community involvement in ocean management and science in our area. The Stewardship Area is 1,320 square miles, and includes 385 square miles of terrestrial habitat and 935 square miles of ocean habitat. The area is 30 miles long (north to south), extends 18 miles offshore (west), encompasses the uplands watersheds, and includes portions of both the Oregon Territorial Sea as well as federal waters.

## Keynote Address: *"Marine Reserves: The Need for Systems"*

**Dr. W. J. Ballantine, Leigh Marine Laboratory**

*Abstract combined with Friday lecture*

[DVD Available; see back page]

## Panel III. *"The Consequences of the Salmon Closure"*

**Nancy Fitzpatrick,** Administrator, Oregon Salmon Commission

*The Effect on Fishermen.* As independent business owners, salmon fishermen are impacted by season closures. State and federal managers establish seasons and quotas annually with typical Oregon seasons from March through October.

2008 is not the first year with closures. Extremely low Klamath Fall Chinook abundance was the primary stock impacting the curtailed seasons for 2005 and 2006. Typical landings of 3-4 million pounds (value $7-10 million) was reduced to around .5 million ($2.75 million).

This fishery income pays the regular household expenses, as well as associated boat expenses (boat payments, moorage, dock electricity, gear, repairs, equipment, boat upkeep, fuel, required safety equipment). Without fishing, fishermen are not buying gear, safety equipment, or performing annual maintenance. Therefore the related fisheries businesses are seeing fewer customers thus affecting the entire coastal communities.

Governor Kulongoski declared an emergency in 2006 and 2008, and approved direct financial assistance to the fleet. The Oregon Watershed Enhancement Board funded work opportunities for displaced fishermen for salmon habitat restoration projects and Project CROOS paid fishermen to collect scale samples and fin clips to determine genetic stock identification.

The Department of Community Colleges and Workforce Development and the Department of Human Services funded the Port Outreach Specialist Project to contract with six Outreach workers who worked with fishermen, their families, crew members and fishing communities impacted by the disasters connecting them to local and state services.

Accordingly, Oregon fishermen received federal disaster assistance that allowed them to pay their family and boat-related expenses.

**Glen H. Spain,** N.W. Regional Director, Pacific Coast Federation of Fishermen's Association

*The Effect on Fishermen.* The widespread salmon fisheries closures of 2008 (and likely 2009) are the inevitable result of the fact that 80% or more of Oregon ocean-harvested salmon come from outside Oregon, with most coming from the California Central Valley where in 2008 these salmon runs completely collapsed.

Oregon's salmon dependency is exacerbated because Oregon has not taken good care of its own native coastal river stocks, most of which are also seriously depressed and many of which are now ESA-listed to prevent their extinction.

Oregon is the ocean cross-roads of many salmon runs. Because weakened stocks from elsewhere intermingle with Oregon-origin stocks as sea, "weak stock management" requirements will close down Oregon's ocean salmon fisheries whenever <u>any</u> salmon run in <u>any</u> one of these out-of-state river systems collapses. Thus Oregon has an abiding economic interest in helping to restore salmon runs in all three states, not just in Oregon. Salmon problems in other states do not stop at state boundaries -- they are Oregon's problems as well.

The Impacts on Oregon's salmon-dependent coastal communities from these periodic salmon closures include;

(1) reducing the productive capacity of the whole salmon industry;
(2) collapsing local port infrastructure and loss of markets to farmed salmon, which can negatively effect the industry for many years;
(3) driving fishing jobs and families out of fishing communities permanently;
(4) exacerbating the aging of the fleet as fewer young fishermen are recruited; and most importantly,
(5) eliminating the most vocal and most politically effective advocates for salmon restoration -- fishing families and their communities.

**Hans T. Radke**, Natural Resource Economist

*The Effect on the Economy.* Since the year 2000, Oregon has had about 600 active salmon troll permits issued out of a total of 1,200. Salmon commercial troll fishing has generated less than $10 million annually in total personal income to coastal Oregon communities. The economic impact of state and federal payments in 2007 and 2008 is estimated to generate about $35 - $50 million in each of these years.

The ocean salmon fishery is generally a mixed stock fishery. There will always be a salmon species or stock listed as threatened or endangered, which will lead to continued closures unless a better system of stock identification and harvest management is developed.

By way of summary, regulators of the salmon fishery are issuing too many permits. Disaster payments generated about four times as much income as harvests. Furthermore, the future of ocean salmon trolling is not very good unless changes in identification of stocks and in-time management practices are adopted.

## Lecture: ***"Extreme Storms, El Ninos, and the Sea Level Rise Due to Changing Climate"***

**Dr. Jonathan Allan,** Coastal Geomorphologist, Oregon Department of Geology & Mineral Industries

The Oregon coast is characterized by about 300 miles of shoreline. The bulk of the shore (~72%) is comprised of sandy beaches (both dune-backed and bluff-backed) that are bounded by resistant headlands. The headlands form pocket beach littoral cells, whereby sand is moved about within the cells with little to no exchange occurring between adjacent cells.

Since the beaches of Oregon are characterized by limited sediment sources, they are particularly susceptible to the effects of major storms that develop and track across the North Pacific. These storms

are in response to climate events such as El Niño's, and in the long-term to the effects of climate change and sea level rise.

With the development of the Oregon coast having begun in earnest in the 1960s, developers have been allowed to locate expensive properties and infrastructure atop high dunes overlooking the ocean, along the edge of coastal bluffs and on sandy spits. In many cases the development of the Oregon coast has occurred without a sound knowledge of the processes that drive coastal change. Many of these homes are now located in hazardous situations requiring expensive engineering to safeguard them.

There are many factors that influence the stability and instability of Pacific Northwest beaches. The most important of these include high ocean waves, increases in mean sea level due to El Niño climate effects, storm surges, and "hotspot erosion" due to oblique wave approach that removes large amounts of sand from the southern ends of the littoral cells. Of these, it is the combination of large ocean waves, coupled with high water levels, that contribute to the most significant erosion problems. The result is as much as 15 to 45 m. (45 – 150 ft) of dune retreat during a single storm or from storms-in-series.

Such responses are likely to be compounded in the future with the recent discovery that North Pacific waves have increased in height since the 1970s, while storm frequency has been increasing since at least the 1940s. Factoring in a sea level rise of 0.2 to 0.8 m (0.7 to 2.6 ft) by year 2100, the expectation is for even more coastal erosion and inundation that will severely challenge coastal communities and society in the future.

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

*Ocean Climate Change*

- Ecosystems in their natural state are more resilient. Stresses created by climate change will make resilience all the more important. Anything that increases both the scientific information base and public awareness will help us cope.
- We need a system of marine reserves representing various ecosystem habitats that strengthen resilience from climate change and other impacts. For development of this system we need to minimize economic harm along the coast.
- Resilience through diversity. To reconfigure our thinking and cultural priorities, emphasize the holistic interconnectedness of coastal communities and resources. This should be done through grass roots community-based education and outreach efforts, such as town festivals.
- There is a need for long-term, consistent monitoring to document and understand changes due to global warming. Develop low-cost monitoring using automated instruments offshore, using volunteer monitors.

*Building an Ocean Legacy*

- We recommend the development of collaborative groups in every coastal community that will establish a common vision for a healthy ocean legacy.
- Community-based ocean user groups such as POORT provide an excellent model for collaborative relationships. They can lead to the establishment of marine reserves and stewardship areas, especially watersheds that impact reserves. Educational program at the elemental level are crucial.
- What happened with the POORT effort is worthy of study as a possible model of community collaboration. In particular, linking onshore watersheds to the nearshore ocean.
- We recommend the Port Orford and Depoe Bay initiatives for marine reserves, as they illustrate a community process that includes all stakeholders. We encourage the framers of state and regional policies to maintain our local control and responsibility.
- Building an ocean legacy will take partnerships and innovative approaches. At both the community and state levels, advisory bodies much be diverse with proportional representation.

*Salmon Closure*

- The salmon problem won't be solved in Oregon alone, or in the ocean alone. We must look at all factors that affect the larger system, particularly those onshore where the habitat problems are.

- Salmon are a significant part of Oregon's history. Variability in ocean conditions and issues with habitat loss and degradation have paid a grim picture of salmon future. The state should examine what the ultimate goal for salmon is. Is it harvest? Sustaining coastal economics? Maintaining Oregon's heritage? If harvest is the goal, then the state should consider terminal harvest, policies to ensure favorable habitat, and look to Alaska's management of salmon fishing as a model.
- Recent salmon closures remind us we have neglected too many aspects of earth's habitats for too long. With uncontrolled population growth and unsustainable resource use, humans have "broken the last straw" in survival. It's time for marine reserves, including rivers and watersheds in the mix. Fishermen are only the first to face the consequences of our neglect.
- Weak salmon runs must be protected. Fisheries management today must cope better with dramatic change and be more flexible. We need real-time ecosystem data for better management.
- Respect genetic diversity and point of geographic origin of salmon stocks.
- Fishing has to be controlled and sustainable at all times. An equitable distribution must be achieved among and within sectors of the fishing community.
- Be precautionary…weather is cyclical and so are salmon runs. Learn from the past mistakes, that is, adaptive management.

*Marine Reserves*

- We believe in a network of marine reserves; they can contribute to fisheries management and scientific investigation. They have intrinsic worth.
- We will never know everything or enough to satisfy skeptics but we do know enough to move forward with forming a network of marine reserves that include more than one example of Oregon's ocean richness. Action should happen sooner rather than later; the situation is complicated today and the forecast is that the situation in the ocean is not likely to get any simpler. Some new issues, like ocean acidification and enhancing resiliency, make protecting intact habitats a common sense approach. Fishers must be part of the science to aid in the transition. People must have a way to express their views without fear of retaliation.

*Conference as a Whole*

- The Conference was an excellent start toward multi-directional (i.e. science, stakeholders, managers, policy makers) exchange of ideas, which is critical. Concern persists regarding representation of other perspectives, despite apparent consensus regarding ecosystem-based management. Consensus suggests transition from basic research/management to advocacy is necessary. Upward flow of information is critical! Local problems have global origins, and local stakeholders need to make this known.

*Margaret Mead's Statement*

- "Never underestimate the power of a small, committed group to change the world. In fact, that's all that ever has."

***Vital Statistics*** Now in its 4th year, the Conference attendance has ranged from 195 to 227, with 202 registrants, graduate students, speakers and guests attending this year. On average, half of the audience has been from Florence; this year 86 were from Florence, 65 from coastal cities, and 51 from the valley.

Questionnaires were turned in by 76 attendees. Of the 73 giving an opinion of an overall rating of the Conference, 35 responded "excellent"; 30 said "very good"; and 8 checked "good." Evaluation of the panels, on a scale of 1 to 5, with 4 indicating "very good", the consensus ranged from 3.9 to 4.3. 90 % approved the format.

Dr. Ballantine's lecture Friday evening was rated 4.8, and his Keynote on Saturday – 4.7. 96 % thought the cost reasonable, and 87 % said they were likely to return. 19 said they stayed in a motel.

***Videotaping***

Dr. Ballantine's lecture "Marine Reserves: The New Zealand Experience" is available on DVD. Send check for $10 along with mailing address to: Green Fire Productions, PO Box 369, La Grande, OR 97850.

Dr. Ballantine's keynote "Marine Reserves: The Needs for Systems" is available on DVD from Campbell Productions (541-997-4295)

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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.*

*The Conference brings together a diverse group of leaders, providing a balance of viewpoints, from the worlds of science, fishing, conservation, government, education and business.*

*Visit us at* www.hecetaheadconference*.org.*

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