



*Strategic Plan 2004-2009*

*January 2005*

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# ***Background and Operational Philosophy***

## ***Background***

The Coastal Oregon Marine Experiment Station (COMES) encompasses faculty, advisory board, research associates, students, staff, and facilities at the Hatfield Marine Science Center and the Seafood Research and Education Center (OSU Seafood Laboratory). COMES began in 1988 as a counterpart to the inland agricultural branch experiment stations -- its mission -- to conduct applied research on coastal and marine issues beneficial to the citizens of Oregon and the Nation. Under the leadership of Lavern Weber and Captain R. Barry Fisher, the Station began with three faculty and a handful of graduate students. By 2004, the Marine Experiment Station has grown to include 11 faculty, 39 staff and research associates, 47 graduate students, and over \$4 million in external grants and funds. COMES has become the largest applied marine research organization in Oregon and one of the largest University-based marine resource and seafood research organizations on the West coast and the United States.

The research programs of COMES encompass seven primary areas: Aquaculture, Fish Disease, Fisheries Population Dynamics, Fishery Management and Policy, Marine Mammals, Marine Economics and Marketing, Salmon and Fisheries Ecology and Genetics, and Seafood Science. (*See Appendix A for Organizational Chart*). COMES faculty have joint positions within their academic homes, and some with Oregon Sea Grant or the Oregon Department of Fisheries and Wildlife. Much of this research involves a diverse array of cooperators including OSU faculty, Oregon Sea Grant, national and international research institutes, industry and seafood commodity commissions, and state and federal government agencies including National Marine Fisheries Service, USDA Agricultural Research Service, Oregon Department of Fish and Wildlife, and Oregon Department of Agriculture. COMES also helps sponsor workshops and conferences which further the mission of the Station in supporting wise use of marine resources.

## ***Operational Philosophy***

The operational style of COMES is interdisciplinary and entrepreneurial, with a focus on scholarly research which “makes a difference in the lives of Oregon’s citizens.” COMES works closely with the Advisory Board, College, and other partners to address vital problems, needs, and opportunities confronting Oregon and Pacific Northwest coastal communities. Our strategic approach is to maximize the creativity and impacts of our programs by anticipating the future, balance risks with opportunities, and seamlessly integrate research, outreach, and teaching responsibilities.

## *Consistency with OSU and CAS Strategic Plans*

COMES will operate according to the strategic mission and plans of Oregon State University and the College of Agricultural Sciences. Consistent with the OSU plan, COMES will strive to “develop partnerships to add economic and social value” and be accountable as an “engine for economic growth.” In particular COMES will focus its strategic goals and initiatives consistent with two of OSU’s five strategic themes:

- *Managing natural resources that contribute to Oregon's quality of life, and growing and sustaining natural resources-based industries.*
- *Optimizing enterprise, innovation, and economic development.*

COMES will also strive to achieve the three primary OSU planning goals of:

- 1. Providing outstanding academic programs that further strengthen our performance and pre-eminence in the five thematic areas.*
- 2. Providing an excellent teaching and learning environment and achieve student access, persistence and success through graduation and beyond that matches the best land grant universities in the country.*
- 3. Substantially increasing revenues from private fundraising, partnerships, research grants, and technology transfers while strengthening our ability to more effectively invest and allocate resources.*

Consistent with Goal 1 COMES will increase total grants, contracts, and publications and contribute through implementing an HMSC Strategic Plan to develop “targeted programs at the Hatfield Marine Science Center.” For Goal 2 COMES will strive to improve the experience and success of undergraduate and graduate students and work closely with coastal community colleges in dual programs and enrollment. For Goal 3 COMES will increase revenues through improved grantsmanship, establishment of a development program, and increased technology transfers.

The Coastal Oregon Marine Experiment Station presently operates in alignment with the College of Agricultural Sciences in its three broad areas of emphasis:

- *New value-added products and markets that leverage the economic contributions of Oregon agriculture.*
- *Natural resources management and policy through discovery and learning to improve understanding of nature as a system.*
- *Integrated management systems that help assure economically sustainable, environmentally sound agriculture.*

To achieve these three areas of emphasis the College is committed to supporting existing areas of research, education, and extension/outreach, while emphasizing *Four Strategic Emphases* known

as *Aim 1*:

- *Build strength in biobased products*
- *Build excellence in ecosystem services*
- *Build excellence in food, nutrition, and health*
- *Build excellence in water and watersheds*

COMES presently conducts programs consistent with all four areas. Future proposed COMES programs and staffing plans that align within these areas will be expected to have greater support by CAS and the Agriculture Experiment Station compared to plans that do not emphasize these areas.

CAS also has eight additional goals for achieving *Aim 2* in order to *Build the College's Capacity*. These goals include: increasing quality and number of academic offerings and students; sustaining interdisciplinary research; increasing partnerships; assuring stakeholder involvement; supporting faculty and staff; improving facilities; increasing funding; supporting diversity; and, using metrics for accountability. The COMES Strategic Plan is designed to help the College achieve these eight goals.

## ***Vision, Mission, Goals, and Values***

### ***Vision***

The Coastal Oregon Marine Experiment Station (COMES) is the leading Branch Experiment Station in the Nation in conducting interdisciplinary and cooperative marine science research. COMES is recognized for its unique programs and partnerships, the creativity of its basic and applied science, the quality and leadership of its faculty and students, unique integration of teaching, scholarship, and outreach, and significant value of its economic, social, and environmental impacts to Oregon and the Nation.

### ***Mission and Goals***

The Coastal Oregon Marine Experiment Station conducts research to understand, utilize, and sustain marine resources and coastal ecosystems in order to benefit the citizens of Oregon, the Pacific Northwest, the Nation, and the World. In furtherance of this mission, the long term goals of the Station are to:

1. Increase economic and social benefits from wise use, management, and sustainability of the State's valuable marine resources and coastal ecosystems;
2. Develop new or improved seafood products and efficient production processes that provide safer and higher valued seafood;
3. Develop new and improved aquaculture products, processes and systems;

4. Improve marketing efficiency and expand the export and domestic markets for Oregon's seafood products;
5. Develop systems for protecting living marine resources from diseases, genetic depletion, and other hazards;
6. Support beneficial economic development of coastal Oregon communities;
7. Communicate knowledge to students, scientists, managers, industry, and the public that supports wise utilization and sustainability of marine resources;
8. Teach, advise, and mentor undergraduate and graduate students who become future leaders in marine science and resource management.

To accomplish these goals, faculty at the Marine Experiment Station will develop effective partnerships with on-campus faculty, departments, and colleges, Oregon seafood industry, OSU Cooperative Extension Service, Oregon Sea Grant Program, the Oregon Department of Agriculture, the Oregon Department of Fisheries and Wildlife, NOAA Fisheries, and other state, federal and non-governmental organizations.

## *Core Values*

The COMES organization embodies the following values:

- Respond to the needs of Oregon coastal communities, the seafood industry, and disciplinary professions.
- Embrace diverse relationships and openness to new ideas and working styles
- Commit to fostering undergraduate and graduate student research and education
- Support teamwork and coordination among colleagues within COMES, the Hatfield Marine Science Center, the College of Agriculture, and other departments and academic units at OSU
- Foster partnerships and cooperation with national and international scientists, members of the fishing and seafood industries, government agencies, and non-governmental organizations
- Engage in interdisciplinary research in solving complex problems in marine resource science and management
- Integrate our research, education, and outreach responsibilities
- Maintain our reputation as a source of reliable and objective, research-based information.

## *Strengths and Assets*

- High quality and productive faculty and students: Most COMES faculty have national and international reputations and by most measures of productivity (publications, research grants, impacts, students) rank high within the University and College of Agricultural Sciences. COMES supports and advises approximately 50 graduate students per year, many of whom become leading scientists and resource managers in academic, public, and private sectors.
- Internationally recognized signature programs: COMES is nationally and internationally recognized for its work within its major program areas. In particular, COMES “signature” programs have been recognized for their creativity and success in science, education, outreach, and for producing positive economic, social, and environmental impacts. These programs include: *The Pacific Whiting Project, the Molluscan Broodstock Program, the Marine Mammal Endowed Program, the OSU Surimi Research and Technology School, the Salmon and Marine Ecology Initiative, and the Community Seafood Initiative.*
- Highly interdisciplinary faculty, programs, and projects: COMES faculty have demonstrated significant participation in a broad range of interdisciplinary research and education projects that achieve individual and program objectives.
- Excellent external relationships with OSU departments/colleges, Oregon Sea Grant, federal and state agencies, and coastal industries and communities: COMES faculty have a reputation for cooperation with external groups and have shown a strong willingness to work with campus organizations and state and regional industries and communities.
- A strong and committed advisory board and stakeholder groups: The COMES Advisory Board, together with leaders of key stakeholder groups, have worked collaboratively with COMES faculty, staff, and students in developing and achieving COMES strategic goals and objectives.
- HMSC and the Seafood Research and Education Center (SREC): The Hatfield Marine Science Center in Newport and the SREC (OSU Seafood Laboratory) provide state of the art facilities and infrastructure to support marine and seafood research and education.
- Supportive Coastal Communities in Astoria and Newport: The cities of Astoria and Newport and, more broadly, Clatsop and Lincoln Counties have demonstrated consistent and strong political support for COMES, and have been responsive in supporting COMES initiatives and needs.

## *Issues and Challenges*

- Overcoming funding cuts and financial constraints: Due to cuts to the University and College of Agricultural sciences, the COMES base budget was reduced by 15% in 2003. No new “base” resources (beyond possible new faculty salaries) are expected for the next four to five years and the College and unit may face future cuts due to cuts to the AES budget by the State legislature. Together with limitations on reserves and growing costs for staff, students, and infrastructure, COMES budget and financial flexibility will be limited. Fast-response initiatives to fund short-run projects will be severely constrained. Growth in research grants and development funds per FTE must occur in order to compensate for lost financial support.
- Retaining productive faculty: Budget cuts, relatively low salaries compared to peer institutes, financial problems in K-12 education, and other constraints associated with living in rural Oregon communities increases the challenges of hiring and retaining productive “world-class faculty.” To the extent possible faculty searches and hires must be exhaustive and “creative” in order to attract and retain successful and productive faculty.
- Increasing COMES recognition: Although many COMES-based programs have national and international reputations, outside of a handful of local and state-wide constituent groups, COMES has no broad recognition. Developing greater collective recognition and a broader constituent-base is vital if COMES expects to generate greater political and funding support.
- Bridging the divide between resource and sustainability/conservation constituents: Complex marine resource use and sustainability issues can threaten to divide COMES constituents. This problem can undermine COMES effectiveness by dissipating potential support and undermining consensus for research and education priorities. Because of its focus on both utilization and sustainability-related objective research, COMES is uniquely positioned to provide intellectual leadership in “bridging the divide.”
- Limited “ecosystem-oriented” faculty: Many of the potential future funding programs and initiatives including those recommended in the Ocean Commission Report focus on large scale initiatives including ecosystem science and management. COMES has few scientists trained in estuarine, coastal, or marine ecology, which may limit competitive opportunities that support new state, regional, and national research and management initiatives.
- Leveraging partnerships: The OSU, CAS, and HMSC strategic plans strongly emphasize the importance of partnerships in research, education, and extension. New faculty positions and funding will greatly depend on the ability of COMES to demonstrate and “leverage” partnerships. Given excellent relationships with external partners, COMES is well positioned to strategically compete with other units and organizations for short and long term support.

# *COMES Five Year Focus—New Initiatives*

The COMES program will continue its focus and support for its eight disciplinary areas and six signature programs. COMES will also work closely with HMSC, Sea Grant, CAS, F&W, Food Science, and other OSU units in implementing their strategic plans.

COMES faculty and Board, together with HMSC, Sea Grant, and community partners have developed five-year initiatives which broaden existing research or create new disciplinary or program areas. These new areas of emphasis or “focus” are summarized below (in no order of preference). Each focus includes a situation analysis, objective, and set of possible implementation strategies.

## *FOCUS I – Economic and Community Development*

### **Situation Analysis**

- Sustainable Economic Development: Evaluate key issues impacting sustainable community development including conservative-based resource development, higher wage jobs, increasing local income, and improving land use planning and management.
- Tourism: Understand and evaluate changing demographics and exploit new opportunities related to retirees, transfer payment, baby boomers, culinary tourism, nature-based eco-tourism, outdoor education, and relationships between sectors in order to maximize opportunities.
- Infrastructure: Need to evaluate coastal infrastructure and its relationship to meeting industry and community needs, particularly as it relates to: integrating and complimenting industries; evaluating and developing alternate energy sources (wind, wave, bio-based); water quality and availability (include watershed issues); and waste management.
- Economic development of small and mid-sized enterprises (SME): Assist small entrepreneurs in seafood specialty and niche markets (particularly value-added products); culinary tourism; direct seafood sales; access to markets; facilitate development of partnerships with other groups; develop market information for fisheries management.

### **Objective**

Develop research and outreach programs consistent with supporting new sustainable economic development on the Oregon coast.

## Strategies

- Hire a seafood product development specialist. Leadership will be provided by Michael Morrissey in association with the Community Seafood Initiative. Key stakeholders will include the Seafood Consumer Center (see Appendix D, Focus I for details)
- Conduct assessment on needs and potentials for developing renewable energy for coastal communities. Work cooperatively with Hans Radtke, marine resource consultant. Key stakeholders will include coastal community and industry. Benefits will include new knowledge for future planning.
- Conduct analysis on potential opportunities and strategies for seafood-based culinary tourism on Oregon coast. Joe Easley will provide leadership. Work cooperative with Shorebank Enterprise Pacific, Community Seafood Initiative, and the Newport Fishermen's Market Project. Key stakeholders will include coastal communities, seafood industry, and restaurant industry. Benefits will include new jobs and income and strategic integration of tourist and seafood industries.
- Conduct a workshop on the impacts of changing coastal demographics and opportunities to improve community and industry development. Key cooperators and stakeholders will include Oregon Sea Grant, the Community Seafood Initiative, and Oregon coastal communities. Jan Auyong will provide leadership. Stakeholders will include coastal communities and results will support successful community and industry planning.
- Analyze benefits, costs, and risks of direct seafood marketing with specific reference to the Newport Fisherman's Market. Work in cooperation with Oregon Sea Grant, the Fisherman's Wives, and the Community Seafood Initiative. Ginny Goblirsh will provide leadership. Stakeholders will include coastal communities and selected ports. Economic benefits will include an increase in jobs and income to coastal communities.
- Provide assistance to SME's in seafood product and market development. Work cooperatively with the Community Seafood Initiative, Duncan Law Seafood Consumer Seafood Center and Oregon Sea Grant. Gil Sylvia and Mike Morrissey will provide leadership. Stakeholders will include small and medium sized businesses. Results will include more efficient businesses, new product and market development, and additional jobs and income.
- Produce strategic information and conduct annual workshops on strategic fisheries development and product and market development. Work with Sea Grant, ODF&W, Seafood Commissions, and Community Seafood Initiative. Gil Sylvia and Mike Morrissey will provide leadership. Stakeholders include the seafood industry and supporting businesses and coastal ports. Information will support future planning.

## ***FOCUS II – Ecosystem Approaches to Marine Science and Management***

### **Situation Analysis**

- Understanding the complexities of the marine ecosystem: New emphasis on understanding biological and physical complexities of the ecosystem and marine environment versus traditional single species fisheries approach. Relevant factors include climate, oceanographic and temporal trends, multispecies management, habitat analysis and protection, and spatial analysis/management.
- Interdisciplinary analysis: Need biologists, oceanographers, climatologists and ecologists to conduct interdisciplinary marine science research.
- Evaluating spatial management and Marine Protected Areas: Spatial management offers promise for improving utilization and sustainability benefits from resource management, but management approaches such as Marine Protected Area require fundamental science information and analysis to determine potential effectiveness as a resource management tool.
- Need for intellectual leadership: Employing complex systems-based and interdisciplinary tools for studying marine ecosystems requires carefully considered approaches. COMES must provide intellectual leadership for informing the debate on ecosystem science and management.

### **Objective**

Develop research capacity in COMES and exercise leadership in interdisciplinary approaches to improve understanding of marine ecosystems and implications for management.

### **Strategies**

- Hire an early life history marine finfish biologist (*see Appendix C — Staffing Plan*).
- Hire a marine fishery ecologist (*see Appendix C-- Staffing Plan*)
- Cosponsor a forum with OSU and HMSC partners on marine ecosystem science and explore opportunities for collaborative partnerships.
- Cosponsor an Oregon science forum with OSU and HMSC partners on Marine Protected Areas and Marine Reserves.

## ***FOCUS III – Fishery Allocation and Management***

### **Situation Analysis**

- Stock assessment: Laws under existing fishery laws are based on the ability to conduct reliable assessments of resource stocks. Existing stock assessments, however, may be unreliable and result in significant risk and uncertainty. There is a need to improve fishery stock assessments including offshore and nearshore stocks. This will require new methods, particularly for nearshore stocks not easily assessed using traditional swept-area sampling. In addition assessments must be economically efficient given constrained budgets. Multispecies and ecosystem management cannot be successfully implemented unless there is adequate knowledge of individual stocks.
- Allocating and managing marine resources using dedicated access privileges (DAP's) and property rights: Allocating and managing access privileges and property rights remains a critical issue for improving marine resource management. Inadequately designed allocation schemes and battles over access by various sectors (e.g., gear groups, inshore and offshore sectors, recreational fishermen, coastal communities, seafood processors) dissipate energies and limits social benefits. Improved understanding of alternative allocative mechanisms and management using DAP's and property rights (e.g., SURF's, TURF's, IFQ's, Coops) could help industry, coastal communities, and resource agencies develop management systems which effectively meet management objectives.
- Local versus regional resource management: Oregon is developing a nearshore fishery research and management plan. Some coastal communities are considering community and area-based research and management. Analysis is needed to develop research and management concepts consistent with regional needs and budgets.
- Role of scientists in informing the policy debate: There are difficult and contentious issues in allocating and managing fisheries. Scientists need to provide objective and technical information regarding alternative approaches and advantages, disadvantages, and tradeoffs. Scientists who advocate for specific policies, particularly policies where there is inadequate scientific information, may undermine the science and management process and limit the contributions of the scientific community.
- Marine Protected Areas (MPA's): Spatial and area-based management approaches are becoming more important for marine resource management. However, area management has been implemented on an ad hoc basis which can have significant impacts on coastal communities. There needs to be a more significant analysis of spatial and area based management that brings together a broader coalition of scientists, industry, community, and state and federal agencies.

### **Objective**

Provide leadership in evaluating and communicating ideas to improve fishery assessment, management, and resource allocation.

## **Strategies**

- Improve single-species assessment information to enhance understanding and prediction of stock status.
- Lead the development of ecosystem-level (multispecies) approaches to stock assessment.
- Develop new methods for data collection to be used in assessment of near-shore and offshore stocks.
- Conduct comparative studies of resource use rights and allocation systems. Involve PFMC, ODF&W, industry, and community in a cooperative process. Evaluate costs and benefits of alternative systems.
- Conduct systematic analysis to evaluate the possible uses and efficiency of area-based management such as MPA's in the Pacific NW and along the coast of Oregon. Involve the PFMC, ODF&W, industry, and community in a cooperative process. Conduct cost-benefit analysis to evaluate the effectiveness of alternative approaches. Present results using approaches that objectively inform the debate.

## ***FOCUS IV – Aquaculture, Habitat, and Water Quality***

### **Situation Analysis**

- Estuarine ecology: There are significant impacts to the biological health and sustainability of coastal Oregon and Pacific Northwest estuarine ecosystems including habitat loss, water quality, nutrient loads, pollution, nuisance species (e.g., burrowing shrimp, spartina, green crab) and climate change.
- Water quality: Oregon faces a broad range of threats to quality of coastal rivers, bays, estuaries, and the near-shore. Quality issues impacting human health and productive use of coastal waters are caused by a variety of factors including marine mammals, birds, marine invertebrates, and anthropomorphic activities (e.g., sewage, runoff, aquaculture, etc.). The problem is expected to increase as greater numbers of people continue to visit or live on the coast.
- Aquaculture: As the world's fastest growing animal protein sector, aquaculture has significant potential to support economic development, sustainable resource production, restore endemic species, support recreational and commercial fisheries, and rebuild and sustain marine coastal ecosystems. There are also new federal initiatives to support development of offshore aquaculture to produce species such as sablefish, halibut, scallops, and mussels. Like any industry, however, aquaculture can produce both positive and negative benefits depending on how it is implemented and the institutions supporting and controlling its practices.
- Restoration ecology: A new disciplinary approach focused on restoration and enhancement of species, habitats, and ecosystems. The approach uses multidisciplinary tools for recovering endangered or depleted species or populations (e.g., invertebrates, shellfish, finfish, marine mammals) and their associated habitats. NMFS and other agencies are proposing increased restoration for both inshore and offshore habitats. The discipline addresses such questions as: What are the barriers to restoration? Can restoration achieve restoration objectives? What are the cost effective strategies?

### **Objective**

Conduct and support research on sustainability issues related to estuarine ecology, water quality, aquaculture development, and restoration of species and ecosystems.

### **Strategies**

- Estuarine ecology: Conduct research on biology and control of nuisance species (burrowing shrimp, spartina, green crab) and participate in an aquatic nuisance species task force in order to restore estuarine species diversity, habitat, ecosystems and sustained viability of shellfish growers and dependent coastal communities. Key partners would include shellfish growers, fishermen, marine recreation user groups, USDA-ARS, OSU and UO researchers, WA Dept. Ecology & ONR, EPA, ODF&W, PCSGA, PSI, USF&W, and COAS.

- Water quality: Study effects of human development on water quality of estuaries and coastal waters in order to protect human health, produce cleaner water, develop improved monitoring protocols, support healthy ecosystems, and generate greater value from use of marine and estuarine aquatic ecosystems including shellfish and finfish resource. Stakeholders and partners include water resource users (e.g., fishermen, shellfish growers, surfers, fish processors, rural communities, farmers, sewage plants, homeowners), DOE, PCSGA, PSI, FOA, ISSC, DOE, EPA, and county planners.
- Aquaculture: Study potential for offshore aquaculture development in order to establish new aquaculture enterprises and support restoration opportunities for endemic species. Stakeholders and partners include commercial and recreational fishing industry, aquaculture industry, energy developers, ODFW, DSL, and NOAA.
- Restoration Ecology: Hire a new COMES faculty member to study and develop optimal restoration strategies and technologies for species and habitats of economic and ecological significance. Stakeholders and partners include the fishing industry, aquaculture industry, ODF&W, NGO's, USF&W, EPA, and NOAA.

## ***FOCUS V – Value-Added Product Development, Seafood Processing, and Seafood Safety (see Appendix D for details)***

### **FOCUS V.A – Value-Added Product Development**

#### **Situation Analysis**

Innovation is critical in production and harvest practices, in processing and manufacturing, and in new approaches to the marketplace. To achieve this innovation, communities and firms must have access to information, research, technology, and capital. These objectives will be met through a new partnership named the Community Seafood Initiative (CSI). CSI is a partnership among Oregon State University, Shorebank Enterprises, (a non-profit Pacific Northwest Development Bank), the Coastal Oregon Marine Experiment Station, and the Seafood Consumer Seafood Center. The specific focus of the CSI project is to help coastal communities develop new seafood products and markets while developing and promoting sustainable aquaculture and fishing management practices. Besides conducting applied research in food science, marketing, and economics, the project sponsors numerous workshops and conferences, and works one-on-one with individual fishermen, processors, and marketers.

#### **Objective**

The broader goal of this project is to incorporate on-going, innovative research regarding new technologies and product diversification to assist small and mid-size seafood businesses. Specific objectives include:

- Strengthen the Community Seafood Initiative (CSI) partnership.
- Research new technologies and product diversification opportunities.
- Develop infrastructure and human resources for increased product development activity.
- Incorporate activities of the Seafood Consumer Center through the CSI team.
- Increase community and industry participation in applied research activities.
- Create linkages to innovative entrepreneurs.

#### **Strategies**

- Use high pressure technology for product development.
- Develop value-added products for albacore tuna.
- Develop value-added products for oysters and other shellfish.
- Work with the new sardine industry to develop products and markets.
- Determine needs of the industry for traceability and develop methods for its implementation.

## **FOCUS V.B -- Surimi and Seafood Processing including Byproducts and Functional Foods**

### **Situation Analysis**

A large portion of valuable components (fish proteins and other functional components) are currently not utilized as food or food ingredients. One example is Pacific sardines which command only \$0.05/lb as a product for the Japanese bait market. The development of new products and market niches for Pacific sardines need to be identified to expand economic opportunities for the fishery. Maximum utilization of fish and fishery by-products for sardines can be potentially achieved through protein recovery using pH shift. The application of this technology can isolate specific proteins and other products including omega-3 oils. The OSU Seafood Lab is well-equipped with state of the art facilities to conduct this type of research.

### **Objective**

Explore ways to maximize utilization of fish and fishery by-products.

### **Strategies**

- Stay on the leading edge in the fish protein technology through interdisciplinary activities.
- Conduct protein recovery and omega-3 oil isolation using pH shift to upgrade feed/waste to food or functional ingredients.
- Obtain federal grants in utilizing this technology and approach.

## **FOCUS V.C -- Seafood Safety and Microbiology**

### **Situation Analysis**

Seafoods are relatively susceptible to bacterial contamination and decomposition. It is estimated that contaminated seafood causes more than 110,000 cases of food poisoning each year, accounting for a large and growing proportion of all food poisoning incidents in the United States. Development of innovative technologies for preserving freshness and eliminating contaminants in seafood are in great need. Improving quality and safety of seafood has become the most important topic for today's seafood industry. The OSU Seafood Lab has been conducting basic and applied research to improve the safety of seafood products including proper on-board handling strategies to control histamine formation in scombroid species, the application of high hydrostatic pressure processing (HPP) in post-harvest shellfish processing to eliminate *Vibrio parahaemolyticus* in raw oysters, and providing risk assessment on methylmercury in albacore tuna. We will continue to expand our strength in seafood safety research to develop novel processing technologies for the seafood industry to provide high quality and safe products to the consumers and promote the economic development of rural coastal communities.

## **Objective**

Develop new technologies for improving seafood safety through innovative research on reducing bacterial contamination, increasing shelf-life, and eliminating pathogens in seafood products.

## **Strategies**

- Conduct risk assessment of microbial and chemical contamination of seafood.
- Evaluate microbial hazards associated with modified atmosphere packaged seafoods.
- Develop procedures to preserve quality and extend shelf-life of products.
- Apply innovative technologies to inactivate pathogens in seafoods.
- Improve sanitizing procedures to control microbial contamination in seafood processing environment.

## ***FOCUS VI -- Communication & Outreach Education***

### **Situation Analysis**

- Improve communication, dialogue, and education between scientists, educators, managers, and resource users. Due to rapid and dynamic changes in conditions affecting marine resource management including legal mandates, natural environments, stock status, seafood markets, and demographics, there is a significant need to improve the effectiveness of communication and education across all groups involved in resource use and management. Effective communication and education, however, is difficult due to the rapid rate of change, constrained budgets, and sometimes limited cooperation between key organizations. This is particularly true for anticipating future problems and opportunities. It is also made difficult due to the geographic range of constituents spread over a 350 mile long coastline. Marine education and research organizations within OSU including COMES, Sea Grant, and F&W need to develop effective, timely, relevant, and cooperative educational strategies with stakeholder partners in order to achieve respective missions.
- Conducting objective science-based education. Ideally, marine science is objective and policy-neutral—its role is to inform policy-makers so they can effectively advance society’s welfare. But the science projects that are prioritized and the manner in which they are framed can be based on ill-informed judgments, constrained priorities, and subjective values. In addition scientists have conflicting theories, ideas, and evidence. Providing leadership in helping marine resource managers, decisionmakers, and the public understand complex, conflicting, or erroneous science opinions, particularly when related to controversial and politically charged policy choices, is an important function of educational-based organizations including Land Grant and Sea Grant Universities.

### **Objective**

Develop communication and outreach education strategies consistent with COMES mission, goals, and core values; help stakeholders understand marine science, anticipate future alternatives, and effectively participate in research, management, and education.

### **Strategies**

- Develop a COMES Communication Plan in order to improve outreach education to stakeholders and nontraditional constituents. An effective communication plan will also improve public relations and build political and financial support. (*See Appendix E for details*).
- COMES should continue to support and participate in cooperative fishery research and education projects including SAFE, the Cooperative Fishery Research Group, the Port Liaison Project, the Fisheries and Marine Resources Student Training and Internship Program, and the Educating Managers for 21<sup>st</sup> Century Fisheries initiative. These five projects which are co-led by stakeholders and OSU are model programs for improving cooperative fishery research, management, and education. A key challenge will be

maintaining support and funds for these programs. COMES together with HMSC, Sea Grant, F&W, and agency, industry, and community partners should lead a discussion on the best approaches to ensure the long-term support and growth of these efforts.

- COMES has led an effort to develop concepts supporting *Strategic Fisheries and Seafood Business Planning*. These concepts include two-page summaries of status and future for Oregon fisheries, a web site housing references and data, an HMSC library reference section, and an annual workshop. COMES should work with Sea Grant, the Community Seafood Initiative, and selected agencies and industry partners to implement these strategies in order to improve planning and development for industries and communities.

## *Implementing the Plan*

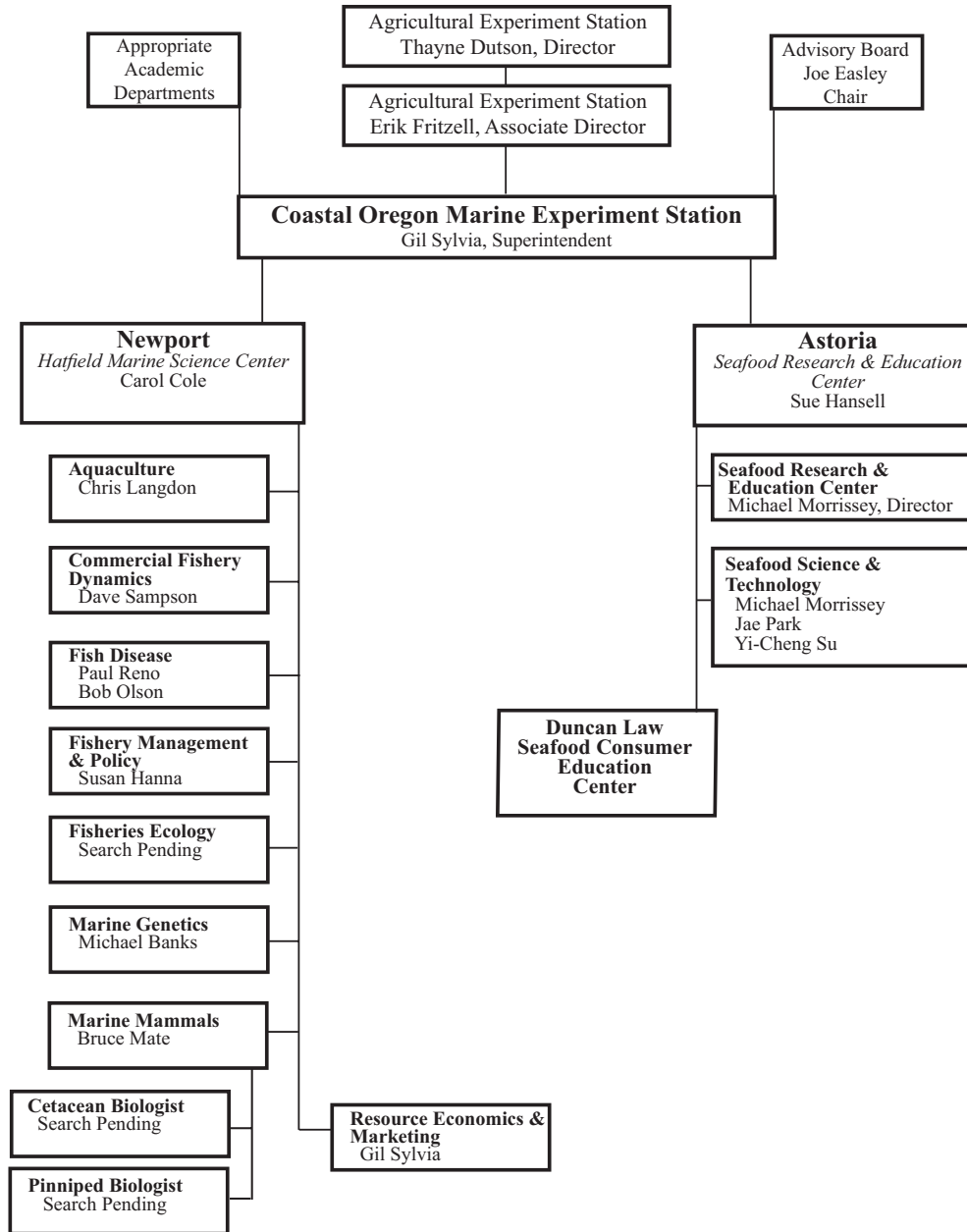
Each year COMES will review the plan for relevancy and progress in achieving its mission, objectives, and strategies. Progress will be summarized in the annual report and a report presented to the College and the Advisory Board. Relevant metrics will be used to evaluate progress (Appendix G). If necessary, and after consultation with faculty and the board, the Plan will be revised each year to reflect changing priorities and strategies in response to new challenges or issues. Within five years ((2009) Comes will undertake a thorough reassessment of the Plan via a formal planning process.

Specifically the annual review will focus on progress in achieving objectives associated with the:

- Five Year Focus and Eight Project Areas
- Signature Programs
- Staffing Plan
- Communication Plan
- Development Plan

# Appendix A--Organizational Chart

## Organization Chart



11/29/04

# *Appendix B—COMES Constitution and Bylaws*

## *Constitution*

### COASTAL OREGON MARINE EXPERIMENT STATION ADVISORY COUNCIL CONSTITUTION

#### ARTICLE I - NAME, LOCATION

The name of this organization shall be the Coastal Oregon Marine Experiment Station Advisory Council, and its headquarters shall be at the office of its Executive Secretary.

#### ARTICLE II - PURPOSE

The purpose of this Council shall be: Represent the marine agricultural interests related to agriculture of the Oregon coast and related waterways, advise the Coastal Oregon Marine Experiment Station of the Agricultural Experiment Station of Oregon State University, with particular reference to research programs and facilities, priorities, and resources, and ways in which the Station can better serve marine-related agriculture on the Oregon coast.

#### ARTICLE III - FINANCE

There shall be no membership fees, assessments or dues levied or collected, nor shall there be any expenditures by or for the account of this Council.

#### ARTICLE IV - LIABILITY

All services to, with, or on behalf of this Council shall be voluntary, and no members or officers shall be responsible for the acts, or liable in any manner for any misfortune suffered by anyone because of identity or association with or service to this Council.

ARTICLE V - AMENDMENTS

This constitution may be amended by a vote of three-fourths of the membership in accord with the terms of the By-Laws regarding meetings and voting.

ADOPTION

This constitution was adopted by unanimous vote of the membership present at a regularly called membership meeting held at Newport, Oregon on June 29, 1989.

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Chair, Advisory Council

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Superintendent

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Director, Oregon Agricultural Experiment Station

# *By-Laws and Board Responsibilities*

## COASTAL OREGON MARINE EXPERIMENT STATION ADVISORY COUNCIL BY-LAWS

### ARTICLE I - MEMBERSHIP

Members of this Council will be appointed by the Director of the Agricultural Experiment Station of Oregon State University. Membership will be composed of three members representing fisheries, three members representing the seafood industry, two members representing the coastal community, and one member representing environmental concerns. Members should be from the Oregon coast, with at least one member from the northern Oregon coast, one from the southern Oregon coast, and one from the central coast. The term of appointment will be for three years, with the exception that an appointment to fill an unexpired term will be for the length of the unexpired term. A member of the Council can be appointed to only two successive terms, not including an unexpired term of appointment. Initially, terms for the individual members shall be chosen by lot for either one, two, or three years in order to establish a rotation of membership, whereby each year one third of the membership will terminate their appointment on the committee. The Council will present names of at least two candidates to be considered for each vacancy to the Director of the Agricultural Experiment Station of Oregon State University. The appointees shall be selected from this list by the Director.

### ARTICLE II - OPERATING YEAR MEETINGS

Section 1. Operating Year. The operating year of this Council shall begin on the first day of January of each year and close on the last day of the following December.

Section 2. Meetings. Regular meetings of the membership shall be held at least twice annually. At least one meeting per year will be held at a site other than the Hatfield Marine Science Center. Additional meetings may be scheduled by the Advisory Council as appropriate.

Section 3. Voting. Each regular member of the council, on her or his proxy, shall have one vote.

Section 4. Quorum. A majority of the voting membership shall constitute a quorum for the transaction of business at any membership meeting.

Section 5. Officers. At the last meeting of the membership of each operating year, there shall be elected by the members, each to serve a term of one year, a Chairperson and a Vice-Chairperson,

each of whom shall be a voting member of the Council. The Chairperson and Vice-Chairperson shall be eligible to succeed themselves in office only one time. The Superintendent of the Marine Experiment Station will serve as the Executive Secretary.

Section 6. Ex Officio Members. The Oregon Department of Fish and Wildlife, the Oregon Coastal Zone Management Association, the State Department of Agriculture, the State Department of Economic Development and the Extension Service will be represented by ex officio membership. Other ex officio members may be added as needed.

### ARTICLE III - AMENDMENTS

These By-Laws may be amended, suspended, or repealed at any meeting of the membership by affirmative vote of two-thirds of all the voting members present provided written notice of the meeting and a copy of the proposed amendment shall have been mailed to each voting member not less than 30 days prior thereto.

### ARTICLE IV – ADVISORY COUNCIL MEMBER RESPONSIBILITIES

Council members are expected to act consistent with the Purpose of the Council (Article II of the Advisory Council Constitution) by representing natural resources and marine-related agriculture of the Oregon Coast and related waterways, and advising the Coastal Oregon Marine Experiment Station with particular reference to research programs, facilities, priorities, and resources. In order to achieve this Purpose, members are expected to meet the following responsibilities:

1) Attend all meetings and conference calls, or designate a proxy — more than two unexcused absences or three consecutive absences during a term are grounds for dismissal; 2) Be prepared to actively discuss agenda topics consistent with the Purpose of the Council; 3) Represent constituent interests by actively seeking their advice on issues consistent with the Council's Purpose. Meetings serve as a vital mechanism for coordinating industry and community interests with Station activities including the research programs of individual faculty. Council Members are expected to be pro-active and provide relevant advice on existing and future issues impacting Oregon coastal regions. Besides providing helpful guidance to the Station in prioritizing, developing, and implementing research-related activities, Members are expected to help the Station in disseminating research findings relevant to their particular constituency group.

### ARTICLE V – SUPERINTENDENT RESPONSIBILITIES

The Superintendent will help Council Members achieve their Purpose through effective coordination and communication. To meet this responsibility the Superintendent will: 1) Work closely with the Council Chairperson to support Council members in meeting responsibilities; 2)

Contact each Council member at least twice per year to discuss Council responsibilities and relevant issues; 3) Structure meetings to facilitate effective communication and discussion; and 4) Communicate to Council Members the activities of the Coastal Oregon Marine Experiment Station and Advisory Council including i) publishing an annual report, ii) expanding and regularly updating the Marine Experiment Station website, and iii) publishing a minimum of two newsletters per year.

ADOPTION

These By-Laws were adopted by the members of this Council in a regularly called session at Newport, Oregon, on June 29, 1989 and modified in a regularly called session at Charleston, Oregon, on October 13, 1999.

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Chair, Advisory Council

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Superintendent

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Director, Oregon Agricultural Experiment Station

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Superintendent

## *Appendix C--Staffing Plan*

### **COASTAL OREGON MARINE EXPERIMENT STATION**

#### **Staffing Plan for Professorial Positions**

*June 2004*

#### **Professorial Staffing Situation through 2007**

The Coastal Oregon Marine Experiment Station (COMES), with locations in Newport and Astoria has a diverse faculty that reflects the broad range of research needs and opportunities in using and conserving Oregon's valuable coastal and marine resources. Presently there are ten faculty in COMES representing the following disciplines and Experiment Station FTE (relative to total FTE which include teaching and extension appointments):

Aquaculture (.5/.75)  
Fish Disease (1.0/1.0)  
Fisheries Genetics (1.0/1.0)  
Management and Policy (.5/.75)  
Marine Mammals (.2/1.0)  
Resource Economics and Marketing (1.0/1.0)  
Population Dynamics (.05/.75)  
Seafood Science (3.0/3.0)

**Totals:** 10 faculty 7.25 AES FTE 9.25 Combined FTE

Since 2000 COMES has lost seven faculty due to retirement, position deferment, or faculty who have left OSU to take new positions. These lost positions include Seafood Engineering, Fish Disease, Population Dynamics, Fisheries Ecology, and Seafood Science (Biochemistry and Microbiology) for a total loss of 3.35 AES FTE and 5.25 combined FTE. However, over that same time COMES gained positions in Population Dynamics (the return of David Sampson) and Seafood Science (the hiring of Yi-Cheng Su in Seafood Microbiology) for a net loss of 2.30 AES FTE and 4.05 combined FTE.

A recent loss included in these figures is the departure of Ian Fleming (Fisheries and Salmon Ecology) who will leave Oregon State University by the end of June 2004 to become Head of the Ocean Sciences Program at Memorial University in St. John's, Newfoundland, Canada. COMES, with the considerable support of the Fish and Wildlife Department, the Oregon Department of Fish and Wildlife, and the administration in the College of Agriculture, made every effort to retain Ian by expanding Ian's position and salary to include administration of the newly created Fall Creek Hatchery Research Facility. Memorial University, however, countered with a significant salary increase and Ian and his family decided it was in their best overall interests to return home to Canada.

Over the last three months COMES has been reviewing its professorial staffing needs as part of the Strategic Planning Process. Although this process is not yet complete (and will not be finalized until July/August when the COMES Board and faculty will meet to approve the final draft plan), COMES has prioritized its staffing needs in 2004-2005 and has agreed on additional positions to pursue in 2006 and 2007. Some of these positions are new and some are replacement positions. Other positions have been previously proposed for Priority Staffing as far back as 1998 but have not been approved by the College.

#### For 2004-2005:

- 1) A critical need and very high priority is replacing Ian Fleming who was a COMES faculty member for little more than three years. Ian was a world-class researcher (obtained tenure in two years) who successfully established the new program in Marine Salmon and Fisheries Ecology that was part of the Salmon Ecology Initiative approved by the Oregon legislature in 1998. He also taught courses and classes in marine ecology at HMSC
- 2) A second critical need and very high priority is adding additional professorial staff (Marine Pinniped Biologist and Marine Cetacean Biologist) as part of the Marine Mammal Endowed Program. Bruce Mate plans to retire over the next three-five years and, given the expansion and complexity of his program, it is critical to begin new hires while Bruce is still involved with the program.

## For 2006-2007 and beyond

The following positions are also considered very high priority. A subset will be proposed in FY 2006 and then 2007 depending on their importance to the COMES Mission, consistency with OSU Strategic Plan and the CAS Strategic Plan, and our ability to develop partnerships to obtain additional support. A brief justification for each position can be found in the next section:

1. Seafood Product Development Specialist (New Position)
2. Restoration Marine Ecologist (New Position)
3. Early Life History Marine Biologist (Old Priority Staffing Position)
4. Deep Sea Benthic Microbiologist (Old Priority Staffing Position)
5. Fishery Gear Behavioral Ecologist (Old Priority Staffing Position)
6. Coastal and Marine Resource Tourism Economist (discussed but never formally submitted as a Priority Staffing Position).

# Staffing Alternatives, Recommendations and Justification for 2004-2005

## 1) *Marine Salmon and Fisheries Ecologist*

**Alternatives:** Replacing Ian Fleming is the highest priority for COMES. There are no faculty at COMES or OSU with the experience and skills to conduct research on the marine ecology of salmon. Although the COMES board and faculty considered replacing the marine salmon ecology position with the Research Director at Fall Creek, after considerable discussion and meetings we reached a unanimous decision among COMES Board/faculty and the Hermiston Board/faculty that COMES must continue to focus on the marine ecology and life history of salmon and other marine species and work collaboratively with Hermiston as part of the Marine Ecology Initiative.

**Recommendation:** Immediately replace Ian Fleming with a 1.0 FTE AES position, although some teaching FTE may be possible after discussions with the F&W department. This is the recommendation of both the COMES and Hermiston Experiment Station Advisory Boards and faculty. COMES is prepared to cover all costs for a search and start-up package.

**Justification:** The marine salmon ecology position is vital for coastal and inland constituents. Salmon remains a billion dollar economic issue for the state of Oregon and the challenges and complexities of salmon research and management continue to grow. Understanding the marine and estuarine ecology of salmon is critical for making rational decisions in the use and conservation of Oregon's salmon resources and in the use and conservation of terrestrial and aquatic watershed resources. Grants and contract support are expected to be significant given past history and the Ocean Commission Report to Congress, which recommends a doubling of expenditures for ecological marine research. This is the only ecology position in COMES and is expected to provide leadership in ecological approaches in marine research and fishery management at OSU-HMSC. Similar to the cooperative efforts of Ian, this position is expected to partner with many of the agency researchers at HMSC and fellow OSU faculty and other national and international salmon and marine ecology researchers. The position is consistent with Initiative 5 in the OSU Strategic Plan, and Goals 2 and 4 in the Draft CAS Strategic Plan, and Goals 2 and 4 in the HMSC Strategic Plan. It is expected to generate significant economic and environmental and social impacts in protecting salmon stocks and improving opportunities to use Oregon's marine and freshwater resources. In addition, over \$300,000 dollars of AES funds was spent in constructing a wet lab building and other supporting research facilities. These facilities will be vacant next year when Ian's last students graduate. If we are unable to fill the facility with a faculty replacement, the facilities will revert to HMSC.

## 2) *Cetacean Biologist and Pinniped Biologist*

**Alternatives:** Bruce Mate is retiring within the next three years and there is no faculty in COMES or OSU/HMSC capable of taking over his program. Due to Bruce's active grantsmanship and fund raising, support for the Marine Mammal Endowed Program (\$6 million corpus) continues to grow including \$1.4 million in outside federal grants in 2004. As a result of the groundfish buyout program Bruce received three large fishing vessels as donations (worth \$1.8 million) that provides his program the opportunity and flexibility to conduct cetacean research around the world. Given the importance and complexity of his program, it is vital that Bruce not only be replaced, but there be a transition period while Bruce "hands over the reigns" of his program to a new director. With no new resources required from AES, Bruce is prepared to "deconstruct" his own position (while staying on as a "voluntary" fund raiser) and create two new positions—a Cetacean Biologist (which ultimately replaces Bruce) and a Pinniped Biologist, which is fundamentally a new position. These positions will also be conducting teaching at HMSC, and the Department of Fisheries and Wildlife has agreed to contribute a .1 teaching FTE to the Cetacean Biologist position

**Recommendation:** Hire a Cetacean biologist and a Pinniped Biologist in 2004-2005. In May 2004, the COMES Board voted unanimously to support these new positions as very high priorities. The positions are structured as follows:

Cetacean Biologist: .15 AES/.10 Teaching/.50 Endowed Program/.25 grant sources. The position is tenured at .5 FTE commitment. The individual hired for the position is expected to become Director of the program when Bruce retires.

Pinniped Biologist: .15 AES/.60 Endowed Program/.25 grant sources. The position is tenured at a .5 FTE commitment.

Bruce Mate: With the hiring of these positions, Bruce Mate's support will become 100% Endowed Program dollars and outside grants. He will retire in 2007 or 2008 while continuing to work as a fund raiser for the program.

**Justification:** The Marine Mammal Endowed program is internationally recognized as one of the leading programs in the world for electronically tracking large cetacean species using satellite technology. The program is making both basic and applied research findings consistent with Themes 1, 2, and 5 in the OSU Strategic Plan and contributions consistent with Goals 1, 2 and 3. These positions would be consistent with Goal 2 in the CAS Strategic Plan and Goals 1 and 2 in the HMSC Strategic Plan. Given the past success of the program and its continued growth, it is well positioned to be a world leader in marine mammal research. As recommended in the Ocean Commission Report to Congress, funding for whales, seals, and sea lion research needs to be substantially increased in order to understand and protect these important species.

These two positions leverage the considerable support from the Marine Mammal Endowed program. There are no additional dollars requested from the College above the level of support that Bruce now receives. For the same dollars and tenure commitment from the College, we can obtain two faculty that are expected to bring in considerable outside funding for the College, train future students, and address issues important to

constituents in Oregon and the Nation in understanding, managing, and protecting marine mammal resources.

## **Staffing Alternatives, Recommendations and Justification for FY 2006-2007** *(All positions considered “high priority”—no order of preference)*

- **Seafood Product Development Specialist.** (New proposed position-no AES funds required in year 1-3) This is a new position developed during the COMES strategic planning process and will be located at the OSU Seafood Laboratory. It is considered a keystone position in maximizing the strengths of the Seafood Laboratory, the Consumer Seafood Center, the Community Seafood Initiative, and the new Seafood Sea Grant extension position to be located in Astoria. This position is expected to generate significant economic benefits consistent with Theme 3 in the OSU Strategic Plan and Goal 3 in the CAS Strategic Plan. The position will operate in close cooperation with the Food Innovation Center. Although the position will be funded initially by outside grants and contracts, within three/four years it is our intent to transition the position, if successful, to a professorial tenure track position (.75 AES FTE).
- **Restoration Marine Ecologist** (New proposed position). This is a new position developed during the COMES strategic planning process. It addresses the key need of supporting the recovery of estuarine and marine environments and species. It recognizes the value of combining conservation-based aquaculture with ecological theory to restore/rebuild lost habitat and species including shellfish, salmon, and rockfish species. This position is expected to conduct basic and applied research and generate economic, environmental, and social benefits from improving and maximizing the value of ecological services. The position is expected to partner closely with the Oregon Department of Fish and Wildlife and the National Marine Fisheries Service. The position is consistent with Initiative 5 in the OSU Strategic Plan and Goals 2 and 4 in the CAS Strategic Plan
- **Early Life History Marine Biologist** (Old priority staffing position) Although this position was initially proposed in 1996 and was included in the COMES/Hermiston Salmon Ecology Initiative approved by the Oregon Legislature, it was not funded due to the shortage of dollars. The position, however, remains a high priority. The position recognizes that the interaction of the marine environment with eggs, larvae, and juveniles is fundamental for understanding survival and growth of valuable marine species in the dynamic environment of the Pacific Northwest. Understanding these interactions can allow for improved management of marine fishery resources including mollusks, crustaceans and finfish (e.g., salmon and rockfish). It is expected to be conducted in close partnership between Oregon Department of Fish and Wildlife and the National Marine Fisheries Service. A detailed job description and justification (with supporting letters) was developed for this position and proposed to the College in 2000 and 2001.
- **Deep Sea Benthic Microbiologist** (Old priority staffing position) This research position was developed in cooperation with the Department of Microbiology and the NOAA VENTS Program and included free ship time, a graduate student, and .25 FTE from NOAA (annual recurring support worth over \$180 K). The position was designed to

explore deep sea marine organisms found under high temperatures and pressures near deep sea vents or cold methane seeps off the Oregon coast. The position was designed to analyze benthic microbiology and benthic ecosystems and explore the characteristics of individual organisms for potential uses in high technology, computers, pharmaceuticals, and other bio-based products. The position is consistent with Initiatives 1, 2, 3 and 5 in the OSU Strategic Plan and Goals 1, 2, and 6 in the CAS Strategic Plan. A detailed job description and justification (with supporting letters) was developed for this position and proposed to the College in 2001.

- **Fishery Gear Biologist/Ecologist** (Discussed but never submitted as a priority staffing position). This research/extension position (.5 AES/.5 Extension) was developed during a meeting of the COMES faculty and board in the summer of 2002 that initiated the COMES strategic planning process. The position was ranked as the highest priority initiative among six initiatives developed during the planning process that summer. The position was never submitted due to the freeze on new positions in CAS. The position was designed to conduct research and outreach education on understanding and reducing the interactions between fishing gear and marine organisms including finfish species and benthic organisms. It is expected to be conducted in close partnership between Oregon Department of Fish and Wildlife and the National Marine Fisheries Service (Northwest and Alaskan Fishery Science Centers). The position is consistent with Initiative 5 in the OSU Strategic Plan and Goals 2 and 6 in the CAS Strategic Plan.
- **Coastal Resource-Based Tourism Specialist** (Discussed but never submitted as a priority staffing position). This research/extension position (.5 AES/.5 Extension) was developed during a meeting of the COMES faculty and board in the summer of 2002 that initiated the COMES strategic planning process. The position was ranked as the second highest priority initiative among six initiatives developed during the planning process that summer. The position was never submitted due to the freeze on new positions in CAS. The position was designed to conduct research and outreach education in understanding coastal tourism trends, interactions with marine resources, interactions with other industries (fisheries, forestry, seafood, agriculture) and conduct research and develop information for designing tourism development strategies. The proposal recognized that tourism is the largest growing industry on the Oregon coast and that tourism trends can be exploited for mutual advantage by traditional natural resource industries. The position is consistent with Initiatives 3 and 5 in the OSU Strategic Plan and Goal 3 in the CAS Strategic Plan.

# *Appendix D—OSU-COMES Seafood Laboratory Strategic Plan*

## **2004 – 2009 Strategic Plan**

### **Oregon State University Seafood Laboratory Astoria, OR**

#### **Mission**

To serve the seafood industry, including fishermen and seafood processors, and the citizens of Oregon, the region, nation and the world through research, education, and outreach and service activities. To achieve this mission, the OSU Seafood Laboratory (OSU-SFL) will:

- Provide graduate education and training in seafood chemistry, seafood safety and microbiology, seafood processing, surimi seafood, byproduct utilization, and value-added product development.
- Integrate fundamental and applied research across different sectors of the industry to assist them in the full utilization of harvested resources and to provide solutions to current and future problems encountered by Oregon's seafood industry.
- Provide outreach activities that convey integrated knowledge of seafood science and technology to the seafood industry, the public, and ancillary industries for the long-term sustainability of Oregon's seafood industry.
- Provide service to the profession and society by interpreting science-based knowledge to assist policymakers and regulators in formulating informed policies, regulations, and decisions. Faculty will provide leadership and support for professional organizations and related activities that advance seafood science.

The OSU Seafood Laboratory will develop flexible programs to effectively accomplish this mission, and rapidly respond to changing harvesting, seafood processing, regulatory, and consumer needs.

#### **Vision**

The OSU-SFL is recognized at the national and international level as the leader in surimi research and education. We also aspire to be the Seafood Research and Education Center that is nationally and internationally recognized as a leader in seafood chemistry, processing, safety, value-added products and byproduct research. We will accomplish this by promoting excellence in faculty, working in state-of-the-art facilities, attracting high-quality students from Oregon, the Pacific Northwest, and around the world, and interfacing with constituents who are highly supportive of our programs.

## **Core Values**

- Responsiveness to the needs of the seafood industry and the food science profession.
- A diverse faculty which values relationships and openness to new ideas and working styles.
- A commitment to fostering graduate research and education
- Partnership and cooperation with individuals inside and outside the OSU Seafood Laboratory
- Willingness to embrace interdisciplinary research in solving complex problems in the industry
- Teamwork and coordination among colleagues at the Coastal Oregon Marine Experiment Station, the Department of Food Science and Technology and the Food Innovation Center as well as other units in the College and University
- Credibility as a source of reliable, research-based information.

## **Five Year Research Focus**

### **Focus 1 - Economic Development with a focused on value-added seafood products**

#### **Situation Analysis**

The economies of rural coastal communities of the Northwest – are dependent upon, and have been dominated by – the fishing, forestry, and farming sectors. Because of declines in the natural resource base and fundamental management, regulatory and market shifts towards sustainable resources, these communities are at a crossroad. They can choose to fight the changes taking place around them, sticking to traditional practices, approaches and products, or choose to embrace this change and adapt new methods and technologies. The former choice will almost certainly lead towards continued economic decline. The later choice, if embraced, will lead to renewed effort and economic security in a changing marketplace. To meet the challenges ahead, these communities, and the small to mid-size companies that support them, must innovate. This innovation must occur in production and harvest practices, in processing and manufacturing, and in new approaches to the marketplace. To achieve this innovation, these communities and firms must have access to information, research, technology, and appropriate capital. These objectives will be met through a new partnership named the Community Seafood Initiative (CSI). CSI is a partnership among Oregon State University, Shorebank Enterprises, (a non-profit Pacific Northwest Development Bank), the Coastal Oregon Marine Experiment Station and the Consumer Seafood Center. Its mission is to foster successful entrepreneurship and coastal community development in the Pacific Northwest. This unique partnership merges research, extension, and business and community development in order to strategically “bridge the divide” between coastal communities and knowledge-based institutions. The specific focus of the CSI project is to help coastal communities develop new seafood products and markets while developing and promoting sustainable aquaculture and fishing management practices. CSI has numerous sub projects and activities including developing new value-added seafood products, “virtually” integrating marketing, processing, and fishing activities, developing systems to optimally manage product quality, designing digital-based “traceability” systems for market and business development, and helping fishermen use and record environmental information to improve sustainable fishing practices. Besides conducting applied research in food science,

marketing, and economics, the project sponsors numerous workshops and conferences, and works one-on-one with individual fishermen, processors, and marketers.

**Overall Objective:** The goal of this project is to incorporate on-going, innovative research regarding new technologies and product diversification to assist small and mid-size seafood businesses.

### **Strategies**

1. Strengthen the Community Seafood Initiative (CSI) partnership
2. Research New Technologies and Product Diversification Opportunities
3. Develop infrastructure and human resources for increased product development activity
4. Incorporate activities of the Seafood Consumer Center through the CSI team
5. Increase community and industry participation in applied research activities
6. Create linkages to innovative entrepreneurs

### **Action Plans**

1. Use high pressure technology for product development
2. Develop value-added product for albacore tuna
3. Develop value-added products for oysters and other shellfish
4. Work with the new sardine industry to develop products and markets
5. Determine needs of the industry for traceability and determining appropriate methods for its implementation

### **Indicators of Progress**

1. Increase in grant dollars supporting CSI
2. Involvement of graduate students from several disciplines in CSI projects
3. Increase in the number of value-added products and entrepreneurs in the seafood industry
4. Increased recognition of CSI as a primary “go-to” program for economic development in the seafood industry.
5. Contribution to region’s seafood economy through CSI projects.

## **Focus 2 – Surimi and Seafood Processing including Byproducts and Functional Foods**

### **Situation Analysis**

The OSU Seafood Lab is a world leading institute in surimi and its related studies. We plan to continue to be a world leader and assist the industry and academia in future challenges. Primary processing of various fish is done in the form of surimi, fillet, or H&G fish. Recent technologies, without doubt, have improved the processing yield significantly. However, a large portion of valuable components (fish proteins and other functional components) are currently not utilized as food or food ingredients. Pacific sardine has made a strong biological comeback to the Pacific Northwest for the last few years. However, most of the landings in the Astoria area fishery are processed as bait for the Japanese long-line fishery. The average ex-vessel price is \$0.05/lb. The Japanese bait fishery is a demanding marketplace. The development of new products and market niches for Pacific sardines need to be identified as a major constraint for economic success in this fishery. There is general consensus that demand for Pacific sardines for the bait industry is normally met at 15,000- 20,000 mt as there is global competition to fill this market niche. Various ways for maximum utilization of fish and fishery by-products can be searched through protein recovery using pH shift and upgrading feed/waste to food or food ingredients. The application of this new technology of isolating fish proteins can be achieved by characterizing the major muscle components – sarcoplasmic proteins including proteolytic enzymes, myofibrillar proteins, and stroma proteins. In addition, this centrifugal technology would allow us to isolate omega-3 oil from sardine for possible use as a functional ingredient. As for the mechanism to complete this objective, the OSU Seafood Lab has a well-equipped state of the art facility covering most processing and chemistry-related studies.

### **Overall objective**

The goal of this project is to explore various ways for maximum utilization of fish and fishery by-products through protein recovery and omega-3 oil isolation using pH shift and upgrading feed/waste to food or functional ingredients.

### **Strategies**

- 1) Stay on the leading edge in the fish protein technology through interdisciplinary activities
- 2) Obtain federal grants in utilizing this technology and approach.
- 3) Attract high quality graduate students
- 4) Promote our research and activities worldwide.

### **Action Plan**

- 1) Submit a research proposal to USDA/CSREES and/or the industry once a year
- 2) Publish a minimum of three refereed journal articles a year
- 3) Publish a textbook covering a wide range of fish protein technologies by 2008
- 4) Present research outcomes at various national and international conferences once a year.

## **Indicators of Progress**

The following outcomes would give a realistic five year strategic plan in keeping this particular “focus” successful and productive:

- 1) Grants and gifts
- 2) Papers/books published
- 3) Students (MS, PhD)
- 4) Recognition of scholarly research through awards
- 5) Presentations at the national conference and/or directly to the industry.

## **Focus 3 - Seafood Safety and Microbiology**

### **Situation Analysis**

Seafoods are more susceptible to bacterial contamination and decomposition. They can easily be contaminated by polluted environments and accumulate toxic substances or pathogens in the digestive tracts. The microbial contamination generally results in loss of quality, reduced shelf-life, product recalls, and potential foodborne illnesses. Development of innovative technologies for preserving freshness and eliminating contaminants in seafood are in great need. With increased media attention on the nutritional benefits of seafood, more and more consumers are eating seafood than ever before. The increased consumption of seafood has led to an increased awareness of its quality and safety by the consumers. It is estimated that contaminated seafood causes more than 110,000 cases of food poisoning each year, accounting for a large and growing proportion of all food poisoning incidents in the United States. Improving quality and safety of seafood has become the most important topic for today’s seafood industry. The OSU Seafood Lab has been conducting basic and applied research to improve the safety of seafood products. Recent studies completed at the OSU Seafood Lab resulted in the development of proper on-board handling strategies to control histamine formation on scombroid species, the application of high hydrostatic pressure processing (HPP) to post-harvest shellfish process to eliminate *Vibrio parahaemolyticus* in raw oysters, and providing risk assessment on methylmercury in albacore tuna. We will continue to expand our strength in seafood safety research to develop novel processing technologies for the seafood industry to provide high quality and safety products to the consumers and promote the economic development of rural coastal communities.

### **Overall Objective**

The goal is to develop new technologies for improving seafood safety through innovative research on reducing bacterial contamination, increasing shelf-life, and eliminating pathogens in seafood products.

### **Startegies**

- (1) Risk assessment of microbial and chemical contamination of seafood
- (2) Evaluate microbial hazards associated with modified atmosphere packaged seafoods
- (3) Develop procedures to preserve quality and extend shelf-life of products
- (4) Apply innovative technologies to inactivate pathogens in seafoods
- (5) Improve sanitizing procedures to control microbial contamination in seafood processing environment.

## **Focus 4 - Graduate student education and training**

### **Situation Analysis**

Since 1990, the OSU-SFL has maintained a strong focus on the education and training of graduate students in the Department of Food Science and Technology and other departments (e.g. Bioresource Engineering). Since 1992 there have been more than 45 graduate students who have received both PhD and MS degrees with laboratory faculty as their major professor. Moreover, except for a few that had government scholarships the vast majority of these students were sponsored through research grants and funds received by the faculty. This has created a strong learning atmosphere at the OSU-SFL and should continue through the next decade.

### **Objective**

To maintain a level of well-qualified graduate students at the OSU Seafood Laboratory.

### **Strategies**

1. Continue to promote the OSU-Seafood Laboratory as a research center of excellence to attract graduate students from various disciplines
2. Provide an up-to-date website for students who wish to apply for admission to graduate school and undertake research at the Seafood Lab
3. Provide continued support of graduate students through research grants as well as other funds (e.g. surimi school)
4. Initiate a seafood science course at the graduate level.

### **Action Plan**

1. Continue to write grants with graduate student research being a major component
2. Publish papers in important scientific journals and support graduate student participation at major research conferences
3. Initiate an update of web-based activities on a 6-month basis
4. Submit seafood science course at the graduate level in department of Food Science and technology.

### **Indicators of Progress**

1. Maintain level of 6-20 graduate students at the OSU-Seafood Laboratory through 2007
2. Website upgrade accomplished
3. New course in seafood science offered.

## **Focus 5. Outreach and Partnerships**

### **Situation Analysis**

Currently most of the faculty at the OSU Seafood Research and Education Center have 1.0 FTE in Research with one person having a 0.25 FTE in Extension. Nonetheless, all faculty members at the OSU-SFL are engaged in outreach activities. There is an understanding that being part of an experimental station implies working closely with stakeholders and the seafood industry. There is full recognition that the success of applied research activities requires outreach, information exchange and assistance to businesses for economic development and technology implementation. This is often best accomplished through partnering with other organizations on either a formal or informal basis. An example of a formal partnership is the Community Seafood Initiative (CSI) with partners including the OSU-SFL, COMES, Shorebank Enterprise Pacific and the Seafood Consumer Center. This partnership was formed through successful application of grants and has specific functions and action plans that are essential to the success of the workplan. There are also informal partnerships that have less financial commitment but are important to the both research and outreach. For example, the OSU Surimi School has been very successful through the strong partnerships of numerous companies within the surimi industry. The OSU Surimi School, which was established in 1993, is the only program of its kind that offers up-to-date technology and hands-on skills to the world audience of surimi and surimi industry. To continue to maintain the program at the highest level, our efforts will include the utilization of our research outcomes and multidisciplinary/multi-institutional collaboration. Through efforts such as the OSU Surimi School and the Seafood Community Initiative, faculty at the OSU-SFL are engaged with stakeholders and the seafood community. It is imperative that these activities continue and broaden. As the OSU-SFL grows and increases its outreach potential partnerships with additional industry members as well as other institutions will allow the laboratory to explore new areas of outreach and applied research.

### **Objective**

Increase Community and Industry engagement in seafood education and research through early involvement thereby enhancing relevance and creating a sense of ownership.  
Encourage and strengthen relationships amongst university and non-university institutions representing diverse disciplines.

### **Strategies**

1. Build on the strength of the OSU Surimi School and the Community Seafood Initiative
2. Determine industry needs and host and run workshops accordingly
3. Engage in partnerships with other departments and strategic units throughout Oregon
4. Improve communication of OSU-SFL activities

### **Action Plans**

- Identify critical needs in the Surimi Industry
- Participate in seafood commodity commissions meetings
- Engage stakeholders to identify opportunities for value-added products
- Identify projects that benefit small and mid-size businesses
- Determine topical areas and critical needs for the seafood industry
- Run 2-3 workshops per year
- Keep information up-to-date on websites including the OSU Surimi School, Heads-Up and the CSI website.

# *Appendix E -- Development Concepts*

## ***Coastal Oregon Marine Experiment Station Developmental Priorities***

As part of a major new capital campaign by OSU, each unit within the College of Agriculture is expected to build a portion of financial support through development projects (public fundraising). Because COMES was originally under the direction of Lavern Weber, who also was the Director of HMSC, all development monies went thru HMSC. Presently, the only major program in COMES that generates significant development funds is the Marine Mammal Endowed Program.

The following three COMES development projects (in no order of preferred ranking) were an initial attempt to construct ideas. These projects are only a first effort at considering development projects and provide a starting point to develop ideas among faculty, board, and stakeholders. COMES will be working closely with CAS development staff to construct a development strategy and begin its implementation.

### **Project #1**

**Establish and support the Institute of Oregon Marine Ecology and Resource Management (OMERM).** Oregon's marine resource industries and coastal communities are confronting unprecedented challenges in management and science. The difficult problems inherent in achieving sustainability are driving a potential wedge between Oregon's traditionally close-knit communities, industries, and researchers. Using our connections to coastal communities and research agencies, COMES proposes to develop an interdisciplinary institute for marine science and management governed by representatives of Oregon marine resource industries, communities, conservationists, and scientists. The Institute would 1) foster cooperative research in marine resource management and ecology using state of the art technology, 2) develop alternative harvest and production technologies which conserve marine habitats, and 3) conduct research and education which supports rational policies for sustaining coastal communities. A multi-disciplinary approach will be necessary to achieve these goals, involving fisheries biologists, ecologists, geneticists, aquaculturists, economists and policy makers working together with members of Oregon's coastal communities. Potential CAS Collaborators include Michael Banks, George Boehlert, Mark Camara, Susan Hanna, Scott Heppel, Selina Heppel, Chris Langdon, Paul Reno, Gil Sylvia.

**Relevance to COMES's Strategic Future:** This project is consistent with COMES overall strategic mission to conduct research to understand, conserve, utilize and manage Oregon's marine resources and to enhance the economic and social value of related activities. In particular, this project supports COMES strategic objectives 1 and 7: *(1) To enhance the marine resources of the State, preventing waste and providing sustained economic, recreational and aesthetic benefits;* *(7) To preserve coastal resources and to enhance environmental quality.* In particular, if COMES is unable to develop cohesive constituent and community ideas and support, its

constituent base will erode as industries and communities (irrationally) compete for increasingly limited opportunities to utilize marine resources.

Likelihood of a Donor: This concept can attract a wide range of supporters including the Oregon fishing and seafood industry, coastal communities, conservation groups, and foundations. The COMES Board and faculty have helped co-develop this idea which we expect will be more fully developed at the next Board meeting. We would expect to need funds of over \$1,000,000 to support a part-time director and initial projects.

Concept: There are many exciting sub-projects this organization could sponsor including the use of industry vessels to collect information on the marine ecosystem and gear interactions/performance, or alternatively evaluate the health of coastal marine infrastructure and its relationship to fishery management.

Unit's Capacity and Infrastructure: Gil Sylvia together with COMES Board members will work collectively with staff to support this project.

## **Project #2**

**Develop and support a research program for eliminating Clostridium botulinum in seafood.** Clostridium botulinum is a major concern for both the industry and the Food and Drug Administration. It is also a research area that could attract significant support from industry and seafood donors (apart from surimi research) for the OSU Seafood Laboratory. There are several "hot-ticket items" already on the table (crab meat packed in vacuum sealed containers) that have FDA worried. There are no research labs in the US doing Clostridium work in seafood, and research is unlikely to occur over the next five years. Substantial dollars (\$500,000-\$1,000,000) would be needed to refit or construct a laboratory to conduct the science. We would expect to collaborate with OSU's Department of Food Science, the Oregon Department of Agriculture, and the National Fisheries Institute.

Relevance to COMES's Strategic Future: This project is relevant to COMES's overall strategic mission to conduct research to understand, conserve, utilize and manage Oregon's marine resources and to enhance the economic and social value of related activities. In particular, this project supports COMES strategic objective 2: *develop new and improved seafood products and efficient processes that protect the safety and nutrition of the customer.* This project would continue to build the OSU Seafood Lab into the nations #1 university-based seafood laboratory and attract support from the entire West coast and national seafood industries.

Likelihood of a Donor: The Pacific Seafood Group located in Portland, Oregon (and the nation's fourth largest seafood company with annual sales of \$600 million) has already indicated interest. Seafood companies in Seattle with total sales of over \$4 billion, which have supported past work at the Astoria lab, are also potential donors. There is significant opportunity to leverage public dollars.

Concept: Developing new procedures acceptable to FDA for testing and eliminating this deadly biohazard is an exciting concept for industry.

Unit's Capacity and Infrastructure: Michael Morrissey with Gil Sylvia and the staff of COMES and the Astoria Seafood lab will make the necessary commitment to support this project.

### **Project #3**

#### **Develop and support the Institute for Aquaculture and Fisheries Genetics and Ecology**

**(AFGE):** The cumulative effects of intensive harvest and environmental deterioration have severely impacted marine fisheries. During the same period, hatchery-based culture and restoration have grown, though not without controversial side effects, both ecological and genetic. These effects have resulted in serious political and economic conflict between fisheries and aquaculture. Recent advances in molecular genetics, statistics and biotechnology, however, present tools that can replace the conflict with a win/win situation promoting sustainable exploitation of wild populations and ecologically appropriate culture systems. The motivation for this institute derives from the need to balance the economic and ecological impacts of both exploitation and supplementation of marine fisheries. We envision that this institute will utilize the potential for collaborative efforts between Marine Fisheries Genetics, Salmon Ecology, and shellfish genetics represented by the Molluscan Broodstock Program and the USDA/Agricultural Research Service Aquaculture Genetics programs, all of which are already in place at HMSC. The primary focus of this new institute would be to foster leading edge research in genetics, evolutionary ecology and aquaculture towards sustainable management and harvest of fisheries and aquaculture. Potential HMSC collaborators include Michael Banks, Mark Camara, and Chris Langdon.

Relevance to COMES's Strategic Future: This project is consistent with COMES overall strategic mission to conduct research to understand, conserve, utilize and manage Oregon's marine resources and to enhance the economic and social value of related activities. In particular, this project supports COMES strategic objectives 3 and 6: *(3) To develop new aquaculture products, processes and systems; (6) To develop systems for protecting living marine resources from diseases, genetic depletion and other hazards. This program would leverage exciting new program in salmon, marine ecology, and aquaculture with COMES and USDA/ARS.*

Likelihood of a Donor: Potential collaborators include the marine shellfish and fishing industries on the West coast and various foundations including the Gordon and Betty Moore Foundation <http://www.moore.org/> and David and Lucile Packard Foundation <http://www.packard.org/>

Concept: Incorporating genomics and bioinformatics into fishery assessment could identify more precisely which traits are critical to the long-term sustainability of wild populations. However, this knowledge could also be used to develop appropriate culture practices and to better discriminate between wild and cultured populations.

Unit's Capacity and Infrastructure: Gil Sylvia together with COMES Board members, the Salmon Ecology program, Molluscan Broodstock program, and ARS Shellfish Genetics/ Ecology program would collaborate with staff to support this project.

# Appendix F – Communication Plan

## Situation Analysis

COMES presently has no formal communications plan but does employ a number of communication tools including a website (<http://marinresearch.oregonstate.edu>), an annual report, 2-3 newsletters per year, 2-3 annual board meetings, ad hoc press releases, and articles in *Oregon Agricultural Progress* magazine. Individual faculty, particularly those associated with COMES signature programs, typically conduct communication and public relations as a program activity.

Although these activities are sufficient to communicate with key stakeholder leaders and selected constituencies, they do not reach a broader set of the public or potentially new stakeholders. Unlike most branch stations situated within a radius of 50-100 miles of key constituents, COMES traditional stakeholders are located along a 325-mile coastline. Some board members must undertake a five-hour or longer drive to reach the Newport or Astoria facilities. In addition, because COMES is a relatively new organization, its activities are often confused with those of HMSC or Sea Grant. Although this confusion is not necessarily always a problem, it does limit COMES's ability to develop its own recognizable identity. Developing regional and national recognition is critical to broadening constituencies and generating stronger political and financial support. This will be particularly important for fund raising and development activity. COMES faculty are conducting research generating benefits to coastal communities, the state, and the nation. It is important that COMES communicate this work to core constituencies.

## Objective

Develop a COMES Communication Plan in order to improve outreach education to stakeholders and nontraditional constituents, improve public relations, and build political and financial support.

## Strategies

- Work with CAS Communications to develop four thirty-second video and radio spots that focus on COMES research activities. Each video will feature a different theme:
  - Economic development
  - Sustainability
  - Seafood
  - Training the state's students as scientific and management leaders.The videos will be featured on local cable on the coast and the valley as public service announcements. There will be no cost to COMES for production or distribution.
  
- Summarize projects or research findings in approximately 500-word abstracts intended for lay audiences. Use for press releases for newspapers and websites and publish on Heads-Up (Fishermen's Wives/Sea Grant Website <http://www.heads-up.net/>). In particular get

summaries to Capital Press (Western edition), Oregonian, Newport News-Times, Daily Astorian, and local coastal newspapers.

- Develop a COMES display for HMSC Visitor Center. Work with Oregon Sea Grant to develop a display that features key interdisciplinary projects involving multiple COMES researchers and industry and agency cooperators. Examples might include development of the Pacific whiting industry, Oyster research (from broodstock to added-value seafood), and salmon ecology/genetics research.
- Design an attractive and exciting COMES poster representing the range of COMES activities and contributions and distribute to key outlets including coastal extension offices, port offices, local governments, marine stores, and other coastal establishments.

## Appendix G – Metrics

All OSU and CAS units are required to develop a set of “metrics” which measure research, education, and outreach productivity including “inputs” and “outputs.” These productivity measures must be tabulated annually and published in the annual reports of each unit.

CAS requirements include:

- Be quantitative when possible
- Be rational and objective (that is, make sense in relation to what is being measured)
- Address both the input of resources, and the output or consequence
- Be available for both education and research functions
- Be consistent with OSU 2007 metrics, when possible
- Be applicable across disciplines.

In its annual report COMES will publish the following aggregate input and output productivity metrics:

### Inputs

- COMES AES budget
- Extramural funds including grants, contracts, and development
- Research FTE
- Grants and contracts per research FTE
- Overhead
- Students funded on grants
- Total projects
- Total interdisciplinary, cooperative, and team projects.

### Outputs

- Peer reviewed publications
- Peer reviewed publications per FTE
- Other publications
- Patents
- Classes conducted
- Students taught
- Graduating students
- Graduating students per FTE
- Presentations
- Organized workshops and conferences including attendance
- Progress in implementing strategic plan initiatives
- Service activities
- Economic, social and environmental impacts (*Oregon Invests*).