Advanced Topics Seminar – Spring Quarter 2015
Latin American Fisheries Fellowship
ESM 296-4
Seminar Title: Enhancing Coastal Social-Ecological Systems Through Aquaculture
Instructor: Hunter Lenihan

Seminar Description:
This 2-unit seminar course explores key social and environmental themes related to the growing contribution of aquaculture to world food production. Students will interact with world-renowned experts from aquaculture science, management, and industry, leading discussions that examine global seafood production, environmental sustainability, the capacity for ecosystem and fisheries enhancement, and socio-economic implications and impacts of multiple types of aquaculture. The seminar is hosted by the Latin American Fisheries Fellowship program, so will focus in part on the development of aquaculture in Latin America through speakers with expertise in that region. Students will contribute by leading discussions in class, and by collaborating on a synthesis of literature that leads to the writing of an overview paper addressing a major question in sustainable aquaculture.

Seminar topics and speakers			
Dates	**Session Times**	**Presentation + Discussion Topics**	**Speakers**
Session 1: April 17th	1:00pm – 1:30pm	Introduction to seminar – Overview of format and assignments, and co-learning objectives	Lenihan *Sustainable Aquaculture Research Center*
	1:30pm – 3:00pm	Global aquaculture and the challenges to increase food security in a sustainable way: FAO perspective	Doris Soto, *FAO*
Session 2: May 8th	1:00pm – 3:00pm	Aquaculture in sustainable seafood markets and consumer perceptions	Pete Bridson *MBA; GAPI*
Session 3*: May 22	1:00pm – 3:00pm	Offshore and onshore aquaculture in the Santa Barbara Channel socio-ecological system.	Bernard Friedman, Douglas Bush *Mussel producers*
Session 4: May 29th	1:00pm – 2:30pm	Emerging technologies in aquaculture feeds – overcoming key sustainability barriers	Margareth Overland *Centre of Research Based innovation*
	2:30pm – 4:00pm	Regulating aquaculture - bottlenecks and industry oversight: unleashing producers, responsibly	Felipe Sandoval *SalmonChile*
Session 5: June 5th	1:00pm – 2:30pm	Critical lessons from agriculture—adverting problems associated with disease and antibiotics, nutrients, and genetic modification.	Roz Naylor *Stanford Center on Food Security and Environment*
	2:30pm – 3:30pm	Faculty Panel: Enhancing Social Ecological Systems through Aquaculture – barriers, opportunities, and leveraging interdisciplinary research to accelerate sustainable aquaculture at scale	Naylor, Gaines, Lenihan, Halpern, Costello
	**Field trip is tentative upon boat availability; alternative is classroom session 1-3pm with producers*		

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Assignments—this 2-unit seminar requires participation in all speaker sessions (scheduled on Fridays throughout the Spring Quarter), completion of the written assignment (literature review: see description below), and leadership of discussion related to one of the speakers scheduled.

- **Literature review and synthesis assignment:** the goal of this assignment is to survey and synthesize the leading scientific literature related to themes covered in each seminar. The literature review can be completed individually or in small teams on a specified topic (identified in advance of the speaker), and will thoughtfully synthesize the major points from at least 5 of the most significant papers on the topic [5 per person if working in teams]. Your paper should synthesize key concepts introduced in the published work, and critically examine linkages as relate to new insights from your learning, speakers, and discussions. [Your synthesis should be 4-6 pages, including an annotated bibliography of the literature discussed].

- **Discussant assignment:** Corresponding to your topic selected for the literature synthesis assignment, students will lead an informed discussion (~30 minutes) following the guest speaker. Discussants (in pairs or small groups) are responsible for summarizing the major literature for their peers, and guiding an examination of the topic as they relate to the broader theme of the seminar: enhancing coastal social-ecological systems through aquaculture.

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Speaker Biographies

Doris Soto
Doris is a Senior Aquaculture Resources Officer at the FAO Fisheries and Aquaculture Resources Use Division. From 1990 until joining FAO, she was a Professor of the Fisheries and Oceanography Faculty at the Austral University in Puerto Montt, the lake and fjord region in Southern Chile. Dr. Soto's research work focused on salmon farming environmental management and nutrient cycling in farms both in freshwater and marine environments; and extensive research to evaluate the effect of escaped salmon and trout on aquatic ecosystems. Her research has contributed to scientific knowledge and also to decision-making through the aquaculture environmental regulation program set up by the Chilean government and also through active interaction with the private sector.

Peter Bridson
Peter Bridson, founder of Seagreen Research, served as the Aquaculture Manager at Seafood Watch for six years where he conducted research on the complex and often controversial environmental impacts of aquaculture. His more than 20 years' experience in aquaculture research aided the development of criteria with which Seafood Watch assesses the sustainability of farmed seafood and informs the buying decision of consumers and businesses nationwide. Peter sits on the Global Aquaculture Alliance's Standards Oversight Committee, the Global Seafood Sustainability Initiative's Aquaculture Expert Working Group, and the National Institute for Animal Agriculture's National Roundtable for Sustainable Aquaculture. He previously sat on the WWF-initiated Shrimp Aquaculture Dialogue's Global Steering Committee and the Global Aquaculture Performance Index's Policy Advisory Committee.

Margareth Overland
Dr. Overland was the Director of The Norwegian University of Life Sciences Aquaculture Protein Centre (10 year research initiative), where her research combined fundamental approaches in fish and animal nutrition with more applied approaches to provide knowledge of use to both academia and industry. Her current research, now at the Center for Research Innovations, is focused on developing novel feed ingredients for the aquaculture and farm animal industries, using basic natural resources in the production on high-quality feed components based on advanced biotechnology. Margareth also holds appointment as a Professor in Aquaculture at the Norwegian University of Life Sciences (NMBU).

Felipe Sandoval
Felipe Sandoval is the current president of SalmonChile – the industry association comprised of Chile's largest salmon producers, which seeks to address health, environment, social and economic challenges facing the salmon industry internationally. Prior to leading SalmonChile, Sandoval was the Undersecretary of Fisheries of Chile under President Michelle Bachelet, and took over as executive secretary at the so-called "salmon table" chaired by the finance minister at the time, a public-private taskforce tasked to define the urgencies to improve the production of the Chilean salmon industry. Sandoval comes from a civil engineering background, and served for many years in both government posts and in the private sector involved in the fisheries and aquaculture.

Rozmond Naylor
Rosamond Naylor is the William Wrigley Professor in the Stanford School of Earth Sciences; Senior Fellow at the Freeman-Spogli Institute for International Studies and at the Stanford Woods Institute of the Environment; and director of Stanford's Center on Food Security and the Environment. Her research focuses on the environmental and equity dimensions of intensive food production, and she is engaged in policy issues associated with food and agricultural systems in the U.S. and abroad. Naylor has been involved in numerous field-level research projects throughout the world concerning issues of aquaculture and livestock production, high-input agricultural development, biotechnology, and climate-induced yield variability and food security. Her Research incudes: Search for Sustainable Solutions in Salmon Aquaculture; Farming Finfish in Coastal Ecosystems and the Open Ocean: Assessing Options for Sustainability; Co authored: Does Aquaculture Add Resilience to the Global Food System?