

Program: Taller de redes/Workshop

Embracing complexity: looking at Chilean fisheries socio-ecological systems

What?

The workshop "Embracing complexity: looking at Chilean fisheries socio-ecosystems" is an important step in a broader initiative that works on the integrated conservation of the marine resources in Chile by the Millennium Nucleus Center for Marine Conservation of Universidad Católica de Chile. The objective is to use an integrated and interdisciplinary approach to describe and understand the complex socio-ecosystem of Chilean fisheries in order to find ways in which these interconnected networks can be understood to foster a sustainable usage of marine resources and preserve coastal biodiversity.

Where and when?

Centro de Conservación Marina (ECIM), Las Cruces, Chile
6-8 December 2012

Why?

There are three goals associated to the successful exploitation of marine resources: A) sustained economic benefits for fishers and the associated community. B) Long-term persistence of fished populations. C) Reduced impact on the entire ecosystem, including non-fished species and, ultimately, maintenance of biological diversity. The first two of these goals are usually considered in traditional fisheries approaches. The third goal is seldom considered as part of fisheries programs.

In the case of Chilean artisanal fisheries, attempts to achieve these general goals are further complicated by at least two factors: a) the multi-species nature of artisanal fisheries complicates not only the application of simple measures of fisheries management, but it also makes evaluation of ecosystem-level impacts extremely difficult. b) Artisanal fisheries and the species they target are spatially-structured systems, which often times exhibit local and largely decoupled dynamics. In addition, attempts to achieve sustained economic returns for Chilean fishers and at the same time ensure viability and persistence of the extracted species are destined to absolute failure without incorporating the social-structure of the fisher communities. Indeed, social networks of perceptions, information, traditions, etc. can be as important as actual economic returns in ensuring long-term persistence of environmentally-sustainable practices. Of course, when biologically and socio-economically sustainable strategies can be achieved for a set or for all exploited species included in the fisheries, there is no guarantee these strategies would also foster maintenance of overall biodiversity of the ecosystem.

Considering the great complexity of the issues, is no wonder why the approach has always been to

simplify the problem, for instance, dealing with the fisheries of a single species, dealing with fisheries at regional scales as if they were spatially-homogeneous, evaluating consequences of fisheries for indicator species, etc.

The idea of the Workshop is to tackle these complex problems by embracing their complexity. We want to think of ways in which the networks of fishers, exploiting multiple species interconnected among them and with many other non-commercial species through trophic and non-trophic interactions, can be perturbed (i.e. by a specific fishing strategies, creating a small reserve, etc) in ways that foster the three goals stated above.

I. Thurs 6: "Setting up the scene"

9:30 - 10:00 Welcome and General Introduction to the Workshop. **Sergio Navarrete, Camilo Rodríguez**

10:00 - 10:30 The goals of the Center for Marine Conservation and this Workshop. Presentation of participants.

Coffee break

11:00 - 11:20 Artisanal fisheries in Chile: TURF's and other considerations. **J.C. Castilla**

11:20 - 11:40 The social component of artisanal fisheries in Chile. **S. Gelcich**

11:40 - 12:10 No take zones, marine reserves and TURF's: toward a network of protected areas in Chile. **M. Fernández**

12:10 - 13:00 Open Discussion

Lunch

14:30 - 15:15 Understanding artisanal fisheries and marine resources management in other contexts - Group activity.

15:15 - 15:30 Including trophic and non-trophic interactions in ecological Networks. **Sonia Kefi.**

15:30 - 18:00 Divergent exercise. Mapping local and global issues related to the coastal marine socioecosystem.

18:00 - 19:00 Field visit ECIM marine reserve

DAY 1
Thursday 6th

II. "Convergence: Approaches to complex systems"

9:00 - 9:20 Network theory. **Mauricio Herrera**

9:20 - 9:40 Dynamic modeling and energy transformations. **Sonia Kefi**

9:40 - 10:00 Open system approach to complex ecological Networks. **Rolando Rebolledo**

10:00 - 10:20 Vibrant Data Project. **Eric Berlow**

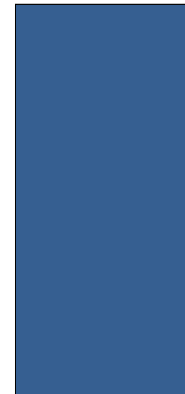
DAY 2
Friday 7th

Coffee Break

11:00 - 13:00 Exercise. Creating clusters and an interraled map.

Lunch

14:30 - 18:00 Understanding complexity and methods for interconnection and networks. Visualizing the sets of complex systems.



III. "Wrapping up"

09:00 - 11:00 Creating a road map

11:00 - 11:30 Defining the Tools and drivers

11:30 - 12:30 Final conclusions

12:45 End of workshop

Lunch



LIST OF PARTICIPANTS

CCM:

Christopher Aiken
Juan Carlos Castilla
Miriam Fernández
María Dulce Subida
Stefan Gelcich
Natalio Godoy
Sergio Navarrete
Bryan Bularz (PhD student – Ecology, PUC)
Paula Pappalardo (PhD student – Ecology, PUC)
Montserrat Rodríguez (Marine Biologist)
Sebastián Tapia (Undergraduate Marine Biology student)
Andrés Marín (PhD student – Sociology, University of Wales, UK)

EXTERNAL:

Eric Berlow- Vibrant Data Labs y Universidad de Berkeley, California
Sonia Kefi- Evolutionary Sciences Institute, Universidad de Montpellier, Francia
Pablo Marquet- Pontificia Universidad Católica de Chile
Rolando Rebolledo- Centro de Análisis Estocástico, Pontificia Universidad Católica de Chile
Fernanda Valdovinos- PhD student, Theoretical Ecology, Universidad de Chile.
Miguel Fuentes- Centro de Complejidad Social, Universidad del Desarrollo
Mauricio Herrera- Centro de Inteligencia de Datos y Redes, Universidad del Desarrollo
Camilo Rodríguez-Beltrán- Centro de Inteligencia de Datos y Redes, Universidad del Desarrollo
Mauricio Tello- PhD student, Mathematics, P. Universidad Católica de Chile