

Sub-Antarctic Research Alliance

An international and interdisciplinary initiative linking science with the humanities for biocultural research, education and conservation



UNIVERSITY of
NORTH TEXAS



Weekly Quiz

- What are the four main biomes of the Magallanes Region (describe them based on topography/geomorphology and/or vegetation types)? (Moore 1984)
- Name 2 of the 10 “criteria” for biocultural conservation (Rozzi et al. 2006)
- What does the Yahgan word “*omora*” mean, and how does it embody biological and cultural values in conservation?



UNIVERSITY of NORTH TEXAS



Benchmarks and Background

- 2000: Creation of Omora Park
 - Omora N.G.O. and U. of Magallanes
- 2004: Initiative to create the Cape Horn Biosphere Reserve
 - “Institutionalize” an interdisciplinary approach
- 2004: Founding of what became the Institute of Ecology and Biodiversity
 - 5 Chilean universities and 2 NGOs
- 2006: Tracing Darwin’s Path
 - U. of North Texas & OSARA
- 2008: Chile’s first Long-Term Socio-Ecological Research Network
 - Links 3 sites in Chile, including Omora
- 2009: Sub-Antarctic Research Alliance
 - UNT & UMAG as “hubs”

Levels, Scale & Institutions

- International:
 - UNT & OSARA
- National:
 - IEB
- Regional/Local:
 - UMAG & Omora

Long-Term Program Initiatives

- Tracing Darwin's Path
 - 1-2x per year since 2006
- NSF International Research Experience for Students (2009-2011)
 - Swarthmore, UGA, UCONN, UNT, Texas A&M, ESA-SEEDS
 - International Field Experiences
 - Fall Semester Course

IRES

Objective:

This program will train a new generation of scientists and academics ***to understand the importance of including a biocultural approach to research and education*** within the ***international context*** of modern science and conservation initiatives. It will enable future scientists (and other disciplines) to build international networks and creatively respond to socio-ecological issues across borders.

Specific goals:

- 1) To provide an international experience using the interdisciplinary research, education, and conservation network being implemented by US and Chilean institutions, based in the CHBR, and other sites of the nascent Chilean LTSER network;
- 2) To conduct interdisciplinary research integrating ecological sciences and environmental philosophy through field work and studies of ecosystems, biodiversity, and ethno-ecological perspectives;
- 3) To transfer the research's results, field activities, and theoretical concepts to educational and ecotourism activities that are currently being implemented at the CHBR;
- 4) To assess the effectiveness of the transfer of research into educational and ecotourism activities, as well as into the learning experiences of US students.

Introduction to Biocultural Conservation

Core Professors – USA:

- Dr. Christopher Anderson, ecologist, UNT-UMAG-IEB
 - 325J EESAT Building
 - Office Hours: By appointment, christopher.anderson@umag.cl
- Dr. Ricardo Rozzi, conservation philosopher, UNT-UMAG-IEB
- Dr. James Kennedy, ecologist, UNT

Invited Lecturers:

- Dr. Andrés Mansilla, phycologist, UMAG-IEB
- Dr. Francisca Massardo, ethnobotanist, UMAG-IEB
- Dr. J. Baird Callicott, philosopher, UNT
- Dr. Juan Carlos Aravena, ecologist, Fundación CEQUA
- Dr. Bernard Goffinet, bryologist, University of Connecticut
- Dr. Irene Klaver, philosopher, UNT
- Dr. Dale Wilkerson, philosopher, UNT

Teaching Assistants:

- Alexandria Poole, philosophy Ph.D. student and environmental sciences M.S. student, UNT
 - 325C EESAT Building
 - Office Hours: Thursday 1-5, by appointment, alexpoole@my.unt.edu
- Cristóbal Pizarro, conservation M.S. student, UMAG

Introduction to Biocultural Conservation

Course Catalogue Information:

- PHIL 5960, BIOL 5040, 4005

Class Schedule:

- Fall semester; Thursdays
- Chilton 245
- August 27 – December 10, 2009
- 6:00 – 8:50 PM (Texas Time)

Academic Dishonesty Policy:

- www.vpaa.unt.edu/academic-integrity.htm

ODA Statement:

- *The University of North Texas is on record as being committed to both the spirit and the letter of federal equal opportunity legislation; reference Public Law 92-112 – The Rehabilitation Act of 1973 as amended. With the passage of new federal legislation entitled Americans with Disabilities Act (ADA), pursuant to section 504 of the Rehabilitation Act, there is renewed focus on providing this population with the same opportunities enjoyed by all citizens.*

Drop/Add Information:

- www.essc.unt.edu/registrar/schedule/scheduleclass.html

Introduction to Biocultural Conservation

Course Description:

- The course will provide students with ***an introduction to subantarctic ecosystems and cultures of southern South America*** (geography, climate, ethnography and ecology) and also expose them to both the practical and theoretical aspects of biocultural conservation, including its interdisciplinary character integrating the sciences and humanities, focusing on the development and implementation of the Omora Park as a long-term ecological study site that serves to ***link society and development with biodiversity, history and ecosystems*** in the Cape Horn Biosphere Reserve.
- This semester-long seminar course will be ***bilingual*** and include seminars and readings shared between various Chilean and US institutions of higher learning. It is part of a broader International Research Experience for Students (IRES) program that includes a field experience and a study-abroad field course entitled *Tracing Darwin's Path*. Participation in the field components associated with the the semester-long seminar course is not a requirement.
- We will use various interactive features during the course, including Blackboard, videoconferences and livestreaming. Course materials will made available online (www.osara.org/darwin_2009.htm).
 - *Be aware that classes will be recorded and archived. Objections to this policy should be notified to the instructors before 31 August 2009.*

Introduction to Biocultural Conservation

Readings:

Readings will be made available in PDF here: www.osara.org/darwin_2009.htm. Students are expected to come to class each week having read assignments before hand.

Course Evaluation:

1) Presentations (20%)

Each week one or two students will make use up to 15 minutes to initiate the discussion session of the class. Guidelines = presentation (format individually decided to use powerpoint, hand outs or other approaches) that introduces the week's topic, provides a brief synthesis of the readings and provides questions to initiate and lead the subsequent discussion.

2) Attendance and Participation (10%)

Attendance is mandatory. Students are responsible to prepare ahead of time, attend all lectures and discussion sessions, ask questions, and express themselves creatively and concisely in their work. Ways of earning points for class participation include being prepared to contribute positively to class discussion of the assigned readings. Contributing positively requires having read and as thoroughly as possible understood the assigned readings and at least being able to raise important questions if not provide definitive answers. Authorized absences that will be considered on a case-by-case basis and include: religious holidays, call to active military duty and a certified sickness by a medical professional. Absences will affect participation grade.

3) Comprehension/Preparation Quizzes (20%)

Every week a short quiz will be taken regarding the material contained in the readings.

4) Tests (25%)

Two tests will be taken during the semester worth 10% and 15% of the grade each.

5) Final project (25%)

Together with the course coordinator, each student should select a topic of relevance for subantarctic biocultural conservation and elaborate a "review-type" article, using an extensive bibliographic search. Format, content and length will be explained in class during September.

Date	Topic	Readings / Assignments	Lecturer
* 27 August	General introduction to the course and subantarctic ecosystems	Rozzi et al. 2006, 2008a,b (<i>Frontiers and EE</i>), Moore 1983	R. Rozzi & C.B. Anderson
* 3 September	Biogeography and ecology of <i>Nothofagus</i> forests	Veblen Chapters 1, 2 Supplmental: Lara et al. 2005, Heads 2006, Aravena et al. 2002	J.C. Aravena & R. Rozzi
* 10 September	Watersheds: Aquatic biodiversity and ecology	Pickett et al. 2007, Moorman et al. 2006, Whiteman & Sites 2008	J. Kennedy
17 September	Wilderness	Leopold 1949, Callicott 2008, Mittermeier et al. 2003	J.B. Callicott
24 September	Subantarctic landscapes and comparisons between Northern and Southern Hemispheres	Select articles from special edition of <i>RCHN</i>	C.B. Anderson
1 October	An ethno-ornithological approach Topics for review essays should have been determined with instructors by this date.	Massardo & Rozzi 2004, Aillapan & Rozzi 2004, Rozzi 2004 + Selections of the Multi-ethnic Bird Guide	F. Massardo & R. Rozzi
8 October	Ethnography and culture of Magallanes	Martinic	R. Rozzi
* 15 October	Marine biodiversity	Readings to be defined Mid-Term Exam	A. Mansilla
22 October	Watersheds: Philosophy and policy	Galloway et al., etc.	I. Klaver
29 October	Invasive species	Anderson et al. 2006, Larson 2005, Brown & Sax 2004	C.B. Anderson
5 November	Ecosystem ecology and thinking of the whole ecosystem	Golley 1993 (chapters 3 and 5), Odum 1969, Pickett & Ostfeld	C.B. Anderson & J. Kennedy
12 November	Implementing, field stations, long-term socio-ecological research and biosphere reserves	Anderson et al. 2008, articles from field station series in <i>BioScience</i>	C.B. Anderson & R. Rozzi
19 November	New paradigms in interdisciplinary graduate education	Estevez et al. manuscript, Rozzi et al. manuscript, series of articles in <i>Frontiers</i>	A. Poole & C.B. Anderson
26 November	Thanksgiving	-----	-----
# 3 December	Bryology, "The Miniature Forests of Cape Horn" and "Tourism with a Hand Lens"	Rozzi et al. 2008, Goffinet et al. 2006 Submission of "review" essays.	B. Goffinet
10 December	Last day of class: Summary	Final exam date to be confirmed	J. Kennedy, C.B. Anderson & R. Rozzi

Why are we doing this...

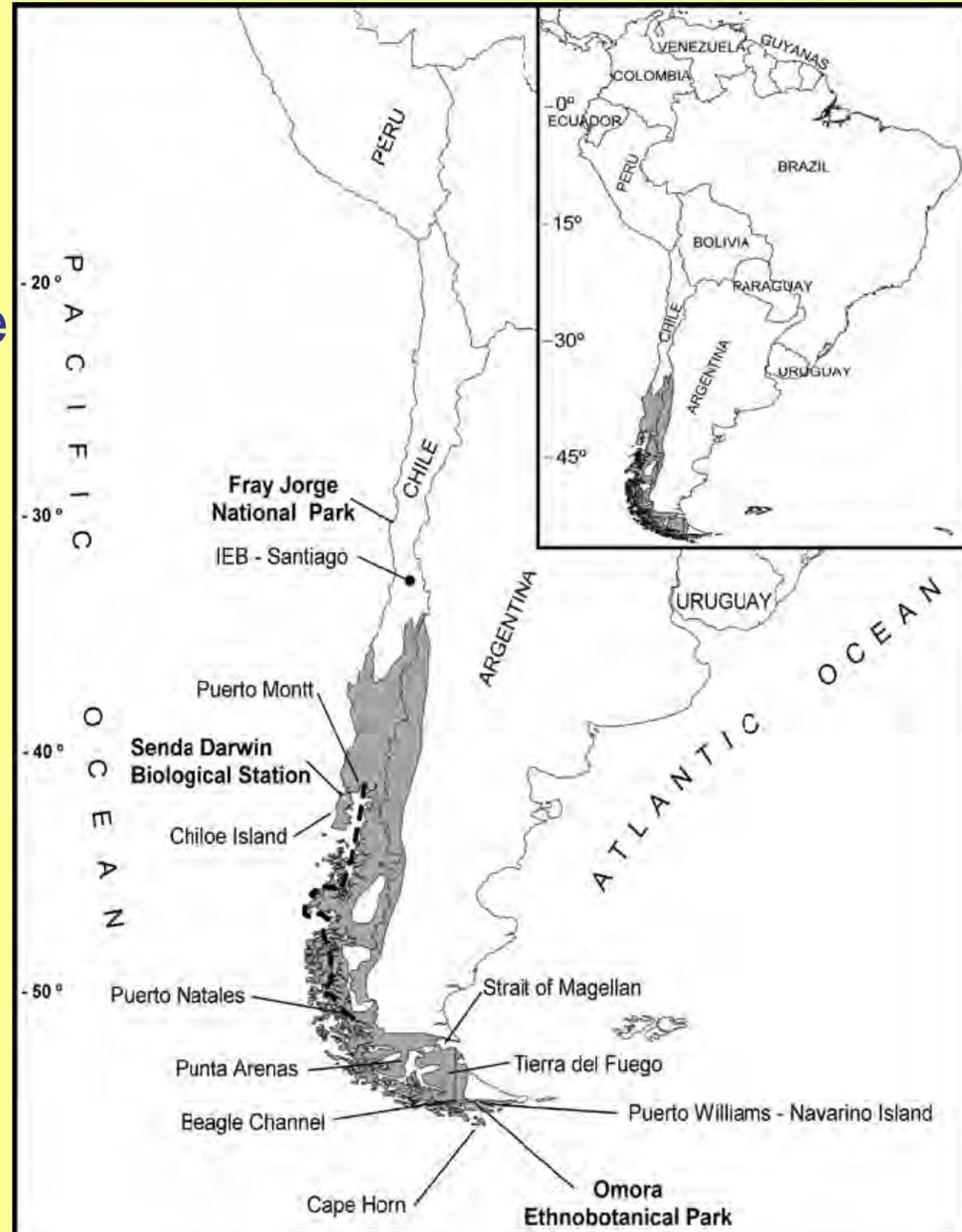
- Environmental problems are
 - social and ecological
- The environmental “crisis” is largely about perceptions, attitudes, values and behavior
 - rather than a lack of information
- A new paradigm in conservation must not only conceive of integrative ideas
 - but also implement them
- Hybrid disciplines have been successfully created
 - such as ecological economics, environmental law.....so.....

What we're doing....

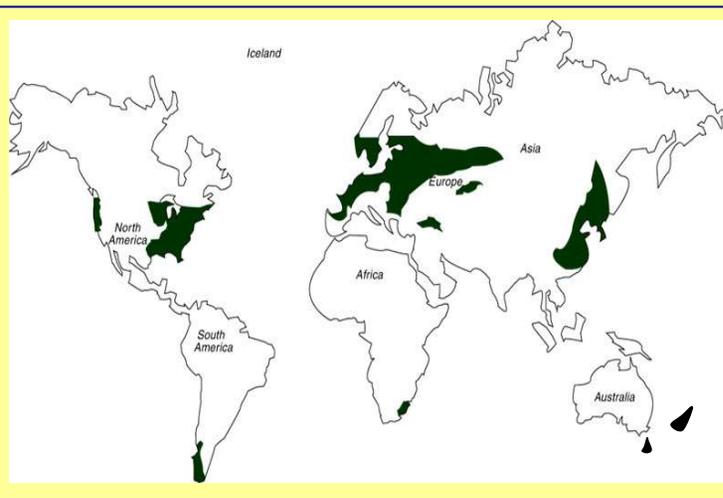
- Integrating humanities and sciences for conservation “practice”
 - not just theory
 - i.e. “biocultural conservation”

Where we're going... why here?

- South American temperate forests
 - Argentina and Chile
 - Most extensive temperate forests in southern hemisphere
 - “forest island”



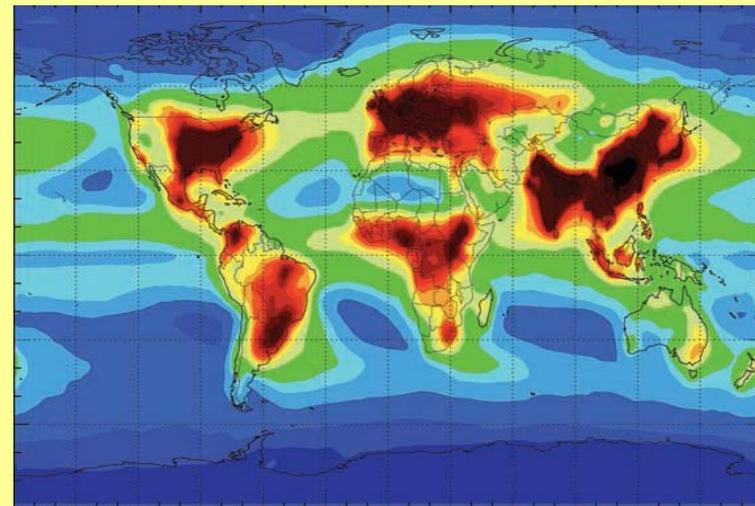
- **Longest latitudinal range of temperate forest in the Southern Hemisphere**
 - largest expanse of temperate forest in the Southern Hemisphere
- **Pronounced ecological gradients from desert shrubland (30°S) to temperate rainforest (43°S) to cold subantarctic forest-bog mosaic (55°S)**
 - precipitation, temperature, day length and anthropic influence
- **Ecosystems subjected to strong climatic variability**
 - at inter-annual, decadal & millennial scales
- **Minimum atmospheric inputs from industrial air pollution**
 - “pre-industrial” control site



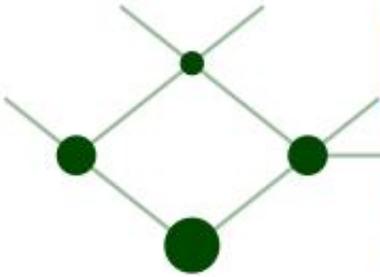
Temperate forests of the world



Precipitation gradient



N deposition (Galloway et al. 2004)



LTSER-CHILE

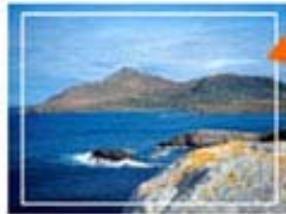
Red Chilena de Sitios de Estudios
Socio-Ecológicos de Largo Plazo



Estación
Experimental Fray
Jorge (30°S)



Estación Biológica
Senda Darwin
(42°S)



Parque
Etnobotánico
Omora (55°S)



www.ieb-chile.cl/ltser

Biocultural “Research Platform”

The Cape Horn Biosphere Reserve includes the austral archipelago with two national parks.

The

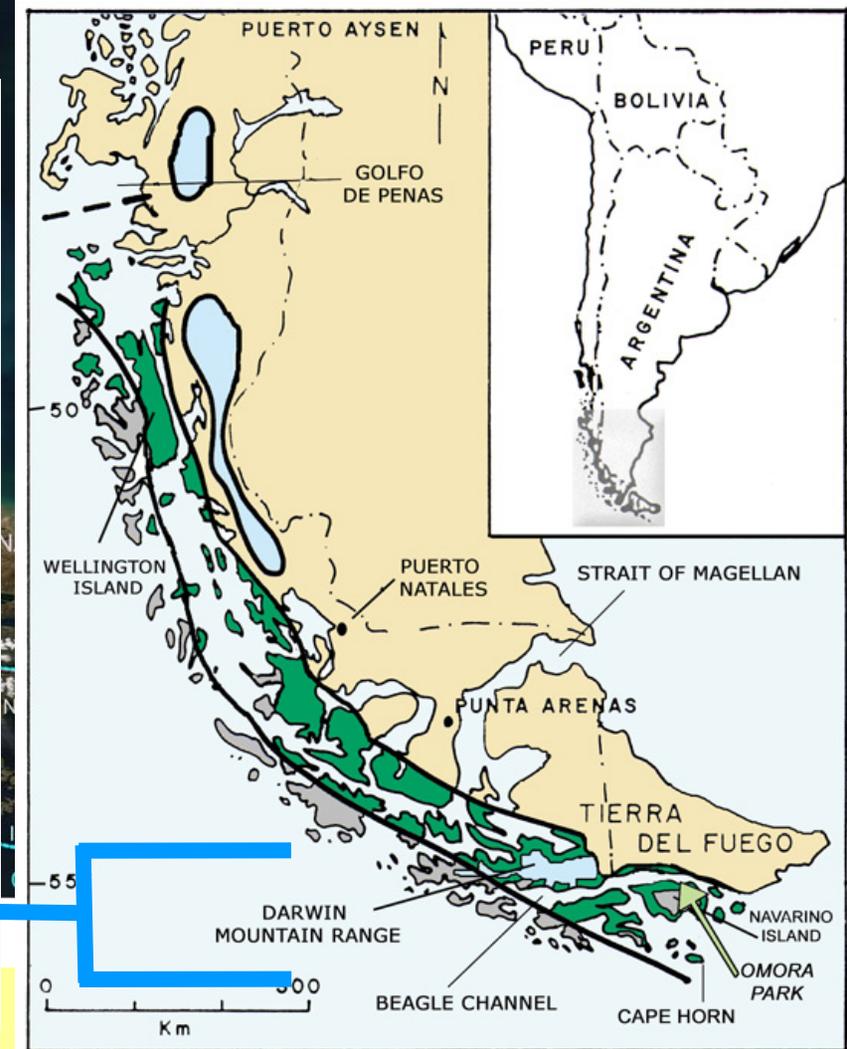
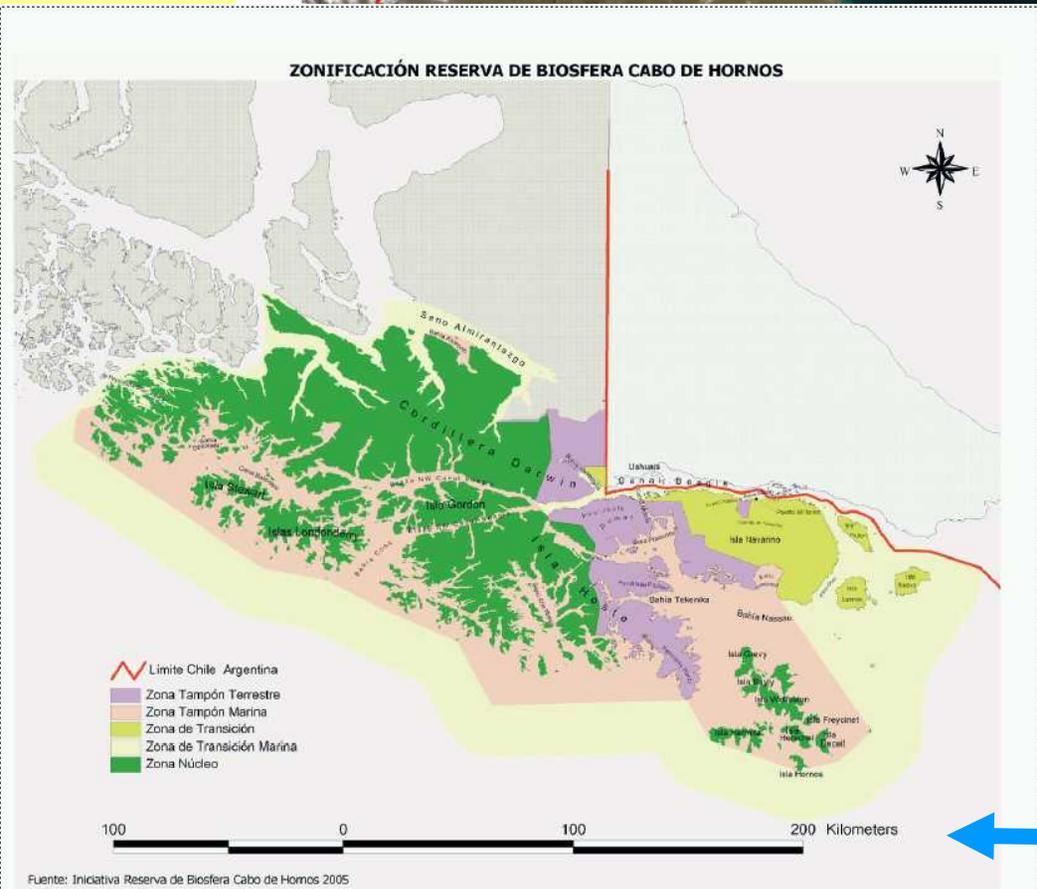


Figura 8. Area propuesta para la Reserva de Biosfera Cabo de Hornos (Figura Laboratorio SIG CERE Universidad de Magallanes y Fundación Omora).

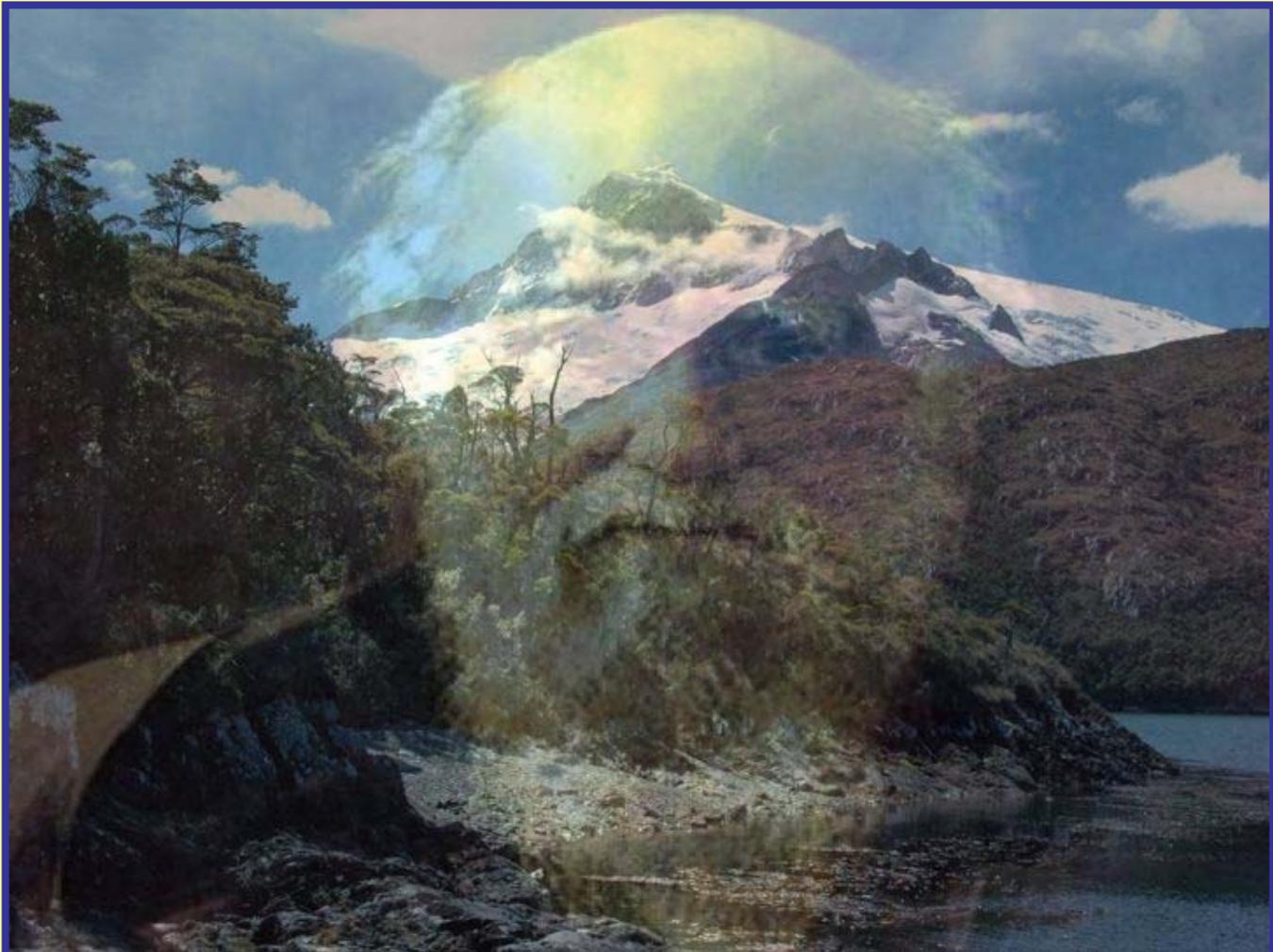
Singularities: History of Sailing

- World sailing-navigation landmark
 - Yahgan canoes
 - Willem Corneliszoon Soerbee
 - Hoorn, Netherlands
 - Major sailing route and graveyard



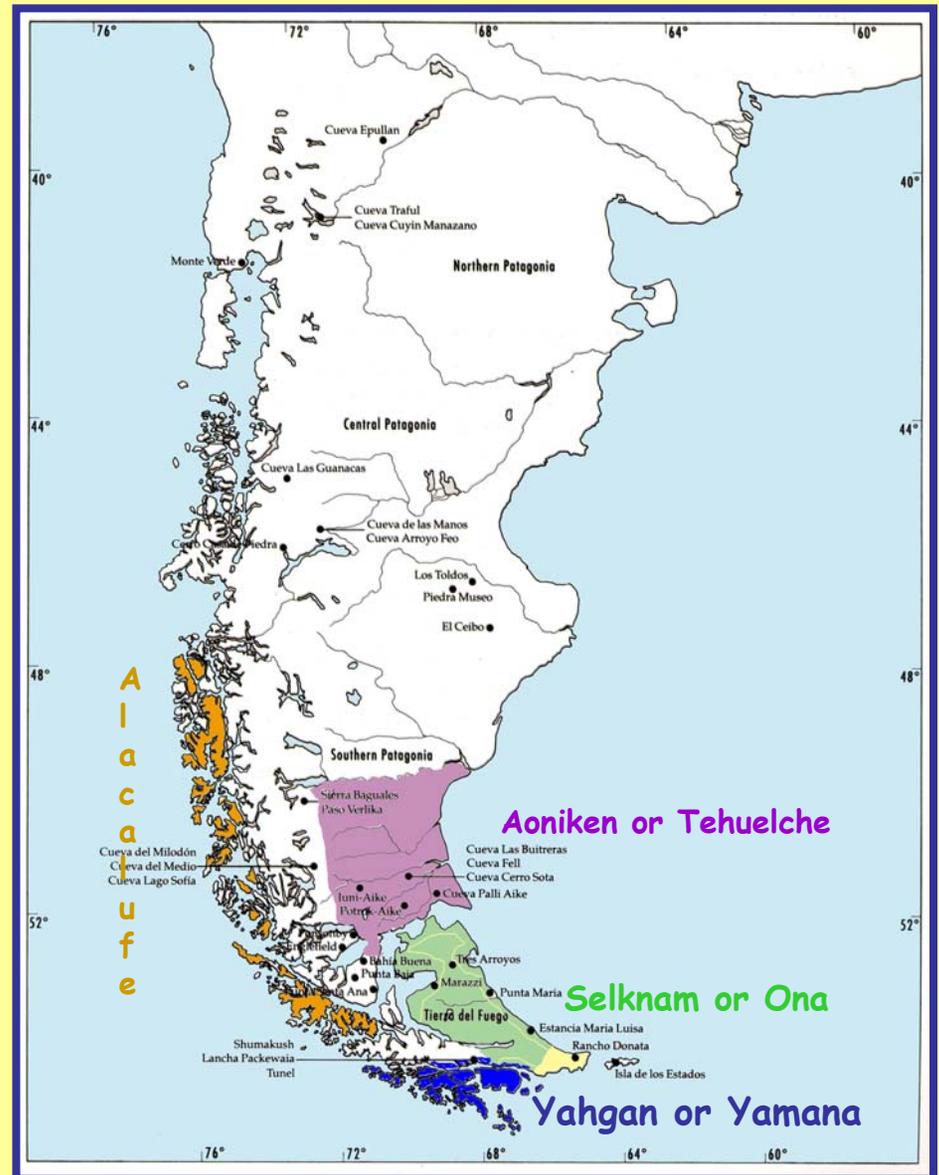
Singularities: History of Science

- The Yahgans are the most cited ethnic group in the *Origin of Species* and the *Descent of Man*

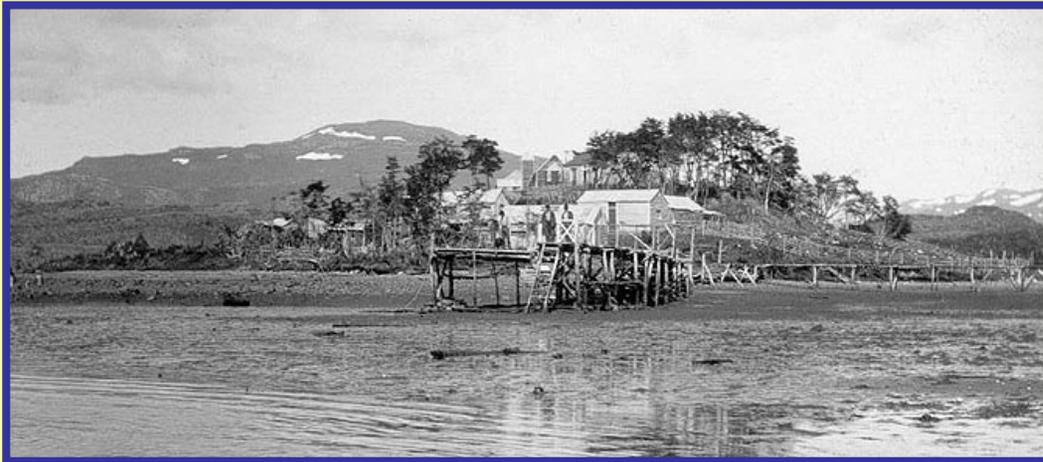
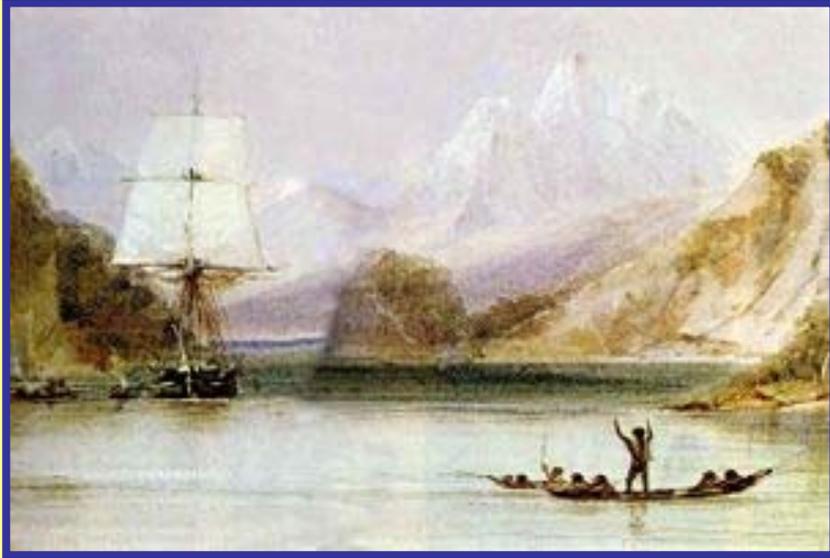


Singularities: Human Settlement

- Yahgans: 7,500 B.P.
 - World's southernmost ethnic group



Singularities: Human Settlement



Singularities: Human Settlement

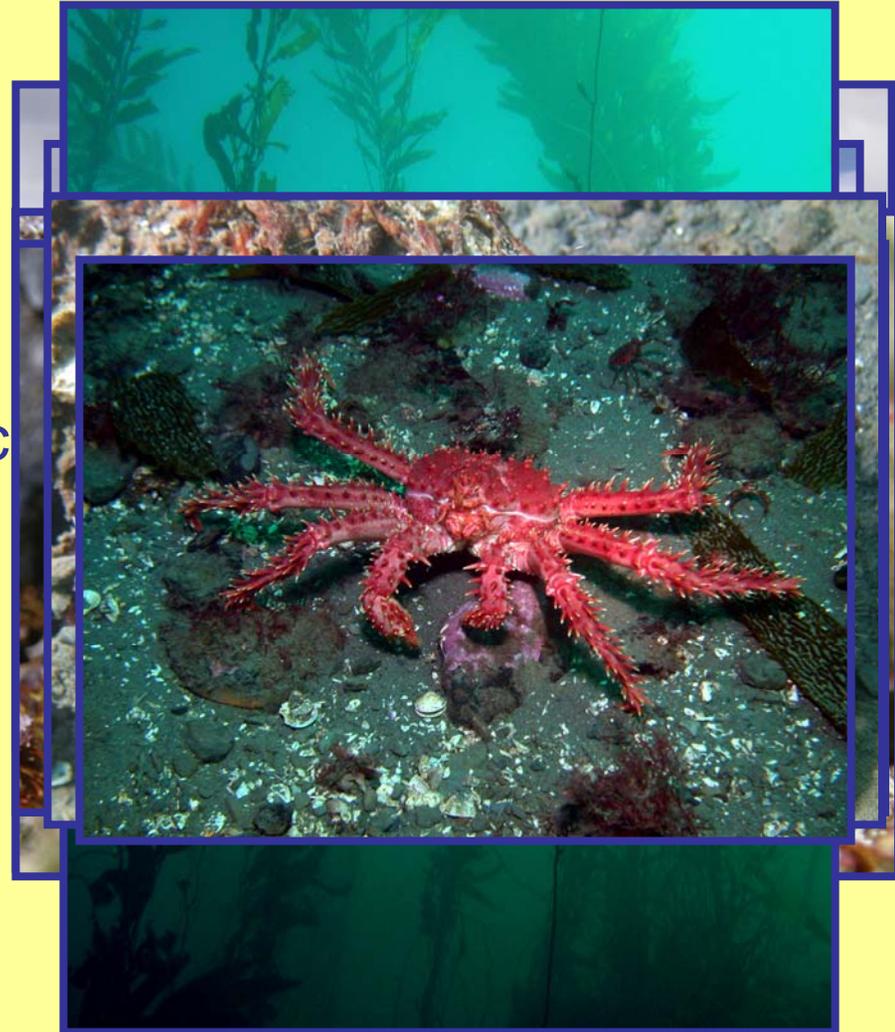


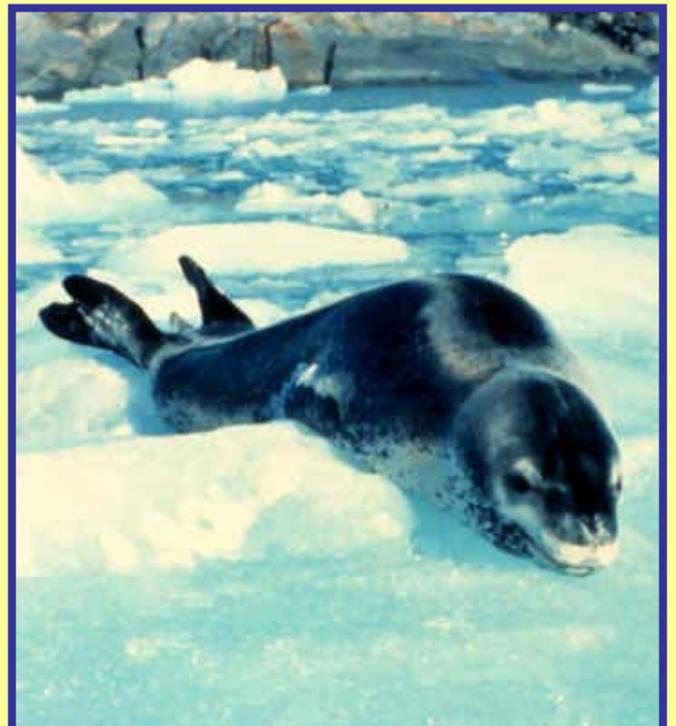
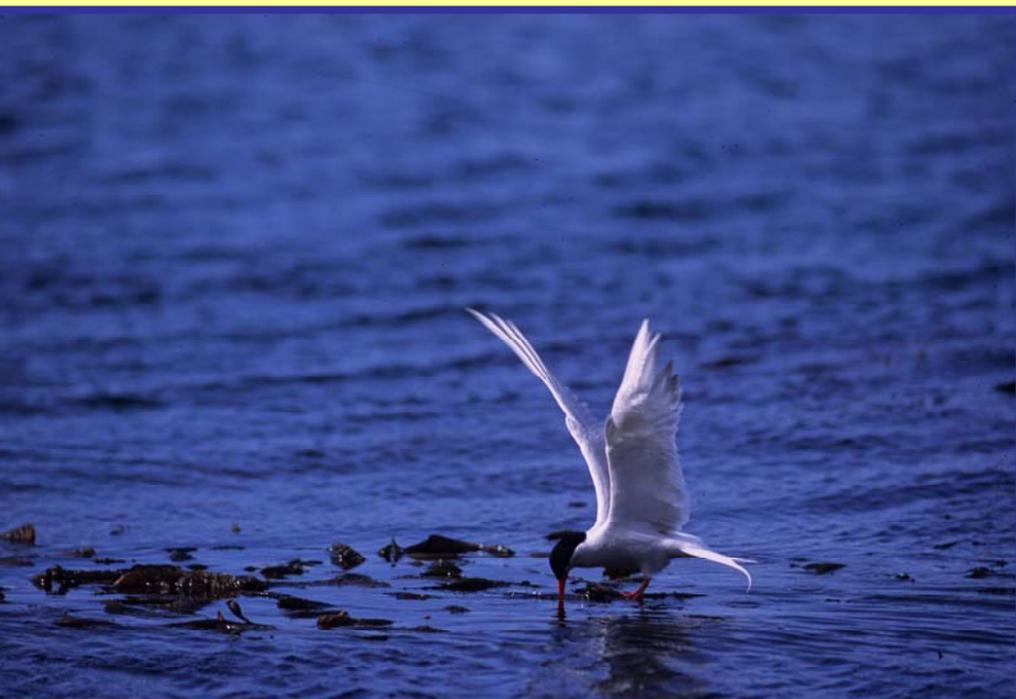
Singularities: Human Diversity



Singularities: Ecological Diversity

- Terrestrial Ecosystems:
 - Magellanic evergreen forest
 - Mixed deciduous forest
 - Magellanic tundra mosaic
 - High-Andean
 - “Miniature forests”
- Marine Ecosystems:
 - Kelp forests
 - Intertidal
 - Sea floor







Blackish cinclodes



Striated caracara



White-bellied seedsnipe

**Yellow-bridled
finch**



© Steve Bird - Birdseekers - World

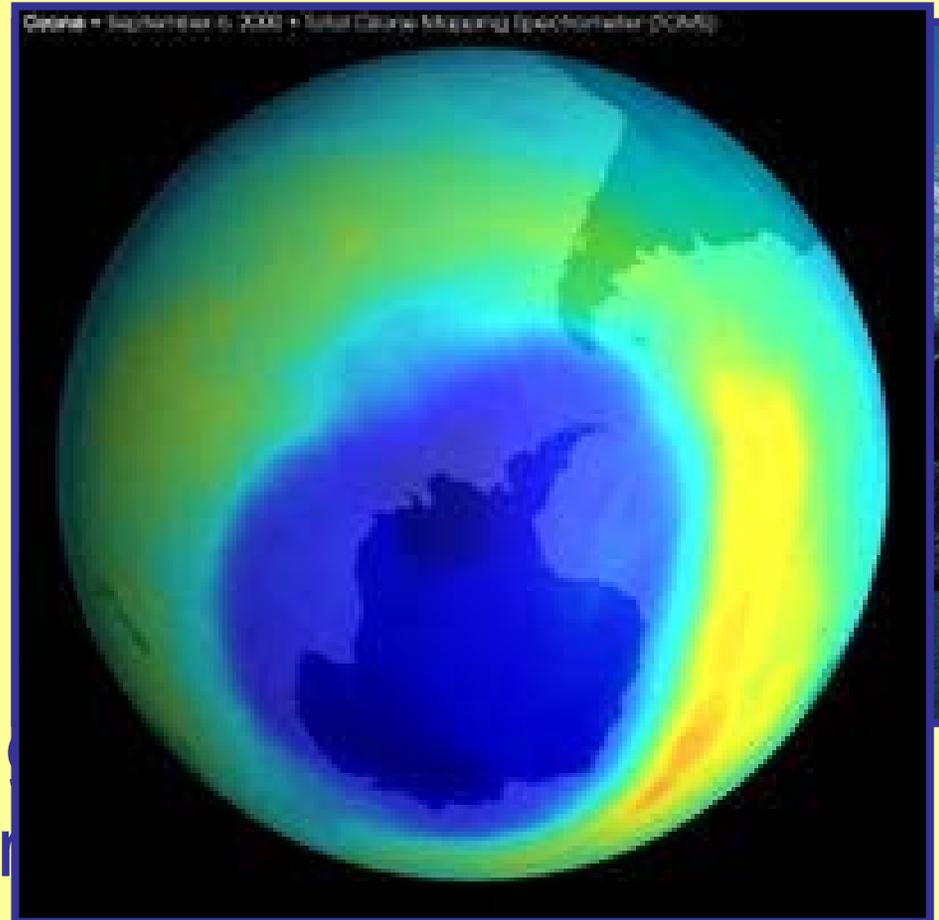
Threats

Global threats:

- Climate change
- Ozone hole
- Exotic species

Local threats:

- Development
 - tourism
 - salmon farming
- Opening of militar

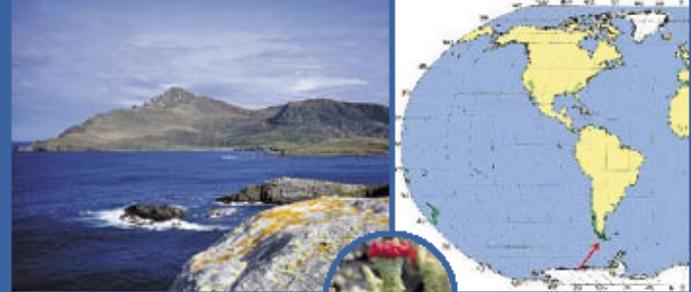


Threats = Opportunities!?



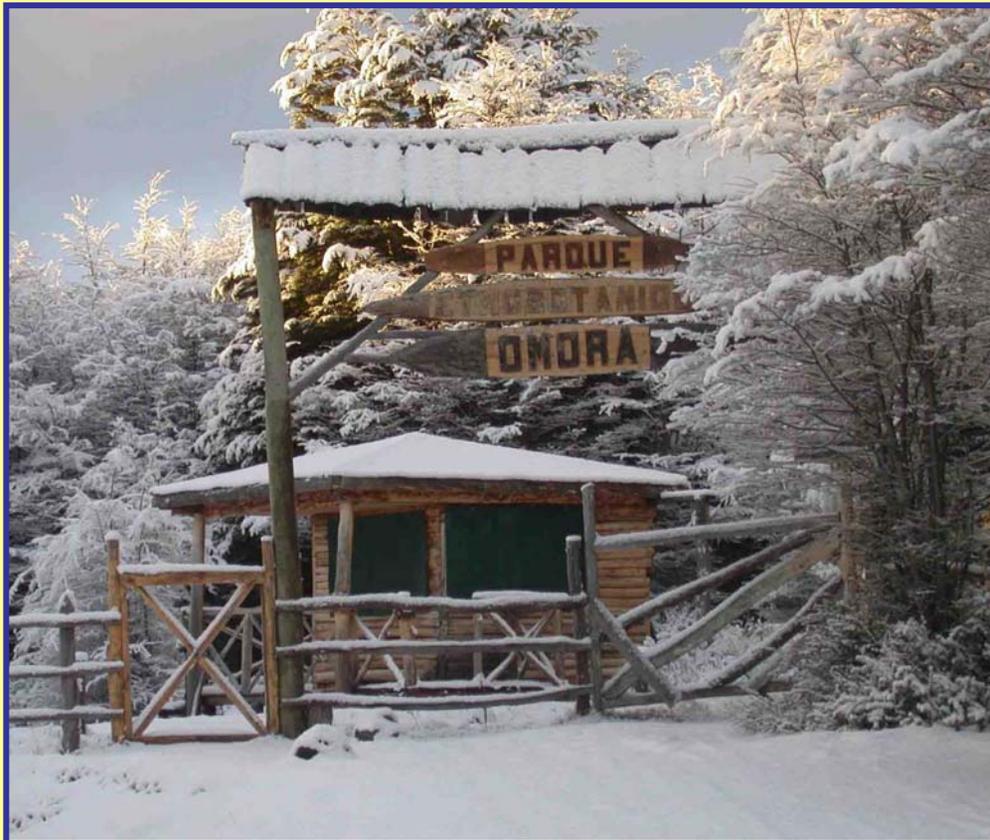
Cape Horn Biosphere Reserve

Nomination Document for the Incorporation of the Cape Horn Archipelago Territory into the World Biosphere Reserve Network
MaB Program – UNESCO



Ricardo Rozzi, Francisca Massardo, Augustin Berghöfer, Christopher B. Anderson, Andrés Mansilla, Miguel Mansilla, Jordi Plana, Uta Berghöfer, Pedro Araya & Eduardo Barros

EDICIONES UNIVERSIDAD DE MAGALLANES





**Biocultural
Conservation**



Research

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