



ESTABLISHING A MUTUALLY BENEFICIAL PARTNERSHIP

Andrés France
INIA Quilamapu



Pre-application

- INIA - CABI relationships.
- Early research activities.
- Defining common interests.
- Drafting a Darwin Initiative project.
- The application process.

CABI member countries and centres



CABI improves people's lives worldwide by providing information and applying scientific expertise to solve problems in agriculture and the environment.

what is CABI?



CABI is a not-for-profit science-based development and information organization.

CABI addresses issues of global concern, such as food security, through science, information and communication.

KNOWLEDGE FOR LIFE



GOBIERNO DE CHILE
MINISTERIO DE AGRICULTURA
INSTITUTO DE INVESTIGACIONES
AGROPECUARIAS
INIA

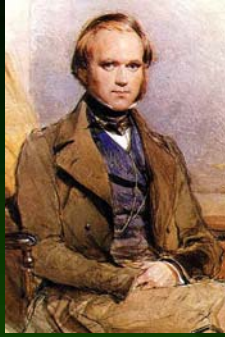
CABI - Chile Relationships



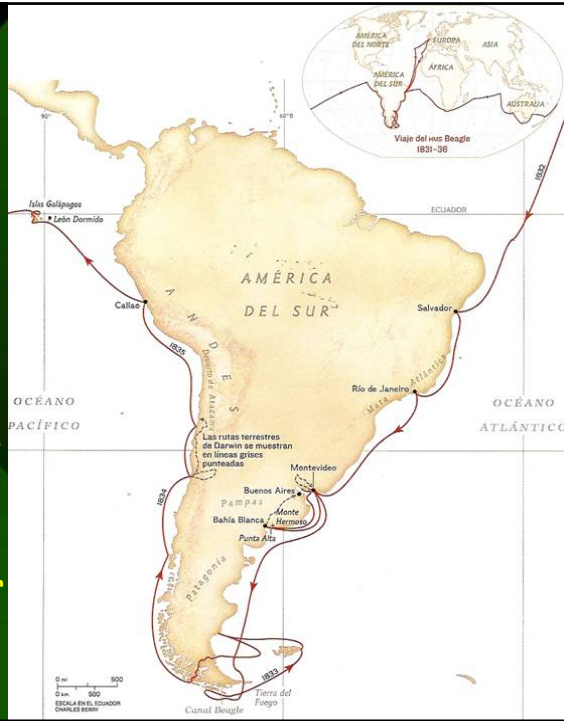
- The first work was in forestry mycology between the Universidad Austral and the International Mycology Institute (IMI) in 1985.
- Chile become CABI Member Country en 1995.
- INIA was nominated the CABI liaison institution by the Ministry of Foreign Relationships.
- In 1996 the CABI leader of the Insect Pathology Program (Dr. Dave Moore) visit Chile and INIA.
- Dr. Moore support the formation of a Insect Pathology Program at INIA.

- We applied to EU grants in biological control.
- We develop the idea to study the Chilean biodiversity related to beneficial micro-organisms.
- Drafting the project: Chile and the biodiversity under Darwin footsteps.





- September 1833, the HMS Beagle enter to the Magallanes canal.
- Travel along Chile for 23 months.



Research Proposal:

"Conserving an using
entomopathogenic fungi and
nematodes within Chile"



Inception periods

- Staff organization.
- Mutual recognition (breaking the ice)
- Survey preparation.
- Communications.

SURVEY

1. Latitude 18° S (Arica-Altiplano e Iquique -Colchane)
2. Latitude 30° S (Calama 0 Res. Nac. Los Flamencos).
3. Latitude 33° S (Valparaíso a Los Andes).
4. Latitude 37° S (Concepción a Laguna del Laja).
5. Latitude 39° S (Tirúa - Lago Galletue.)
6. Latitude 46° S (Archipiélago Los Chonos a Balmaceda).
7. Latitude 54° S (Tierra del Fuego).



S18° 9' 35.9'' W69 28 28.9''

4,800 m asl

1,500 Soil samples
(Aprox. 400 Kg)

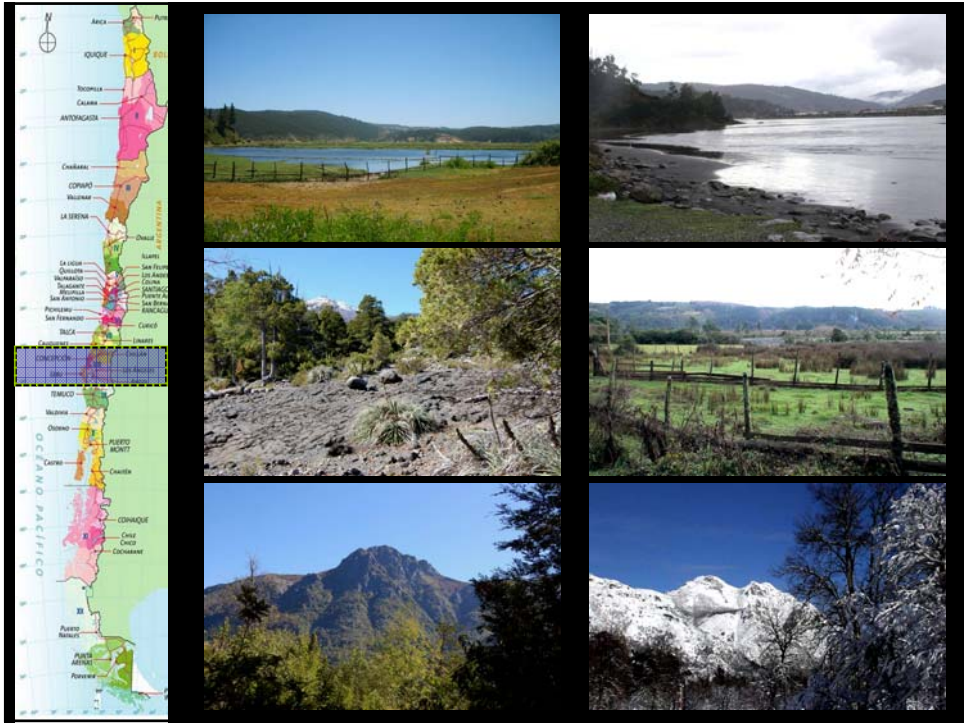
S54° 16' 56.2'' W68 43 59.1''

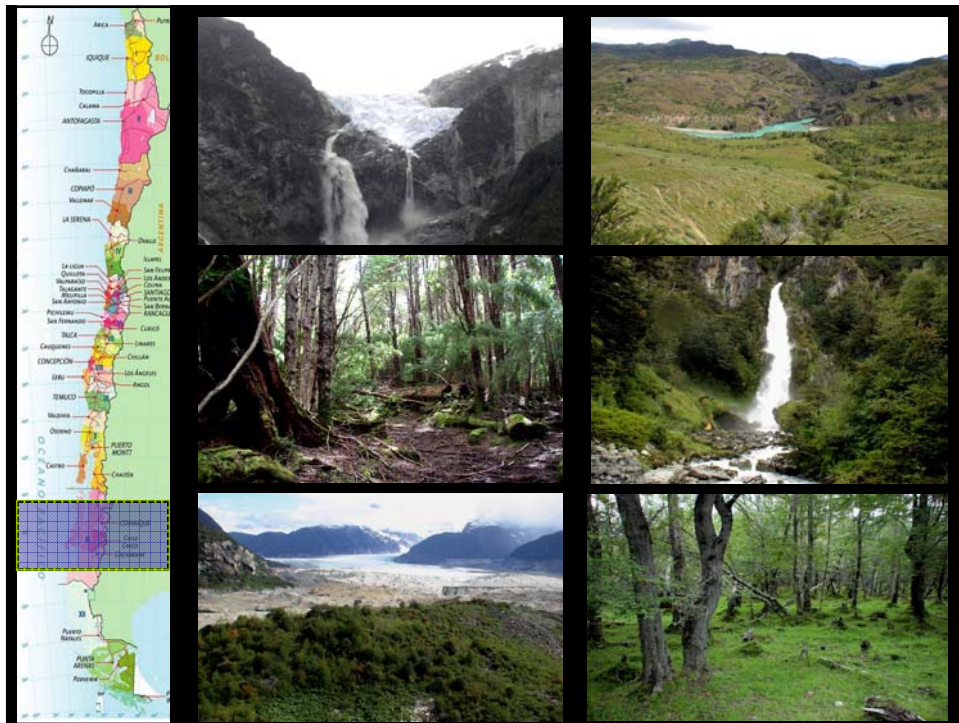
Remote working and communications

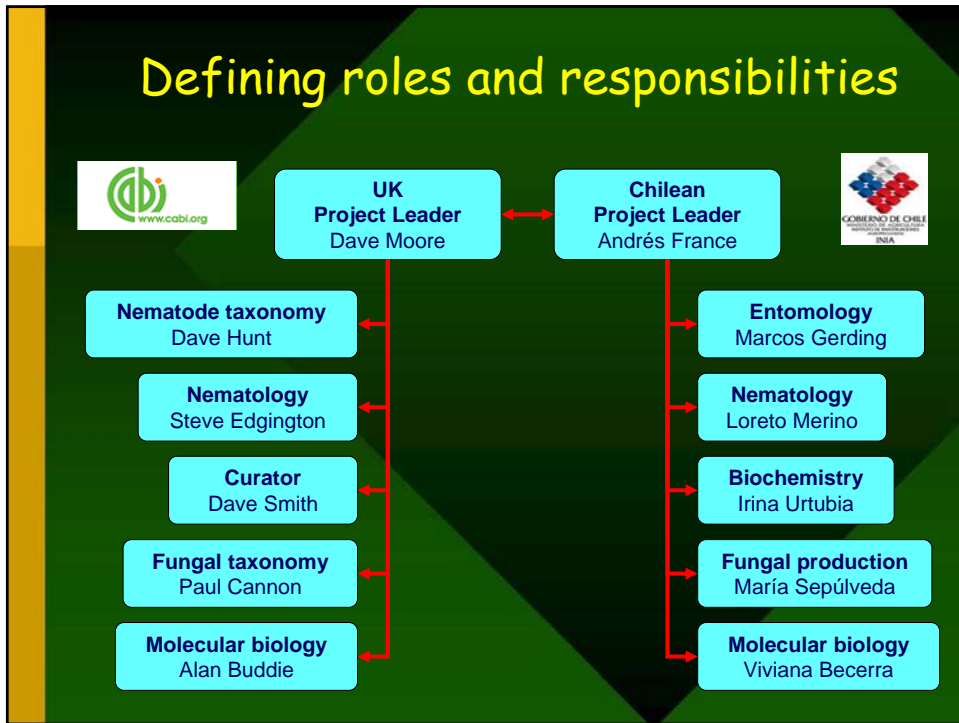
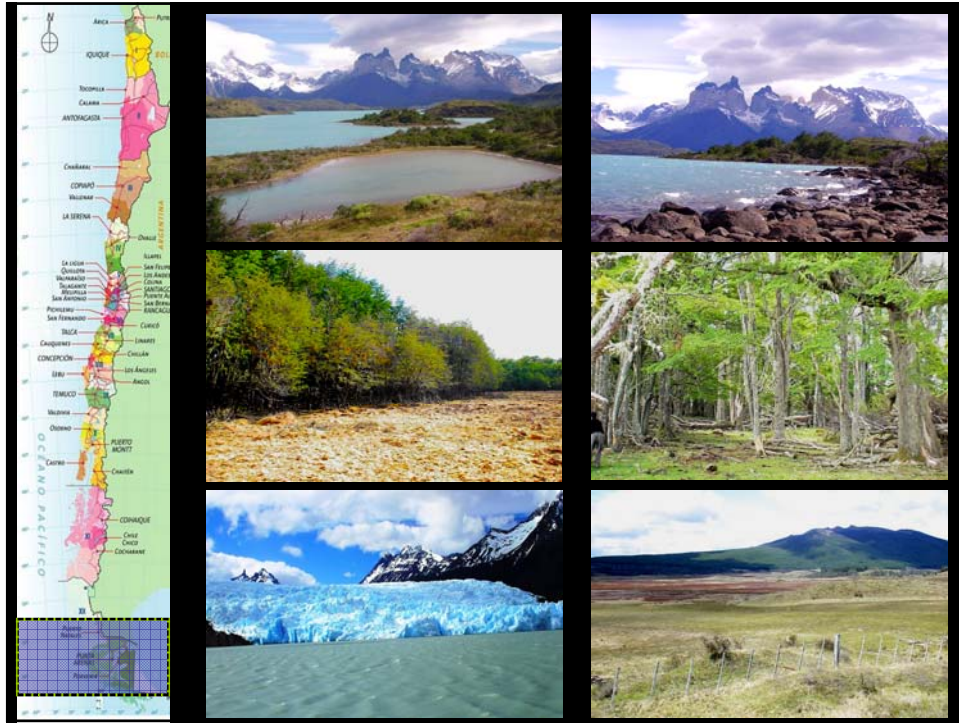
- Survey trips were the reference point for our activities.
- After each sampling trip we defined the next activities, reviewed the old one and analyzed the results.
- Between trips, communications was mainly by Internet and some occasional phone call.











• Steirnernema.

S. australe *New specie*

S. feltiae

S. glaseri

S. diaprepesi

S. unicornum *New specie*

• Heterorhabditis

H. bacteriophora

H. marelatus

H. safricana

Heterorhabditis n.sp. *New specie*

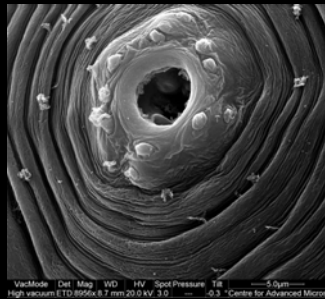
Phasmorhabditis

P. hermafrodita

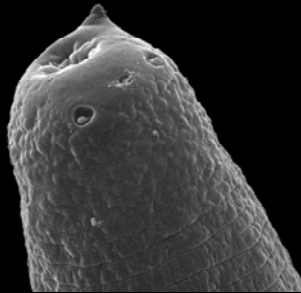
103 Aislamientos de NEP
(7% de muestras positivas)



New species:



Steinernema australe



Steinernema unicornum





Developing management capacity

- The Technological Centre of Biological Control (2008).
- A fully curated long-term collection place in Chile.
- Training in taxonomy, long term collection, sampling, cryopreservation and microbial production.
- A large numbers of new isolates of Entomopathogenic Fungi (520) and nematodes (101) from a range of ecosystems, including climatic and topographic extremes.
- Numerous presentations and workshops provided by project staff to a range of audiences (primary school children, scientists and farmers).



www.controlbiologicochile.cl

Developing management capacity

- Ph.D. and Agronomist Thesis.
- Scientific presentations and posters at conferences and congress.
- Numerous media articles in newspaper, radio and TV)
- A photo-diary on www.youtube.com
- A project video on www.youtube.com/watch?v=OSAOBI2K9iI
- A 16-minute film on the project in Spanish and English.
- A significant rise in awareness of biodiversity within Chile along with a substantial increase in scientific capacity within the host country.



IN SEARCH OF DARWIN'S NEMATODES

IN SEARCH OF DARWIN'S NEMATODES

Oliver Heinen and James Edgarson, Cornell University, Ithaca, New York, USA; Sebastián Pizarro, Avonzo, Chile; 17th July 2009
©Pharos@cornell.org, S.Edgarson@cornell.org and Andrés Franco and Lucía Pérez, Instituto de Investigaciones Agrobiológicas (IIRA), Avda. Víctor Jara, Casilla 90, Chillán, Chile. pharos@cornell.org
Insecta@cornell.edu and why did Charles Darwin select Inches for special study, when he could have used nematodes?

Adapting to extreme situations

(24 hr. previous sampling trip: Earthquake in the north)



The Chaiten eruption.

An ash column
about 40 km high
cover our sampling
site with tons of
ashes, destroying
flora and fauna
that we will never
watch again.



The Llaima eruption.

Lava and ashes
cover our survey
site after 4 weeks
of sampling,
destroying flora
and fauna forever



The ecosystem fragility

- 🌍 *We live in a changing world, usually imperceptible but another with dramatic and permanent changes, that tell us how fragile and small we are.*
- 🌍 *The samples collected from these sites provide one example of obtaining unique isolates before devastating habitat loss.*





BIODIVERSIDAD DE HONGOS ENTOMOPATÓGENOS.

Dir 81		Dir 82		Dir 83	
Dir 84		Dir 85		Dir 86	
Dir 87		Dir 88		Dir 89	
Dir 90		Dir 91		Dir 92	
Dir 93		Dir 94		Dir 95	
Dir 96		Dir 97		Dir 98	
Dir 99		Dir 100		Dir 101	
Dir 102		Dir 103		Dir 104	
Dir 105		Dir 106		Dir 107	
Dir 108		Dir 109		Dir 110	
Dir 111		Dir 112		Dir 113	
Dir 114		Dir 115		Dir 116	
Dir 117		Dir 118		Dir 119	
Dir 120		Dir 121		Dir 122	
Dir 123		Dir 124		Dir 125	
Dir 126		Dir 127		Dir 128	
Dir 129		Dir 130		Dir 131	
Dir 132		Dir 133		Dir 134	
Dir 135		Dir 136		Dir 137	
Dir 138		Dir 139		Dir 140	
Dir 141		Dir 142		Dir 143	
Dir 144		Dir 145		Dir 146	
Dir 147		Dir 148		Dir 149	
Dir 150		Dir 151		Dir 152	



