

# Live Andes (Advanced Network for the Distribution of Endangered Species)



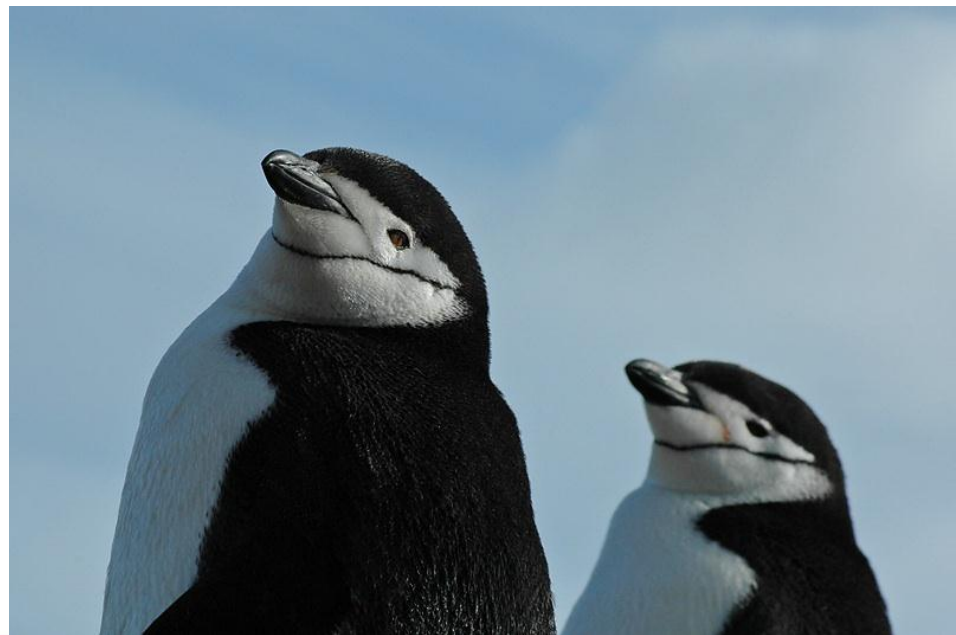
[www.fauna-australis.puc.cl](http://www.fauna-australis.puc.cl)

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# Overview



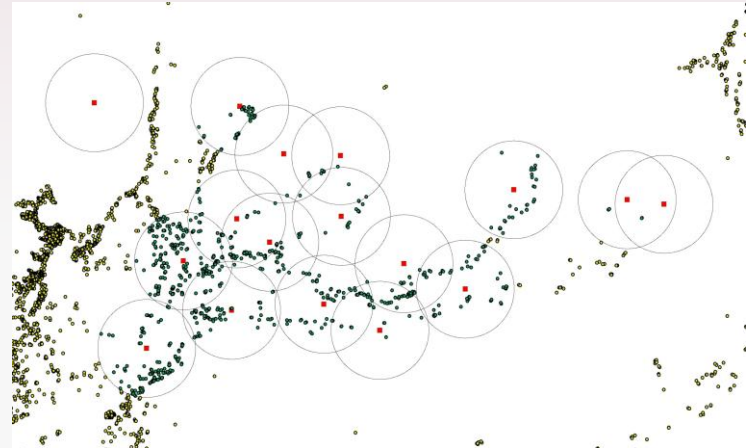
- Who are we?
- Why we need Live Andes?
- Challenges in Latin America
- Current solutions
- Our solution
- Demo



# Fauna Australis Research Lab

Our aim is to study wildlife species to suggest conservation actions

We use all sort of techniques in the field and monitoring wildlife need new technologies and ICT



# IUCN – Red List of Threatened Species

International Union for Conservation of Nature and Natural Resources

- Species classification for evaluation of extinction risk
- Monitoring the state of change of biodiversity
- Provide a global context for the establishment of conservation priorities at the local level

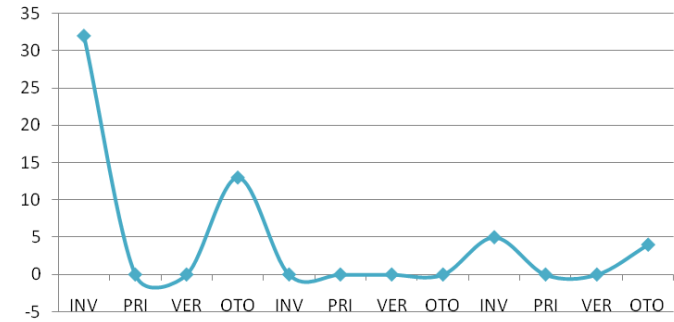


# Why data sharing for endangered species is needed?

## Extinction Risk

- There are more than 18,000 species threatened in the world
- Many remain unclassified

(IUCN Red List)



*Charadrius modestus*

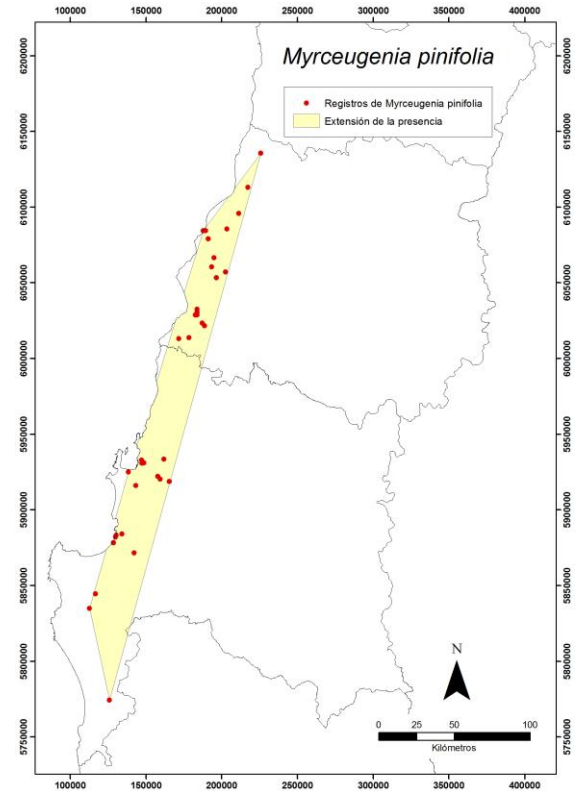


# IUCN – Red List of Threatened Species

Species monitoring requires updated information about species distribution

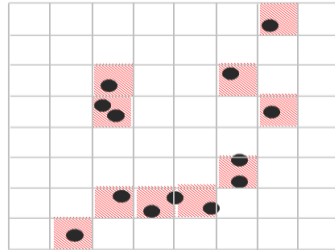
Species presence records and mapping are increasingly important for IUCN classification

(IUCN workshop in Santo Domingo, Dominican Republic, January 2011)

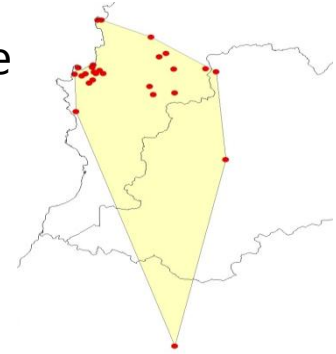


# IUCN – Red List of Threatened Species: criteria

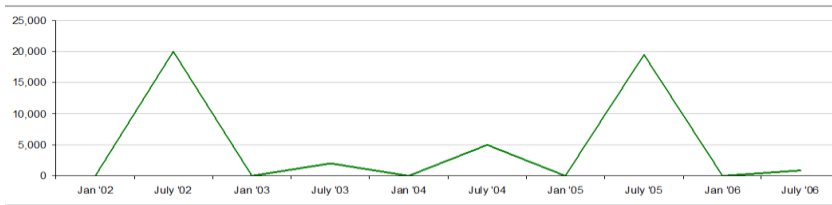
Occupancy area



Extend of occurrence



Location



Extreme fluctuations

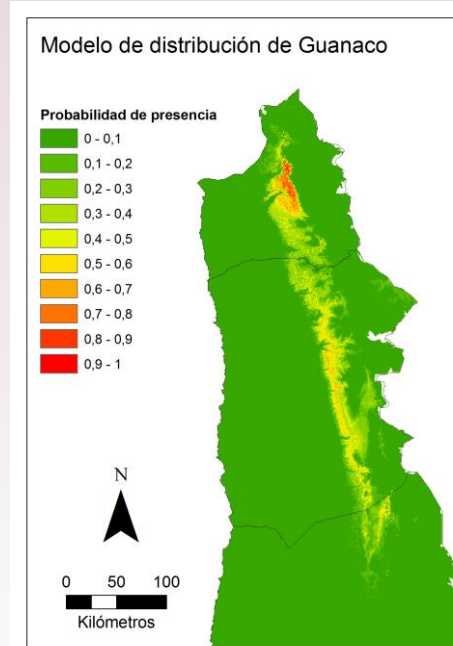
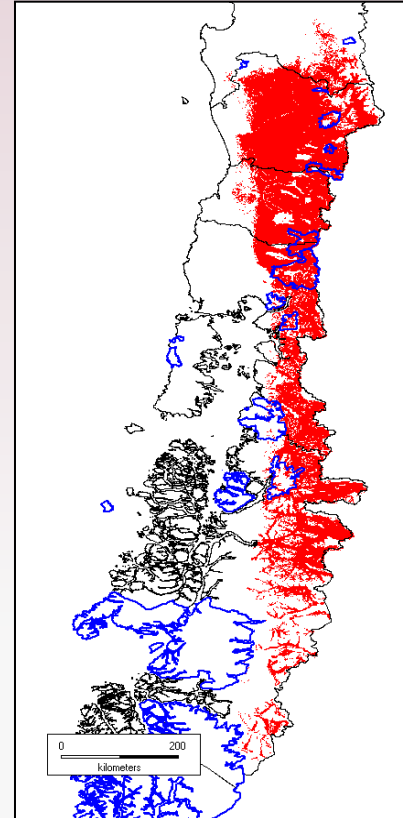


# Species Distribution Models

Modeling from species presence records



Key data for mapping  
distribution of  
endangered species: **Sightings**





# The problem: Wildlife Data Challenges in Latin America

We are facing an era of data-intensive science (Jim Gray's 4<sup>th</sup> paradigm of scientific exploration), but...

- Wildlife species are not easy to detect (data generation challenge)
- Poor technological training (knowledge challenge)
- Institutions are not coordinated (data sharing challenge)

# Data Generation Challenge

- We still know little about many endangered species
- Many animals are not easy to detect (cryptic behavior, low population density, inaccessible habitats)
- Extensive surveys and adequate equipment are expensive



**Citizen science may play a role:**

**Outdoors visitors to natural areas**

# Knowledge Challenge

- Government officers lack of technology and skills to upload data
- There are training and language barriers to use available computational tools (e.g. GIS, computational models)





# Data Sharing Challenge

- Government agencies have little experience sharing wildlife data and sometimes run parallel database systems for the same topic
- Sharing protocols are absent
- Cloud computing is almost none
- Many useful studies end up stored in papers or emails without being utilized
- Citizen science records of wildlife are not considered.

# Wildlife Digital Databases – Geo-referenced Data

Digital collections from museums, universities and other institutions



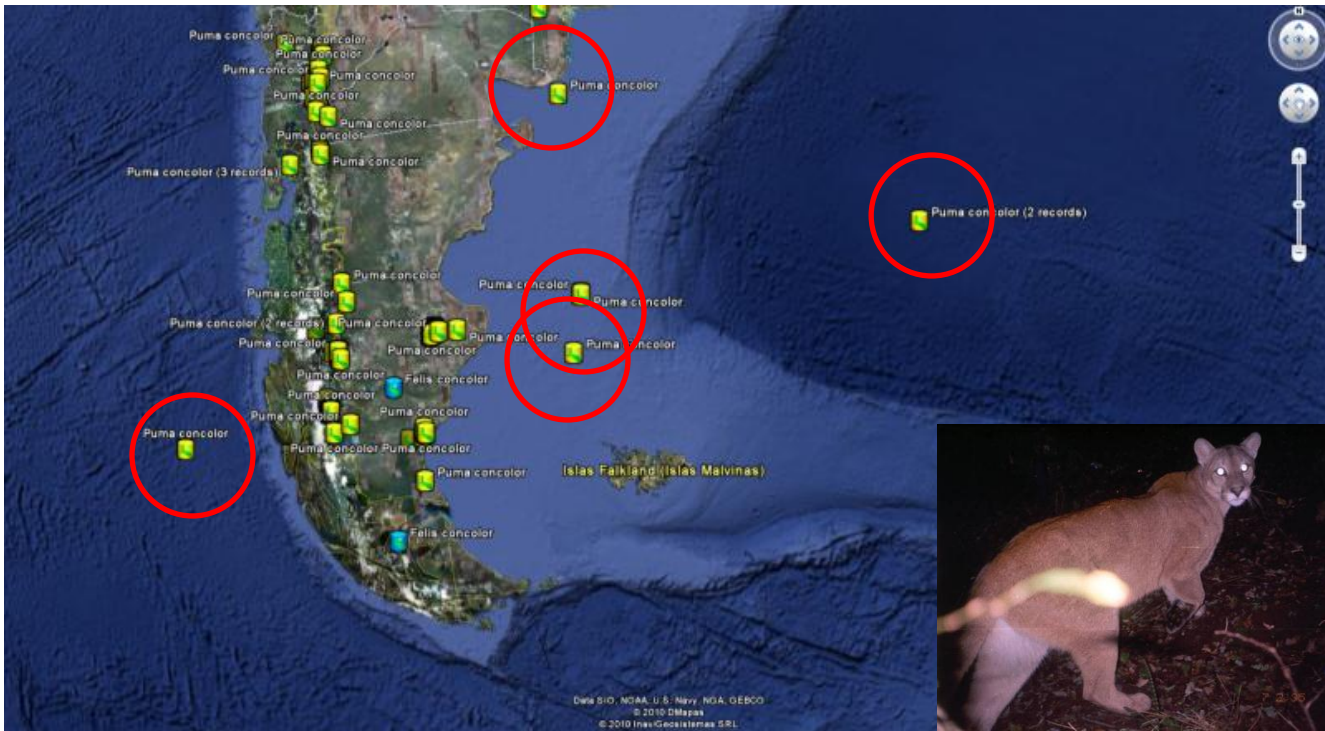
# Wildlife Digital Databases – Georeferenced Data

Bias in wildlife datasets for some species and countries

Common name	Scientific name	GBIF records	GBIF georeferenced records*	Arctos records	Arctos georeferenced records*	MaNIS, HerpNet records*
Ranita de Darwin	<i>Rhinoderma darwinii</i>	903	<b>13</b>	10	<b>7</b>	<b>13 (5)</b>
Gato Güiña	<i>Leopardus guigna</i>	31	<b>16</b>	0	<b>0</b>	<b>19 (13)</b>
Gato Colo Colo	<i>Leopardus colocolo</i>	2	<b>0</b>	0	<b>0</b>	<b>5</b>
Pudu	<i>Pudu pudu</i>	47	<b>27</b>	6	<b>3</b>	<b>27</b>
Comadreja trompuda	<i>Rhyncholestes raphanurus</i>	36	<b>35</b>	1	<b>1</b>	<b>35</b>

\* Many records are from the same localities. Records in parenthesis represent different localities.

# Global database programs are not really useful at regional scale





# Citizen-Science Portals

eBird

[www.ebird.org](http://www.ebird.org)

Portal for reporting birds



**Observado.org**

[www.observado.org](http://www.observado.org)

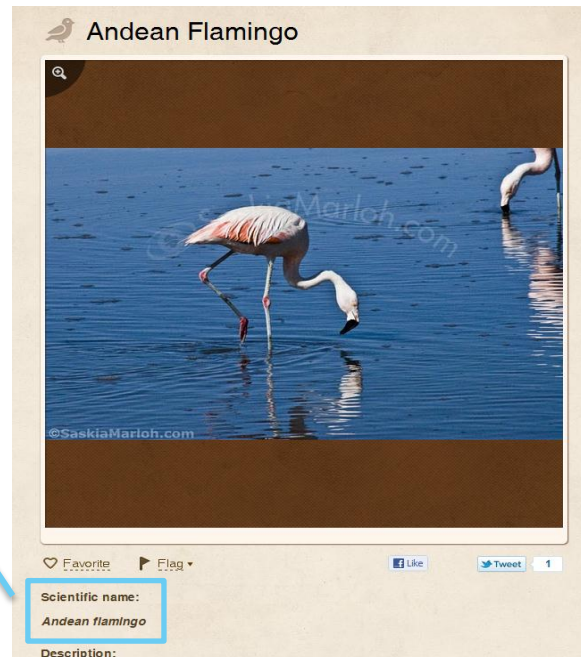
Dutch portal, mainly European users

# Citizen-oriented Portals for Reporting Biodiversity Sightings



[www.projectnoah.org](http://www.projectnoah.org)

Scientific name:  
*Andean flamingo*



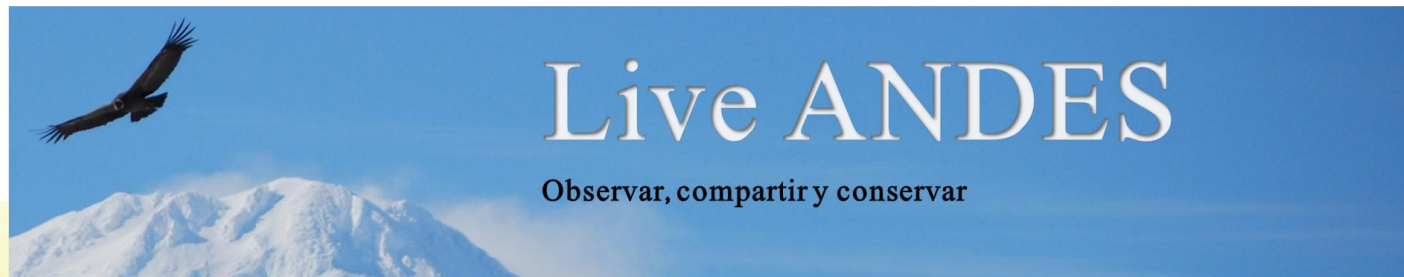
- Portals for uploading photos and locations, oriented at the general public
- Good for improving general knowledge about biodiversity more than produce scientific data

# Live ANDES: Advanced Network for Distributions of Endangered Species

Web Portal for uploading, visualize, and download wildlife species records & analyze them for conservation actions

Aimed at improving wildlife knowledge and conservation

Promoting data sharing among citizens, scientists and government agencies & contribute to meet IUCN global classification species criteria



# Live ANDES: Advanced Network for Distributions of Endangered Species

Observing endangered species is not always possible: One single sighting may provide key information

## Citizen science

Citizens learn about wildlife and gather data for research and management



Scientists access to more data for analyses and can share results with policy makers

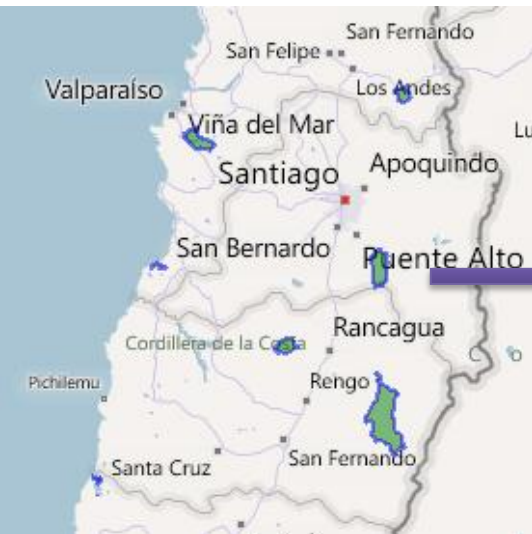


Officials and policy makers can manage their data, share it among them and have feedbacks with the scientific community & citizens



# Wildlife Data Gathering Workshop for Park Rangers

Topics covered: GPS, data accuracy, data management and storage and Web tools



Río de los Cipreses National Reserve  
Andean Mountains in Central Chile

# Live ANDES – Web Portal

LiveANDES  
Observar, compartir y conservar

LiveANDES  
El objetivo de Live ANDES es aportar al conocimiento y conservación de las especies, promoviendo la observación e intercambio de registros de presencia.

Inicio | Explorar Avistamientos | Ingresar Avistamientos | Portal Denuncias | Material Complementario | Enlaces | Acerca de

## Bienvenidos

Live ANDES es un portal que permite compartir y visualizar registros espaciales de vida silvestre, con el objetivo de aportar al conocimiento y conservación de la biodiversidad.

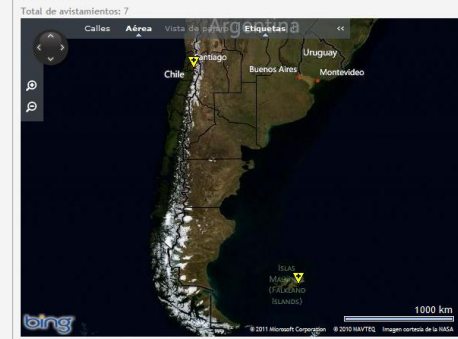
La versión actual del portal permite ingresar registros de aves, anfibios, reptiles y mamíferos terrestres de Chile.

En estos momentos Live ANDES se encuentra en un periodo de evaluación, por lo que podría presentar problemas de funcionamiento.

### Especie del día:

Ranita de Darwin - *Rhinoderma darwini*

Avistamientos:



LiveANDES  
Watch, share and preserve

Ranita de Darwin  
*Rhinoderma darwini* es una especie amenazada de extinción (catalogada como Vulnerable por la IUCN) principalmente por la destrucción y modificación de su hábitat a causa del reemplazo por plantaciones forestales y actividades tanto agrícolas como ganaderas.

Home | Explore sightings | Enter sightings | Portal reports | Supplementary material | Links | About

## Welcome

live ANDES is a portal that allows you to share and view space records of wildlife, with the aim of contributing to the understanding and conservation of biodiversity.

The current version of the portal allows to enter records of birds, amphibians, reptiles, and terrestrial mammals in Chile.

Currently Live ANDES is located in a period of assessment, so it could present problems.

### Species of the day:

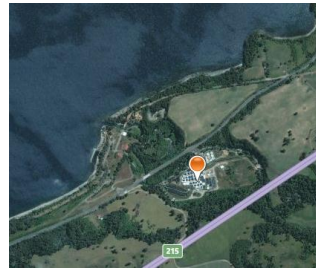
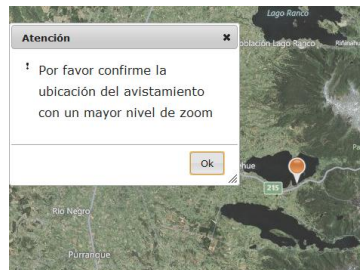
Darwin's little frog - *Rhinoderma darwini*

Sightings:



# Live ANDES - Data quality control

- Species scientific names have to be selected from a valid list
- Species photos for guiding proper identification are available
- Users can upload their own photo to support their records
- By selecting the location in the map, the user is forced to a minimum zoom level for adequate precision (the mountain lion in the sea problem!)
- Species distribution polygon can be uploaded
- Data outside species distribution polygon are withheld for approval





# Live ANDES – Windows Phone



- Online and Offline mode
- Species photos and location can be uploaded using phone camera and GPS
- Nearby sightings can be explore using GPS location

# Live ANDES – Future Development



- Partnership with the Ministry of Environment
- National portals in other Latin America countries and a network with conservation programs
- Advanced analysis tools; distribution models, extent of occurrence calculation, spatial analyses
- Institutional portals; group statistics, data sharing controls, access to additional data



# Live ANDES – Demo



[www.liveandes.org](http://www.liveandes.org)



Latin American and Caribbean Collaborative ICT Research





# Live ANDES Team

## Principal investigator

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- Alfredo Bolt

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- Guillermo Robles
- Arturo Tagle
- Raúl Undurraga



Latin American and Caribbean Collaborative ICT Research



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