



Microsoft® Research

FacultySummit 2011

Cartagena, Colombia | May 18-20 | In partnership with COLCIENCIAS

Live ANDES (Advanced Network for Distributions of Endangered Species):
A New Tool for Wildlife Conservation

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Fauna Australis Research Lab



Biodiversity (Flora and Fauna) is a key asset in the Andean region of South America.

Wildlife Conservation aims to protect biodiversity for future generations.

Fauna Australis Research Lab (www.fauna-australis.puc.cl)



FAUNA AUSTRALIS
Wildlife Conservation

HOME NOTICIAS INVESTIGACION ESPECIES PUBLICACIONES AVES BOSQUE TEMPLADO DOCENCIA ESPECIES INVASORAS

QUIENES SOMOS

- Beta Live-Andes
- HISTORIA
- LABORATORIO FAUNA AUSTRALIS
- NUESTRA MISIÓN

ENTRADAS RECIENTES

- Investigación Fauna Australis en la Araucanía
- FAO publica trabajo: Grupo de Especialistas en Camélidos Sudamericanos
- UICN Newsletter 2011 (Abril)
- Libro sobre Biodiversidad y Cambio Climático
- Investigación y educación de los perros en ambientes naturales



Investigación Fauna Australis en la Araucanía

mayo 4th, 2011 Fauna-Australis

La estación experimental Fauna Australis de la Araucanía se ubica en la zona de Pichares, junto al Kodkod lugar de encuentros.

Director: Sr. Jerry Laker Agr., MSc.

Equipo de investigadores: Cristián Bonacic, Jerry Laker, Nicolás Gálvez (Ing Agr, MSc); Felipe Hernández (MV, MSc), Alberto Dittborn (Profesor de Diseño)

Postdoctorado: Elke Schuttler (Marie Curie)

Candidato a Doctor: Tomás Altamirano



Search 



www.fauna-australis.puc.cl

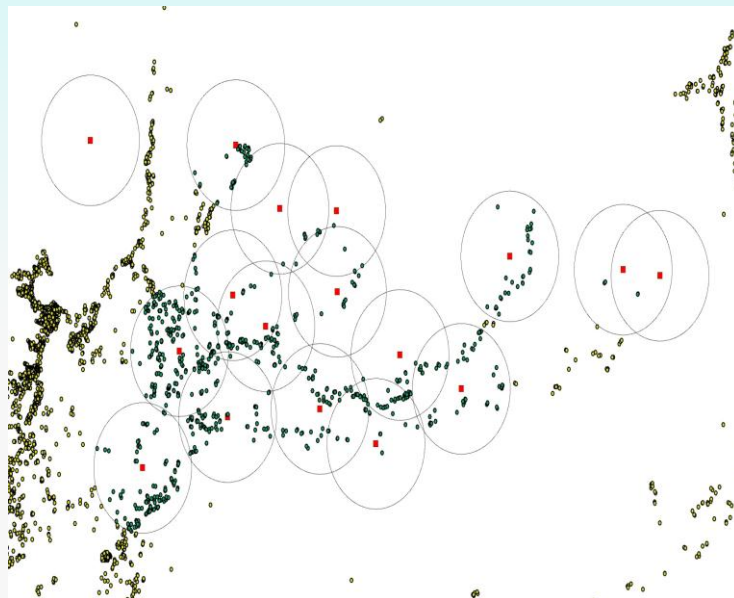
 **SEE ENGLISH SITE**

ARCHIVOS

- mayo 2011
- abril 2011
- marzo 2011
- enero 2011
- diciembre 2010
- noviembre 2010
- octubre 2010
- septiembre 2010
- agosto 2010
- julio 2010
- junio 2010

Fauna Australis Research Lab

Studying wildlife with advanced field techniques
Spatial analysis and modeling
Considering natural and social background at a
landscape scale

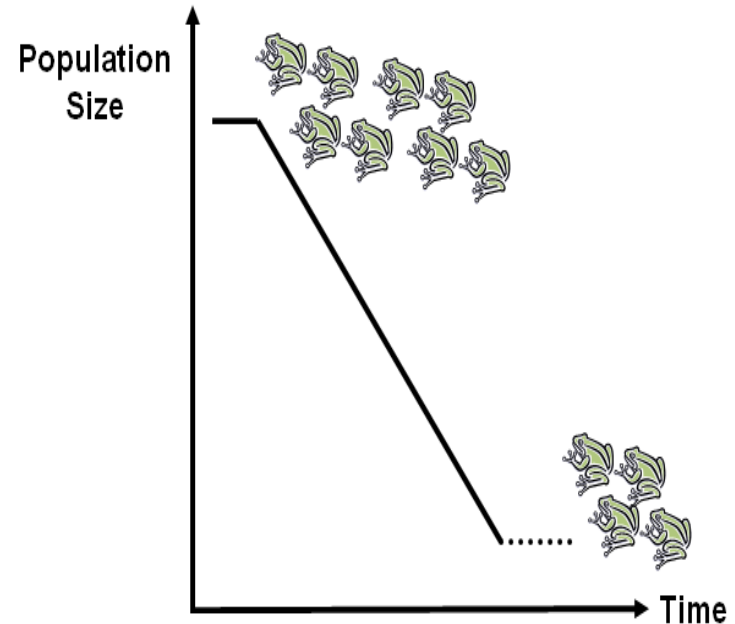


Why data sharing for endangered species is needed?

Extinction Risk

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

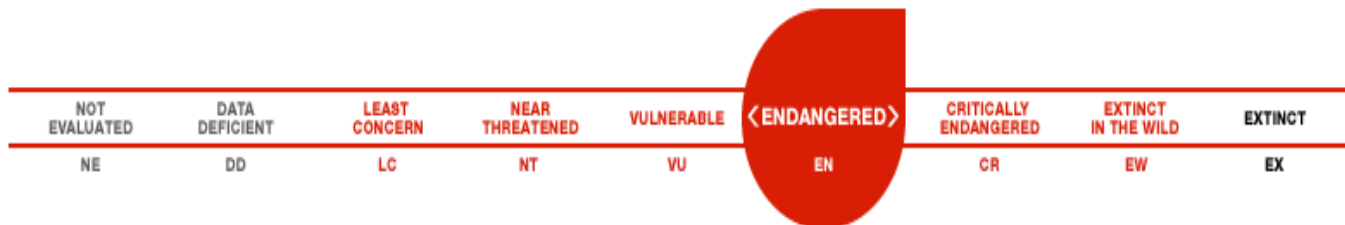
(IUCN Red List)



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

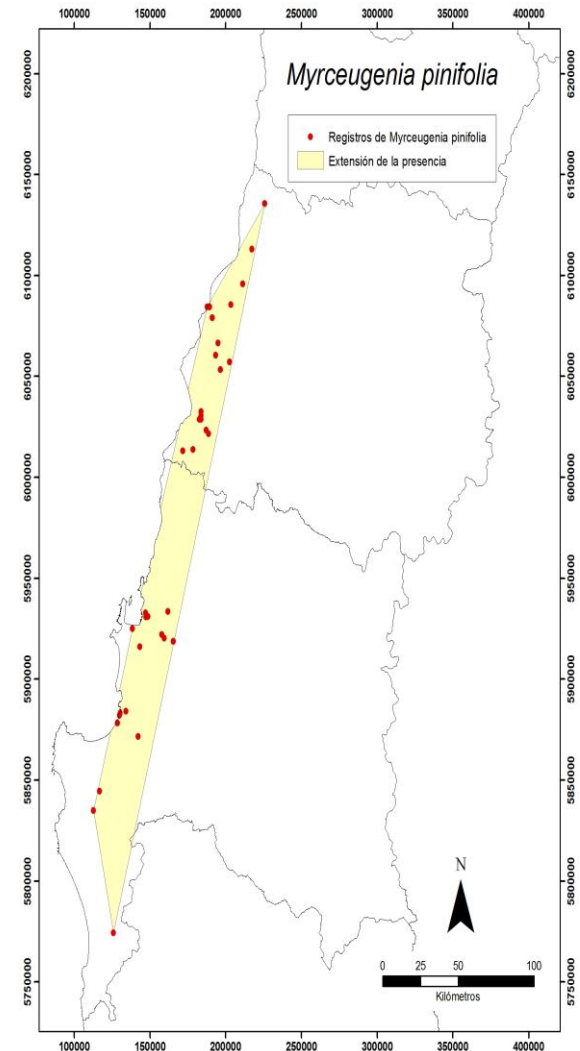


IUCN – Red List of Threatened Species

Species monitoring requires updated information about species distribution

Species presence records and mapping are increasingly important for IUCN classification

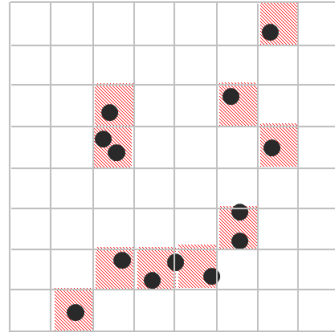
(IUCN workshop in Santo Domingo, Dominican Republic, January 2011)



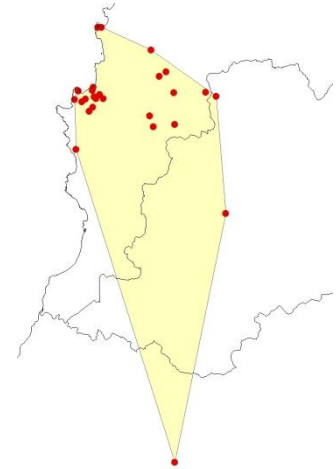
IUCN – Red List of Threatened Species

IUCN – Red List of Threatened Species: criteria

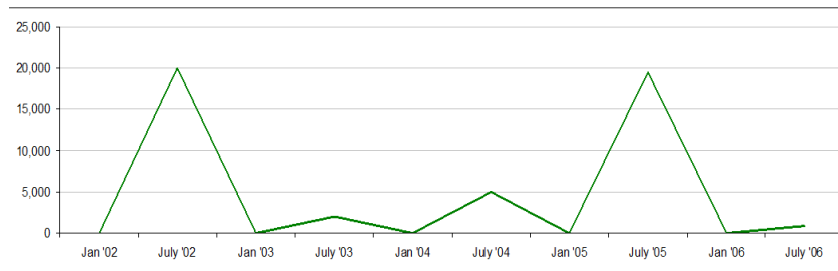
Occupancy area



Extend of ocurrence



Location

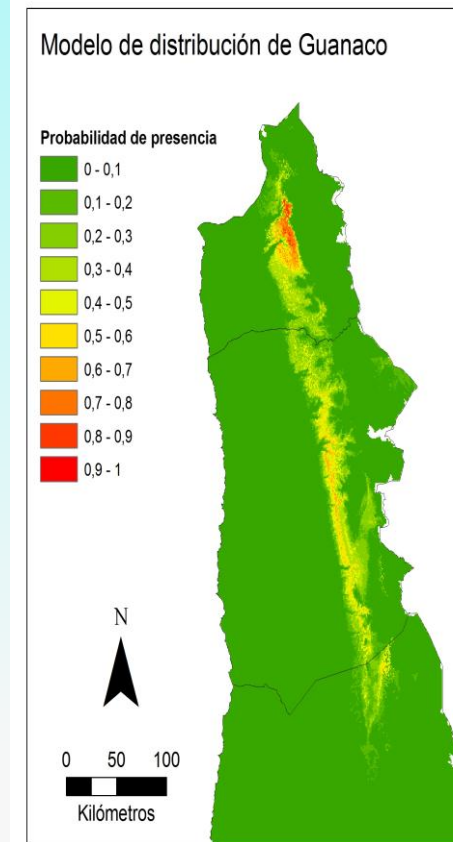
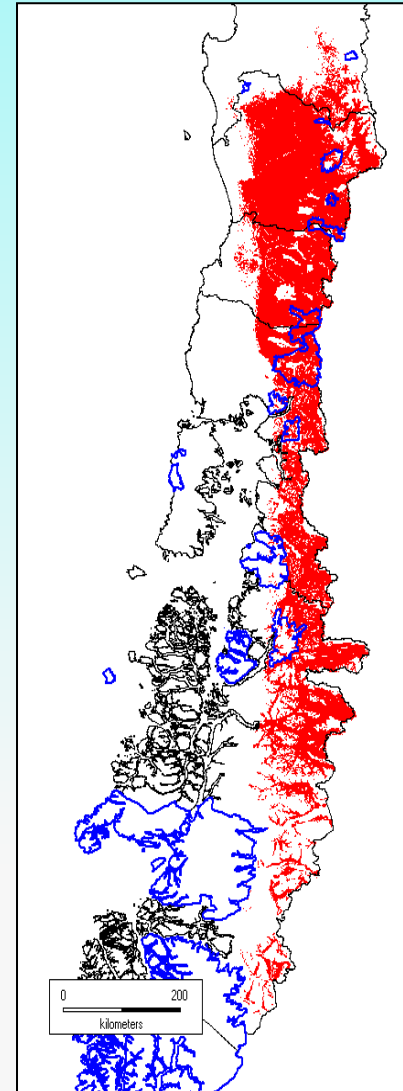


Extreme fluctuations

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 4th 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

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 is not included into the valuable data for wildlife recording.

Wildlife Digital Databases – Georeferenced Data

Digital collections from museums, universities and other institutions



Citizen-science portal; online check-list for bird-watchers, data for scientists

The logo for eBird. It features the word "eBird" in a black, serif font, with the "e" in a green, sans-serif font.

<http://ebird.org>

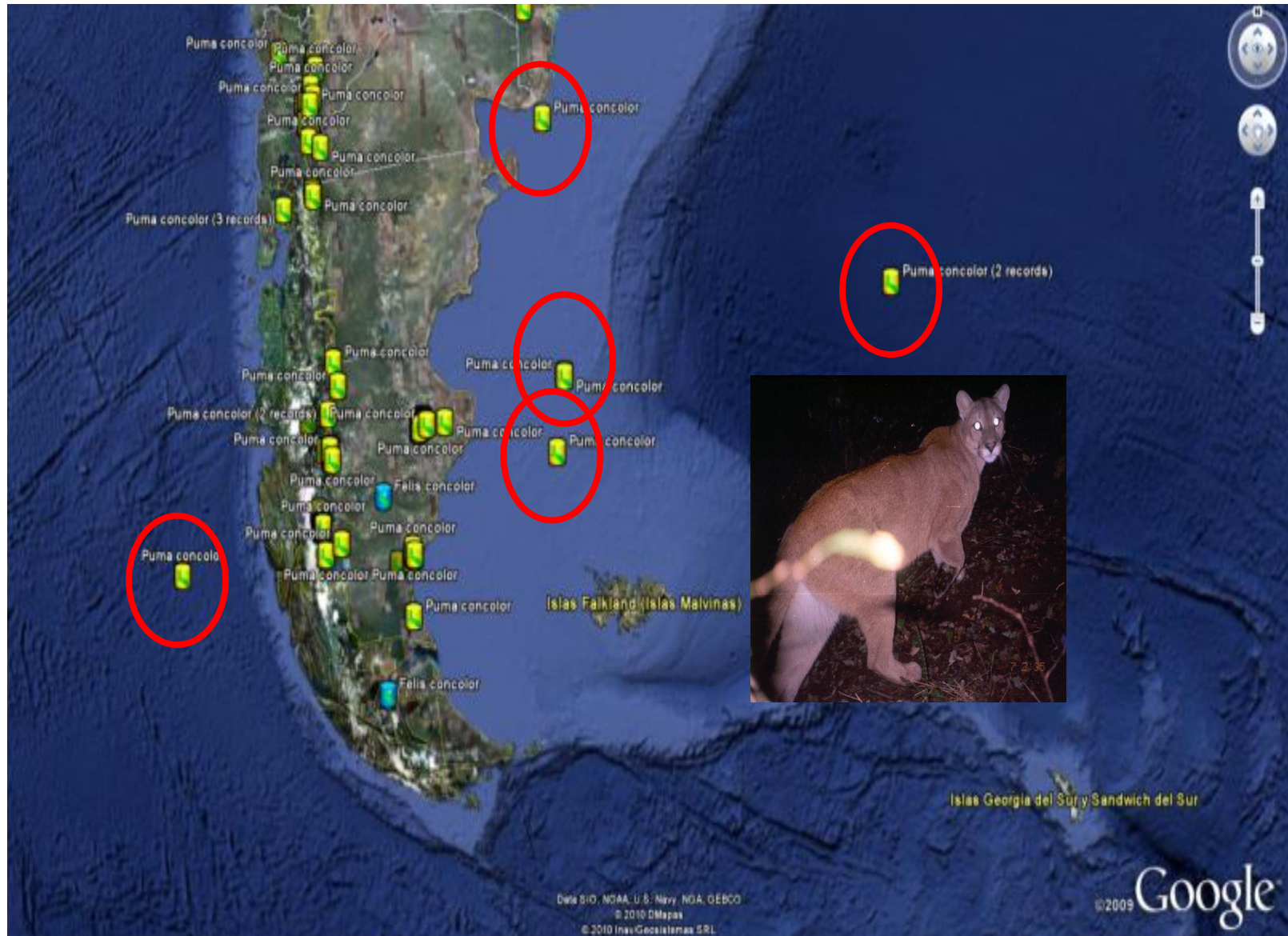
Wildlife Digital Databases – Georeferenced Data

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	13	10	7	13 (5)
Gato Güiña	<i>Leopardus guigna</i>	31	16	0	0	19 (13)
Gato Colo Colo	<i>Leopardus colocolo</i>	2	0	0	0	5
Pudu	<i>Pudu pudu</i>	47	27	6	3	27
Comadrejit a trompudas	<i>Rhyncholestes raphanurus</i>	36	35	1	1	35

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

Global database programs are not really useful at regional scale



Live ANDES: Advanced Network for Distributions of Endangered Species

Web Portal for uploading, visualize, and download wildlife species presence records

Aimed at improving wildlife knowledge and conservation

Promoting data sharing among citizens, scientists and government agencies



Live ANDES: Advanced Network for Distributions of Endangered Species

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

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



Citizen science



Citizens learn about wildlife and gather data for research and management

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

Live ANDES – Web Portal



Bienvenidos a LiveANDES

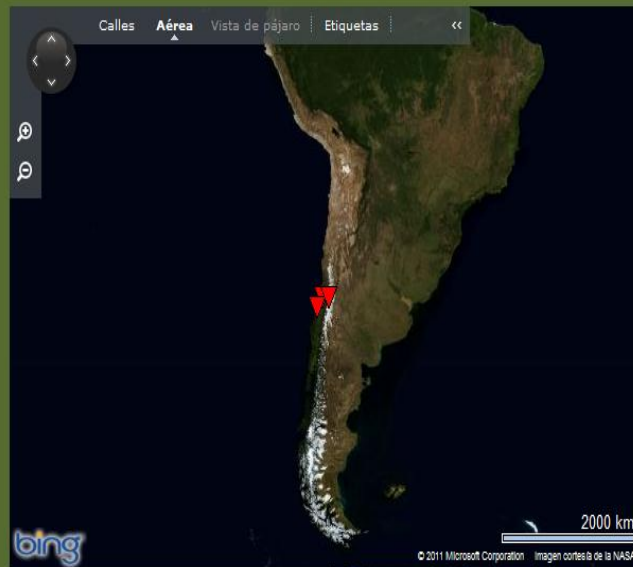
Live ANDES es un portal que permite compartir y visualizar registros espaciales de vida silvestre.

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

En el contexto de ciencia-ciudadana, cualquier persona puede ingresar un avistamiento, que será de gran utilidad para científicos y organismos públicos y privados preocupados de la conservación y manejo de vida silvestre. Por otro lado, los usuarios pueden aprender más sobre la distribución de especies, organizar sus avistamientos y aportar a la conservación.

Live ANDES es un proyecto del **Laboratorio Fauna Australis**, de la Pontificia Universidad Católica de Chile, con el apoyo de Microsoft Research a través de Laccir (Latin American and Caribbean Collaborative ICT Research Federation).

Especie de muestra: Perdiz chilena - *Nothoprocta perdicaria*



Live ANDES – Main Features



Data Exploration

Geo-referenced records
of observed species

Live ANDES – Data Exploration

Exploration by date and species

Valid scientific names of Chilean terrestrial vertebrates

Visualization in Bing Maps

Valid name of all species

Explorar Avistamientos

Filtrar Avistamientos

Fecha entre y

Especies:

Eliminar

Agregar

Lycalopex culpaeus

Lycalopex griseus

FILTRAR

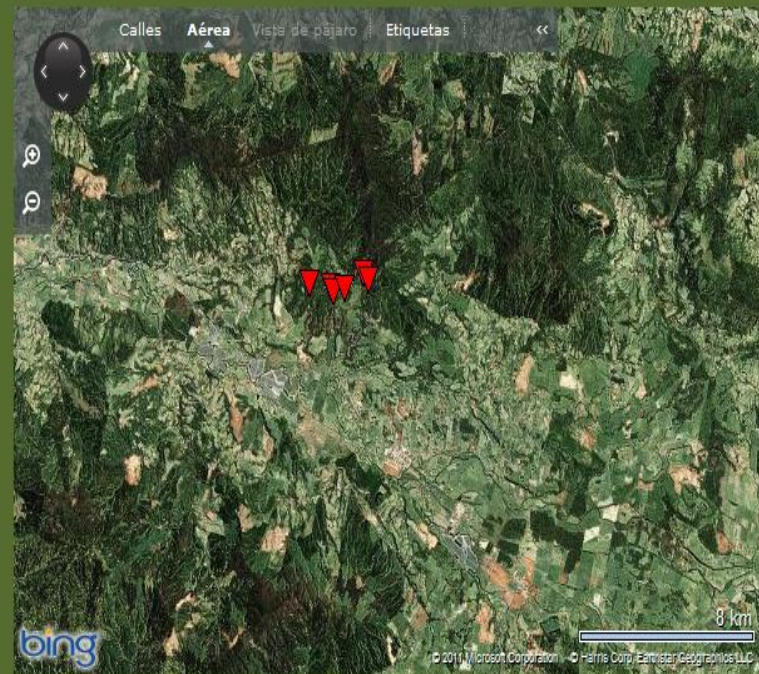


Table visualization (more fields,
more data)

Download formats: *.xlsx, *.csv,
*.kmz, *.shp

Live ANDES – Data Upload



Direct observation, audio,
camera trapping
Indirect signs; footprints,
scat
Reported in a publication
or interview

Data upload

Individual records
List of records in
table format

Live ANDES – Data Upload

Geographic coordinates
or
Map search

Improvement of Map Labels

Location Finder

Ingreso de Avistamiento

Paso 1 - Ubicación

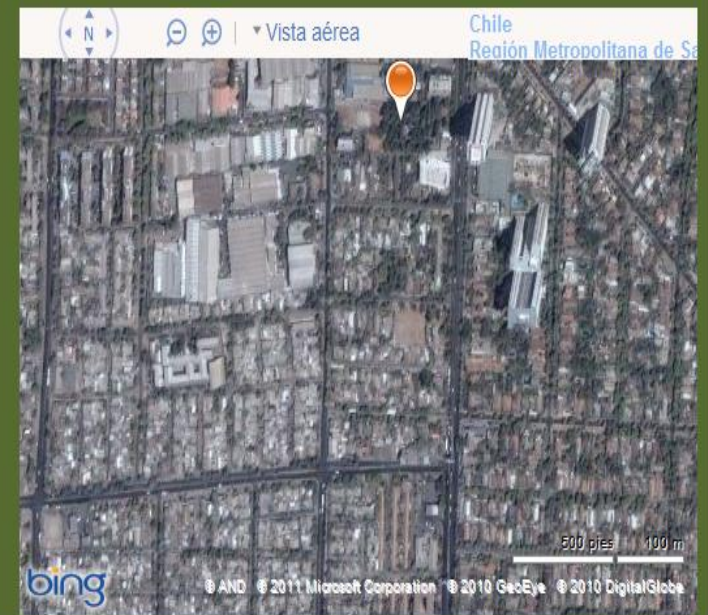
Latitud

-33° 29' 11.874038565966

Longitud

-70° 36' 1.5105584577406

[Cambiar a decimal](#)



Live ANDES – Data Upload

Species selection from reference list

Option of uploading record picture

Additional information, required and optional

Reporting more than one species for the same location

Ingreso de Avistamiento

Paso 2 - Especie

Especie:

Diuca diuca

Foto Imagen:

Seleccionar archivo new doc_1.jpg

Volver

Continuar

Paso 3 - Información Adicional

Fecha

2011-05-06

Hora del Día

10:04

Tipo de Avistamiento

Directo - Auditivo

Edad

Indeterminado

Cantidad de Ejemplares

2

Sexo

Indeterminado

Comentario

Estaba arriba de un árbol

Volver

Continuar

Live ANDES – Data Upload

Ingresar una lista de avistamientos

Subir una lista de Avistamientos

Formato de Archivo: Usar un archivo csv descargable de aca: [Plantilla](#)

Nombre del archivo: No se ha seleccionado ningun archivo

☐ Deseo que mis Avistamientos sean privados

ENVIAR LISTA

Batch upload in CSV table

Live ANDES – The future

Mounting extant biodiversity database

Coordinating with Government agencies, scientists, eco-tourist guides, park-rangers

Training about Live Andes & assembling a team of experts to validate information

Programming simple tools for data analyses in order to comply with IUCN Red List criteria for all species

Optimise Live Andes for connectivity with other tools

Extending Live Andes beyond Chile to the conservation community in Perú, Bolivia, Ecuador, Colombia



Live ANDES Team

Principal investigator

Dr. Cristian Bonacic

Project Coordinator

- Robert Petitpas

Coordination assistant

- Catalina Zumaeta

GIS and Remote Sensing

- Professor Marcelo Miranda

Software Development

Dr. Andrés Neyem

Software Development Coach

- Alfredo Bolt

Developers (Lycalopex team)

- Christian Anguita
- Juan Pablo Cornejo
- Virginia Opazo
- Guillermo Portilla
- Guillermo Robles
- Arturo Tagle
- Raúl Undurraga



Bonacic, Neyem, Petitpas (PUC)



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Live ANDES

Observar, compartir y conservar

demo



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