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Biodiversidata: A Collaborative Initiative Towards Open Data Availability in Uruguay

Florencia Grattarola | University of Lincoln

flograttarola.com | @flograttarola

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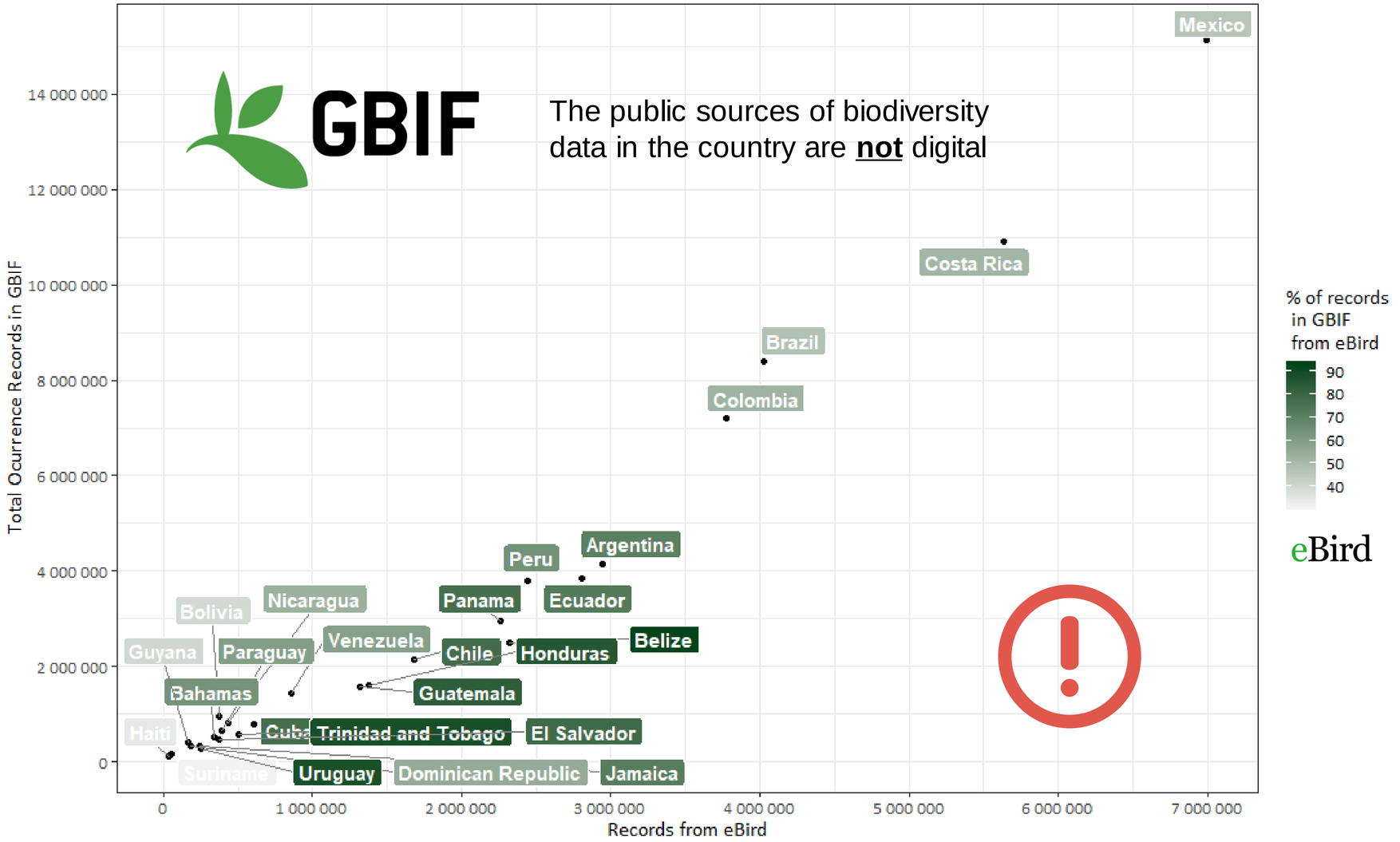
Uruguay is deeply ignored in terms of biodiversity

What is the scenario?

What is the scenario?

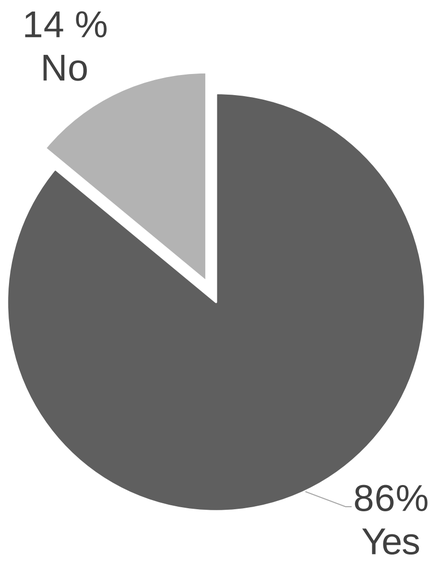
Uruguay is one of the countries of Latin America with the lowest levels of access to biodiversity data



GitHub https://github.com/bienflorencia/rBiodiversidata/tree/master/GBIF%20Latin%20America

What is the scenario?

People are willing to share their data



Grattarola & Pincheira-Donoso (2019)
(https://doi.org/10.26462/28.1.1)

OBSTACLES

1. Time and effort to make data available
2. Absence of data management plans
3. Lack of recognition for their effort

INCENTIVES/MOTIVATIONS

1. Create networks with other scientists
2. Get recognition if their data are used by others

What did we do?

What did we do?

PLAN

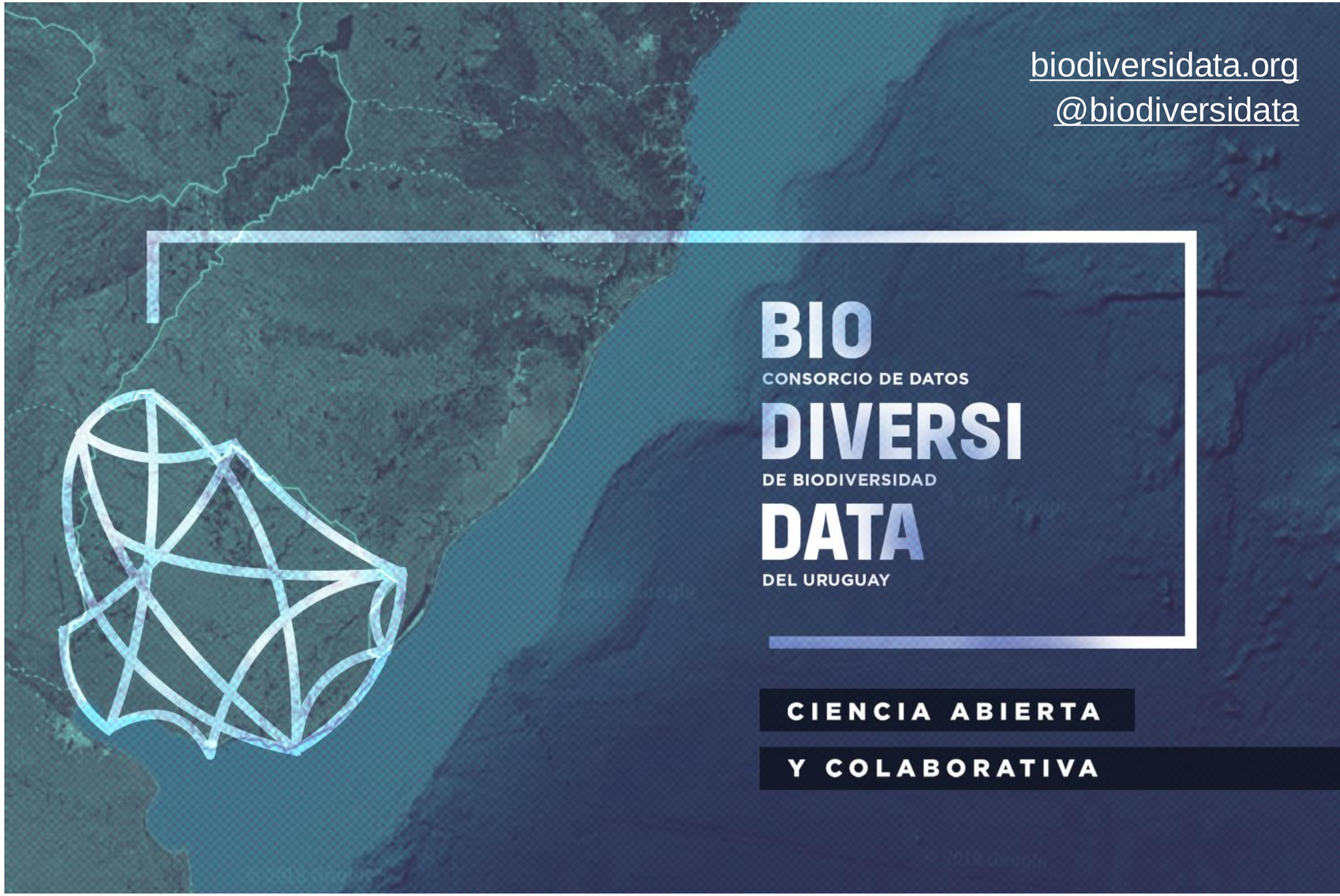
- Create a network of experts sharing data and knowledge.
- Simplify data processing workflow.
- Get credit for data and research.

What did we do?

biodiversidata.org
@biodiversidata

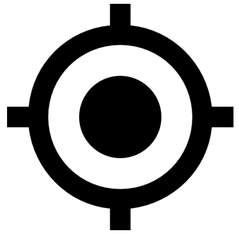
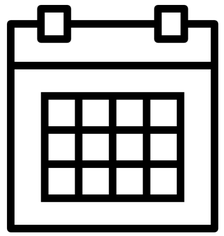
GOALS

- Collect the maximum possible amount of primary data from vertebrate, invertebrate and plant species.
- Use it to collaborative generate global impact scientific research.
- Make the data available free and open.



What did we do?

Data Collection

taxa | geographic location | date

(sources)

BIO CONSORCIO DE DATOS DIVERSI DE BIODIVERSIDAD DATA DEL URUGUAY +  + GBIF

	A	B	C	D	E	F	G	H	I	J
	ID archivo	ID camara	Latitud	Loingitud	Especie	n individuo	mes	dia	año	time
	EK000003	Edita	-32.1327	-53.7549	Homo sapiens	1	12	15	2014	17:46:23
	EK000004	Edita	-32.1327	-53.7549	Mazama gouazoubira	1	12	15	2014	23:44:02
	EK000009	Edita	-32.1327	-53.7549	Mazama gouazoubira	1	12	15	2014	23:44:15
	EK000011	Edita	-32.1327	-53.7549	Mazama gouazoubira	1	12	15	2014	23:44:32
	EK000015	Edita	-32.1327	-53.7549	Mazama gouazoubira	1	12	15	2014	23:44:47
	EK000016	Edita	-32.1327	-53.7549	Mazama gouazoubira	1	12	15	2014	23:44:58
	EK000019	Edita	-32.1327	-53.7549	Cingulata	1	12	16	2014	01:08:11
	EK000023	Edita	-32.1327	-53.7549	Cuniculus paca	1	12	17	2014	00:42:40
	EK000026	Edita	-32.1327	-53.7549	Mazama gouazoubira	1	12	17	2014	06:27:53
	EK000028	Edita	-32.1327	-53.7549	Mazama gouazoubira	1	12	17	2014	06:28:03
	EK000036	Edita	-32.1327	-53.7549	Mazama gouazoubira	1	12	17	2014	06:28:55
	EK000047	Edita	-32.1327	-53.7549	Mazama gouazoubira	1	12	19	2014	11:40:15
	EK000051	Edita	-32.1327	-53.7549	Mazama gouazoubira	1	12	19	2014	11:40:34
	EK000052	Edita	-32.1327	-53.7549	Mazama gouazoubira	1	12	19	2014	11:40:51
	EK000055	Edita	-32.1327	-53.7549	Mazama gouazoubira	1	12	20	2014	02:00:39
	EK000059	Edita	-32.1327	-53.7549	Mazama gouazoubira	1	12	20	2014	02:00:53

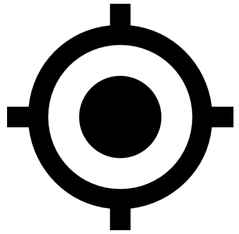
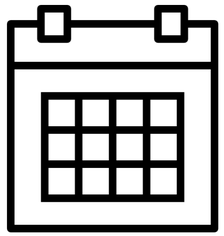
Sheet1

Especie	X	Y	Localidad
Mazama gouazoubira	-32.1327	-53.7549	Casa de Edita
Cingulata	-32.1327	-53.7549	Casa de Edita
Cuniculus paca	-32.1327	-53.7549	Casa de Edita
Hydrochoerus hydrochaeris	-32.1327	-53.7549	Casa de Edita
Tamandua tetradactyla	-32.1327	-53.7549	Casa de Edita
Dasypus novemcinctus	-32.1327	-53.7549	Casa de Edita
Procyon cancrivorus	-32.1327	-53.7549	Casa de Edita
Lycalopex gymnocercus	-32.1327	-53.7549	Casa de Edita
Cerdocyon thous	-32.1327	-53.7549	Casa de Edita
Leopardus wiedii	-32.1327	-53.7549	Casa de Edita
Cabassous tatouay	-32.1327	-53.7549	Casa de Edita
Conepatus chinga	-32.1327	-53.7549	Casa de Edita

Species	Department	Locality	Latitude	Longitude
Argenteohyla siemersi	ROCHA	Bañados en el Parque Nacional de Santa Teres	33° 58' S	53° 28' W
Argenteohyla siemersi	SAN JOSE	Arazati	34° 34' S	57° 00' W
Bufo arenarum	CANELONES	Aguas Corrientes	34° 31' S	56° 24' W
Bufo arenarum	CANELONES	Balneario Atlantida	34° 44' S	55° 45' W
Bufo arenarum	CANELONES	Balneario Parque del Plata	34° 44' S	55° 42' W
Bufo arenarum	CANELONES	Medanos de Solymar	34° 48' S	55° 54' W
Bufo arenarum	CANELONES	Balneario Lagomar	34° 50' S	55° 57' W
Bufo arenarum	CANELONES	Balneario San Jose de Carrasco	34° 50' S	55° 58' W
Bufo arenarum	CANELONES	Aeropuerto de Carrasco	34° 49' S	56° 02' W

What did we do?

Data Collection

taxa | geographic location | date

(sources)

BIO CONSORCIO DE DATOS DIVERSI DE BIODIVERSIDAD DATA DEL URUGUAY +  + GBIF

Melanophryniscus atroluteus. ARTIGAS: Yuquery orilla próxima al Arroyo Molles, 30º 13' S, 56º 42' W; Región del Yacaré, 30º 17' S, 57º 11' W; Arroyo Yacuy, 5 Km. arriba de Ruta 3, entre Artigas y Salto, 30º 46' S, 57º 42' W; Estancia El Ombú, Rio Cuareim, 30º 18' S, 57º 23' W; Bella Unión, 30º 15' S, 57º 35' W, Arroyo Itacumbú, próximo a Tomás Gomensoro, 30º 25' S, 57º 30' W; Arroyo Tres Cruces, 30º 27' S, 56º 48' W; Arrocera Conti, 30º 32' S, 57º 53' W; Campos de Larza-Riusa, 30º 35' S, 57º 52' W; Barra del Arroyo Yacuy, 30º 47' S, 57º 44' W; Arroyo Mandiyú, 30º 29' S, 57º 50' W; Estancia de Washington Carvalho, a 11 Km. de Colonia Palma, 30º 36' S, 57º 46' W. CERRO LARGO: 6 Km. al Sureste de Melo, 32º 23' S, 54º 11' W. LAVALLEJA: Estancia Mautone, 8 Km. al NW de Averías, Ruta 14, 33º 34' S, 54º 19' W. PAYSANDÚ: Santa Rita, 32º 07' S, 58º 09' W. ROCHA: Ruta 14 Km. 463, 33º 54' S, 53º 35' W. SALTO: Termas del Arapey, 30º 56' S, 57º 30' W; El Espinillar, ANCAP, 30º 56' S, 57º 52' W. TACUAREMBO: Puntas del Arroyo Cuaró, 31º 53' S, 55º 37' W. TREINTA Y TRES: Estancia El Rincón, Palo a Pique. Séptima Sección Olimar, 33º 27' S, 54º 32' W.

Melanophryniscus devincenzii. RIVERA: La Palma, Rubio Chico, próximo a subida de Pena, Cuchilla Negra, 31º 09' S, 55º 55' W; Puntas del Arroyo Laureles, 31º 16' S, 56º 09' W. TACUAREMBO: Gajo Norte del Arroyo Tres Cruces, Sierras del Infiernillo, 31º 23' S, 56º 10' W.

Melanophryniscus montevidensis. CANELONES: Parque Roosevelt, 34º 49' S, 56º 01' W; Atlántida, 34º 44' S, 55º 45' W; Frente a la Base Aérea Nº 1, 34º 50' S, 56º 02' W; Lagunas Arenosas frente al Aeropuerto, 34º 49' S, 56º 02' W; Bañados de Carrasco, 34º 50' S, 56º 02' W; Lomas de Solymar, 34º 48' S, 55º 54' W; Médanos de Solymar, 34º 48' S, 55º 54' W. MALDONADO: Zanja de los Alemanes, 34º 49' S, 54º 55' W; Solís Grande, 34º 47' S, 55º 23' W; Laguna del Sauce, 34º 50' S, 55º 08'W; Barra de Maldonado, 34º 55' S, 54º 45' W; Laguna del Diario, 34º 55' S, 55º 01' W; Charco en las proximidades del Arroyo Maldonado, 34º 54' S, 54º 44' W; Lomo de Punta Ballena, 34º 55' S, 55º 03' W; Charco en el ángulo de la costanera en San Rafael, 34º 56' S, 54º 55' W; Punta del Este, 34º 58' S, 54º 57' W. MONTEVIDEO: Carrasco, 34º 53' S, 56º 03' W; Pajas Blancas, 34º 52' S, 56º 22' W. ROCHA: Arroyo San Miguel, 33º 41' S, 53º 32' W; Parque Nacional San Miguel, 33º 41' S, 53º 35' W; Ruta 14 Km. 463, 33º 54' S, 53º 35' W; Medanos Costeros entre el Cerro de la Moza y el Cerro Verde, 33º 58' S, 53º 29' W; Parque Nacional de Santa Teresa, 33º 59' S, 53º 28' W; Punta del Diablo, 34º 03' S, 53º 33' W; Castillos, 34º 12' S, 53º 50' W; Aguas Dulces, 34º 17' S, 53º 46' W; Charco al lado del Arroyo Valizas, 34º 22' S, 53º 51' W; Vivero Día Forestal, Ruta 10, Cabo Polonio, 34º 22' S, 53º 53' W; 1 Km. al Este de la Pedrera, 34º 34' S, 54º 04' W; Playa Arachania, 3 Km. al Este de La Paloma, 34º 35' S, 54º 07' W; La Paloma, 34º 36' S, 54º 08' W; Punta Rubia, 34º 34' S, 54º 04' W; La Coronilla, 33º 51' S, 53º 30' W; La Pedrera, 34º 34' S, 54º 05' W. SAN JOSE: Barra de Santa Lucía, 34º 48' S, 56º 21' W.

FERRUGINOUS PYGMY OWL *Glaucidium brasilianum*

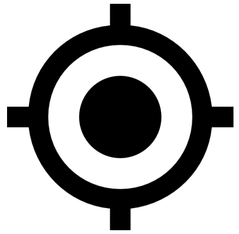
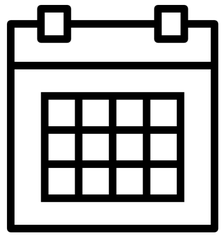
Two photographed at Arroyo de las Pavas, *c.*38 km west of Treinta y Tres City, dpto. Treinta y Tres, on 2 March 2007 (A. Rocchi & G. Mondón). One photographed and another heard at Quebrada de los Cuervos, dpto. Treinta y Tres, on 3 March 2009 (CC); the species was also observed there in 1999 (CC). Found near Paso Paiva, río Yaguarón, eastern dpto. Cerro Largo on 15 (one) and 16 (two) January 2011; one bird was sound-recorded (ABA, JLM; XC93401). Also photographed at three sites south of Paso Centurión on 6–7 March (DP, JLM, JSA), 9 March (ABA) and 1 November 2011 (JLM, JSA, D. Gil). Singles and pairs were seen repeatedly and photographed at Paso Averías, río Cebollatí, southern dpto. Treinta y Tres, on 18–24 April 2011 (AR & M. Abreu). There are very few previous reports for Uruguay. Wetmore (1926) collected a female near Lascano, dpto. Rocha in February 1921, while Tremoleras (1927) took two at Arroyo Grande, dpto. Flores in 1891 and reported another in dpto. Lavalleja taken prior to 1927, and one was collected at Paso de las Piedras, río Negro, dpto. Durazno, in April 1961 (Cuello & Gerzenstein 1962), but ours are the first records since then. Probably not as rare as previously considered (especially around Centurión) and the species appears to be widespread over the country. It is scarce in Entre Ríos, Argentina (de la Peña 1997) and rare in Rio Grande do Sul, Brazil (Belton 1984).

ESPECIES DE ANFIBIOS Y REPTILES REGISTRADAS EN PASO CENTURIÓN - RÍO YAGUARÓN

Especies	Nombre común	Sitio I
Clase AMPHIBIA		
Leptodactylidae		
Leptodactylus latinasus	rana piadora	X
Leptodactylus gracilis	rana saltadora	X
Pseudopaludicola falcipes	rana macaquito	X
Pseudidae		
Pseudis minutus	rana boyadora	X
Hylidae		
Hyla pulchella	rana trepadora	X
Hyla minuta	ranita rayada	X

What did we do?

Data Collection

taxa	geographic location	date

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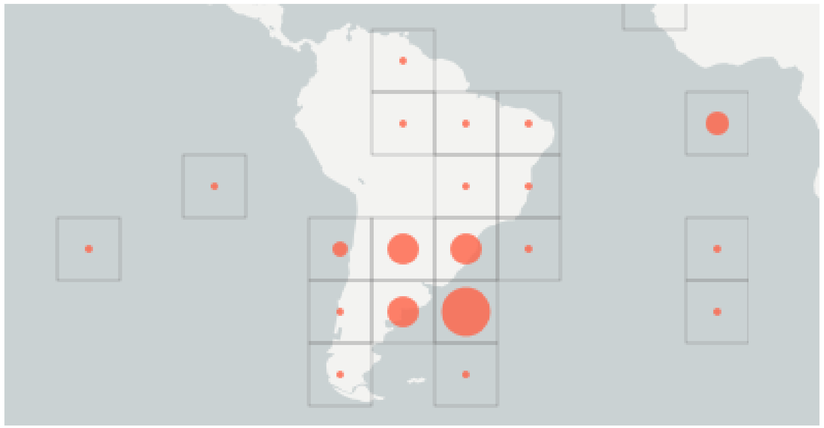
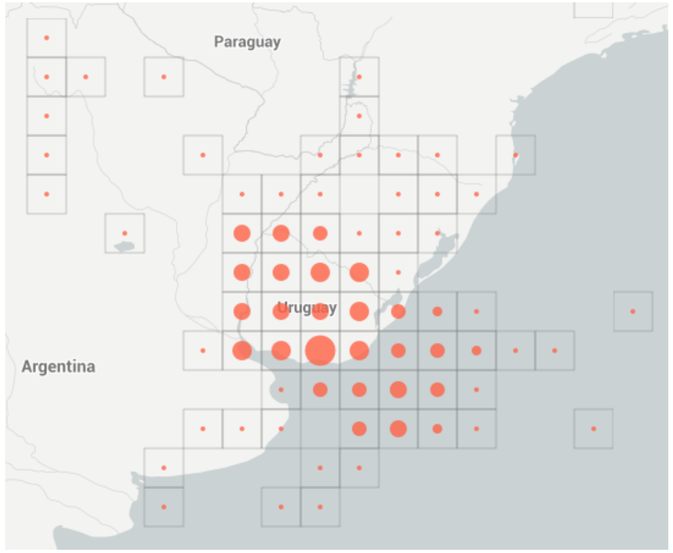
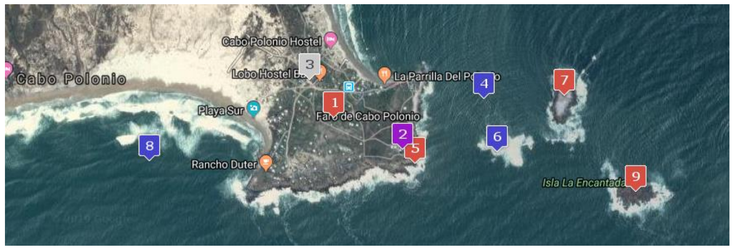




What did we do?

Cleaning and Standardisation (semi-automated)

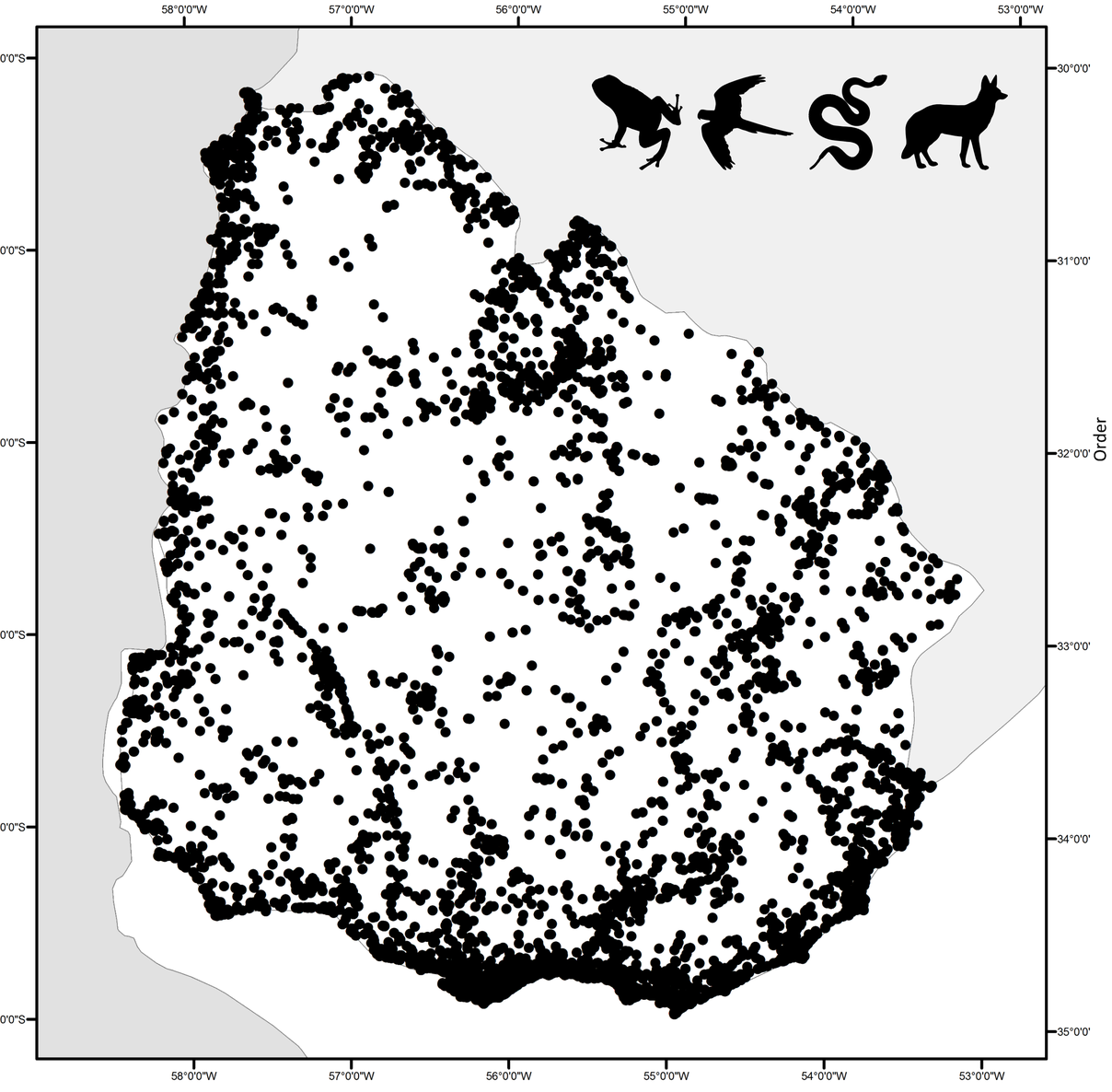
OLD Species	NEW from The Reptile Database
Anops kingii	Amphisbaena kingii
Leptotyphlops munoai	Epictia munoai
Liophis jaegeri	Erythrolamprus jaegeri
Liophis poecilogyrus	Erythrolamprus poecilogyrus
Liophis almadensis	Erythrolamprus almadensis
Liophis miliaris	Erythrolamprus miliaris
Cnemidophorus ocellifer	Ameivula ocellifera

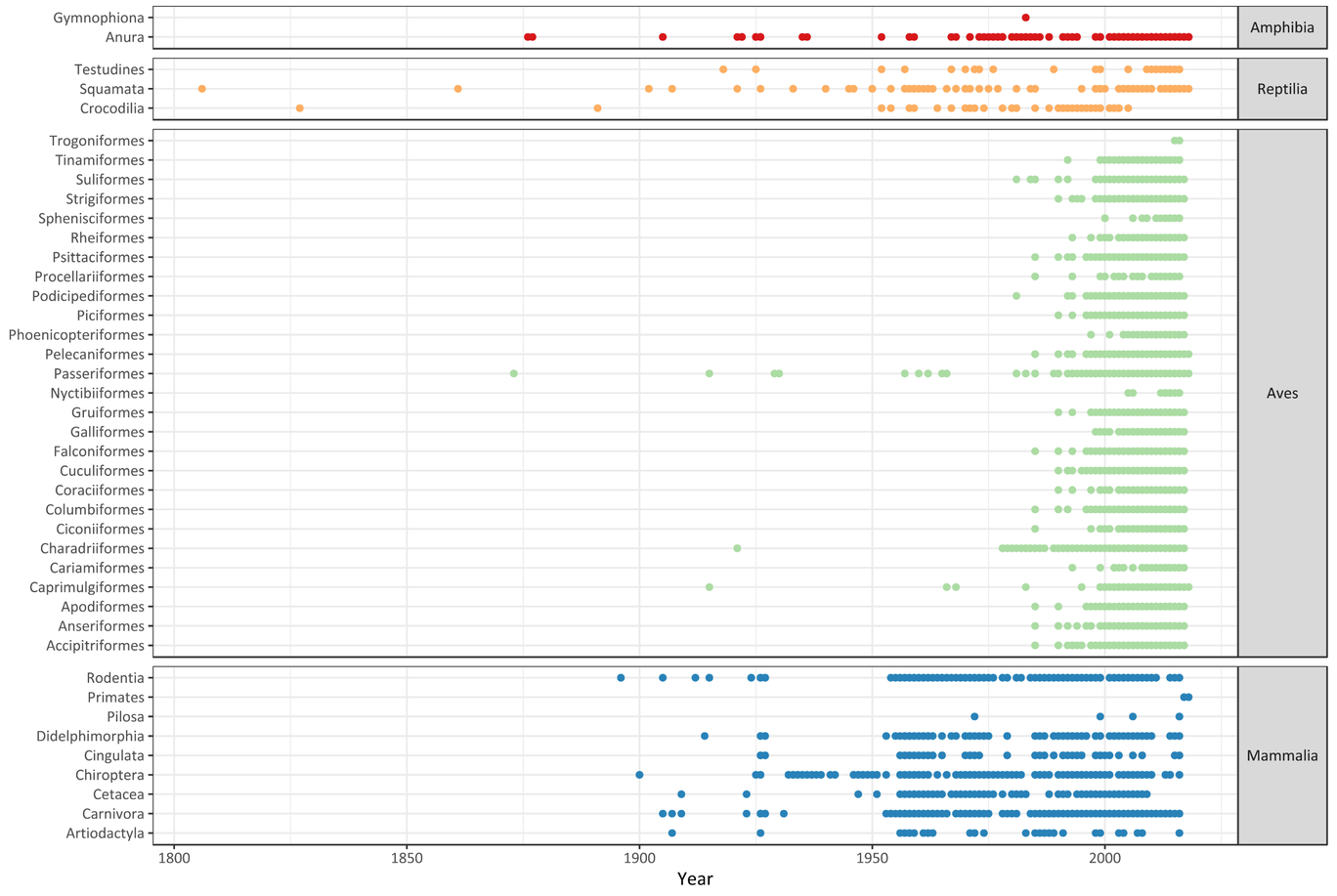


taxa | geographic location | date

- occurrenceID
- scientificName
- scientificNameAuthorship
- vernacularName
- kingdom
- phylum
- class
- order
- family
- genus
- specificEpithet
- infraspecificEpithet
- countryCode
- stateProvince
- verbatimLocality
- decimalLatitude
- decimalLongitude
- georeferenceSources
- georeferencedBy
- eventDate
- year
- month
- day
- basisOfRecord
- institutionCode
- collectionCode
- catalogNumber
- recordedBy
- recordNumber
- identifiedBy
- associatedReferences

What did we do?





69,380 occurrence records (non-duplicated)
673 species

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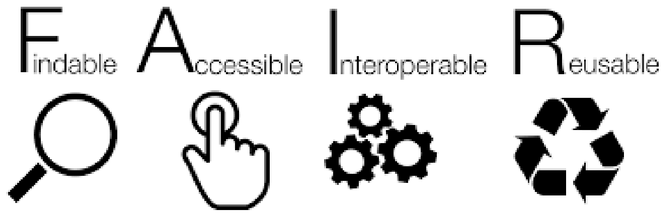
What did we do?



Data Paper

https://doi.org/10.3897/BDJ.7.e36226

Repository

https://doi.org/10.5281/zenodo.2650169

Scripts

https://github.com/bienflorencia/rBiodiversidata

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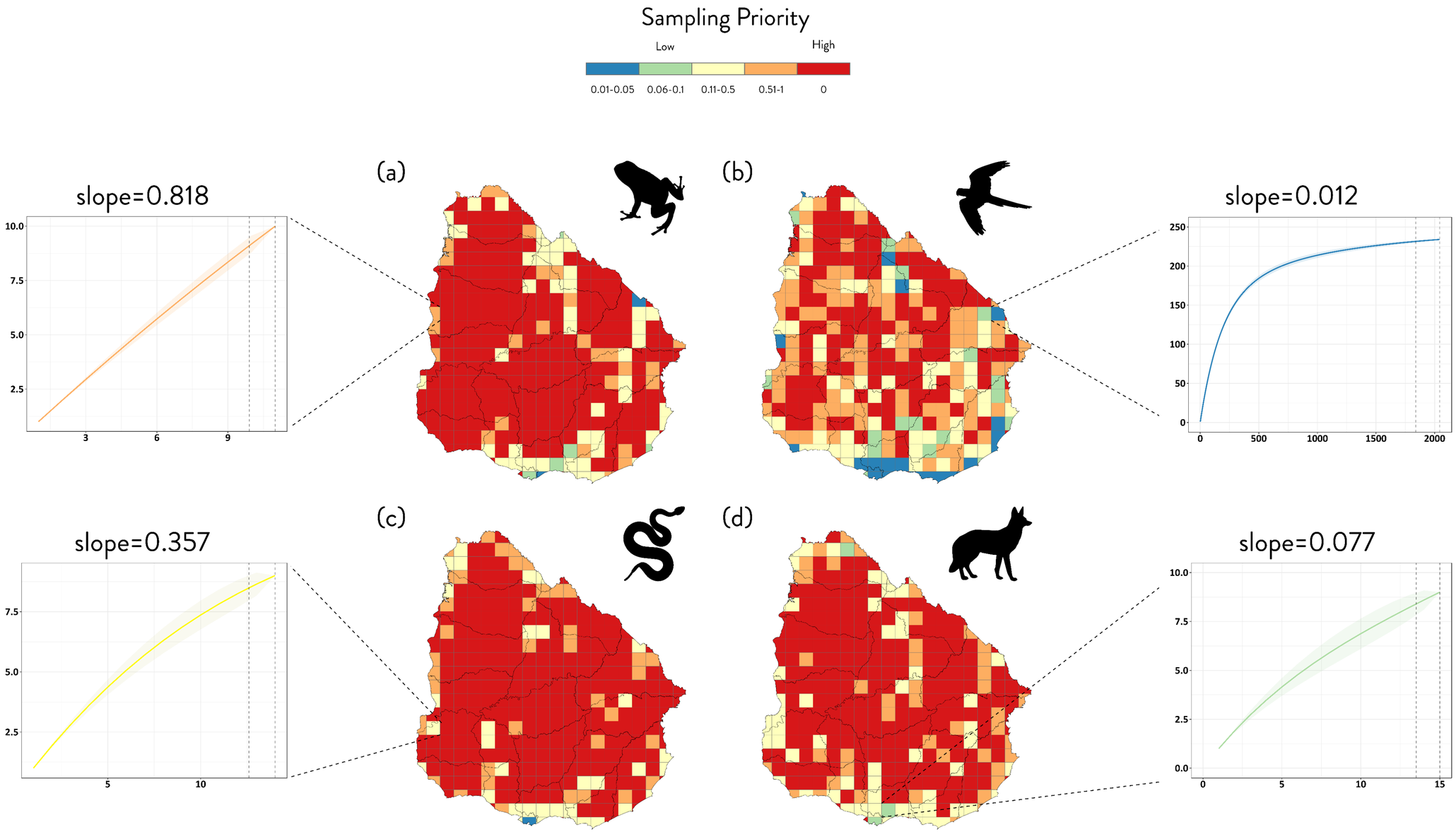
What did we do?

Research Paper



What did we do?

What did we learn?

What did we learn?

21.5%

There is a major gap between being willing to share and effectively doing so.

What did we learn?

COLLECTIONS

There is insufficient support for the maintenance of national collections and digitisation of specimens.

Herbario Jardín Botánico de Montevideo

Given lack of support, people invest personal time (sometimes money). They don't feel this is valued, so who 'owns' the data gets fuzzy.

What did we learn?

INFRASTRUCTURE

Disconnection between government and academia
Different aims/timelines

- Sustainable goals
- Research & Publish

Data-sharing is perceived as a negative subject given past experiences

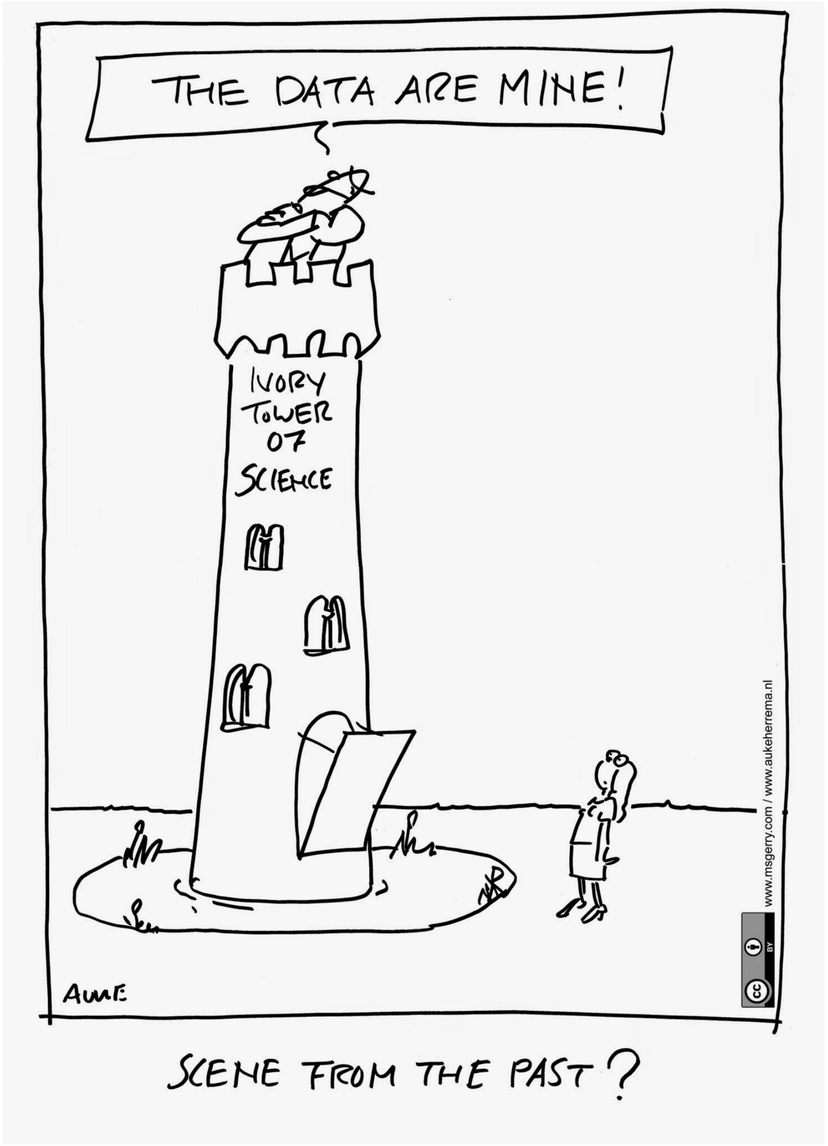
Public funded data should be open. Yes, but…

It is important to understand what is behind non-sharing practices. To make it compulsory may only make people more reluctant.

What did we learn?

RESEARCHERS

- Inexistent culture of standardised data-sharing among researchers
- The lack of data management plans can be a greater barrier even for those willing to share.
- There is a rooted habit of asymmetric use of the data generated, there is no vision of reutilisation of data.



What did we learn?

INSTITUTIONS

There is a lack of strategic plans towards open science in most of Uruguay's research institutions.

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MUSEO Y JARDIN BOTÁNICO Prof. Atilio Lombardo

iibce INSTITUTO DE INVESTIGACIONES BIOLÓGICAS CLEMENTE ESTABLE

Total absence of incentive structures (not incorporated in research assessments), making data-sharing a personal decision more than an institutional one.

What did we learn?

- **The path is long, full of ups and downs**. In low-resource research scenarios imposition does not help. So, we need to be patience and keep going. But with each step, push a little bit further.

- **Target those willing**. Directing the project to individual researchers/experts and not institutions was key in reducing time. But we need to start engaging more people.

- **Centralising the cleaning and standardisation processes**. This allowed researchers to send their raw records and save time. At the end, it enlarged the amount of data being collated. But we need to start training others on learning the language of data-sharing.

- **Communication the results and outcomes**. This made the project gain visibility. But we still need to engage the citizens and involve them in the conversation.

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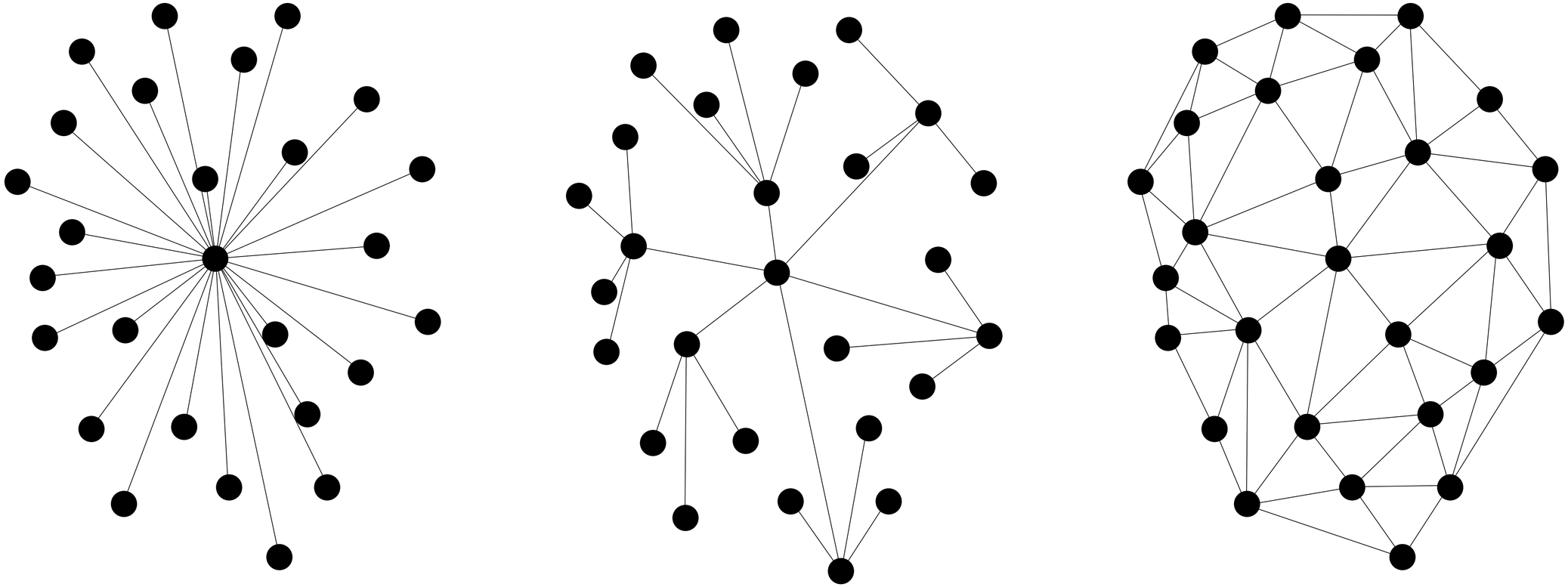

A socially committed science must be open, must enable participation and seek knowledge democratisation

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Gracias / Thank you

Florencia Grattarola &
Daniel Pincheira-Donoso

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DATA
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Ana Laura Rodales
Andrés González
Daniel Hernández
Daniel E. Naya
Enrique M. González
Gabriel Laufer
Germán Botto
Inés Da Rosa
Juan A. Martínez-Lanfranco
Javier González
Lucía Ziegler
Noelia Gobel
Patricia Mai
Raúl Maneyro

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Building a global infrastructure
for biodiversity data. Together.

22 - 25 October

Leiden - The Netherlands

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Better data - better science - better policies