



Evaluación del Enriquecimiento Ambiental



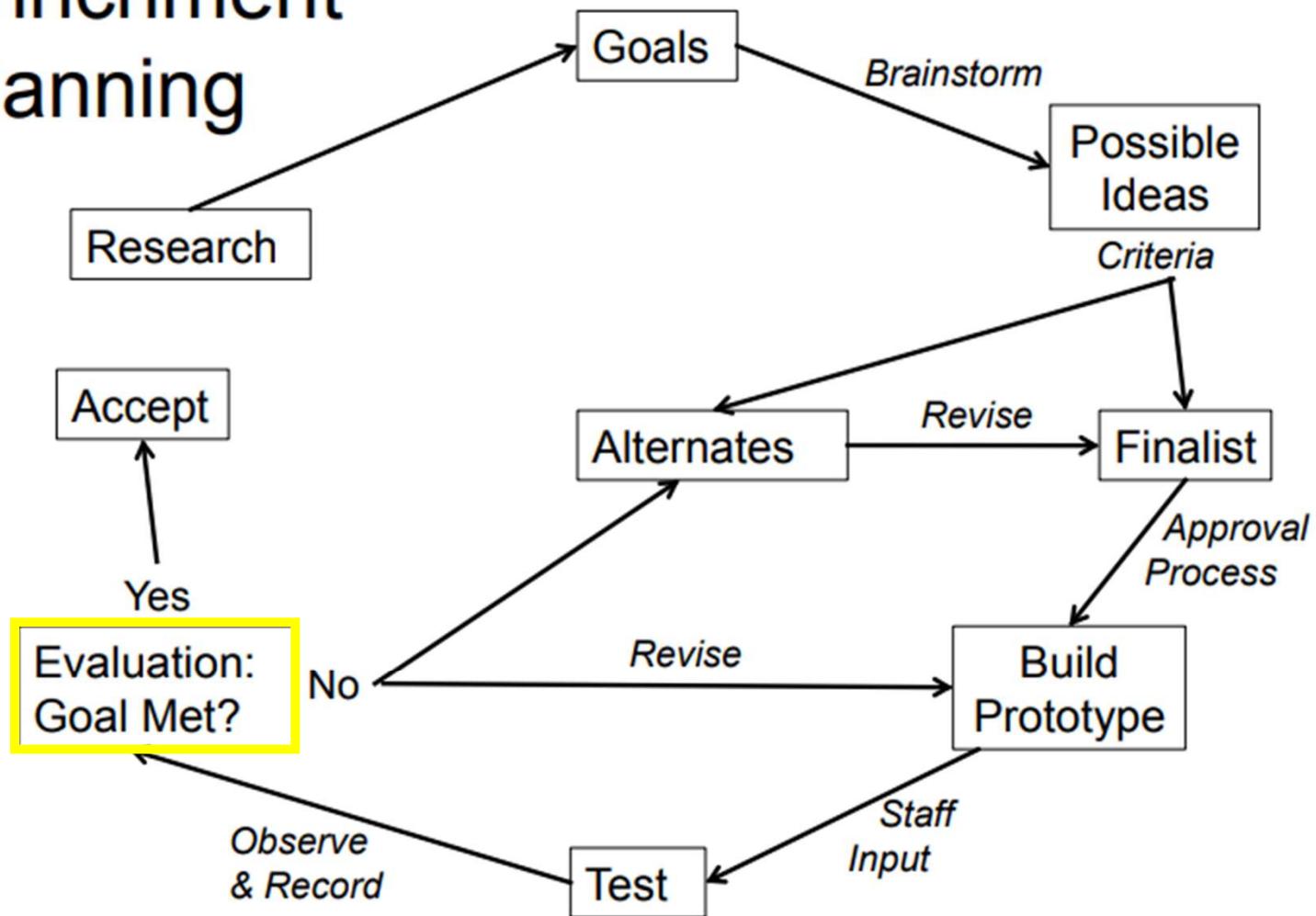
M.Sc. Alejandro Rodrigo^{1,2}

¹ Laboratorio de Cognición y Aprendizaje Comparado
Universidad de Guadalajara



1º Curso - Taller de Enriquecimiento Ambiental en Fauna Silvestre

Enrichment Planning



Contenido

- Breve recapitulación
 - ¿Qué es el EA?
 - ¿Cuál es el objetivo del EA?
 - Tipos de EA
- Problemáticas de los programas de EA
- Evaluación
 - Diseños experimentales
 - Apps

A photograph of two chimpanzees in a grassy enclosure. One chimpanzee is in the foreground, facing away from the camera, while another is partially visible behind it. The background shows a wire fence and more greenery.

¿Qué es el enriquecimiento ambiental?

- Es una herramienta de crianza utilizada en zoológicos
- Incluye:
 - Provisión de objetos inanimados,
 - Agentes sociales (intraespecíficos o interespecíficos)
 - Material sensorial (por ejemplo, rastro de olor o reproducción de llamadas de alarma)

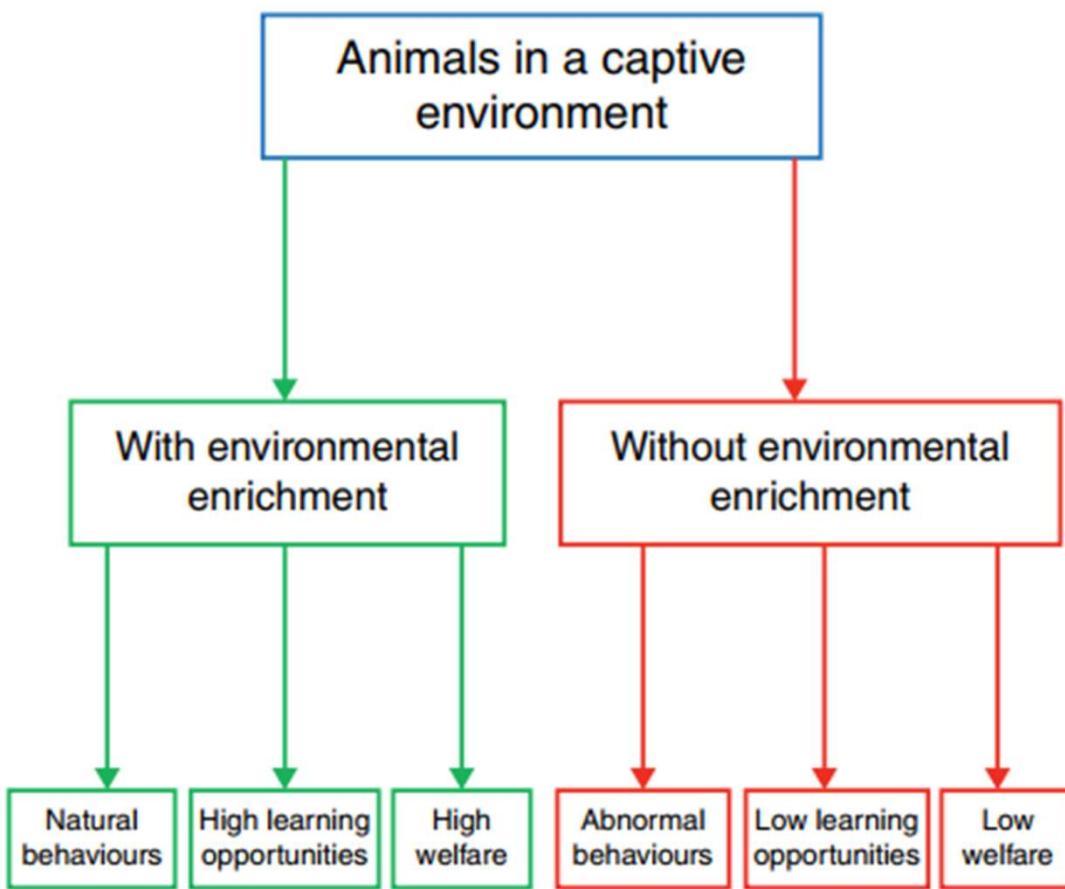
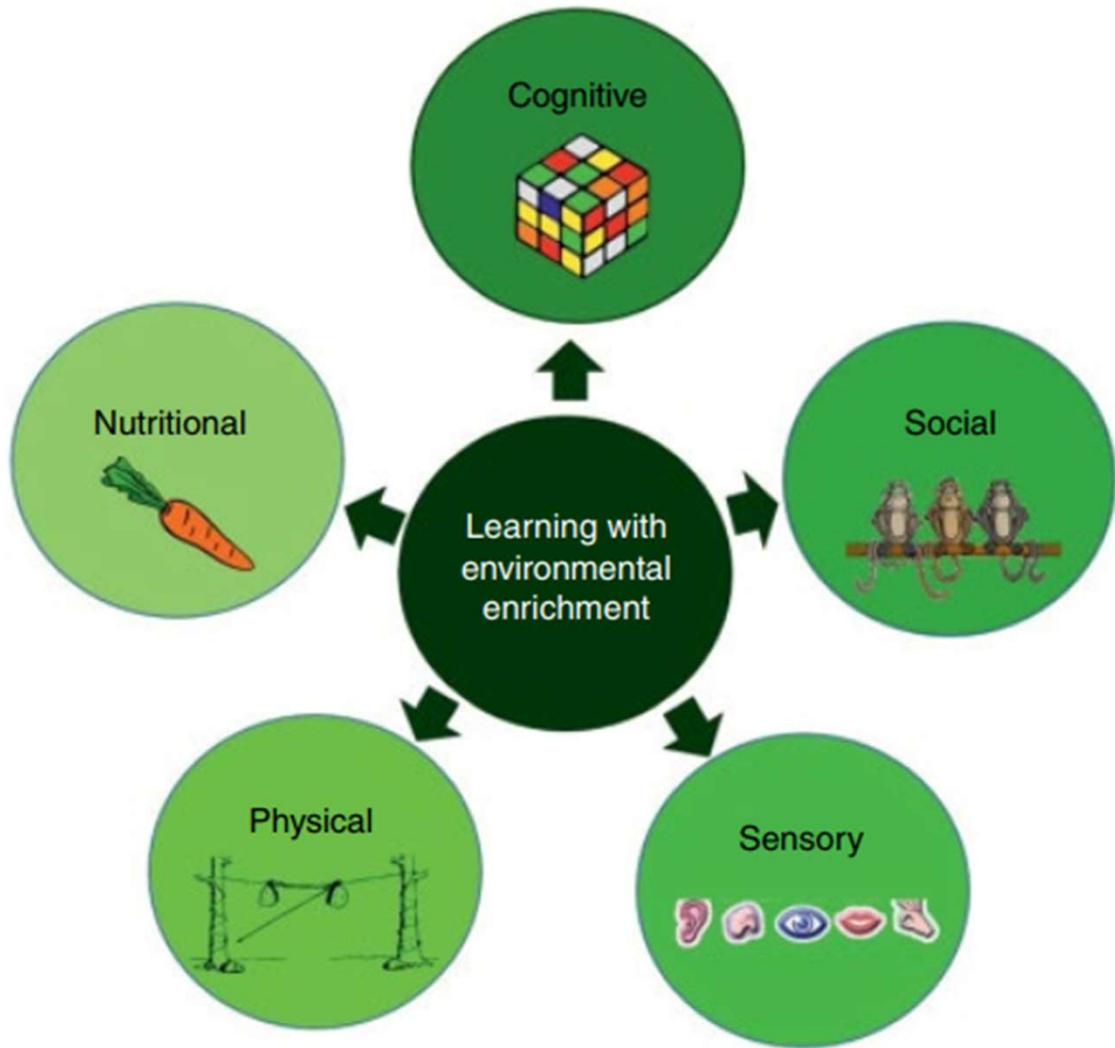


Figure 6.1 Comparison of the consequences of enriched or not enriched environments for captive animals.

Melfi et al. (2020)



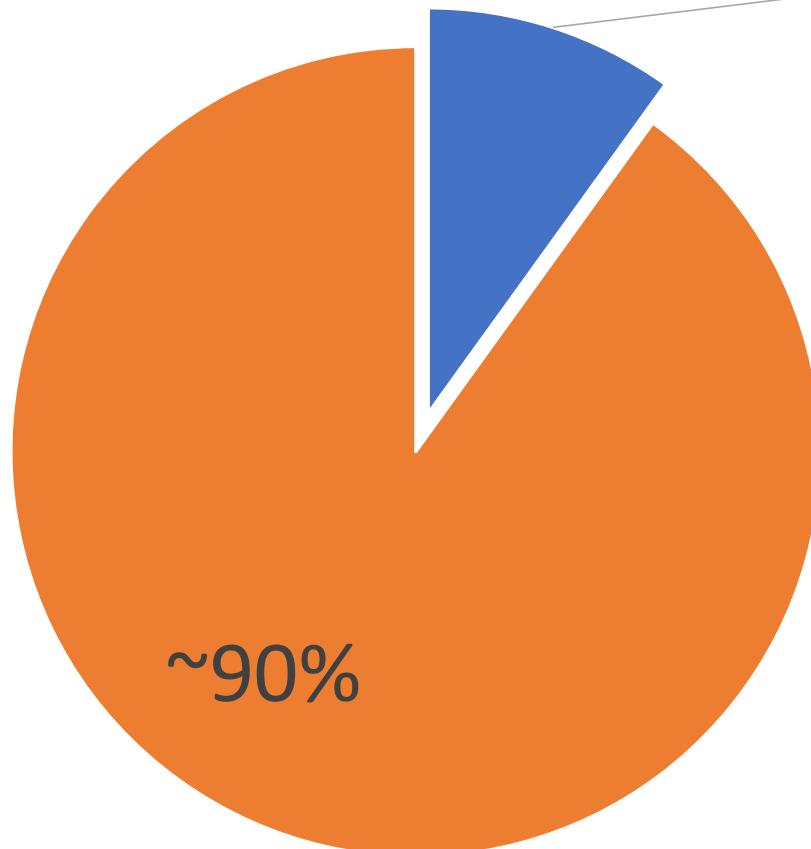
(Bloomsmith, et al., 1991; Melfi et al., 2020)

A photograph of a lion pride in a naturalistic enclosure. In the foreground, two lionesses are resting on the ground under the shade of large trees. One is lying down, and the other is standing. In the background, another lion is walking away from the camera. The scene is set in a dry, open landscape with palm trees and other vegetation.

No todo es tan fácil como
parece

Publicaciones científicas (1985-2004)

■ EA Zoo's ■ EA Laboratorio



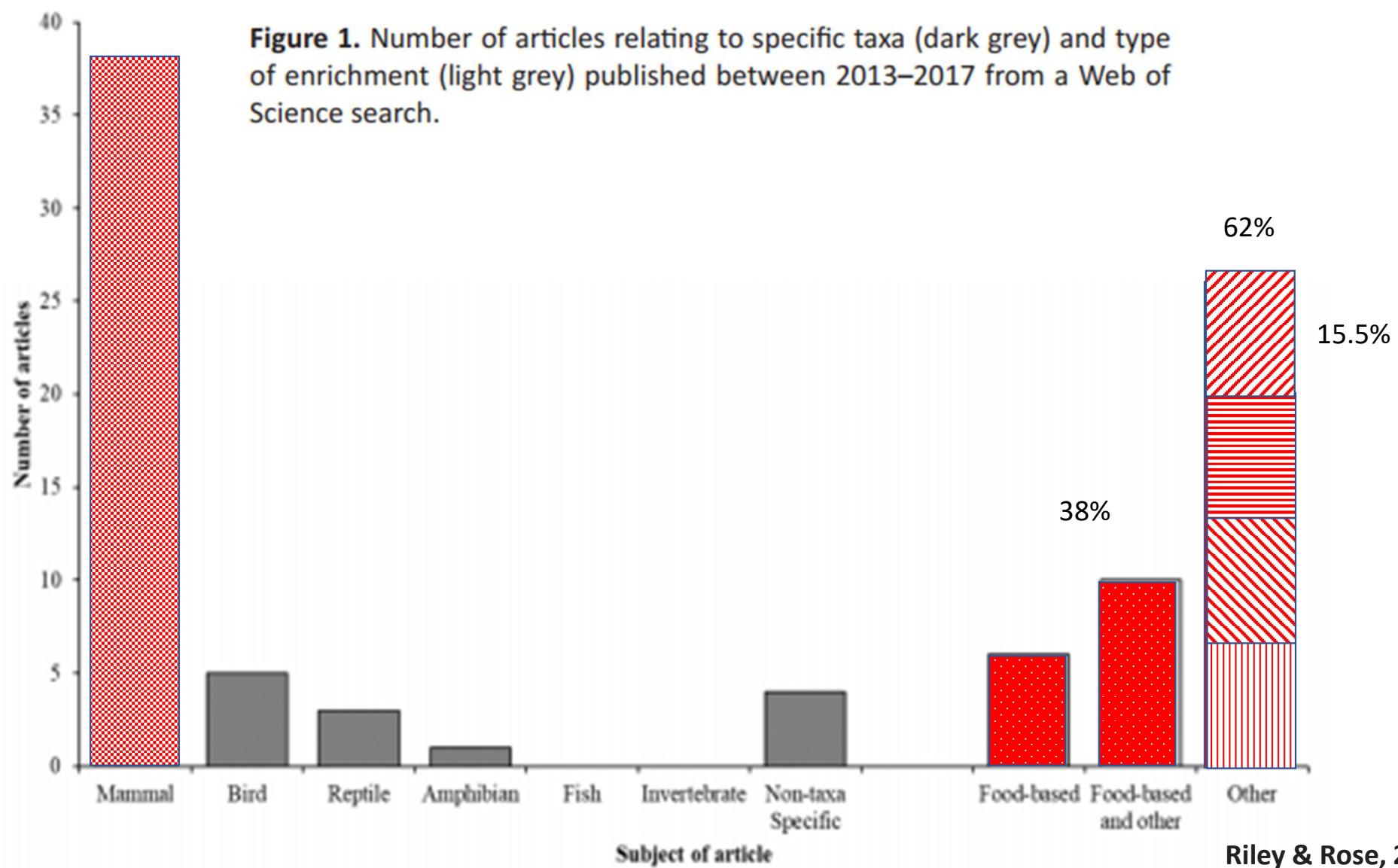
de Azevedo et al. 2007

Table 6

The application of enrichment type (%) between different taxonomic groups (the percentages refer to rows and the numbers in brackets below are *N*)

	Cognitive (%)	Food (%)	Sensory (%)	Social (%)	Structural (%)	Unknown (%)	Various (%)
Bird	0 (0)	5.17 (3)	29.31 (17+)	5.17 (3)	29.31 (17)	20.69 (12)	10.34 (6)
Fish	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	100.00 (2)	0 (0)
Invertebrate	0 (0)	0 (0)	25 (1)	25 (1)	25 (1)	25 (1)	0 (0)
Mammal	3.94 (25)	5.67 (36)	5.30 (33)	6.46 (41)	19.84 (126)	50.55 (321)	8.35 (53)
Reptile	0 (0)	0 (0)	0 (0)	0 (0)	75 (3)	25 (1)	0 (0)

+: a large positive standardized residual (>2.5). Note amphibians are not presented as no published studies were in our data-set.

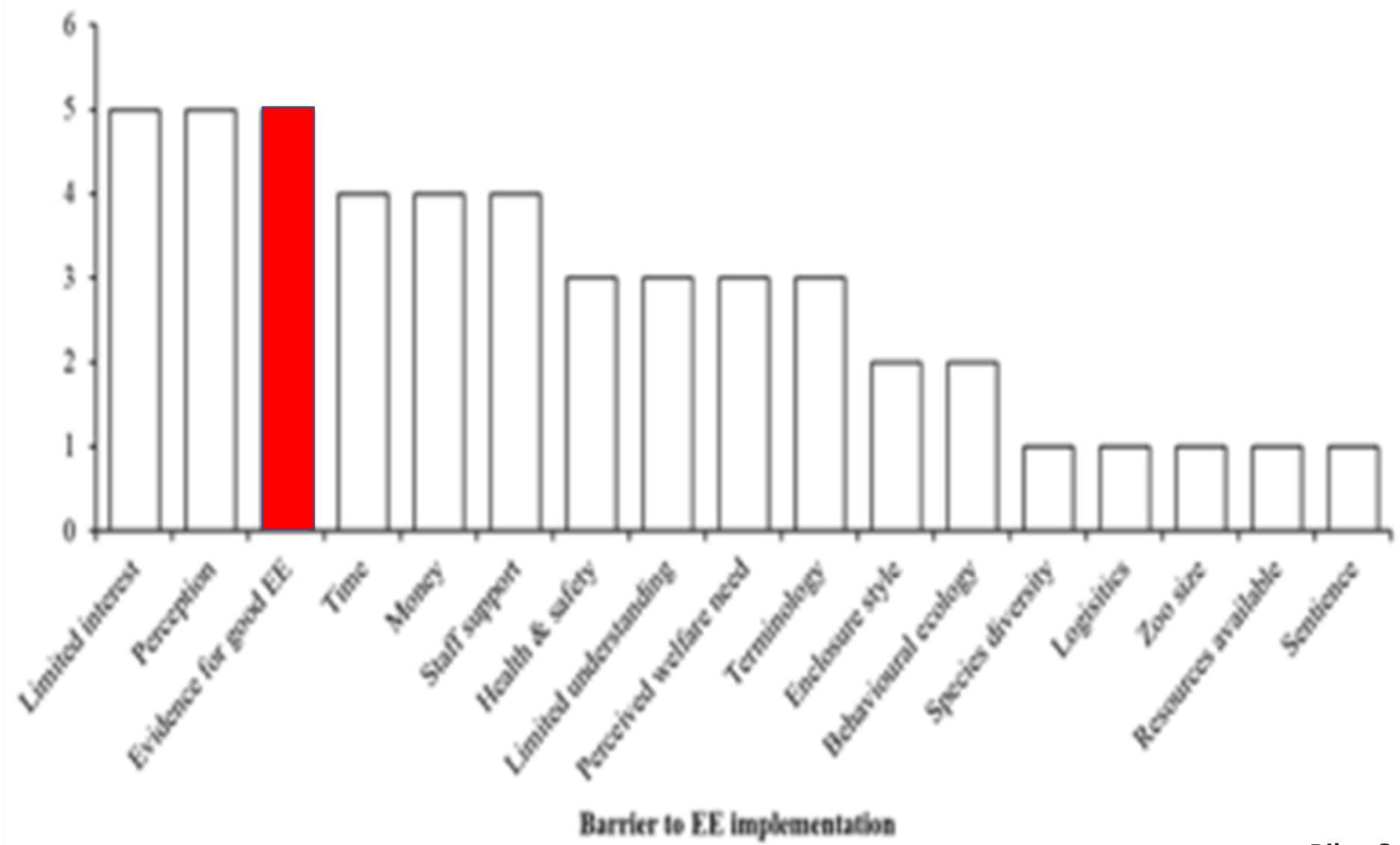


Riley & Rose, 2020

Ecología
comportamental = Mejores
programas de
EA

Table 1. Perception of EE from participants in each focus group.

Theme	Is EE luxury or essential?	Is EE reactive or routine?	Is recent* literature available when making decisions about EE use in this scenario?	Of recent literature found, are there zoo-focused papers available?
Domestic Animals in the Zoo	Luxury	Reactive	Limited (<5)	Mainly farm/lab papers
Non-parrot Birds	Essential	Routine	Limited (<5)	Yes
Reptiles and Amphibians	Luxury	Reactive	Limited (<5)	Yes
Fish and Invertebrates	Essential	Routine	Limited (<5)	Mixture of lab-based with some zoo
Small Mammalian Carnivores	Luxury	Reactive	Limited (<5)	Yes
Non-Food-Based EE	Luxury	Routine	Some (>5 - <10)	Yes



Riley & Rose, 2020

EVALUACIÓN

Sistema de tres pasos

- Documentar
 - Simple: Tipo calendario, en donde, la información del EA se escribe diariamente, como el tipo de EA utilizado
 - Detallada (e.g., escalas Likert)
 - Compleja (e.g., BORIS, Animal Behavior, ZooMonitor, Deeplabcut)
- Evaluar
- Reajustar

CRONOGRAMA DE ENRIQUECIMIENTOS MES: DICIEMBRE

MARTES 1	MIERCOLES 2	JUEVES 3	VIERNES 4	SABADO 5	DOMINGO 6	LUNES 7	MARTES 8	MIERCOLES 9
JAGUAR	TIGRILLOS	PECARIS	OSOS	PUMA	UCHUCHOS	OSOS	JAGUAR	PUMA
M. MACHINES	TAIRA	MAPACHE	TAPIR	M. CHORONGOS		TAPIR	M. MACHINES	M. CHORONGOS
VENADOS	LEONES	CUSUMBOS	M.COTONCILL O	CERVICABRA	M. SAIMIRIS	ZARIGUEYA	VENADOS	CERVICABRA
BUHOS	AGUILAS	GUACAMAYO S	AVESTRUZ	GUARROS	CONDOR	AVIARIO	BUHOS	AVESTRUZ
BORREGOS	YEGUA	BURRITA	LLAMAS			CHIVOS	BORREGOS	YEGUA
	GALAPAGOS					T. MOTELOS		
JUEVES 10	VIERNES 11	SABADO 12	DOMINGO 13	LUNES 14	MARTES 15	MIERCOLES 16	JUEVES 17	VIERNES 18
TIGRILLOS	PECARIS	OSOS	UCHUCHOS	JAGUAR	PUMA	OSOS	TIGRILLOS	PECARIS
TAIRA	MAPACHE	TAPIR	M. CHORONGOS	M. MACHINES		TAPIR	TAIRA	MAPACHE
M. COTONCILLO	CUSUMBOS	LEONES	M. SAIMIRIS	ZARIGUEYA	CERVICABRA	VENADOS	CUSUMBOS	M. COTONCILL O
AGUILAS	GUACAMAYOS	BUHOS	GUARROS	AVIARIO	AVESTRUZ	AGUILAS	GUACAMAYOS	CONDOR
BURRITA	LLAMAS			CHIVOS	BORREGOS	YEGUA	BURRA	LLAMAS
	HERPETARIO A					GALAPAGOS		

ENRIQUECIMIENTO PRIMATES MAYORES FEBRERO 2019

LUNES	MARTES	MIERCOLES	JUEVES	VIERNES	SABADO	DOMINGO
				1 Cocos rellenos	2 Jitomates rellenos de pasta	3 Carritos rellenos de gelatina
4 Hielos de fruta	5 Pastel de alimento húmedo	6 Montañas de paja	7 Palomitas de maíz	8 Pastel de avena	9 Tómbolas con fruta	10 Palanqueta de semillas
11 Gelatina en cascara de sandia	12 Alimento húmedo en hojas de maíz	13 Mangueras de bombero rellenas	14 Garrafones de corazón	15 Piñatas de corazón	16 Corazones de yute	17 Tapas con bambú
18 Alimento húmedo encascara de naranja	19 Torres de hojas de plátano	20 Espárragos con tuercas	21 Tubos de PVC con niveles	22 Gelatina en botellas de pet	23 Dulce de manzana en hojas de maíz	24 Aspersores
25 Bolitas de	26 Hielos	27 Piñatas de	28 Rodajas			

Sistema de tres pasos

- Documentar
 - Simple: Tipo calendario, en donde, la información del EA se escribe diariamente, como el tipo de EA utilizado
 - Detallada: Reporte detallado que incluye el nivel de participación del animal con el objeto (e.g., escalas Likert)
 - Compleja (e.g., BORIS, Animal Behavior, ZooMonitor, Deeplabcut)
- Evaluar
- Reajustar cuando sea necesario.

Documentación detallada

- Fecha
- Especie
- Recinto
- Nombre del EA
- Escalas de Likert
- Comentarios acerca de algo inusual o especial que haya ocurrido
- Nombre y firma de la persona que realizó el registro



Formato de Evaluación de Estimulación Conductual



Programa de Enriquecimiento Animal para Gorilas de Tierras Bajas Occidentales (*Gorilla gorilla gorilla*)



MES/AÑO:

Calendario de Registro y Evaluación de Enriquecimiento Animal

"Promoviendo el enriquecimiento animal, a través de la estimulación integral de cada individuo, facilitando la expresión del comportamiento natural de la especie, en búsqueda del más alto Bienestar Animal..."

- ## DIRECTA

- [1] No se observó interés ó interacción

- [2] Interés mínimo (solo tocó/investigó/probó pero no más)**

- [3] Interés limitado (solo por unos 15 minutos o menos, ó esporádicamente)**

- [4] Interesado (usó/participó más o menos [50%] en el tiempo disponible)**

- [5] Muy interesado (usó/participó prácticamente todo el tiempo disponible, le encantó)

INDIRECTA

- [A]** Sin evidencia de interés ó interacción

- [B]** Evidencia de interés mínimo (solo tocó/investigó/probó pero no más)

- [C] Evidencia de interés limitado (uso limitado)**

- [D] Evidencia de interés (usó/participó de manera y por un tiempo considerable)

- [E]** Evidencia de gran interés
(usó/participó prácticamente todo el
tiempo disponible, le encantó)

Desventajas

- Registro conductual deficiente: Frecuencia de interacción, no tiempo ni conductas específicas
- Registro subjetivo de la eficacia
- Nula replicación externa
- Análisis de datos deficiente

ZIMS FOR
HUSBANDRY



Animales

Buscar animales por Identificación/GAN Filtrar por Institución Tus listas de animales

Estadísticas **TCF17-00277/Tremarcos ornatus**

Detalles **Más Detalles** Nota y Observación Evento Importante de Vida Mis Transacciones

Expandir todo Colapsar todo

Enriquecimiento

[mostrar formato de búsqueda](#) Acciones

Enriquecimiento	Categoría	Meta	Fecha asignada	Sesiones
figuras de avena con miel	Comida	Biológico, Aumentar la Conducta Repertorio, Reducir el comportamiento indeseable, ocupar el tiempo, Reduce el estres, Aumentar la habilidad motora fina, otro comportamiento, Proporcionar estimulación mental, aumentar la Salud, Comportamiento Natural, otro Biológico, Mejorar la socialización, Uso del recinto, Aumentar la Reproducción, incentivar la investigación, Reducir la Agresión, Comportamiento	30/11/2020	1 Sesión Grabada ver/editar
Tubo de PVC perforado con Croquetas	Estimulación mental, experiencia novedosa, Cognitivo, Visual, elemento de combinación, Táctil, sensorial, Ocultos / enterrada, Presentación, estres	Incentivar la investigación, Mejorar la socialización, Biológico, aumentar la Salud, Aumentar la Conducta Repertorio, Aumentar la habilidad motora fina, Comportamiento, Proporcionar estimulación mental, ocupar el tiempo, Reducir la Agresión, otro Biológico, Aumentar la Reproducción, Reducir el comportamiento indeseable, Uso del recinto, otro comportamiento, Reduce el	30/09/2020	1 Sesión Grabada ver/editar
Montón de hojas de sensorial arból		Aumentar la Reproducción, Mejorar la socialización, otro comportamiento, Aumentar la Conducta Repertorio, ocupar el tiempo, Biológico, Proporcionar estimulación mental, Aumentar la habilidad motora fina, aumentar la Salud, otro Biológico, Reducir el comportamiento indeseable, Comportamiento Natural, Uso del recinto, Comportamiento, Reduce el estres, incentivar la investigación, Reducir la Agresión	30/09/2020	1 Sesión Grabada ver/editar
albóndigas de croqueta molida	Comida	Reducir la Agresión, Mejorar la socialización, Comportamiento, aumentar la Salud, Reduce el estres, otro comportamiento, otro Biológico, ocupar el tiempo, Aumentar la habilidad motora fina,	30/09/2020	1 Sesión

Inicio Administrar Plant... Animales

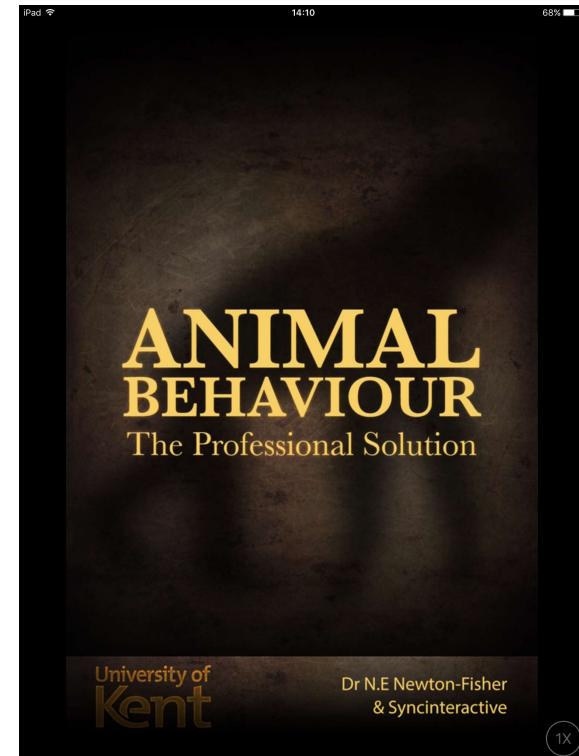
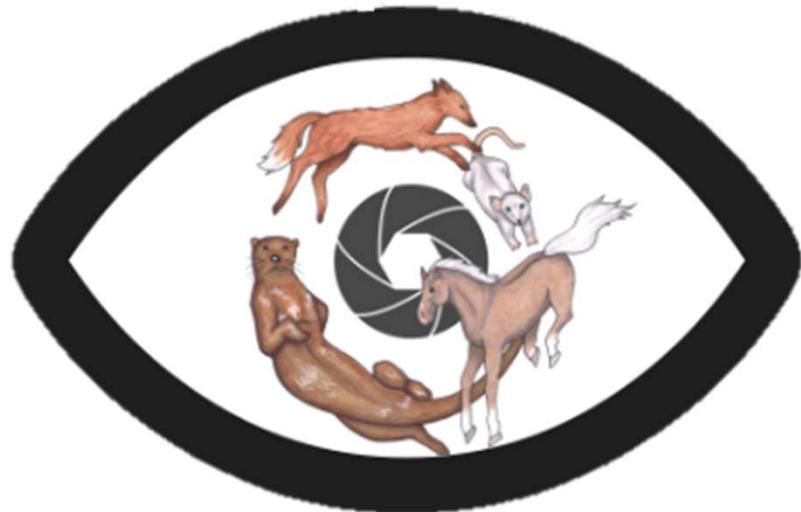
ZIMS FOR
HUSBANDRY



Añadir Enriquecimiento Sesión

Fecha *	Proporcionado por
27/01/2021	Por favor, seleccionar
Tiempo Dado	Tiempo Fuerza
La Reacción de los Animales	
Duración de la participación de los Animales	Por favor, se
Evaluacion de la Sesión	
Por favor, seleccionar	
<input type="checkbox"/> Reajuste / cambios recomendados	
Detalles	
<input type="button" value="Guardar"/> <input type="button" value="Guardar & Repetir"/> <input type="button" value="Cancelar"/>	

Documentación compleja



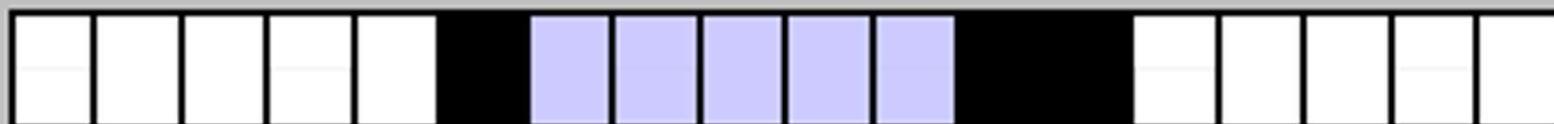
ZOOMONITOR 

TABLE 1 Single-subject designs

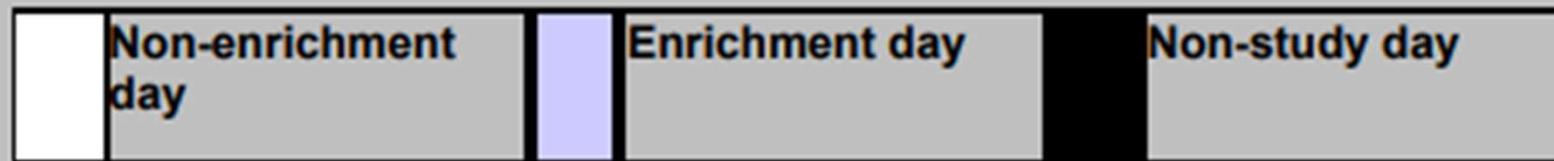
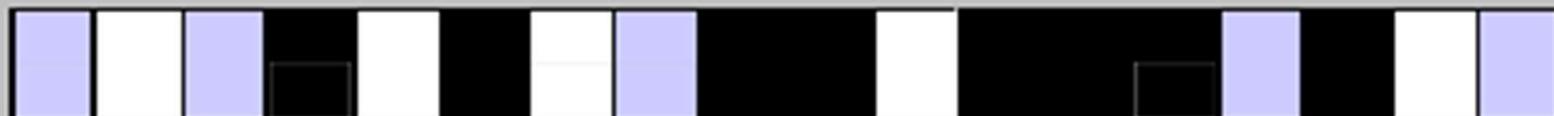
Design	Key characteristics	Best use	Limitations
Reversal	Conditions alternate between baseline (A) and intervention (B) phases at least twice (ABAB).	Comparing performance under different conditions.	Not ideal when the behavior of interest is unlikely to reverse or when reversal is unethical.
Multiple baseline	An intervention is implemented at different points in time across multiple baselines (individuals, situations, settings, time, or behaviors).	Ideal when reversal to baseline is not possible or not ethical.	Requires withholding intervention for some individuals, settings, etc. until effects have been shown in others.
Multiple probe	Similar to multiple baseline except baselines are probed periodically rather than continuously.	Ideal when continuous measurement of baselines is impractical or unnecessary (e.g., measuring acquisition of steps in a teaching sequence).	Not ideal for testing interventions for existing behaviors.
Changing criterion	Behavior change is targeted to meet a criterion that changes gradually over the course of the intervention.	Useful when timely behavior change is critical and reversal to baseline and/or withholding the intervention to introduce sequentially across baselines is undesirable.	Requires deciding whether the animal's performance aligns closely enough with our criterion to allow us to infer that the intervention was responsible for behavior change.
Multiple-treatment (multi-element and alternating treatments)	Two or more interventions are rapidly alternated within sessions, across sessions, or across days, with each intervention associated with distinct stimulus conditions (multi-element), or applied in the same phase but alternated and balanced across different stimulus conditions (alternating treatments).	Useful for efficiently comparing multiple intervention strategies.	Effects may carry over from one session to another; ceiling or floor effects may make treatment comparisons difficult.

Box 3 Possible study designs

- a) Blocks of 5 days pre-enrichment, 5 days enrichment and 5 days post-enrichment.
Not recommended unless enrichment is not easily moved in and out of enclosure

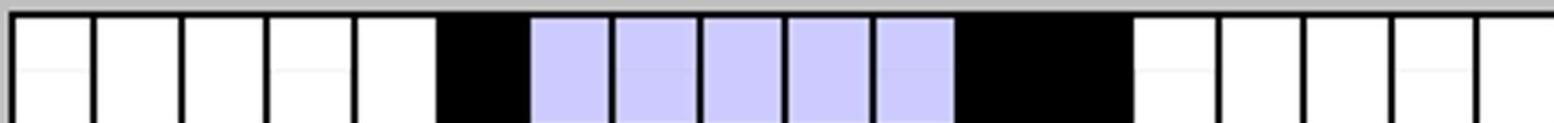


- b) Randomly assigned enrichment and non-enrichment days (5 each)



Box 3 Possible study designs

- a) Blocks of 5 days pre-enrichment, 5 days enrichment and 5 days post-enrichment.
Not recommended unless enrichment is not easily moved in and out of enclosure

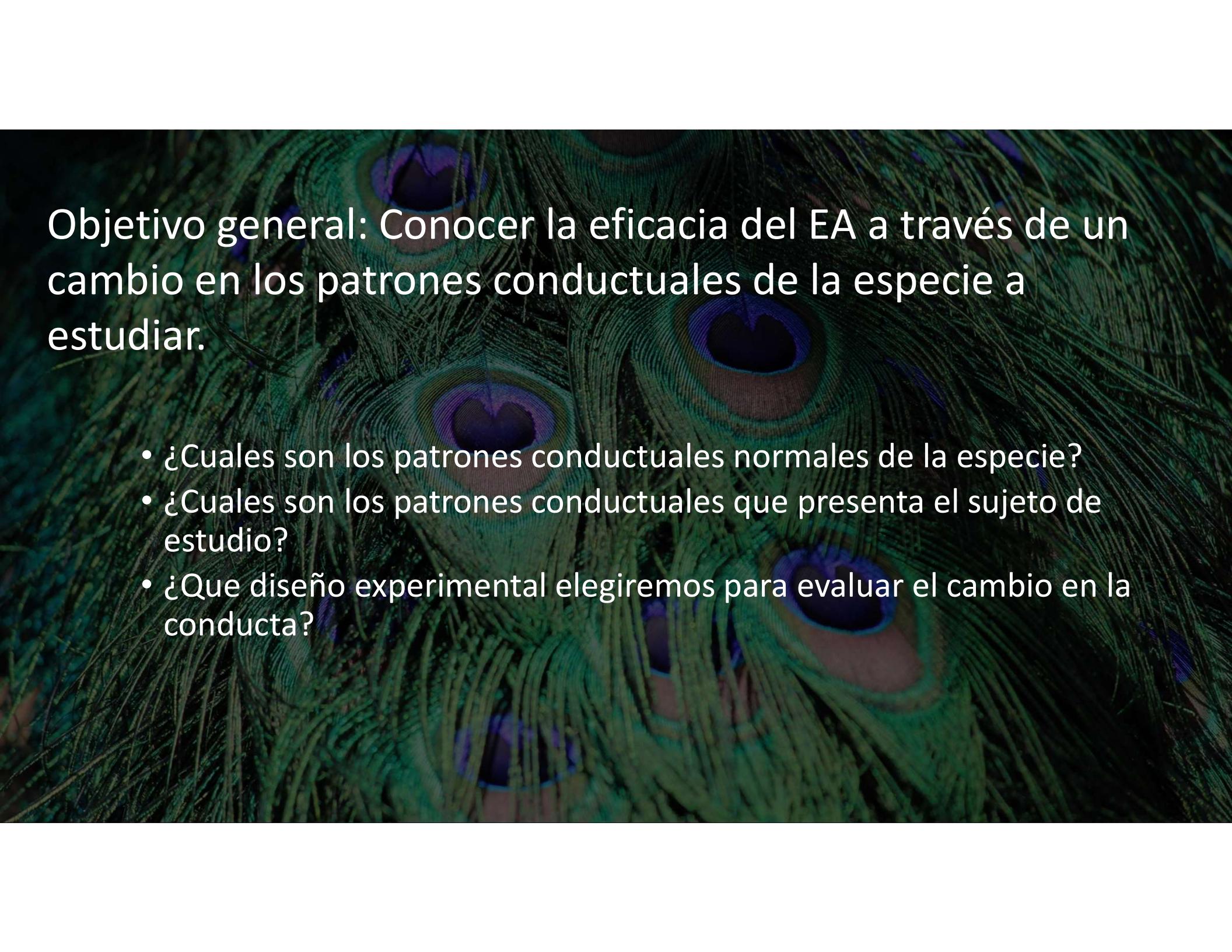


- b) Randomly assigned enrichment and non-enrichment days (5 each)



A white tiger with dark stripes is lying on its back on a grassy field. It is looking directly at the camera with its mouth slightly open. The background is a dark, out-of-focus area.

Recapitulando...



Objetivo general: Conocer la eficacia del EA a través de un cambio en los patrones conductuales de la especie a estudiar.

- ¿Cuales son los patrones conductuales normales de la especie?
- ¿Cuales son los patrones conductuales que presenta el sujeto de estudio?
- ¿Que diseño experimental elegiremos para evaluar el cambio en la conducta?

¿Cuales son los patrones conductuales normales de la especie? Búsqueda de bibliografía

- Google Scholar: <https://scholar.google.com.mx/>
 - Microsoft Academic: <https://academic.microsoft.com/home>
 - Biblioteca digital de la Universidad
 - Sci-hub y libgen
-
- Publish or perish: <https://harzing.com/resources/publish-or-perish>
 - Dimensions <https://app.dimensions.ai/discover/publication>
 - Connected papers: <https://www.connectedpapers.com/>



Environmental enrichment AND ...
Free text in full data

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FILTERS

FAVORITES

PUBLICATION YEAR

<input type="radio"/> 2021	164
<input type="radio"/> 2020	4,835
<input type="radio"/> 2019	2,151
<input type="radio"/> 2018	3,038
<input type="radio"/> 2017	1,429
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<input type="radio"/> 2012	2,623
More	

RESEARCHER

RESEARCH CATEGORIES

PUBLICATION TYPE

SOURCE TITLE

JOURNAL LIST

PUBLICATIONS

44,020

DATASETS

3,187

GRANTS

14

PATENTS

1,014

CLINICAL TRIALS

0

POLICY DOCUMENTS

325

Show abstract Sort by: Relevance

Title, Author(s), Bibliographic reference - [About the metrics](#)

Evaluation of Enrichment for Reptiles in Zoos

Taylor Eagan

2018, Journal of Applied Animal Welfare Science - Article

Studies on environmental enrichment for reptiles are lacking in the scientific literature. Although the literature reflects a limited take on reptile enrichment in the zoological community, it may not... [more](#)



4

Add to Library

Unraveling the Complexity of the Zoo Community: Identifying the Variables Related to Conservation Performance in Zoological Parks

Maria C. Fàbregas, Federico Guillén-Salazar, Carlos Garcés-Narro

2011, Zoo Biology - Article

Zoological parks make up a highly heterogeneous community. Ranging from small collections at shopping malls to highly developed bioparks, their contribution to conservation is expected to vary enormou... [more](#)



1

Add to Library

Relative response to digital tablet devices and painting as sensory enrichment in captive chimpanzees

Priscilla P. Grunauer, Justin W. Walguarnery

ANALYTICAL VIEWS

RESEARCH CATEGORIES

06 Biological Sciences

7,744

0602 Ecology

2,952

07 Agricultural and Veterinary Sciences

2,298

11 Medical and Health Sciences

2,258

05 Environmental Sciences

1,976

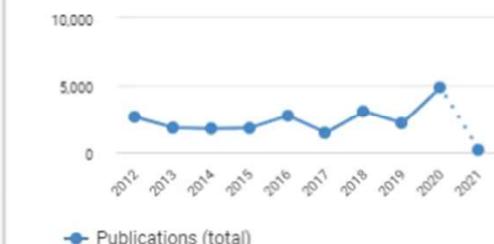
OVERVIEW

Citations

661 K

Citations (Mean)

15.01



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connectedpapers.com

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Paper DOI

arXiv
Paper URL

Paper Title

Semantic Scholar
Paper URL

PubMed
Paper URL

Or start with one of our example graphs

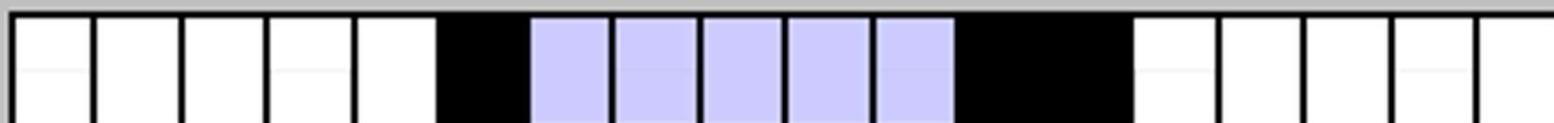
¿Cuales son los patrones conductuales que presenta el sujeto de estudio? Etograma

Behavioral category	Description
Search 	Focal bird searches for food using either vision or touch. Tactile search refers to probing the mud with the tip of the bill (knots) or rooting through seaweed (turnstones).

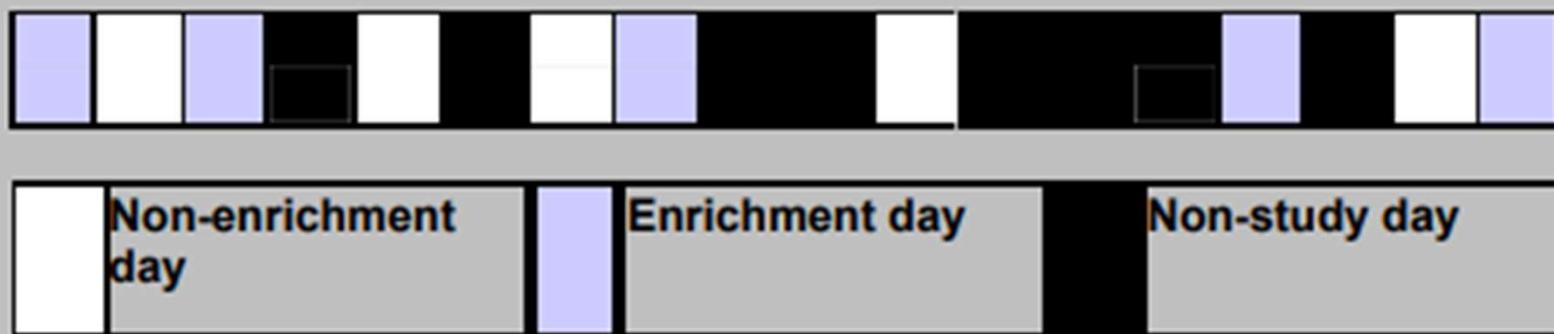
Vahl, et al. (2005)

Box 3 Possible study designs

- a) Blocks of 5 days pre-enrichment, 5 days enrichment and 5 days post-enrichment.
Not recommended unless enrichment is not easily moved in and out of enclosure



- b) Randomly assigned enrichment and non-enrichment days (5 each)





Uso de apps para el registro
conductual

Algunas Apps disponibles

- Animal Behavior Pro: <https://apps.apple.com/us/app/animal-behaviour-pro/id579588319>
- BORIS: <https://www.boris.unito.it/>
- Animal observer: <https://apps.apple.com/us/app/animal-observer/id991802313>
- Behayve: <https://www.behayve.com/>
- ZooMonitor: <https://zoomonitor.org/home>
- Lince PLUS: <https://github.com/observespport/lince-plus/releases/tag/v1.2.0>
- Jwatcher: <http://www.jwatcher.ucla.edu/>
- The Observer XT: <https://www.noldus.com/applications/animal-behavior-observation>

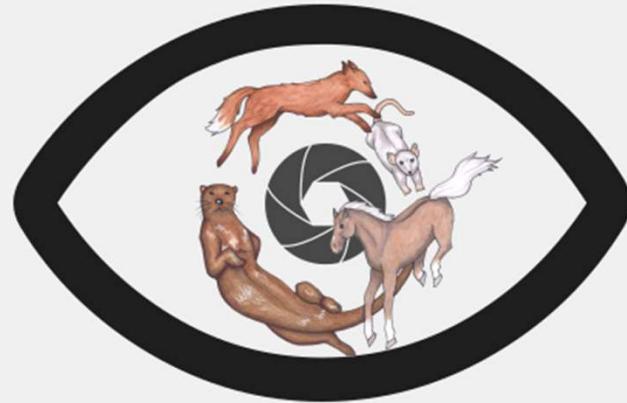
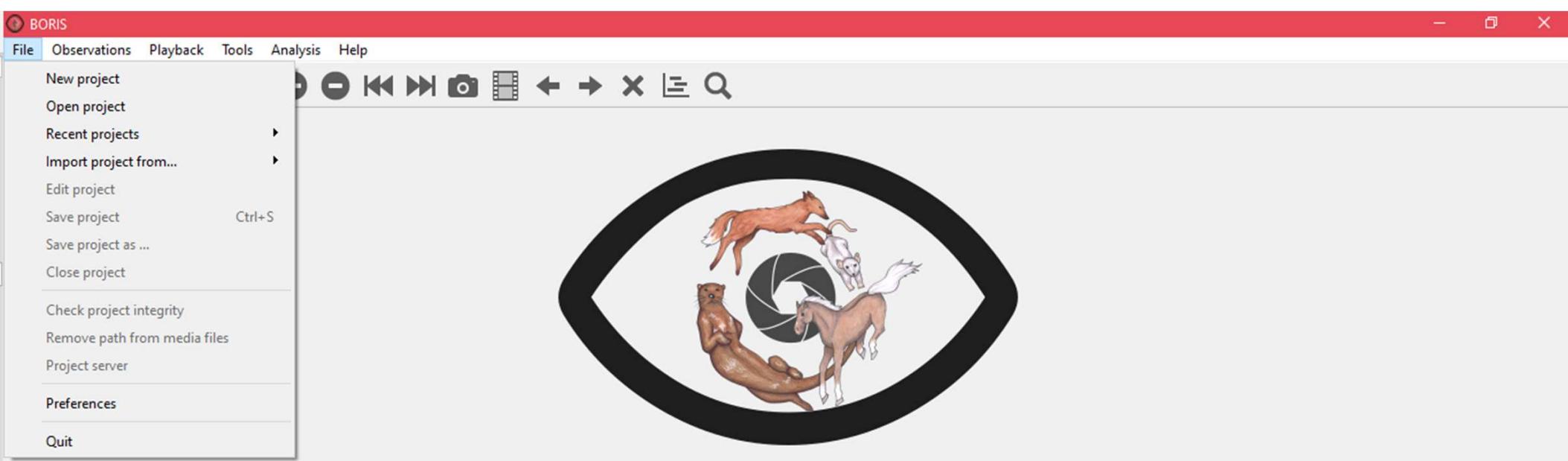


Guía Rapida: <https://boris.readthedocs.io/en/latest/>

Friard & Gamba, 2016



UNIVERSITÀ
DEGLI STUDI
DI TORINO



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DI TORINO

edit project

? X

Information Ethogram Subjects Independent variables Observations Behaviors coding map Converters

Project name

Regularity in the feeding patterns of the Great Tailed Grackle (*Quiscalus mexicanus*)

Project file path: C:\Users\aleja\Downloads\Great Tailed Grackle (*Quiscalus mexicanus*).boris

Date

2018-01-29 18:55:59



Description

The main aim of this observational study is determine if the Great Tailed Grackle (*Quiscalus mexicanus*) shows certain patterns of feeding behavior in an urban environment.

Time format

seconds

hh:mm:ss.mss

Cancel

OK

edit project

?

X

Information Ethogram Subjects Independent variables Observations Behaviors coding map Converters

Behavior type	Key	Code	Description	Category	Modifiers	Exclusion	Modifiers coding map	
1 State event	0	At the observation site	This states the moment where the ...			Searching for food		Add behavior
2 Point event	f	Fly	The focal animal flies away from the ...			Searching for food		Clone behavior
3 State event	s	Searching for food	The focal animal pecks the ground, ...					Remove behavior
4 Point event	j	Jump	The focal animal jumps or make a ...			Searching for food		Remove all behaviors
5 Point event	d	Displacement	The focal animal banish another bird ...	{'0': {'name': 'Displacement event...}}		Searching for food		Behavioral categories
6 Point event	o	Out of the sight	The focal animal is out of the sight for ...			Searching for food		Convert keys to lower case
7 Point event	1	One subject	Indicates that only one animal is at the ...					
8 Point event	2	Two subjects	Indicates that more than one animal is a...					
9 Point event	3	Three subjects	Indicates that more than one animal is a...					
10 Point event	4	Four subjects	Indicates that more than one animal is a...					
11 Point event	5	Five subjects	Indicates that more than one animal is a...					
12 Point event	6	Six subjects	Indicates that more than one animal is a...					
13 Point event	7	Seven subjects	Indicates that more than one animal is a...					
14 Point event	8	Eight subjects	Indicates that more than one animal is a...					
15 Point event	9	More subjects	Indicates that more					

[Cancel](#)[OK](#)

Regularity in the feeding patterns of the Great Tailed Grackle (Quiscalus mexicanus) - BORIS

File Observations Playback Tools Analysis Help

New observation Ctrl+N

Start observation Ctrl+O

View observation

Edit observation Ctrl+E

Observations list Ctrl+L

Close observation Ctrl+Q

Import observations

Export observations list

Add event Ctrl+A

Edit selected event(s)

Shift time of selected event(s)

Explore project

Find in events

Find/replace in events

Check state events

Fix unpaired events Ctrl+U

Select events from interval

Delete selected events

Delete all events

Export events ▾

Create subtitles

Extract sequences from media files

Extract frames from media files

Create transitions matrix ▾



Type	Description	Category	Modifiers	Excluded
event	This states the moment where the ...			Searching for food
event	The focal animal flies away from the ...			Searching for food
event	The focal animal pecks the ground, ...			
event	The focal animal jumps or make a ...			Searching for food
event	The focal animal banish another bird ...		{'0': {'name': 'Displacement event...}}	Searching for food
event	The focal animal is out of the sight for ...			Searching for food

Description	Current state(s)

New observation

Observation id: Date:

Description:

Independent variables:

	Variable	Type	
1	Time of day	timestamp	2017-10-25 00:00:00
2	Location	text	20°38'09.2"N 103°24'42"E

Time offset: + 0 : 00 : 00 : 000 hh:mm:ss seconds

Limit observation to a time interval

Media Live

Media files Data files

Player	Offset (seconds)	Path	Duration	FPS	Video	Audio

Add media Add media without path Remove selected media Add all media from directory Add all media from dir without path

Visualize the sound spectrogram for the player #1
 Visualize the waveform for the player #1
 Stop ongoing state events between successive media files

Cancel Save Start

File Observations Playback Tools Analysis Help



Ethogram

Player #1

Events for "pba" observation

	Key	Code
1	0	At the observation site
2	f	Fly
3	s	Searching for food
4	j	Jump
5	d	Displacement
6	o	Out of the sight



time	subject

Subjects

	Key	Name	Description
1		No focal subject	

InkedDesplazamiento.mp4: 00:00:00.000 / 00:00:10.867 (paused)

No focal subject

[Progress Bar] [Timeline] x1.000

Regularity in the feeding patterns of the Great Tailed Grackle (*Quiscalus mexicanus*) - BORIS

- □ X

File Observations Playback Tools Analysis Help

New observation Ctrl+N
Start observation Ctrl+O
View observation

Edit observation Ctrl+E
Observations list Ctrl+L

Close observation Ctrl+Q

Import observations

Export observations list

Add event Ctrl+A

Edit selected event(s)

Shift time of selected event(s)

Explore project

Find in events

Find/replace in events

Check state events

Fix unpaired events Ctrl+U

Select events from interval

Delete selected events

Delete all events

Export events ▶

Create subtitles

Extract sequences from media files

Extract frames from media files

Create transitions matrix ▶



Type	Description	Category	Modifiers	Excluded
event	This states the moment where the ...			Searching for food
event	The focal animal flies away from the ...			Searching for food
event	The focal animal pecks the ground, ...			
event	The focal animal jumps or make a ...			Searching for food
event	The focal animal banish another bird ...	{'0': {'name': 'Displacement event...}}		Searching for food
event	The focal animal is out of the sight for ...			Searching for food

Description	Current state(s)

Tabular events

Aggregated events

as behavioural sequences ▶

as Praat TextGrid

for analysis with JWatcher

as behaviors binary table

Regularity in the feeding patterns of the Great Tailed Grackle (*Quiscalus mexicanus*) - BORIS

- □ X

File Observations Playback Tools **Analysis** Help

Ethogram

	Key	Co	Option	Category	Modifiers	Excluded
1	0	At the obse	Cohen's kappa (time-unit)			Searching for food
2	f	Fly	here the ...			Searching for food
3	s	Searching for food	imal flies			Searching for food
4	j	Jump	he ...			Searching for food
5	d	Displacement	The focal animal			Searching for food
6	o	Out of the sight	pecks the ground, ...			Searching for food
			The focal animal			
			jumps or make a ...			Searching for food
			banish another bird ...		{'0': {'name': 'Displacement event...}}	Searching for food
			The focal animal			Searching for food
			is out of the sight for ...			Searching for food

Subjects

	Key	Name	Description	Current state(s)
1		No focal subject		

A close-up photograph of a Great-tailed Grackle, showing its dark blue-black plumage, white wing patch, and yellow eye ring. The bird is standing on a dry, brownish ground surface, looking towards the left.

Daily Patterns of Foraging and Aggressive Behaviors in Great-tailed Grackle (*Quiscalus mexicanus*) at an Urban Patch with Availability or Absence of Resources

Rodrigo, Avila-Chauvet & Buriticá (en revisión)

Objetivo de la investigación

- El objetivo principal de la investigación era conocer los patrones de alimentación de los zanates mexicanos cuando la disponibilidad de alimento era abundante o reducida.
- También nos interesaba conocer si las conductas de agresión incrementaban o disminuían en relación con la disponibilidad.



En el sitio de observación (Entrada)



En el sitio de observación (Salida)

Volar



Búsqueda de alimento



Salto



Desplazamiento



Fuera de vista

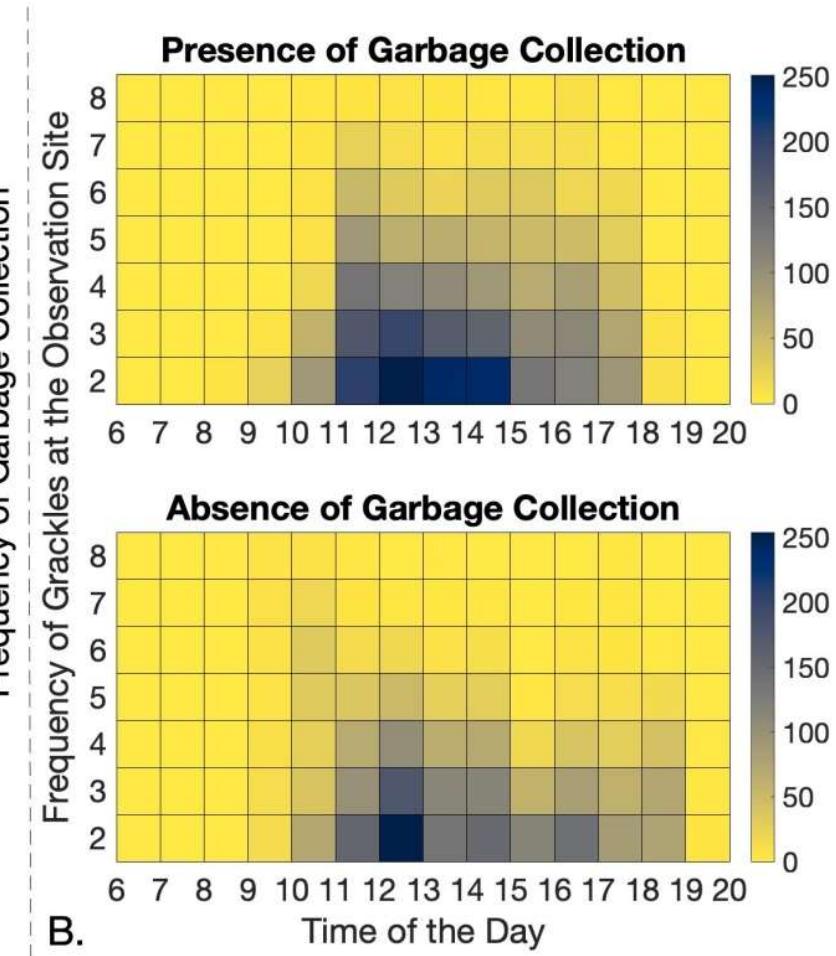
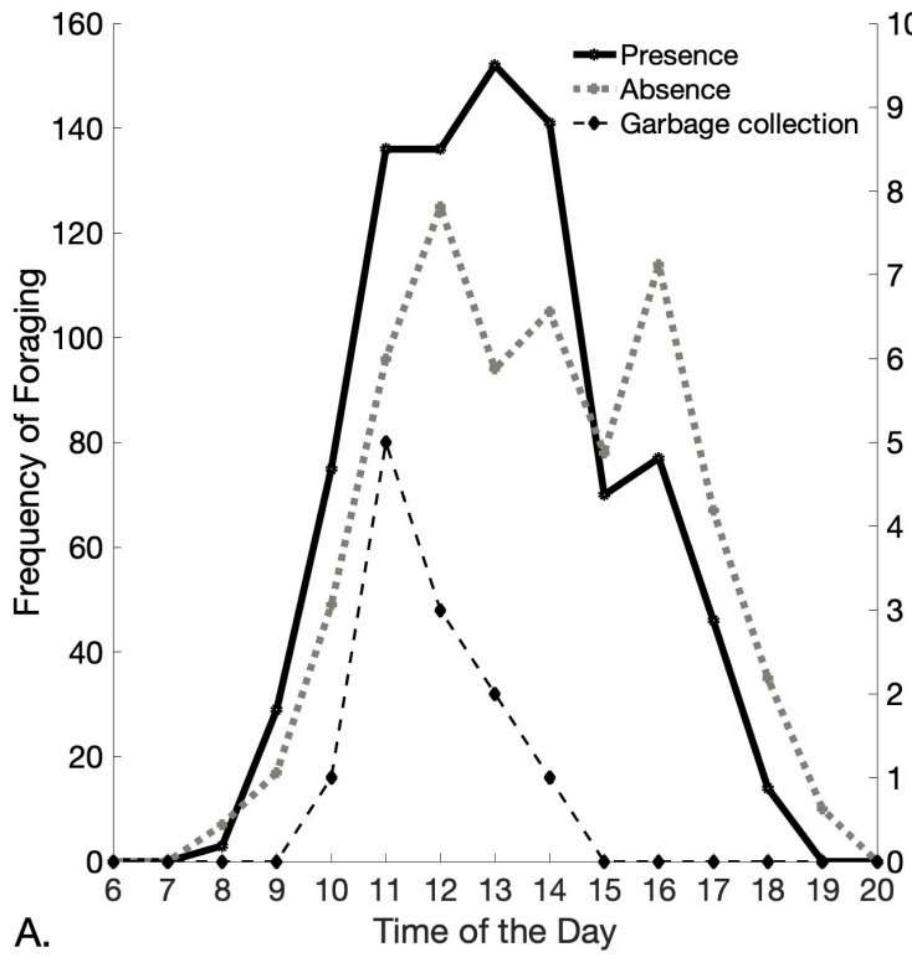


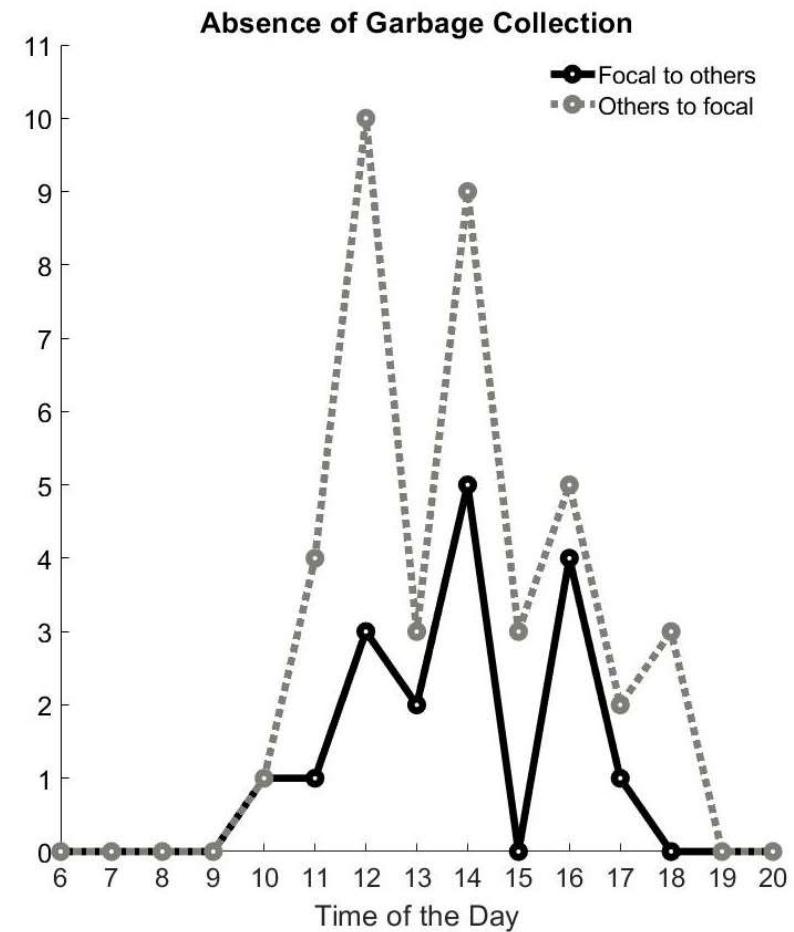
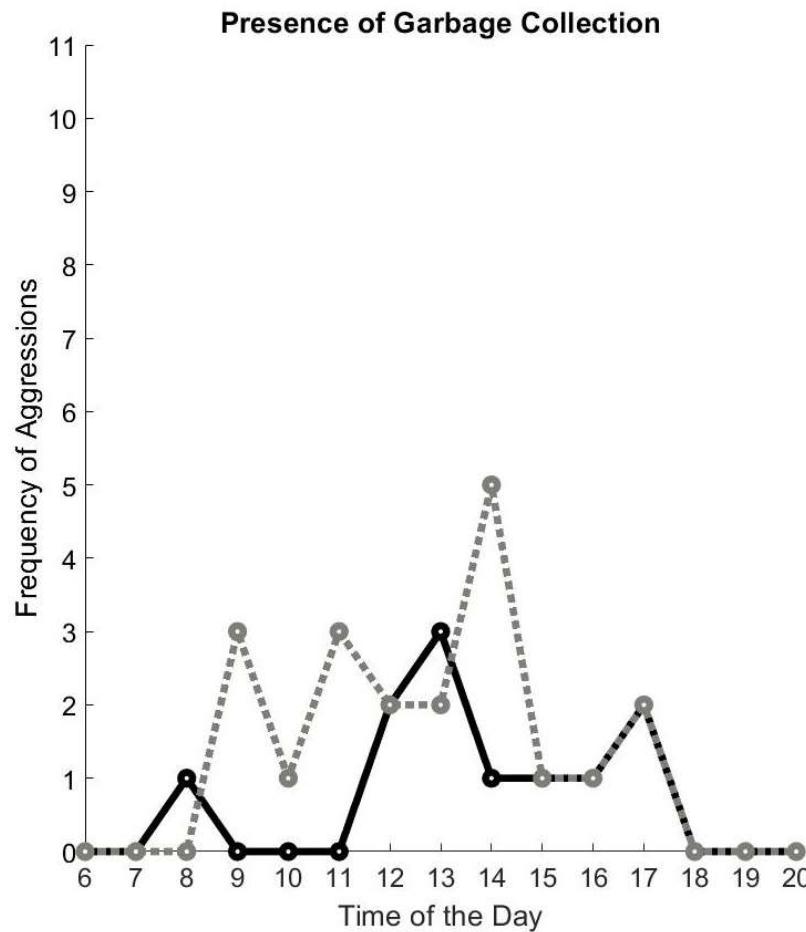
Basura



A close-up photograph of a black bird, likely a crow or raven, standing on a dirt path. The bird has dark feathers and a prominent white patch on its wing. It is looking slightly to the left. The background is blurred, showing a natural outdoor setting.

Resultados







Innovation in meerkats in captivity

Longán, A., Colell, M., **Rodrigo, A.**, Ensenyat, C., & Buritica, J. (En preparación)



File Observations Playback Tools Analysis Help



Player #1



00029.mp4.re-encoded.
3840px.
1000000k.avi:
200.400 /
401.000
(paused)
Focal subject:
(2)inf

Events for ...	
1	2.376
2	5.901
3	15.70
4	27.85
5	29.82
6	32.62
7	35.88
8	69.53
9	72.97

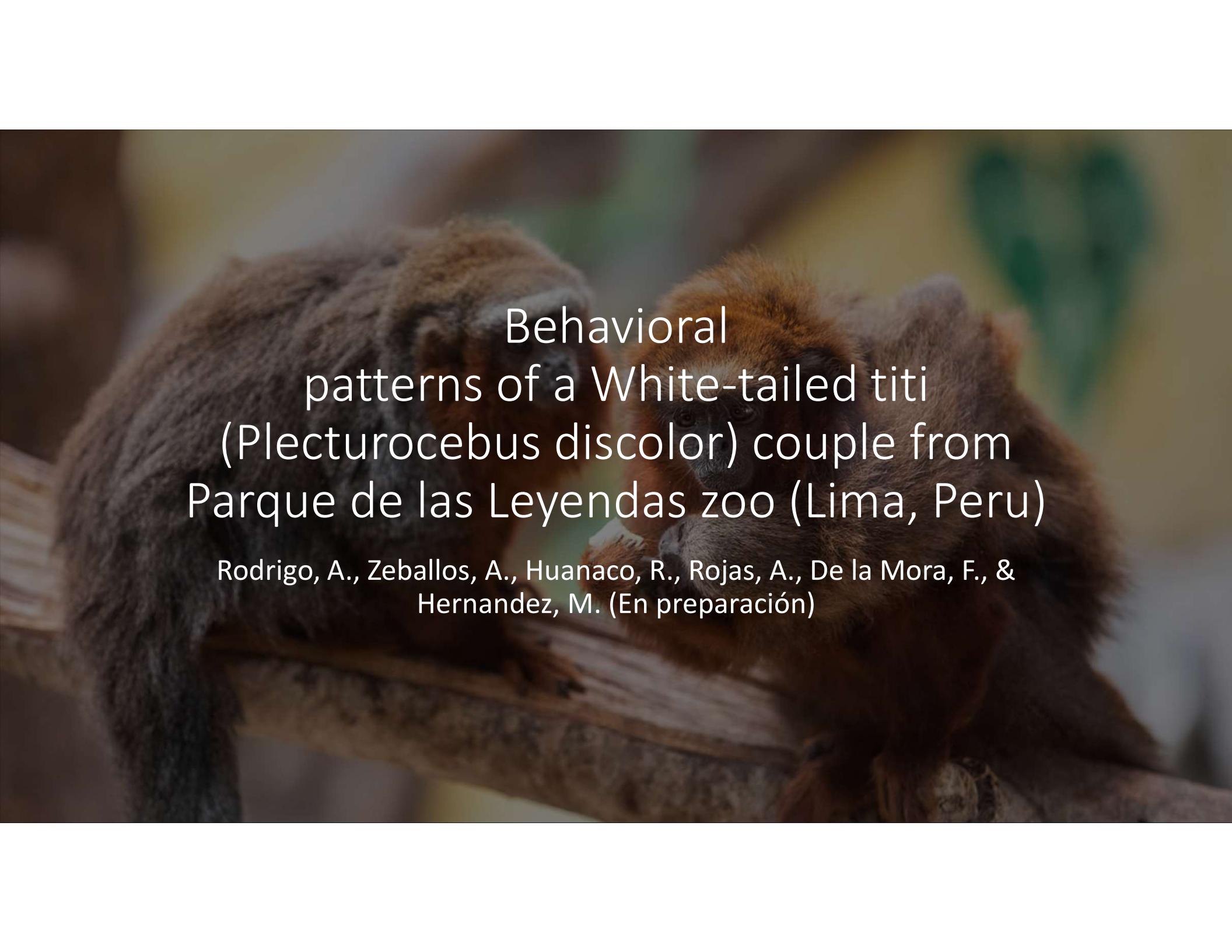
Ethogram

1	1
2	2
3	3
4	4

Subjects

1
< >

x1.000



Behavioral patterns of a White-tailed titi (*Plecturocebus discolor*) couple from Parque de las Leyendas zoo (Lima, Peru)

Rodrigo, A., Zeballos, A., Huanaco, R., Rojas, A., De la Mora, F., &
Hernandez, M. (En preparación)

File Observations Playback Tools Analysis Help



Player #1

2020/08/29 09:54:04



Ethogram

	Key	Code
1	a	Acicalar

53M31S_1598712811.mp4: **33.402 / 60.000** | total: **93.452 / 300.100**

No focal subject

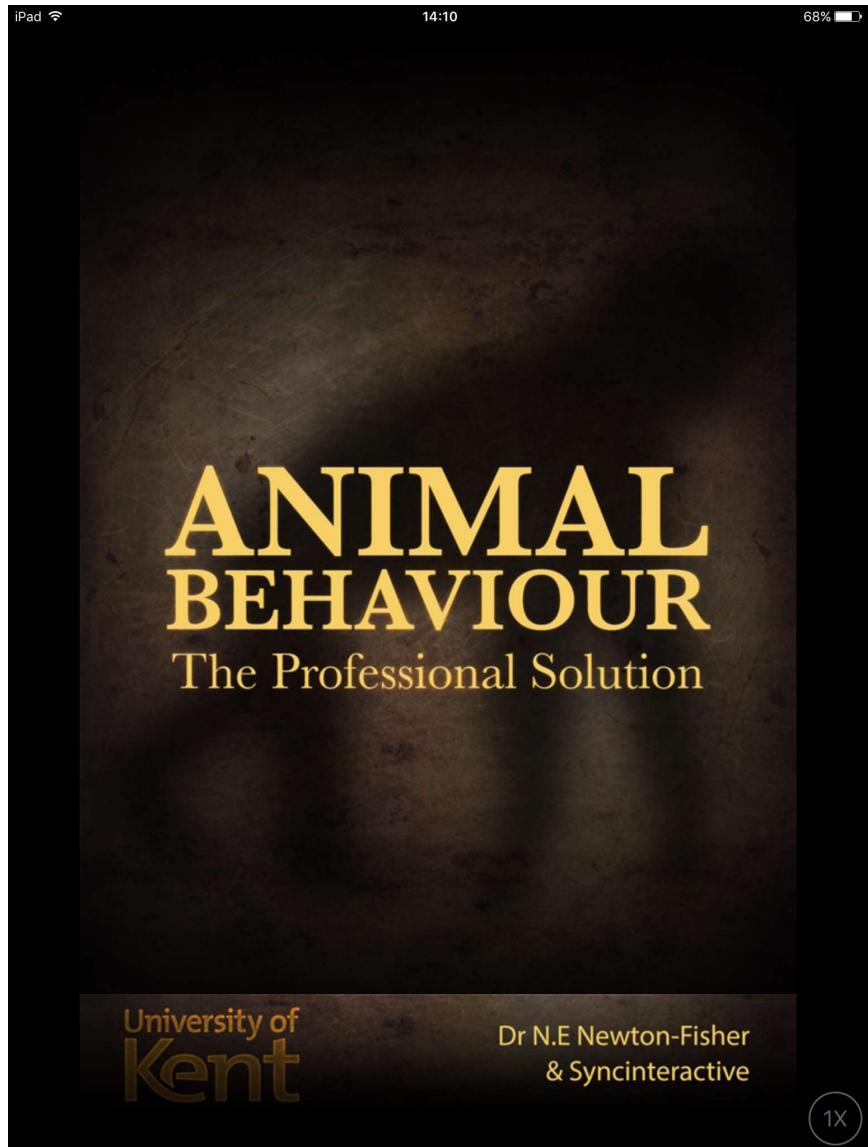
Subjects

	Key	Name
1		No focal subje

Events for "ARod-2020/08/29_09:52:32_10:52:32" observation

	time	subject	code	type
14	89.701	Macho	Desplazamiento	START
15	92.949	Macho	Desplazamiento	STOP
16	92.950	Macho	Sentado/Estático	START
17	94.200	Macho	Sentado/Estático	STOP
18	94.201	Macho	Levantarse	START

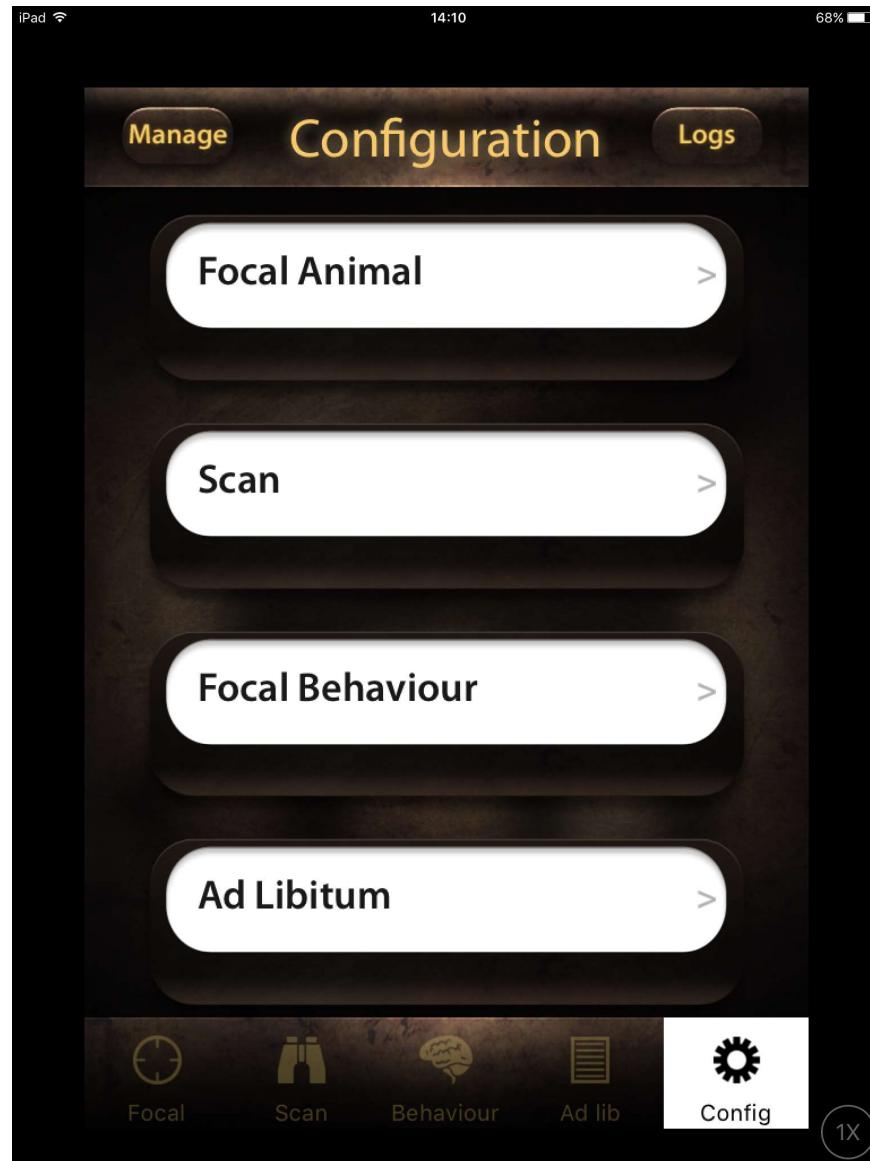
x1.000

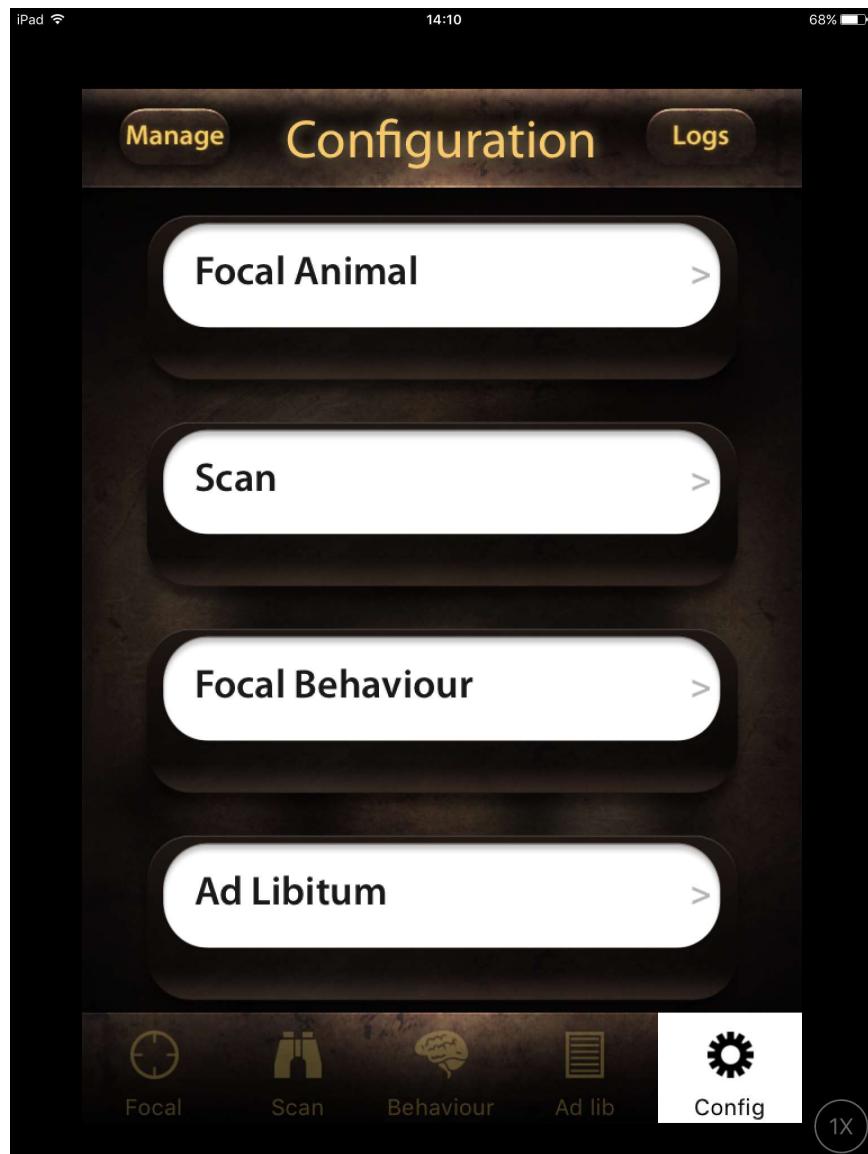


Guía Rapida

<https://www.youtube.com/watch?v=v9pLE9kpOnk>

Newton-Fisher, 2020





Almacenamiento de registros conductuales

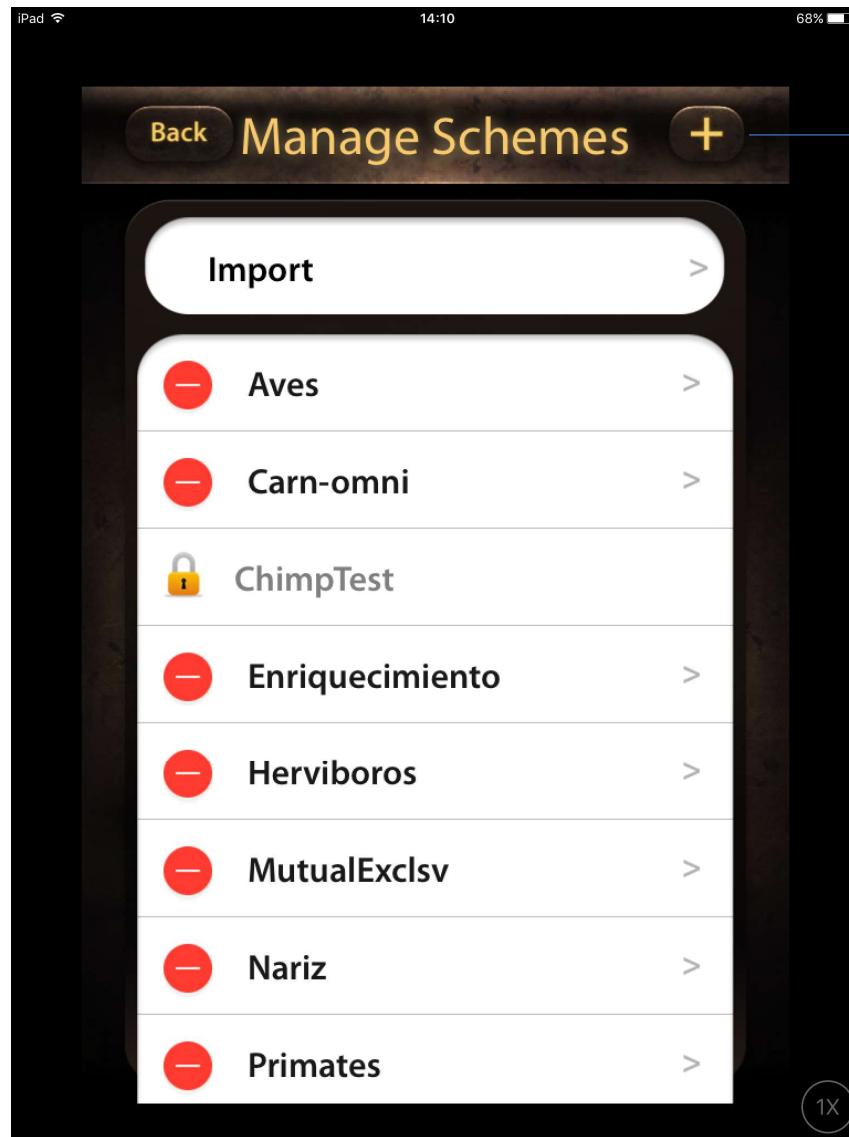
Tipos de registros observacionales

Configuration

- Focal Animal
- Scan
- Focal Behaviour
- Ad Libitum

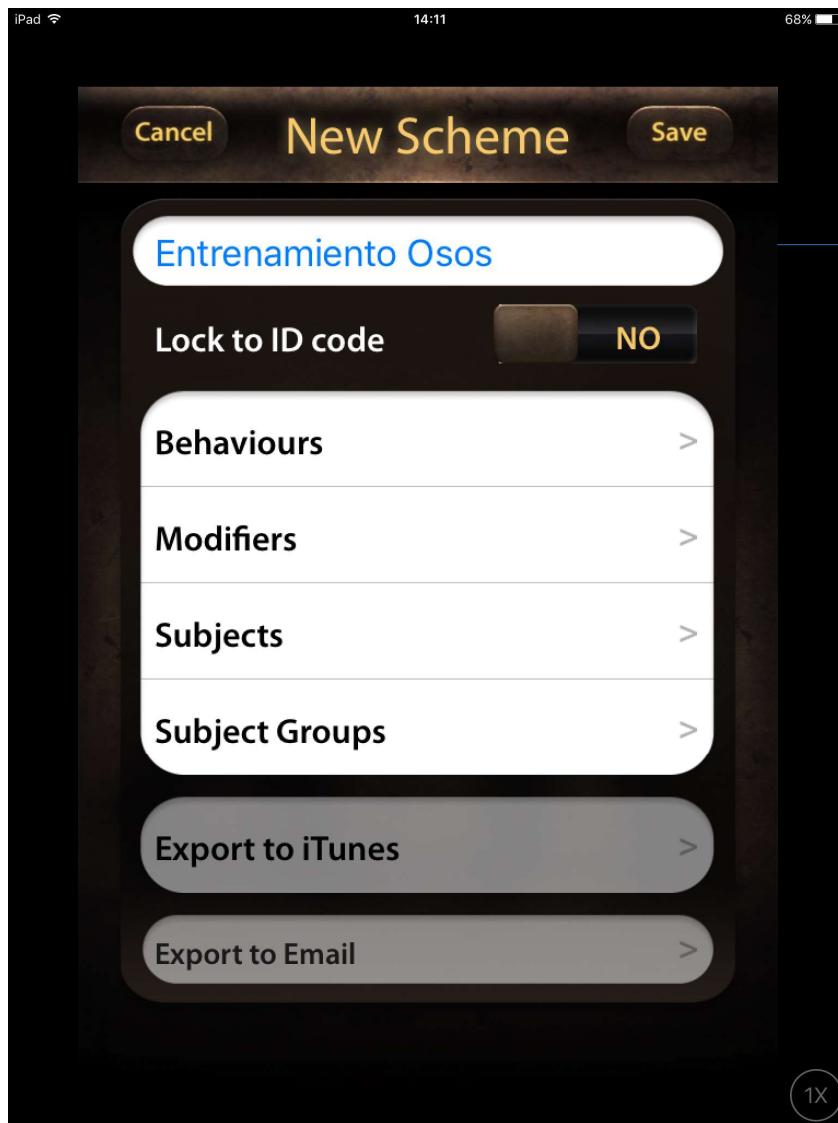
Manage Schemes

- Import
- Aves
- Carn-omni
- 🔒 ChimpTest
- Enriquecimiento
- Herviboros
- MutualExclsv
- Nariz
- Primates



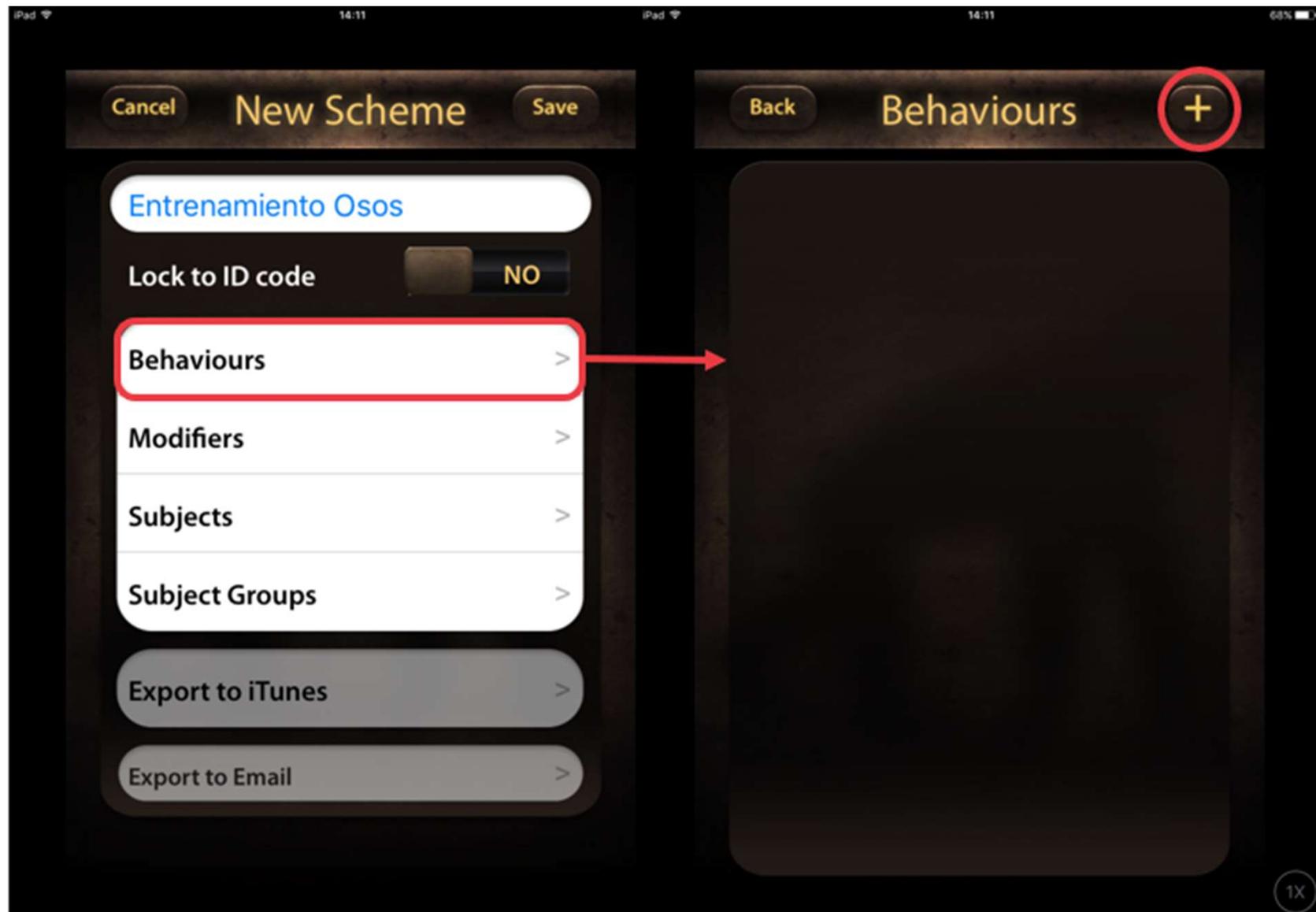
Agregar un etogramma nuevo

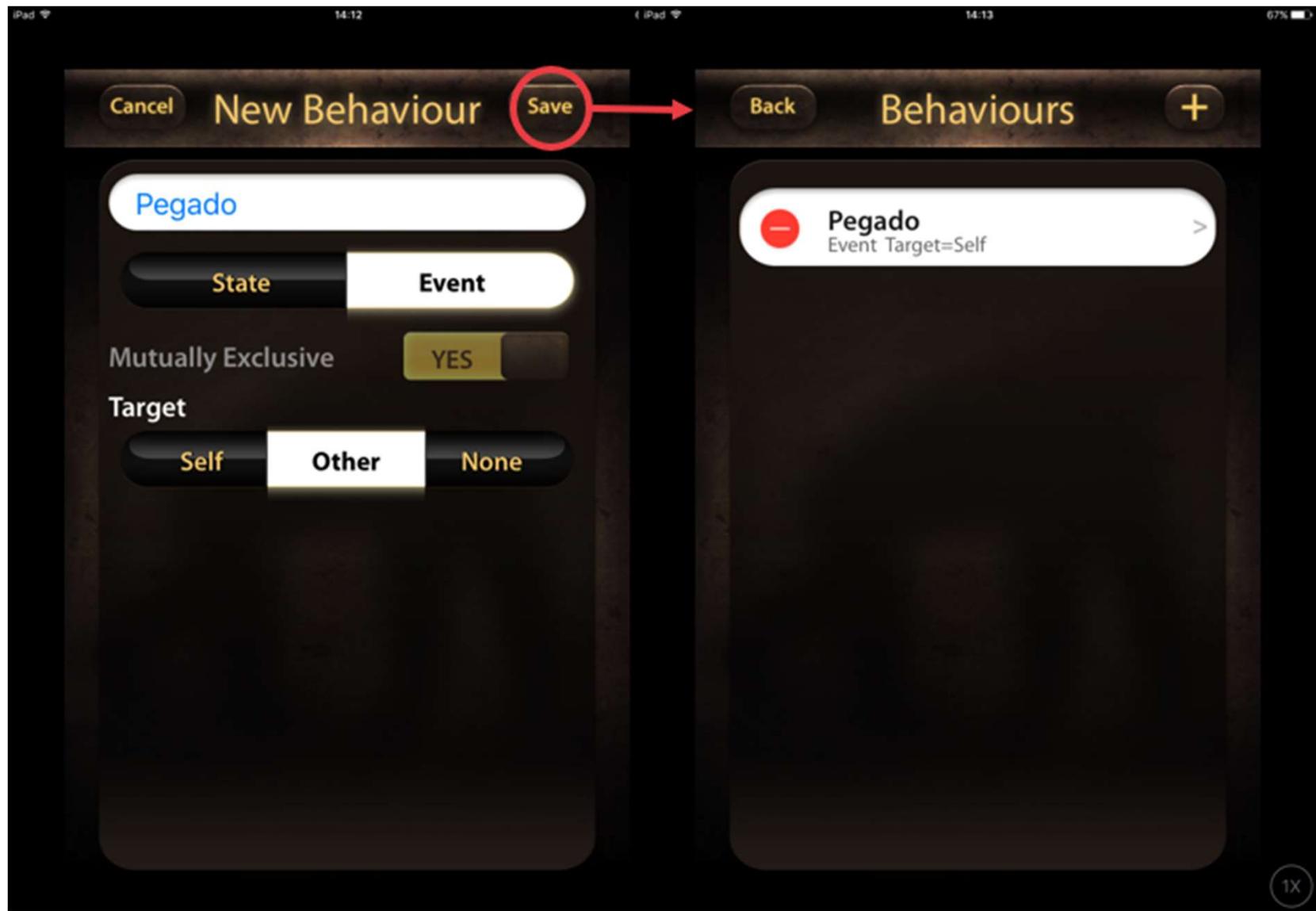
Lista de etogrammas programados

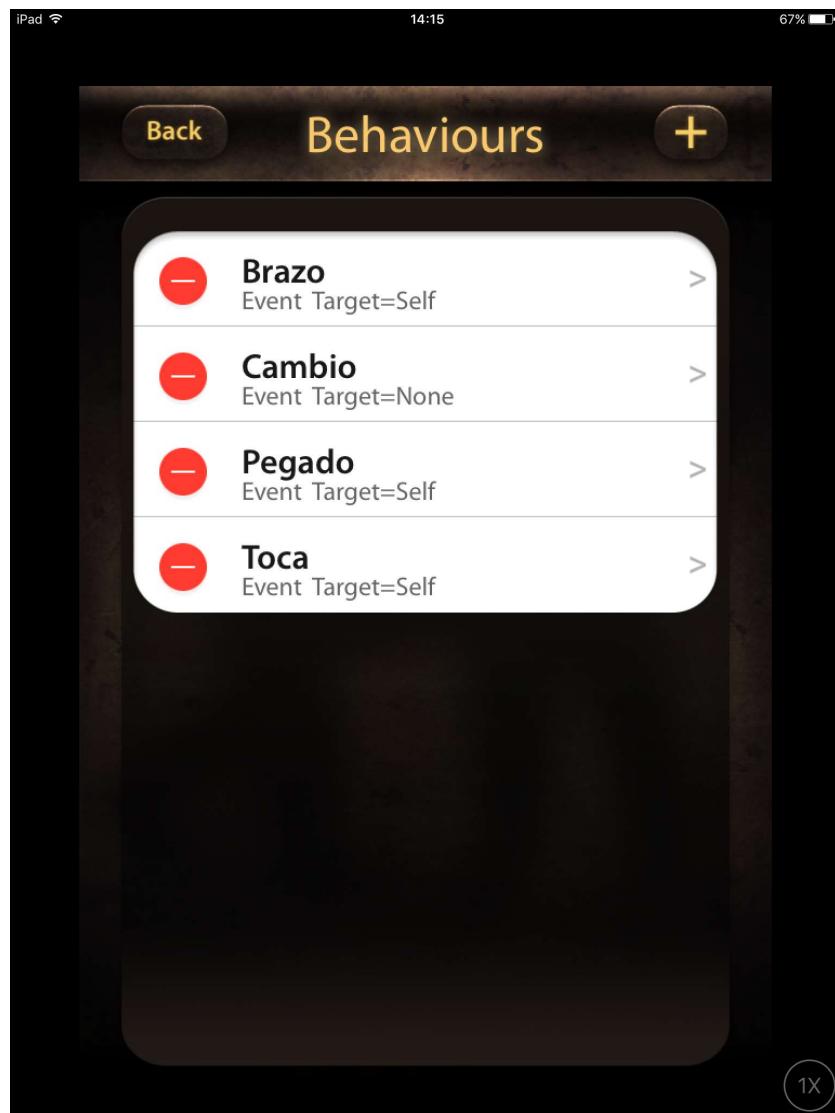


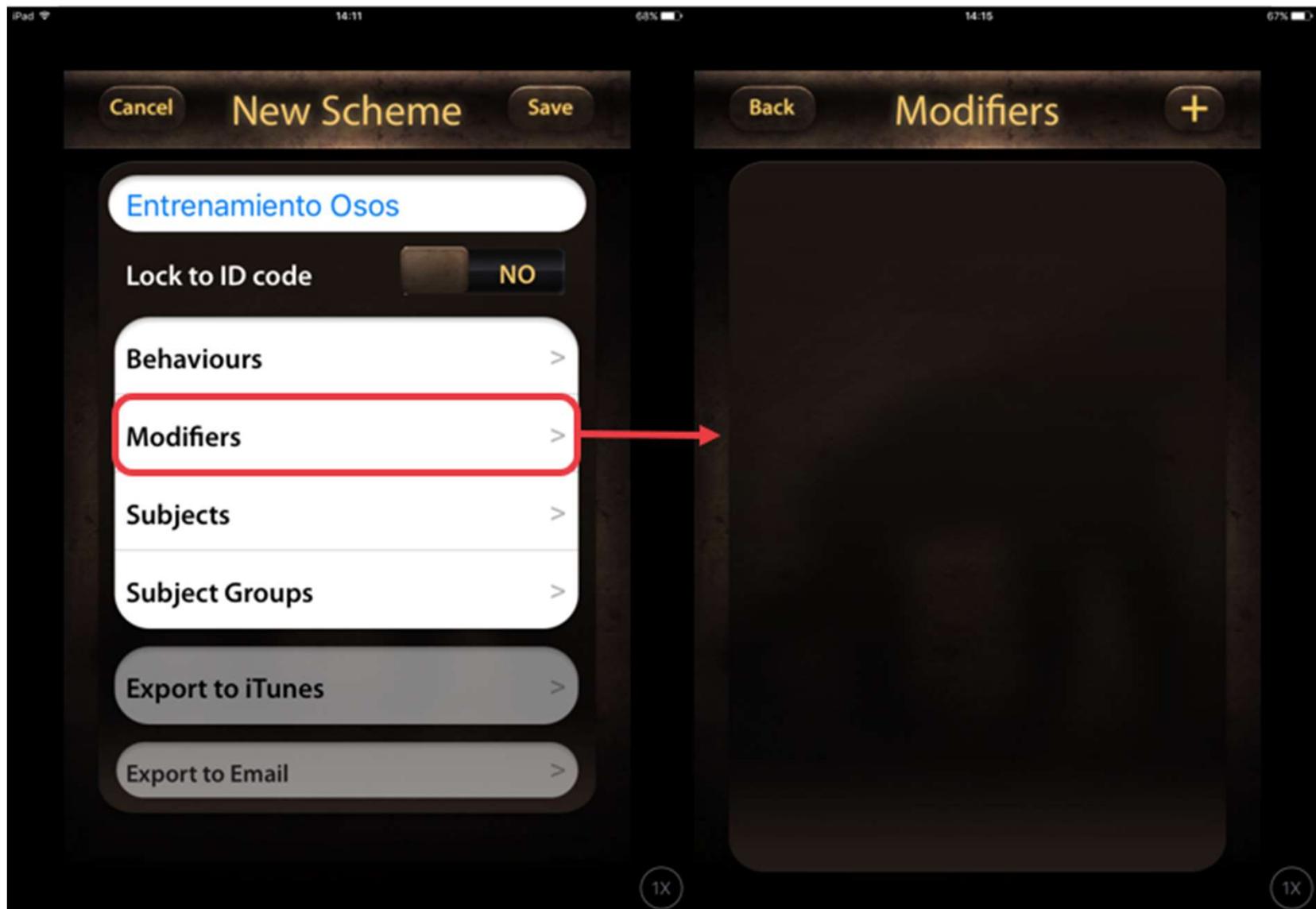
Nombre del etograma

Lista de comportamientos, modificadores y sujetos a incluir en nuestro etograma









Configuration

- Focal Animal >
- Scan >
- Focal Behaviour >
- Ad Libitum >

Focal Animal

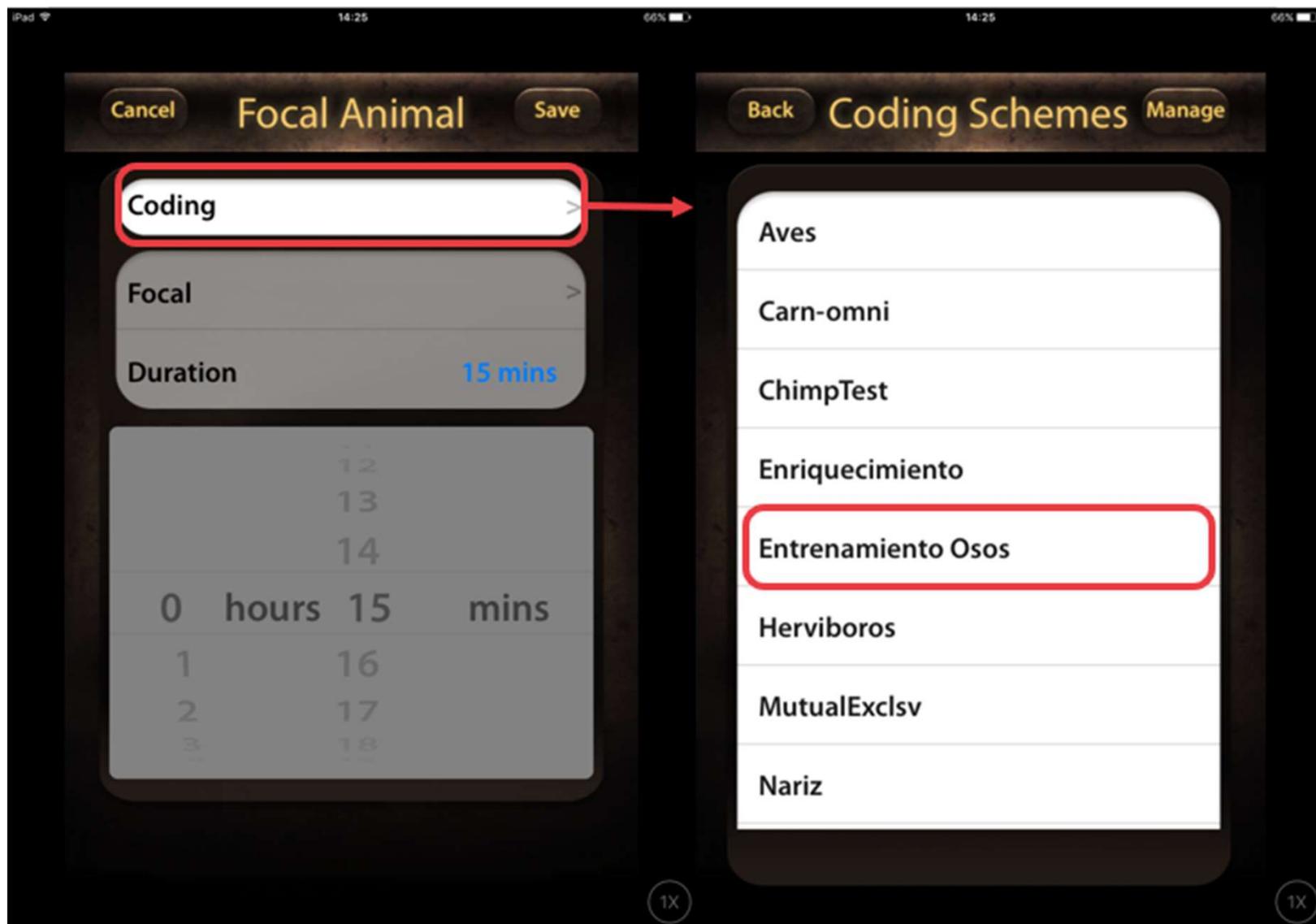
Coding >

Focal >

Duration 15 mins

0	hours	15	mins
1		16	
2		17	
3		18	

Focal Scan Behaviour Ad lib Config 1X 1X



The image displays two screenshots of a mobile application interface, likely for tracking animal training sessions.

Screenshot 1: Focal Animal

- Top Bar:** iPad, 14:25, 66%, 21:29, 68%.
- Header:** Focal Animal (Cancel, Save).
- Coding:** Entrenamiento Osos > (with a red arrow pointing to the "Focal" field).
- Focal:** Focal > (highlighted with a red box).
- Duration:** 15 mins.
- Time Selection:** A modal showing a 24-hour clock face with numbers 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, and 24. Below the clock are fields for hours (0, 1, 2, 3) and minutes (15, 16, 17, 18). The value 15 mins is also displayed above the time selection.

Screenshot 2: Focal Subject

- Header:** Focal Subject (Back).
- List:** A list of names: Alloth, Baldomero, Kike, Noah, and Zoé.

The image displays two side-by-side screenshots of a mobile application interface, likely for fieldwork or data entry.

Left Screenshot: Focal Animal Configuration

- Top Bar:** Contains "Cancel", "Focal Animal", and a red-circled "Save" button with a red arrow pointing to it.
- Section Headers:** "Coding" and "Entrenamiento Osos >" (blue link).
- Setting Labels:** "Focal" and "Alloth >" (blue link).
- Setting Labels:** "Duration" and "15 mins >" (blue link).
- Duration Input:** A numeric keypad showing hours and minutes:
 - Hours: 0, 1, 2, 3, ... (with 12, 13, 14 above)
 - Minutes: 15, 16, 17, 18, ... (with 19, 20, 21 below)

Right Screenshot: Configuration Overview

- Top Bar:** Contains "Manage", "Configuration", and "Logs".
- Section Headers:** "Focal Animal" and "Ready >" (blue link). Below it, text says "Current: 15 mins duration, focal = Alloth".
- Buttons:** "Scan", "Focal Behaviour", and "Ad Libitum" (each with a right-pointing arrow).
- Bottom Navigation:** A row of icons with counts:
 - Focal: 1X (highlighted with a red box)
 - Scan: 1X
 - Behaviour: 1X
 - Ad lib: 1X
 - Config: 1X



Left Screen (21:20):

End Focal Animal 00:15:00

ACTOR : BEHAVR : RECSR

modifier1 modifier2 modifier3

Actor Behav Recvr Modfr OK

Brazo Cambio Comando conducta
Entrena dor Pegado Reforza dor
Sin Conducta Toca

Verbal

Actor Behav Recvr Modfr OK

No verbal Otro Target
Verbal

Focal Scan Behaviour Ad lib Config

1X

Right Screen (21:21):

End Focal Animal 00:14:30

Alloth : Comando conducta : Alloth

Verbal

Actor Behav Recvr Modfr OK

No verbal Otro Target
Verbal

Focal Scan Behaviour Ad lib Config

1X







Configuration

- Focal Animal >
- Scan >
- Focal Behaviour >
- Ad Libitum >

Logs

Logs

Back

Focal Animal

Alloth
12 feb 2019 14:25:46 to 12 feb 2019 14:26:27

Wero
13 nov 2018 17:31:37 to 13 nov 2018 17:37:36

Cristina
11 nov 2018 10:58:07 to 11 nov 2018 11:00:54

Rebeca
11 nov 2018 10:55:07 to 11 nov 2018 10:57:44

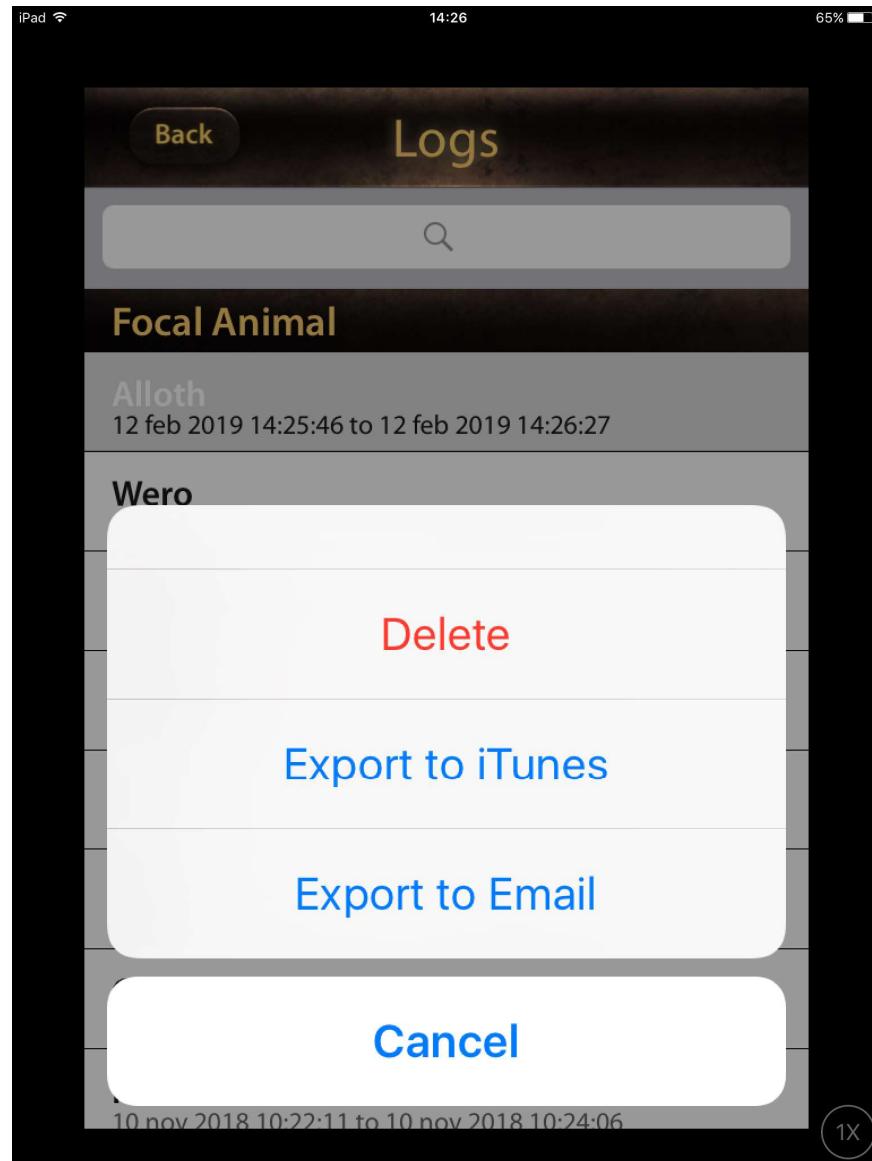
Judo
11 nov 2018 10:52:05 to 11 nov 2018 10:54:36

Wero
11 nov 2018 10:42:13 to 11 nov 2018 10:47:07

Cristina
10 nov 2018 10:25:08 to 10 nov 2018 10:26:49

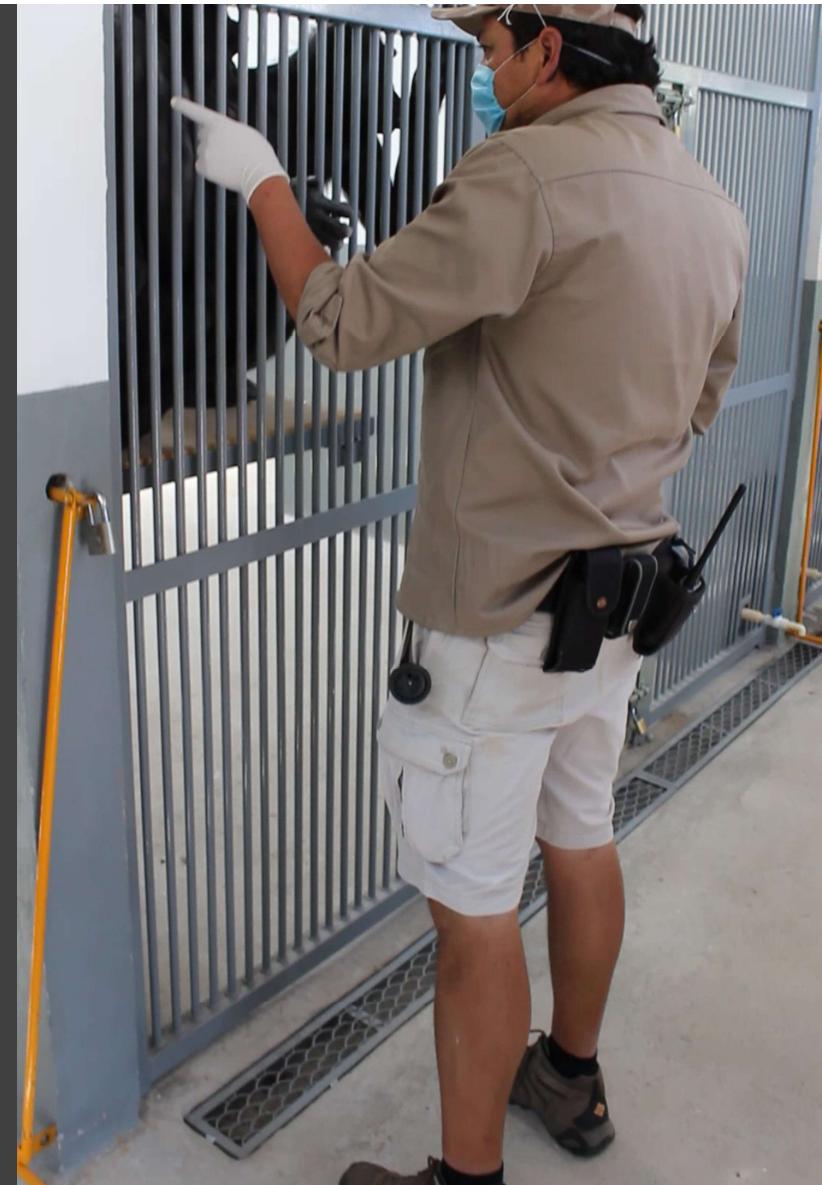
Rebeca
10 nov 2018 10:22:11 to 10 nov 2018 10:24:06

1X



Evaluación de los programas de entrenamiento a través del uso de etogramas

Longán, Rodrigo & Gomez-Medina (En
preparación)



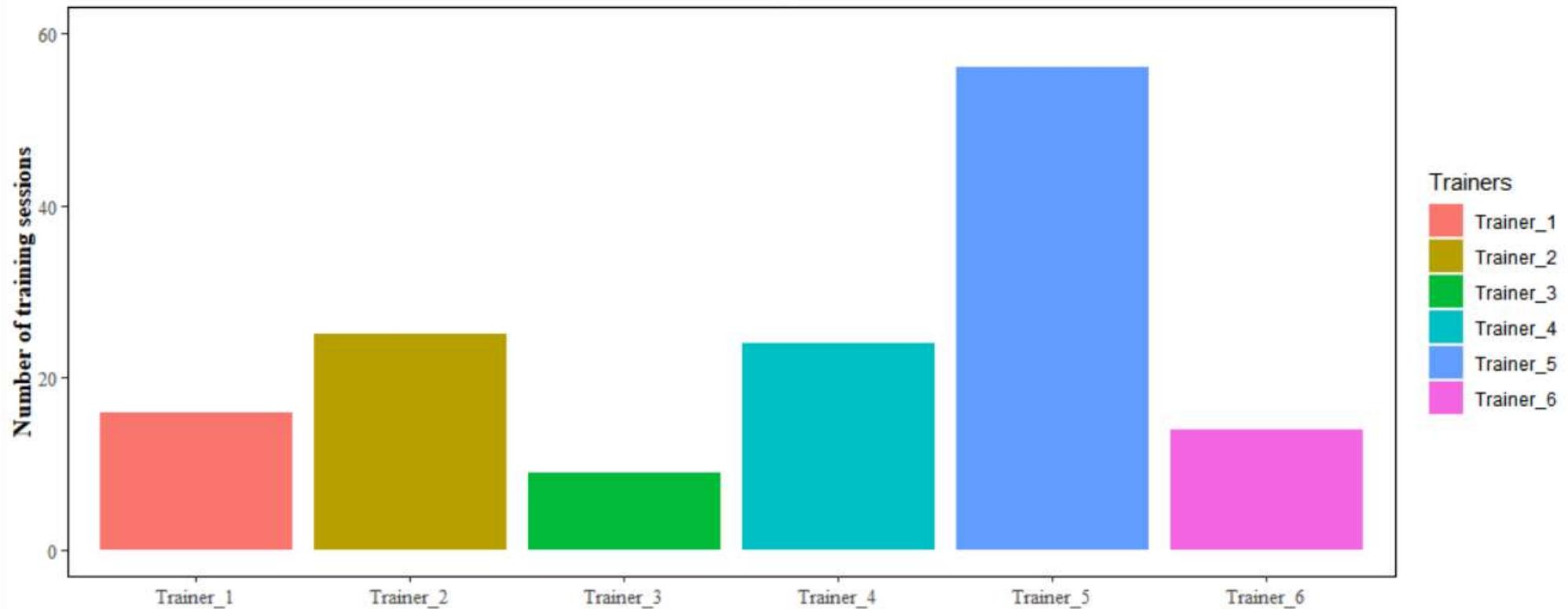
Objetivo de la investigación

- Proponer una forma objetiva de evaluar los programas de entrenamiento en animales de zoológico.
 - 1) índice de correspondencia
 - 2) duración de las sesiones de entrenamiento
 - 3) variabilidad del repertorio conductual de las especies que se entrena
- El índice de correspondencia se calculó siguiendo los parámetros de la contingencia Skinneriana de tres términos (S-R-Er): los comandos emitidos por los entrenadores (S), los comportamientos realizados por los animales (R) y el número de reforzadores entregados (Er).

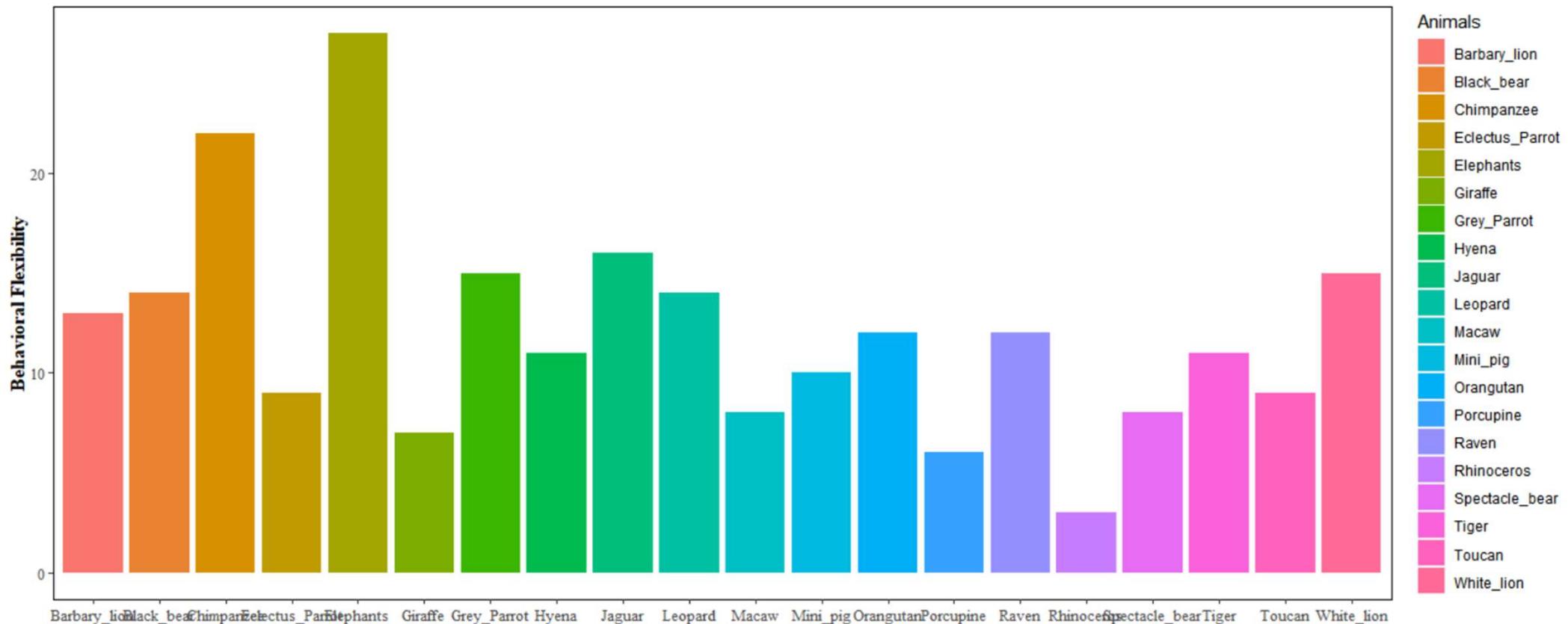


Resultados

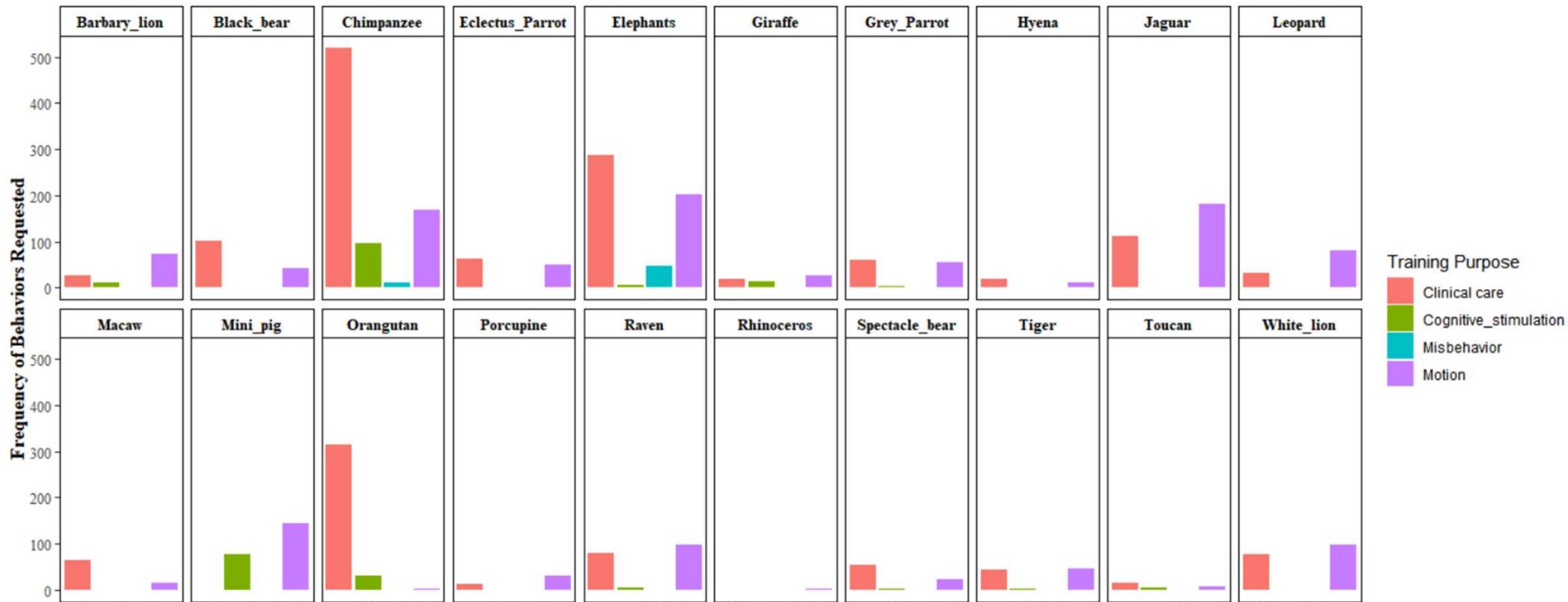
Recorded sessions per trainer

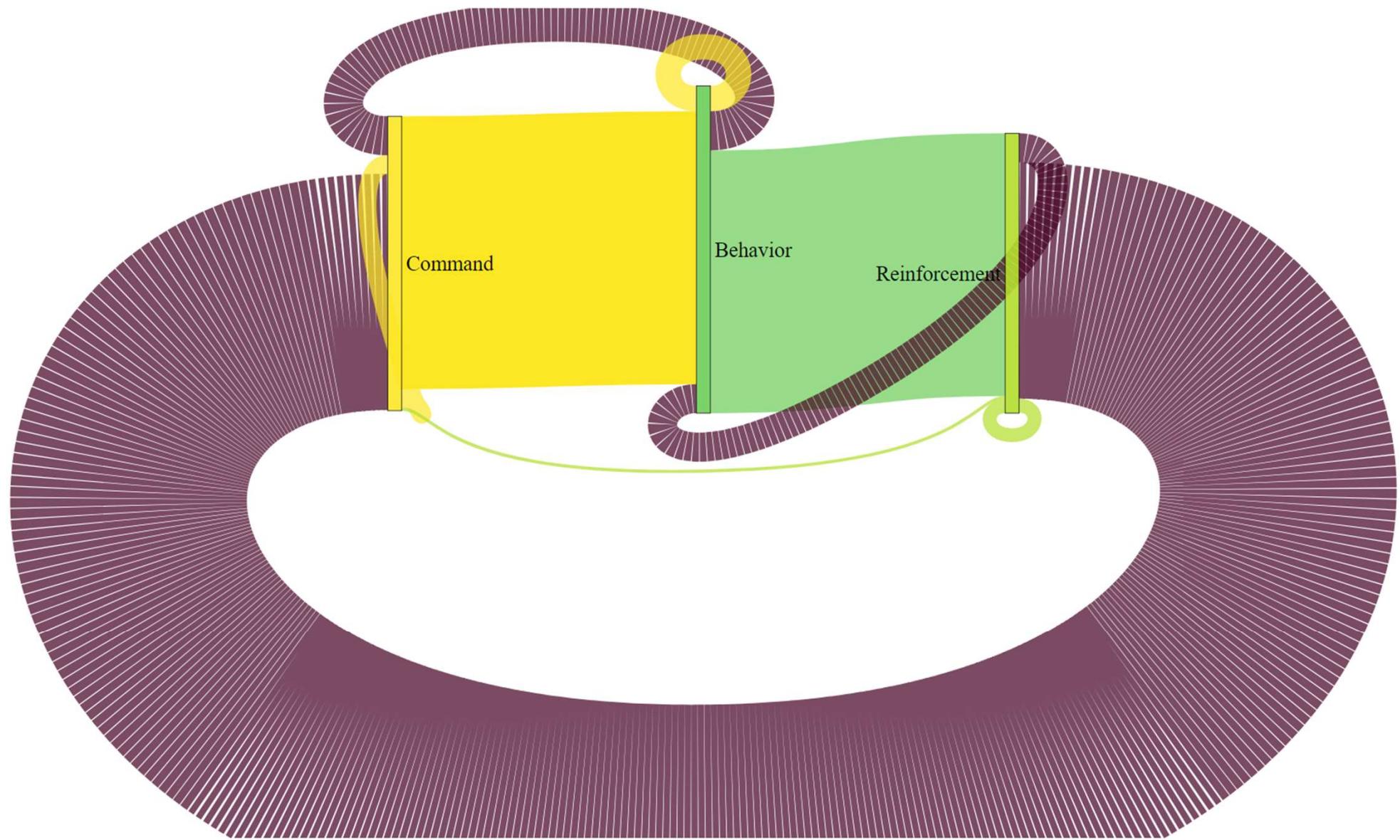


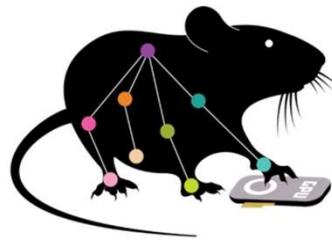
Number of trained behaviors



Type of trained behaviors







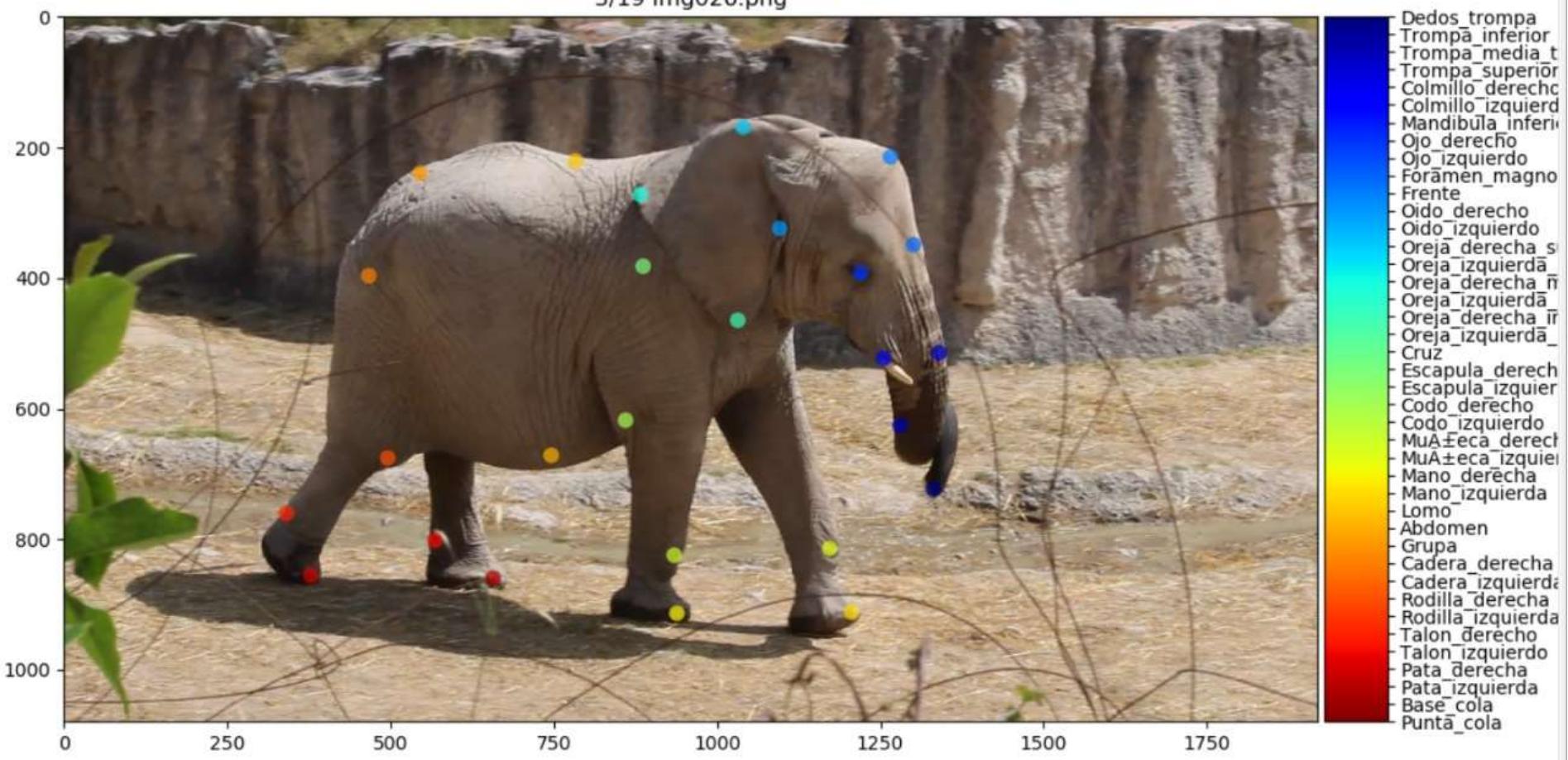
DeepLabCut:

a software package for
animal pose estimation



Mathis et al., 2018; Bova et al., 2019; Nath et al., 2019,. Mathis & Mathis, 2020

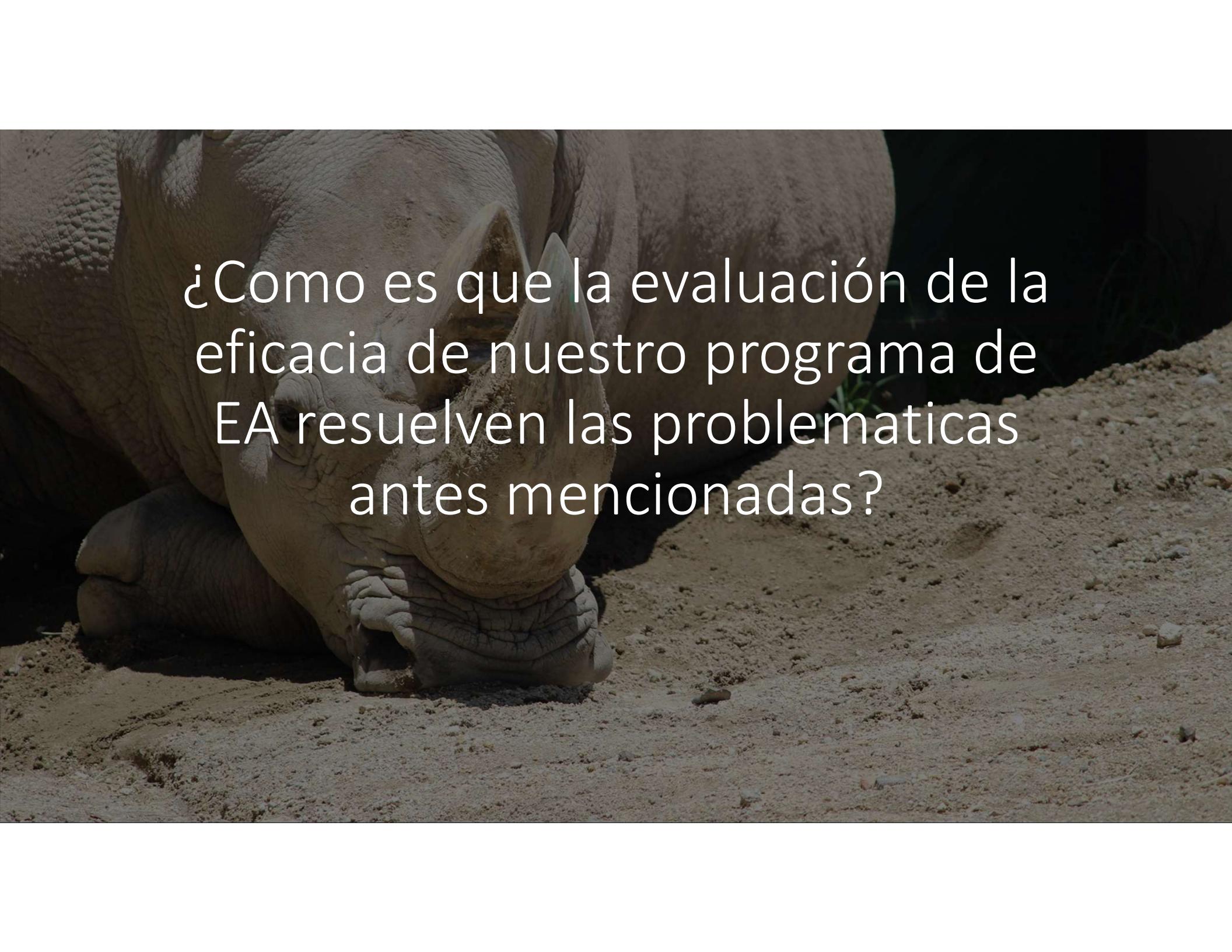
3/19 img026.png



Using artificial intelligence to determine and prevent foot problems in African elephants (*Loxodonta africana*)

Rodrigo & Martinez (En preparación)





¿Como es que la evaluación de la
eficacia de nuestro programa de
EA resuelven las problemáticas
antes mencionadas?

En conclusión

- El registro y análisis del comportamiento nos ayuda a conocer mejor a los animales que se encuentran bajo cuidado humano, respondiendo preguntas acerca de la causa, función, desarrollo y evolución de la conducta.
- Nos ayuda a conocer cuál es estado de salud de nuestros individuos.
- Nos permite implementar técnicas de evaluación de los programas de bienestar animal, incluidos el programa de enriquecimiento y entrenamiento animal.

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¡Gracias por su atención!



rodrigo.gutierrezt@alumno.udg.mx



@alejandrodrigo



alejandrodrigo86.github.io/Web/



alejandrodrigo86