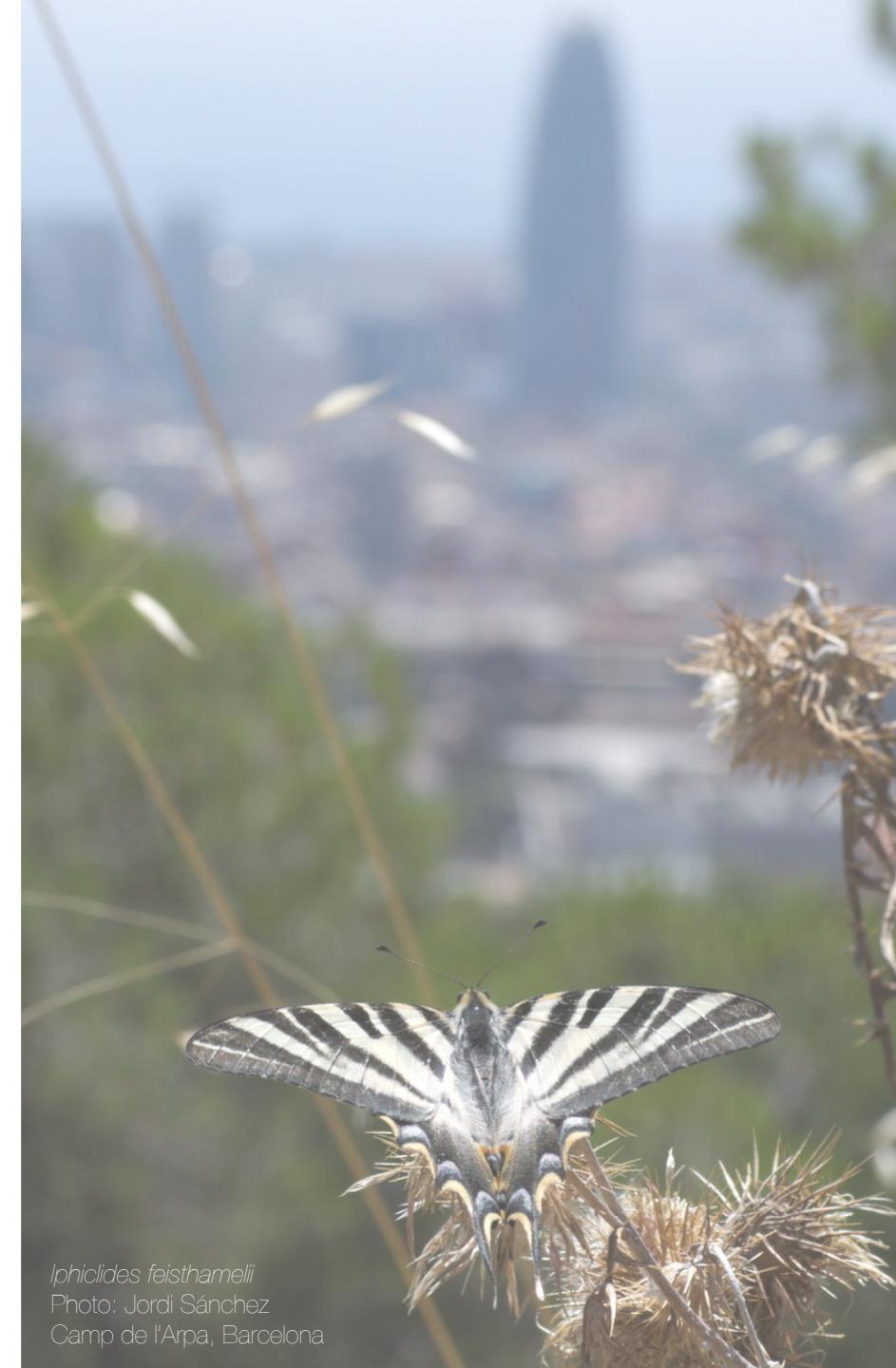


# **Seguimiento de mariposas en las ciudades (uBMS): Del voluntariado a la ecología y la planificación urbana**

Yolanda Melero



*Iphiclides feisthamelii*  
Photo: Jordi Sánchez  
Camp de l'Arpa, Barcelona

# “uBMS: urban butterfly monitoring scheme”

## 2018 - ongoing



EXCEL·LÈNCIA  
SEVERO  
OCHOA



Citizen science project in Barcelona and Madrid to collect **long term temporal data on butterfly species abundances in urban areas.**

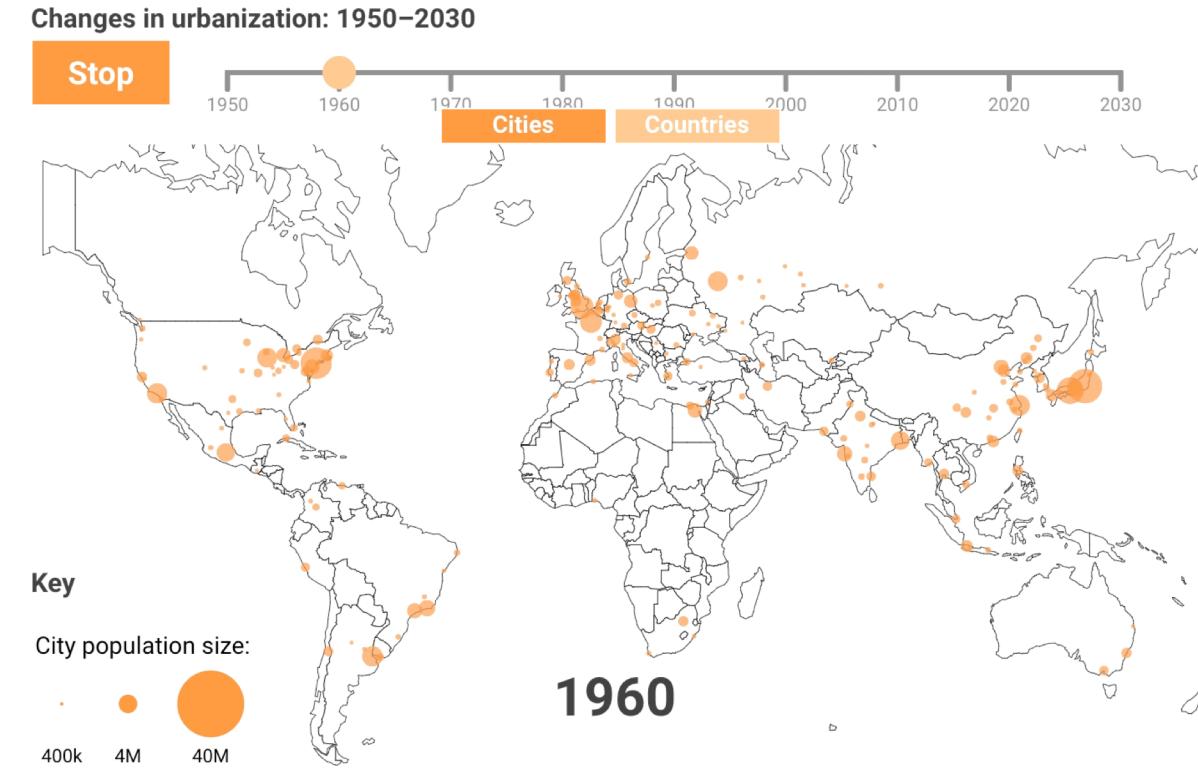
Describing **taxonomical and functional biodiversity in urban areas**, and understand their **patterns and processes**



# BUTTERFLY MONITORING TO BETTER UNDERSTAND URBAN BIODIVERSITY



Ana Jiménez @LA VANGUARDIA



Malakott et al. 2016 Science, 352.

# A driver of global change impacting local and global biodiversity



B

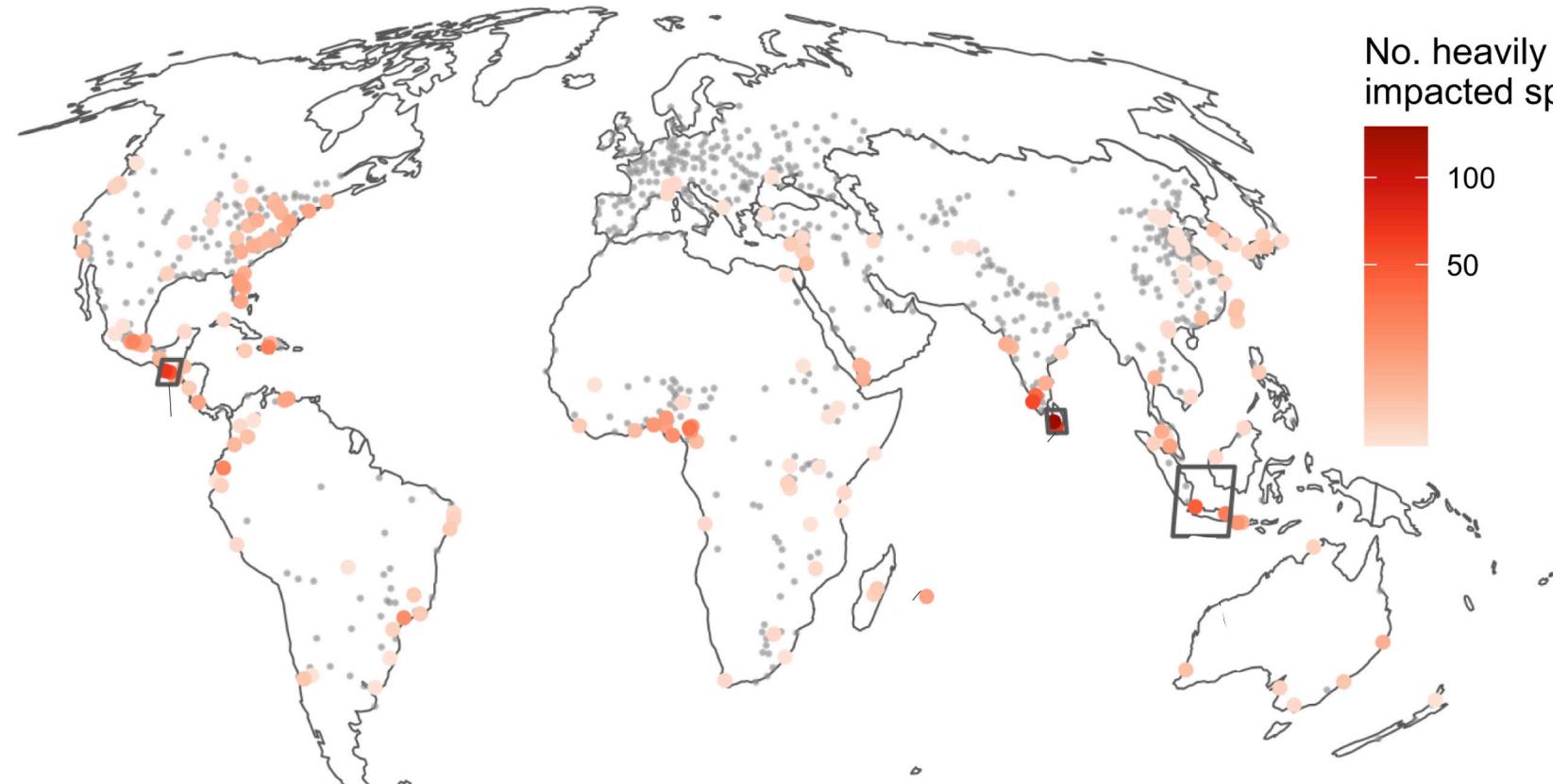


Fig. Number of impacted species due to urbanisation. McDonald et al, 2019. Nature.

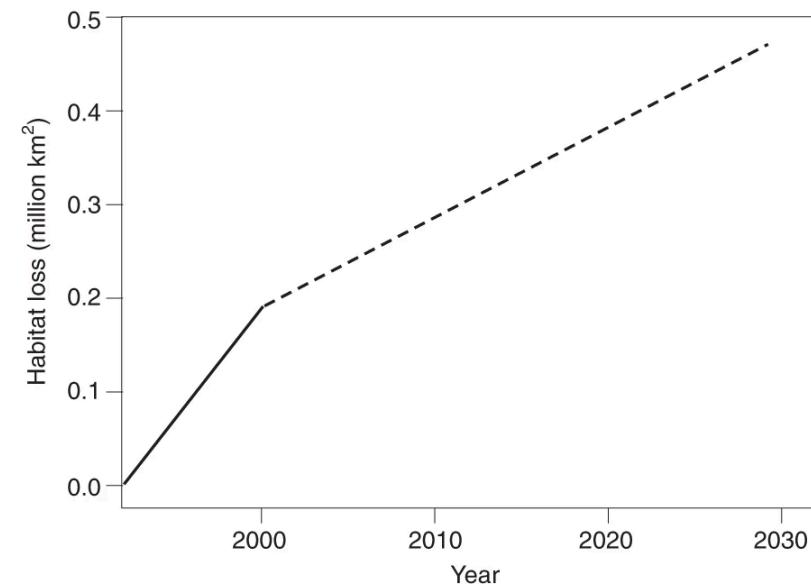
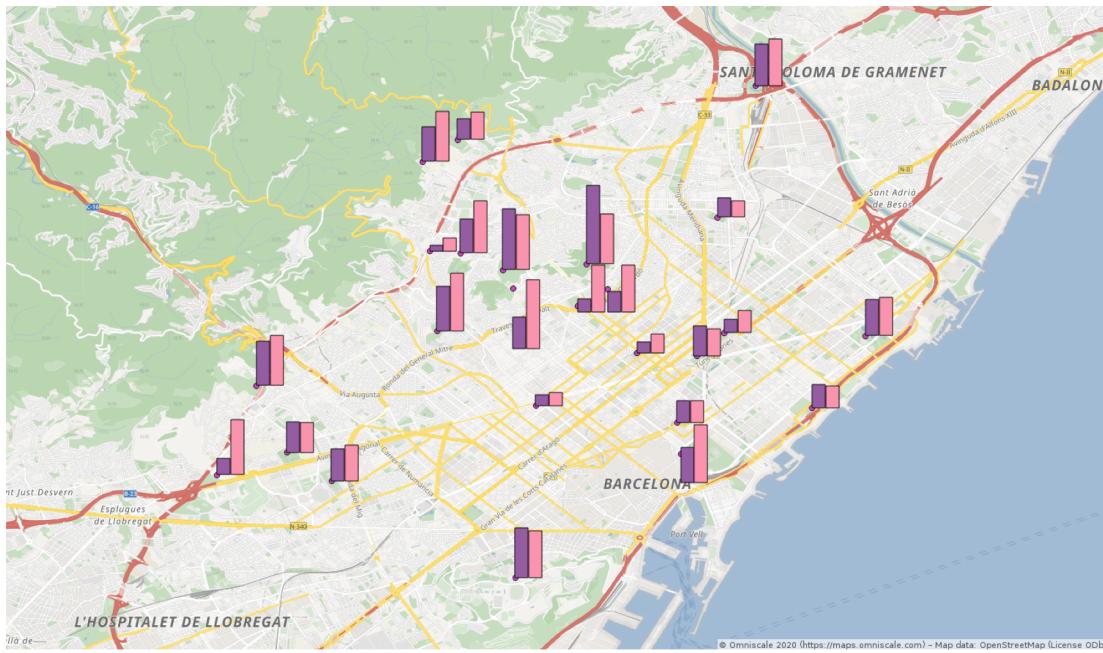


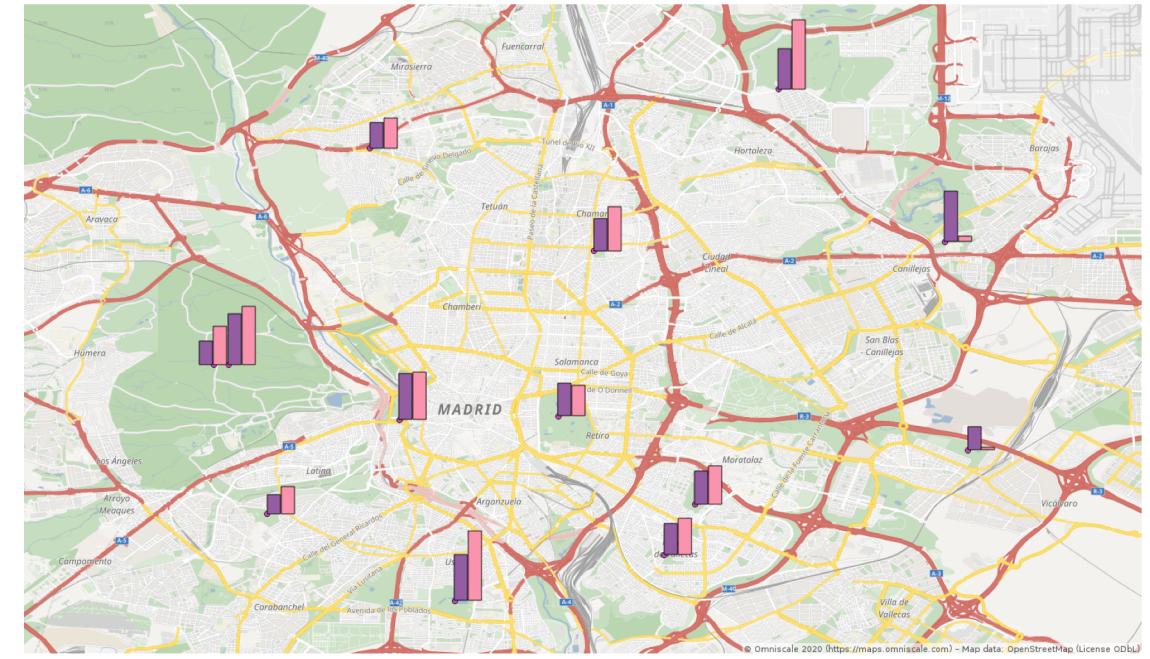
Fig. Cumulative habitat loss caused by urban growth since 1992. McDonald et al, 2019. Nature

# COVERING URBAN PARKS OF DIFFERENT CHARACTERISTICS: CONNECTIVITY, VEGETATION AND SIZE

- Average number of species 2018-2021
- Number of species 2022

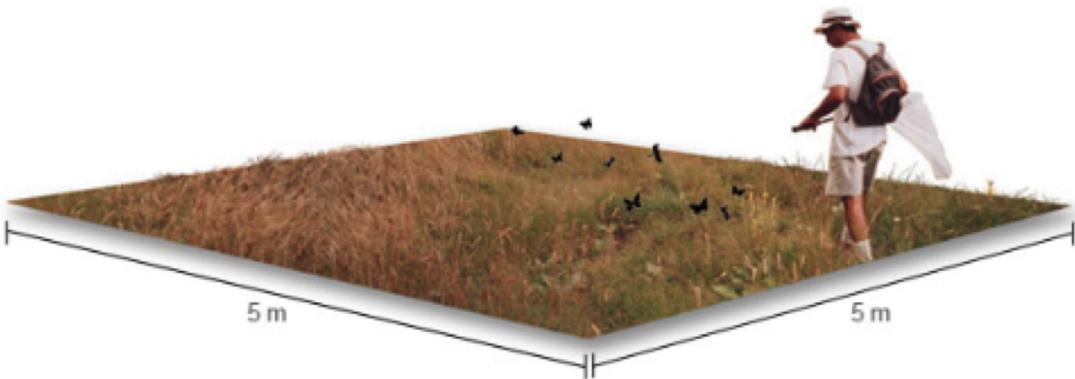


Map of Barcelona monitoring sites. A total of 29 sites are offered, of which 25 are being monitored.



Map of Madrid monitoring sites. A total of 25 sites are offered, of which 13 are being monitored.

# METHODOLOGY: BMS + COCONUT PROJECT



Pollard Walk - As in any BMS  
300m transects



## Parque de la Almudena (Parque del Crematorio de la Almudena)

Dirección: Calle Nicolás Salmerón, 4. 28017 Madrid (Pueblo Nuevo - Ciudad Lineal).  
Horarios: siempre abierto.  
Cómo llegar: Metro La Almudena (Línea 2); Buses 70 y 106.  
Página web [aquí](#)



Transecto (en rojo) y área de paseo (verde) de la Almudena (Madrid).  
Longitud del transecto: 300 m. Tiempo de paseo: 20 minutos.

+Walk around time – relative to the garden/park size

# ONLINE DATABASE – COLLABORATIVE ACCESS WITH ADMINISTRATIONS



## Detalle de muestreo

Censador:  Ubicación:

Fecha:

Hora inicio:  Hora fin:

Viento inicio:  Sol inicio:

Viento fin:  Sol fin:

Comentarios:

## Recuentos

Nuevo recuento		
Iphiclides feisthamelii	Transecto	Paseo
Sexo		
Macho	0	0
Hembra	0	0
Indeterm.	2	0

Managers and some volunteers have access and use the data



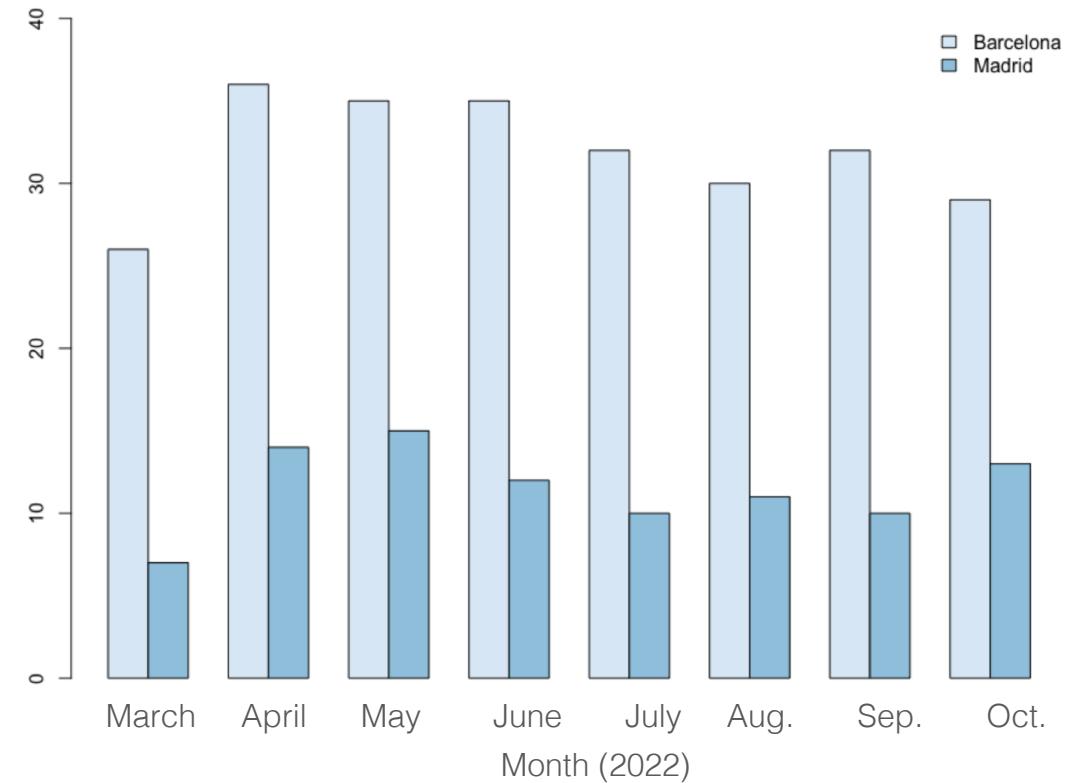
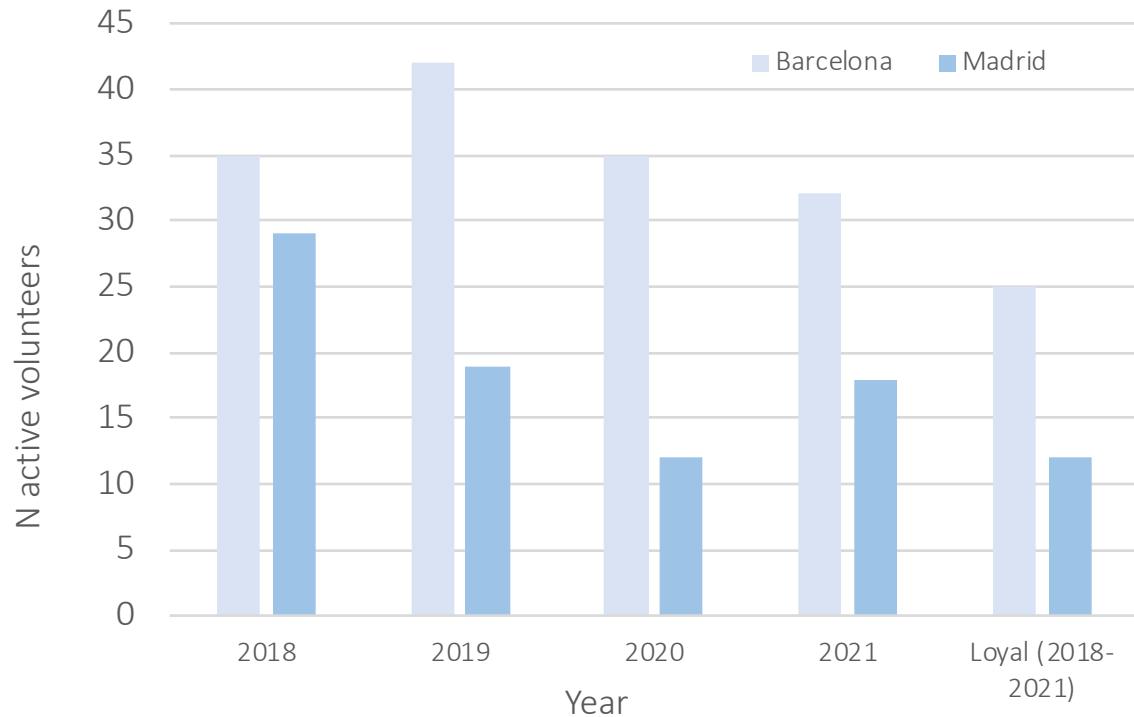
# VOLUNTEERS WITH DIVERSE BACKGROUNDS, FLEXIBILITY OF PARTICIPATION



Pau Guzmán @CREAF



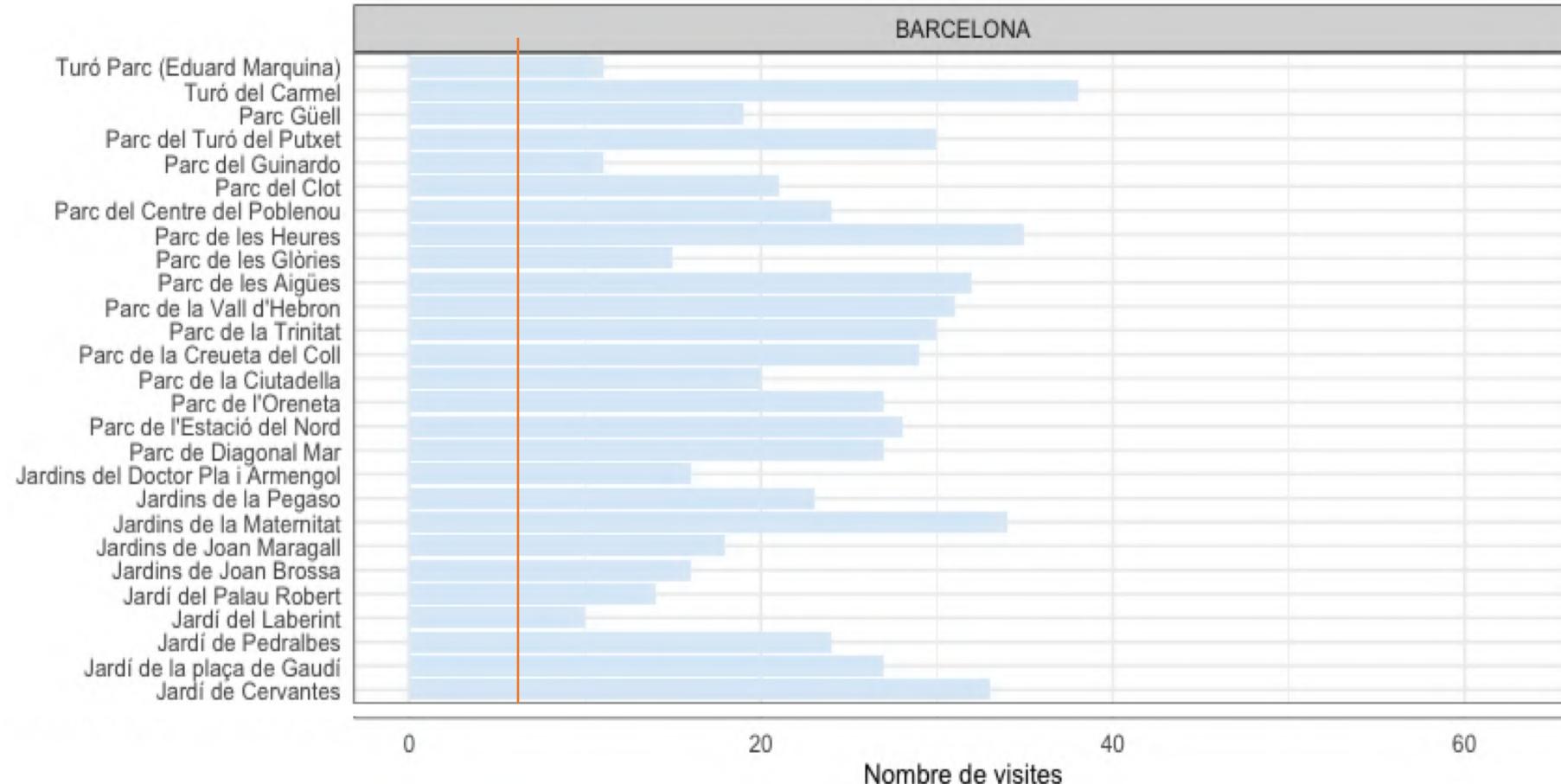
Mónica Muñoz @uBMS



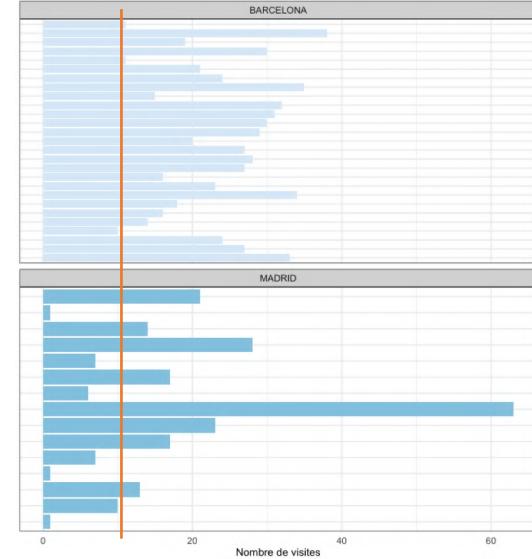
Andreu Ubach giving a course for the volunteers in BCN city  
Photo: Xavi Redon; volunteer, uBMS BCN

The **number of visits per park** is also varied because of the flexibility of volunteers.

Now since this 2022 we have a **contracted technician** covering them

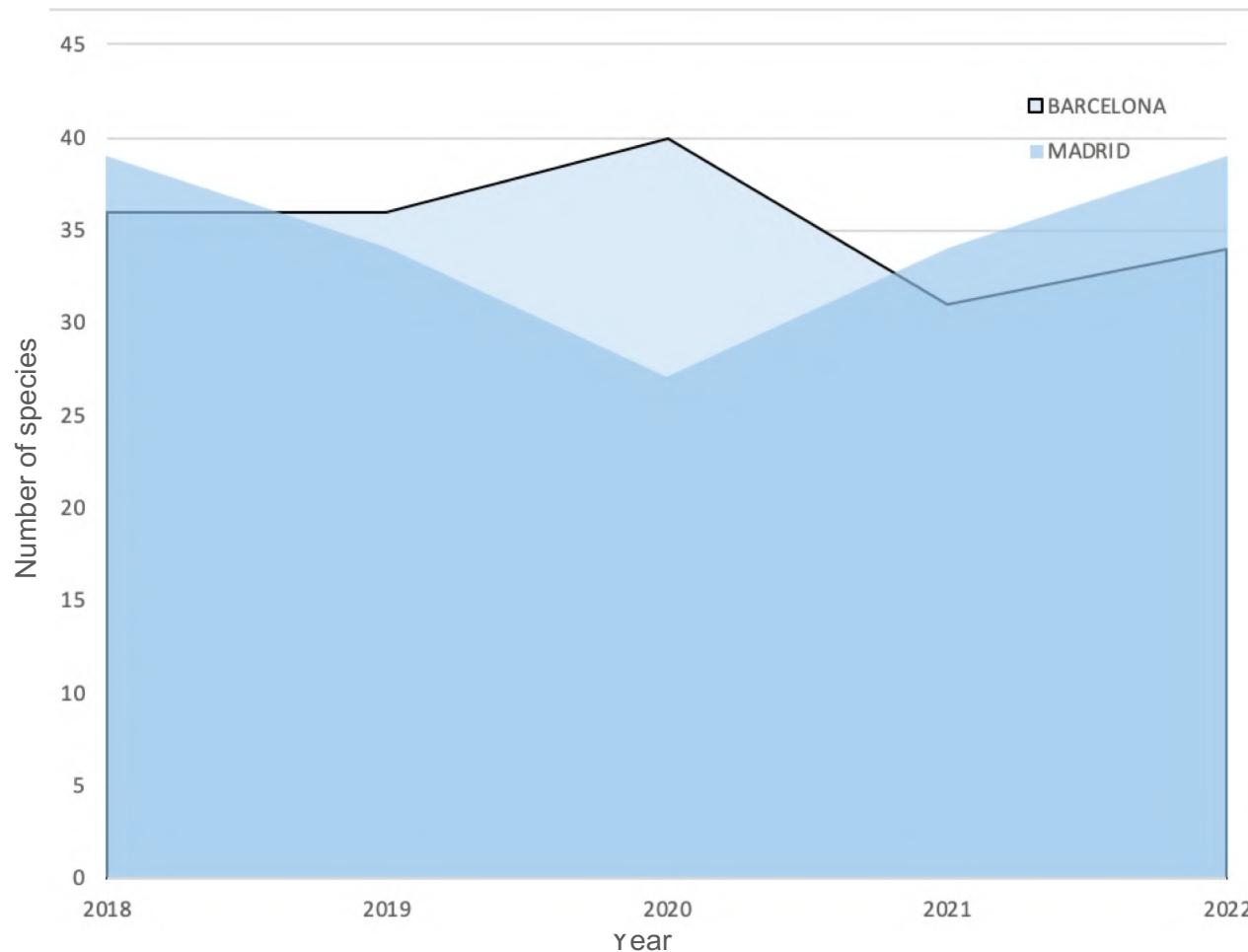


## Example of visits done in 2022 in BCN



# A YOUNG PROJECT BUT ALREADY MAPPING THE URBAN BUTTERFLY RICHNESS

So far **43** and **39** different species different observed in BCN and MAD

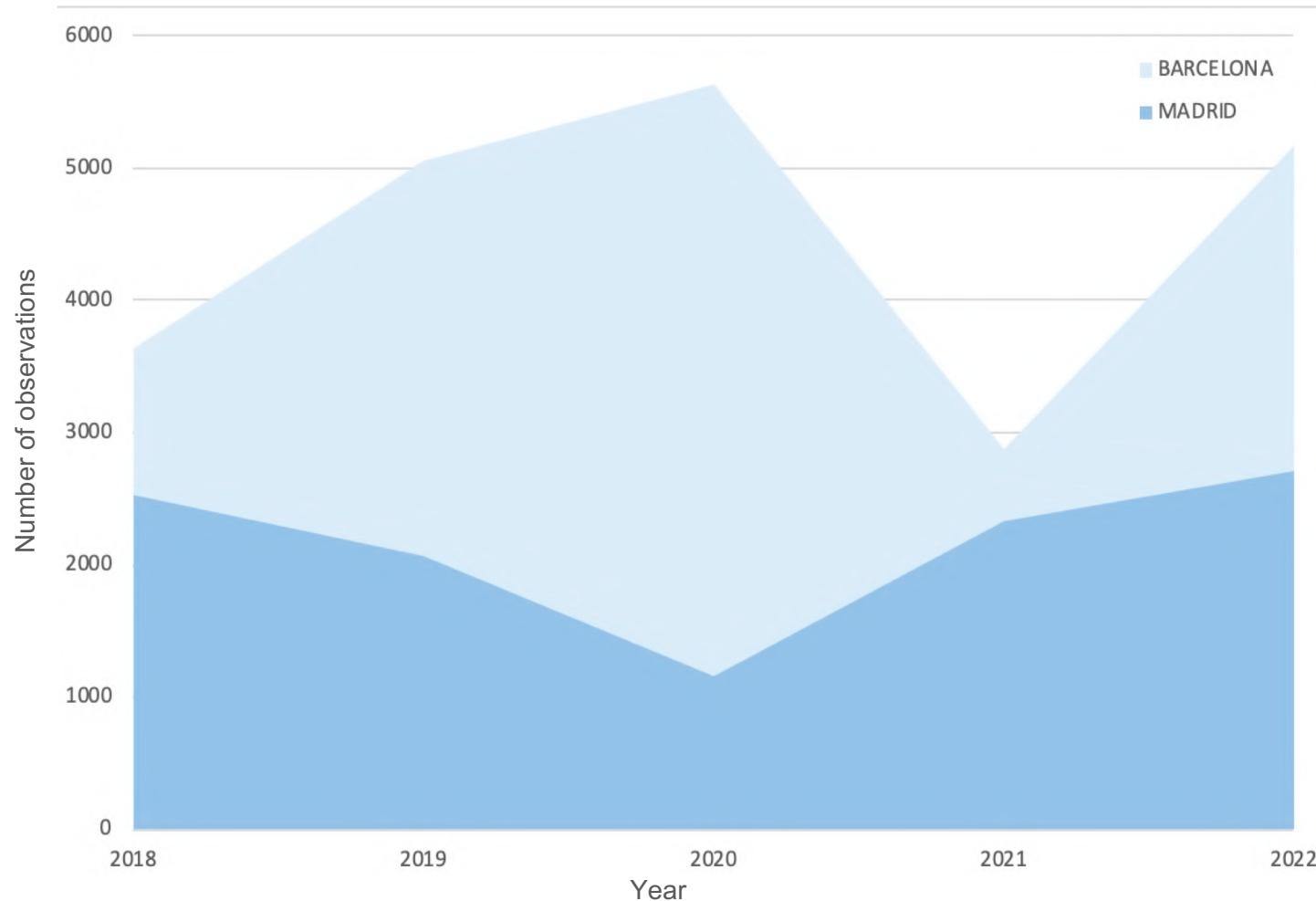


*Iphiclides feistameli*  
Photo: Cinta Calzada  
Volunteer, uBMS BCN

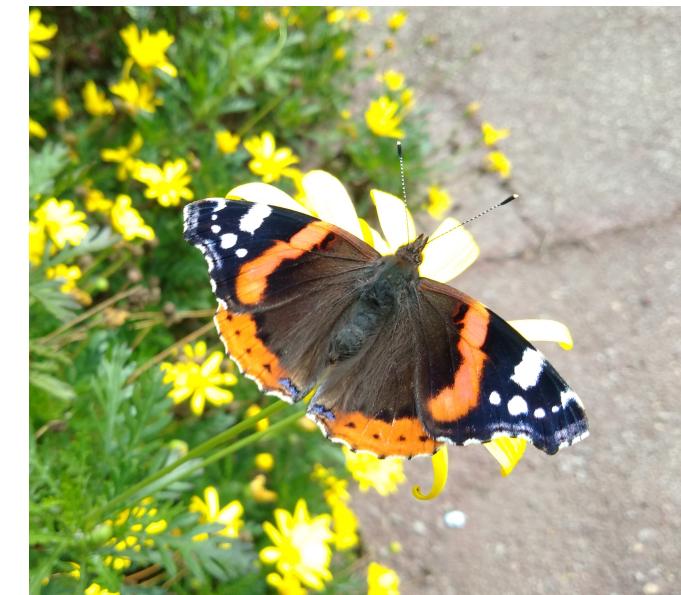


# AND ABUNDANCES

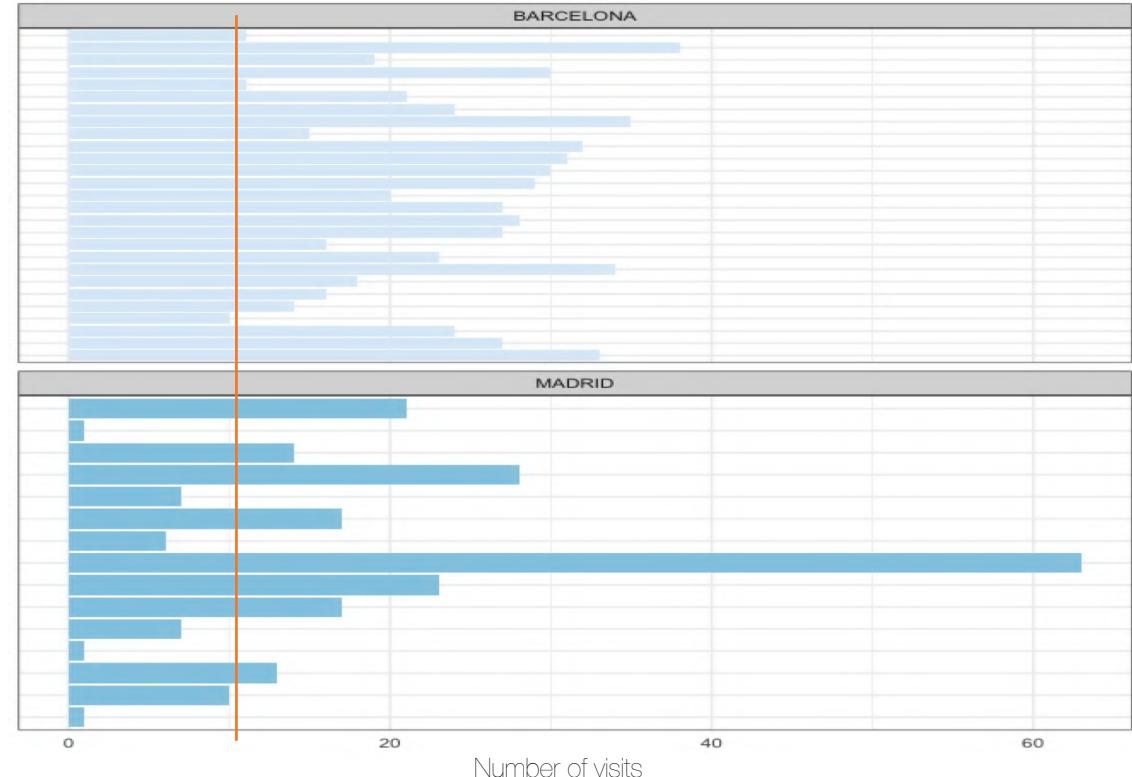
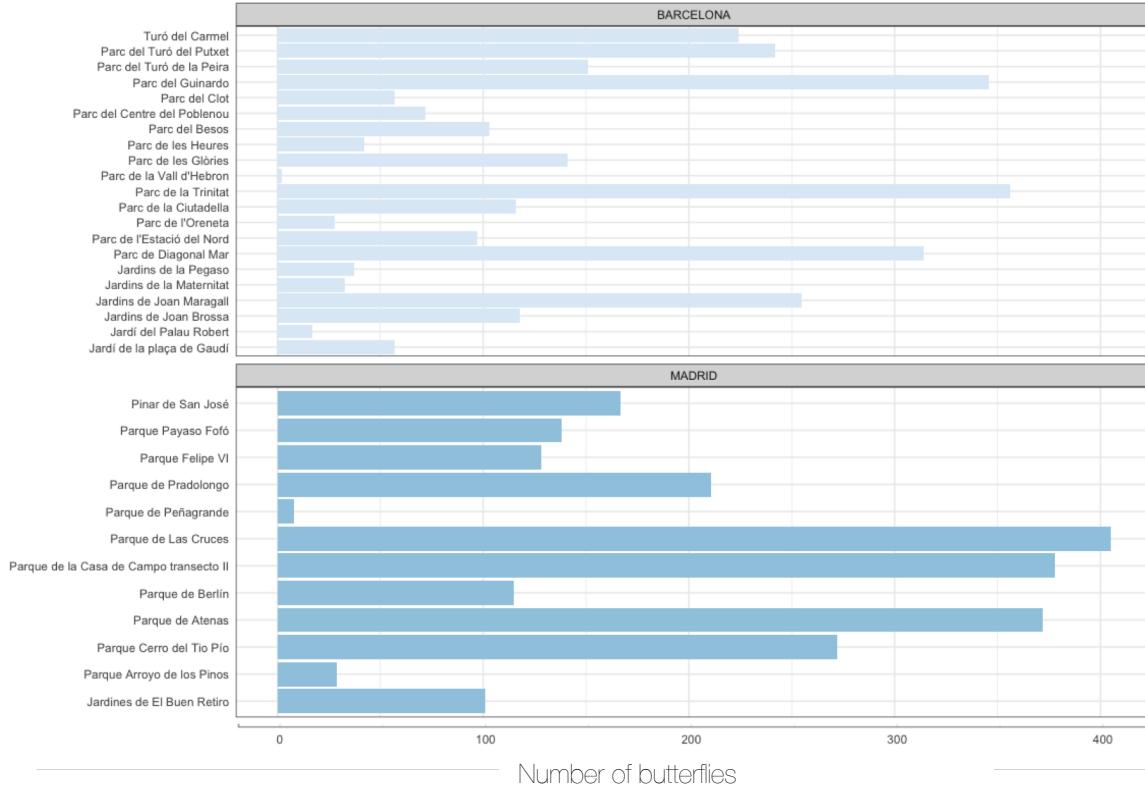
A total of ca. **35000 butterfly observations** also varying over time due to several effects



*Vanessa atalanta*  
T. Del Putget  
Photo: Cinta Calzada  
Volunteer, uBMS BCN



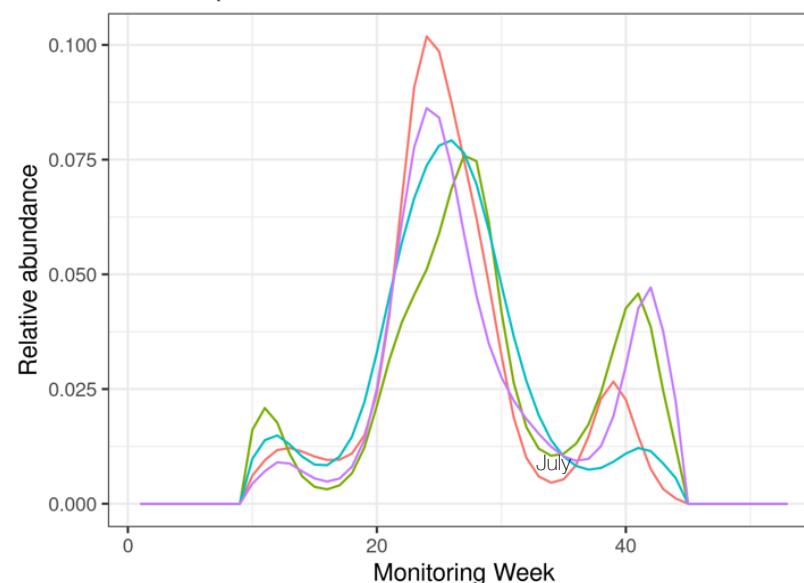
**Variation** across sites, but also partly due to the **number of visits**



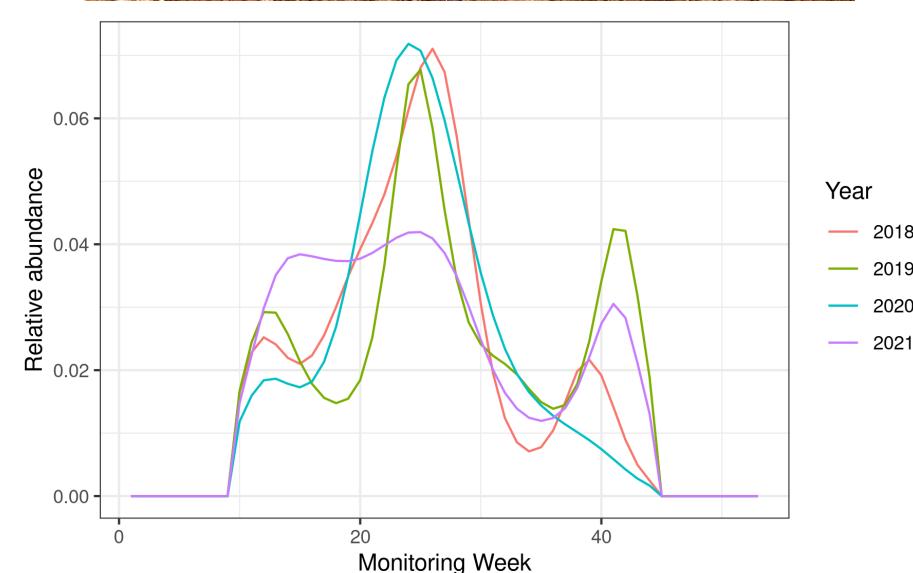
**Technician** (since 2022) + Students (2023) covering in BCN

# DATA REFLECT THE “URBAN EFFECT”: few species are super abundant, most lower abundance in the city

The **small white** is the overall winner in both cities, in abundance (7.5K observations) and distribution



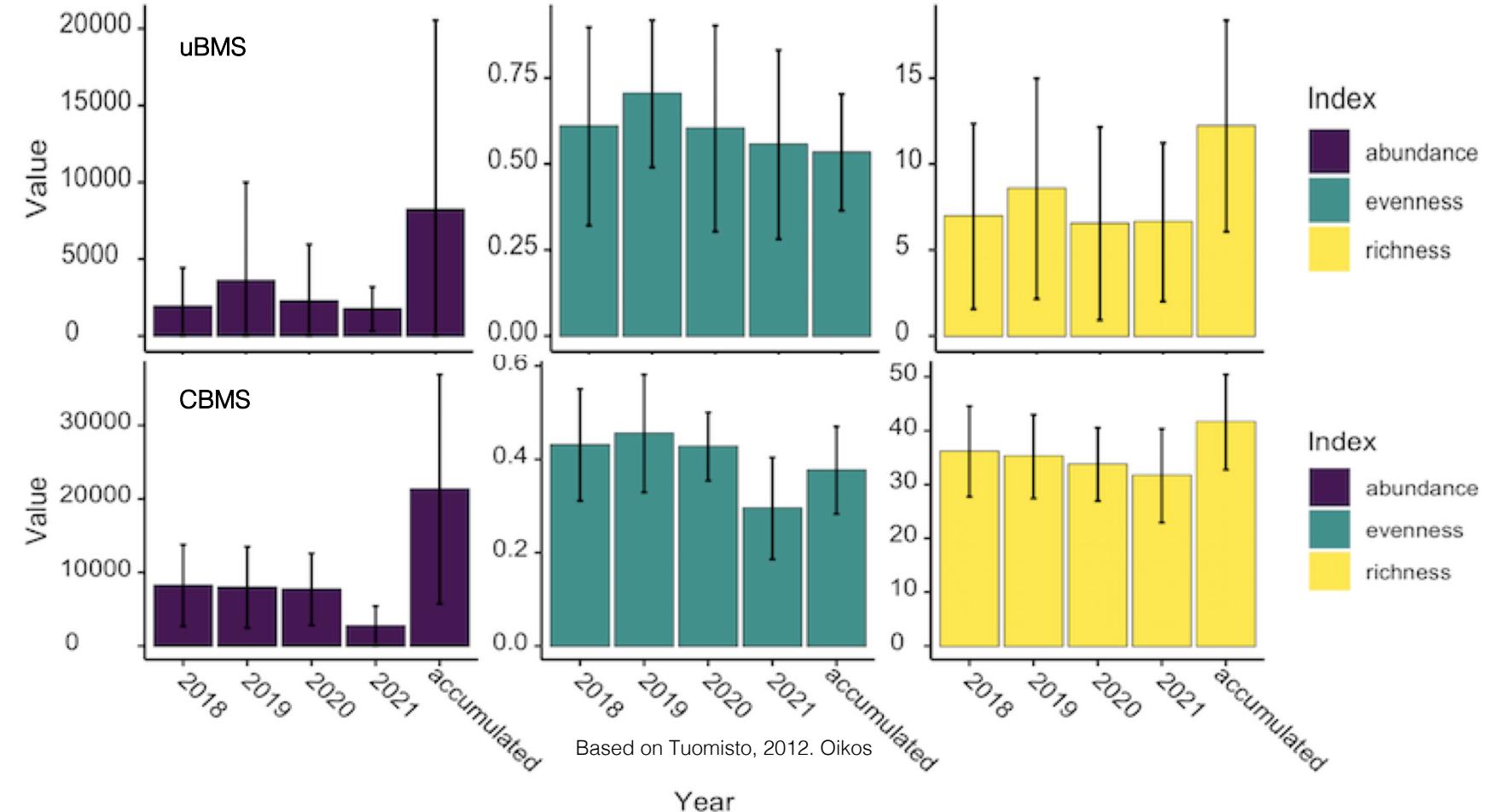
The **speckled wood** 2nd and 3rd (BCN, MAD) in abundance (3.3K observations)



# REDUCED TAXONOMIC AND FUNCTIONAL COMMUNITY DIVERSITY



MSc. L Buonafede



# THE “URBAN EFFECT”: less marked in some groups



Butterflies, Barcelona  
(Catalonia, Spain)

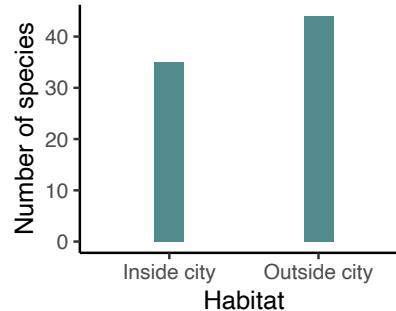


Herpetofauna, Melbourne  
(Victoria, Australia)

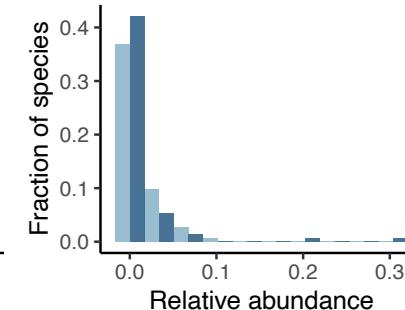
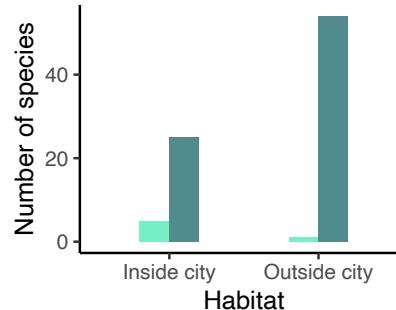
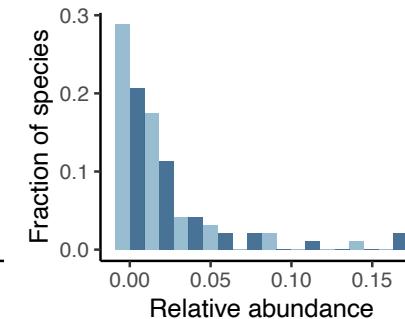
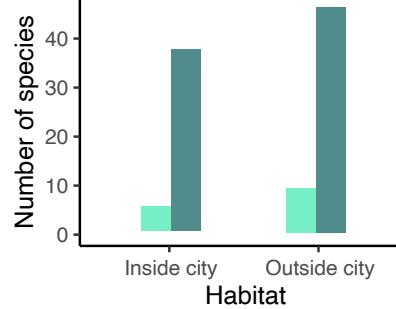
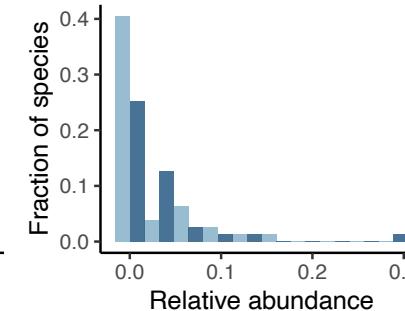


Birds, Newcastle  
(NSW, Australia)

Native  
Non-indigenous



Inside city  
Outside city



# THE “URBAN EFFECT”: less marked in butterflies



MSc. C Pla-Narbona,



Low mobile and high SSI  
62 sp

Low mobile and medium SSI  
58 sp

Mobile and low TAO  
19 sp

Mobile and generalists  
13 sp

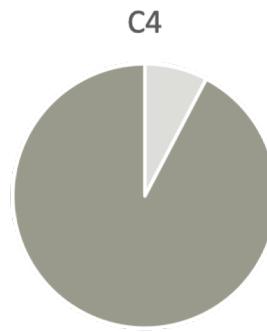
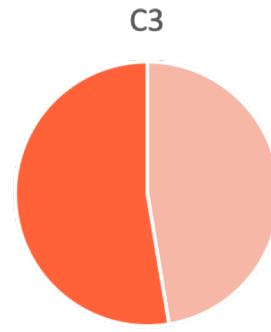
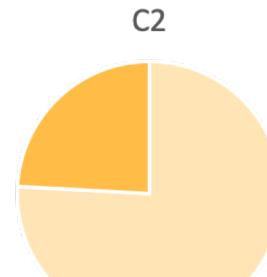
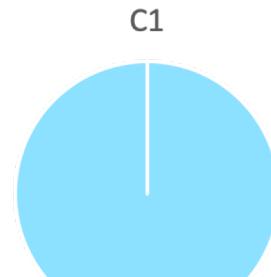
N in BCN city

0

14

10

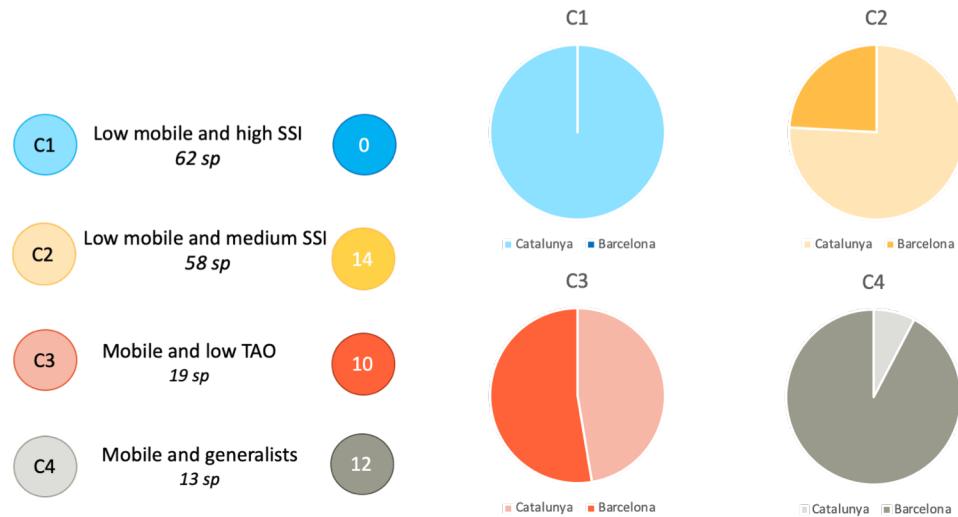
12



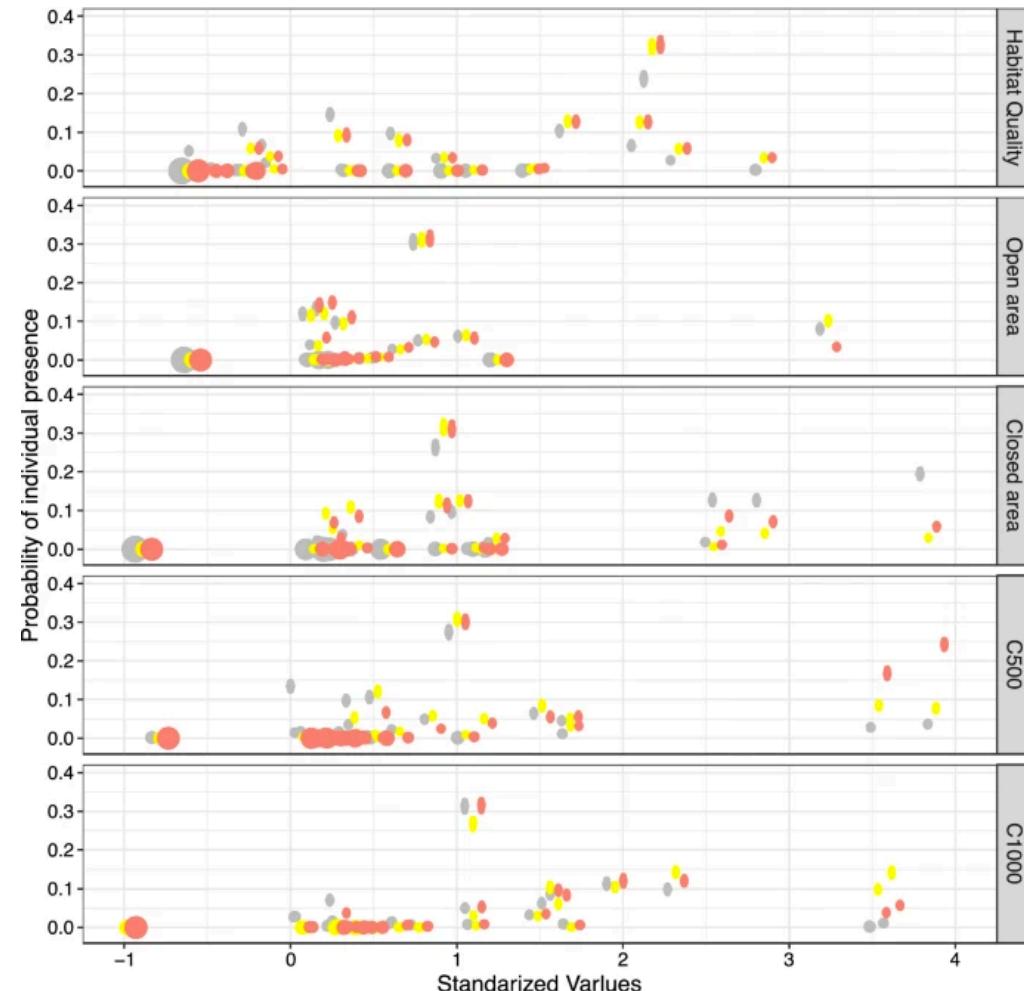
# Diversity reduction relates to species traits and the landscape



MSc. C Pla-Narbona,

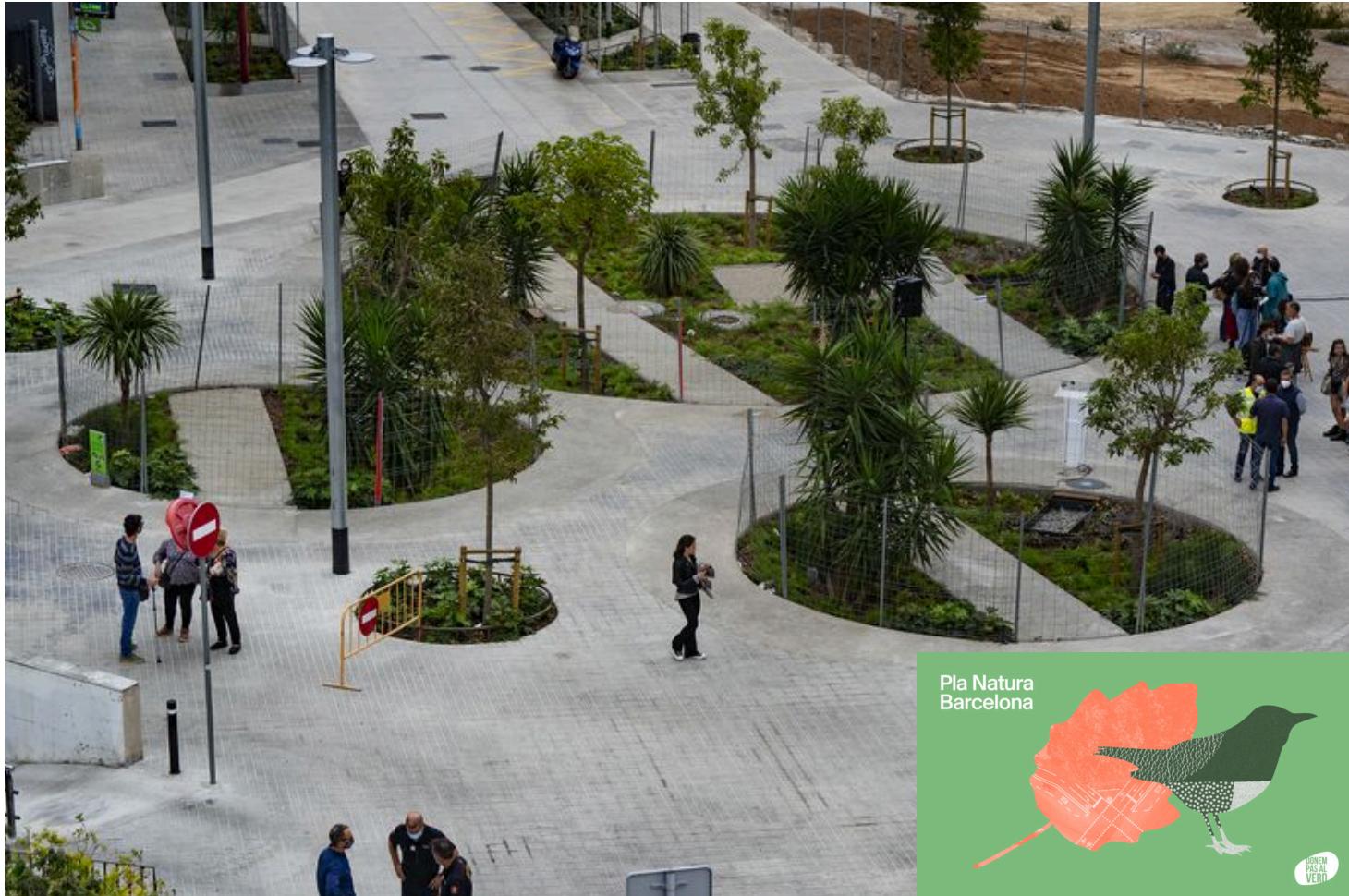


**Trait-landscape relation** defines **urban** taxonomical and functional **biodiversity**



# Specific management measures for different clusters (traits)

## ➤ Increase of natural green areas within the city



C/ Consell de Cent  
Pla del Verd i Biodiversitat BCN  
Pla Natura 2030 BCN



Landscape and Urban Planning  
Volume 195, March 2020, 103707



The role of the urban landscape on species with contrasting dispersal ability: Insights from greening plans for Barcelona

Yolanda Melero <sup>a, b</sup>✉, Constantí Stefanescu <sup>a, c</sup>, Stephen C.F. Palmer <sup>d</sup>✉, Justin M.J. Travis <sup>d</sup>✉, Joan Pino <sup>a, e</sup>✉

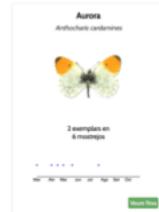
Butterfly biodiversity in the city is driven by the interaction of the urban landscape and species traits: a call for contextualised management

Clàudia Pia-Narbone, Constantí Stefanescu, Joan Pino, Francisco J. Cabrero-Sañudo, Enrique García-Barros, Miguel L. Munguira & Yolanda Melero ✉

*Landscape Ecology* 37, 81–92 (2022) | [Cite this article](#)

1513 Accesses | 3 Altmetric | [Metrics](#)

# WILL MANAGEMENT BE BENEFICIAL?



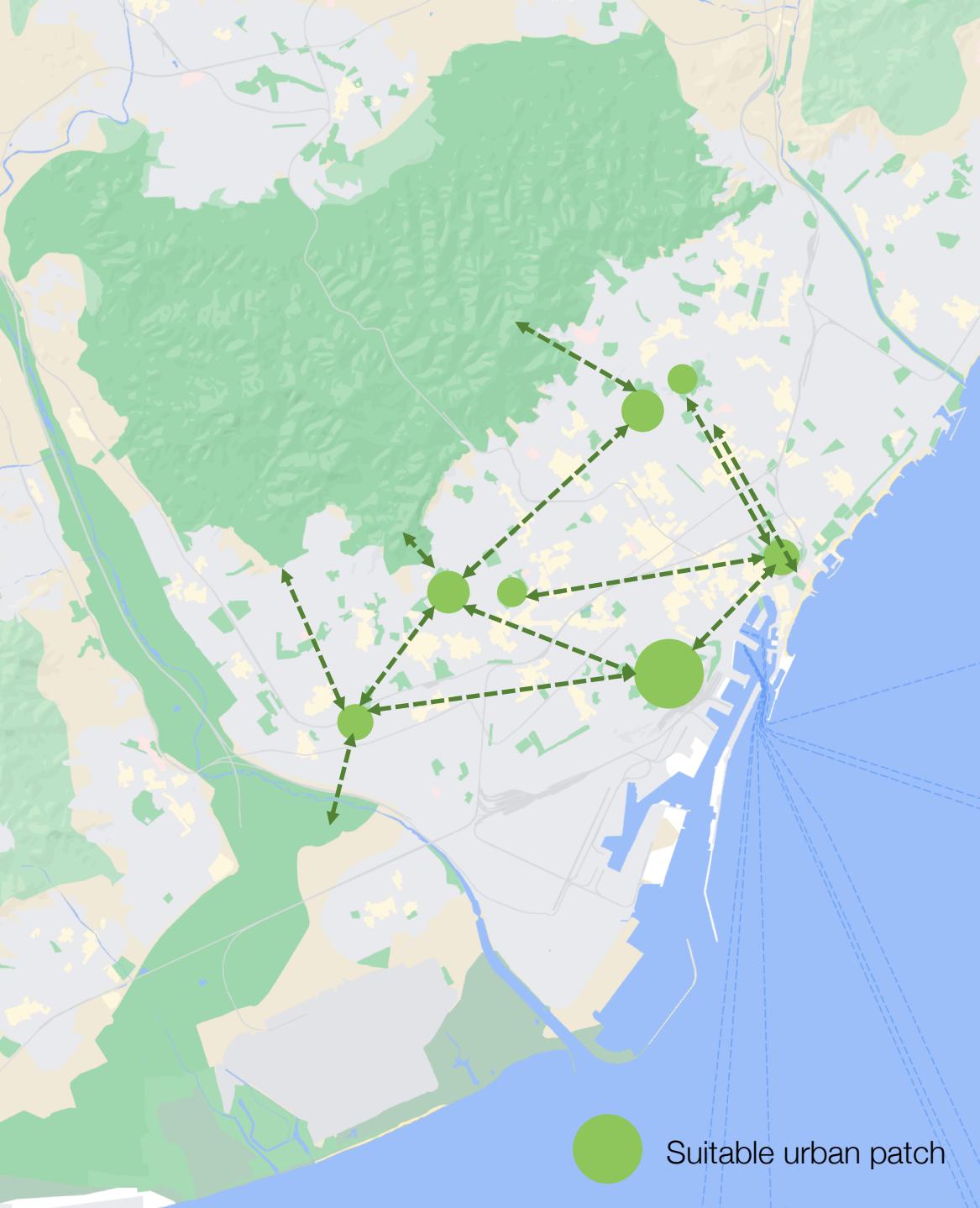
## URBAN EFFECT:

- Few preadapted sp.
- Random component
- Source sink dynamics

Figures from Jordi Sánchez's web 2021 for the uBMS  
Volunteer in the uBMS

Canela estriada *Lampides boeticus*. Turó del Putxet, Barcelona  
(juliol 2018) Foto: Jordi Sánchez





Urban exploiters seem to show metapopulation dynamics



Mobile and generalists  
12 sp around BCN

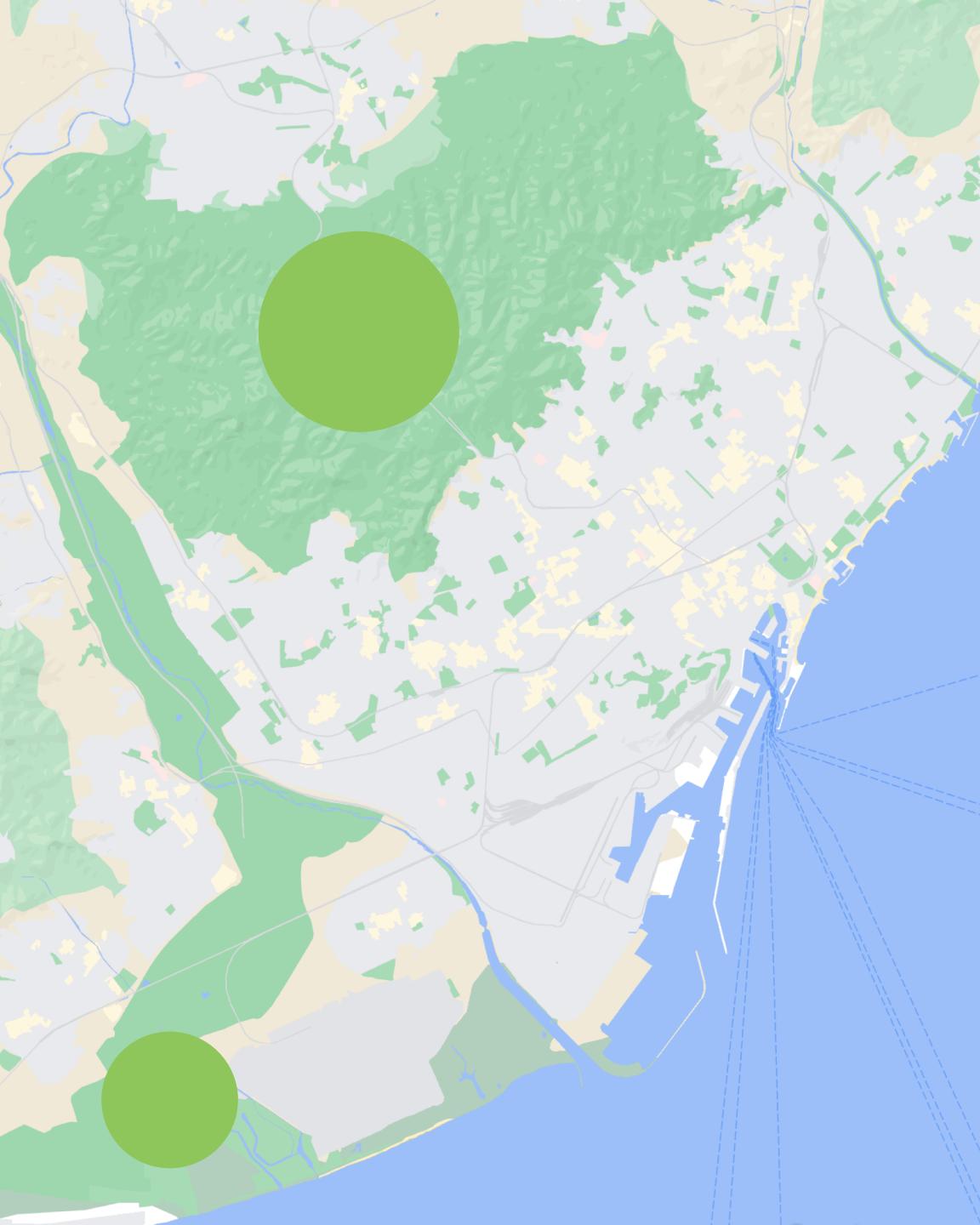


Pre-adapted sp to live in the city?



MINISTERIO  
DE CIENCIA  
E INNOVACIÓN





Urban avoiders are unable to colonise and survive the city



Low mobile and high SSI  
ca. 20sp around BCN

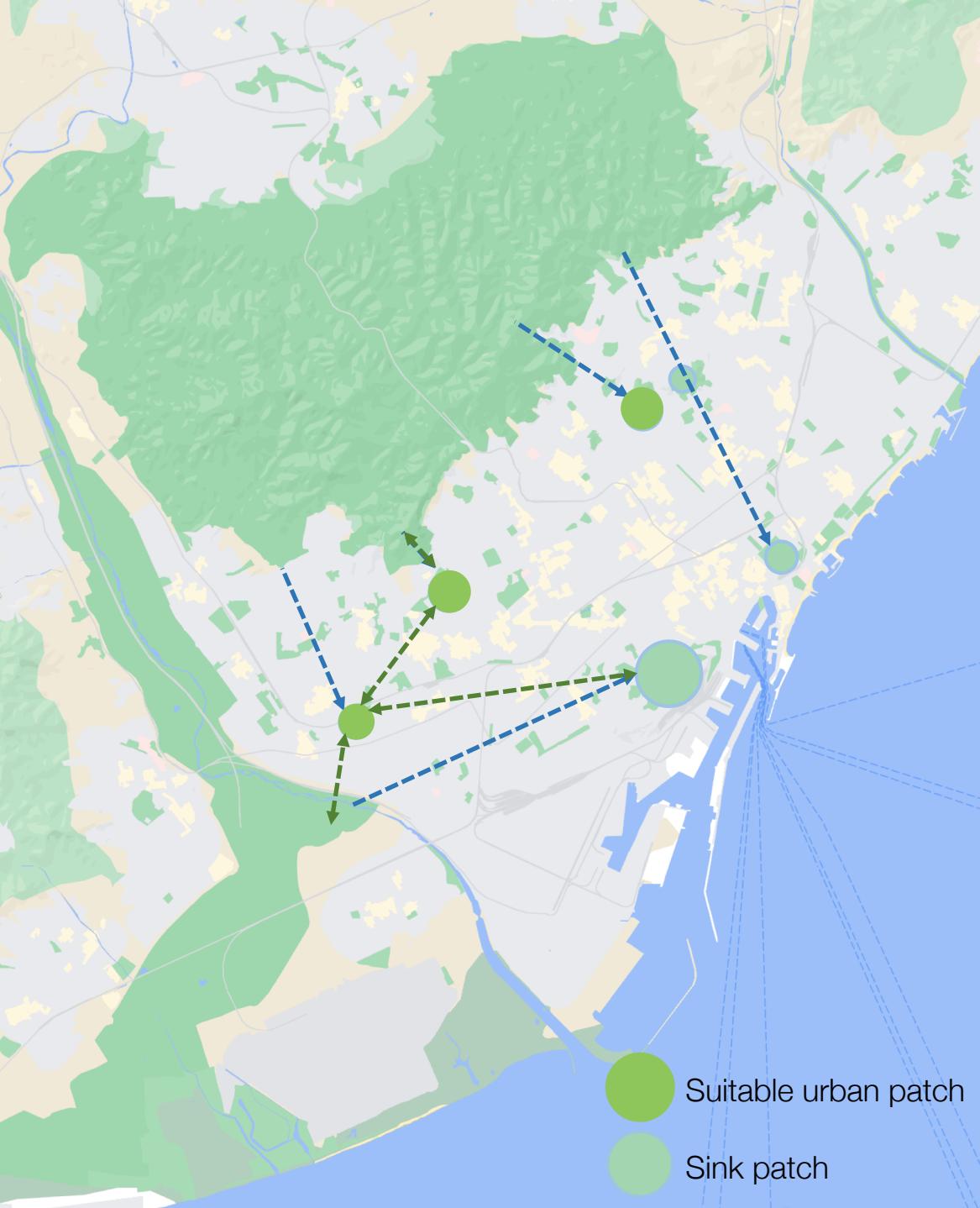


Maladaptive sp.: lack of plasticity or of evolutive time to adapt



MINISTERIO  
DE CIENCIA,  
E INNOVACIÓN

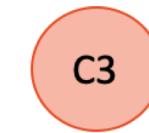




Source-sink dynamics may appear in urban species



**Low mobile and medium SSI**  
ca. 15sp around BCN



**Mobile and low TAO**  
15 sp around BCN



MINISTERIO  
DE CIENCIA  
E INNOVACIÓN



“MEDYCI:



From islands to traps: Metapopulation dynamics in the city and their mediation with the species traits and the environmental conditions”

“SATURNO:



Successful urban dwellers: Eco-evolutionary dynamics of species adapted to urban novel environments”



# THANKS YOU AND OF COURSE, THE VOLS:

**In Barcelona:** Ángel Sánchez Carrillo, Aïda Martínez García, Adrià Sánchez, Alejandra Silvina Palena, Ana Rubio, Carme Roca Saumell, Carolina Rius Salvador, Daniel González, David Molins i Olmos, Enrique Doblas Miranda, Eric Toro Delgado, Federico Dureiko Alentorn, Federico Espejo Nogueira, Joan Ubach i Batallé, Joana Bastardas Llabot, Jordi Sánchez Monsó, Laura Rigol Carrasco, Lucy Esperanza Gómez Sánchez, María José Llorens Ocaña, Maria Cinta Calzada Bau, Maria Ester Gómez Serra, Miriam Ferreiro Alarcón, Mónica Muñoz Llop, Montserrat Maín Olmeda, Núria Villergas Puig, Neus Carrilero, Nil Redon Muñoz, Octavi Borruel Trenchs, Ona Redon Muñoz, Ona Yanez i Vilanova, Roberto García Baz, Teresa Costa Prats y Toni Chaquet López, Xavier Redon.

**In Madrid:** Antonio Sabido Calurano, Cecilia Muñoz Sánchez, Chelo, Cristina, Eduardo Rojo Sanz, Emilio Martín Cruzado, Federico Ojeda Gimeno, Genevieve Bosshard, Javi, José Luis Alonso Gutiérrez, Juan Antonio Arce Altamirano, Miguel Ángel Perales Torres, Miguel Melero, Raúl Alonso Moreno, Rafael Hidalgo Pascua y Raquel Giraldez Lara. En Sabadell: Berto Gil Climent, Carolina, Gerard Codina Martínez, Pilar Vallet Vila y Wolfgang Steinherr..



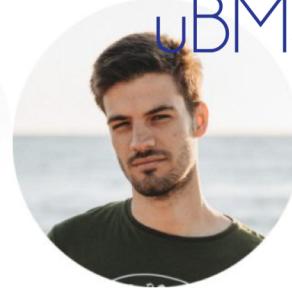


Left to right: Paco Cabrero (UCM), Constantí Stefanescu (Museu Granollers), Joan Pino (CREAF), Yolanda Melero (CREAF), Miguel Munguira (UAM) y Enrique García-Barros (UAM)



**Pau Guzmán**

Co-coordinator  
Communication uBMS



**Gerard Gaya**

Social Media uBMS



**Swarup Bhoumik**

Technician uBMS



**Clàudia Pla-Narbona**

Technician CBMS

We are **expanding the team!!**

**Interested** MSc / PhD students contact YM: [ymelero@ub.edu](mailto:ymelero@ub.edu)  
Be also tuned at: <https://ubms.creaf.cat/category/blog/>



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@uBMS\_project

