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Séminaire du plan national d'actions en faveur du Puffin des Baléares

24 au 26 juin 2024

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Balearic shearwater – colony monitoring and demography insights

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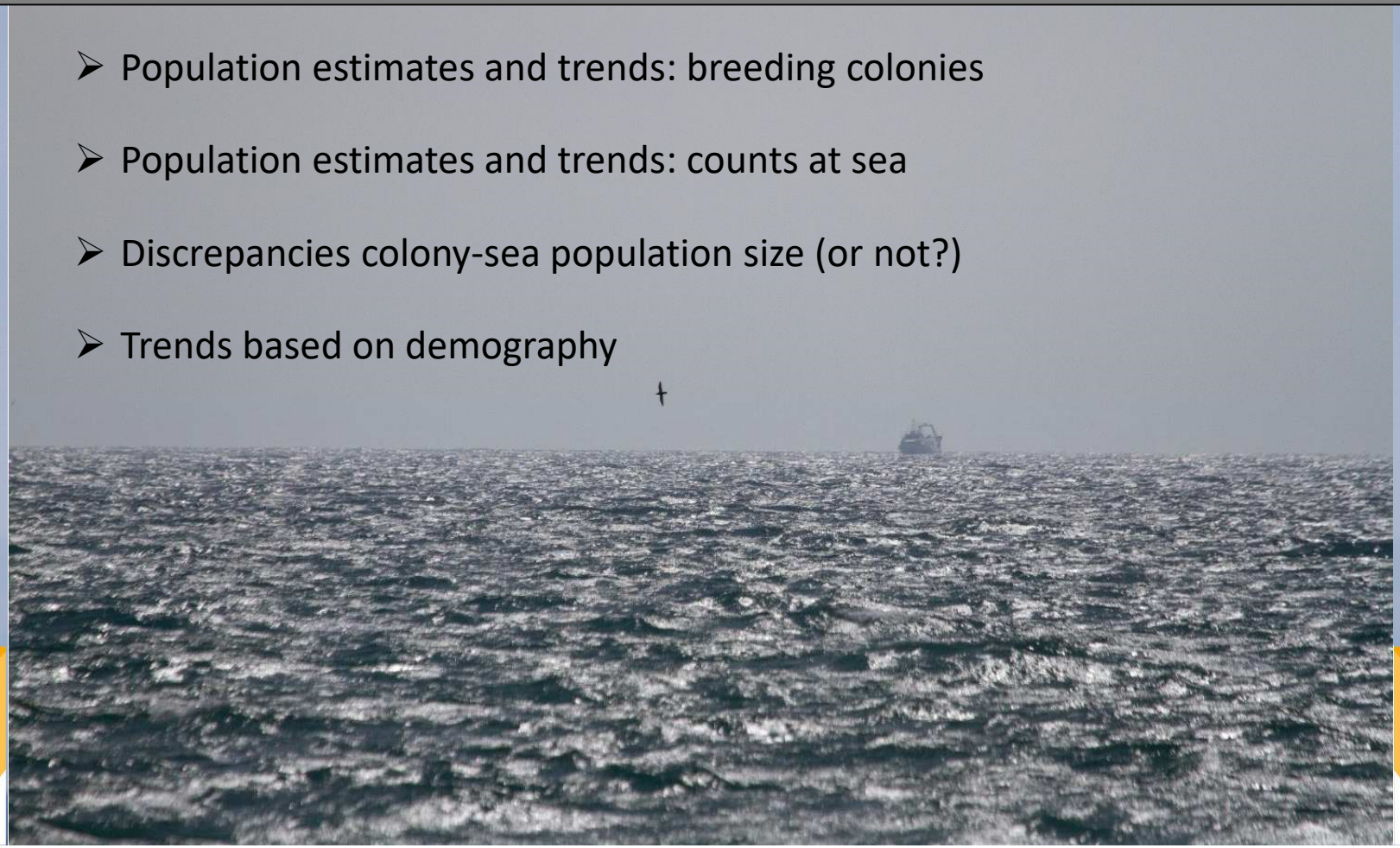
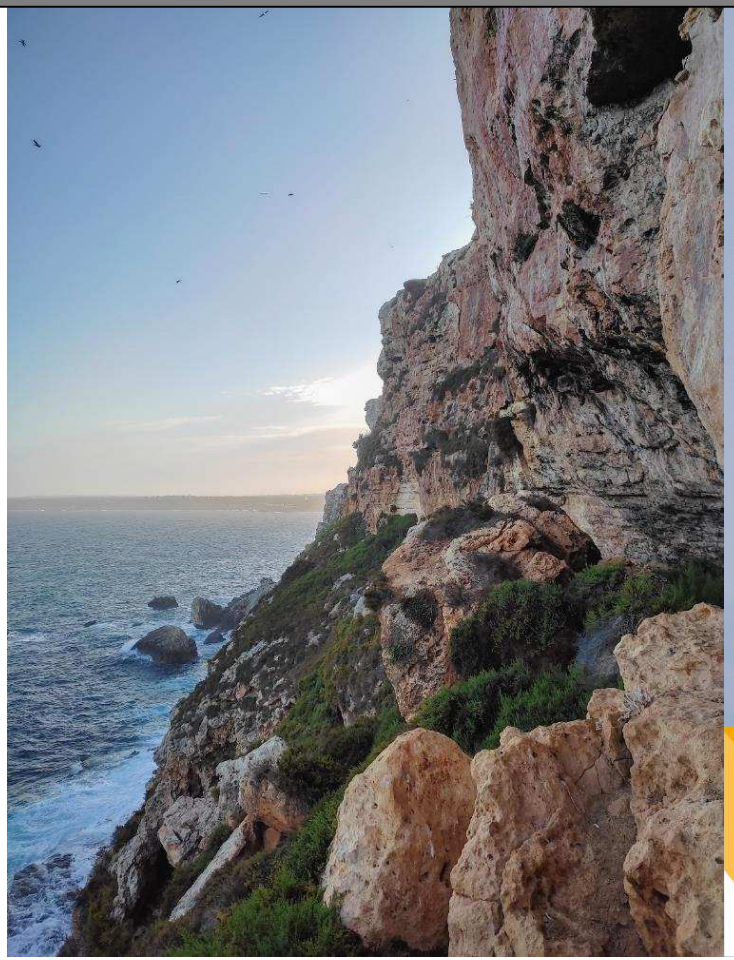
Issues to consider

- Population estimates and trends: breeding colonies
- Population estimates and trends: counts at sea
- Discrepancies colony-sea population size (or not?)
- Trends based on demography



Population estimates and trends: breeding colonies

- Estimation: ~3000 pp
- Habitat often inaccessible or difficult to access
- Counts often rely on indirect estimates (call rates, rafts, etc.)
- High uncertainty (but *seems difficult* to account for many more pairs)
- Trends uncertain, subject to biases that may change over time



Population estimates and trends: breeding colonies

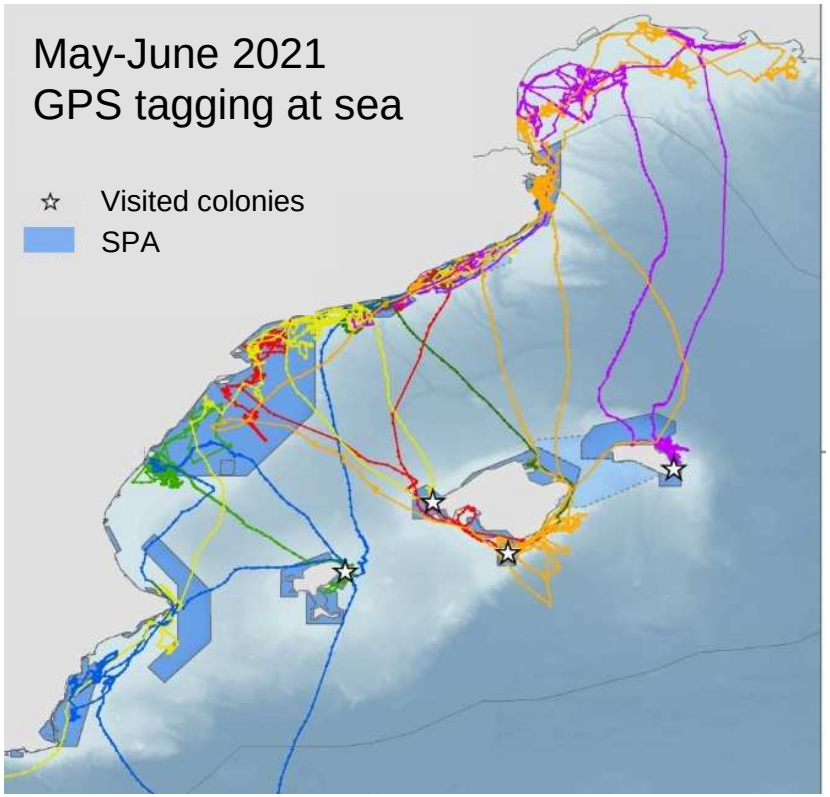
Population estimates and trends: breeding colonies

Population estimates and trends: counts at sea

- Estimations ~ 20000-30000 individuals (vs. 3000 breeding pairs)
- Methods:
  - Boat surveys (Mediterranean Iberia)
  - Migration through Gibraltar (post-br.)
  - (non-breeding congregations)
- Counts subject to bias (mobility-repeatability; phenological changes; observer effort;…)
- Trends uncertain

Discrepancies colonies vs. at sea counts

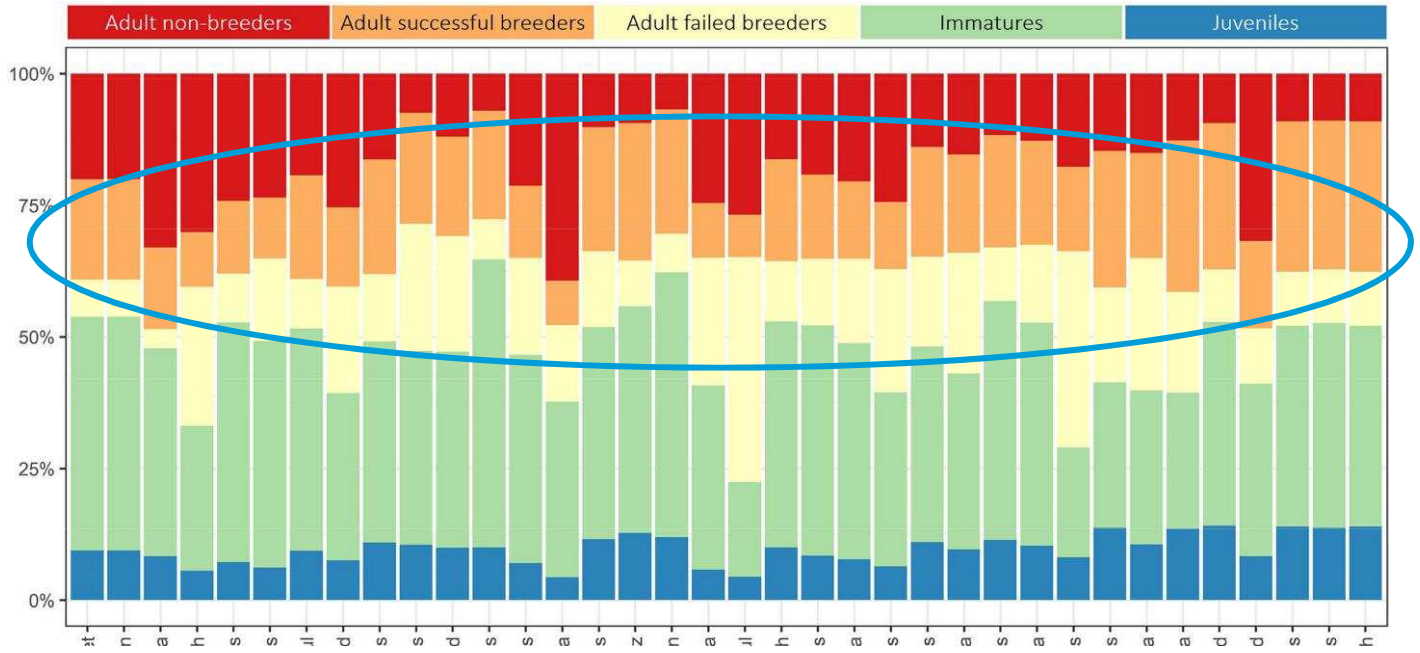
- Breeding population underestimated?
- Global population (at sea) overestimated?
- Unknown breeding colonies? (little evidence)



Data from PUFMED project – birds captured at sea and tagged with GPS/GSM, all visited known colonies (n = 18, 2021-2022)

But are they real discrepancies?

Carneiro et al. 2019 (*J Appl Ecol* 57: 514-525) reviewed % breeders vs. global population in several Procelariformes: **19-53%**



Data from current counts would represent ~ **20-25%** in Balearic shearwater

How to assess trends: demography

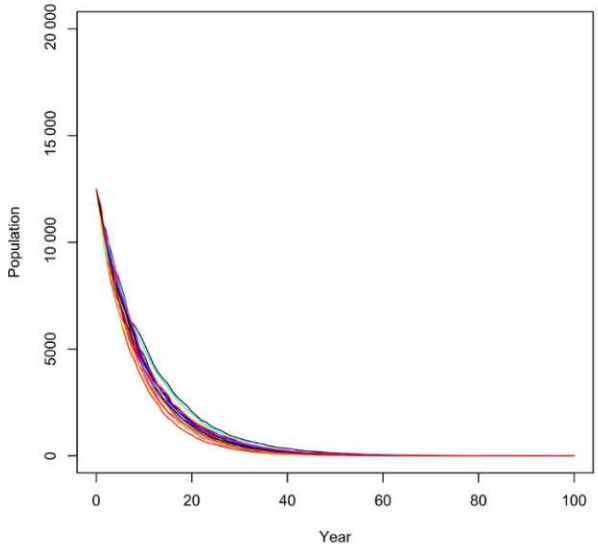
- High philopatry (return to same nest)
- Easy to catch in nest
- Chicks remain in nest
- Long-lived

Ideal for capture-recapture studies

Long-term monitoring programmes

And what does demography say?

- Sa Cella (Mallorca; 1985-2014)
- Annual decline 14% (λ = 0.86)
- ↓ Ad. survival = 0.81
- Mean extinction time 61 years (considering 7000 pp!!!)
- Colony without predators – problem at sea
- Bycatch as a major driver



Journal of Applied Ecology

Journal of Applied Ecology 2016, 53, 1158–1168 doi: 10.1111/1365-2664.12622

Demography of the critically endangered Balearic shearwater: the impact of fisheries and time to extinction

Meritxell Genovart[1*], José Manuel Arcos[2], David Álvarez[1], Miguel McMinn[3], Rhiannon Meier[4], Russell B. Wynn[4], Tim Guilford[5] and Daniel Oro[1]

And what does demography say?

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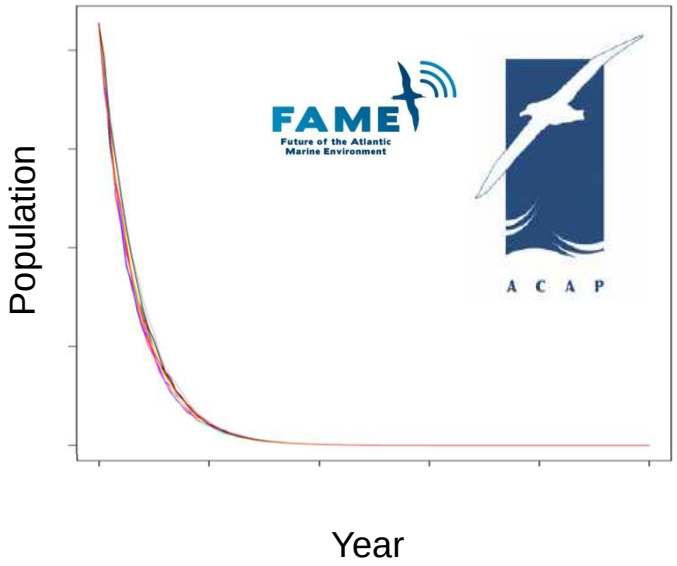
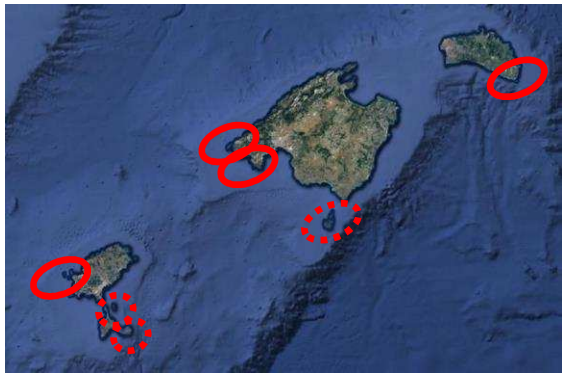


Increasing programmes

- Sa Cella (Mallorca (data since 1985, sparse)
- Sa Conillera – Es Bosc (since 2011)
- Malgrats de Mallorca (Since 2017)
- Mola de Maó – Menorca (since 2017)
- Illots des Freus (irregular)
- Formentera (exploratory 2024)
- Cabrera (exploratory 2024)



Efforts by a few research teams, need to strengthen support from administrations

GOBIERNO DE ESPAÑA · VICEPRESIDENCIA TERCERA DEL GOBIERNO · MINISTERIO PARA LA TRANSICIÓN ECOLÓGICA Y EL RETO DEMOGRÁFICO · Fundación Biodiversidad · Life · INTEMARES · LIFE PanPuffinus!

Concluding remarks

- Complex population estimates, high potential biases
- Trends not obvious based on counts (though indications of decline)
- Demographic models allow to infer reasonably robust trends
- Consistency between islands – further support
- CR status seems justified
- Problems at sea – **attention to bycatch!!!**

Many thanks!

SEO BirdLife