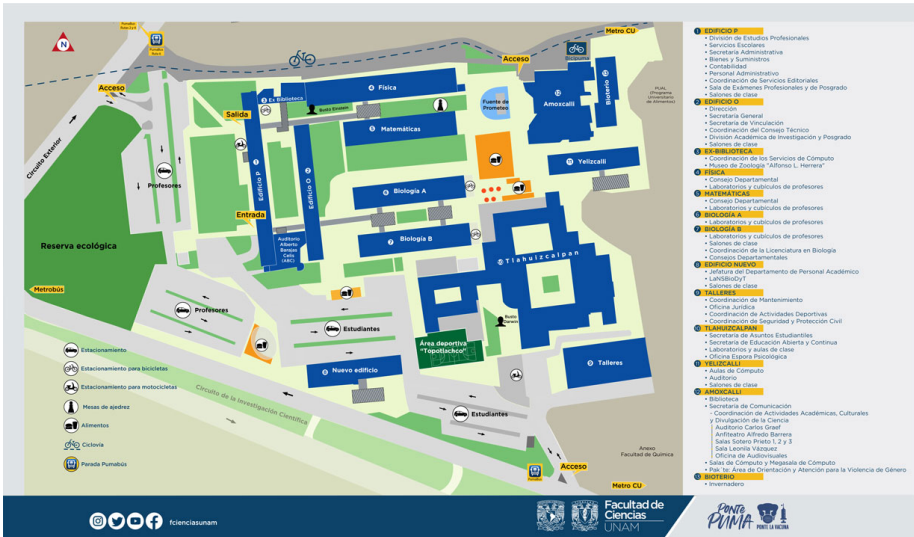


Taller Ecología del Movimiento

February 11, 2024

¿En qué lugar pasas tu día en Ciencias?



Marco conceptual de la Ecología del Movimiento

[Nathan et al., 2008]

El marco incorpora dos grandes componentes:

- Componente basado en el individuo.
- Componente basado en los factores externos que influyen en las causas, mecanismos y patrones de movimiento.

Componente basado en el individuo

Preguntas

- 1 ¿Por qué se mueven?
- 2 ¿Dónde se mueven?
- 3 ¿Cómo se mueven?

Proceso de toma de decisión de movimiento del individuo :

¿Cómo se le asigna una importancia relativa al comportamiento de acuerdo a diferentes objetivos como reproducción, alimentación, descanso, etc? ¿Cómo entendemos el movimiento de acuerdo a distintas metas o propósitos?

Componente basado en los factores externos

- ¿Cómo está cambiando el entorno-contexto donde se desarrolla el individuo?

Tipología de movimiento

Los principales tipos de movimiento son los de:

- 1 **Residencia o área de actividad estable** son los movimientos registrados en áreas bien definidas y estables para distintos años.
- 2 **Migración** es el movimiento estacional-periódico estable de largas distancias entre distintas localidades. Corresponden a movimientos de acuerdo a estaciones del año.
- 3 **Dispersión** es el movimiento en el que la población o individuo deja la localidad ocupada y se mueve hacia una localidad diferente. Ambas áreas, la dejada y la de llegada, son ocupadas por periodos largos de tiempo.
- 4 **Nomadismo** movimiento que tiene una frecuencia alta, no estacional o periódica, y tampoco estable tanto en tiempo de permanencia y de dirección.

Net squared displacement (NSD)

Una forma de distinguir estos tipos de movimientos es mediante el **Net squared displacement (NSD)**. Este indicador mide la distancia a partir de un punto de inicio de la trayectoria, donde inicia el seguimiento, hasta el punto final de seguimiento.

Migración

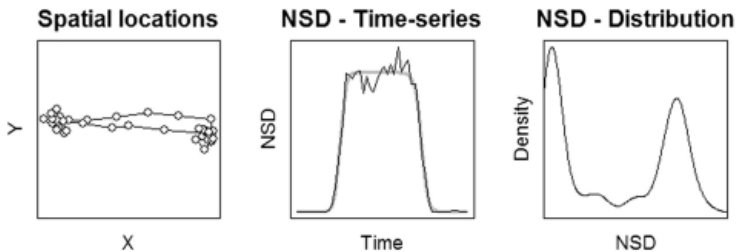


Figure: Migración. Tomado de [Bastille-Rousseau et al., 2016]

Dispersión

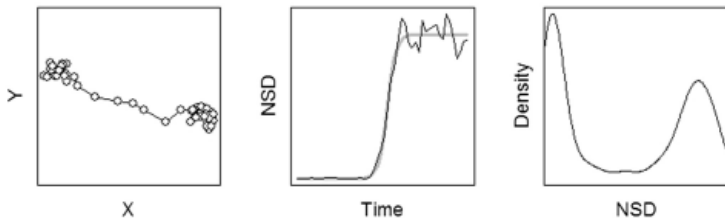


Figure: Dispersión. Tomado de [Bastille-Rousseau et al., 2016]

Nomadismo

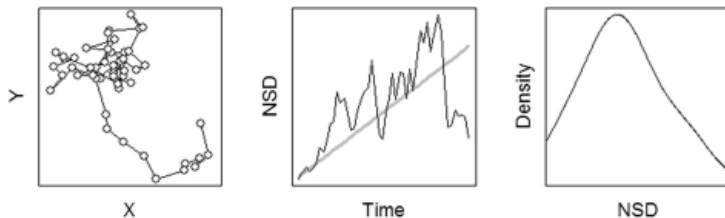


Figure: Nomadismo. Tomado de [Bastille-Rousseau et al., 2016]

Sedentarismo

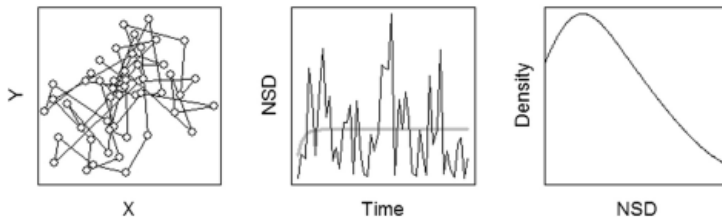


Figure: Sedentarismo. Tomado de [Bastille-Rousseau et al., 2016]

Datos: Movebank for animal tracking data



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Data from: Australia's east coast humpback whales: satellite tag derived movements on breeding grounds, feeding grounds and along the northern and southern migration.

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Files

Movements of Australia's east coast humpback whales.csv (7.49 MB)

Movements of Australia's east coast humpback whales-reference-data.csv (16.64 KB)

README.txt (19.21 KB)

Date

2023-12-12

DOI

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Authors

Andrews-Goff, Virginia
Gales, Nick
Childerhouse, Simon J.

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Abstract

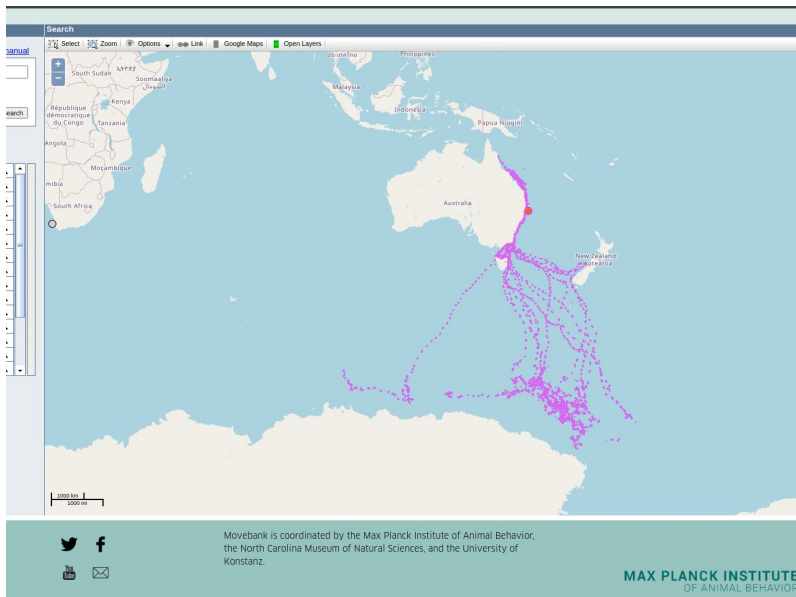
Background: Satellite tags were deployed on 50 east Australian humpback whales (breeding stock E1) between 2008 and 2010 on their southward migration, northward migration and feeding grounds in order to identify and describe migratory pathways, feeding grounds and possible calving areas. At the time, these movements were not well understood and calving grounds were not clearly identified. To the best of our knowledge, this dataset details all long-term, implantable tag deployments that have occurred to date on breeding stock E1. As such, these data provide researchers, regulators and industry with clear and valuable insights into the spatial and temporal nature of humpback whale movements along the eastern coastline of Australia and into the Southern Ocean. As this population of humpback whales navigates an increasingly complex habitat undergoing various development pressures and anthropogenic disturbances, in addition to climate-mediated changes in their marine environment, this dataset may also provide a valuable baseline.

New information: At the time these tracks were generated, these were the first satellite tag deployments intended to deliver long-term, detailed movement information on east Australian (breeding stock E1) humpback whales. The tracking data revealed previously unknown migratory pathways into the Southern Ocean, with 11 individuals tracked to their Antarctic feeding grounds. Once assumed to head directly south on their southern migration, five individuals initially travelled west towards New Zealand. Six tracks detailed the coastal movement of humpback whales migrating south. One tag transmitted a partial southern migration, then ceased transmissions only to begin transmitting eight months later as the animal was migrating north. Northern migration to breeding grounds was detailed for 13 individuals, with four tracks including turning points and partial southern migrations. Another 14 humpback whales were tagged in Antarctica, providing detailed Antarctic feeding ground movements.

Broadly speaking, the tracking data revealed a pattern of movement where whales were at their northern limit in July and their southern limit in March. Migration north was most rapid across the months of May and June, whilst migration south was most rapid between November and December. Tagged humpback whales were located on their Antarctic feeding grounds predominantly between January and May and approached their breeding grounds between July and August.

Figure: <https://www.movebank.org/>

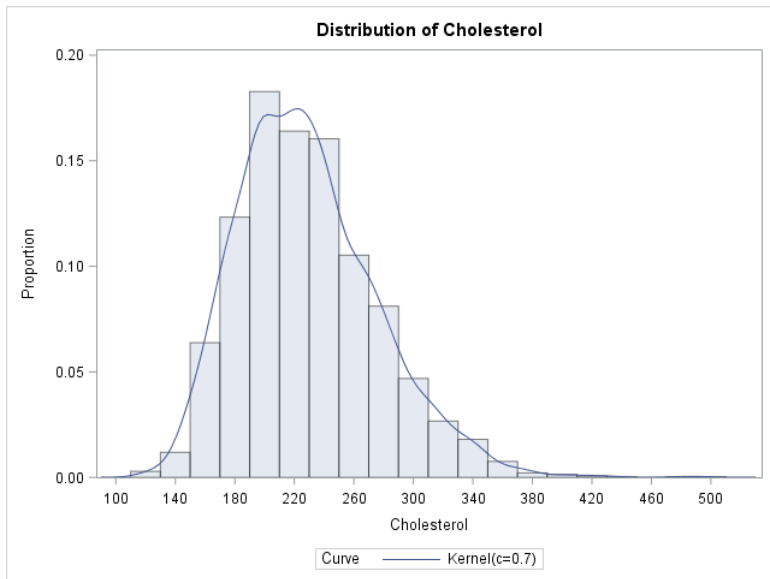
Humpback whales



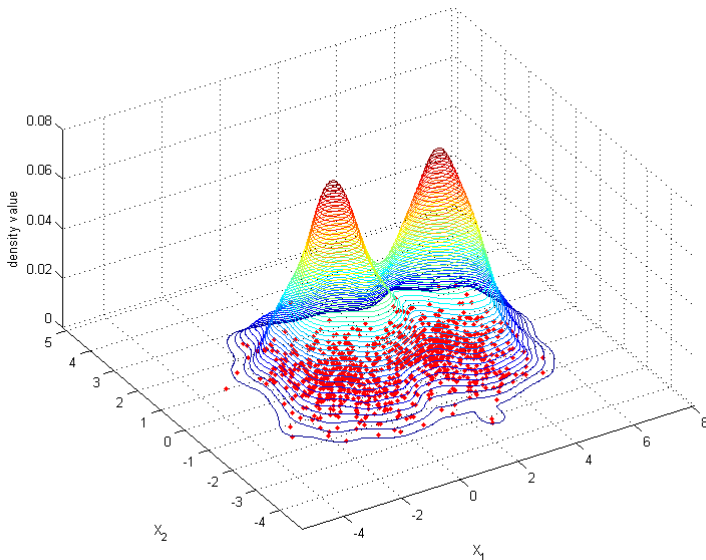
Actividades

- Calcular Net squared displacement (NSD).
- Estimar Kernel Density

Kernel Density Univariado



Kernel Density Bivariado



Referencias



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