Movement ecology
Movement ecology

Phyllosophical study of movement (Aristotle’s *De Motu Animalium*)

Mechanistic study of movement (Galen's *De Motu Musculorum*)

GPS in animal ecology theme issue; RSTB

Movement as a framework (Nathan et al. 2008)

- Biotelemetry and biologging issue; JAE
- Movement ecology special feature; PNAS

Collective movement ecology issue; RSTB

Movement ecology virtual issue; JAE

Tracking devices
Movement ecology

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Phylosophical study of movement (Aristotle's De Motu Animalium)
Mechanistic study of movement (Galen's De Motu Muscolorum)


Number of articles

Tracking devices

Software

R ArcGIS SAS SPSS MATLAB Python
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ArcGIS

SAS

SPSS

MATLAB

python
Movement ecology framework

- **External factors**
  (abiotic & biotic factors affecting movement)

- **Motion**
  (how to move)

- **Internal state**
  (affecting motivation & readiness to move)

- **Navigation**
  (where to move?)
Movement ecology framework

- **External factors** (abiotic & biotic factors affecting movement)
- **Motion** (how to move)
- **Internal state** (affecting motivation & readiness to move)
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Movement ecology framework

- **External factors** (abiotic & biotic factors affecting movement)
- **Motion** (how to move)
- **Movement path**
- **Internal state** (affecting motivation & readiness to move)
- **Navigation** (where to move?)
In this study...

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SAS
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In this study: last 10 years of movement ecology

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Number of articles
0 300 600 900 1200
8007 movement ecology papers

More on the methods: https://rociojoo.github.io/mov-eco-review/

The whole study: Joo et al. (pre-print): https://arxiv.org/abs/2006.00110
Results: Movement ecology framework

External factors (77.3%)

Internal state (49.0%)

Motion (26.2%)

Navigation (9.0%)

Movement path

location \((x, y, z, t)\)
Results: Movement ecology framework

- External factors (77.3%)
  - Internal state (49.0%)
    - Motion (26.2%)
    - Navigation (9.0%)
  - Movement path (33.3%)
    - Location (x, y, z, t)
Results: software
Conclusions

- Movement ecology framework
  - External factors > movement processes
    - Easier to study
    - Easier to translate into conservation & management
    - All components are key to understand mechanisms
Conclusions

- **Movement ecology framework**
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- **Tracking devices**
  - More precision
  - Data other than standard tracking (x,y,t)
Conclusions

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  - R prevalence
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- Software
  - R prevalence

A field more driven by data and technologies than new concepts?
Thanks for your attention

✉️ rocio.joo@ufl.edu  🔄 rocio_joo