Max-Planck-Institut für Ornithologie

MAX-PLANCK-GESELLSCHAFT

Radio frequency identification (RFID) Management System

A Novel Technology for Collecting Animal Behavioural Data

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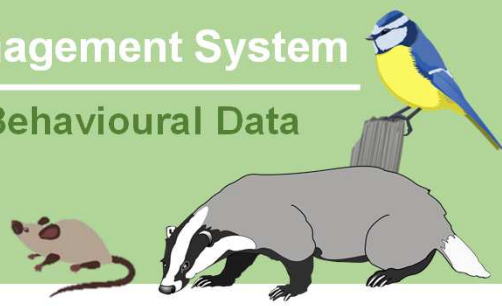

Uses of the APRDL:

- Reproductive behavior (e.g. incubation and brooding rates, feeding rates, etc.)
- Individual dispersal for adults and fledglings
- Survival or return rates
- Breeding site selection
- Social interactions (e.g. social networks at feeders)

Benefits of using APRDL over traditional methods (visual observations and camera traps):

- No observer biases and not affected by low visibility
- Autonomous – requires minimal battery and SD card changes
- Only active during events (e.g. bird entering a nest box) → does not need time-consuming processing like camera traps
- Allows for 24/7 data collection, and large data sets with high accuracy
- Compatible with any species that can be equipped with a RFID tag

RFID tag/transponder:

Standard recording (bird entering nest box):

20190122-170542.326 LBO:ON
20190122-170542.326 RFID is powered ON
20190122-170542.484 LBI:ON
20190122-170542.670 Transponder: 6140000000008001
20190122-170543.870 LBO:off
20190122-170543.924 LBI:off
20190122-171143.000 RFID is powered off

Specifications:

- Low power device → inactive current mode = 40µA (0,040mA)
- Useful for wild populations and laboratory experiments
- Compatible with different RFID readers and external triggers (Light barriers or infrared detectors)
- Can be used with different radio clock receivers (e.g. Germany 77,5 kHz, UK and USA 60 kHz, and China 68,5 kHz)
- Reliable in harsh environments (-40°C – 60°C)
- Used with Short Range readers (3,3V@0,22A)
- 12V battery pack