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Ollscoil Teicneolaíochta an Oirdheiscirt
South East Technological University



Otterly Amazing: Non-Invasive Genetic Monitoring of the European Otter in Ireland

By Samirah Blaauw

Lough Carra, Co. Mayo

- Alkaline marl lake, ~1,500 ha
- Marl: calcium carbonate deposit on the lakebed (stones/rocks)
- Ecological and conservation importance
- Low-nutrient water, unique ecosystem
- Main problem: nutrient enrichment

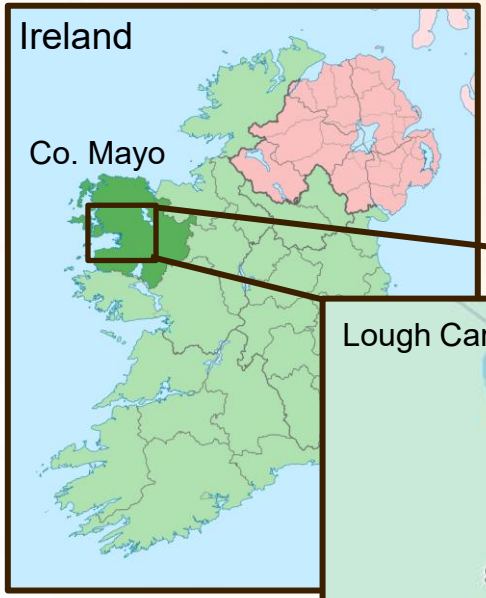




Image credit:
Philip Doddy
Marl Crusts of Lough Carra Booklet



Lough Carra LIFE

- EU LIFE programme (2021-2026)
- Goal: Preserve unique marl lake ecosystem
  - Conservation of European otter
  - Management of American mink

Image credit:
Lynda Huxley
Lough Carra Catchment Association





Project Aims

Test Non-Invasive Sampling Methods

Apply Molecular Methods

Population Genetics + Dietary Analysis



Aid conservation efforts!

Otter Poop: Spraints in the wild

- Sampling method: Positive sites resampling
  - collection of ‘old’ samples
  - ‘fresh’ samples (<48 hrs) collected every other day
  - Stored in EtOH
- Variable color, consistency and texture



The problem with spraints



- Notoriously difficult sample type
- Low genotyping success rates (<25%)
- Variety of factors influencing DNA quality/yield
  - Humidity, temperature, exposure, etc.
- Accessibility & weather conditions affect sampling











Alternative sample type: Hair & water

Hopefully: better DNA quality/yield!

Sticky Stick

- Hair sample collection
- Adhesive (Velcro) attached to stick
- Placed along wildlife path





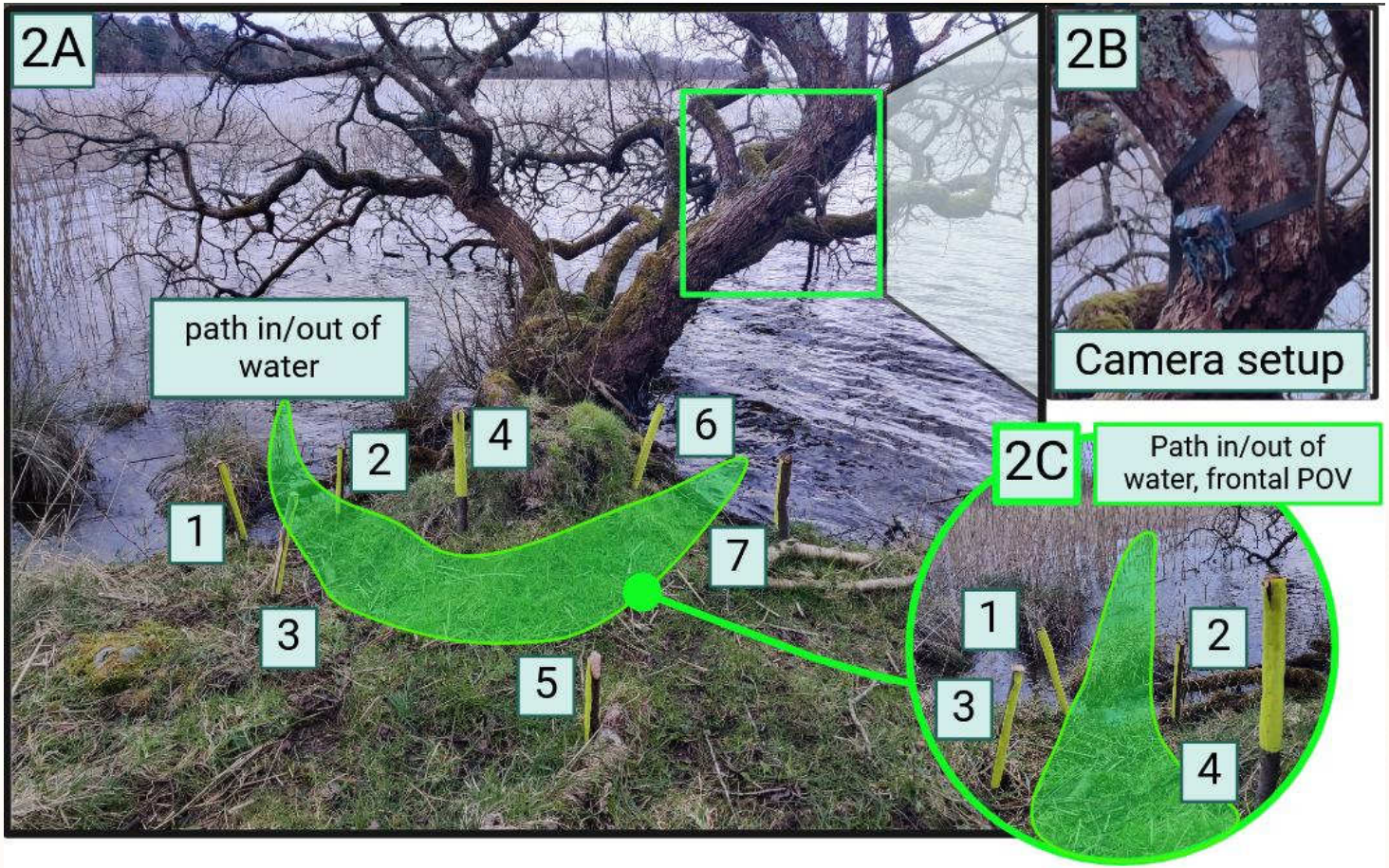
eDNA

- Water sample(s)
- Presence/absence genetic data
- Otter specific DNA markers





Sticky Stick: Setup



Sticky Stick: Camera Trap Footage









Sticky Stick:

Additional Animals

eDNA

- Part of the National Otter Survey
- eDNA → complement the standard survey method
- Data from this year's survey (2023) → inform eDNA survey sites
- 16 sites total
  - 10 sites in Galway
  - 6 sites in Waterford
- Otter-specific markers
- Presence/absence data



So, to recap:

Collect Non-Invasive Samples

Apply Molecular Methods

Perform population Genetics



Aid conservation efforts!

Lough Carra: Results

- 80+ sites surveyed
- 12+ positive sites
- 395 samples
  - 2% unusable (n=9)
  - 23% non-otter (n= 91)
  - **75% otter samples (n= 304)**
- ***Otter samples***:
  - 10% no sexing possible (n=28)
  - 30% male otters (n=94)
  - 60% female otters (n=182)
- ***Non-Otter samples:***
  - 43% no sexing possible (n=31)
  - 14% male (n=15)
  - 43% female (n=46)



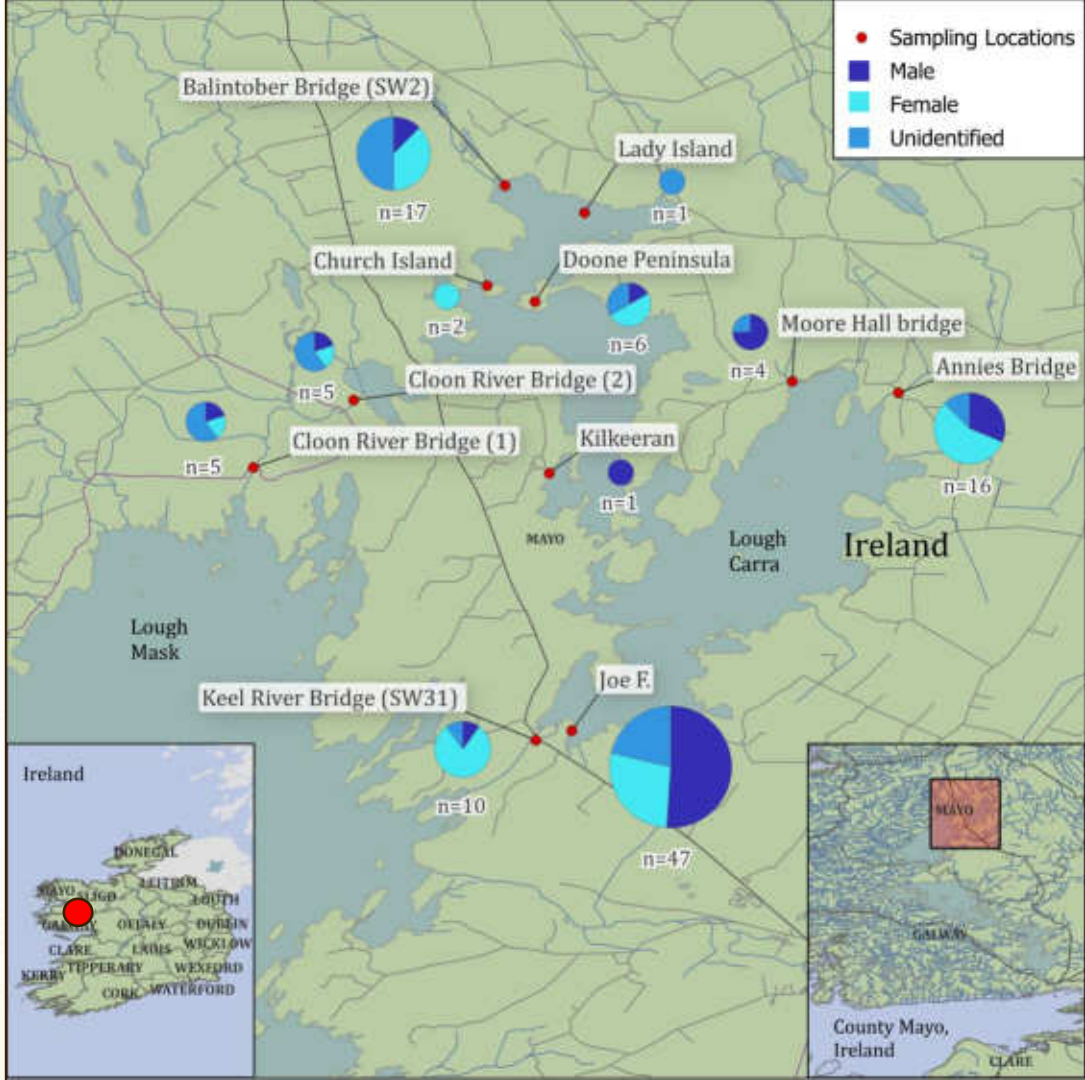


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RuthEalesArt - Etsy



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Thanks !

Are there any questions?

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