Tracking Small Wildlife Using Nanotags


Trevor Peterson
Stantec Consulting, Inc.
Topsham, ME 04086
Nanotag Telemetry

• What are nanotags?
• Northeast Migration Monitoring Network
• Pilot study to track bats offshore
• Applications for ecological studies and wildlife management
Nanotag Basics

- Coded VHF transmitters
- Small size (0.29 – ~3 g)
- Configurable burst interval (2 – 10 s)
- Battery life 10 – 33 days (0.29 g)
- Attachment using glue, “backpacks”, skin sutures
- Range dependent on application, antenna configuration
Nanotag Signal
Nanotag Receiver

5 – 9 element yagi

https://sensorgnome.org/
Nanotag Receivers

www.lotek.com
Northeast Migration Monitoring Network

- 19 Receivers in Gulf of Maine in 2013
Northeast Migration Monitoring Network

• 50+ Receivers in Northeast, 2013
Tracking Bats offshore with Nanotags – a Pilot Study
Tracking Bats offshore with Nanotags – a Pilot Study

• Do passive recording arrays provide sufficient coverage?
• Detection/transmission range?
• Tag lifespan/attachment?
Tracking Bats offshore with Nanotags – a Pilot Study

• Rate of migration?
• Timing of flight?
• Stopover behavior?
Tracking Bats offshore – Preliminary results

• 8 bats tagged at Petit Manan Point
  • 3 eastern red bats (*Lasiurus borealis*)
  • 3 little brown bats (*Myotis lucifugus*)
  • 1 northern long-eared bat (*Myotis septentrionalis*)
  • 1 eastern small-footed bat (*Myotis leibii*)
Tracking Bats offshore – Preliminary results

Eastern Red Bat
Released 9/18/13

Last detected ~10/1/13
Tracking Bats offshore – Preliminary results

- 8 bats have been detected (100%)
  - 5 bats at 3+ stations
- Detections ~16 days past release
- Eastern red bats ranged up to ~33 km between sites
- Little brown bats ranged up to ~20 km between sites
Casco Bay Receiver
Casco Bay Receiver

- 31 birds detected
  - 12 red-eyed vireos and 6 blackpoll warblers tagged at PMI
  - 10 Ipswich sparrows tagged at Sable Island, NS (~830 km east)
  - 1 black-backed gull
  - 2 semipalmated sandpipers
  - 2 REVI detected 1 day before at Jordan’s Delight (~206 km northeast)
- Bats not detected in Casco Bay
Casco Bay Receiver

- Red-eyed vireo
  - October 3
  - 10 minutes
  - ~1 – 1.5 km
  - Both antennas

- Ipswich sparrow
  - October 10
  - 8 minutes
  - ~1.5 – 2 km
  - South antenna
Additional Applications?

- Regional migration monitoring
- Crossing structure monitoring
- Wind project impacts
- Wildlife exclusion
- Songbird/bat/insect migration
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