Motus
Wildlife Tracking System

A Program of Birds Canada

BIRDS CANADA
OISEAUX CANADA

The Motus Wildlife Telemetry System

Dan Groebner KK7IAB Arizona Game and Fish Department

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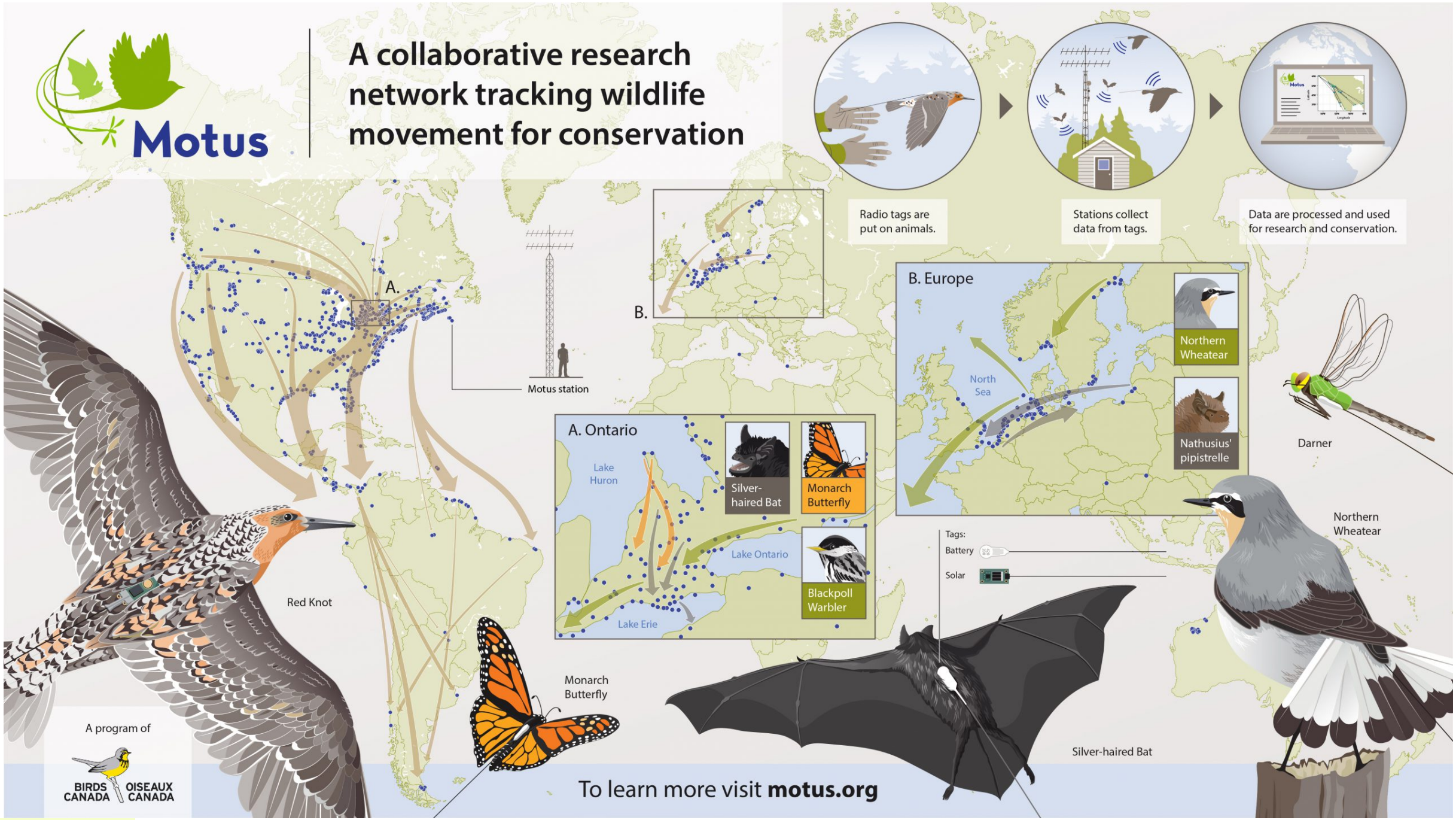
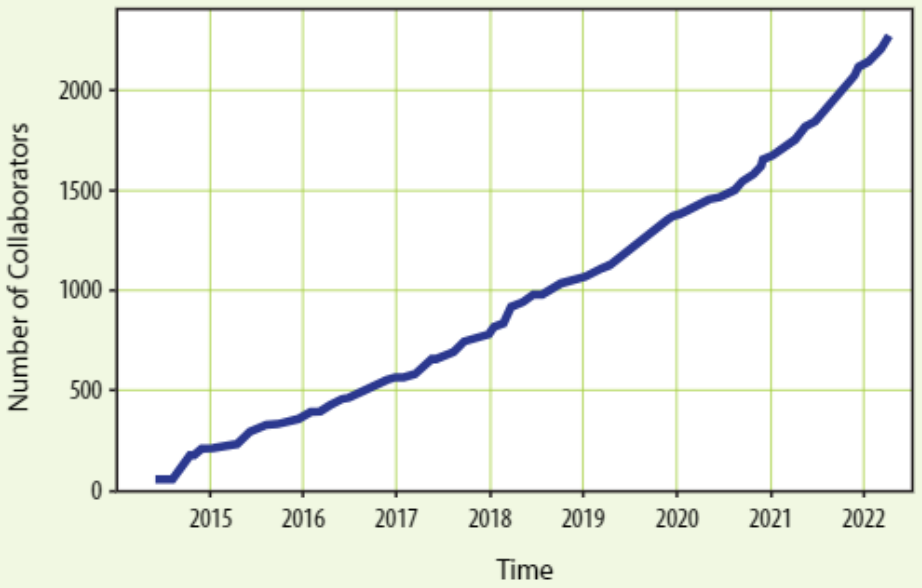
Telemetry in Wildlife Research and Management

- Earliest use of telemetry on wildlife – mallards in Minnesota – 1960s
- VHF pulsed frequencies between 148-152, 163-165 , 216-220 MHz
- Each animal has its own frequency
- Transmitter lifespans: 30 days to 4 years
- Transmitter ranges: 100 yards to >10 miles
- Transmitter sizes: Small to large
- Purposes: Habitat use, fresh critters for mortality, home ranges
- Methods: Mobile receivers to "triangulate" or "home", like "fox hunting"

Motus Wildlife Telemetry is Fundamentally Different

- Designed and developed by Birds Canada in Nova Scotia in 2012
- VHF SBD pulses on only 2 frequencies: 166.380 and 434.000 MHZ
- Transmitter lifespans longer than VHF
- Transmitter ranges: Depends on location of receiving tower
- Transmitter sizes are usually smaller than VHF
- Purposes: Migrations and landscape scales habitat use
- Methods: Stationary receiving stations upload data to internet


Motus
A collaborative research network tracking wildlife movement for conservation
Radio tags are put on animals.
Stations collect data from tags.
Data are processed and used for research and conservation.
A.
B.
Motus station
B. Europe
North Sea
Northern Wheatear
Nathusius' pipistrelle
A. Ontario
Lake Huron
Lake Ontario
Lake Erie
Silver-haired Bat
Monarch Butterfly
Blackpoll Warbler
Darner
Northern Wheatear
Tags:
Battery
Solar
Red Knot
Monarch Butterfly
Silver-haired Bat
A program of
BIRDS CANADA
OISEAUX CANADA
To learn more visit motus.org



4 Continents

31 Countries with Motus receiver stations

1,426 Receiver stations

285 Species tagged

33,259 Animals tagged

510 Projects to date

2,000 Partners and collaborators

149 Publications based on Motus data

Figure 1: Growth in Motus collaborators 2015-2022 (left), and Motus metrics 2022 (right)

Existing, Planned and Prospective Stations

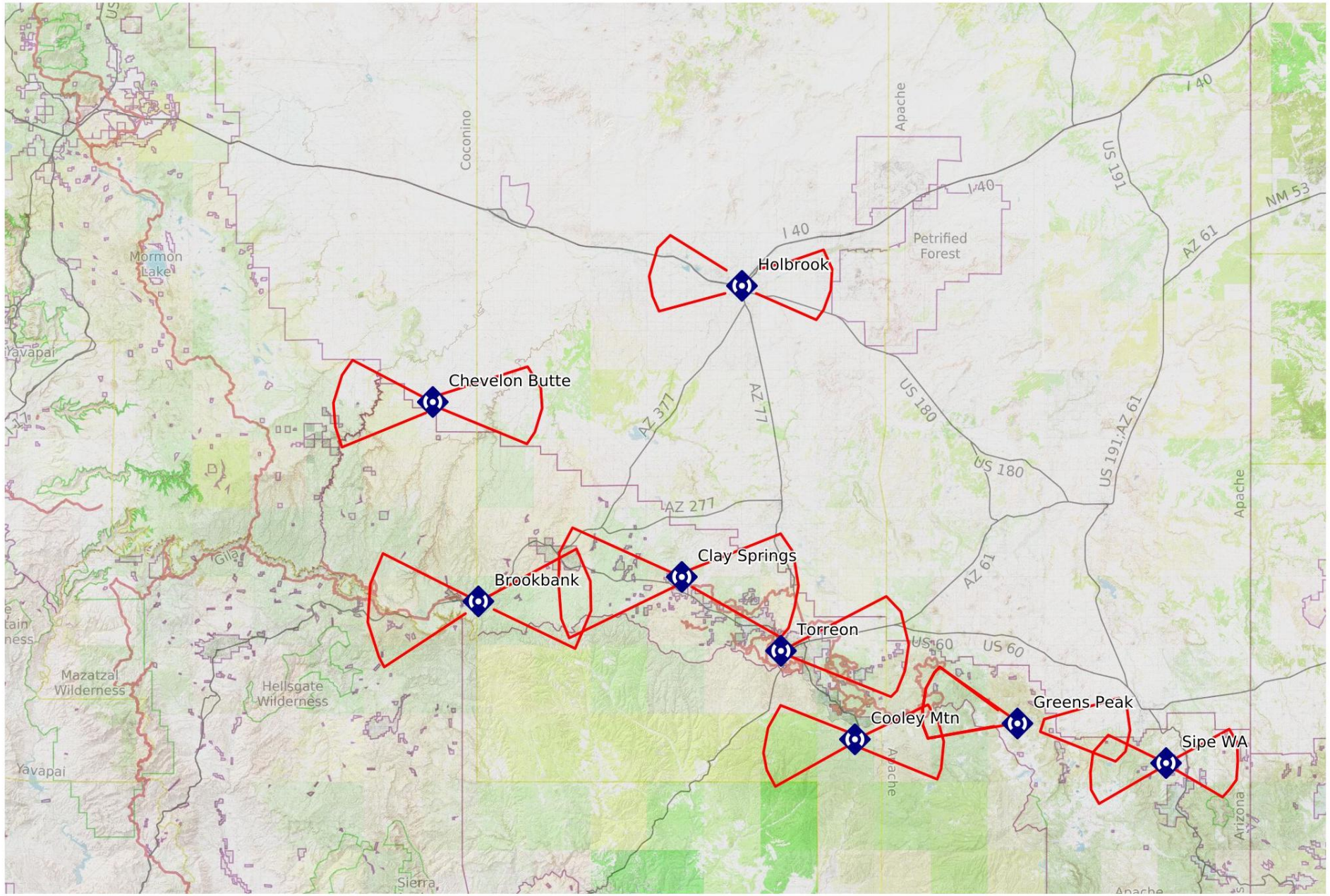
Figure 3: Conceptual hemispheric infrastructure framework for the Americas by 2030. Similar ambition exists for Europe and other regions.

Cost of DIY Motus Receiving Station

Item	Quantity	Cost Ea
Raspberry Pi 4 8GB	1	$200
SDR FUNCUBE Dongle	2+	$300
9-element Yagi 166.380 MHz	2	$570
GPS USB	1	$40
USB Hub	1	$30
Solar panel 100W & controller & battery	1	$400
Tower, mast, cables	1	$500?

Prioritizing Receiving Site Locations

- Wildlife Area?
- Migration route?
- Power?
- Cellular?
- WiFi?
- Part of an array?
- Red tape?
- Cooperators!!!



Mercator Projection
WGS84
UTM Zone 12S

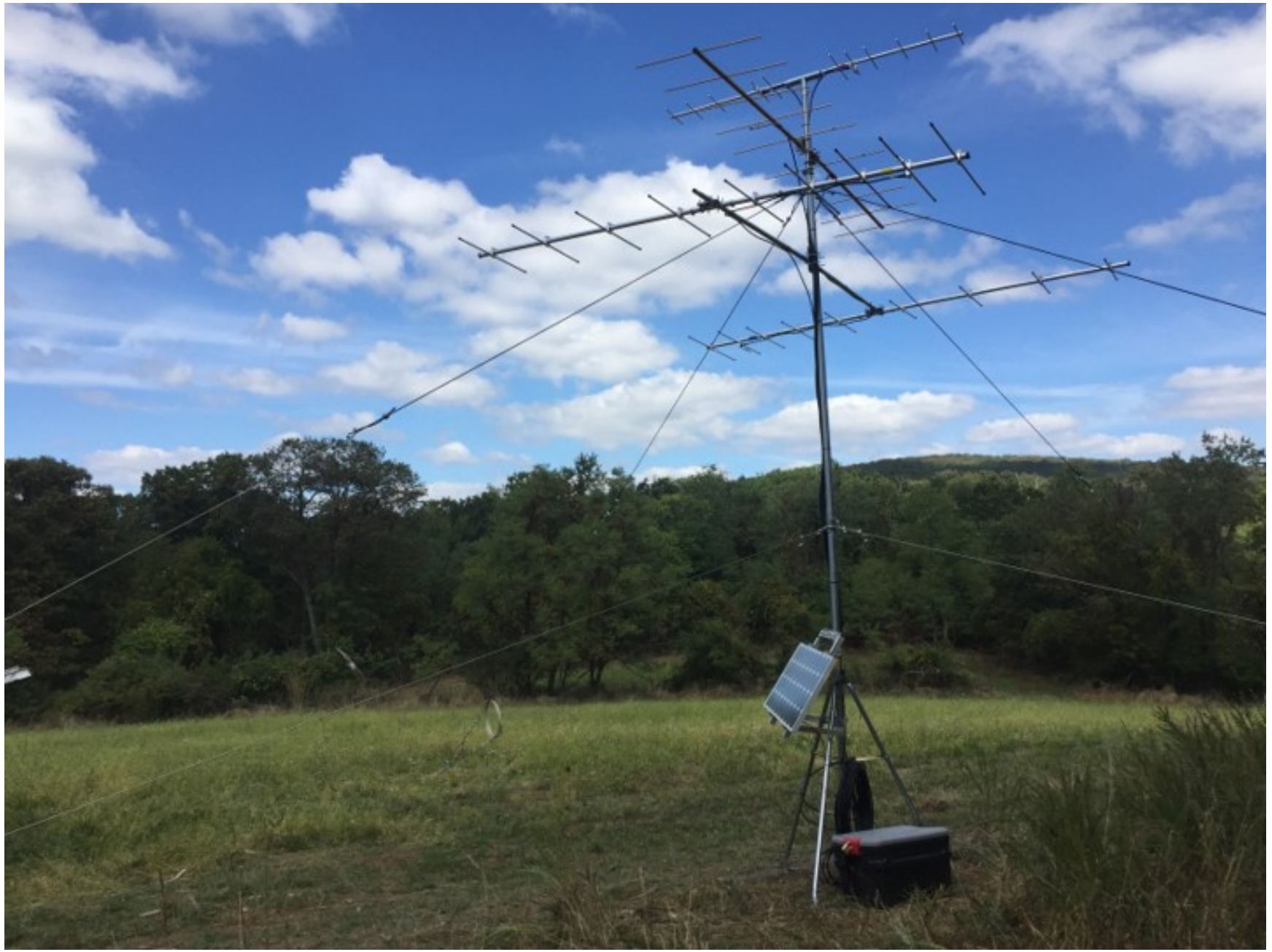
25 50 75 100 125 150 175 km

25 50 75 100 mi

Scale **1:1049407** 1 inch = 16.6 miles

MN 9.4º

SARTOPO




Welcome to Long Point Bird Observatory


MARLON

Other Potential Kachina Projects

- Search and Rescue new Command Trailer
- APRS Field Crew Tracking System
- Wildlife Water Catchment Monitors
- Drone mounted VHF Receiver

Motus.org

- https://motus.org/dashboard/#e=main