

Forest Monitoring for Early Successional Species in the Green Mountains

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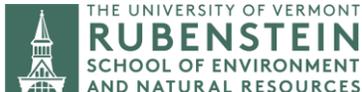
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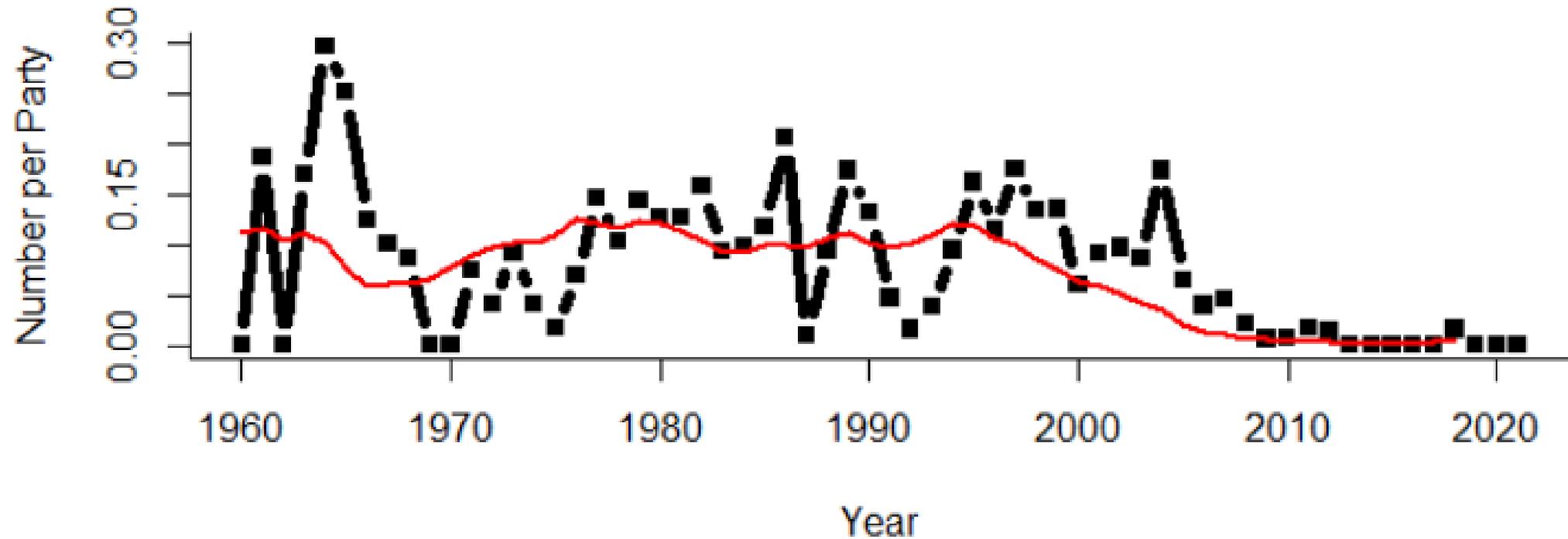
⁵ U.S. Geological Survey, Vermont Cooperative Fish and Wildlife Research Unit, Rubenstein School of Environment and Natural Resources, University of Vermont, Burlington, VT, USA





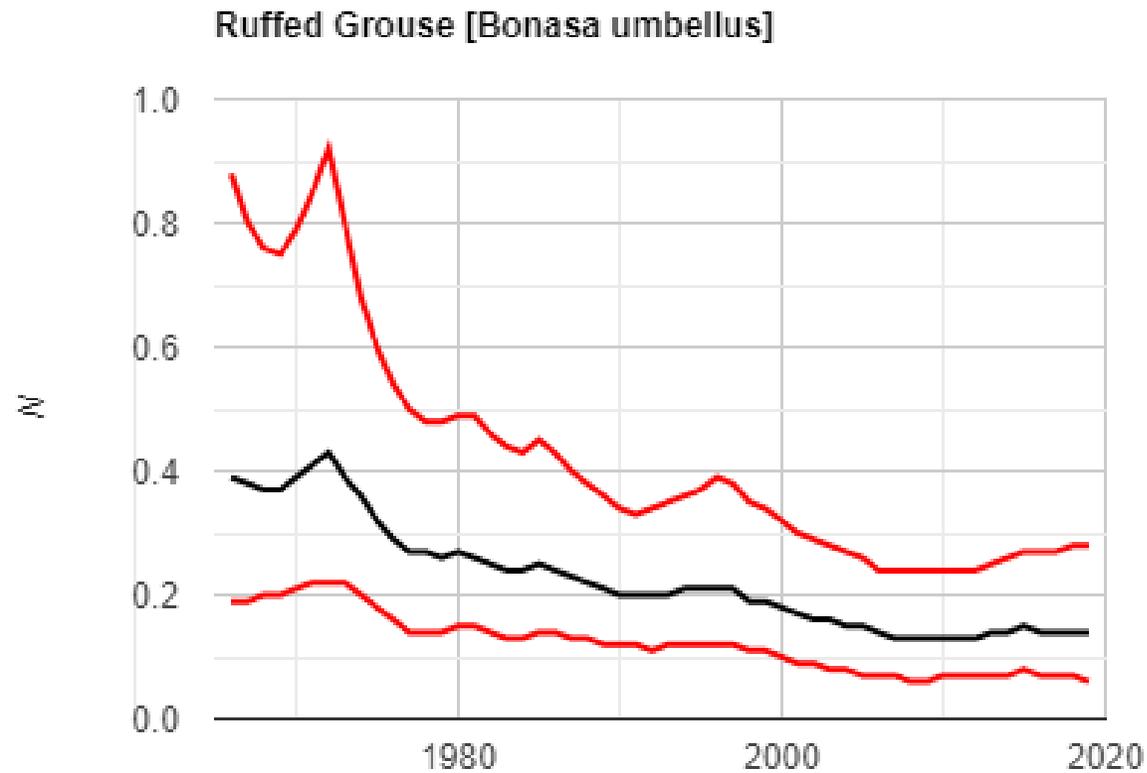
Early Successional Species in Vermont

Ruffed Grouse – Audubon Christmas Bird Count (Burlington, VT)



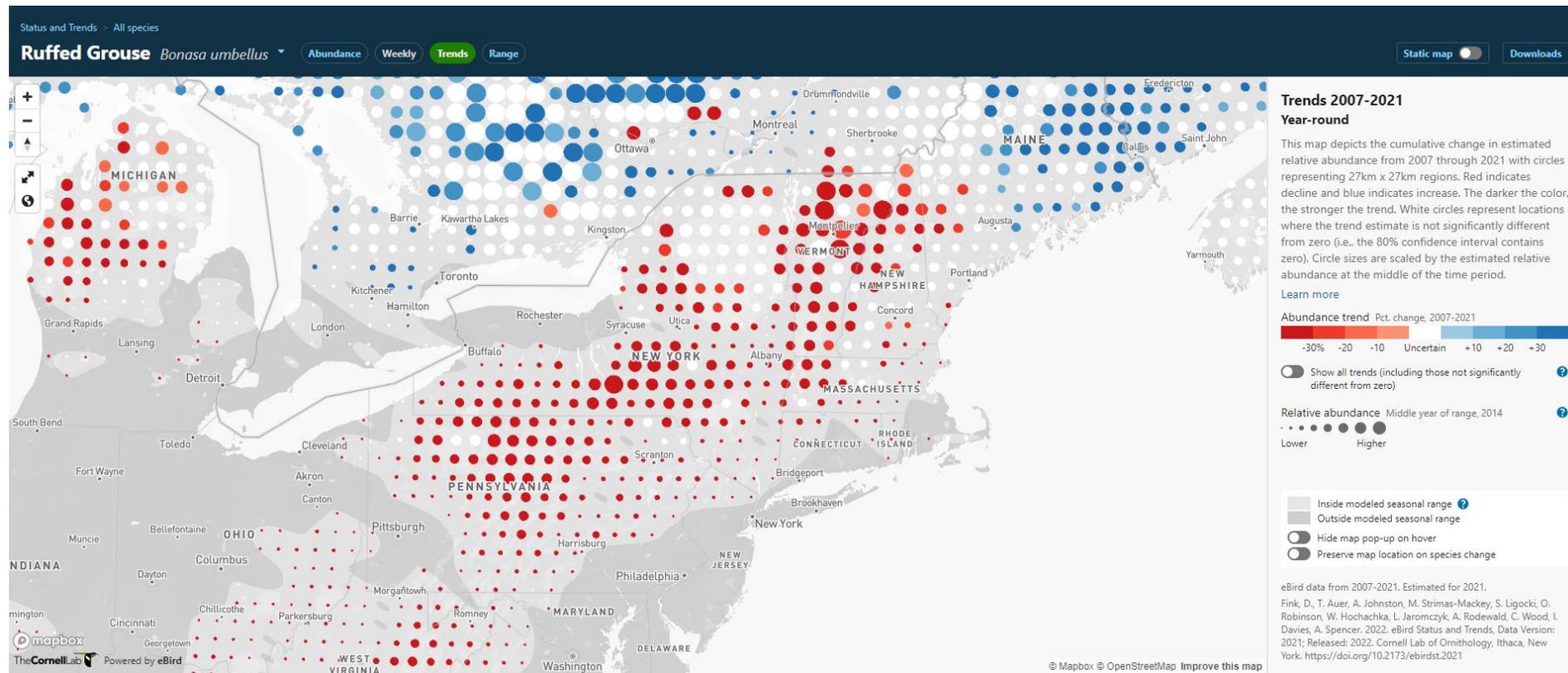
Early Successional Species in Vermont

Ruffed Grouse – Breeding Bird Survey



Early Successional Species in Vermont

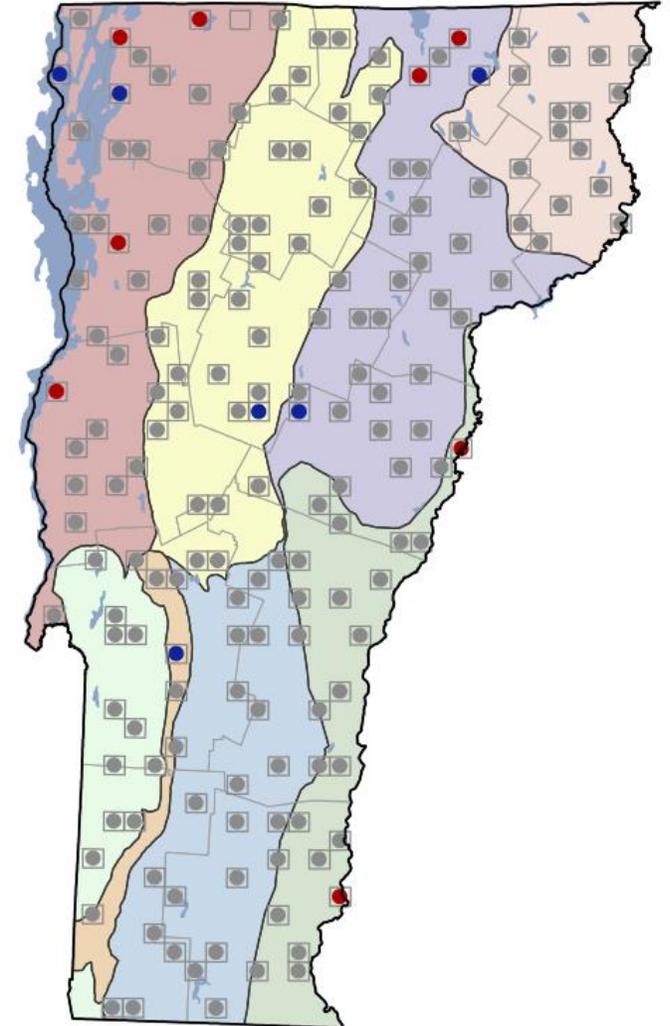
Ruffed Grouse – eBird Trends (2007 – 2020)



Early Successional Species in Vermont

Ruffed Grouse – Breeding Bird Atlas (1976-2003)

Biophysical Region	First Atlas	Second Atlas	Change	% Change
Champlain Valley	30	28	- 2	- 7
Northeastern Highlands	17	17	+ 0	+ 0
Northern Green Mountains	34	35	+ 1	+ 3
Northern Vermont Piedmont	28	28	+ 0	+ 0
Southern Green Mountains	27	27	+ 0	+ 0
Southern Vermont Piedmont	21	19	- 2	- 10
Taconic Mountains	11	11	+ 0	+ 0
Vermont Valley	4	5	+ 1	+ 25
Totals	172	170	- 2	- 1



Other Early Successional Species



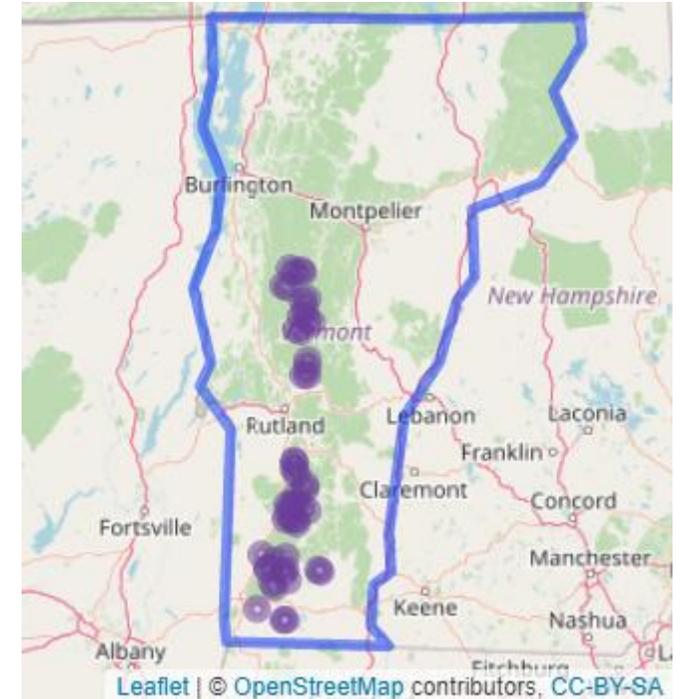
Impacts of Timber Harvest on Avifauna

- What are the impacts of timber harvest on avian communities?
- Do early-successional species occur more frequently near recent timber harvest?



Survey Protocol

- ~50 recording units (Song Meter Micro) placed within Green Mountain National Forest in late-spring to early-summer, 2022.
- Some units placed in mature forest, while some were placed near recent cuts.
- Recorders collected November-December, 2022.
- Timed recordings of 37 minutes per day:
 - BLOCK 1: Record for 1 minute, every 10 minutes, from 05:00 to 09:00
 - BLOCK 2: Record for 1 minute, every 30 minutes, from 16:30 to 23:00



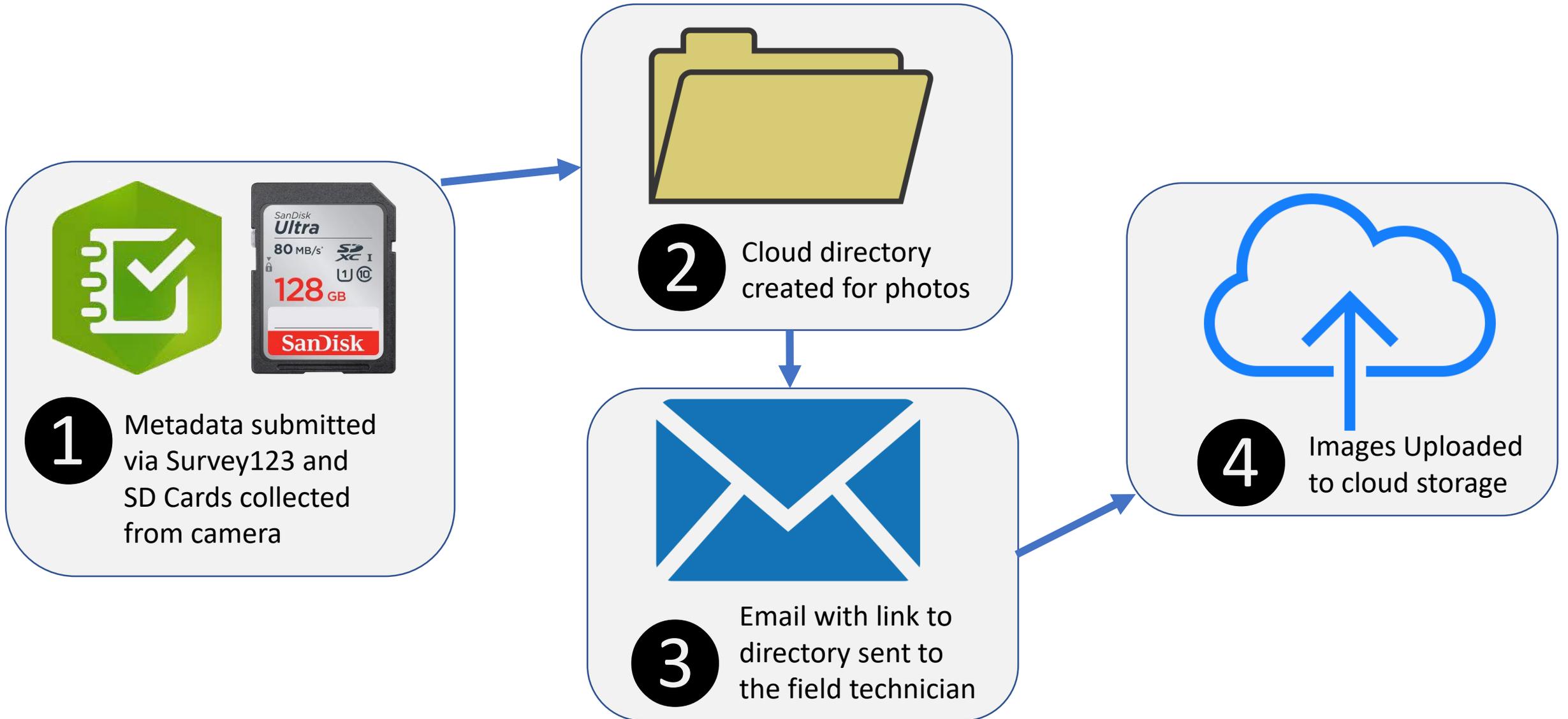
Site Selection: Near Recent Cuts



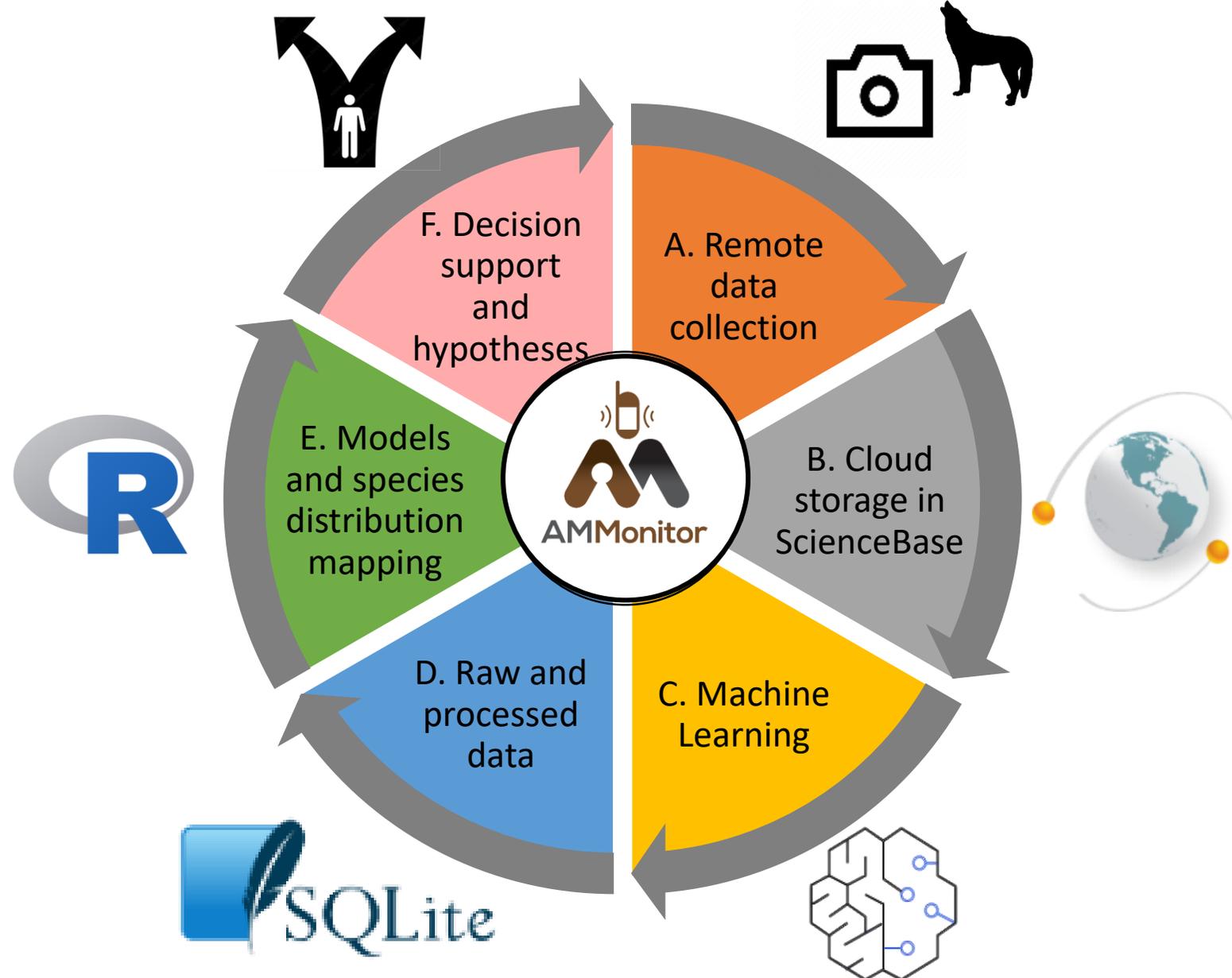
Site Visits in Spring and Fall



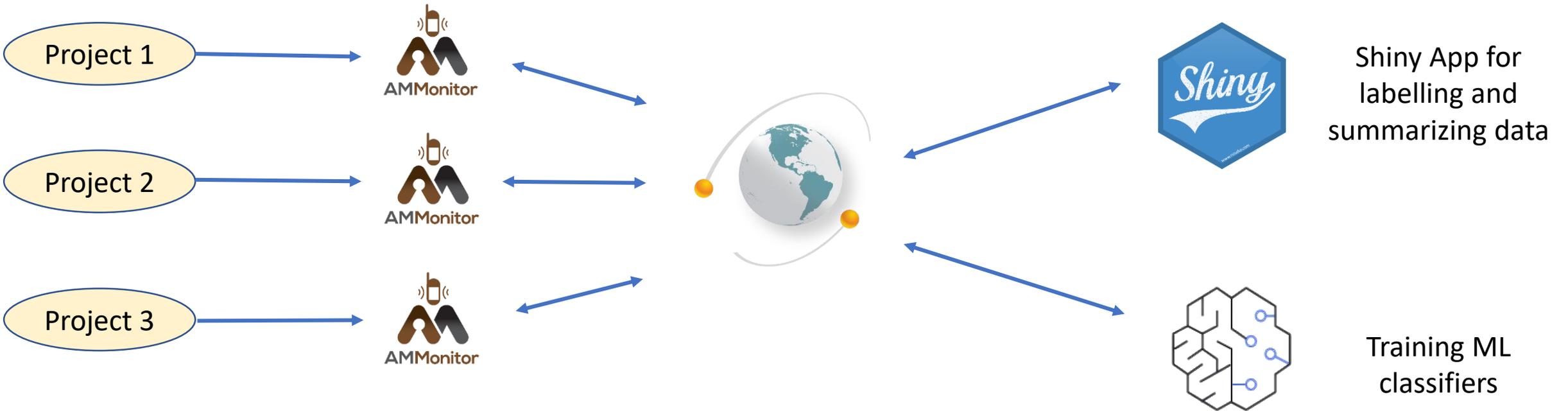
Remote Data Collection



AMMonitor – Data Management Ecosystem



Data Management & Organization



Independent
Monitoring
Projects

A unifying
framework
(independent local
databases)

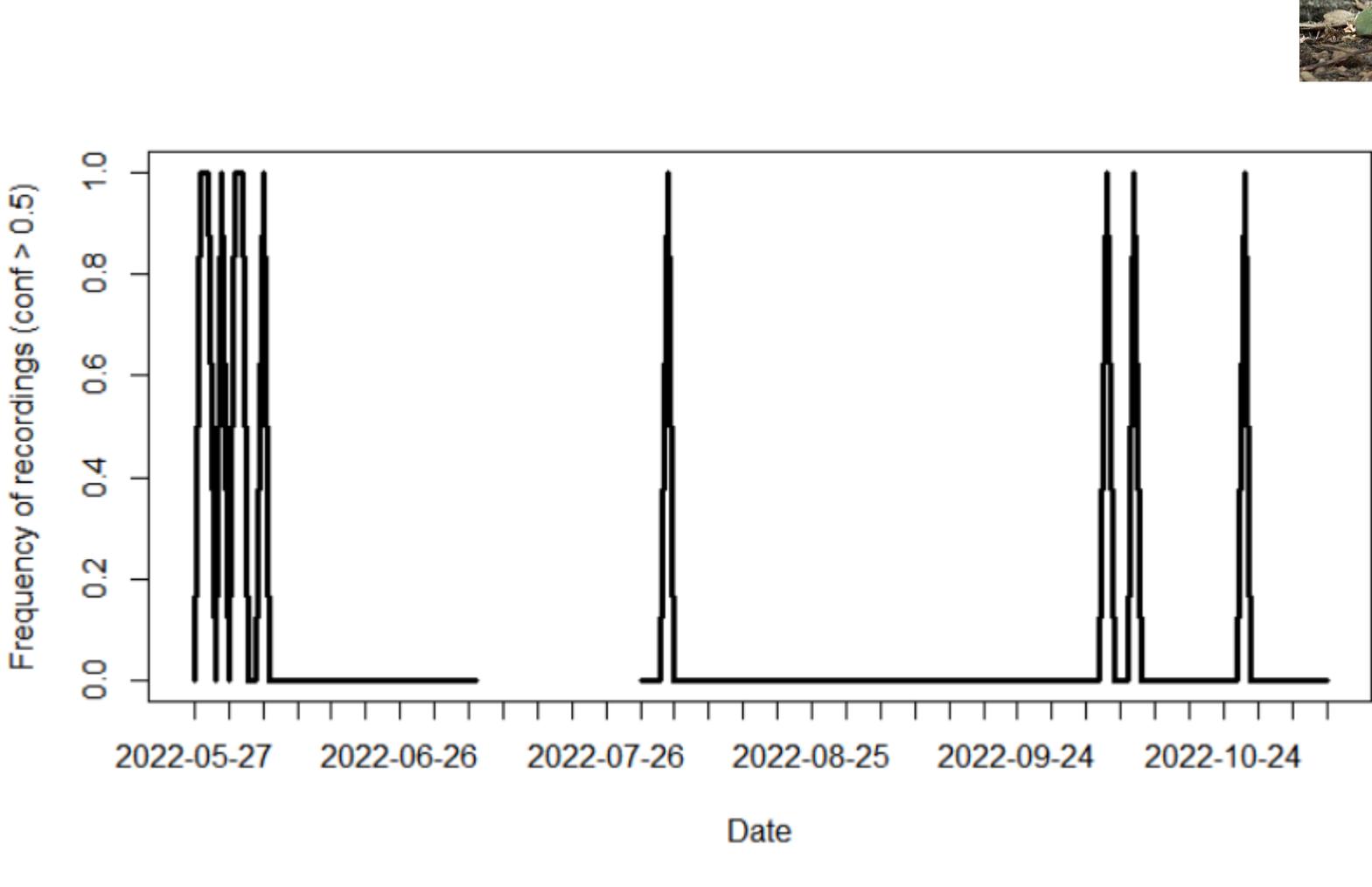
Science Base:
Stable repository
rich in metadata

Data Analysis

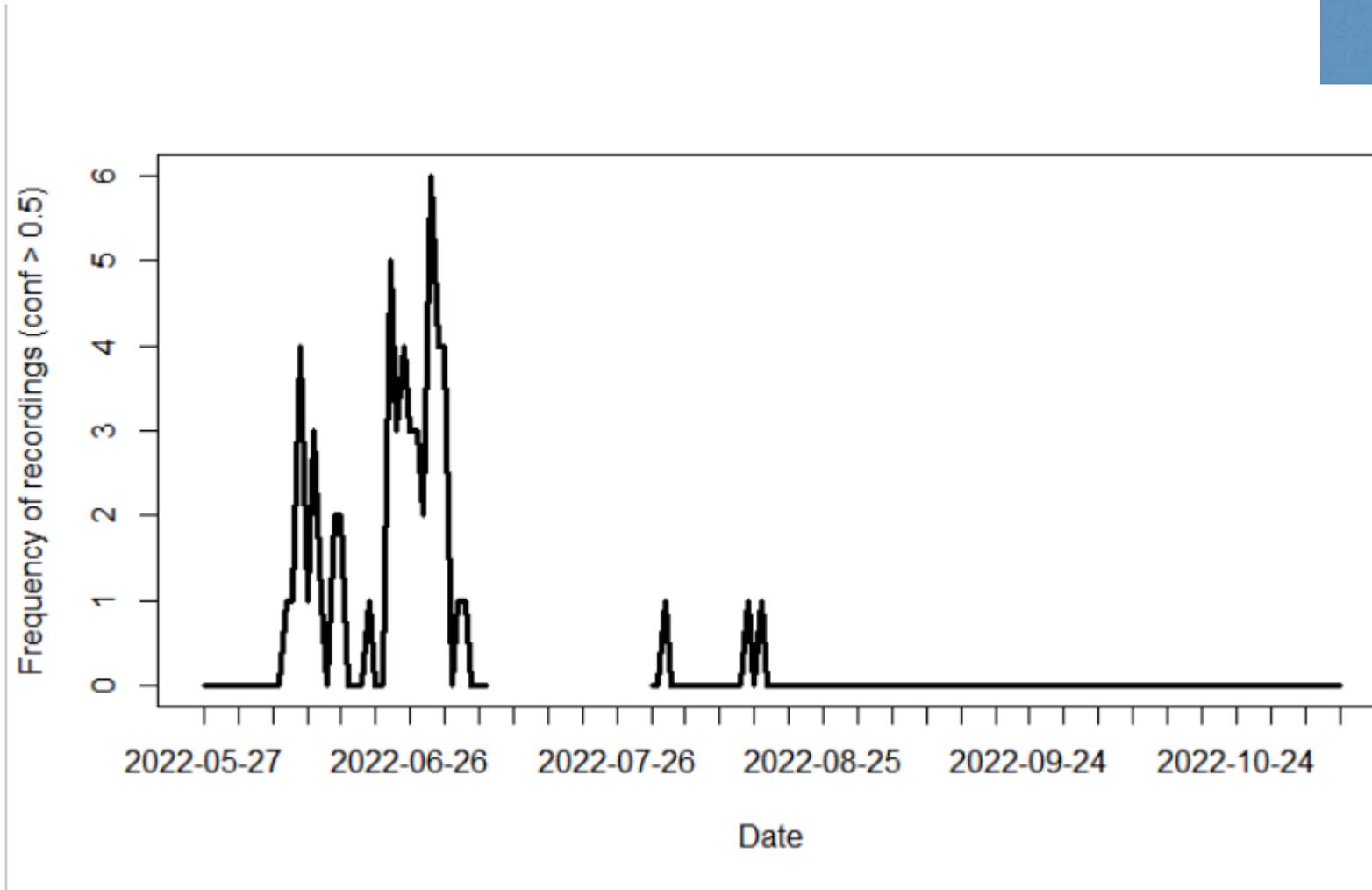
- 90+ hours of recordings per site
- 130+ days of recordings, all sites
- BirdNET used to analyze bird species presence.
 - Model developed by Cornell, used in the popular “Merlin” app.
- Detect 200+ species, predictions receive “confidence” score 0-1



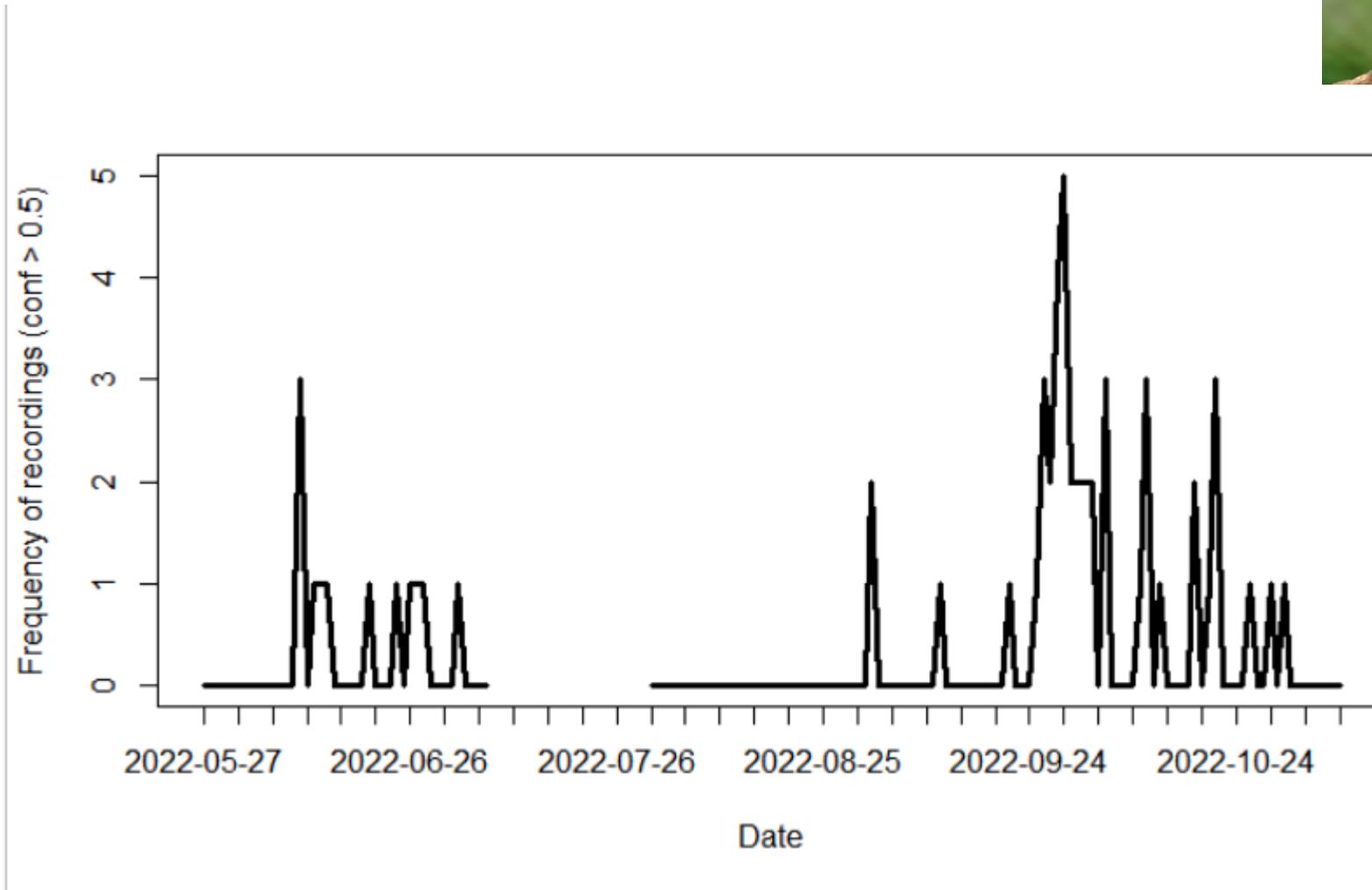
American Woodcock



Mourning Warbler

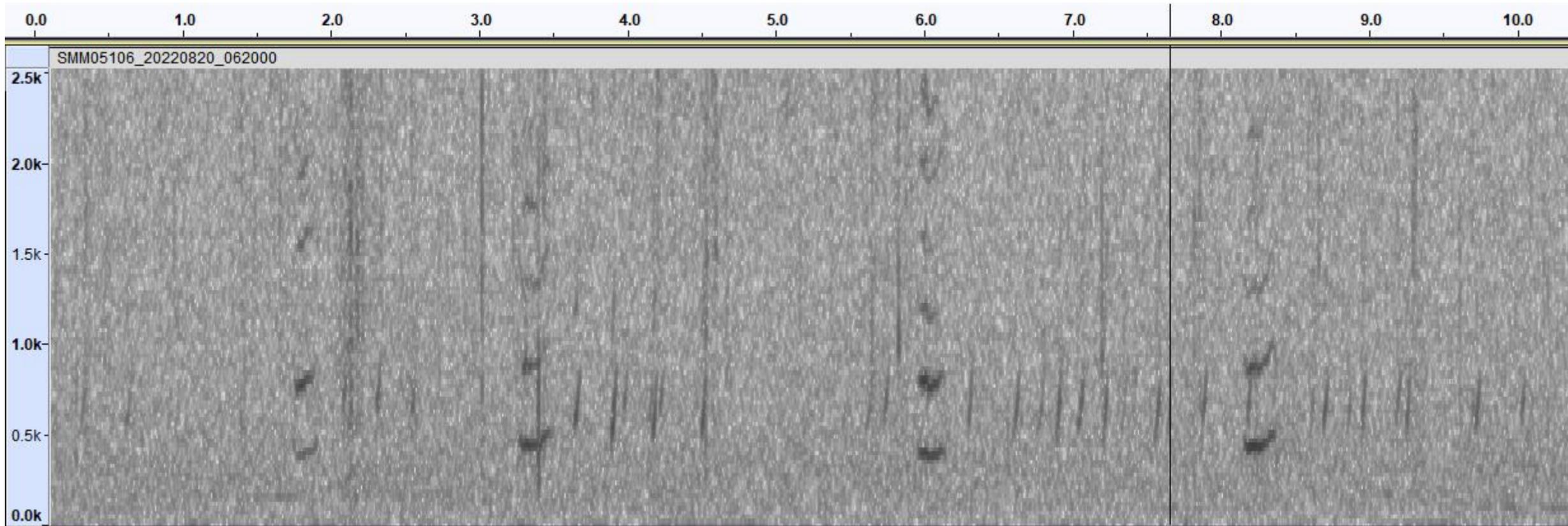


White-throated Sparrow



Ruffed Grouse

2022-08-20 6:20 AM



Thank You!

- Vermont Fish & Wildlife Department
- Green Mountain National Forest
- Ruffed Grouse Society
- Forest Ecosystem Monitoring Cooperative
- USGS Cloud Hosting Solutions (Upal Chowdhury)

