

Passive Acoustic Monitoring and PRISM

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Environment and
Climate Change Canada
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Changement climatique Canada

Program for Regional and International Shorebird Monitoring (PRISM)

- Active in the Arctic since 2001
- Focused on documenting population distributions and trends, habitat use
- Observation-based surveys use a double-sampling method
 - Intensive surveys at several plots
 - Rapid surveys (90 minutes) at wide range of randomly selected plots

Program for Regional and International Shorebird Monitoring (PRISM)



Observational surveys

- Active in the Arctic since 2001
- Double-sampling method
- 90 minutes per plot



Acoustic surveys

- Active since 2022
- Passively record sound on autonomous recording units (**ARUs**) at center of each PRISM plot
- **Detect and classify** sounds from this data to get timeseries of **presence across full summer**

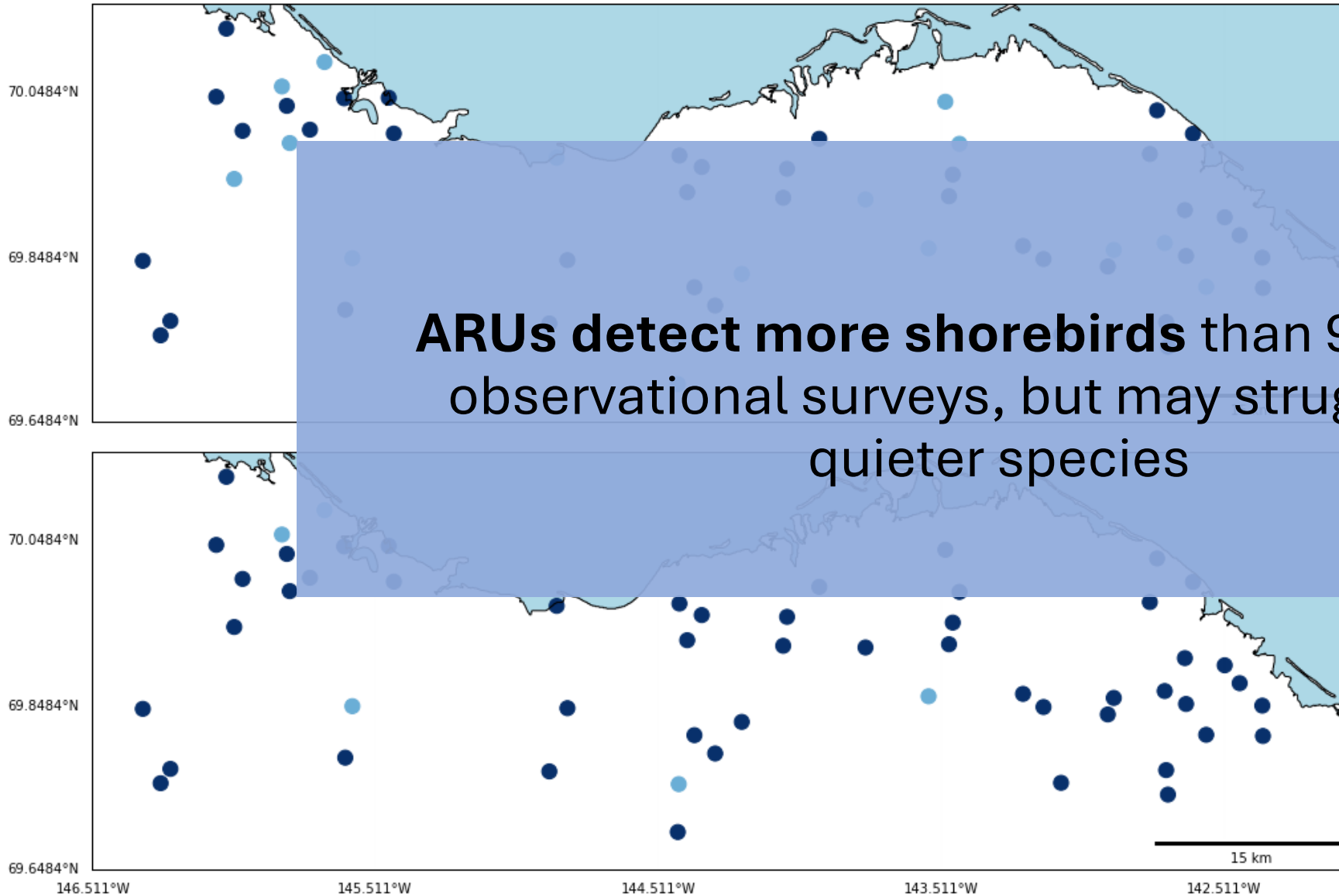
A bird with brown and white streaked feathers is perched on a green background. The bird is facing left and has a long, dark beak. The background is a solid green color.

Questions

- Can we get the same information (abundance, distributions) from ARUs that we get from observational surveys?
- What **new** insights can we get from the ARUs?

Can we get the same information?

Arctic National Wildlife Refuge, 2022



ARUs detect more shorebirds than 90-minute observational surveys, but may struggle with quieter species

Dark blue = ARU species list has all observed species and

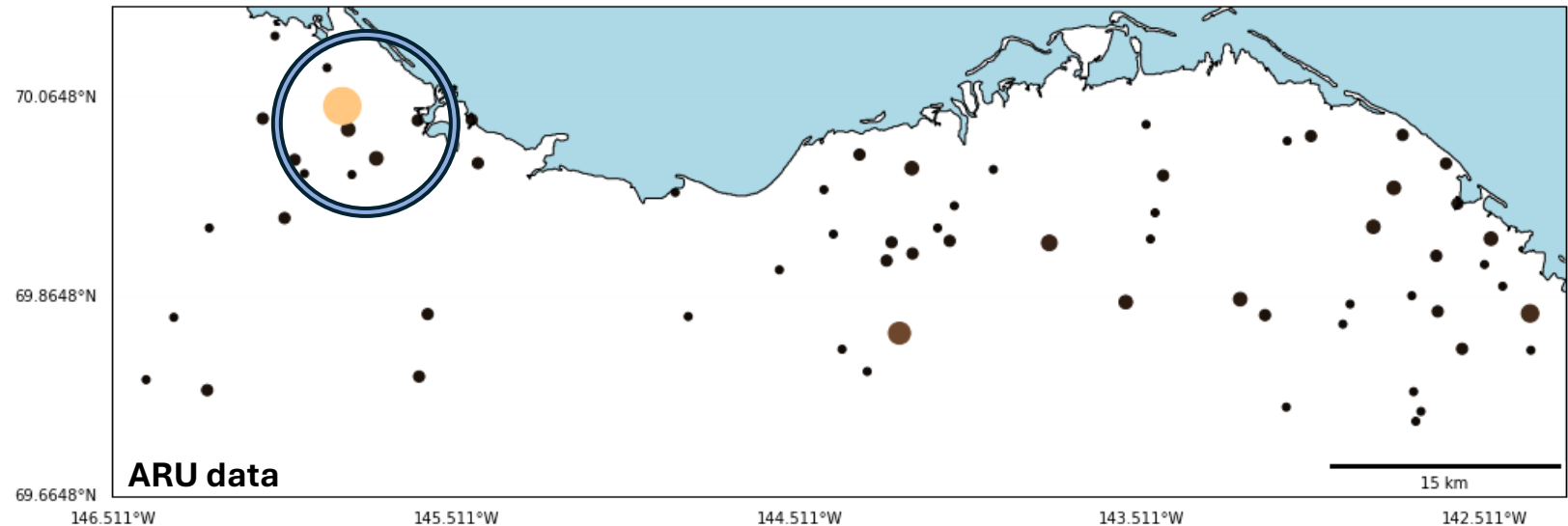
Light blue = ARU species list does not have all observed species

Can we get the same information?



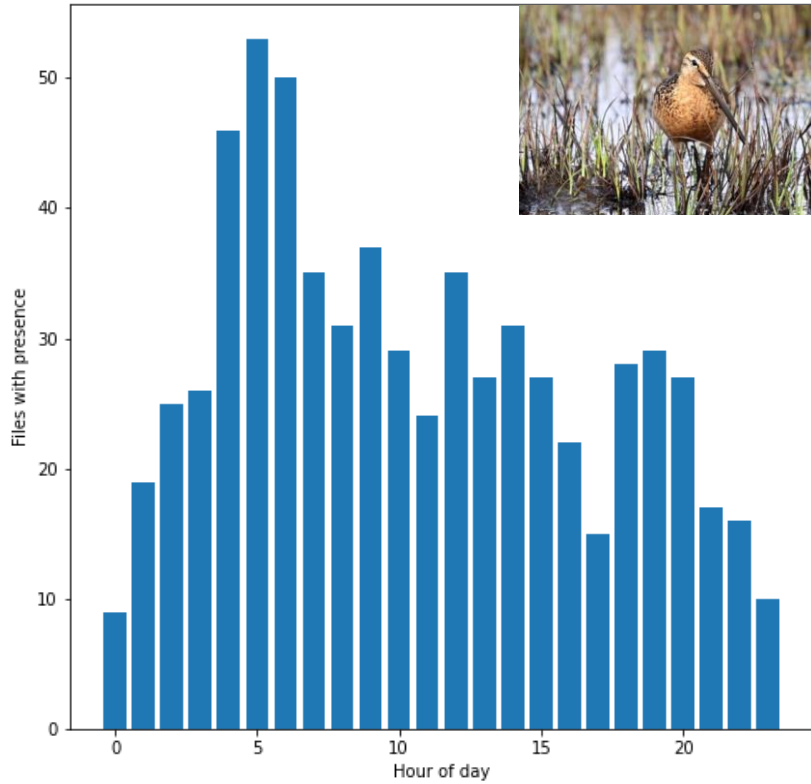
Primary 'hotspot' matches well between data types, but ARU data captures more detail

Long-billed dowitcher distribution

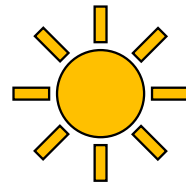
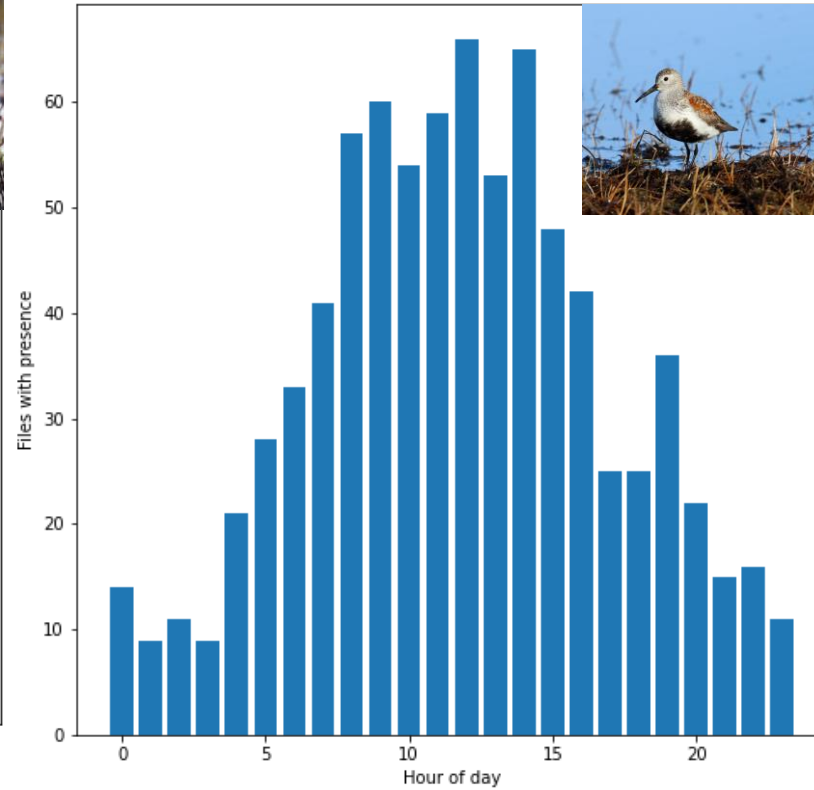


What new insights can we get from ARUs?

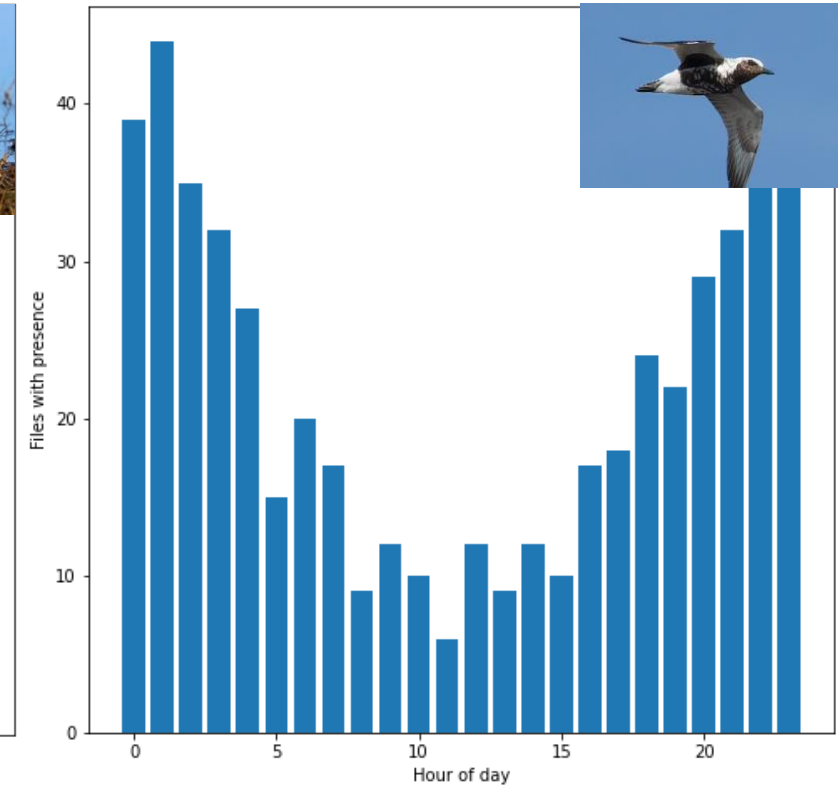
Long-billed dowitcher



Dunlin

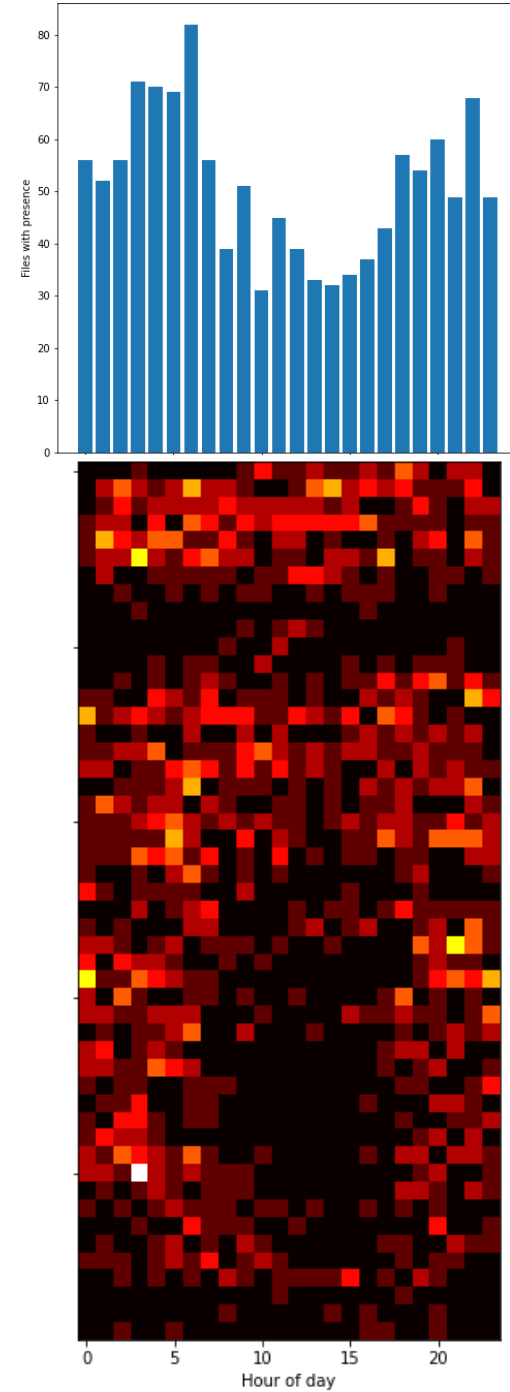
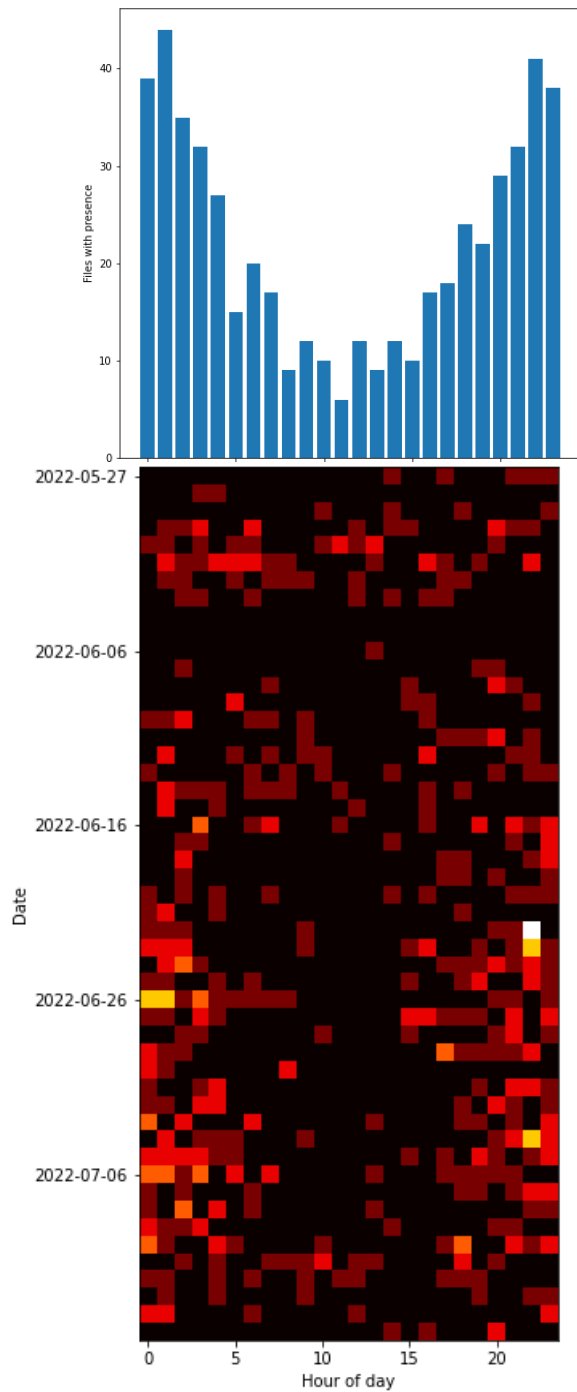


Black-bellied plover





Black-bellied plover



American golden-plover

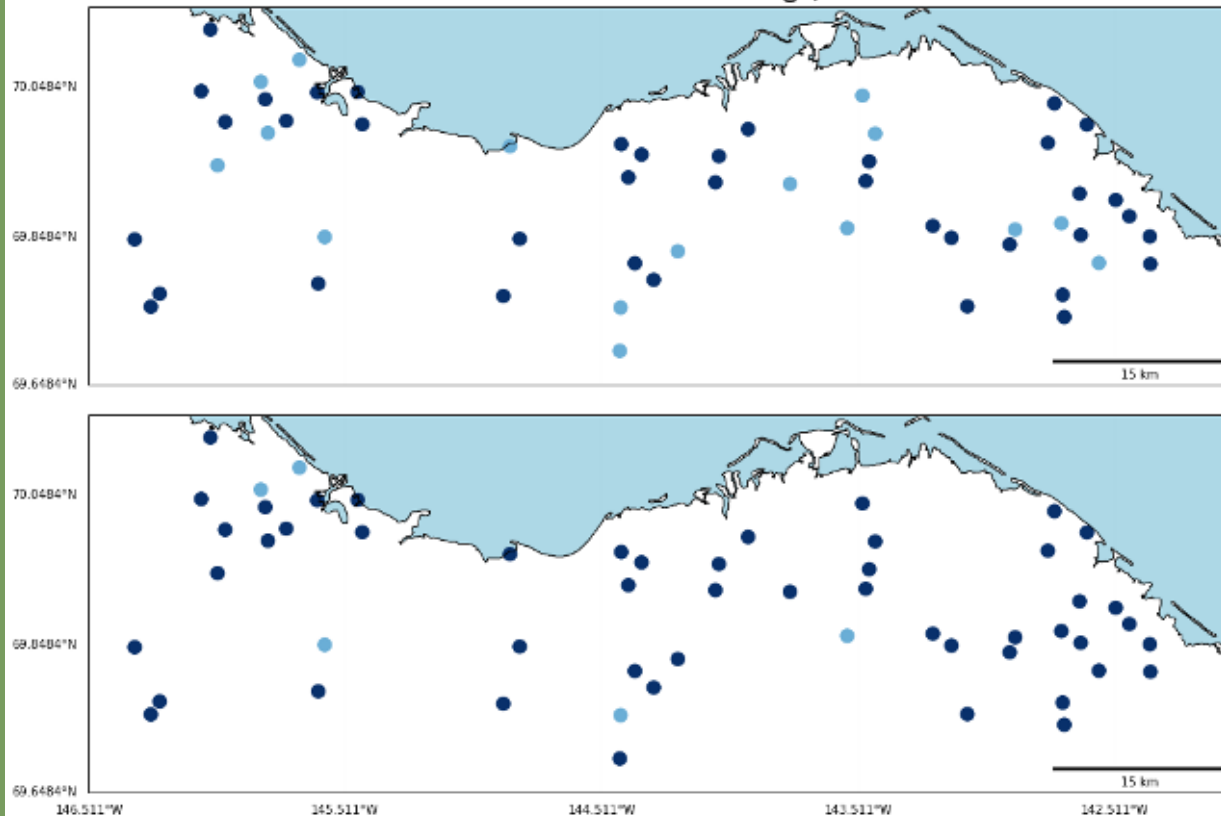


Conclusions

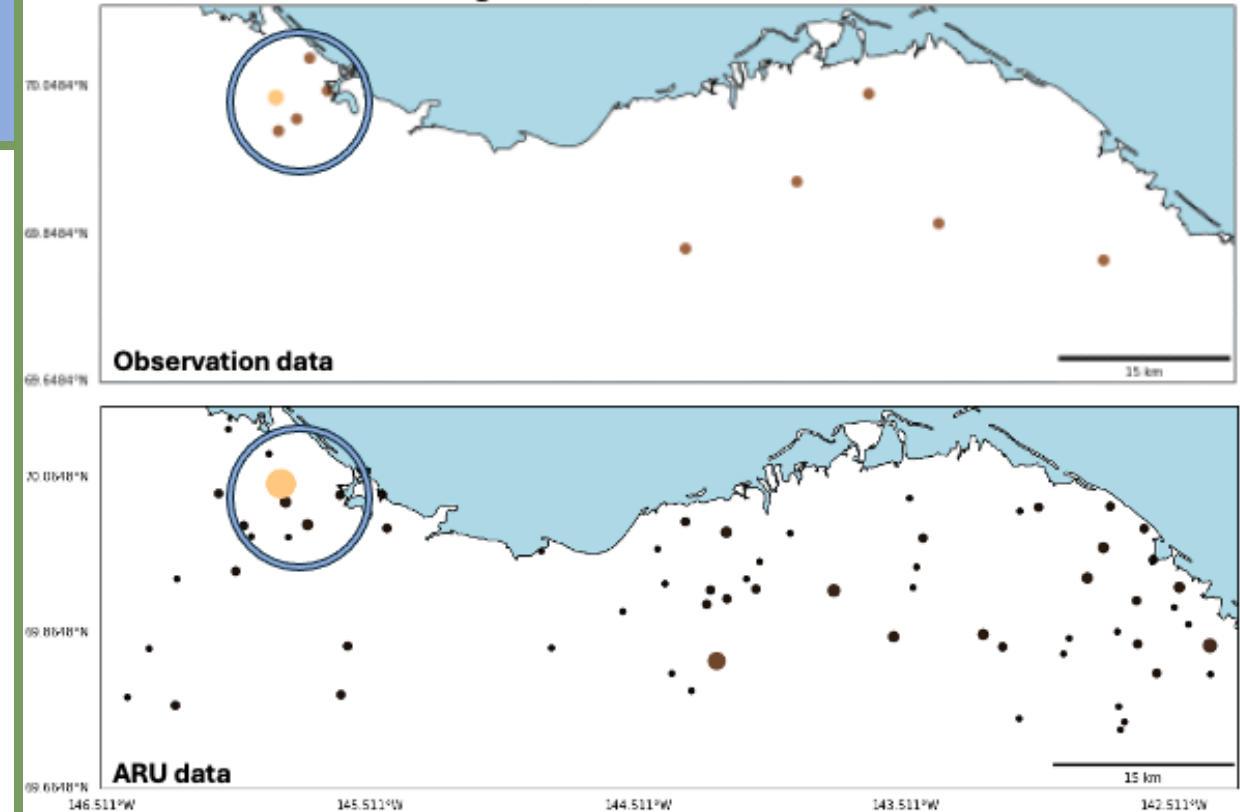
→ Can we get the same information (abundance, distributions) from ARUs that we get from observational surveys?

ARUs **detect more shorebirds** but struggle with quieter species

Arctic National Wildlife Refuge, 2022



Long-billed dowitcher distribution



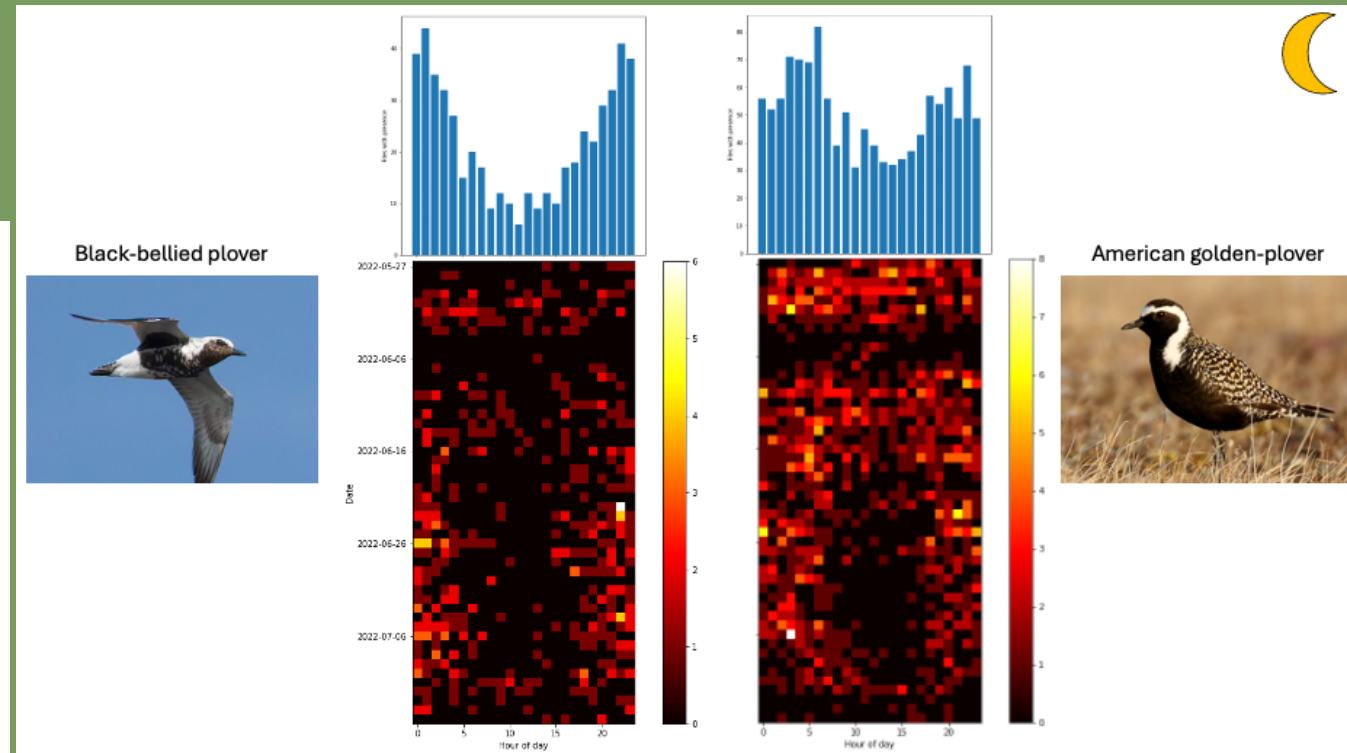
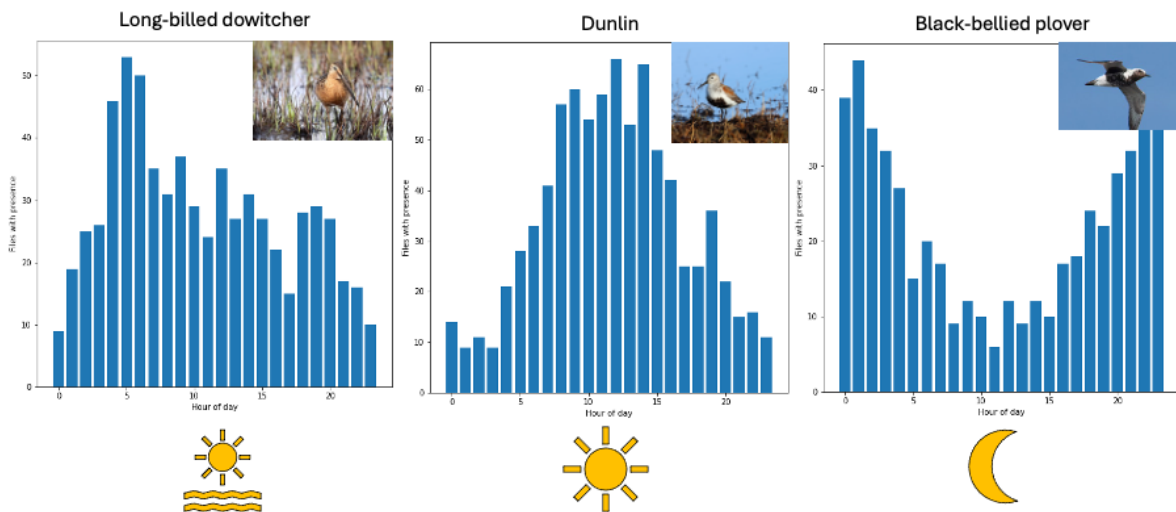
Primary 'hotspots' match well, but ARU data captures additional detail

Conclusions

Can we get the same information (abundance, distributions) from ARUs that we get from observational surveys? Yes, with some caveats

→ What new insights can we get from the ARUs?

Daily patterns in vocal activity **differ amongst species**



For a given species, daily patterns can also differ significantly **across the breeding season**