

Movement Ecology and Hunting of Alberta's Nesting Sandhill Cranes (*Antigone canadensis*)

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Image by Maddie Trotter

Sandhill Crane Distribution & Migration

- Inhabit 6 provinces and all territories³
- 5 populations in Canada, 2 in Alberta: Rocky Mountain pop. and Mid-continent pop. (RMP, MCP)⁴
- MCP has 3 sub-species: Greater, Canadian, and Lesser Sandhill Crane⁵
- MCP nests in Alberta, Saskatchewan, the territories, and Alaska⁶
- Rocky-mountain population nests in US Rockies/Waterton Lakes National Park⁶
- To date, no studies have been conducted on Alberta's nesting cranes

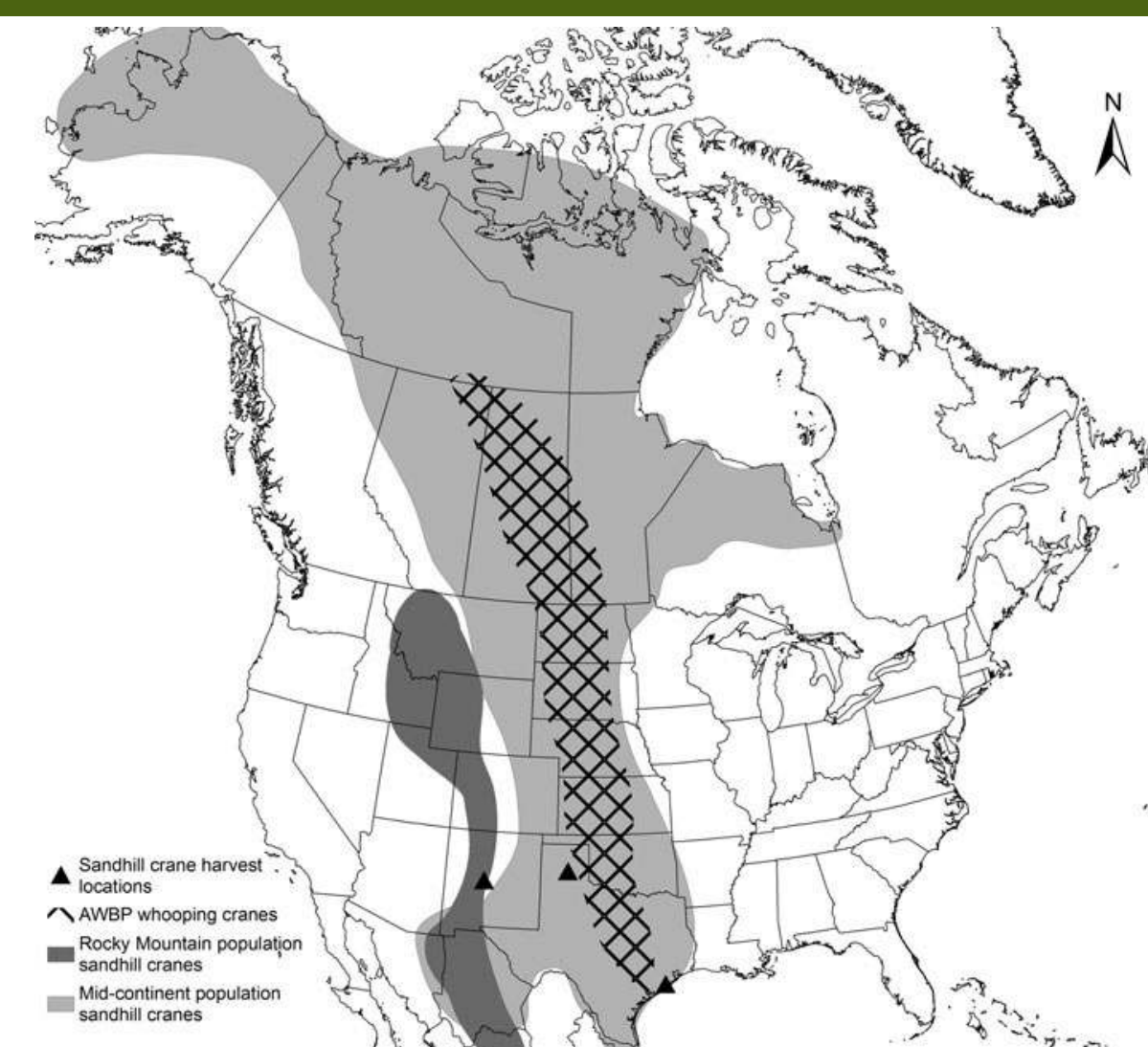


Figure 1. MCP and RMP population distribution map. Image by the Alberta Conservation Association.



Robin Ulery via Audubon

Study Area

Site Selection:

- Primary site determinations via eBird and ARU (autonomous recording unit) detections
- eBird filtered for Sandhill Crane sightings in Alberta between June-August 2019-2022
- Reviewed all sightings for photo confirmation of multiple individuals or the presence of colts.
- ARU detections processed through ABMI's systematic grid
- Pre-scouted sites have defined hotspots to focus site identification efforts in Spring 2023

Sandhill Crane Hotspots:

- Currently identified 4 nesting crane hotspots in south-central Alberta
- Rocky Mountain House, Cold Lake, Olds, and Waterton Lakes National Park
- Given capture time constraints, will identify 2 primary capture locations

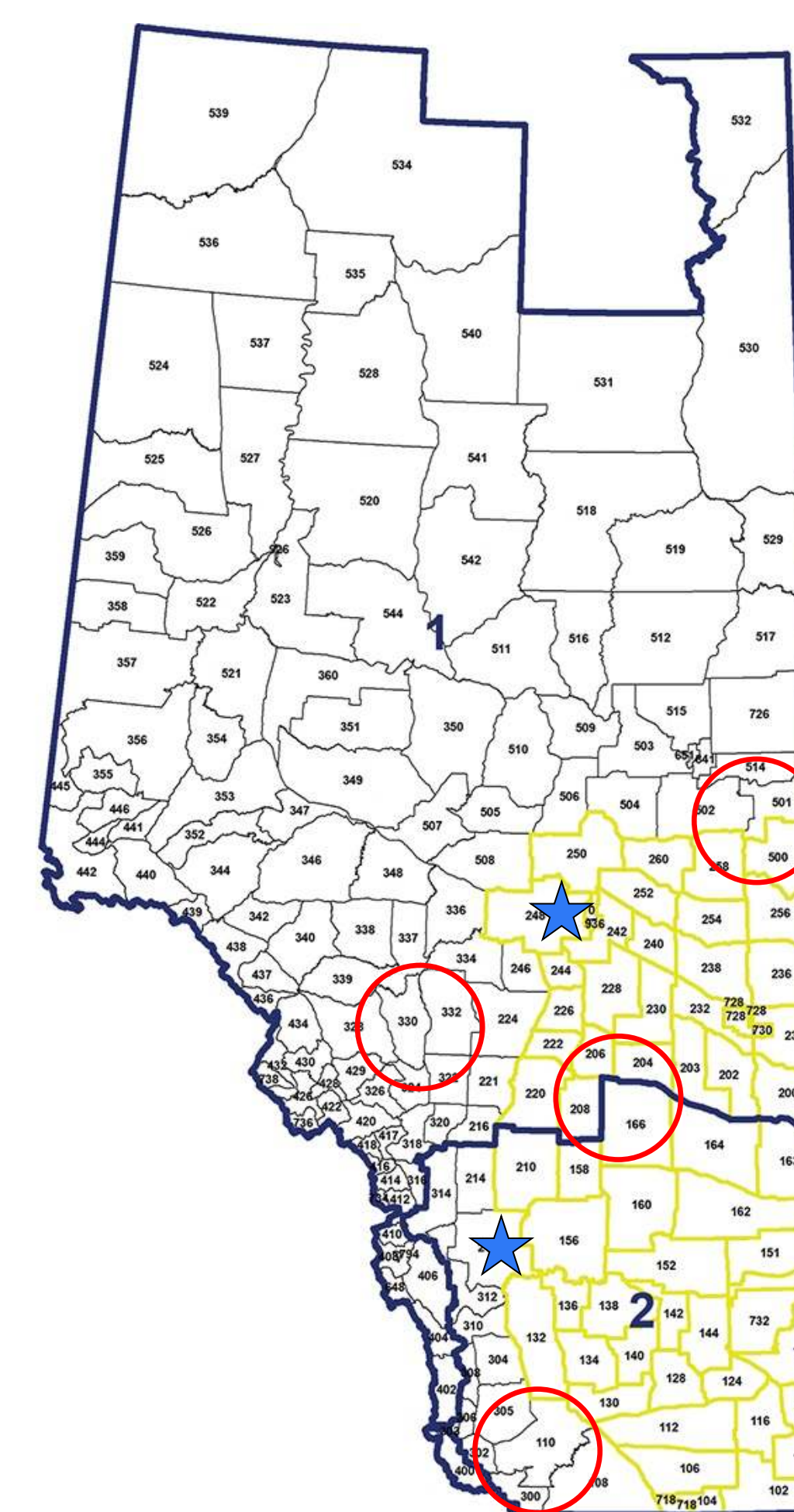


Figure 2. Map of identified sandhill crane nesting hotspots in south-central Alberta (red circles), along with Alberta's 2 major cities (blue stars) and huntable WMU's (highlighted yellow). Image by the Government of Alberta.

Objective 1: GPS Banded Individuals

Habitat Selection and Home Range:

- RSF to determine habitat selection
- Utilization of GLM model structure
- Home range determined using kernel density estimator

Migration Pathways and Staging:

- Nesting pop. south of the boreal is small
- Are cranes exposed to hunting during migration?
- Monitoring staging areas within hunting range during fall migration
- Brownian bridge movement model to map migration

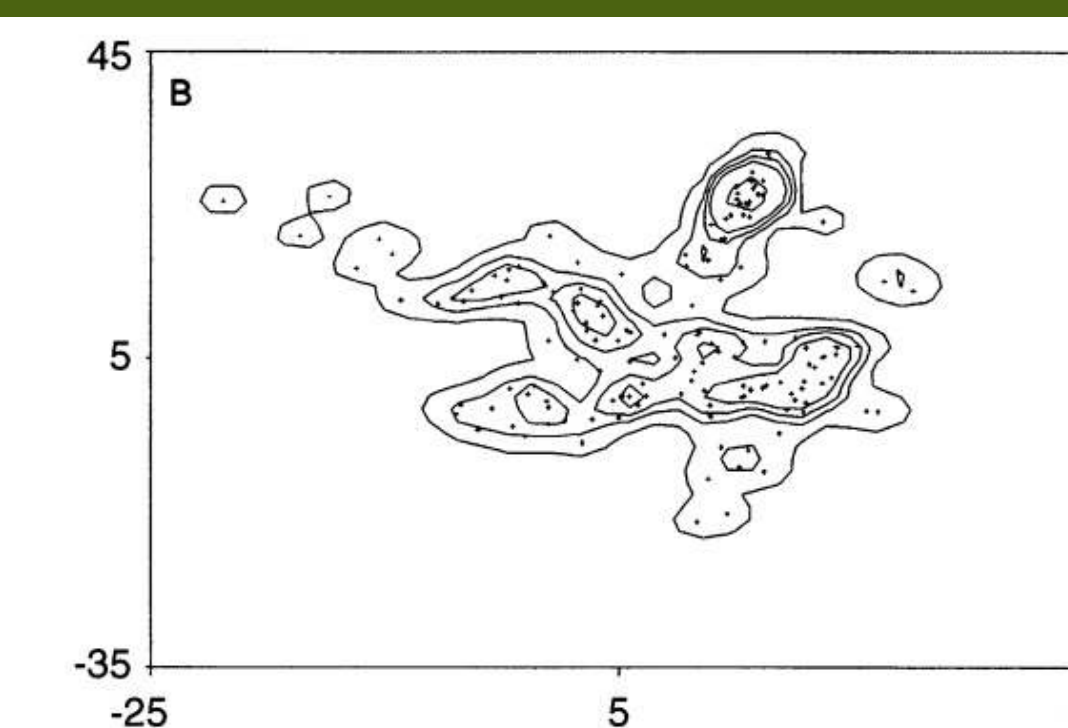


Figure 3. Image exemplifying a home range via kernel density estimator. Image by Seaman and Powell 1996.

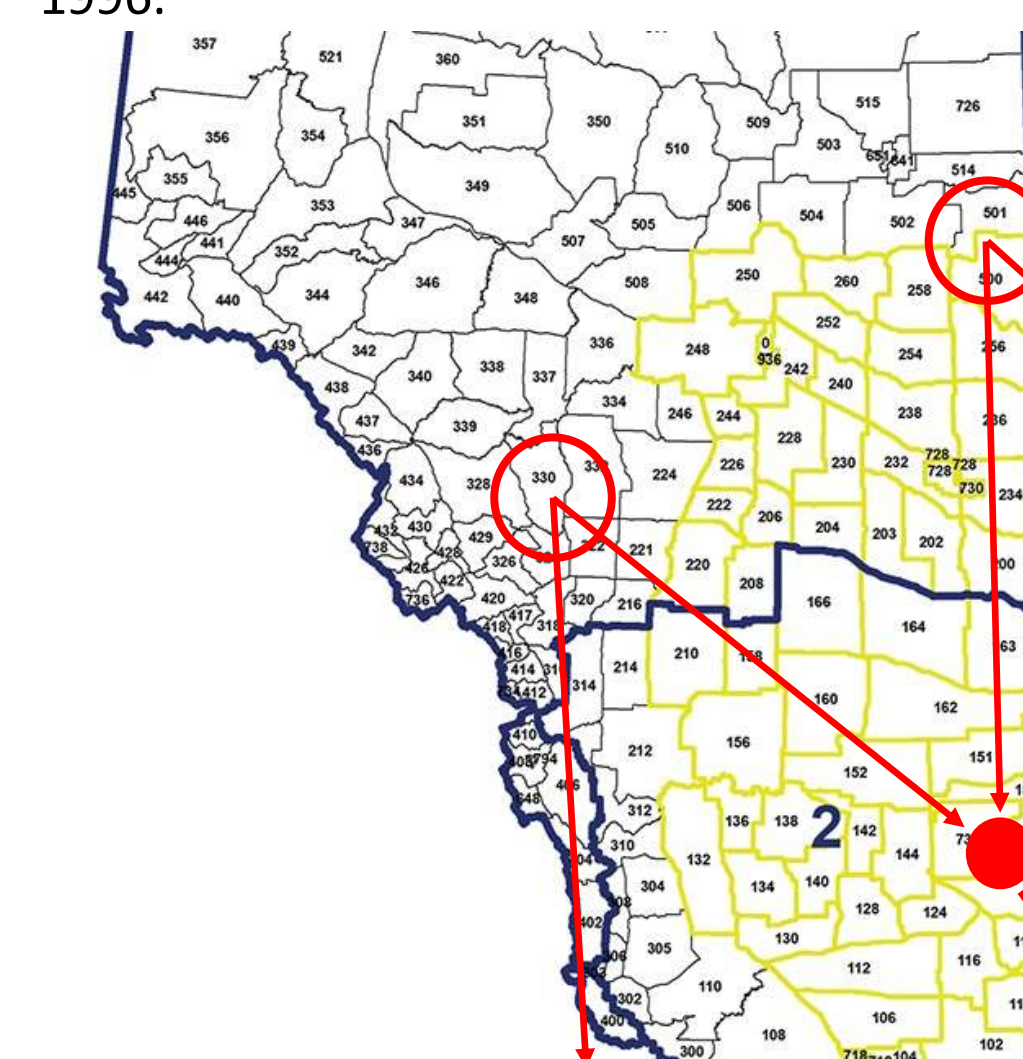


Figure 4. Map illustrating hypothetical migration paths from nesting hotspots (Red arrows stemming from red circles) and staging areas within huntable WMUs (solid red circle). Image by the Government of Alberta.

Crane Hunting in Alberta

- Desirable waterfowl nicknamed "The Ribeye of the Sky"
- Hunting in 16 US States, 3 Canadian Provinces⁷
- Alberta approved a hunting season in 2020
- Some express concern over premature approval
- Alberta birds may already be hunted disproportionately⁷
- Is Alberta's small south-central nesting population being disproportionately hunted?



Brad Fenson via Final Approach



Ken Bailey via Outdoor Canada

Objectives

- Determine nesting crane movement ecology including habitat selection, home range size, migration routes, staging grounds, and hunting exposure during fall migration.
- Determine nesting pair distribution and migration timing in Alberta.

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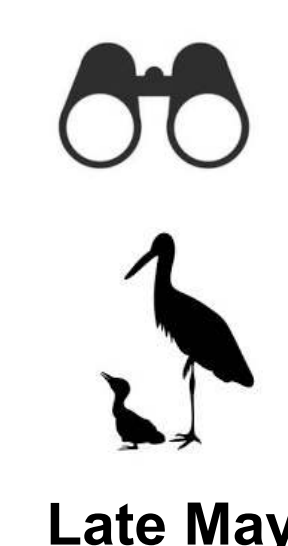
Capture Timeline

Capture timeline similar to Burke (2001) in Yorkton Wetland Complex:

- Nesting: Late April – Early May (locate nest sites)
- Hatching: May 20th – June 9th (identify colts)
- Capture and banding: June 24th – July 22nd



Late April



Late May



June - July

Sandhill Crane Capture and Handling

Capture:

- 4-8 weeks old to safely and efficiently capture and band.
- Capture 15 colts by hand pre-fledged

Handling:

- 15-minute chase and handling time
- Blood sample, body morphometrics
- Attach Ornitrack OT-R22-4G GPS and CWS rivet band

Acknowledgements

Thank you to Jason Caswell, Garnet Raven, Trevor Thompson, and all members of the Bayne Lab.

Objective 2: ARU Data

Nesting Distribution:

- Utilize ABMI's systematic grid to identify sandhill crane summer nesting locations across the province
- Focus on unison call recordings to identify nesting sites

Fall Migration Timing:

- Determine the timing of nesting sandhill crane migration through Alberta
- Utilize ABMI's systematic grid to attempt a visualization of a migratory wave across the province
- Understanding of migratory departure will further complete picture of province-wide hunting exposure

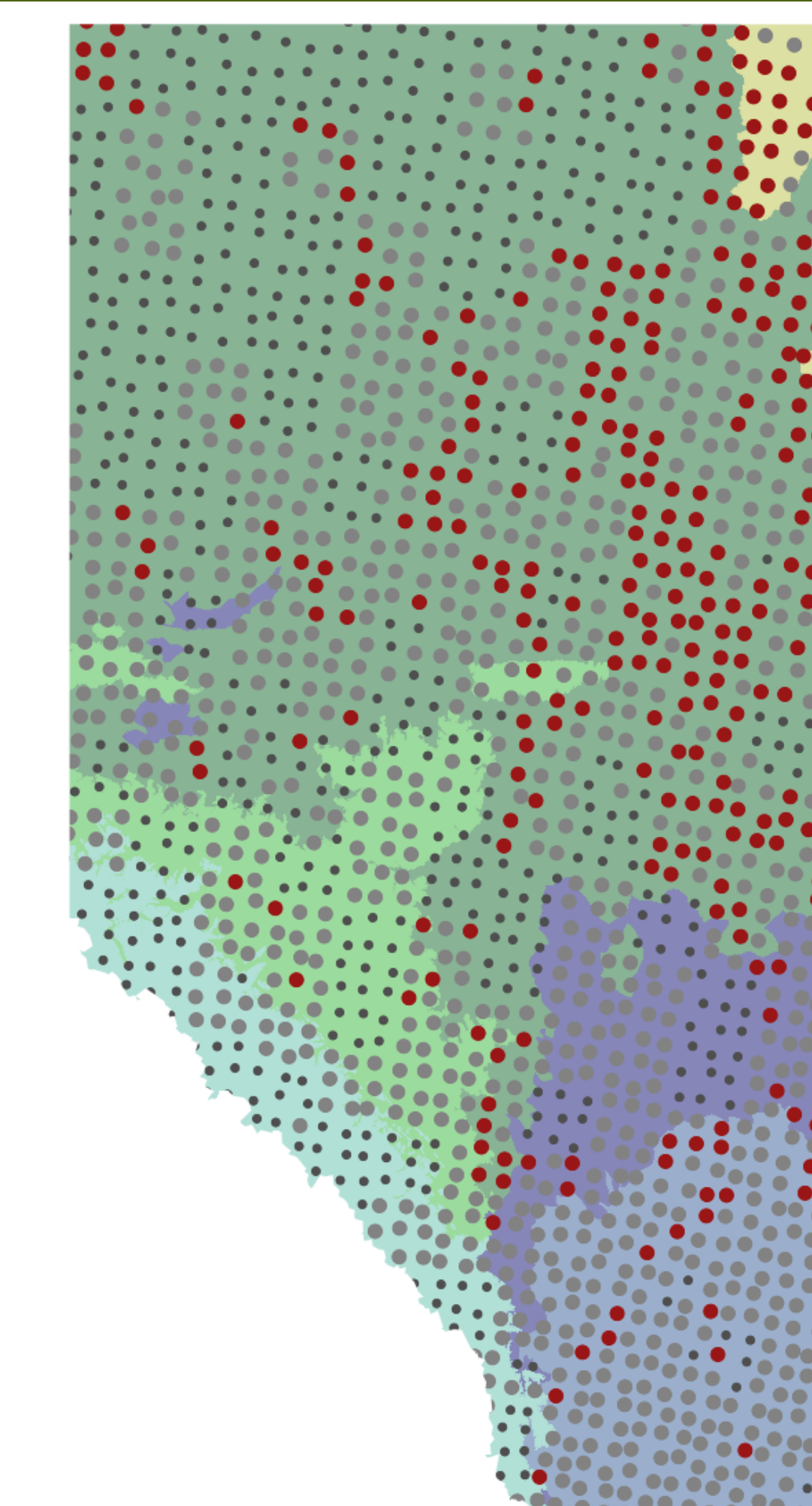


Figure 5. Currently identified sandhill crane ARU identifications. Image by the Alberta Biodiversity Monitoring Institute.

References

- Burke., 2001. University of Wisconsin. Sevens Point, Wisconsin.
- Mitchusson., 2003. New Mexico Depart. Fish & Game. Santa Fe, New Mexico.
- Government of Canada., 2014. Enviro. Clim. Change Canada. Ottawa, Ontario.
- Pacific Flyway Council and Central Flyway Council., 2016. US Fish & Wild. Serv. Vancouver, Washington.
- Krapu and Johnson., 1990. J. Wild. Mana. 54, 234-238.
- Kruse et al., 2012. US Fish & Wild. Pub. 292.
- Krapu et al., 2011. Wildl. Monogr. 175, 1-38.