

Bats in Alaska:

**Citizen Science and Field Research Give
New Insights about their Distribution,
Ecology, and Overwintering Behavior**



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Why study bats?

- Resource managers need to determine the appropriate actions and levels of effort necessary to fulfill their public trust responsibilities for this species
- Planning and environmental assessment processes for public lands should include bat habitat and range information when considering effects of land-management practices

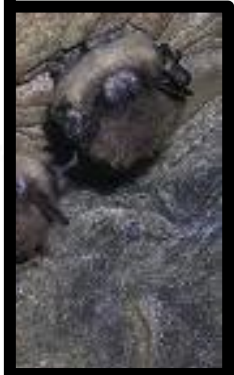
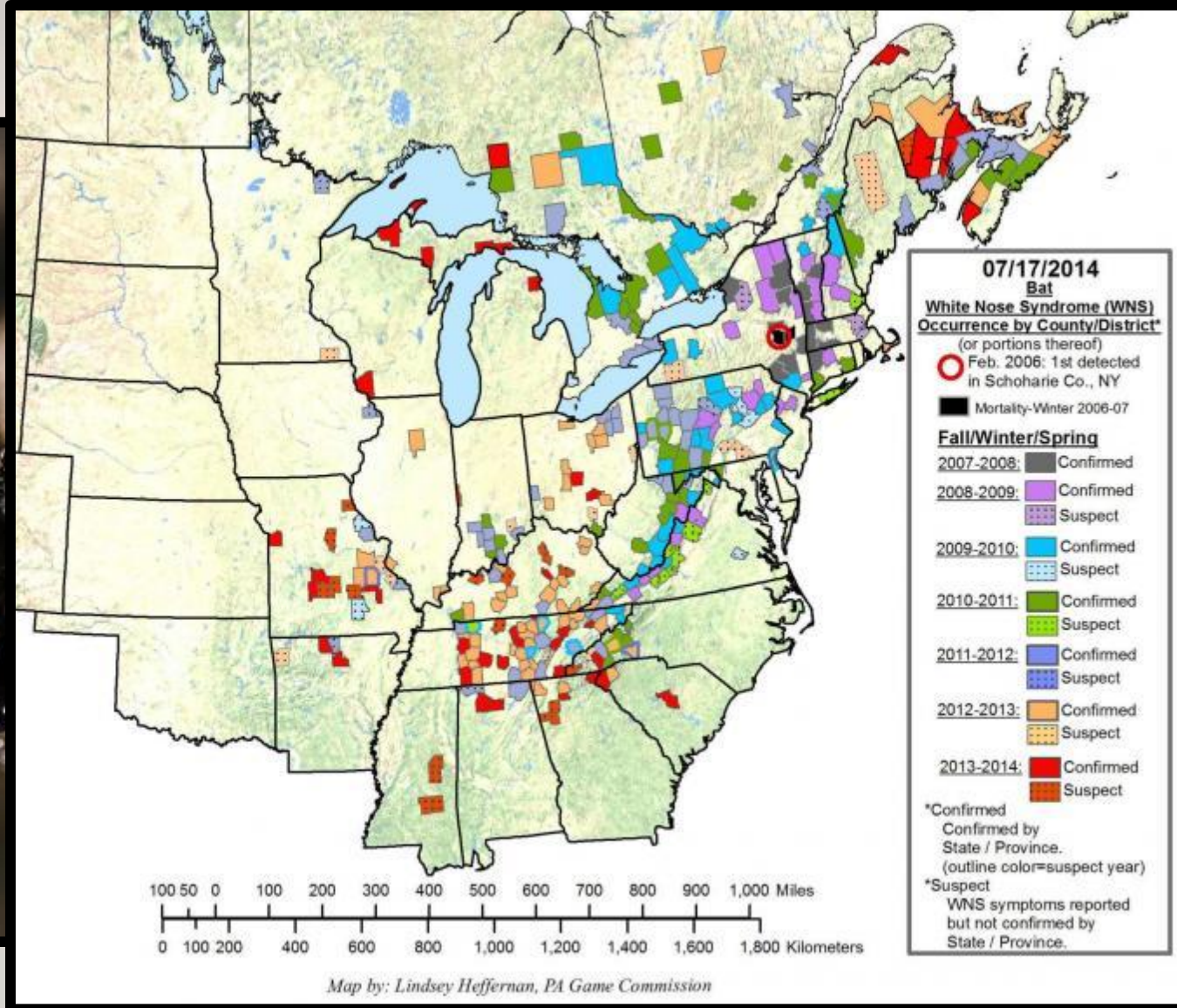
Why study bats?

- Through increased awareness of the value of bats in the wild, we can slowly begin to understand and conserve bats in Alaska
- Important that we continue to learn more about bats and bat ecology in Alaska so we can conserve resources critical to their survival and prevent population declines

Conservation Concerns

- The U.S. Fish and Wildlife Service listed the entire genus *Myotis* as a conservation concern in 2003
- White Nose Syndrome is decimating bat populations in eastern North America
- High mortality rates caused by crashes with wind turbines

White Nose Syndrome



Bat Species in Alaska



Little brown bat
(*Myotis lucifugus*)



Silver-haired bat
(*Lasionycteris noctivagans*)



Yuma myotis
(*Myotis yumanensis*)



Long-legged bat
(*Macrophyllum macrophyllum*)



Hoary bat
(*Lasiurus cinereus*)



Keen's myotis
(*Myotis keenii*)



California myotis
(*Myotis californicus*)

Little brown bat (*Myotis lucifugus*)

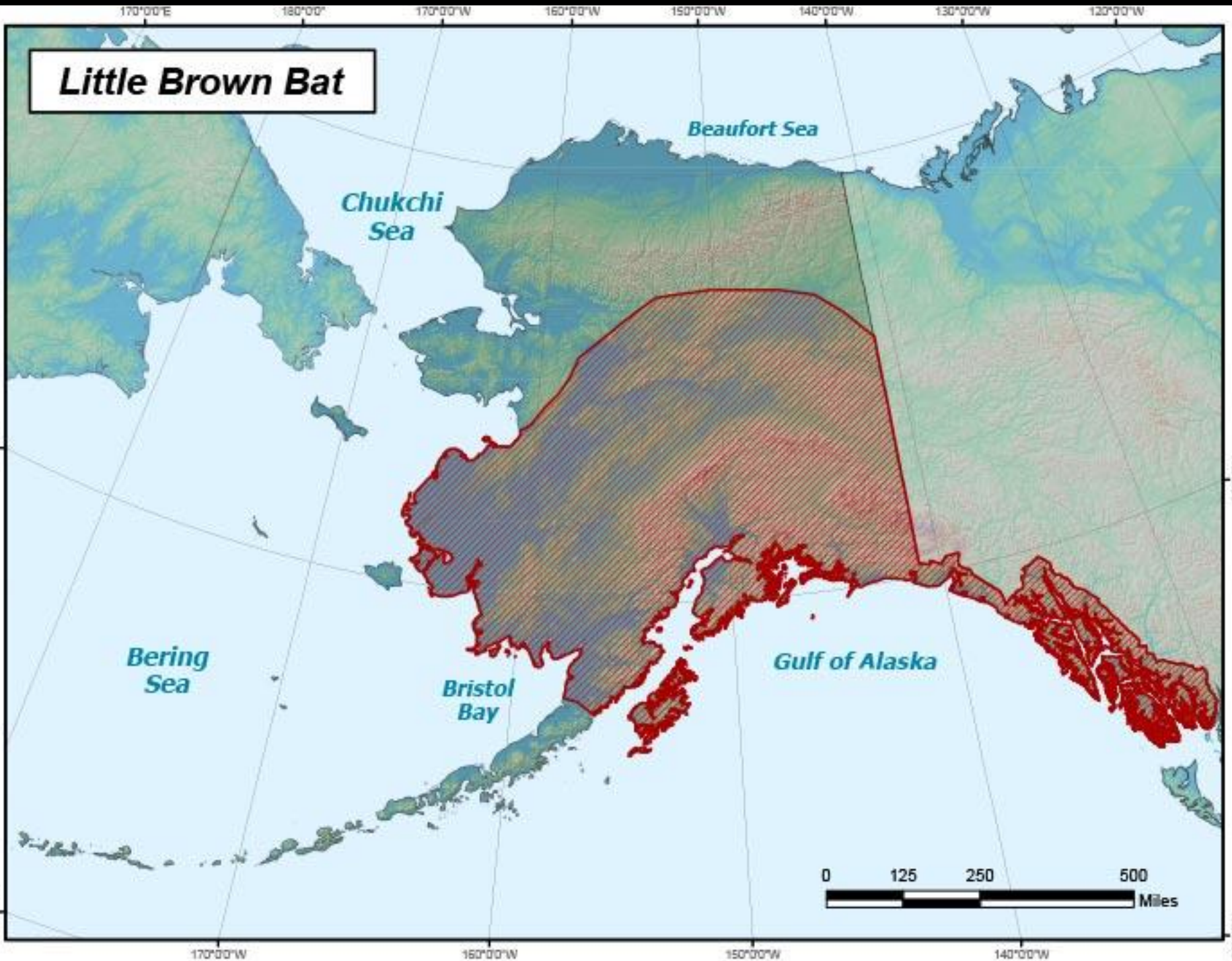
- Most common and widespread bat species in Alaska
- Weight: 5–9 g
- Length: 3–4 ½ in
- Wingspan: 8–9 in
- Flying speeds: up to 22 mph, average of 12 mph



Little brown bat (*Myotis lucifugus*)

- Habitats
 - Southeast: Temperate rainforests
 - Interior: Spruce/birch forests
 - Western region: Treeless, shrub-dominated communities
- Distribution limited by geographic barriers, roost availability, climate, length of night, and prey availability

Little Brown Bat



Research Needs

A photograph of a bat hanging upside down from a rock. The bat's wings are spread out, and its body is visible. The background is a blurred, light-colored rock surface.

- Little is known about the ecology of bats in Alaska
 - Distribution and abundance during summer months poorly understood
 - Few summer maternity roosts documented
 - Even less known about where bats go in winter

Research Needs

- Knowing where bats are on the landscape, where they hibernate, and whether or not they migrate are critical information gaps
- Because bats occur in low densities in Alaska, documenting their summer distribution, roosting habitat, migration habits, and winter hibernacula is a challenging task

Alaska Citizen Science Program

- Partnership between members of the public and professional scientists
- Provides opportunities for private citizens to assist wildlife biologists in collecting important data and be part of ongoing research projects and conservation planning
- With help of local residents we are able to expand our efforts and do more with our resources

Alaska Citizen Science Program

- Alaska is a huge state with few scientists and limited funds available to study the many different species of wildlife that live here
- The Citizen Science Program allows individuals, families, community organizations, and school groups — anyone interested in learning more about our local wildlife — a chance to get involved

Alaska Bat Monitoring Program (ABMP)

- Developed in 2004, a citizen science-based approach for collecting baseline information on the locations of bats, roosts, and hibernacula to
- Aims to encourage general public and natural resource professionals across Alaska to report any and all encounters with bats.
- Used as the basis for more intensive, directed research efforts

Alaska Bat Monitoring Program (ABMP)

- Enlist volunteer participation by:
 - Extensive public outreach efforts
 - “Inreach” to academics, agency researchers, and other natural resource professionals
 - Mass-media elements to publicize the project
 - Live presentations for the general public, civic organizations, and school groups
 - The website www.akbats.net provides “self-service” alternative for those we are unable to reach in person

Alaska Bat Monitoring Program (ABMP)

- Volunteer data
 - Observations wherever bats encountered
 - Record number of bats observed
 - Whether bats flying or roosting
 - Substrate type (if roosting)
 - Date and time, elevation, latitude and longitude, and physical directions to the observation site.
- Photographs to validate observations are requested but remain optional

Ongoing Research

- Bat detectors convert the high-frequency calls that bats make to a lower-frequency sound within the range of human hearing
- Allow us to “eavesdrop” on bats while they forage



Summer Roosts

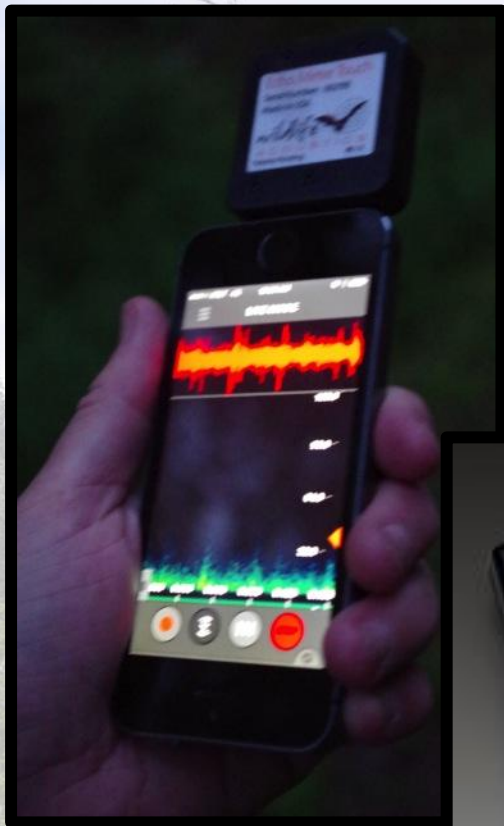
- We know of only a handful of summer roosts, most in buildings
- Track summer roosts through fall to determine if bats leave or remain in place over winter

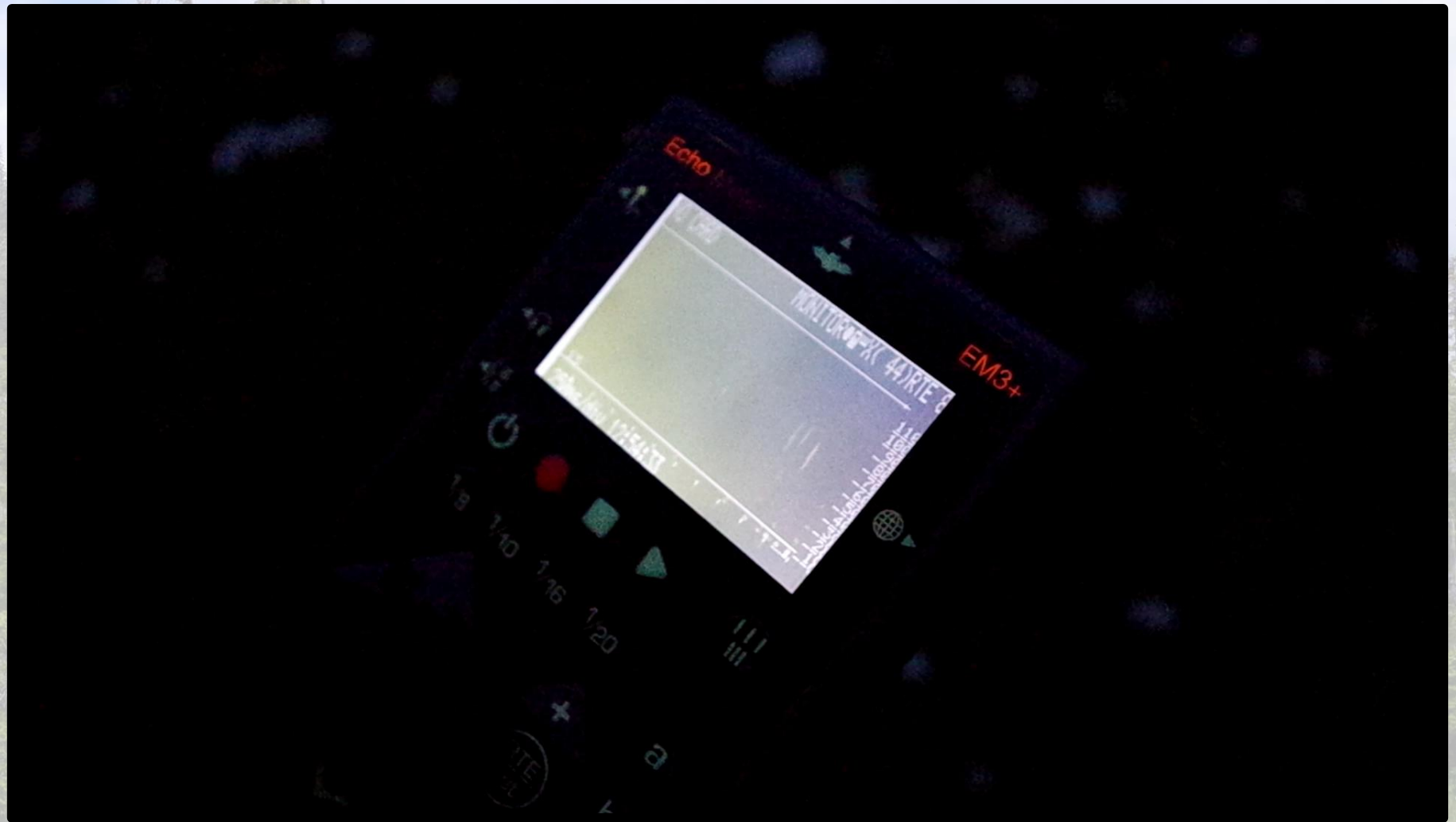


Winter Roosts

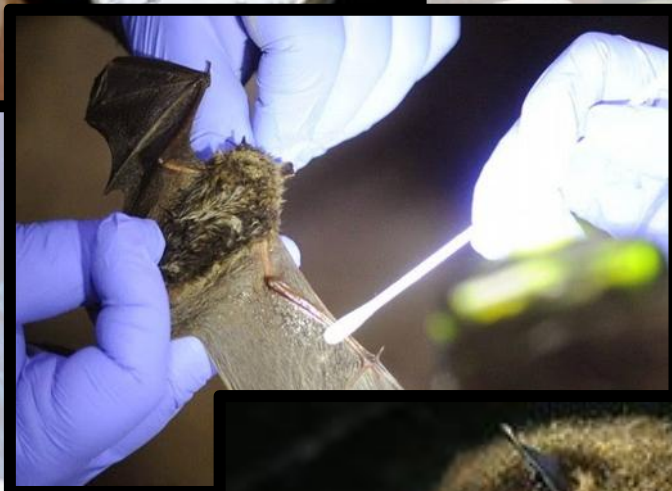
- Either migrate to warmer climates or hibernate
- Drop body temperature and metabolic rate to conserve energy when no food is available
- Hibernacula must stay cold, but remain above freezing
- Caves and abandoned mines popular in East and Midwest
- Don't know where most western bats spend the winter











Results of Citizen Science, 2004-2012

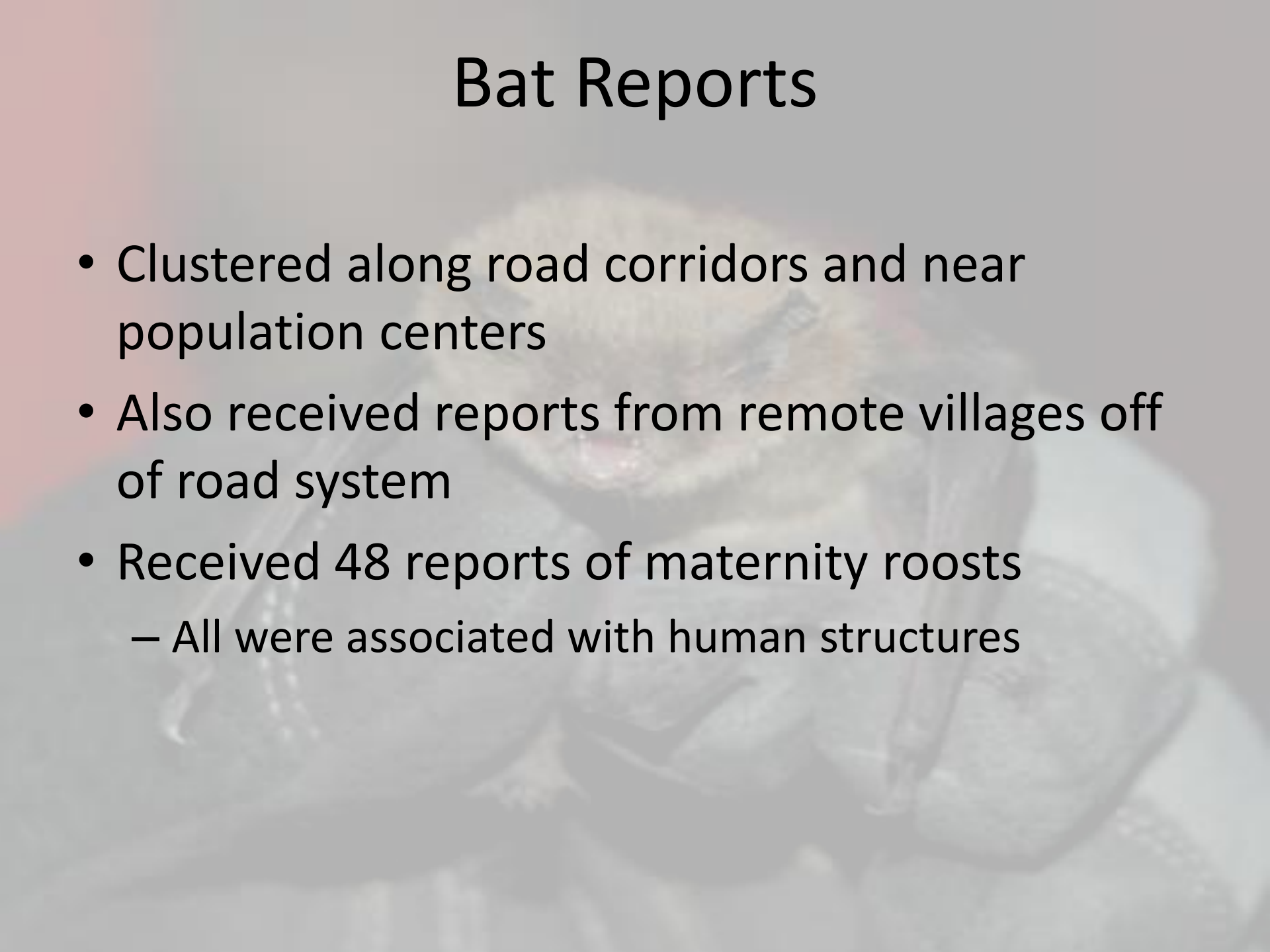
- Yielded data with geographic scope and temporal sweep that would be extraordinarily expensive to acquire using more traditional field methods for such exploratory research.
- This project and these data are intended to inform and guide more rigorous research efforts utilizing these gold-standard methods in the future

Bat Reports

- Received reports of bats from 252 unique locations
 - Southcentral (n=191)
 - Central (n=34)
 - Western Alaska (n=27)
- Overall, bats reported throughout state south of Brooks Range
 - Northernmost observation in Kotzebue
 - Westernmost in White Mountain and St. Michael
 - Southernmost from Semidi Island group

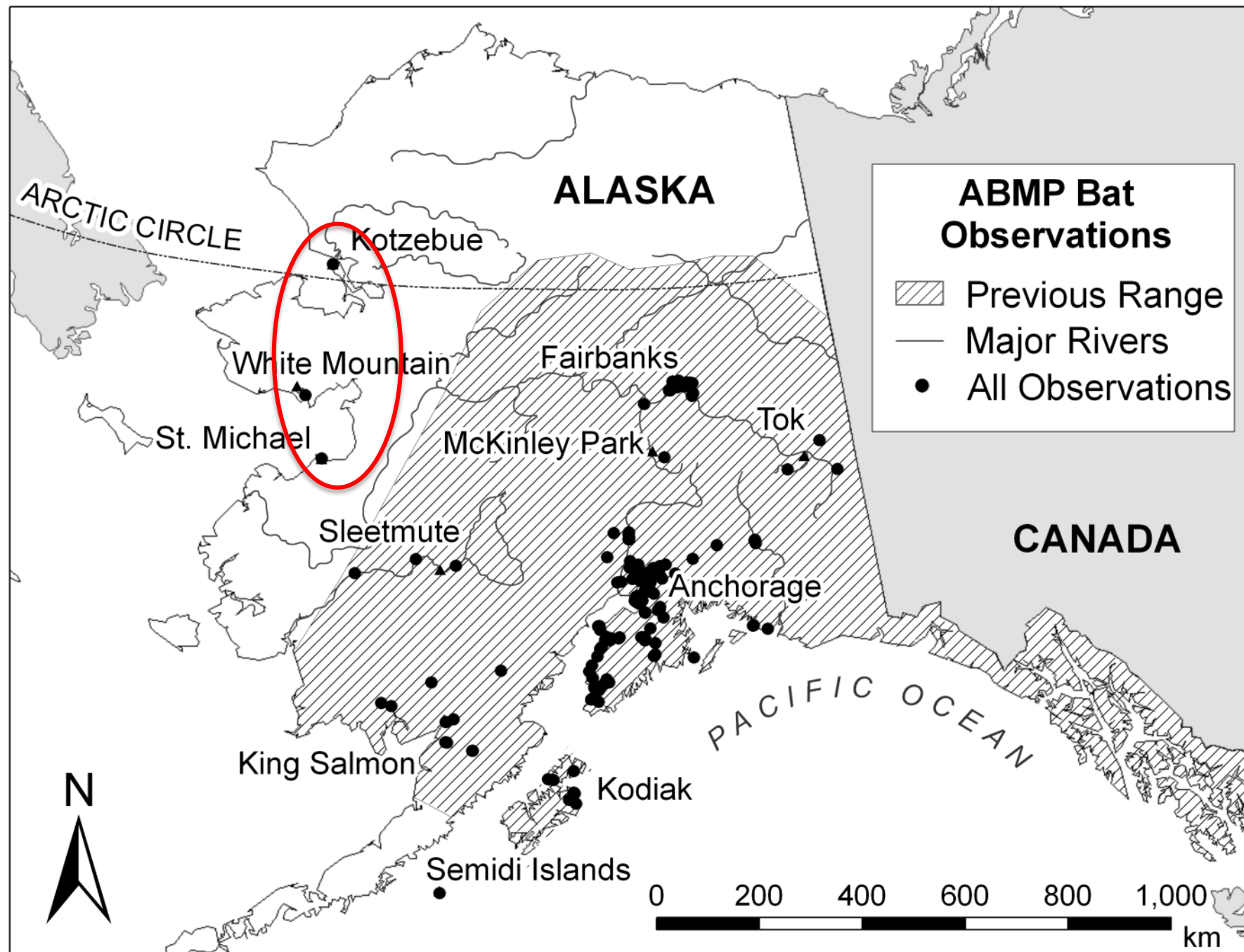
Bat Reports

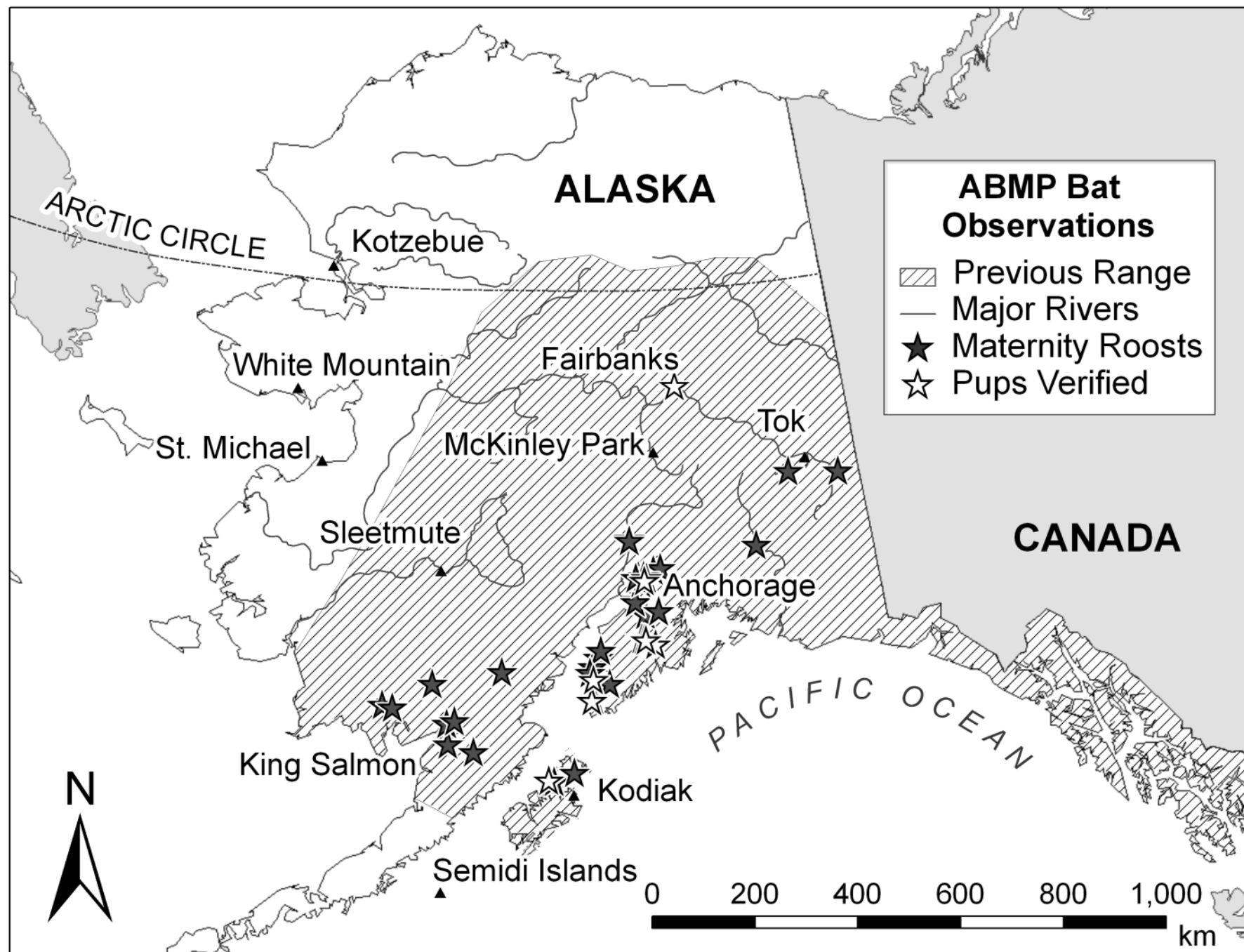
- Clustered along road corridors and near population centers
- Also received reports from remote villages off of road system
- Received 48 reports of maternity roosts
 - All were associated with human structures

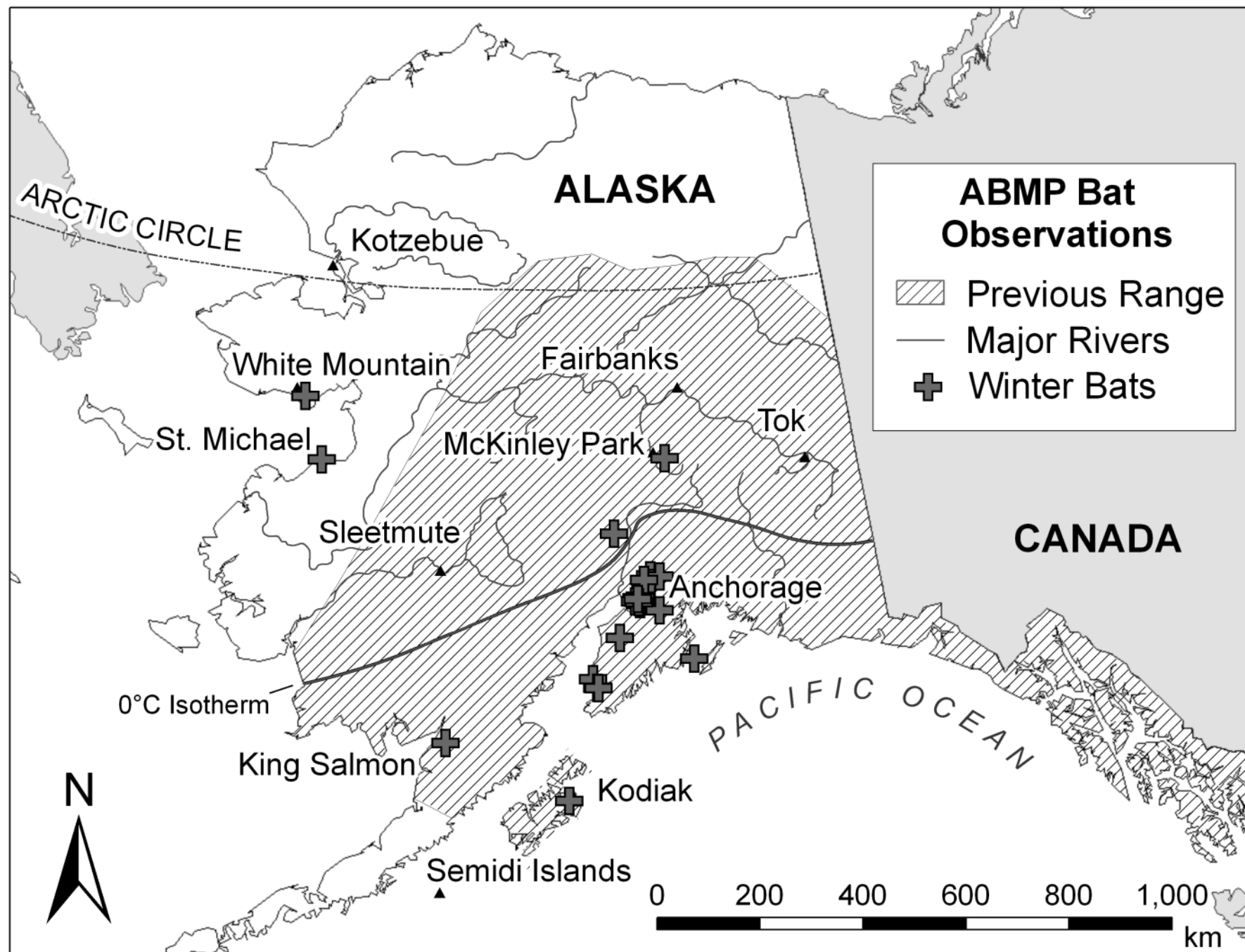


Bat Reports

- Reports of bats in 25 unique locations during the winter period from October to April
 - All associated with buildings unless observed flying outdoors
 - No hibernacula in natural substrates
- Implications
 - Bats in most northerly areas are likely non-migratory and overwinter in human structures
 - Winter observations in Southcentral Alaska suggest both migratory and non-migratory behavior







Local Environmental Observer Network



ALASKA NATIVE TRIBAL HEALTH CONSORTIUM
leaders in life care

