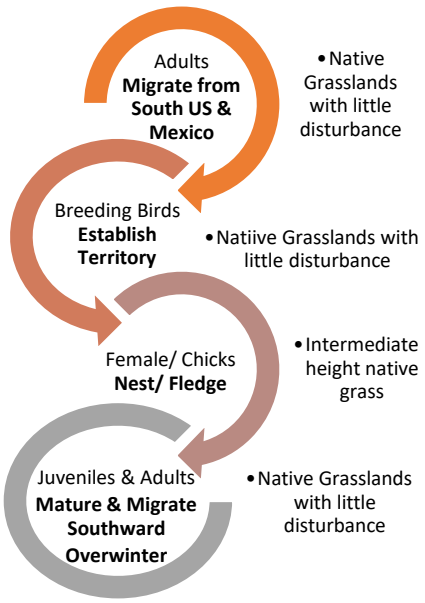
Species Ecology

Sprague's Pipits (*Anthus spragueii*) arrive in Alberta in early to mid-May, migrating from their wintering grounds in the southern United States and northern Mexico. They establish breeding territories in native prairie grasslands, often displaying strong site fidelity by returning to the same areas annually. During this period, cup-shaped nests are built on the ground and concealed by grass. Eggs are laid between May and June, with an incubation time of approximately two weeks.[1,2,3,4,5]



After hatching, the nestlings remain in the nest for 10–12 days, during which time they are cared for by both parents and gradually learn to forage near the nest. By late August, juveniles disperse from the natal areas, maturing as they prepare for their southward migration. During migration, they typically remain solitary or in loose groups, heading back to their wintering grounds.

Habitat Ecology

Migrating Habitat in Alberta: native prairie grasslands with minimal disturbance, and intermediate vegetation height and density, with some bare ground and moderate litter depth.

The species avoids areas with excessive woody vegetation or human-altered landscapes, such as croplands or heavily grazed pastures.

Breeding Territories: open spaces with minimal human disturbance and intermediate vegetation height and cover. This bird prefers grasslands with moderate litter cover and some bare ground. The average size of a Sprague's pipit's breeding territory in Alberta can vary in size depending on habitat quality and population density. Males establish and defend these territories during the breeding season, ensuring adequate resources for nesting and foraging.

Fledging Habitat: grass nests are constructed on the ground, concealed by surrounding vegetation for protection from predators and harsh weather conditions. Nesting areas avoid tall, dense vegetation, excessive shrubs or trees, and cultivated fields, which are unsuitable for nesting. About two weeks after hatching, chicks leave the nest and although helped by their parents, these fledglings learn to fly and forage for seeds and insects in the adjacent grassland.

Rarity

Conservation Status Rank[4]	Vulnerable to Apparently Secure Breeding Habitat
General Status Category[5]	Sensitive
***Wildlife Act* Regulations**[6]	Special Concern
COSEWIC Status[1]	Threatened
***SARA*-Listed**[7]	Threatened

The Sprague's Pipit is considered rare in Alberta primarily due to habitat loss and fragmentation. This species relies on large, intact native prairie grasslands for breeding, foraging, and migration. However, much of Alberta's native grasslands have been converted to agricultural land, highways, urban developments, or heavily grazed pastures, which are unsuitable for pipit needs.

Movement Behaviour

Sprague's pipits exhibit fascinating movement behaviors within their breeding territories:

Aerial Displays: Male pipits perform remarkable song flights, soaring up to 300 feet in the air while singing to establish and defend their territory. These displays can last from 30 minutes to three hours.

Territorial Defense: Males actively patrol their territories, occasionally chasing away neighboring males in flight to maintain boundaries.

Ground Foraging: Both males and females move briskly on the ground, searching for insects and seeds. They walk rather than hop, which is characteristic of their foraging behavior.

Sprague's Pipit (*Anthus spragueii*)

Mapping Habitat

Breeding territory habitat for Sprague's Pipit were defined as contiguous areas of open grassland with little human disturbance, where mating, nesting, fledging, and much of the foraging for insect prey takes place.

In the grasslands of Alberta, 3,946 breeding territories were mapped using previous sightings or vocalizations of Sprague's Pipit recorded during the breeding season. For each observation, a buffer was applied to the recorded location to represent a minimum breeding territory size of 65 hectares. Overlapping breeding territory polygons were merged into a single polygon for isolation analysis.

Isolated Breeding Territories

What is 'isolated habitat'?

…the degradation or loss of connections between resource patches [habitat].

~Taylor 2022

What are isolated breeding territories?

Isolated Sprague's Pipit breeding territories were identified as mapped areas considered isolated due to the types and extent of land use activities present. Altered movement behavior within these territories imposes an energetic cost on the birds during the breeding season. Factors such as habitat loss, fragmentation, and fluctuations in insect populations contribute to these conditions. These challenges may discourage future use of these areas, despite the species' known tendency to return to previously occupied territories.

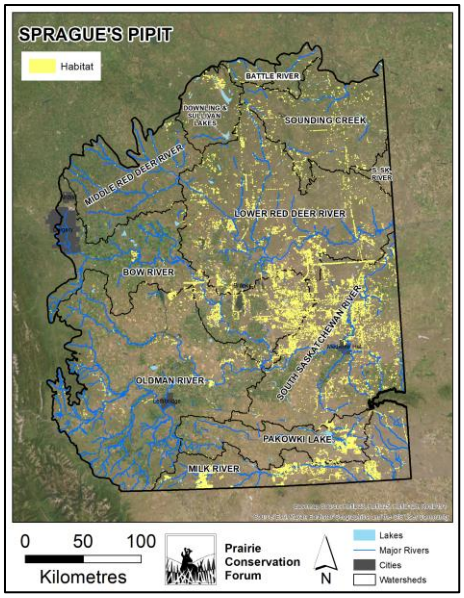


Figure 1 Sprague's Pipit Breeding Territories

What are isolating conditions to Sprague's Pipit habitat?

Sprague's Pipit breeding territories are particularly susceptible to isolation in landscapes dominated by a high proportion of unsuitable habitat, elevated crop density, and excessive road density.

High crop density significantly limits breeding territory habitat through the loss of native grasslands to agricultural lands, which are avoided, as they lack the structural and ecological features required for nesting and foraging. When cropland exceeds 50% of the territory, it creates barriers to movement and isolates populations, further reducing the availability of high-quality habitat.

Road density exacerbates isolation by fragmenting breeding territories through physical barriers, noise pollution, and increased human activity. A road density threshold of <0.5 km/km² is often recommended for Sprague's Pipit, as anything higher disrupts habitat connectivity and increases edge effects.

How were isolated breeding territories identified?

Within breeding territories, three key indicators were assessed: Resistance Values* > 50 for more than 50% of the area, which highlights cumulative habitat disturbances; road density, focusing on fragmentation impacts with a threshold of less than 0.005 ha/ha; and cultivated land density, measuring the extent of grassland conversion with a threshold exceeding 50%.

* *Resistance values* represent the degree to which land cover or use may hinder pipit movement or habitat suitability.

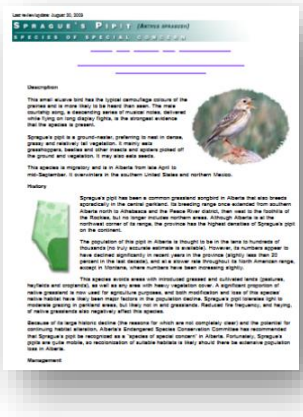
What were the isolated habitat mapping results?

In Alberta's grasslands, 73% of the 3,946 breeding territories are isolated. Among these, 939 have high levels of unsuitable habitat, 271 have high crop density, and 2,206 have high road density.

Interested in SAR habitat conservation?

Species-specific habitat management activities are meant to reduce isolating conditions and re-connect isolated habitat patches for a given Species At Risk (SAR); however, there is no one-size-fits-all approach. Although a general practice that will protect many grassland SAR is to avoid driving across contiguous grassland between April 30 to mid-August[3].

To learn more about Sprague's Pipit, check out the province's factsheet.



You can also check out the Agriculture Best Management Practices for Grassland Bird SAR

In the grasslands, it is often the case where habitats of one SAR overlap habitat patches of another. In some cases, the presence of one SAR, like a Ferruginous Hawk nest, may be a barrier to another SAR, like a swift fox den.

Visit PCF's *Isolated Habitat Webpage*, to find organizations who can:

- provide specific opportunities for habitat enhancement, development, and restoration of prairie habitats, and/or
- help you to establish your legacy through SAR habitat conservation on your land.

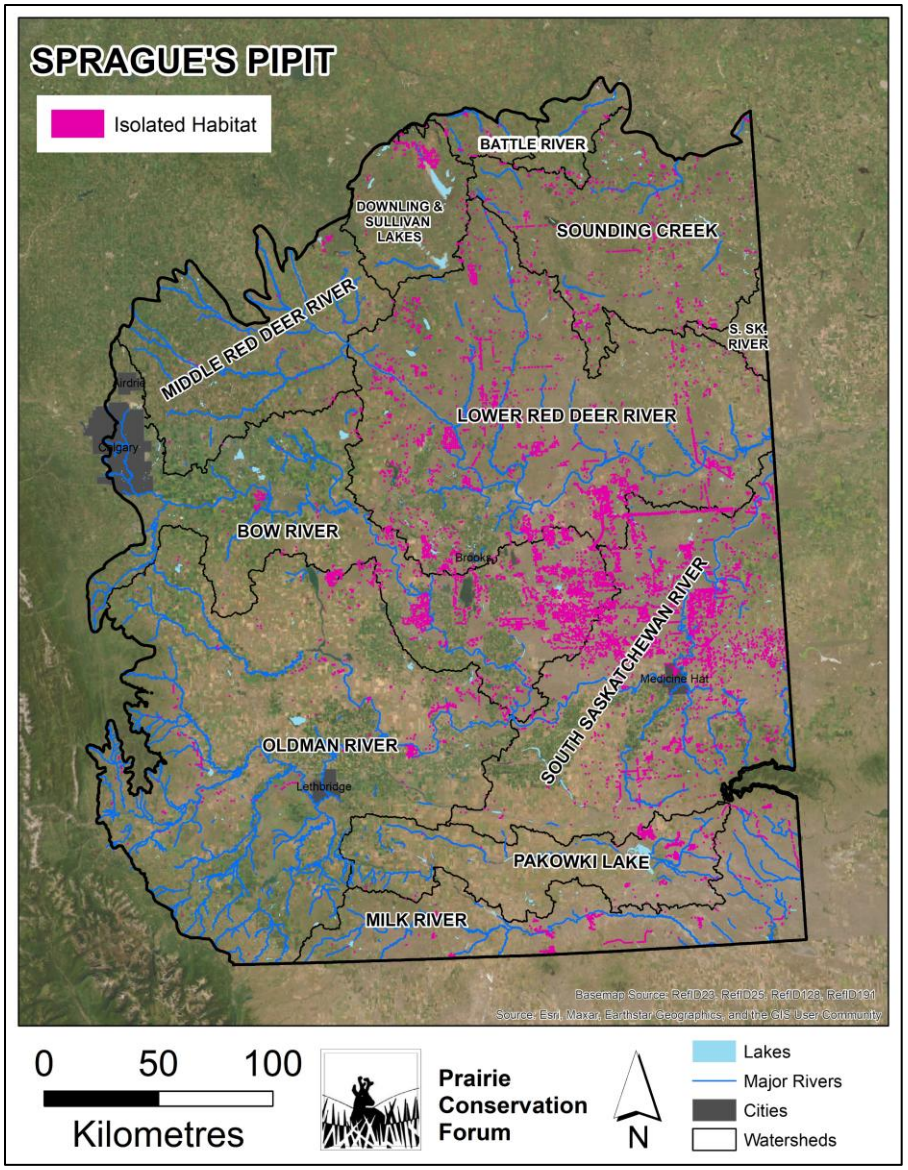


Figure 2 Sprague's Pipit Isolated Breeding Territories

- To view the isolated habitat mapping for this species, check out PCF's Map Viewer
- For more specifics on PCF's Isolated Habitat initiative, check out PCF's *Isolated Habitat Website*
- To learn more about the SAR, click on the superscript numbers in the text

User Notice

Isolated habitat maps represent general areas that might benefit from SAR-specific habitat conservation efforts.

PCF makes no representation or warranty, either expressed or implied, in fact or in law, with respect to the accuracy.