

Central Grasslands Business Plan, with a focus on Sprague's Pipit

Summary:

The PIF V Central Grasslands session will focus on the Great Plains of Canada and the USA as a breeding grounds and the Chihuahuan Desert of Mexico on the wintering grounds. The group discussions will focus on Sprague's Pipit, recognizing that there are several species that share this geography, including Ferruginous Hawk, Mountain Plover, Long-billed Curlew, Burrowing Owl, Chestnut-collared Longspur, McCown's Longspur, Baird's Sparrow, Grasshopper Sparrow, and Lark Bunting. Worthen's Sparrow is an endemic in northeastern Mexico that utilizes grasslands and grassland edges during at least part of the year.

The Sprague's Pipit is a prairie breeding bird perhaps best known for its song flights and elusive behavior on the ground. Once in the air, the Sprague's Pipit sings its ethereal song in an extended song flight that may last 30 minutes. Along with Chestnut-collared Longspur, Baird's Sparrow, and others it is an iconic bird of the Great Plains prairies. In migration and winter they are often detected when flushed or flying over, giving a distinctive liquid flight call. They can be difficult to see well on the ground at any season, and a good view of a Sprague's Pipit on the ground is memorable!

Sprague's Pipit has undergone severe population declines on the breeding grounds, with an average of 3.5% annual decline as documented by the Breeding Bird Survey from 1966 to 2010 (Sauer et al. 2012). Grasslands throughout the range of Sprague's Pipit continue to be lost at a high rate through conversion to agriculture, and are suffering from fragmentation, drought and inappropriate grazing, invasive species, and poor program policy. This plan will have separate sections for breeding, migration, and winter seasons.

Sprague's Pipits depart the wintering grounds in March-April and begin arriving on the breeding grounds in late April. They depart in late August or early September, arriving on the wintering grounds by October-November with some individuals arriving later.

Breeding Overview

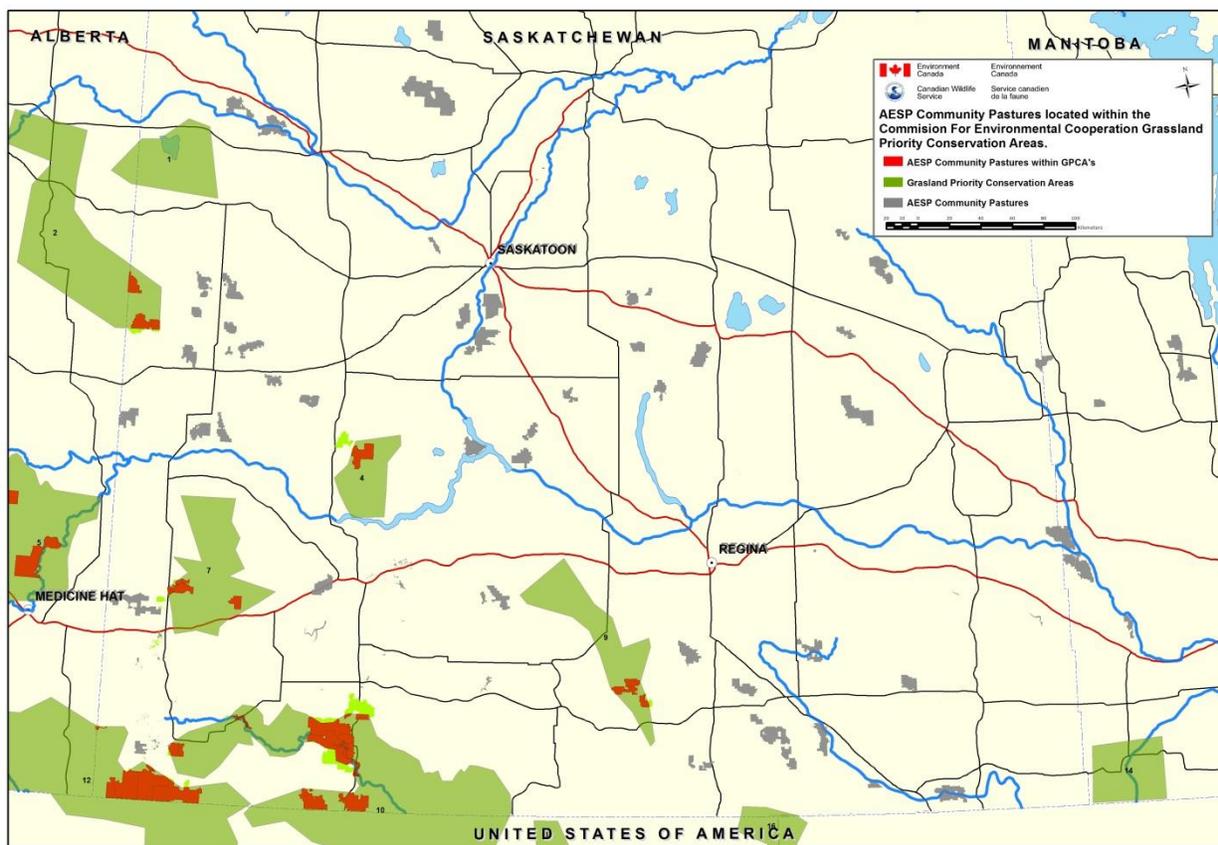
Background

In Canada, At least 75% of the native prairies have been lost since European settlement, primarily due to conversion to agriculture. The Prairie Habitat Joint Venture estimates a 10% loss of prairies in their region from 1985-2001, mostly the loss of small fragments in an agriculture dominated landscape. Seeded pasture and hay actually increased with the bovine spongiform encephalopathy crisis as livestock could not be

sent to slaughter. Remaining habitat is also threatened by widespread energy development.

Sprague's Pipit

Sprague's Pipit breeds across the Great Plains of the USA and Canada, with about 60% of their breeding range in Canada (COSEWIC 2010). Reproductive success is highest on native prairies, with exotic grasses and heavily grazed areas less productive. Canada's prairie grasslands are under extreme threats at this time with a planned transfer of about 1.6 million acres of federally managed community pasture lands back to provincial ownership (and potential sale or loss). Grassland Priority Conservation Areas in Canada are portions of these crown lands (see below).



Individual territories are large at 0.7-4.7ha, and predation accounts for 50-70% of the nest loss (COSEWIC 2010). Threats on the breeding grounds are habitat loss and a decline in habitat quality, high predation levels, and climate change.

In Canada, the population is estimated at 720,000 birds (COSEWIC 2010). The US population is estimated at 170,000 birds and the global population at 900,000 birds

using BBS data and geographic range (PIF Science Committee 2013). Most of the birds are in Bird Conservation Region 11, the Prairie Potholes, with 800,000 birds (PIF Science Committee 2013).

Long-term trend analysis of BBS data shows a decline of 3.5%/year from 1968-2011, and -2.4%/year for 2001-2011 (Sauer et al. 2012). An analysis combining BBS data and the Grassland Bird Monitoring Program (GBM) in Canada showed a non-significant trend of +1.5% over a recent ten year period (COSEWIC 2010). Trends fluctuate dramatically with climatic conditions and the current trend 10 year trend (2001 – 2011) using BBS and GBM is -2.86% (Environment Canada 2013). The GBM in the United States is much more recent.

Migration Overview

Little is known of the Sprague's Pipit's habitat requirements or ecology on migration. More agricultural areas may be used on migration, potentially exposing the species to contaminants. The species response to wind farms and other energy development on migration is unknown.

Winter Overview

Grasslands

The Chihuahuan Desert is one of the most diverse arid regions in the world, with extremely high diversity of cacti and fish. The biological importance of the grasslands is global, and makes this ecoregion comparable with the biological richness of the tropical areas of Mexico. The natural grasslands currently cover less than 15% of the Chihuahuan Desert, often as a mosaic of grass and shrubs. Grasslands provide ecosystem services including carbon storage and aquifer recharge. Natural grasslands can accumulate an average of 45 tons of carbon/ha, which is greater than in the scrub, and about half of what was set in average by a forest of conifers (FAO 2010; Peace 2010) The recharge of aquifers is greater in areas with pastures compared with areas of forests and scrublands (Ice Keese et al. 2005).

In Mexico, most of the pastures are used for livestock breeding. The grasslands are sources of food, fiber and fuel, contribute to the regulation of climate, pollination, the control of invasive species and the capture of carbon. They have cultural, spiritual and recreational value; they have some of the types of soil more productive of the earth, however, the rate of conversion of grasslands to sites of pasture is high. The pastures of the Chihuahuan Desert are subject to various human pressures that combined with extreme drought conditions have meant that 1.2 million ha of native grasslands (10% of the coverage of existing grassland) have been lost in the last 40 years (Rzedowsky 1981).

Much of the grasslands in the Chihuahuan Desert has undergone a transformation on a large scale from grassland to shrub-dominated systems, leading to desertification (Desmond and Atchley-Montoya 2006). In spite of this, the pastures of the Chihuahuan Desert are mostly intact and have a high biodiversity that includes many species of grassland birds representing resident, endemic and migratory species. Ninety percent of the bird species dependent on grasslands in North America spend all or part of their life cycle in these grasslands, and in spite of being increasingly limited in extent, the grasslands of the Chihuahuan Desert play an important role for grassland birds in central North America.

Sprague's Pipit

Sprague's Pipits winter from the Chihuahuan Desert BCR east to at least the Oaks and Prairies BCR. The data available is from work in the Chihuahuan Desert BCR. They are a grassland specialist on the wintering grounds where they inhabit grasslands with thick grass cover and low density shrub cover (Macias-Duarte et al. 2009, Pool et al. 2012). They avoid agricultural lands in winter (Ruvalcaba-Ortega et al. 2012). Desert grasslands in northern Mexico are undergoing desertification, largely as a consequence of overgrazing, and are being reduced in extent by shrub encroachment and conversion of grasslands to farmland. Protection and restoration of winter habitat is critical to any range-wide effort to reverse the documented population declines.

Pool et al. (2012) estimate 231,757 Sprague's Pipits could overwinter in Grassland Priority Conservation Areas (GPCAs) in the Chihuahuan Desert under optimal conditions. Four GPCA's are important for the species with 85% of the estimated carrying capacity.

Sprague's Pipit may use more heavily grazed areas outside of the Chihuahuan Desert in the eastern portion of its winter range, where annual rainfall is higher and more predictable than in the arid west. Little data is available, but anecdotal evidence is that the highest densities in the Chihuahuan Desert (12 birds/km², Pool et al. 2012) are much lower than in good habitat in the eastern portion of the winter range.

Goals

We will discuss whether we want to use habitat goals, population goals, or both. Goals will be further developed at the conference. These goals are from published sources listed at the end of this document.

1. Year-round Population Goals
 - a. Maintain or increase the current population size, distribution and viability.
2. Breeding Season (COSEWIC 2010, Jones 2010).
 - a. In Canada, return to breeding population levels from the period 1980-1989.

- b. In Canada, no net loss of (native) habitat in Canada
- c. Prevent further loss and degradation of native prairie within their historic breeding range.
- d. Improve the condition of pastures and grasslands that are currently in poor condition to good or excellent condition.
- e. Ensure all government sponsored restoration programs utilize native or at least non-invasive non-native grasses.
- f. Restoration on the breeding grounds should target areas near existing native grassland to increase block size and improve the probability that planted grasslands will be utilized.
 - i. In Canada, priority is AB, SK, MB.
- g. Restrict planting of trees and shrubs in areas of native grasslands
- h. Limit linear development within existing blocks of native grasslands by using existing well pads, trails, and infrastructure.
- i. Use minimal disturbance methods when development is unavoidable, and prevent the spread of invasives (e.g. washed vehicles).
 - i. On the breeding grounds, compressor stations should not be located in or adjacent to native prairie to minimize noise.
 - ii. On the breeding grounds, no nesting season fracturing or dewatering to minimize noise.
- j. Minimize haying in the breeding season or time to minimize impact on nesting birds. Haying in the breeding season can lower reproductive success by destruction of nests or reducing overhead cover and increasing the vulnerability of the nests to predation or severe weather.
- k. On the breeding grounds, promote warm season native grasses (WSNG) for hay crops in place of current mix which is not attractive to Sprague's Pipit. Warm season native grasses are best cut higher (3 dm) to minimize nest and nestling loss.
 - i. Research Need: Do Sprague's Pipit use WSNG?
- l. Increase use of prescribed burns on the breeding grounds at appropriate time intervals for the soil and moisture conditions. Fire suppression may limit populations on the breeding grounds particularly in moist mixed-grass or parkland; prescribed burns can improve habitat quality over time by reducing woody plant encroachment, reducing litter, and slowing the invasion of exotics.

3. Wintering grounds

- a. No net loss of native grasslands and grazing lands.
- b. Improve conditions of existing grasslands and grazing lands
- c. Restore grasslands to provide sufficient habitat to support desired breeding population over winter
- d. Reduce the use of pesticides and promote the use of compost or alternative farming methods
- e. Promote the reduction of cultivation in wintering areas
- f. Improve the condition of the soil in areas with high degradation through sustainable grazing and restoration techniques
- g. Assess the effects of greenhouses in the grassland
 - i. Develop strategies to assess as needed

- h. Improve the existing infrastructure for water catchment
- i. Promote sustainable livestock use and grazing
- j. Promote holistic management of grasslands
- k. Promote the eradication of exotic species
- l. Work to reduce or plan carefully human settlements in areas of grassland
- m. Ensure sustainable communities based on grasslands

Threats

Again, this is not a comprehensive list of threats, but threats from sources listed at the end of this document. We will further develop this list at the conference.

1. Loss, reduction and degradation of habitat
 - a. change in land use with conversion to agricultural crops and urbanization
 - b. Overgrazing or inappropriate grazing due to drought, stocking over capacity, and financial issues
 - c. Invasive exotic plants in grasslands
 - d. increased habitat fragmentation by roads, electrical installations, buildings, energy development (especially breeding)
 - e. increased coverage of forbs due to loss of fire in the system
 - f. Shrub encroachment from overgrazing and loss of fire in the ecosystem
 - g. Expansion of mesquite through grazing of mesquite glades, livestock eat the sweet mesquite beans and carry the seeds to other sites (winter)
 - h. Ground water depletion from over-extraction of water for agriculture (impacts habitat quality and winter survival)
 - i. Small patch size leading to increased predation (breeding)
 - j. Fire suppression leading to reduced fire frequencies and habitat degradation (invasives, woody plants, dense growth, excessive litter), wild fires
 - k. Haying native prairie or haying on the breeding grounds at inappropriate times
 - l. Changes in predator communities or fragmentation of habitat increasing nest predation
 - m. Loss of vegetation
 - n. Soil erosion
 - o. Overexploitation of aquifers, alteration of water flows and water supply
2. Other Human Caused/Anthropogenic disturbances
 - a. Energy exploration and extraction
 - b. Noise, primarily from energy production (breeding)
 - c. Contaminants from agriculture when agricultural areas are used (transition)
 - d. Pollution
 - e. Indiscriminant use of pesticides
 - f. Poaching/Illegal hunting
 - g. Installation of greenhouses
 - h. Urban and exurban development
3. Policy Issues

- a. Require use of native grasses in federal and state programs that impact grasslands
 - b. Address ground water issues and permitting for wells
 - c. Require restoration of center pivots to native grasses when they are retired from agricultural production
 - d. Address sod busting programs and policies that reward poor stewardship
 - e. Address the dissolution of the Canadian national pasture system by the Agriculture and Agrifood Canada.
 - i. Protect pastures from energy development (less scrutiny on private lands)
 - ii. Protect pastures by leasing as pasture rather than selling
 - iii. Protect pastures by adding an easement prior to sale
 - f. Protect breeding grounds from widespread oil and gas development; limit disturbance and density
 - g. Energy development can impact patch size and area and cause fragmentation
4. Weather and Climate change
- a. Increasing temperatures on the breeding grounds causing adaptive range changes and potentially new threats
 - b. changes in rainfall,
 - c. increase in desertification,
 - d. increasing climatic extremes (remaining good breeding habitat may be too dry to have sufficient cover and long droughts depress populations as do prolonged cool rainy Junes; winter habitat could also be too dry)
 - e. impact of weather and climate change on transition grasslands is unclear but a potential threat
 - f. drought impacting food supply and habitat; exacerbated by impacts of grazing and fire particularly in drier areas

Selected References.

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