

INVASIVE AND NOXIOUS SPECIES MANAGEMENT IN THE GAETZ LAKE SANCTUARY

RED DEER, ALBERTA:

Techniques Used and Successes Found Controlling Cicer Milk Vetch (*Astragalus cicer*), Canada Thistle (*Cirsium arvense*) and Common Toadflax (*Linaria vulgaris*) in Alberta's Oldest Federal Migratory Bird Sanctuary

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#GAETZLAKESSANCTUARY

INTRODUCTION TO THE SANCTUARY

The Gaetz Lake Sanctuary (GLS) is a federally-protected migratory bird sanctuary located in the heart of Red Deer, AB. In 1924 Catherine Gaetz donated the 118 hectares of land to the Province and established Alberta's first Dominion Bird Sanctuary under the auspices of the Canadian Wildlife Service. In the 1950s a young naturalist named Kerry Wood took an interest in the area and its continued protection. In 1985 in recognition of his efforts, The City of Red Deer established the Kerry Wood Nature Center as the gateway to the Sanctuary.

Located in the Aspen Parkland region of the Province, the Sanctuary showcases four different ecosystems: wetland, grassland, poplar forest, and spruce forest. It also has a split oxbow lake, formed by the meandering Red Deer River roughly 1000 years ago.

The forested habitats, open spaces, wetlands, and mineral springs allow unique plant communities to grow, including several kinds of orchids, primrose, and lady fern. These habitats also provide the food, water, and safe shelter that encourage many different kinds of animals to live here. Long-tailed and least weasels, mink, and pine martens help keep waterfowl, songbird, and rodent populations in balance. Open fields provide cover for deer; hunting grounds for owls, hawks, falcons, foxes and coyotes; and nesting grounds for songbirds. The tree canopy is home to red squirrels, woodpeckers, nuthatches, chickadees, and other forest birds, providing food and protection from predators.

Being a natural space and protected area the Sanctuary is left untouched as much as is possible. The Sanctuary is managed according to the Gaetz Lakes Sanctuary Management Plan. Under this plan, there are sections of the Sanctuary that only receive human visitors in extreme situations. Trails and fencing are maintained either from outside the boundaries or work is conducted mostly by hand wherever possible. Letting nature run its course while facilitating public education is the Sanctuary's main purpose. That means the flora and fauna living in the Sanctuary are left to their own devices unless they become hazards; things such as fallen trees, wandering bears, and especially invasive and/or noxious species are all dealt with according to the threat they pose to people, the land, and the system.

The Sanctuary's original designated area was a fraction of the modern space. Today the entire area spanning from 67 St to the Michener grounds (north to south), and from Clearview to 45 St, along the river (east to west) is managed by the Waskasoo Environmental Education Society. That land is all located east of the Kerry Wood Nature Center and is considered to be a part of the Sanctuary.

Non-native plants are naturally controlled reasonably well via competition and browsing in the more heavily forested sections of the Sanctuary (the east and south sides specifically). The majority of invasive species management occurs on the north-west side of the Sanctuary where the landscape is predominantly grassland and wetland. It is in these areas that Canada thistle is most prominent, and the majority of volunteer efforts around pulling and "burning" of thistle occurs here.

The grassland west of the lakes is the driest area and best suited for the spread of thistle. There are several dense populations found on the boundaries and just outside the Sanctuary limits. Wind-blown seed consistently feeds populations inside the Sanctuary. Those external areas however are typically under City Parks jurisdiction and managed by Parks staff. WEES staff communicate with Parks staff regularly regarding these external populations.

Common toadflax is generally isolated to the west side of the Sanctuary; due to low lying grasses and open fields it is easy to spot and target either by volunteers or the goats. Black henbane are commonly found and controlled by hand-pulling. Cicer milkvetch is a problem throughout the Sanctuary but is much more prominent in the grass fields along the north and west sides, as well as encroaching on the Wishart trail that rings the Sanctuary in a 4km loop, although it is not found in the dark forest area at the south end of the sanctuary.

NON-TOXIC WEED SPRAY

- 2 GALLONS OF PICKLING VINEGAR
- 2 CUPS OF NATURAL ROCK SALT
- 1 TBSP OF ANY BIODEGRADABLE DISH SOAP

In the Sanctuary we use a "home"made weed spray to contain the spread and growth of Canada thistle and spot-outbreaks of toadflax and henbane. It is non-selective but has minimal negative outcomes on surrounding grasses and un-damaged plants:

The goal of spraying is to stimulate the plant into expending stored resources. The first step is to damage the plant, either by hand cutting or with a weed trimmer. The weed spray is then applied to the damaged plant, desiccating the structures. The plant is then forced to draw stored energy from the roots to spur new growth. Repetition of this process renders the plant to weak to thrive.



VOLUNTEERS TY AND JOSH PROVIDING A HARD WORKING EMPLOYEE OF BAAH'D PLANT MANAGEMENT & RECLAMATION SOME MUCH APPRECIATED SCRATCHES AS PAYMENT FOR THEIR HARD WORK IN THE SANCTUARY
2023 SANCTUARY TECHNICIAN THOMAS & RED DEER DREAM CENTER WORKER SEAN STANDING NEXT TO A TRAILER FILLED WITH CANADA THISTLE THAT WAS HAND PULLED BY A GROUP OF FIVE VOLUNTEERS IN UNDER AN HOUR



RELEVANT STANTEC PLOTS AS OF SEPTEMBER 24/2019 WHERE %CT AND %CM ARE THE PERCENTAGE OF THE GROUND COVERED BY CANADA THISTLE AND CICER MILKVETCH RESPECTIVELY

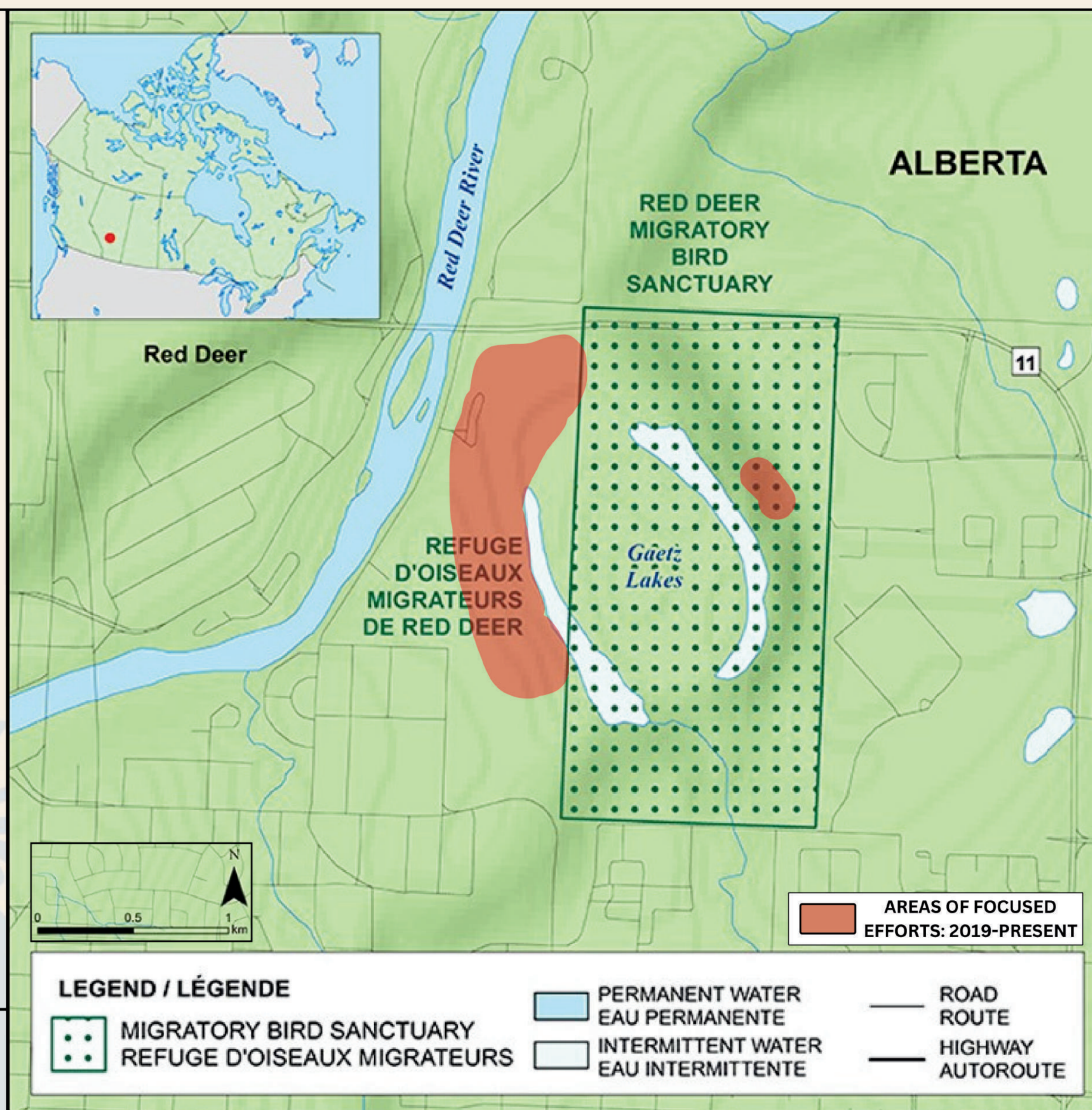
| PIN | %CT | %CM |
|-----|-------|-------|
| 7 | 100 | 0 |
| 10 | 2.44 | 37.56 |
| 12 | 17 | 83 |
| 15 | 41.67 | 58.33 |
| 17 | 100 | 0 |
| 18 | 100 | 0 |
| 20 | 14.81 | 85.19 |
| 21 | 15 | 85 |
| 22 | 22.06 | 77.34 |
| 24 | 80 | 20 |

BAAH'D PLANT MANAGEMENT & RECLAMATION - JEANETTE HALL

Owned and operated by modern shepherds, BAAH'D brings their goats - upward of 700 animals - to the Sanctuary twice a year to graze thistle, and milkvetch.

They work via targeted browsing. This strategy keeps the goats constantly moving, covering huge amounts of ground in a short amount of time. Open to positive public interaction, goats prevent soil damage found with larger browsers, provide firebreak reduction, and focus on specific invasive species while ignoring the native grasses and shrubs.

The goats are not only a chemical free method of control but they also keep seeds from distributing while simultaneously increasing soil nutrients for native species.



INVASIVE SPECIES IN THE SANCTUARY

- Canada thistle (*Cirsium arvense*)
 - noxious weed
 - aggressive perennial
 - control methods
 - mechanical pulling by hand
 - desiccation of seeds and vascular structures to slow dispersal
 - targeted browsing via goats
- common toadflax (*Linaria vulgaris*)
 - noxious weed
 - introduced perennial
 - control methods
 - mechanical pulling by hand
 - targeted browsing via goats
- cicer milkvetch (*Astragalus cicer*)
 - not regulated
 - introduced perennial
 - exploitive generalist
 - control methods
 - targeted browsing via goats
- black henbane (*Hyoscyamus niger*)
 - noxious weed
 - annual or biennial
 - control methods
 - mechanical pulling by hand
 - controlled vinegar and salt burn of vascular structures and seed heads

IMAGE ADAPTED FROM (GOVERNMENT OF CANADA 2019) - RED REPRESENTS THE PRIMARY AREA OF FOCUS FOR VOLUNTEER WEED PULLING EFFORTS. MAP INSERT IN BOTTOM LEFT CORNER IS TO SCALE FROM THE SAME DOCUMENT

Recent History of Invasive Species Control in The Sanctuary

In 2019 Stantec plotted and surveyed much of the accessible Sanctuary. Through counts of Canada thistle and cicer milkvetch stems, they were able to tell us the percentage of land covered by invasive and noxious plant species.

The map below shows their plot points. These correspond to a data table (left) of their findings. Generally the plotted areas in the Sanctuary were 26.37% covered by Canada thistle and 73.03% covered by cicer milkvetch. Many of these plots had a high enough density of invasives, that the plot itself was considered to be 100% covered by a combination of Canada thistle and cicer milkvetch.

Since 2019 there has been a considerable effort to control the invasives in the Sanctuary. BAAH'd Plant Management and Reclamation goats have kept the cicer milkvetch contained. This is an incredibly resistant plant, proving extremely hard to knock back. We are however, preventing it from overgrowing the Sanctuary further. These efforts have given the native species a chance to compete against invasives where they otherwise would have been outcompeted. The goats also keep the soil fertilized, they turn over the soil, they keep the trails clear of tripping hazards.

Through the efforts of seasonal staff, the contractors, and many, many volunteers (both individuals and community groups) Canada thistle is being eradicated from its most problematic spaces. The use of a specialized non-toxic weed spray helps to minimize the spread of viable seeds, and desiccates the vascular structures, while the plants themselves are physically pulled out of the ground by hand, to literally remove the root of the problem.

As a result of the combination of these efforts, plots (shown as yellow push pin graphics) 6 through 8 and 10 through 24 (inclusive) are no longer being controlled for Canada thistle populations. These populations have either been completely removed from the area or are at a low enough abundance that the native plant growth and animal grazing can keep them in check without human intervention.

PLOT MAP PROVIDED BY STANTEC INVASIVE SPECIES DATA COLLECTION TEAM IN 2019 REGARDING INVASIVE SPECIES CONTROL IN THE SANCTUARY

