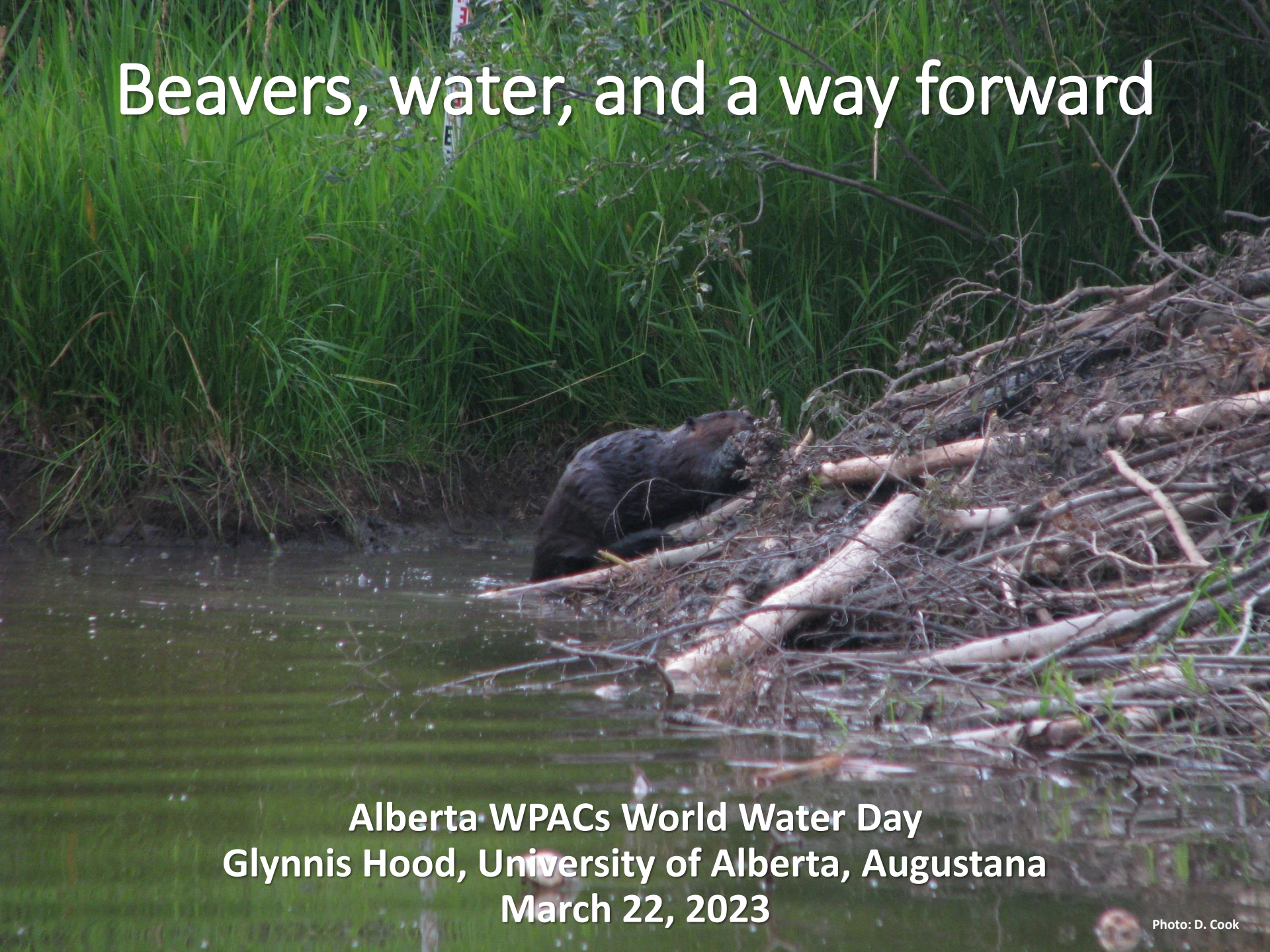
Beavers, water, and a way forward

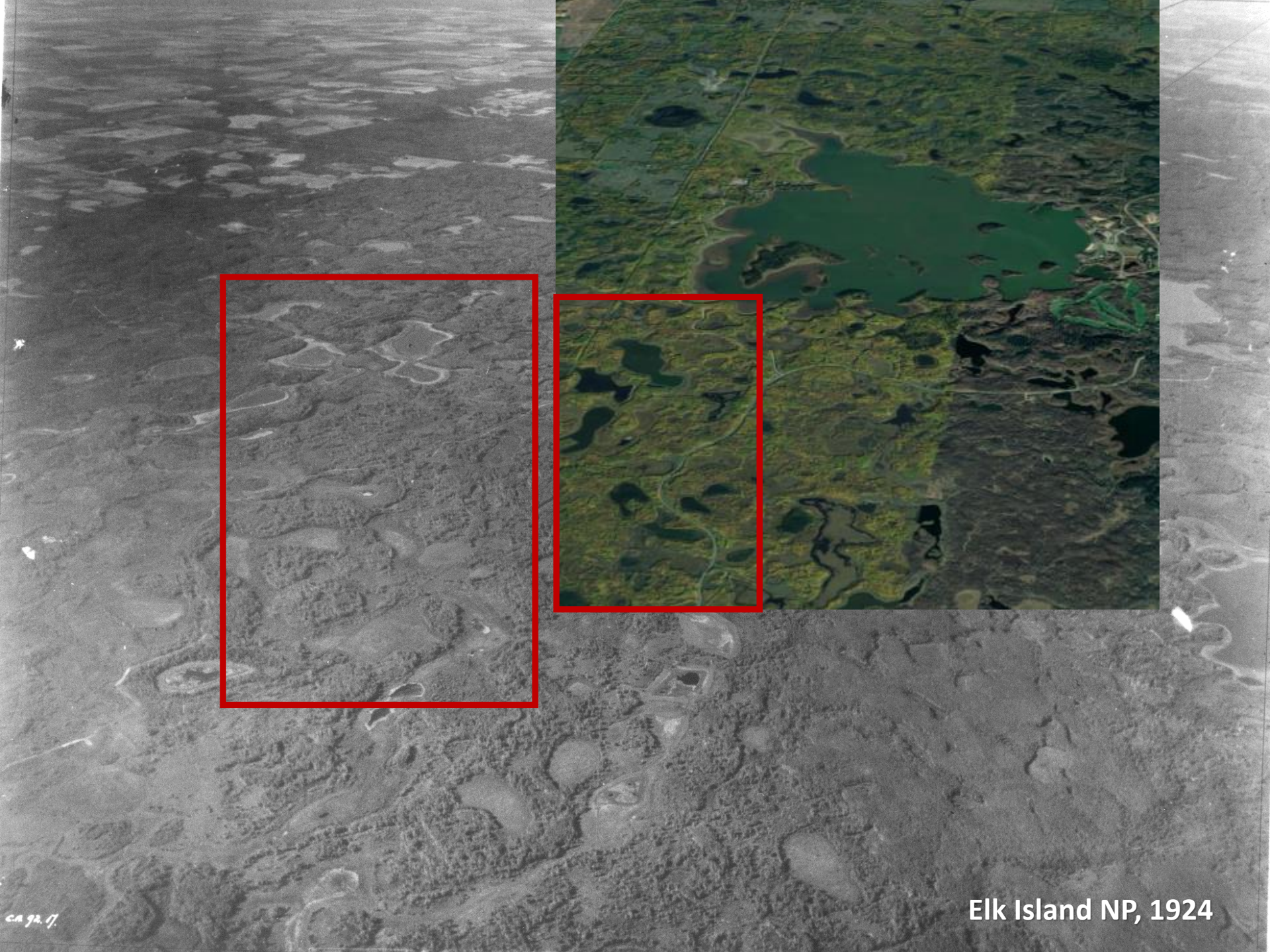


Alberta WPACs World Water Day
Glynnis Hood, University of Alberta, Augustana
March 22, 2023

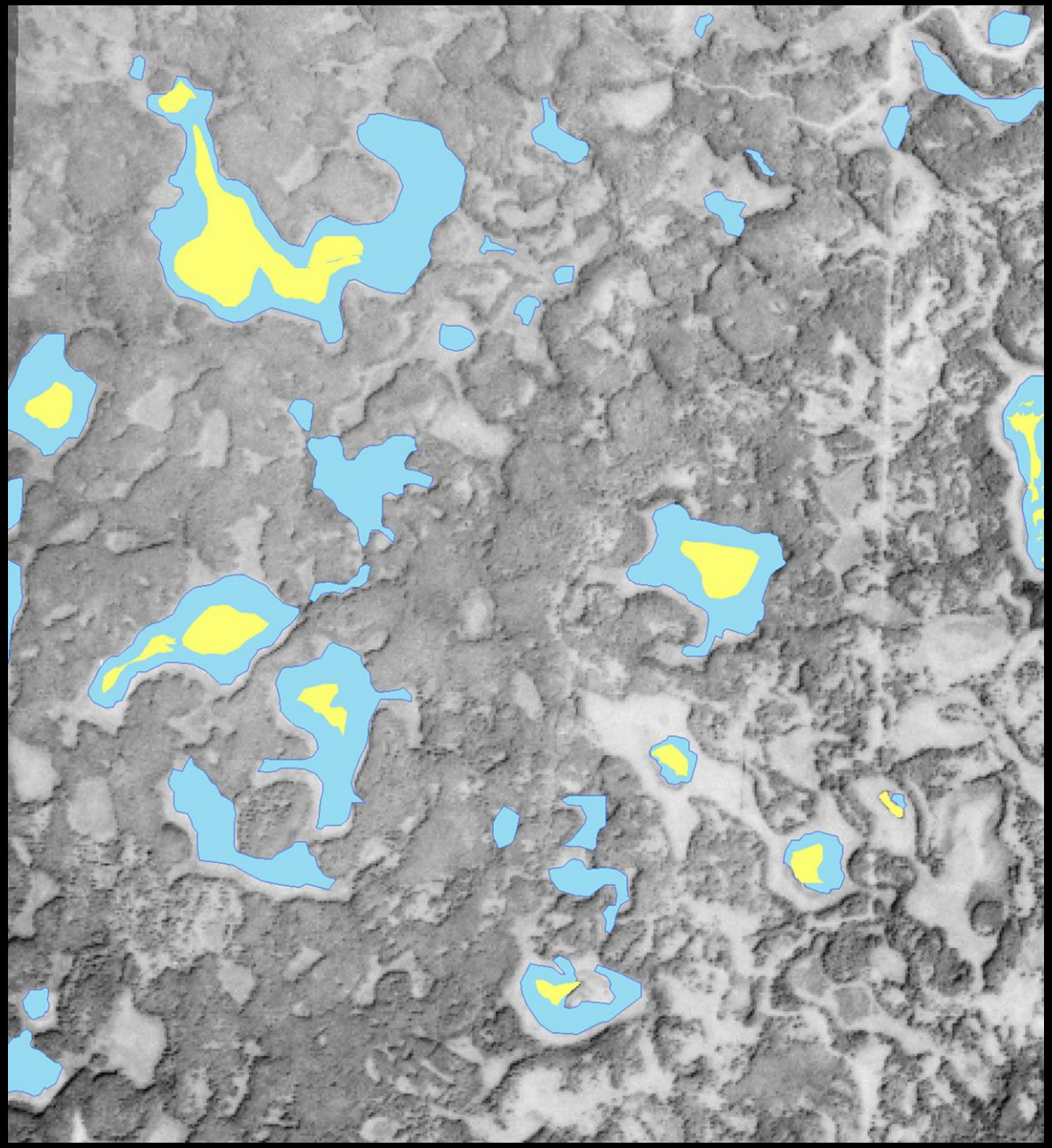
Photo: D. Cook

Why Beavers?

Photo: G. Hood



Elk Island NP, 1924



1950 Water Coverage
2002 Water Coverage

- **1950**
  - 47% more precipitation than 2002
  - no beaver
  - less open water
- **2002**
  - driest year on record
  - beaver well-established
  - 61% more open water than 1950

Hood and Bayley. 2008. *Biol. Conserv*.

A Lake, A Family And 50 Years

MINISTIK LAKE ON A SUMMER'S DAY
. . . conservation work continues

VIEW OF THE SANCTUARY FROM WATERFOWL
. . . haven for thousands of birds

In 1953, judging the time ripe for restocking, Rennie Harley, western manager of Ducks Unlimited, requested beaver from the Alberta game branch. Eight live adult beaver were released on the sanctuary creeks.

One pair raised the water level by 18 inches in one of the small lakes created by one of the new DU dams. Another pair created a new and private pond on the same creek by damming farther upstream.

More Beaver

More live adult beaver were released during the following years and have more than doubled the amount of impounded water in the area in a comparatively short time.

Famous Wildlife Sanctuary Has Williams As Guardians

(For over a half century the sons of the Williams family have been guardians of Minsitik federal sanctuary. They have known it in the lush wild state of the early 1900s, through the dark days of low water levels and great forest fires and at the present time as the almost spectacular come-back of wildlife as all its forms since the regime of Ducks Unlimited Incorporated.)

By IRENE H. WILLIAMS
(Special to The Herald)

Situated 30 miles southeast of Edmonton, Minsitik Migratory Bird and Wildlife Federal Sanctuary is a scant three miles from paved Highway 14. It is the last wildlife area of its size in Western Canada held in its natural state, with the exception of the National Parks. It is at the present time under the jurisdiction of

was well stocked with pike and suckers. The deep creek-bed between Minsitik and Cooking Lake ran bank-full during the annual spring run-off, teeming with those fish all fighting their way upstream to spawn.

The sanctuary has many smaller lakes and sloughs and acres of wild sedge grass which provide ample cover. Minsitik Lake has great beds of sago pondweed (potamogeton pectinatus) which is perhaps the most important waterfowl plant in Western Canada. It provides food from spring until fall and makes the lake a natural breeding ground for every breed of duck common to the Prairie Provinces. Many remain there from early spring until time for their migration to the deep south.

Burt Williams was appointed honorary game guardian in 1918 to work in conjunction with the Royal North West Mounted Police. Benjamin Lawton, chief game guardian of Alberta, was much concerned at that time over the increasing numbers of the wapiti in Western Canada.

Spring Run-Off Inadequate

In 1917 light precipitation during both summer and winter months made the spring run-off quite inadequate to halt the slowly receding waters of Minsitik Lake and others.

With the beaver (Castor Canadensis) "trapped out" of the Minsitik area, more than 2,000 of the dams they had maintained rapidly drained away. Springs dried up and creeks ceased to flow, eventually the waters of the main lake dropped by a full 18 feet. Depleting of the beaver population reached its dismal end in the region during the fur-hungry days of the 1870s when civilization had begun its inevitable smothering process in our central Alberta territory, a process which claimed wildlife as one of its chief victims. There, as in other parts of Canada, the beaver was target No. 1.

Bird Population Disappeared

The sanctuary was visited annually by J. A. Munro, chief migratory bird officer for the three western provinces. In 1923 Burt Williams was appointed part-time guardian by the Dominion government and provided with motor-boat and mobile home for patrols. The year 1926 saw the last of the fish in Minsitik Lake, due to low water levels, and by 1928 all the fish-eating birds, loons, grebe and pelican, as well as blue herons, Canada geese and common tern were seen no more.

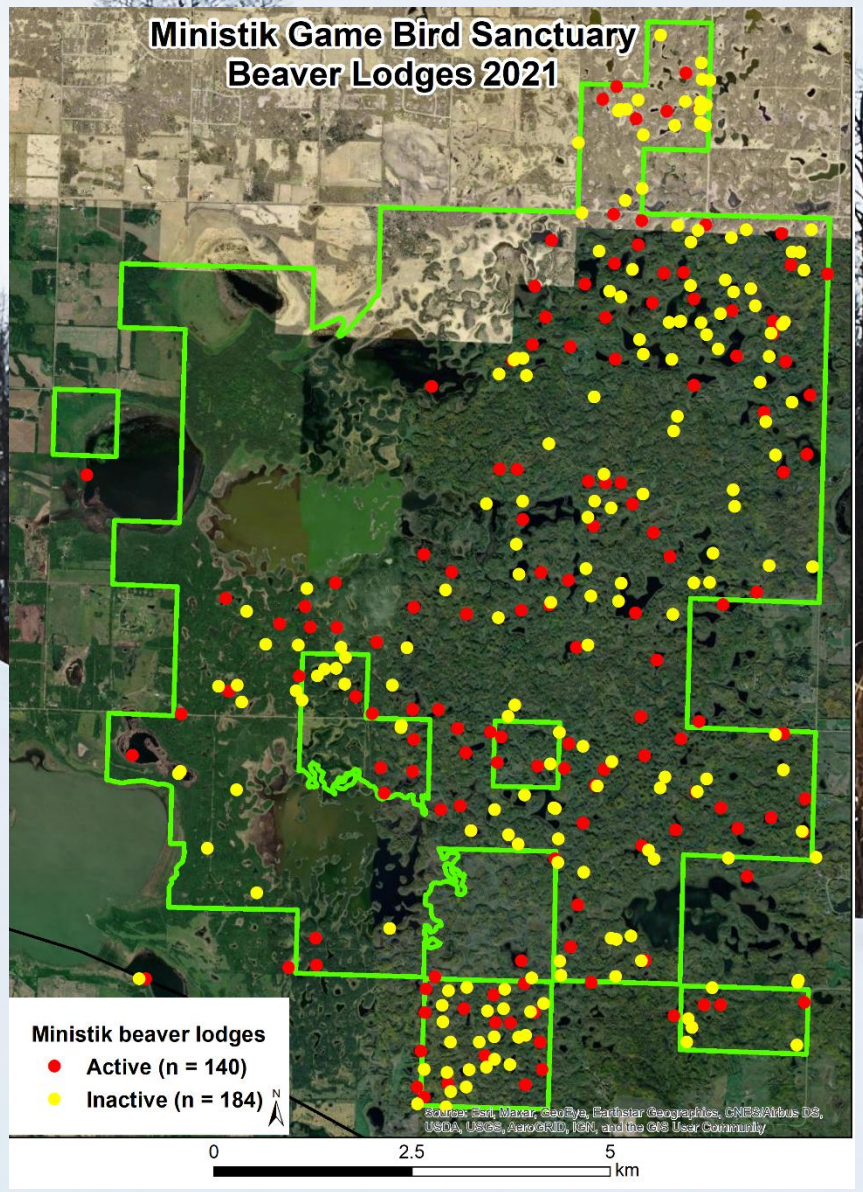
In 1929 the Provinces of Alberta assumed the management of her natural resources, and in 1932 Mr. Williams was transferred to the department of fisheries, provincial government. For the next few years Minsitik sanctuary was without local protection.

As early as 1935 the organization known as More Game Birds of America Foundation banded together and formed the organization in the United States known as Ducks Unlimited Incorporated.

A census revealed that the North American wildlife population had become seriously reduced, also that the bulk of continental wildfowl breed in the Canadian prairie region. For this reason Ducks Unlimited chose this area as begin for its pioneering work.

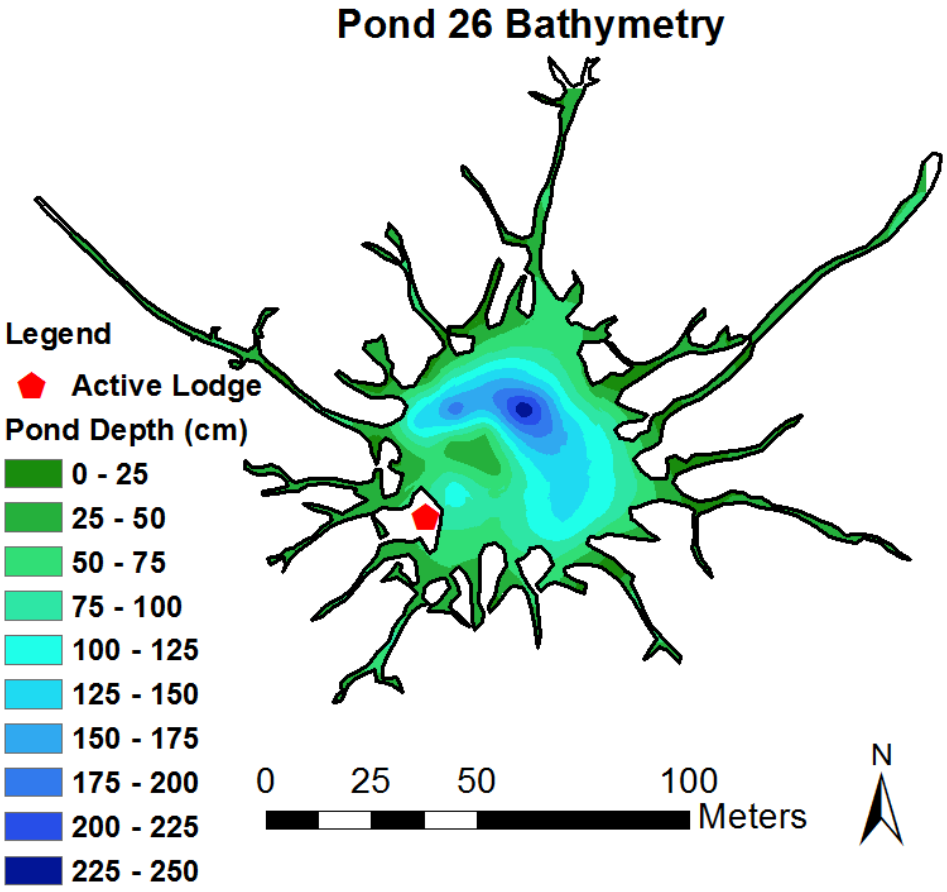
In 1938 it acquired the management of the bird sanctuary and Francis Williams, the eldest son, was appointed one of the first field men. Francis, born and brought up in that locality, had a vast knowledge of the lake, the settlers and the surrounding territory.

In May, 1948, he made an extensive study of the interior of the sanctuary on horseback and, in September, Ducks Unlimited constructed 11 dams, eight of them on locations where many years before beaver had built their original dams. This method of a lake and stream system which re-established a favourable beaver habitat.



Active beaver lodge

Photo: G. Hood



Hood and Larson. 2015. *Freshwater Biol.*

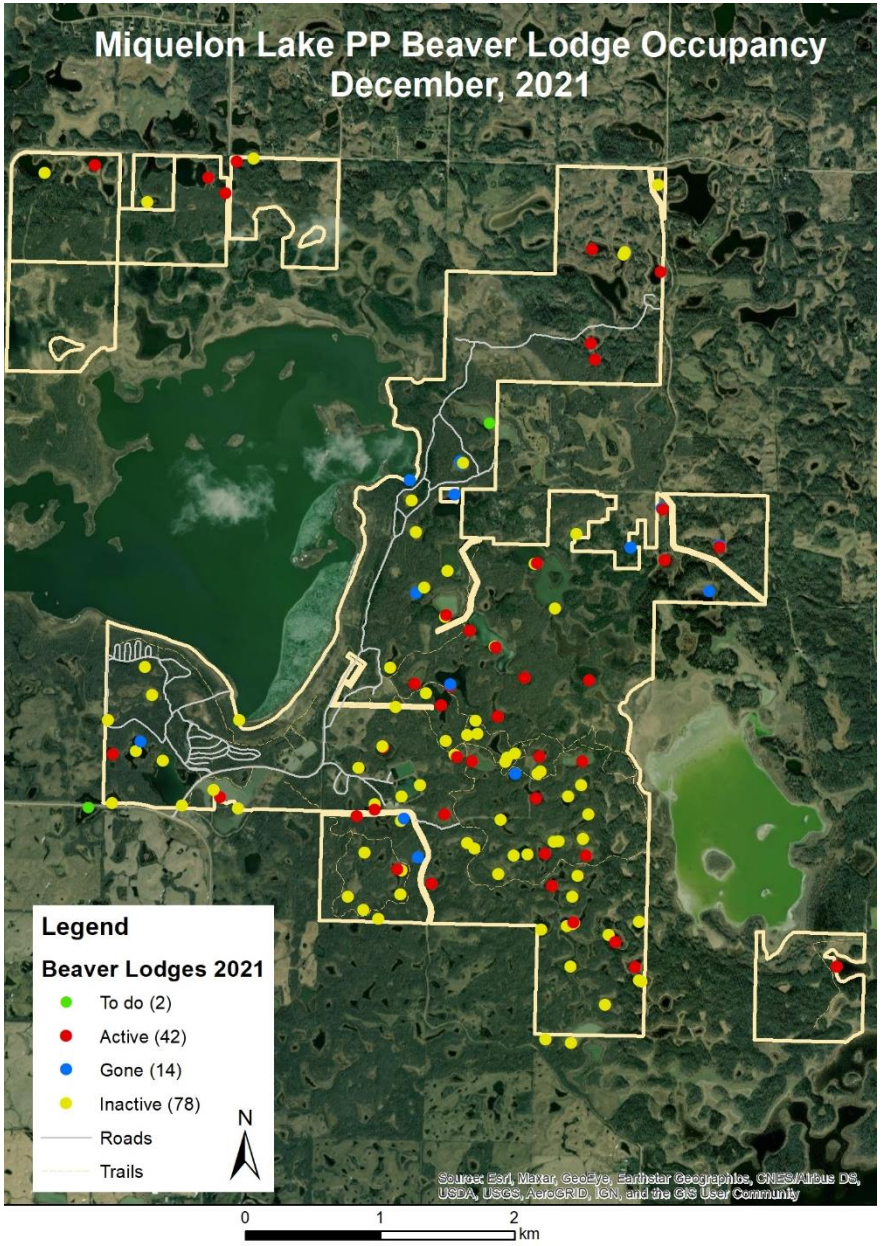
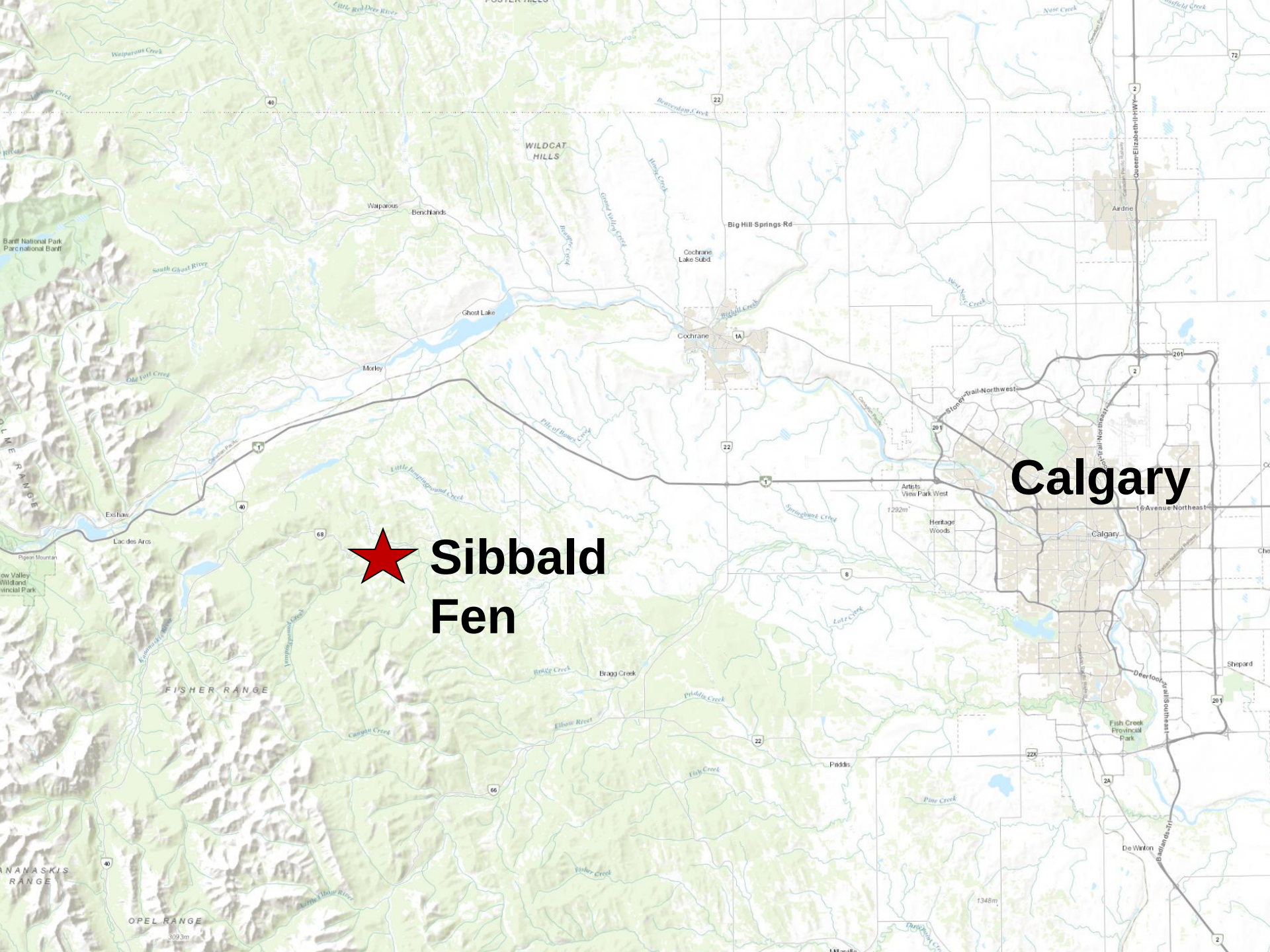


Photo: G. Hood


Miquelon Lake PP


Sibbald Fen
Calgary
WILDCAT HILLS
FISHER RANGE
OPEL RANGE
Cochrane
Bragg Creek
Priddis
Airdrie
Waiparous
Ghost Lake
Morley
Exshaw
Lac des Arcs
Big Hill Springs Rd
Stoney Trail Northwest
16 Avenue Northeast
Deerfoot Trail Southeast
Queen Elizabeth II HWY

Calgary - June 25, 2013

PhotoL Ryan L. C. Quan


Sibbald Fen, Alberta

WOMEN ADVANCING RESEARCH
IN HYDROLOGICAL PROCESSES

Hydrological functioning of a beaver dam sequence and regional dam persistence during an extreme rainstorm

Cherie J. Westbrook[1] | Amanda Ronnquist[1] | Angela Bedard-Haughn[2]

FIGURE 6 Photographs of: (a) Pond 52 after the flood event (June 30, 2013) showing flattened vegetation indicating outburst flood from pond 53 water flowed overtop of it, leaving the dam reasonably intact and the pond storing water; and (b) blocks of peat sheared from just below the dam breach at pond 53 found approximately 50 m downstream


Photo: G. Hood

Photo: G. Hood

Photo: G. Hood


Photo: G. Hood

Building a pond leveller at a bridge site

1. Building the cage

2. Attaching pipe to cage

3. Joining the pipes

4. Floating the cage

5. Dropping cage and pipe

6. Protecting the end

Hood et al. 2018, *Hum. Dimen, Wildl*


07/17/2014 09:34
Photo: G. Hood


Photo: G. Hood


Photo: G. Hood

Future trends?

North American beaver
Castor canadensis

Photo: G. Hood


Thank you
Photo: G. Hood