

SEABRIDGE GOLD

Courageous Lake Caribou Camera Monitoring

Program Summary, 2019 to 2023



June 2023



INTRODUCTION

Overview

Seabridge Gold Inc. (Seabridge) holds mineral leases and mining claims in the Courageous Lake area, located about 240 km northeast of Yellowknife, Northwest Territories. Seabridge began exploration activities and environmental studies in 2003 and continues to actively explore the area. Exploration activities at Courageous Lake consist of geological and geophysical mapping, diamond drilling, camp operations, fuel storage, winter road construction/maintenance and use of the existing airstrip and gravel roads.

The Courageous Lake area lies within the historic range of the Bathurst caribou herd.





The purpose of this summary document is to give interested readers a non-technical overview of ongoing caribou monitoring that has been underway at the Courageous Lake property since 2010 and to summarize key findings to date.

Seabridge Gold Inc. is a publicly traded company with common shares listed on Canada's TSX Exchange and the New York Stock Exchange. Seabridge conducts exploration activities at Courageous Lake in an environmentally responsible manner while providing social and economic benefits to local communities of the Northwest Territories.

Communications regarding this report should be directed to the following address:

Seabridge Gold Inc.

106 Front Street East, Suite 400
Toronto, Ontario, M5A 1E1
Telephone: (416) 367-9292
Fax: (416) 367-2711
Email: info@seabridgegold.net

CARIBOU AT COURAGEOUS LAKE

Bathurst Caribou Herd Population

Barren-ground caribou are currently listed under the Species at Risk (NWT) Act and by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) as a threatened species in the NWT. The Bathurst caribou herd is one of six barren-ground caribou herds in the NWT and is typically the only herd that uses the Courageous Lake area on an annual basis.

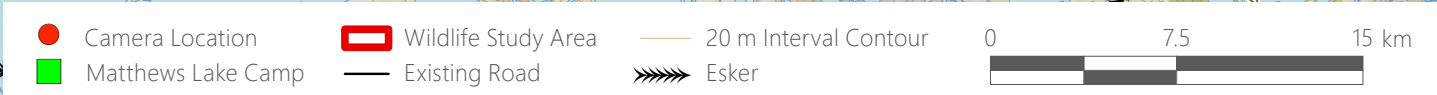
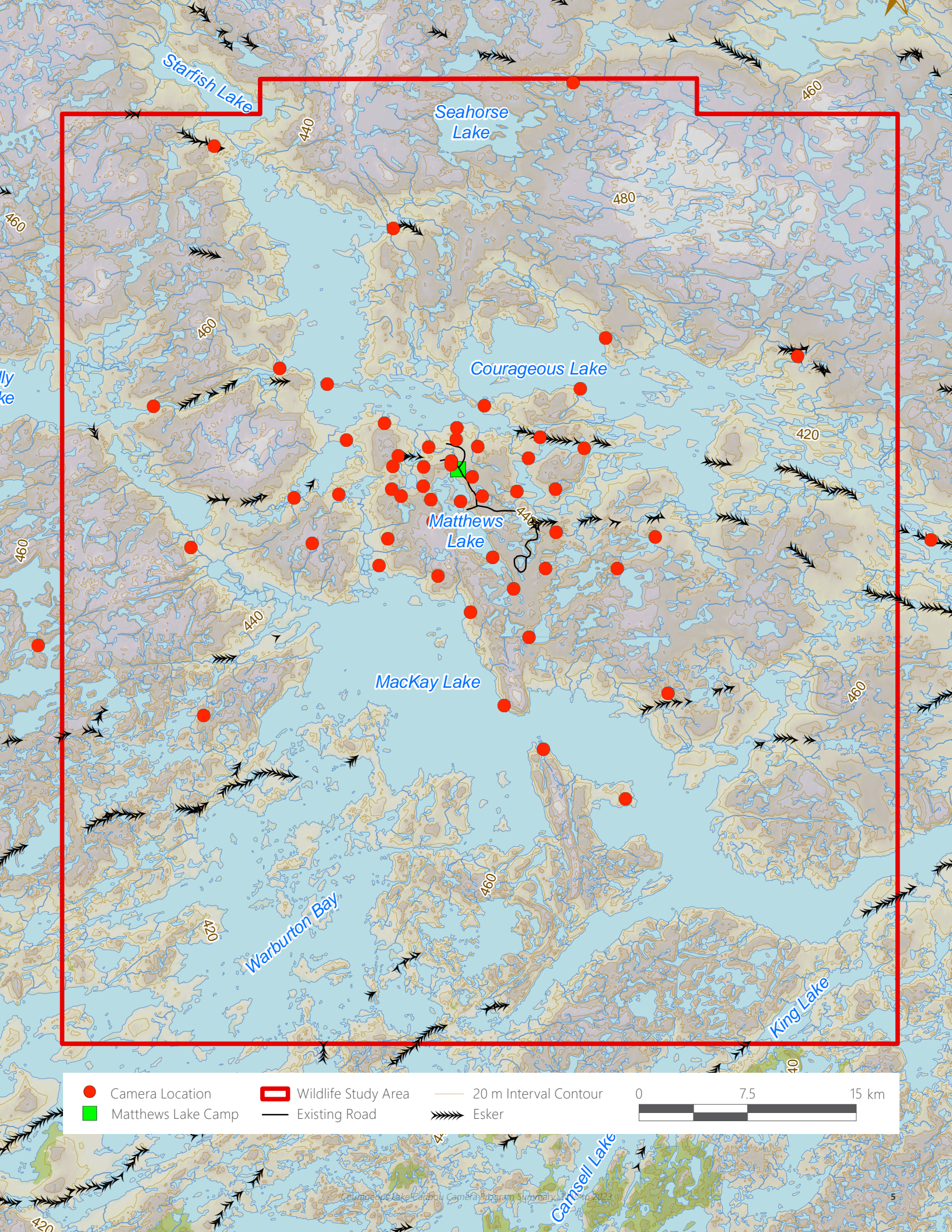
The Bathurst herd had approximately 472,000 animals in 1986 and declined to approximately 34,000 animals by 2011, the first full year of the wildlife camera program at Courageous Lake. By 2021, the year of the most recent population estimate, the Bathurst herd declined to 6,240 animals.

Bathurst Caribou Herd Range

Bathurst caribou have historically occupied a broad range: calving in an area west of Bathurst Inlet and wintering below the tree line south and west of Courageous Lake. Their use of the land can be broadly classified into (1) migrations (most notably in the spring, but also in the autumn) when the animals are moving more quickly across the landscape, and (2) resident periods (calving, post-calving, summer, and winter) when the animals tend to move less and the herd tends to occupy portions of the annual range for longer periods of time. In most years, the spring and autumn periods are when Bathurst caribou have been observed in the Courageous Lake area. There has been a recent shift of the Bathurst herd winter range to the north of the tree line, documented by satellite collar data.

Study Area

The 33,030 hectare Courageous Lake property is located north of the tree line in the zone of continuous permafrost, with a mixture of lakes with rolling hills of tundra vegetation and exposed bedrock. A number of eskers run through the area. The wildlife study area is located between Courageous Lake and MacKay Lake and extends approximately 30 km out in each direction.



Engagement and Study Design

Seabridge monitors the Courageous Lake area to gather information about the movement patterns of caribou that may be using the area. To minimize disturbance to caribou and to be able to monitor caribou night and day, every day of the year, Seabridge chose to use wildlife trail cameras rather than using more intrusive surveys from aircraft.

Seabridge worked with Indigenous land users knowledgeable about the Courageous Lake area to identify caribou trails and areas that would be suitable for camera placement. The caribou trails follow an esker system near the midpoint of Courageous Lake and along the shores of lakes in the area, primarily MacKay Lake and Courageous Lake. Cameras were also placed on high rocky areas and overlooking valleys to capture other potential travel corridors and areas used for foraging.

The wildlife cameras were first set up in the Courageous Lake area in 2010 and have been in operation every year since. The objectives were to use wildlife cameras to:

- monitor the timing, abundance, and location of caribou within the area;
- examine how the above have changed through time; and
- examine caribou use of potential travel corridors identified historically and through caribou trail mapping.

Wildlife cameras are mounted inside boxes to prevent damage from wildlife. Each camera is mounted on a wooden tripod, which is secured with rocks to prevent it from being knocked over by wildlife. The camera enclosures are covered with plywood caps to keep out rain and snow, and with bird spikes to deter birds from nesting on the platforms. A series of motion-triggered photos are automatically recorded whenever the camera's infrared system detected movement in the camera's field of view. Cameras are visited periodically to replace batteries and retrieve memory cards containing photo records with date and time information. Once collected, biologists process the photos to extract information including the species, sex, age, and behaviour of wildlife observed.







STUDY RESULTS

Between July 2019 and June 2023 there were a maximum of 58 cameras functioning in the study area every day. Due to restrictions related to Covid-19 there was no field exploration and no wildlife camera data recovery during 2020 and 2021. As a result, cameras were not serviced for 36 months, resulting in camera malfunctions, battery depletion, and cameras damaged by wind or wildlife. Brief field programs occurred in July 2019, July 2022, and June 2023 to collect meteorological and camera data, and to perform minor maintenance. From July 2022 to June 2023, nearly all of the cameras remained operational. Caribou were photographed at 83% of the camera locations over a total of 1,398 occasions. The number of caribou observations were variable among seasons and years. Data prior to 2019 has been reported in previous summaries.

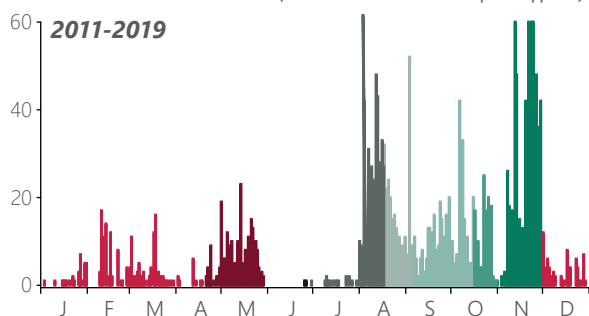
Seasonal Patterns in Caribou Observations

Some seasonal patterns were consistent throughout the 2019 to 2023 study period. During the calving and post-calving seasons (June 2 to June 28) caribou were usually well north of the Courageous Lake area. Though some caribou were recorded during this period, nearly all were male and no calves were observed.

During the early part of the study, in 2010, the Bathurst caribou wintered to the south of the tree line and their northward spring migration passed through the Courageous Lake area. Cameras recorded caribou during spring migration between 2010 and 2017. However, in the winter of 2017-2018 the Bathurst herd wintered north of the tree line (north of Courageous Lake) and no caribou were recorded during the 2018 spring migration, presumably because they were already north of Courageous Lake.

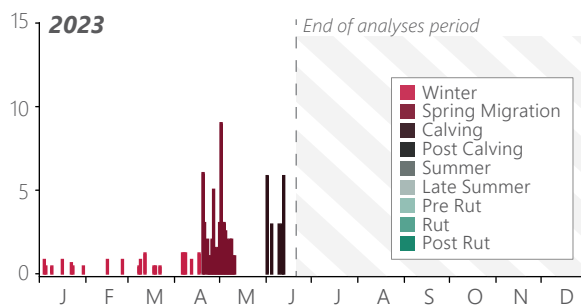
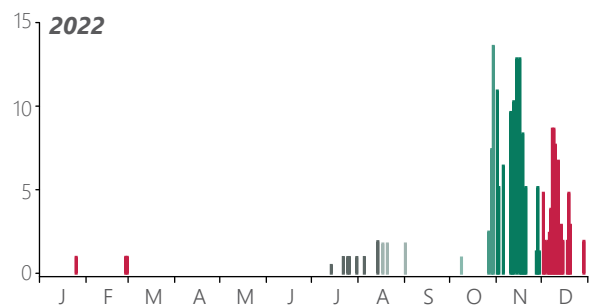
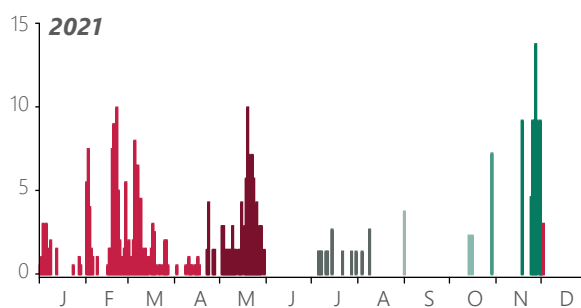
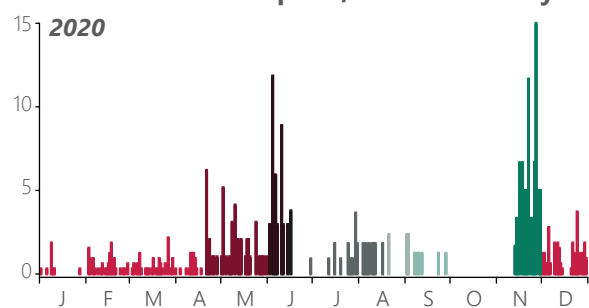
From 2018 to 2023, the winter range of the Bathurst herd appeared to overlap the Courageous Lake area. Spring migration was observed in the Courageous Lake study area in 2020, 2021, and 2023 (with limited cameras operating in spring 2022), suggesting that some caribou still wintered south of the Courageous Lake area.

Total Caribou Events (not standardized for effort)



Shifts in summer, late summer, and pre-rut use of the Courageous Lake area by caribou were also observed. Less caribou detections occurred in these seasons from 2019 to 2023, as compared to 2011 to 2019.

Total Caribou Events per 1,000 Camera Days





SUMMARY

Seabridge continues to use wildlife cameras to monitor caribou in the Courageous Lake area, with several notable results:

- The cameras are an excellent way to incorporate land user information and perspectives, by placing cameras at locations identified by local land users as important for caribou.
- The cameras have proven to be reliable and effective at withstanding the northern climate and recording the presence of caribou at all times of the year, including over multiple years during the COVID-19 pandemic when cameras could not be serviced.
- Caribou observations by cameras continue to occur in the winter; this is consistent with collar data that shows caribou wintering north of the tree line. However, the timing of caribou observations are variable between years.
- In the last four years, from 2019 to 2023, less caribou were recorded in the summer, late summer, and pre-rut seasons around Courageous Lake, when compared to data from 2011 to 2019. Caribou may recently be using habitat further north in these seasons, similar to the shifts in winter habitat use.
- Caribou calves were not recorded on cameras during the calving or post-calving seasons.
- Most caribou recorded by cameras were of individuals or small groups of less than 30 individuals, and most frequently male.