

2009 WMU 529 Moose

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Moose are the primary big game species in WMU 529, providing recreational hunting opportunities and subsistence for many residents. The objectives of this survey were to obtain a moose population estimate for WMU 529 and compare this to surrounding WMUs and with past estimates. Aerial game surveys provide population and density estimates as well as habitat use and distribution patterns. These data enable ASRD to determine hunting license allocations and discuss population condition. When conducted at regular intervals (ideally every 5 to- 7 years in northeast Alberta), surveys also offer valuable data for assessing ungulate and other wildlife population trends. Coincidental data was also gathered for other species, particularly white-tailed deer and woodland caribou. This provides valuable information on distribution and population levels for those species.

Study Area

WMU 529 is located southeast of Fort McMurray. It is bordered by the Clearwater River to the north, a combination of the Christina River, a tributary and the CNR railroad to the west, the Winifred River to the south and the Saskatchewan border to the east. It has an area of just over 4,400 km² and is comprised primarily of northern boreal mixed-wood forest with some areas of disturbance due to forest harvest and oil and gas exploration, most of which exists in the southern area of the WMU. Substantial water bodies within the WMU include Gordon, Gypsy, Birch, Garson, North Watchusk and South Watchusk Lakes. Key summer and winter ungulate habitat occurs throughout the Clearwater and Christina River corridors and the Bohn caribou range is found in the southern half of the WMU. Gypsy Lake Wildland Provincial Park is also included within the WMU boundaries.

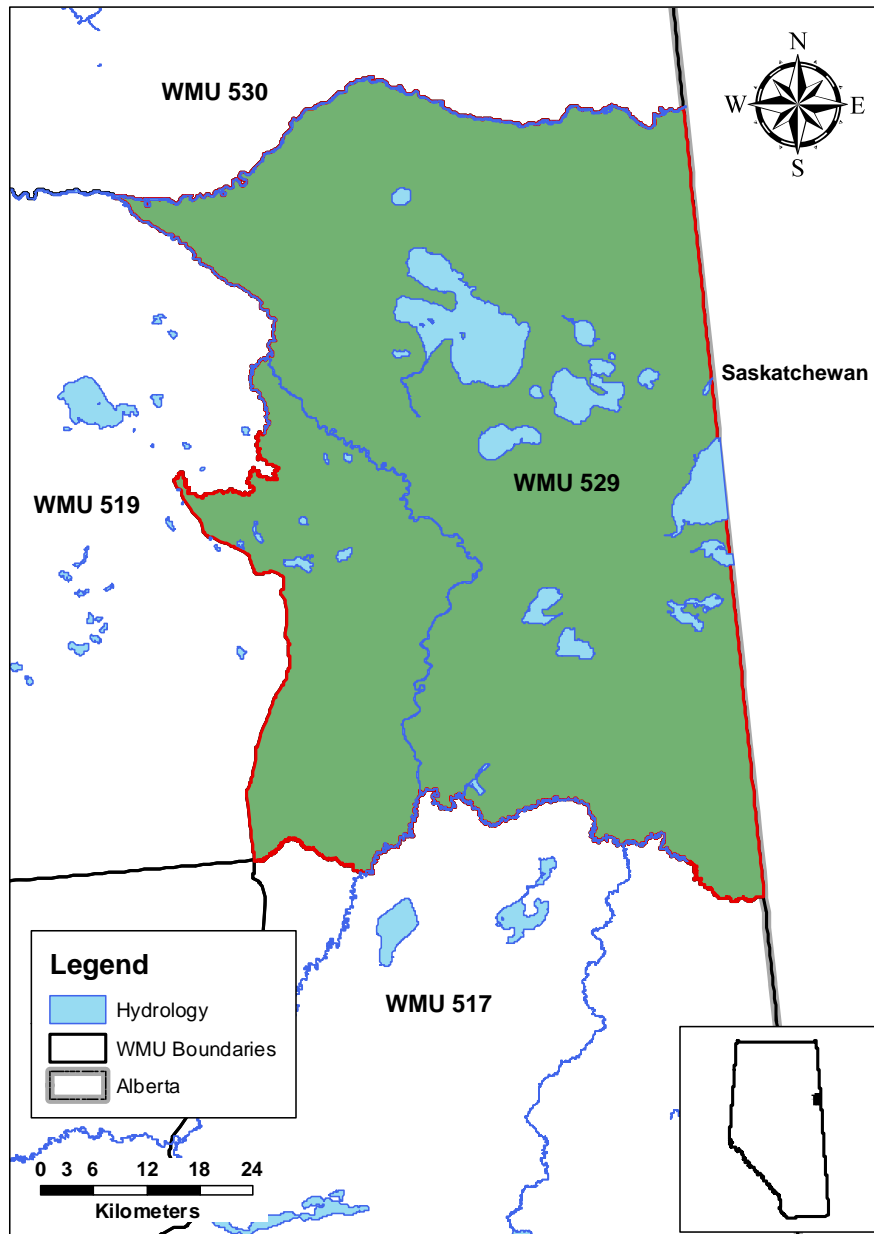


Figure 6.14.1. Location of WMU 529 in Alberta.

Survey Methods

WMU 529 was initially stratified for moose densities using a Cessna 206 fixed-wing aircraft (February 10 -15, 2009). Flight maps to aid in navigation were prepared using ArcGIS 9 and were displayed during flights using Arcpad installed in a Go Book. A 30 second latitudinal grid, which is equivalent to a 0.9 km separation between lines, was overlain on the WMU and flown in sequence. Approximate altitude and ground speed during the flights were 100 m above ground and 140 km/h respectively. This allowed observers to detect animals within 250-300 m on either side of the aircraft, for approximately 50 percent coverage of the WMU. Three observers, including the navigator in the front, were required for the survey. Species, number of animals and distance from plane (distance class) were recorded with a waypoint taken using a GPS unit. In addition to the standard stratification process, a system of calibrated strut and window marks, along with precise altitude measurement, were used to determine the distance of each animal from the aircraft's line of travel and to place them into one of 5 perpendicular distance classes. The results of this additional census method will be reported elsewhere.

Stratification information was used to determine stratum for each sampling block based on moose density. A sampling block grid was established using ArcGIS 9.1 by dividing the WMU into blocks measuring 5 minutes longitude by 5 minutes latitude, resulting in blocks of about 48 km². Stratification observations were digitally rendered onto the sampling block grid. Given air speed and waypoint record time, a lag may occur between when an animal was observed and the location digitally recorded. To ensure accurate stratification, waypoints that occurred near a sampling block boundary were assessed based on direction of air travel. Waypoints were re-assigned to the appropriate block if they fell within 100 m of the block boundary and conditions warranted. Sampling blocks were then ranked according to indices of moose density, calculated as the number of individuals observed per km² within each block. Sample blocks were categorized into one of 3 strata: low, medium, or high. Approximately 12% of the blocks were classed as high, 30% as medium, and 58% low.

Fifteen sampling blocks (5 per stratum) were randomly selected based on moose density, 14 of which were intensively searched using a Bell 206 helicopter February 17-19. Navigation was aided by ArcPad displayed on an Itronix Go Book, with position indicated on screen, plus a GPS in view of the pilot. Blocks were flown in an east-west

direction with a flight line separation of 400 m (0.25 minute or 15 seconds of latitude). Observations were recorded within 200 m of either side of the machine, allowing for total coverage of the area. Altitude was approximately 90 m above ground and air speed was approximately 80 km/h, reaching 100 km/h in more open areas. Moose were classified using four criteria: presence of antlers or pedicel scars, presence of vulva patch, face and body shape and pigmentation, and behaviour. All wildlife observations were recorded on forms with locations digitally recorded. Three observers, including the navigator in the front, were required for the survey.

Overall, survey conditions were good with complete snow coverage, overcast or clear sky, and light winds.

Results

The stratification portion yielded observations of 97 moose, 15 white-tailed deer, 5 woodland caribou, 1 grey wolf and 5 sharp-tailed grouse. During the intensive search of 14 sampling blocks, 37 moose (9 bulls, 15 cows, 13 calves), 4 white-tailed deer, and 39 sharp-tailed grouse were observed. The Quadrat Survey Method program generated a moose population estimate of 157 (± 42 ; or $\pm 26.8\%$ for a 90% confidence interval) with a density of 0.04 moose/km². The sex ratio was estimated at 60 bulls/100 cows/87 calves based on observed moose within and adjacent to surveyed blocks.

Table 6.14.3. Results of the 2009 random stratified block and previous surveys in WMU 529

Year	Population Estimate (confidence limits)	Density / km ²	Ratio to 100 Females	
			Males	Juveniles
2009	157 (26.8%)	0.04	60	87
2006 ¹	259 (--)	0.06	--	--
1998 ²	665 (--)	0.15	65	44
1993	477 (22.9%)	0.11	87	53

¹stratification flight only; estimate without confidence interval or limits.

²only blocks flown; stratification achieved by Reconnaissance Vegetation Index assessment.