Observations of Deer and Wolves during the 2018 Moose Survey

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Introduction

Each year, we conduct an aerial survey in northeastern Minnesota in an effort to monitor moose numbers (DelGiudice, 2018). While the objectives of this annual survey are to estimate moose numbers and demographics; since 2010, wolf and deer observations have been recorded as part of this survey and are summarized in this report. Over time these deer and wolf observations may provide useful trend data especially in regards to changes in relative numbers or locations of wintering deer. Observations of deer and wolves were recorded in years prior to 2010, but with less consistency, and changes to the methodology of the moose survey in 2004 and 2005 render comparisons with earlier years more difficult.

Methods

Moose survey plots are located across moose range in northeastern Minnesota (Figure 1). Since 2005 all moose survey plots have been rectangular (5 x 2.67 mi.) and oriented east to west with a total of 8 transect lines spaced 1/3 of a mile apart. Most survey plots are stratified by expected moose density and randomly selected each year. In addition, 9 permanent plots are used to monitor the effects of large habitat changes on moose numbers over time. In 2018 a total of 52 moose survey plots (43 random and 9 permanent plots) totaling 694 mile^2 were flown from January, 3-13.

In 2018, the survey was flown using a Bell Jet Ranger (OH-58) and a MD 500E helicopter operated by the Enforcement Division of the Minnesota Department of Natural Resources. Transect lines are flown at an average of 250 feet above the ground at 58-63 miles per hour. The pilot is seated in the right front with an observer in the left front, and another observer in the rear directly behind the pilot. The program DNRSurvey, on Toughbook® tablet style computers, was used to record survey data in 2018 and provides real time location information.

Deer are tallied as they are observed incidentally on the survey plots by the pilot or either observer. Although effort is made not to double count deer, no deviations from the transect lines are made to determine sex or age of deer or to verify if more deer were present than first observed. Locations of deer are not recorded except with reference to the survey plot.

Locations of wolf observations are recorded using DNRSurvey. In addition to wolves, observations of deer and moose carcasses judged to be wolf-kills are also recorded. Observations of wolves and carcasses have been recorded consistently on survey plots since 2010, but with less consistency in the first years as they were encountered outside of survey plots. In 2018 all presumed kill sites and direct visual observations were recorded where ever they were encountered during the operational period for the moose survey and wolf tracks were recorded (if present) at least once for every survey plot or at the township level if transiting between survey plots. This data will be included in the Minnesota DNR's 2017-18 statewide wolf report. For consistency with past reports from the moose survey, only visual observations of wolves or carcasses judged to be wolf-kills are reported here.

Deer Observation Results

A total of 290 deer were observed during the 2018 moose survey and 33% of survey plots (17 total) were occupied by 1 or more deer. The locations of 2016 - 2018 moose survey plots and the number of deer

observed on each plot are shown in Figure 1. Where plots were flown in multiple years between 2016 and 2018, the number of deer is shown as either a single value, if not different between years, or as a range from the lowest to highest numbers observed. On most moose survey plots flown more than once between 2016 and 2018, the number of deer observed was zero. A geographic distribution of deer is evident with the majority seen along the western edge of moose range and near the shore of Lake Superior where snow depth and winter severity are typically less. Proximity to people and artificial feed sources on the landscape probably influence deer distribution as well. Earlier observations of deer from 2010–2015 are consistent with the geographic distribution reported here (Schrage, 2014, 2015).

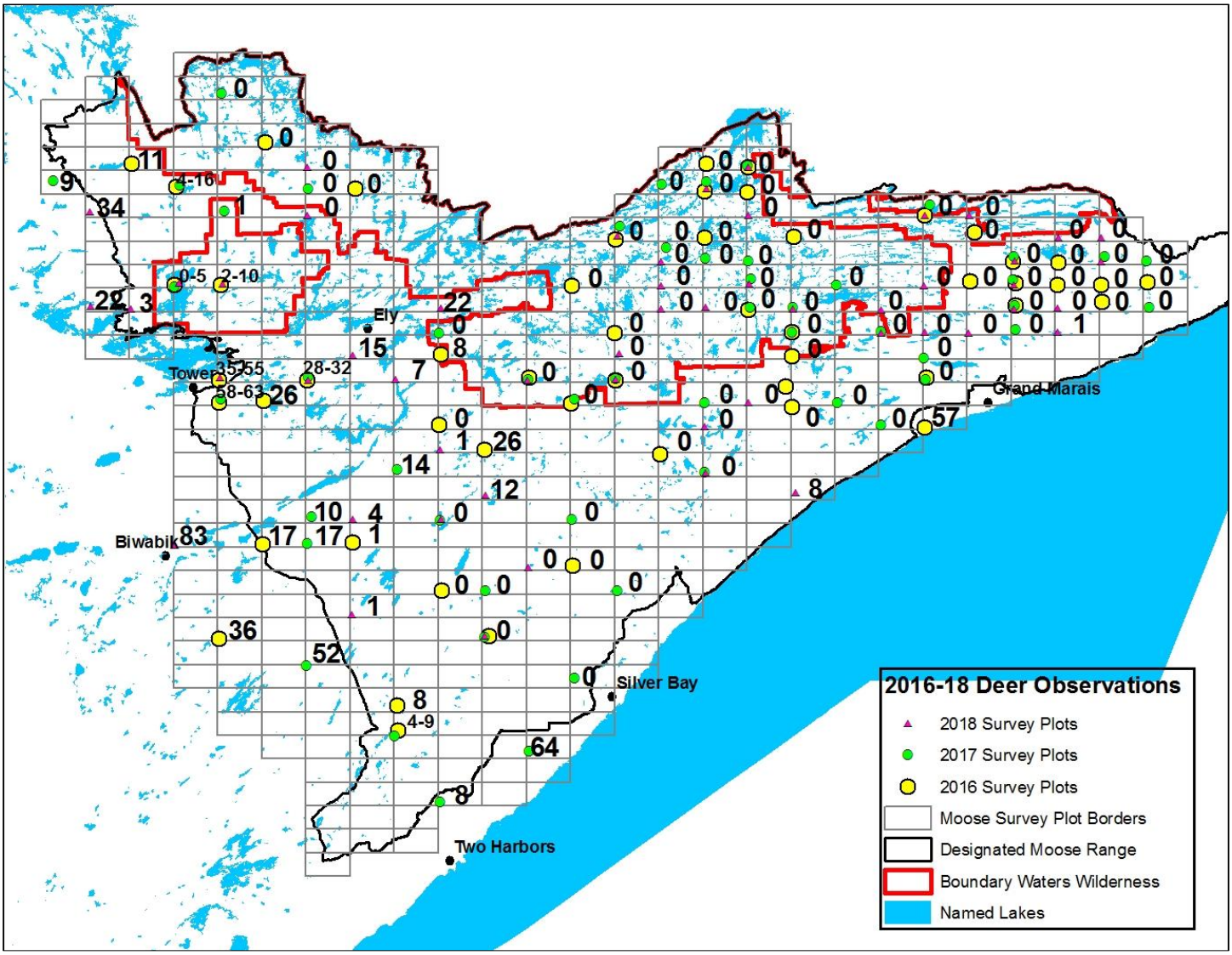

Figure 1. The number of deer observed on moose survey plots 2016-18.

On those plots that were occupied by deer in 2018, numbers averaged 17 deer per plot (range = 1–83). The number of deer per occupied plot since 2010 has averaged 19 per plot and the percentage of plots occupied by deer has averaged 39%. Numbers of deer and moose per occupied plot and the percentage of plots occupied by both species are shown in Figure 2. Changes in occupied plots or the geographic distribution of deer on the landscape are best suited for establishing long-term trends and even short-term trends should be viewed cautiously.

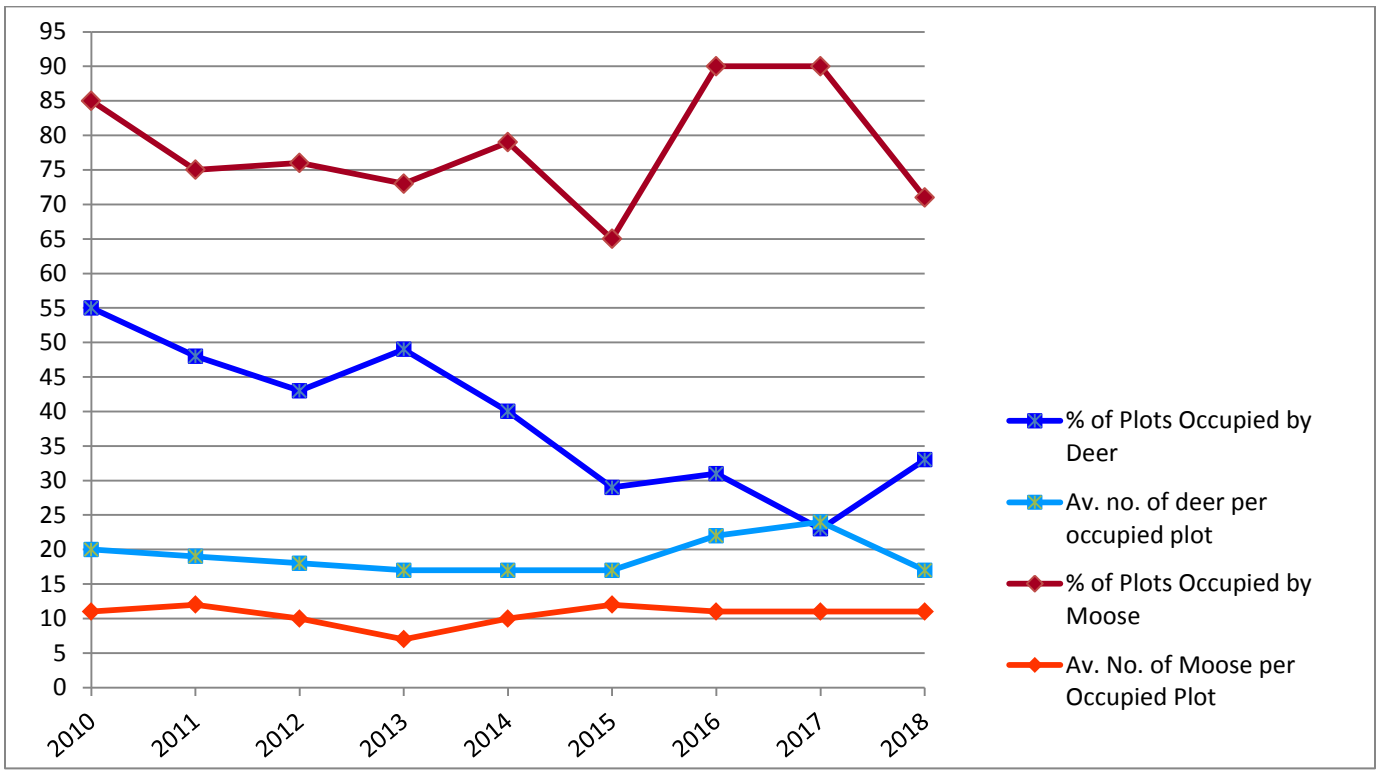

Figure 2. Percent of moose survey plots occupied by deer and occupied by moose and average deer and moose numbers per occupied plot, 2010-2018.

Wolf Observation Results

All of moose range in northeastern Minnesota is considered occupied wolf range (Erb and Sampson 2013). In 2018, wolves were observed on 6 different occasions. Two packs of 4 animals each were observed on Daniels Lake and Calamity Lake in the Boundary Waters Canoe Area. Pairs were observed near Shamrock Lake in Lake County and on Pine Mountain Lake in Cook County. A single black wolf was observed east of the Vermillion River near Finstad Lake and another single wolf near Tittle Lake in Cook County. Considering only observations of 2 or more wolves, the average pack size observed from 2010-2018 has been 4 wolves (n=19, range = 2-11). Pack observations represent minimum pack size as some animals may have been missed.

A total of 3 deer and 3 moose carcass attributed to wolf predation were observed in 2018. Carcass observations of deer or moose which appear to be wolf-kills are based on the judgment of the survey crew. However, these judgments are subjective. Research on moose in Minnesota indicates approximately 2/3rds of adult moose die from causes other than direct predation, so evidence of wolf feeding may merely represent scavenging. Wolf and wolf-kill observations during plot surveys are summarized in Table 1. The high number of carcasses observed during 2018 may have been influenced by the lack of significant new snow leading up to and during most of the survey period.

Survey Year	2010	2011	2012	2013	2014	2015	2016	2017	2018
Number of wolf sighting events	3	1	2	3	1	6	3	6	6
Total wolves seen	19	1	4	12	3	18	7	10	14
Range of group sizes observed	5-8	1	1-3	3-6	3	1-11	1-4	1-4	1-4
Number of deer carcasses	3	0	0	1	1	0	1	0	3
Number of moose carcasses	1	0	1	2	0	0	0	0	3

Table 1. Summary of wolf and wolf-kill observations observed on moose survey plots, 2010-2018.

Acknowledgments

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Previous reports of wolf and deer observations during the moose survey for 2010-2017 can be found at

http://www.fdlrez.com/RM/wildlifereports.htm