MOOSE DAY 2020 REPORT

Summary

On Saturday, February 29, 2020, 32 volunteer teams equaling 100 individuals sighted 87 moose (Table 1). Teams ranged north to Arizona Creek in Grand Teton National Park, east out the Gros Ventre, west to Alta, and south to the Teton County border. The number of moose counted each year during Nature Mapping Jackson Hole's Moose Day project is informative to Wyoming Game and Fish Department's annual moose population estimate for the Jackson Moose Herd.

This year, with temperatures in the mid-30s and mostly sunny, it was good weather for humans scouting for moose.

We had a whopping 172 moose in 2017, due to 57 out the Gros Ventre to the Darwin Ranch. This year the U.S. Forest Service team headed by Jason Wilmot snowmobiled to the Darwin Ranch and saw 39 moose.

In addition, we had a record number of volunteers: 100 up from 92 last year, which was then the all-time high. We had a several family teams and teams of new Nature Mappers including, eight volunteers in a new area around Alta, on the west side of the Tetons. They saw one moose.

Reports noted moose in great shape with glossy coats. Rarely did mappers observe injuries, and no rubbed fur (a sign of ticks) or nicked ears (a sign of carotid artery worms).

In general moose appeared at certain nodes – Buffalo Valley, out the Gros Ventre, a subdivision west of the airport, off the south dike in Wilson, and around Trail Creek/Old Pass Road region. They were more scattered elsewhere throughout the valley compared to previous years' counts.

In terms of age and sex, volunteers recorded Females as 37% of total, Males as 26% of total, 37% of total moose counted as an Unknown in terms of their gender (Table 2). The count includes 71 adult individual moose and 16 juveniles.

Table 1: Total moose observed during Moose Day from 2009-2020.

Year	Date	Total Moose Observed
2009	April 18	95
2010	February 27	86
2011	February 27	124
2012	February 25	94
2013	February 23	67
2014	March 1	74
2015	February 28	97
2016	February 27	99
2017	February 25	172
2018	February 24	77
2019	February 23	139
2020	**February 29**	**87**

Table 2: Moose observations in 2020 by sex and age

Sex/Age	Adult	Juvenile	TOTAL
Female	30	2	**32**
Male	21	2	**23**
Unknown	20	12	**32**
TOTAL	**71**	**16**	**87**

Over 12 years, the number of Moose Day volunteers has gradually risen each year, and 2020 marked an all-time high of 100 this year (Table 3). Most are long-time Nature Mappers and Jackson Hole residents, but several participants were newcomers to the community who helped survey their new neighborhoods.

Several agency biologists volunteered their time: Sarah Dewey of Grand Teton National Park, Jason Wilmot of the U.S. Forest Service, and Ben Wise of Wyoming Game and Fish Department. All staff and several board members of the Jackson Hole Wildlife Foundation also participated.

Table 3. Numbers of people, hours volunteered and search effort[1] on Moose Day from 2009-2020

Year	People	People Units [a]	Total Hours Volunteered [b]	Total Effort [c]
2009	57			
2010	47			
2011	46	31	137.5	88.8
2012	70	49	177.3	103.5
2013	80	40	291.45	132.45
2014	71	36	240.5	115.5
2015	71	39	214	108
2016	73	38	259	100.5
2017	84	33	294.50	246.5
2018	74	33	248.75	258.50
2019	94	36	365.49	139.13
2020	**100**	**32**	**353.25**	**335.75**

[1] Search effort was not recorded in 2009 or 2010. Search efforts for 2011 and 2012 were calculated based on the 2012 method. A more streamlined effort calculation was used in 2012 than in the 2011 report. This 2012 method more accurately represents the volunteers' effort covering the search areas rather than purely the hours volunteered. The 2012 method used "people units" rather than just the raw number of people.

[a] **People Units** represent the unit traveling together. For example, two people in one car represent one people unit and three people in one car also equate to one people unit.

[b] **Total Hours Volunteered** is the sum of each team's number of people multiplied by the number of hours spent searching.

[c] **Total Effort** represents the sum of each team's people units multiplied by the number of hours spent searching.

Most surveyors traveled in teams by car intermittently getting out, walking, and peering over snowbanks. They scouted along the main highways and throughout neighborhoods. Others skied and snowshoed public lands and extensive private tracts. One agency team snowmobiled far out into the Gros Ventre Range.

In 2020, 100 individuals (32 people teams) spent 353.25 total hours volunteering for a total effort of (160.75 hours by car, 95 hours by ski, 42 hours by snowshoe, 26 hours on snowmobile, and 12 hours walking on foot).

Weather:

Conditions on the morning of February 29, 2020 between 6:00 am – 12:00 pm were mostly cloudy with a wind blowing south to southwest averaging 11.5 mph (a temperature high of 40'F and a low temperature of 17'F). The Snake River Basin was at 108% of the 30-year average of snow water equivalent as of February 29, 2020 (NRCS Snotel precipitation update found at: http://www.wrds.uwyo.edu/wrds/nrcs/snowprec/historical/20200229.html (Table 4).

The Natural Resources Conservation Service (NRCS) installs, operates, and maintains an extensive, automated system to collect snowpack and related climatic data in the Western United States called SNOTEL (for SNOwpack TELemetry). Snow Water Equivalent (SWE) is a common snowpack measurement. It is the amount of water contained within the snowpack. It can be thought of as the depth of water that would theoretically result if you melted the entire snowpack instantaneously. In relation to our annual survey, higher snow water equivalents indicate a deeper, denser snowpack and lower ones indicate a shallower, less dense snowpack. In general, a deeper and denser snowpack causes moose to become more concentrated on valley bottoms and closer to roads, leading to higher observability on Moose Day.

Table 4. Snow water equivalent measurements and observer visibility scores from 2010-2020.

Year	Date of Average	Snow Water Equivalent	Observer Visibility
2010	n/a	55%	good
2011	3/16/2011	111%	excellent
2012	3/29/2012	88%	poor
2013	3/10/2013	89%	poor
2014	3/10/2014	142%	poor
2015	3/1/2015	99%	good
2016	3/1/2016	93%	good
2017	2/27/2017	155%	good
2018	2/24/2018	117%	good
2019	2/23/2019	101%	poor
2020	**2/29/2020**	108%	excellent

Other Notes:

- Prior to Moose Day we held a "Moose ID Clinic" on February 26, 2020 from 5:30 – 7:30pm at the Jackson Hole & Greater Yellowstone Visitor Center. We will continue to hold these trainings every year in advance of our annual count since it increases the participants ability to properly sex and age moose.

- On Moose Day there were many other critters to nature map: coyotes, fox, otter, Pacific marten, ermine, bison, and elk, along with various birds: Bald Eagles, Trumpeter Swans, Common Mergansers, Ring-Necked Ducks, and "first-of-the-year" Red-winged Blackbirds.

- The 13th annual Moose Day will take place on Saturday, March 6, 2021.

Acknowledgments:

We thank Wyoming Game and Fish Department, Grand Teton National Park, Bridger-Teton National Forest, and the National Elk Refuge for their contribution of staff time to the cooperative cause of Moose Day. And we thank all of you who snowshoed, skied, drove, and snowmobiled for hours. Finally, appreciation to the private landowners including the Resor Family, Jackson Hole Golf and Tennis Club, Teton Science Schools, among others for granting permission to survey their property.

Figure 1: 87 individual moose were observed during the 12th annual Moose Day 2020