Jackson Hole Wildlife Foundation's

Teton County Wildlife Vehicle Collision Database Summary Report 2018-2019

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Teton County Wildlife-Vehicle Collision Database Summary Report 2018-2019

2018-2019 Data Update

Wildlife-vehicle collisions (WVC) continued on a steady upward trend in 2018-2019 (Figure 1). There was a total of 267 WVC from May 1, 2018 – April 30, 2019 (Table 1). WVC are historically most prevalent during the winter months (December – February; Figure 3), but moose WVC were evenly distributed throughout 2018-2019 (Figure 5), and all species WVC in 2018-2019 were fairly constant throughout the year (Figure 6). Twenty (20) or more WVC occurred on Teton County highways during all months except May (14), February (15) and April (15).

In order to delineate an annual duration that captures the entirety of a winter season, an annual unit is defined as May 1 – April 30 (e.g. May 1, 2018 – April 30, 2019 = 2018-2019). This provides a more accurate representation of the seasonal trends associated with WVCs in Teton County, WY.

Data for the 2018-2019 update was acquired from the following data sources: Wyoming Department of Transportation - Carcass (n=75), Wyoming Department of Transportation – Crash (n=83), Wyoming Game and Fish Wildlife Observation System (n=44) and Nature Mapping Jackson Hole (n=65) (Table 2). In total, Jackson Hole Wildlife Foundation's (JHWF) WVC database contains 46 total species with mule deer, elk and moose being the most prominent species recorded (Table 4).

Summary

The total number of WVCs increased in 2018-2019 compared to the previous year, bouncing back toward numbers that are consistent with recent trends. Moose-vehicle collisions increased significantly in 2018-2019, as 28 moose WVC were recorded across the highway network (Table 4). That total represents the highest number of moose WVC since 2010-2011. Map 1 illustrates where those moose collisions occurred (most locations are exact while all are pegged to within ¼ mile). Seven moose (7) WVC occurred on WY 22 between the town of Wilson and the Town of Jackson. An additional seven (7) moose WVC occurred on WY 390, which was the highest total recorded there since 2010-2011. Four (4) moose were hit on North Highway 89 between the Town of Jackson and the Grand Teton National Park southern boundary, and another four (4) moose were hit on WY 22 between Coal Creek/Mail Cabin and the Wyoming/Idaho border on the west side of Teton Pass.

Methods

The WVC database is updated annually using an automated process. This process stores all wildlife-vehicle collisions in a SQL database where it can be accessed in ArcMap, via an SDE connection, and in Program R, via a remote database connection. The SQL database allows all raw data to be stored in one place. Then, with saved queries, the data is formatted and combined into one large database. This database is then run through an iterative loop in R that eliminates duplicates based on distance (<0.25mi) from other observations entered on the same day of the same species. Additional observations are easily added to the SQL database and queried to eliminate duplicates.

WYDOT maintains spatial datasets for all major travel routes in Wyoming. These spatial datasets use linear-referenced system (LRS) geometry that contain route and measure attributes. Before raw WVC data is queried in a SQL database, a field locating each observation to the nearest LRS WYDOT route is added and populated with a value using the "Locate Feature Along Route" tool in ArcMap. This value is used to when identifying duplicates.

When duplicates are identified in the R script, optimal observations are selected based on the data source. The following table indicates the ranking of the data sources included in the JHWF WVC database (observations with a lower source rank are selected over a higher source rank). If duplicate observations are found in multiple data sources, the record from the source with the highest rank (lowest number) will be retained. The rankings are based on relative spatial accuracy and species sex/age identification.

DATASOURCE	Source Rank
Jackson Hole Wildlife Foundation Nature Mapping Observations (2010-2018)	1
JHWF Roadkill Hotline (2012)	2
Wyoming Game and Fish Department Wildlife Observation System (2014-2018)	2
Wyoming Department of Transportation Crash Data (1994-2018)	3
Wyoming Department of Transportation Carcass Pick-Up Data (1999-2018)	4
Jackson Hole Wildlife Foundation Roadkill Hotline, Other Data Sources (1990-2009)	5
Wyoming Game and Fish Department Wildlife Observation System (1976-2013)	6

Important Caveats of the Database

- No records included within Grand Teton National Park at the park's request. The park maintains its own database.
- Mix of data collected in different ways with different accuracies; may want to consider dissolving data to the nearest mile marker, depending on your goal. Some observers are trained biologists while others are not.
- Large effort to remove potential duplicates among different sources.
- Date/time usually does not record actual time of death, but rather when the dead animal was observed (often a day or two later).
- Heavily biased by ungulates, especially mule deer. These are the animals that WYDOT picks up and that cause crashes large enough to call Police. Also easier to observe by citizen scientists.

- This database is likely a significant underestimate of WVC occurrences in Teton County, even for ungulates. Many WVC events go unreported or animals are hit and die out of sight from roads.
- Probably biased by larger roads (more observers).
- Biased by year; WYDOT has been collecting data since 1990, but other groups started later. WYDOT has also improved their documentation in recent years.
- WVC numbers are influenced by winter conditions, with high numbers occurring during more severe winters when ungulates are concentrated close to roads.

Suggested Citation:

Jackson Hole Wildlife Foundation, Jackson, WY, Wildlife-Vehicle Collision Database, 2/28/2019

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Table 1. Wildlife-Vehicle Collisions by year (1990-2019).

YEAR	Total
1990	29
1990-1991	67
1991-1992	107
1992-1993	77
1993-1994	61
1994-1995	123
1995-1996	64
1996-1997	237
1997-1998	101
1998-1999	124
1999-2000	155
2000-2001	170
2001-2002	166
2002-2003	129
2003-2004	251
2004-2005	146
2005-2006	264
2006-2007	197
2007-2008	220
2008-2009	179
2009-2010	136
2010-2011	371
2011-2012	206
2012-2013	171
2013-2014	213
2014-2015	277
2015-2016	284
2016-2017	358
2017-2018	181
2018-2019	267
Grand Total	**5331**

Table 2. Data sources included in the database by year (1990-2018).

Data Source	Count
tblJHWF_1990_2002	1032
tblJHWF_2003_2009	440
tblJHWF_NATURE_MAPPING_2010_2012	150
tblJHWF_NATURE_MAPPING_2013	41
tblJHWF_NATURE_MAPPING_2014	44
tblJHWF_NATURE_MAPPING_2015	39
tblJHWF_NATURE_MAPPING_2016_20170430	99
tblJHWF_NATURE_MAPPING_2017_2018	31
tblJHWF_ROADKILLHOTLINE_2012	22
tblWGFD_WOS_1976_2012	205
tblWGFD_WOS_2013	5
tblWGFD_WOS_2014	17
tblWGFD_WOS_2015	33
tblWGFD_WOS_2016_20170430	71
tblWGFD_WOS_2017_2018	29
tblWYDOT_TETON_CARCASS_1999_2005	211
tblWYDOT_TETON_CARCASS_2006_2012	660
tblWYDOT_TETON_CARCASS_2013	93
tblWYDOT_TETON_CARCASS_2014	110
tblWYDOT_TETON_CARCASS_2015	118
TBLWYDOT_TETON_CARCASS_2016_20170430	196
TBLWYDOT_TETON_CARCASS_2017_2018	49
tblWYDOT_TETON_CRASH_1994_2012	1004
tblWYDOT_TETON_CRASH_2013	55
tblWYDOT_TETON_CRASH_2014	93
tblWYDOT_TETON_CRASH_2015	70
TBLWYDOT_TETON_CRASH_2016_20170430	108
TBLWYDOT_TETON_CRASH_2017-2018	72
tblJHWF_NATURE_MAPPING_2018_2019	65
tblWGFD_WOS_2018_2019	44
TBLWYDOT_TETON_CARCASS_2018_2019	75
TBLWYDOT_TETON_CRASH_2018_2019	83
Grand Total	**5331**

Table 3. Wildlife-Vehicle Collisions for all years by road name (2010-2019).

Road Name	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019	Grand Total
17SA									1	1
BATCH PLANT RD		2		1					1	4
BOYLES HILL RD	1								1	2
BUFFALO VALLEY RD						1	2			3
CACHE ST	1									1
DELONEY AVE	1									1
E BROADWAY AVE				1						1
FALL CREEK RD	3	1	2	2	2	1	5	2	3	21
FISH CREEK RD	12				1	6			1	20
GAME CREEK RD						1	1			2
HENRY'S RD		2		1		1				4
HIDDEN RANCH LN	1									1
HIGH SCHOOL RD							1			1
JACKSON AVE					1					1
KELLY AVE					1					1
MALLARD RD	1									1
NATIONAL ELK REFUGE	1							1	3	5
PARK LOOP RD	6						2	1		9
PARK RANCH RD SO FORK				1						1
REDMOND ST					1					1
SKI HILL RD			1		2	1			3	7
SNOW KING AVE		1					1			2
SOUTH PARK LOOP			1		1				1	3
SPRING GULCH RD	1	1	1	3	6	2	2		2	18
UPPER CACHE CREEK DR					1					1
US 189		1								1
US 189/US 191 (Hoback JCT to SE County Line in Hoback Canyon)	28	18	14	16	18	18	27	27	10	176

US 189/US 191/US 26/US 89 (Hoback Jct to Jackson Town Square)	139	58	38	57	94	94	149	40	106	775
US 191/US 26/US 89 (Jackson Town Square to GTNP S Boundary)	54	38	31	27	37	29	30	21	26	293
US 26/US 287 (GTNP E Boundary Buffalo Valley to County Line)	10	5	7	1	15	17	10	8	5	78
US 26/US 89 (Hoback Jct to SW County Line in Snake River Canyon)	40	22	21	34	34	38	42	27	27	285
VIRGINIAN LN		1								1
WY 22	54	36	41	48	51	65	70	37	57	459
WY 390	18	20	14	21	12	10	16	17	20	148
Grand Total	**371**	**206**	**171**	**213**	**277**	**284**	**358**	**181**	**267**	**2328**

Table 4. Species count in the Wildlife-Vehicle Collision database.

Species	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019	Grand Total
American Badger									1	1
American Marten	1	1							1	3
American Mink		1								1
American Robin	1					1				2
Barrow's Goldeneye	1									1
Bighorn Sheep							4			4
Bison	1									1
Black Bear			1	1		1	2		1	6
Black Rosy-Finch	1									1
Black-billed Magpie			1	1					1	3
Boreal Toad							1			1
Brewer's Blackbird	1									1
Common Gartersnake	2									2
Common Raven		1			1					2

Coyote		1	1	1		3	2		2	10
Deer Mouse	1									1
Elk	59	37	36	46	29	25	46	49	34	361
Gray Wolf			1		1					2
Great Horned Owl	1	1		1		4				7
Grizzly Bear						1	1			2
Least Chipmunk						2				2
Long-tailed Weasel							1		1	2
Moose	33	14	18	15	13	12	18	20	28	171
Mountain Bluebird					1				1	2
Mountain Lion		1						1		2
Mule Deer	247	137	99	134	217	223	265	105	179	1606
North American Badger									1	1
North American Porcupine	1	4	5	4	2	4	4		3	27
Northern Goshawk				1						1
Northern Raccoon	4	5	3	4	6	4	1	1	5	33
Pronghorn	1			1				1		3
Red Fox	2	1	1	1	1		2	2	2	12
Red Squirrel	2					1				3
Rough-legged Hawk				1						1
Ruffed Grouse					1					1
Short-tailed Weasel (Ermine)	3		1							4
Snowshoe Hare			1							1
Striped Skunk			1		4		6		2	13
Tiger Salamander									1	1
Wandering Gartersnake						1		1	2	4
Weasel						1				1
Western Tanager	1									1
White-tailed Deer	5	2	2	2		1	4	1	2	19
Wilson’s Warbler	1									1
Yellow Warbler	2									2
Yellow-bellied Marmot					1		1			2
Grand Total	**371**	**206**	**171**	**213**	**277**	**284**	**358**	**181**	**267**	**2328**

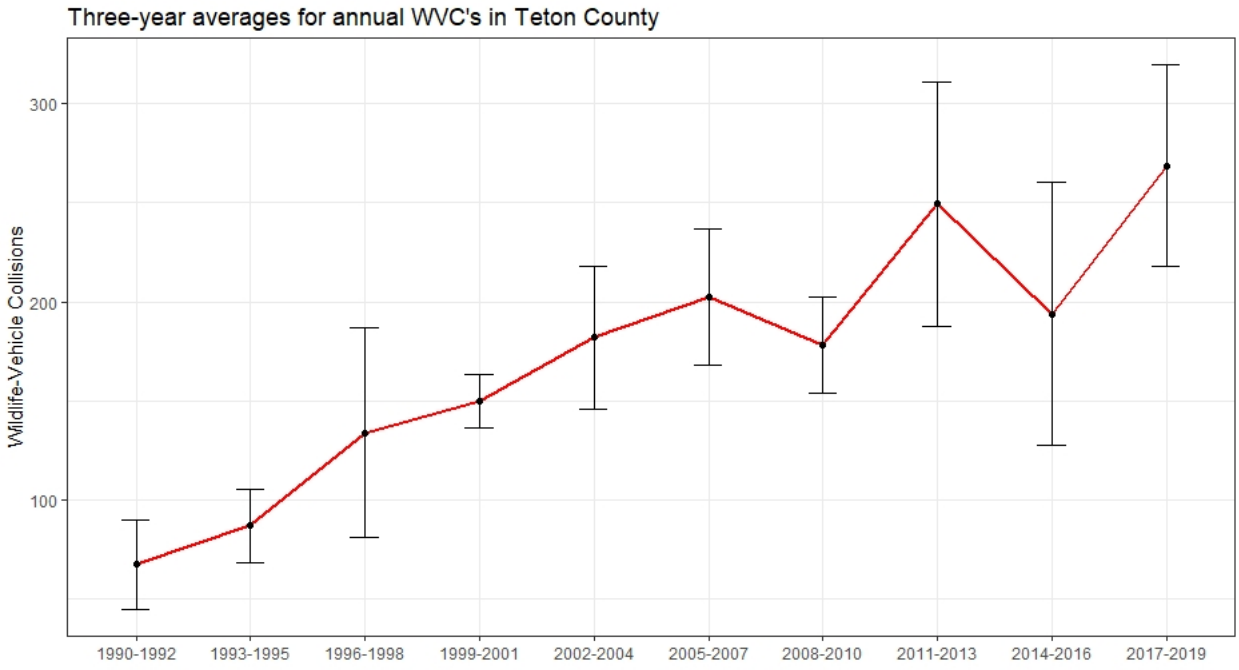


Figure 1. Three-year averages and standard error of wildlife-vehicle collisions in Teton County, WY (1990-2019).

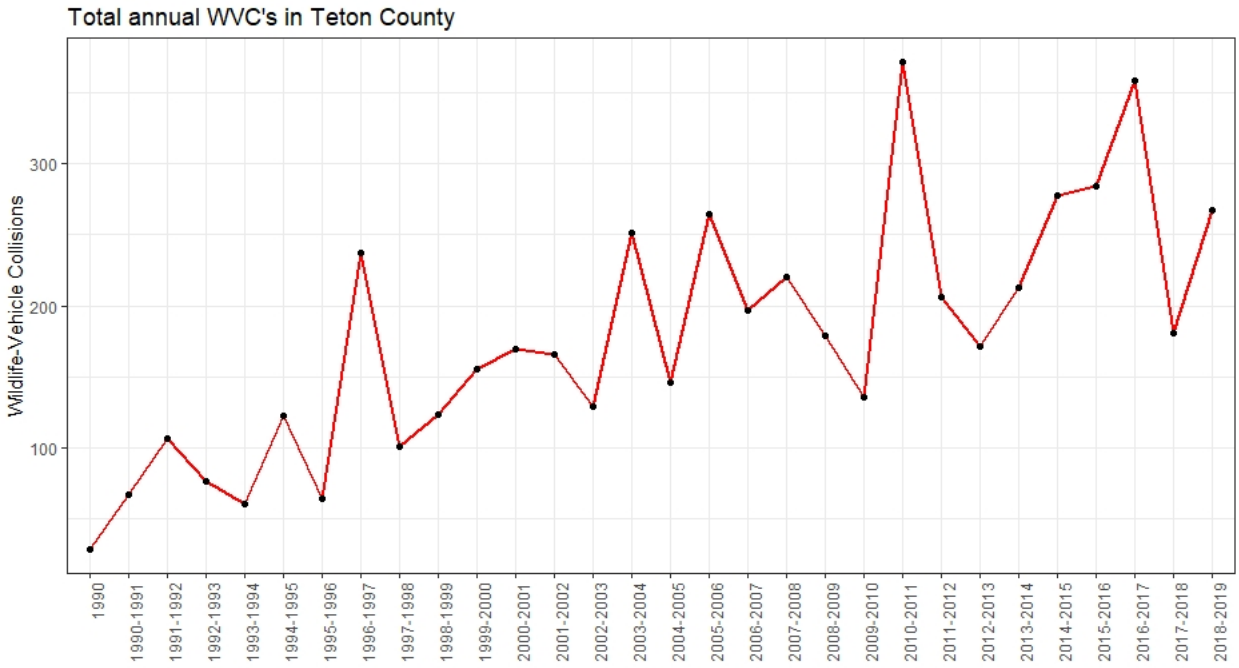


Figure 2. Annual wildlife-vehicle collisions by year in Teton County, WY (1990-2019) (annual equals May 1-April 30).

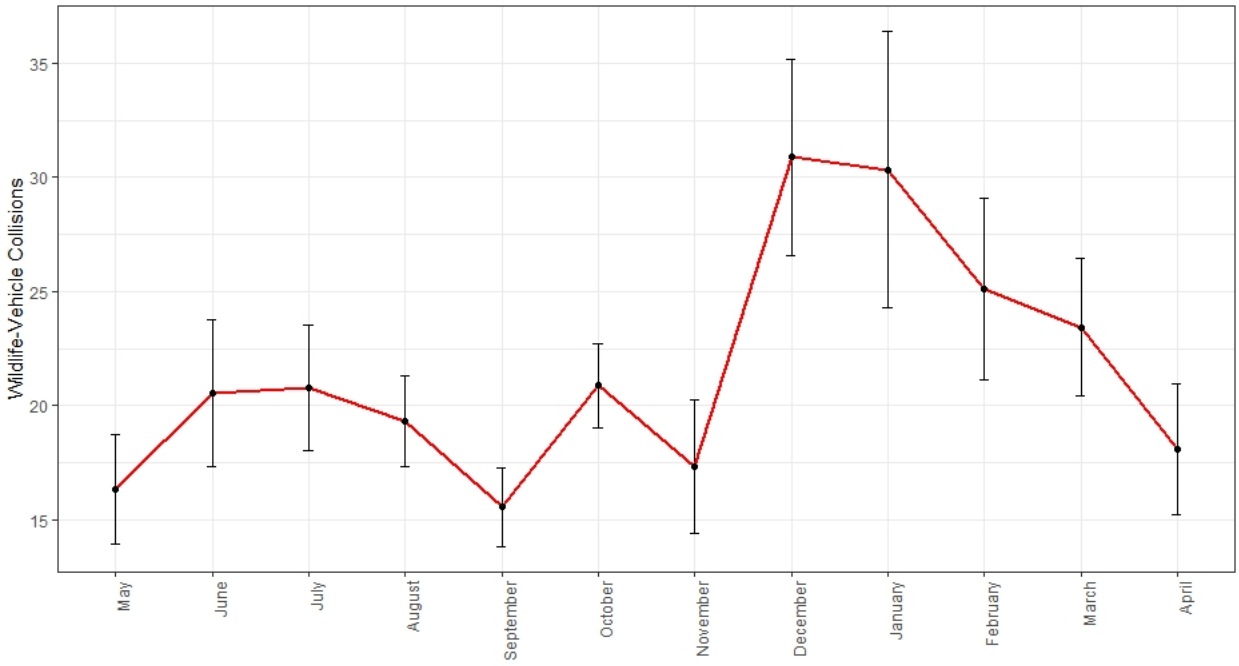


Figure 3. Mean and standard error of wildlife-vehicle collisions by month (2010-2019).

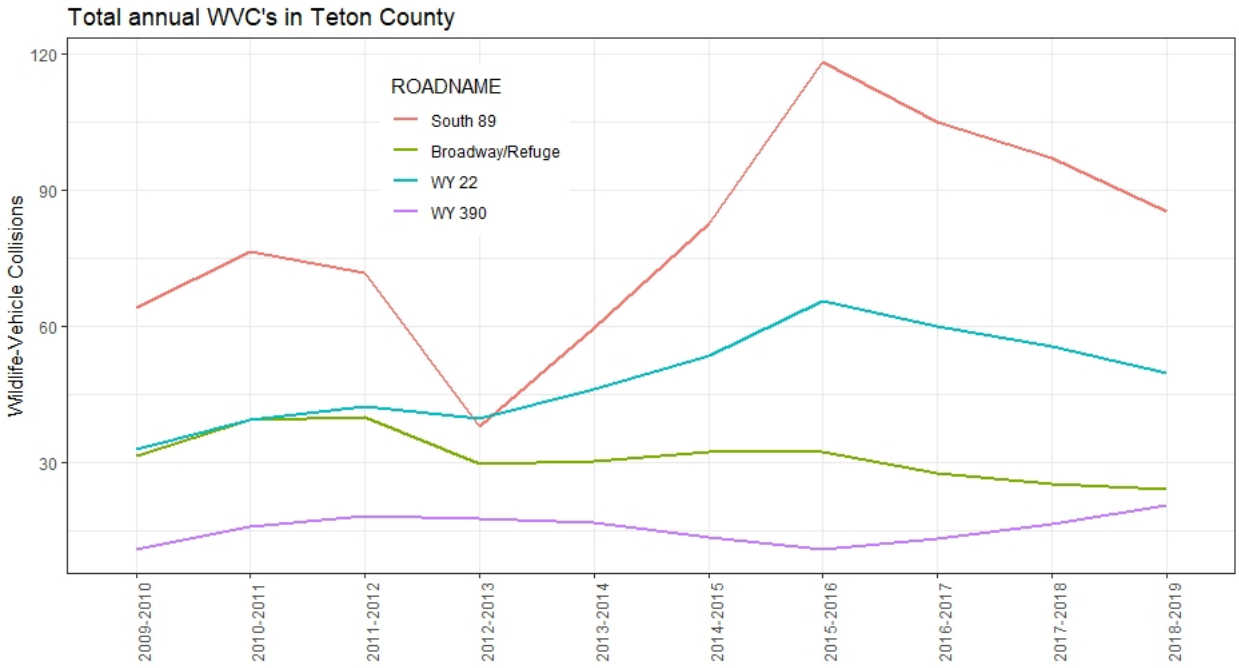


Figure 4. Annual wildlife vehicle collisions on South 89, Broadway/Refuge, WY 22 and WY 390 (2009-2019) (year equals May 1-April 30).

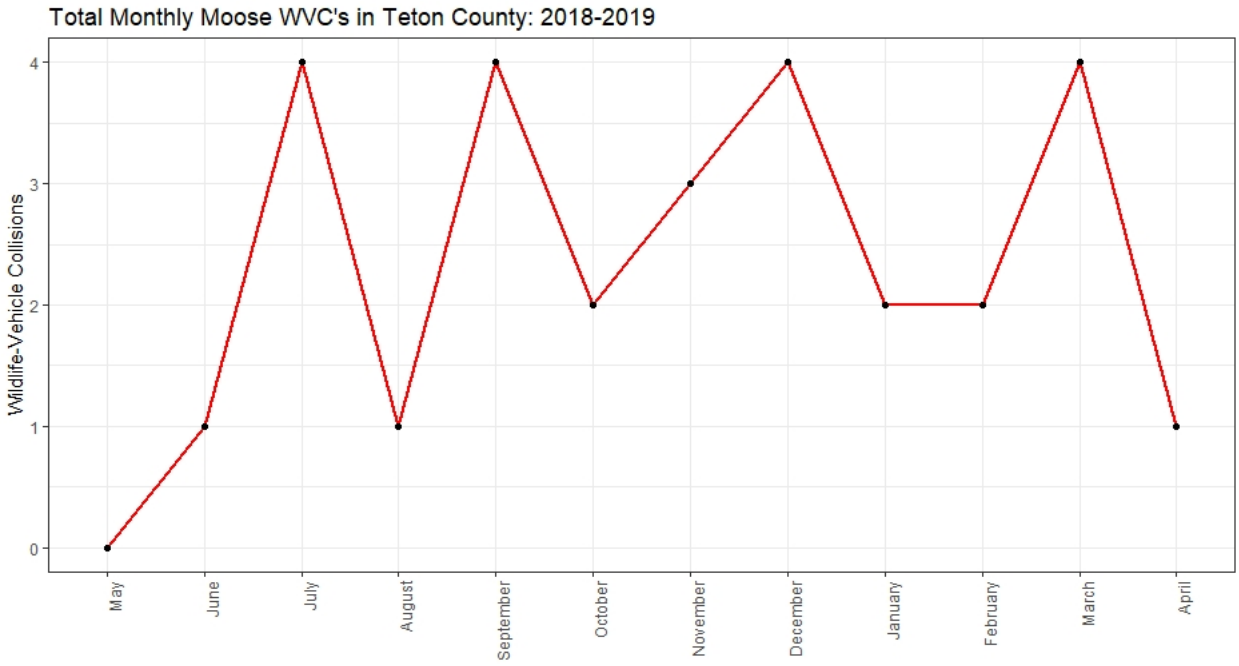
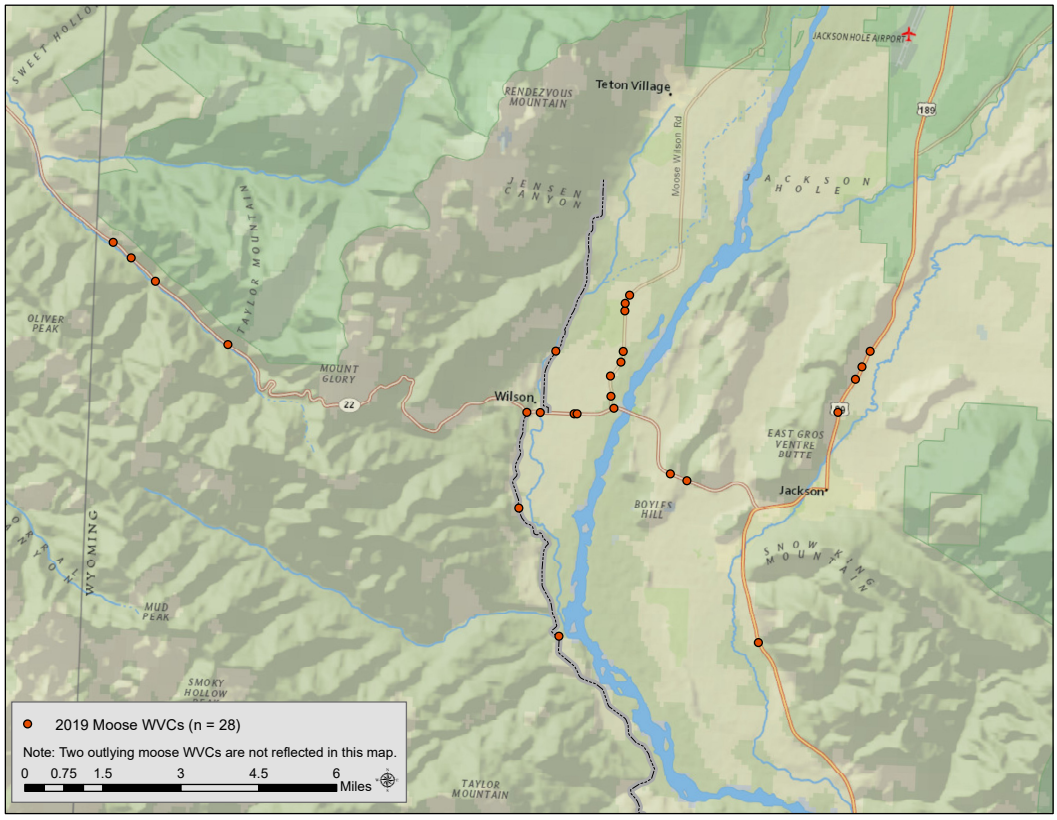


Figure 5. Moose WVC by month (2018-2019).



Map 1. Moose WVC by location (2018-2019).

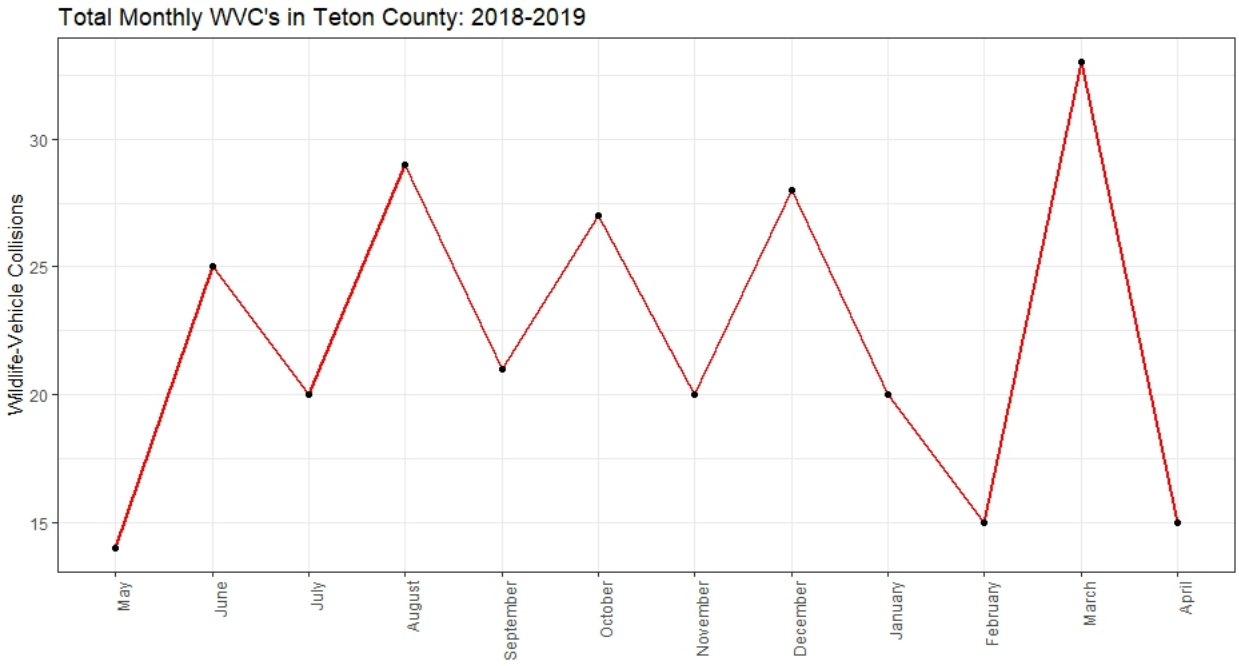


Figure 6. All species WVC by month (2018-2019).

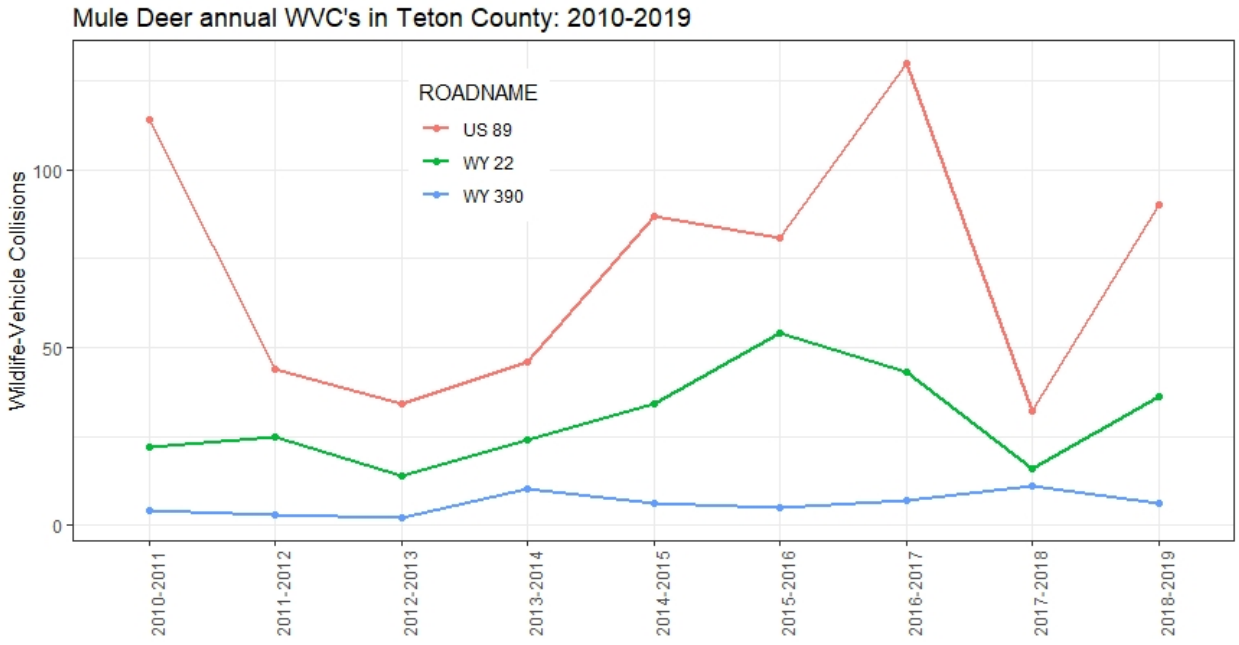


Figure 7. Annual mule deer-vehicle collisions on US 89, WY 22 and WY 390 (2010-2019) (annual equals May 1-April 30).

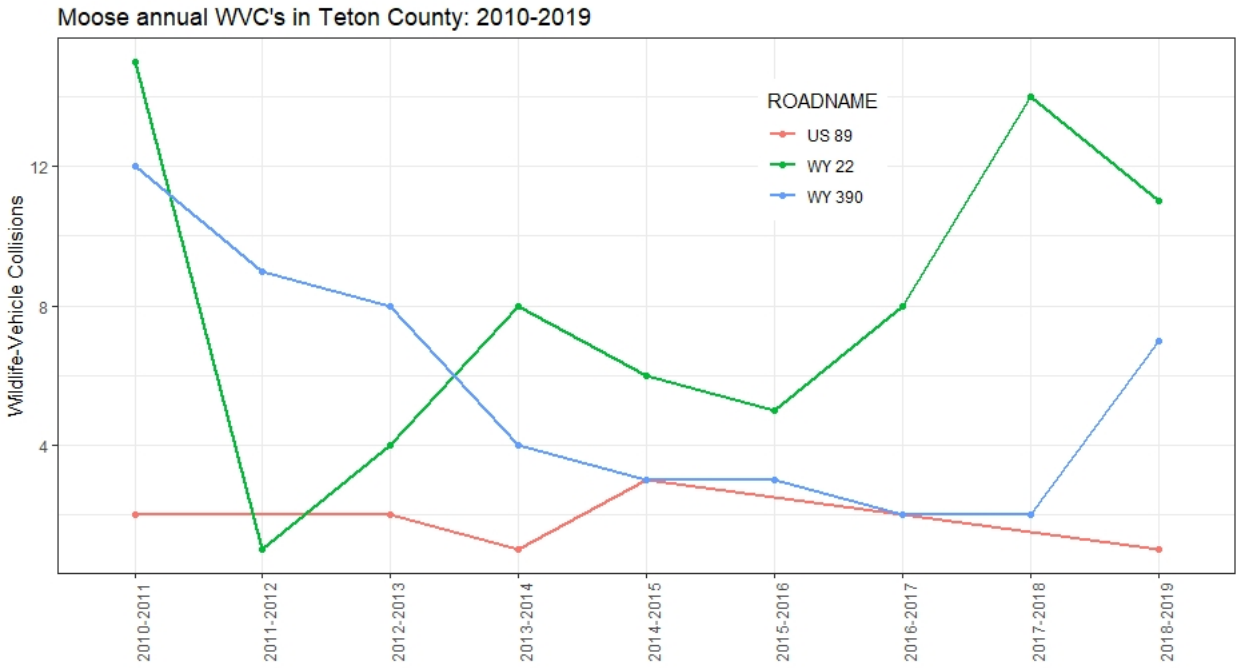


Figure 8. Annual moose-vehicle collisions on US 89, WY 22 and WY 390 (2010-2019) (annual equals May 1-April 30).

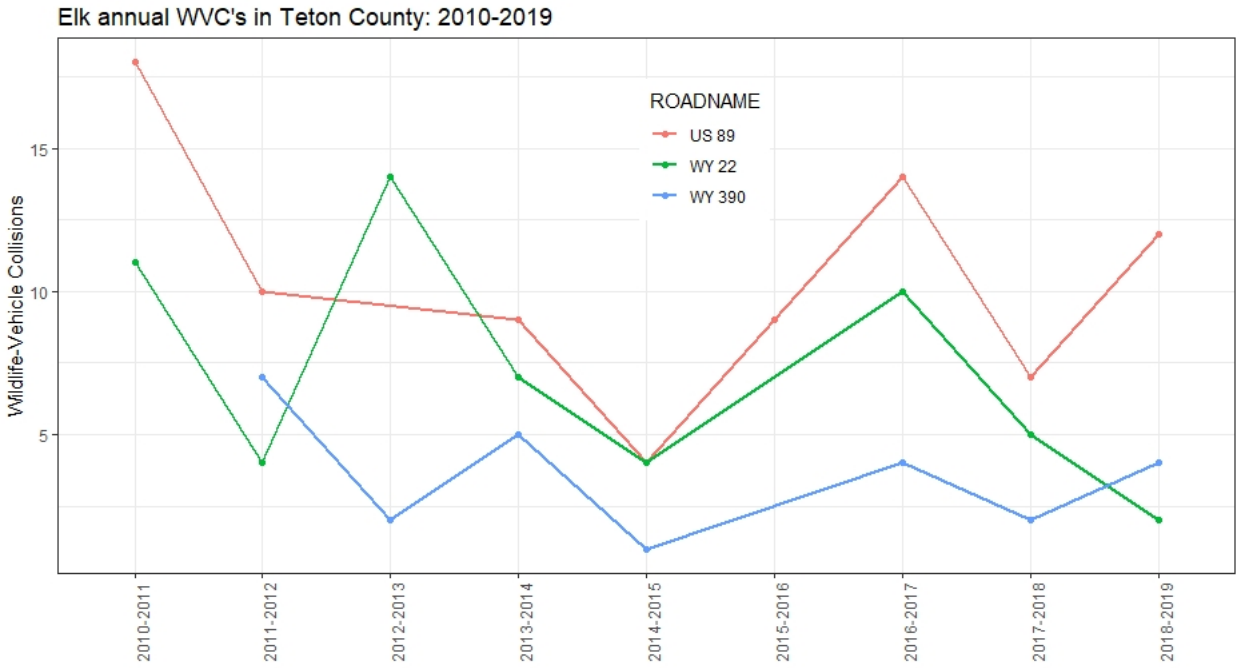


Figure 9. Annual elk-vehicle collisions on US 89, WY 22 and WY 390 (2010-2019) (annual equals May 1-April 30).

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