Environmental Comments

July 30, 2016

Via email:

Idaho Transportation Department
Adam Rush
Office of Communications
P.O. Box 7129 Boise, ID 83707-1129

Re: Comments on Idaho Transportation Department 2017-2021 Idaho Transportation Investment Program

Dear Idaho Transportation Department:

We are pleased to submit the following comments on the Draft Idaho Transportation Department (ITD) Idaho Transportation Investment Program (ITIP), which addresses Idaho's transportation needs for fiscal years 2017 through 2021[1].

We are an informal coalition of organizations interested in improving passage for wildlife and aquatic species in Idaho. Our organizations cooperatively advocate for innovative solutions to improve and/or maintain habitat connectivity across roads and provide safe passage for people, fish, and wildlife through research, mapping, monitoring, policy work, and on-the-ground projects.

These comments identify specific projects described in the ITIP where wildlife issues are a priority for our coalition. We recommend that ITD take the necessary steps to ensure wildlife issues are considered early in the transportation planning and budgeting processes for these projects. We want to ensure early on that any resulting impacts are mitigated, thereby making Idaho's roads safer for the motoring public as well as wildlife.

I. Safe Wildlife Passage in Idaho

Wildlife-vehicle collisions (WVCs) cause human fatalities, injuries, property damage, and pose safety and maintenance challenges for departments of transportation. A 2008 study, requested by Congress pursuant to the SAFETEA-LU Act, estimated that one to two million collisions between cars and large animals occur every year in the United States (Huijser *et al*. 2008). Each year, wildlife-vehicle collisions cause hundreds of human deaths, over 25,000 injuries, and cost Americans over $8 billion, not to mention the harm to native wildlife, including game species. Between vehicle repair costs, medical bills, towing fees, accident attendance costs, hunting value of road-killed game species, and more, the total costs for the average collision with a large ungulate in the United States and Canada have

[1] The ITIP is available at http://itd.idaho.gov/itip/itip2017/FY17_Draft_itip.pdf

been estimated at over $6,000 per deer or bighorn sheep, $17,000 per elk, and $30,000 per moose (in 2007 US$). In addition to endangering Idahoans, wildlife-vehicle collisions also constitute a major threat to survival for some of the 10+ federally listed threatened or endangered animal species in Idaho, including lynx and grizzly bears.[2]

WVCs continue to be a significant concern for transportation agencies. From the National Highway Traffic Safety Administration (NHTSA)'s 2012 annual report of traffic safety data (NHTSA 2014), Table 29 describes various collisions (*i.e.*, with other vehicles, poles, pedestrians) and non-collisions (*i.e.*, roll overs) that are described as the "first harmful event." The table describes over 16 different types of harmful events and includes the category of crashes with animals – approximately 5% in 2012. Of the sixteen categories of causes of potential first event crashes, animals ranked as the 5th most numerous type, after crashes with other vehicles (rear-end, side swipe, angle) and crashes with parked vehicles. Crashes such as head on collisions with other vehicles (2.2%), rollovers (2%), or due to poles (3.2%), culverts/ditches (3.2%) or embankments (0.8%) were all lower than animal-vehicle collisions. **While overall crashes have decreased from 6.4 million in 2000 to 5.6 million in 2012, animal-vehicle collisions increased over that same period, from 258,000 to 271,000.**

Of the total crashes resulting in property damage, 6.5% involve animals. The only other categories to exceed 6.5% in the property-damage-only crashes are collisions with other vehicles (rear-end, side swipe, and angle). Moreover, property-damage only crashes are notoriously under-reported; in fact it has been estimated that well over half (60%) of property-damage-only crashes and almost a quarter (24%) of all injury crashes are not reported to the police (Blincoe *et al*. 2014).

There are, however, proven solutions to this costly issue: wildlife mitigation measures, including wildlife underpasses, overpasses, and systems that automatically detect wildlife nearby, have been shown to reduce wildlife-vehicle collisions *by 80 to 90%* (Woods 1990, Clevenger *et al*. 2001, Dodd *et al*. 2007) – a reduction from 100 collisions to 20 or fewer. Despite their upfront costs, these measures have been shown to pay for themselves over time through collision cost savings when installed at collision hotspots (Huijser *et al*. 2009). Time and again on these types of projects, the American public supports these mitigations, as they support efforts to both improve human safety and reduce wildlife mortality on roadways.

Including wildlife-related mitigation in its transportation planning and construction projects will also help ITD with its *Towards Zero Deaths - Every Life Counts* initiative. Given that wildlife-vehicle collisions result in an average of 13 human fatalities and serious injuries per year in the state (Cramer et al. 2014), addressing these collisions is a necessity if ITD is to reach its long-term goal of zero deaths.

[2] Threatened, Endangered, and Candidate Species in Idaho (January 2015), *available at*: http://www.fws.gov/idaho/species/IdahoSpecies123014.pdf

Where mitigation is determined to makes sense, taking steps to prevent collisions and provide safe passage is predicted to save human lives, wildlife, and money – *creating a win-win-win situation.*

II. ITD's role

We commend ITD for taking steps to include mitigation for wildlife in several existing and planned projects throughout the state, including the SH-21 wildlife bridge, the Portneuf River Bridge on US 30, and projects 19287, ORN 20021, and 13996 in the draft ITIP. We were pleased to see a list of existing wildlife crossing structures and other treatments in Idaho included in the Cramer et al. 2014 study, attached here as Appendix A.

We also applaud ITD's efforts to determine the best available science around wildlife-vehicle collisions on Idaho roads by commissioning studies on major highway corridors throughout the state, including the 2014 study by Dr. Patricia C. Cramer "*Methodology for Prioritizing Appropriate Mitigation Actions to Reduce Wildlife-Vehicle Collisions on Idaho Highways*" (Cramer et al. 2014) and the forthcoming Cramer report "*Idaho Wildlife Connectivity and Safety Solutions on US 20 and SH 87*".

We revisit in these comments some of the more compelling results and conclusions within ITD's Research Report 229, *Methodology for Prioritizing Appropriate Mitigation Actions to Reduce Wildlife-Vehicle Collisions on Idaho Highways* (Cramer et al. 2014). The abstract below explains what the report provides:

> Vehicle collisions with large wild animals are a safety issue for motorists and an ecological concern for wildlife populations. The objective of this research was to advance the efficacy of Idaho Transportation Department's (ITD's) project planning to reduce vehicle collisions with wildlife and to provide wildlife connectivity options across and under roads. A Wildlife-Vehicle Collision (WVC) Prioritization Process was developed through lessons learned from other U.S. States and Ontario Canada's efforts, and GIS modeling of data and maps already available in Idaho. The GIS maps were based on WVC crash and carcass data, Wildlife Highway Linkages maps, and species' habitat maps. The resulting maps of WVC priority areas statewide and within ITD districts were the first of a 13 step process developed for the project. Users of this process further identify priority areas in ITD Districts based on other data such as: Idaho Fish and Game (IDFG) knowledge of wildlife populations, transportation plans, land ownership, field surveys of existing structures, options such as fencing, bridges, and culvert, and their cost-effectiveness. This WVC Prioritization Process was a step along a series of actions which ITD has undertaken and will continue to take to reduce risks associated with WVC and provide wildlife connectivity along Idaho roads.

As Brent Jennings, Highway Safety Manager for ITD wrote in the forward for the report,

> This project was focused on harnessing, organizing and combining these data on a corridor basis to determine where the impacts from WVC are located. By merging

> highway safety data from ITD with wildlife linkage data and habitat data from IDFG, the project team has attempted to paint a balanced picture of the true WVC problem. From an ecological perspective, this project will help prioritize the needs of wildlife and from a highway safety planning standpoint, it will aid in programming for the different treatment options to help prevent WVC….
>
> There is still a lot of work to be done. ITD and IDFG regions will have to take the methodology that Dr. Cramer and her team have prepared and use it to determine local priorities based on local, specific constraints. In addition, ITD now has the education and data needed to work to include WVC metrics in planning and prioritization of WVC projects for the Highway Safety Improvement Program. The point is that this is the beginning and what we have learned from this research has helped to move us along this pathway and towards a safer highway system. (*Id*.)

We hope and expect that ITD is using this information in ITIP project planning and is taking steps to train its employees to implement this plan. We are happy to assist in any way possible. We would greatly appreciate receiving an update on which steps ITD is currently undertaking and plans to undertake in the near future, in hopes that we can identify opportunities where we might be able to aid in the process.

III. Proposed ITD Highway Projects that Raise Wildlife Concerns

The table below sets forth a list of specific projects for each highway district that we believe offers significant opportunities to proactively incorporate measures to mitigate these road segments' disruptive effects on wildlife and ecological connectivity. We identified these projects using a variety of criteria, including (1) type, scope, and location of project; (2) opportunity to incorporate wildlife mitigation; and (3) proximity to important wildlife habitat, with a particular focus on wildlife corridors where safe passage across roads is particularly crucial. In assessing these criteria, we relied upon a number of data sources, including the ITIP and other project-specific materials; selected connectivity models and data layers from the *GNLCC Connectivity Atlas*, and additional data shared by the Transborder Grizzly Bear Project and Wildlife Conservation Society (Maps A-I, Appendix D). The project sites identified in the table have been overlaid on data sources representing wildlife value in the accompanying maps.

Please note that many of the data sources relied upon to identify project sites with potential for wildlife mitigation did not extend across the entire state or across a given species' entire range. The projects and associated wildlife values identified in the Table below therefore do not necessarily represent a comprehensive list, and we respectfully encourage assessment of all available wildlife data in the course of all projects that offer potential opportunities to improve safe passage for wildlife.

The following comments focus on subset of projects that merit additional examination because they are to occur in areas of known ecological importance, as identified by ITD commissioned studies or Idaho Fish & Game's draft State Wildlife Action Plan.

Project 14054
Several of our organizations were invited to a meeting with ITD's District 6 to review a draft of Dr. Patricia C. Cramer's forthcoming report, "Idaho Wildlife Connectivity and Safety Solutions on US 20 and SH 87," which identifies the stretch of US-20 from mileposts 402 to 406 as one of the largest hotspots on US-20 with regards to wildlife-vehicle collisions per mile per year.

This four-mile stretch of US-20 is an area of known ecological importance for grizzlies and wolverines (Maps F, K). Due to the vulnerability of these species, collisions with wolverines and grizzly bears can have profound impacts to the species at the population level. With close proximity to Yellowstone National Park, this stretch of US-20 is also an important linkage area for migrating elk (Map B) and moose populations, as well as mule deer, pronghorn, and black bears.

Furthermore, Idaho Fish & Game identifies ungulate migration as a specific target in this region in the Yellowstone Highlands section of the agency's Draft State Wildlife Action Plan (SWAP) 2015 Revision. The plan states, "US Hwy 20 presents a threat to connectivity and potential expansions to the route would decrease permeability."[3] The SWAP further details specific objectives, strategies, and action steps to respond to this threat including working with ITD, Fremont County, and the Henry's Fork Legacy Project to incorporate best practices for wildlife crossing into highway planning and construction, and developing strategies and actions that enable improved function of ungulate migrations across US Highways 20 and 87 in Island Park.

We ask that ITD act on the recommendations made by IDFG's SWAP and in the forthcoming Cramer report, and include wildlife mitigation in the planning and engineering process for this project. We also ask that ITD amend the ITIP for Project 14054 to include project funds to cover the cost associated with implementing mitigation solutions. Project 14054 at Targhee Pass represents a critical opportunity to build wildlife mitigation into the project design from the outset at a less expensive cost, where an existing highway project is already planned to occur.

Project 18923
This proposed project at milepost 490.4-490.7 on US-95 (District 1) falls within the McArthur Lake corridor between Sandpoint and Bonners Ferry. This area (from mileposts 483-520) was identified as a high priority area for wildlife mitigation "by ITD, USFS, IDFG, NGO's & others in 2007-08 linkage analysis study. The [Utah State University] assessment identifies it as high WVC priority area. Known as a critical grizzly bear, lynx, wolverine & other endangered species linkage between the Selkirk & Cabinet-Yaak Mountains. The Pack/Kootenai River corridors have healthy moose populations & the highway corridor traverses through the river valleys. Mule deer, white-tailed deer, elk, large/mid-sized carnivores, & other wildlife are present in large numbers" (Cramer et al. 2014).

[3] https://idfg.idaho.gov/sites/default/files/YellowstoneHighlandsWorkingDraftPubReview20151228.pdf

With regard to this area, the Draft 2015 SWAP (IDFG 2016) states:

> Highway 95 and the railroad that runs parallel to the highway are prominent transportation corridors within the forested lowlands target. Mortality records for the section of Highway 95 that runs through the Kootenai River Valley regularly document hundreds of animals colliding with high-speed vehicles each year (IDFG Road kill and Salvage database, accessed on Nov 8, 2015).

The SWAP recommends the construction of over- and under-passes in addition to noise buffers at crossing areas to mitigate effects on six SGCN: Northern leopard frog, wolverine, fisher, grizzly bear, Western toad, and Coeur d'Alene Oregonian mollusk.

We ask that ITD act on the recommendations made in these reports and include wildlife mitigation in the planning, budgeting and engineering process for this project.

Project 7215
This area (Mileposts 47-63 on SH-55, District 3) was identified as a medium-high priority area for wildlife-vehicle collision mitigation in the 2014 Cramer report because of residential mule deer and elk (Cramer et al. 2014). We encourage ITD to engineer and build wildlife mitigation into this bridge replacement project.

Project 13966
This area (Mileposts 166.5 – 174.5 on US-20, District 4) was identified as a high priority area for wildlife mitigation in the 2014 Cramer report "because of mule deer, elk, moose, wolf, mid-sized carnivores, badger, red-band trout, and resident trout in the adjacent Wood River" (Cramer et al. 2014). This site also offers very high potential for movement of greater sage grouse (Map E). We encourage ITD to build wildlife mitigation into this bridge replacement project that can accommodate the needs of these diverse species.

Project ORN20041
We encourage ITD, District 6, to build wildlife mitigation into the Highway 33 corridor safety improvements, as it is identified as a highway with "implications for current and future wildlife movement" in IDFG's Draft State Wildlife Action Plan 2015 Revision.[3]

Projects 19547, ORN 19892, ORN 20178 -> 20181
We encourage ITD, District 6, to design and build wildlife friendly bridges and provide appropriate fencing on US 28 and other local bridges along the Lemhi River. This is an area with considerable wildlife vehicle collisions.

Table: Projects with anticipated potential impacts on wildlife habitat and/or movement corridors

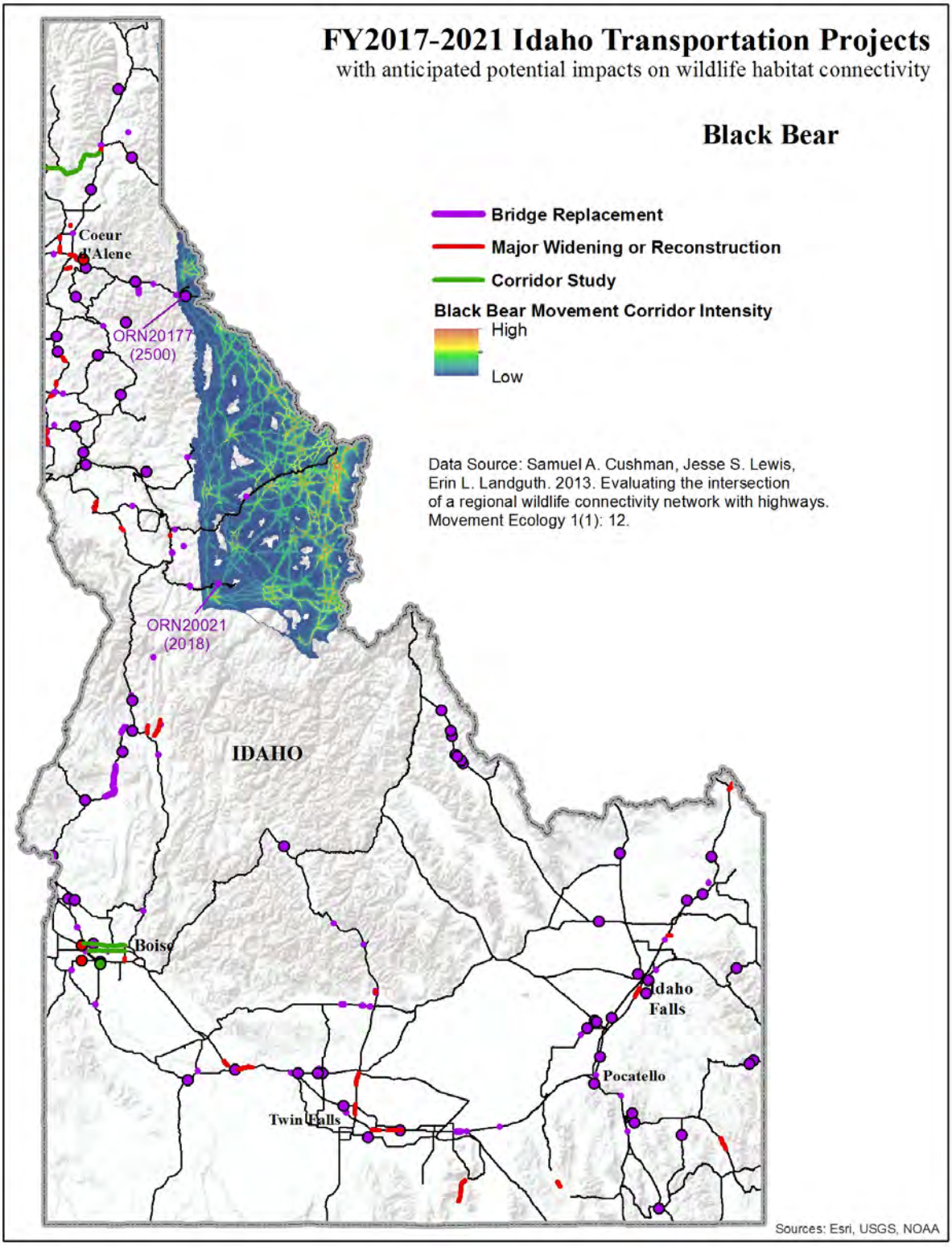
Key No	Year	Dist.	Type	Route	MPs	Potential wildlife value
13385	2017	1	Bridge replacement	SH 3	82-83	Separates core elk habitat (C)
13417	2017	1	Corridor Study	US 2	0-28	Separates core elk habitat (C), Between current grizzly bear range and potential movement corridors (E), Mule deer connectivity zone (F), Separates core western toad habitat (G)
13850	2017	1	Bridge replacement	US 95	458-459	Separates core elk habitat (C), Potential grizzly bear connectivity zone (E), Mule deer connectivity zone (F), Separates core western toad habitat (G)
18923	2018	1	Strategic Initiative	US 95	490-491	High priority for WVCs, Known linkage area for grizzly bear, lynx, wolverine, and other endangered species, Ungulates present in large numbers (Cramer et al. 2014)
19009	2018	1	Bridge replacement	SH 6	30-31	Separates core elk habitat (C), Core western toad habitat (G)
19133	2018	1	Bridge replacement	I 90	43-44	Separates core elk habitat (C), Mule deer connectivity zone (F), Core western toad habitat (G)
18806	2019	1	Bridge replacement	SH 97	69-70	Separates core elk habitat (C)
19257	2019	1	Bridge replacement	I 90	20-21	Separates core elk habitat (C), Mule deer connectivity zone (F)
19431	2019	1	Bridge replacement	I 90	20-21	Separates core elk habitat (C), Mule deer connectivity zone (F)
19046	2020	1	Bridge replacement	OFFSYS	100-101	Separates core elk habitat (C), Grizzly bear current range (E), Mule deer connectivity zone (F), Core western toad habitat (G), Major wolverine linkage zone (I)
19506	2020	1	Bridge replacement	SH 200B	45-46	At boundary of grizzly bear current range (E), Mule deer connectivity zone (F), Core western toad habitat (G)
ORN19947	2020	1	Major widening/reconstruction	US 2	475-476	Core western toad habitat (G)
18813	2500	1	Bridge replacement	OFFSYS	101-102	Core elk habitat (C), Mule deer connectivity zone (F), Core western toad habitat (G)
ORN20087	2500	1	Bridge replacement	STC-5750	102-104	Core elk habitat (C), Mule deer connectivity zone (F)
ORN20090	2500	1	Bridge replacement	OFFSYS	105-106	Core elk habitat (C), Connectivity zone in grizzly bear current range (E), Mule deer connectivity zone (F), Core western toad habitat/connectivity zone (G)
ORN20177	2500	1	Bridge replacement	I 90	65-66	Black bear movement corridor (A)

9806	2017	2	Bridge replacement	FH 60	113-114	Core elk habitat (C), Mule deer core habitat (F), Western toad connectivity zone (G)
12019	2017	2	Bridge replacement	OFFSYS	101-102	Core elk habitat (C)
13883	2018	2	Bridge replacement	US 12	120-121	Female dispersal habitat separating maternal/primary wolverine habitat (H)
13885	2018	2	Bridge replacement	US 12	76-77	Core elk habitat (C), Mule deer connectivity zone (F)
ORN20021	2018	2	Bridge replacement	SH 14	38-40	Black bear movement corridor (A)
ORN20022	2018	2	Bridge replacement	SH 14	22-24	Separates core elk habitat (C), Western toad connectivity zone (G)
9070	2020	2	Bridge replacement	OFFSYS	100-101	Elk connectivity zone (D)
19261	2020	2	Major widening/reconstruction	US 95	280-283	Mule deer connectivity zone (F)
19673	2020	2	Bridge replacement	SH 3	43-44	Separates core elk habitat (D), Mule deer connectivity zone (F), Core western toad habitat (G)
ORN19764	2500	2	Major widening/reconstruction	US 95	282-284	Mule deer connectivity zone (F)
7215	2017	3	Bridge replacement	SH 55	63-64	Medium-high priority for WVC mitigation (Cramer et al. 2014)
13388	2017	3	Bridge replacement	US 95	176-177	Elk connectivity zone (C)
13948	2017	3	Bridge replacement	US 95	121-139	Separates core elk habitat (C), Mule deer connectivity zone (F), Western toad core habitat/connectivity zone (G)
13949	2017	3	Bridge replacement	US 95	154-158	Separates core elk habitat (C), Separates core mule deer habitat (F), Core western toad habitat (G)
14367	2017	3	Major widening/reconstruction	STC-3893	0-4	Core elk habitat (C), Mule deer connectivity zone (F), Core western toad habitat (G), Extends into primary/maternal wolverine habitat (H)
13951	2018	3	Bridge replacement	US 95	145-146	Separates core elk habitat (C), Separates core mule deer habitat (F), Western toad connectivity zone (G)
13056	2019	3	Bridge replacement	STC-3945	103-104	Mule deer connectivity zone (F), Separates core western toad habitat (G)
13946	2019	3	Bridge replacement	US 95	174-175	Elk connectivity zone (C), Mule deer core habitat (F)
14365	2019	3	Major widening/reconstruction	FH 21	2-10	Core elk habitat (C), Mule deer connectivity zone (F), Core western toad habitat (G), Extends into primary/maternal wolverine habitat (H,I)

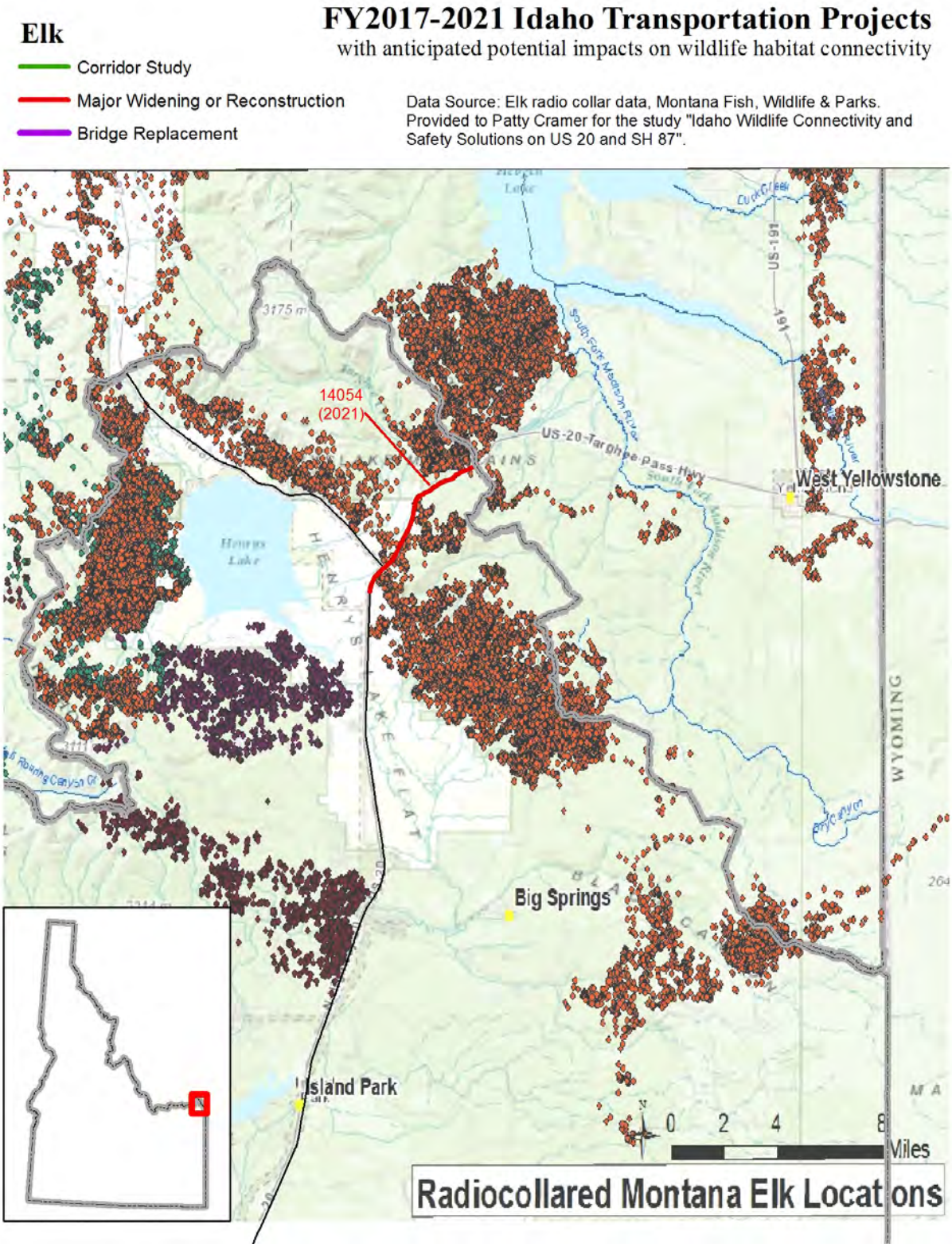
19399	2019	3	Bridge replacement	US 95	160-161	Separates core elk habitat (C), Separates core mule deer habitat (F), Core western toad habitat (G)
19246	2020	3	Bridge replacement	US 95	112-113	Separates core elk habitat (C), Mule deer connectivity zone (F), At boundary of core western toad habitat (G)
12409	2017	4	Bridge replacement	Adams Gulch Rd	102-103	Male dispersal habitat separating primary/maternal wolverine habitat (H)
13966	2018	4	Bridge replacement	US 20	175-177	High potential for sage grouse movement (D)
19542	2018	4	Major widening/reconstruction	SH 77S	5-15	High potential for sage grouse movement (D)
18742	2019	4	Bridge replacement	US 20	164-165	High potential for sage grouse movement (D)
19699	2019	4	Bridge replacement	US 20	172-174	High potential for sage grouse movement (D)
19404	2020	4	Bridge replacement	SH 75	148-149	Female dispersal habitat separating primary/maternal wolverine habitat (H)
ORN20132	2021	4	Bridge replacement	SH 21	123-124	Female dispersal habitat separating primary/maternal wolverine habitat (H), major wolverine linkage zone (I)
9894	2017	5	Major widening/reconstruction	STC-1701	29-32	High potential for sage grouse movement (D)
19382	2019	5	Major widening/reconstruction	US 30	419-425	Male dispersal habitat separating primary wolverine habitat (H)
12122	2018	6	Bridge replacement	OFFSYS	101-102	High elk movement frequency (App. D-1)
18733	2018	6	Bridge replacement	US 20	353	Potential barrier to elk and moose movement (App. D-1,2)
13135	2019	6	Bridge replacement	OFFSYS	0-1	High potential for sage grouse movement (D)
14023	2019	6	Bridge replacement	SH 28	116-117	High potential for sage grouse movement (D)
14061	2019	6	Bridge replacement	OFFSYS	100-101	Potential barrier to moose movement (App. D-2)
19547	2019	6	Bridge replacement	SH 28	125-126	High potential for sage grouse movement (D)
14054	2021	6	Major widening/reconstruction	US 20	401-407	Frequent elk and moose crossings (B, App. D-3 - D6, D8, D9), Grizzly bear current range (E), High moose occupancy/movement (App. D-2, D-7)
19566	2500	6	Bridge replacement	OFFSYS	0-0	Grizzly bear current range (E), High elk and moose movement frequency (App. D-1,2)
ORN19892	2500	6	Bridge replacement	SH 28	114-115	High potential for sage grouse movement (D)
ORN20041	2500	6	Early	SH 33	0-0	Implications for current and future wildlife

			Development			movement (IDFG Draft SWAP Revision, 2015)
ORN20178	2500	6	Bridge replacement	SH 28	101-102	High potential for sage grouse movement (D)
ORN20179	2500	6	Bridge replacement	SH 28	103-104	High potential for sage grouse movement (D)
ORN20180	2500	6	Bridge replacement	SH 28	105-106	High potential for sage grouse movement (D)
ORN20181	2500	6	Bridge replacement	SH 28	106-107	High potential for sage grouse movement (D)

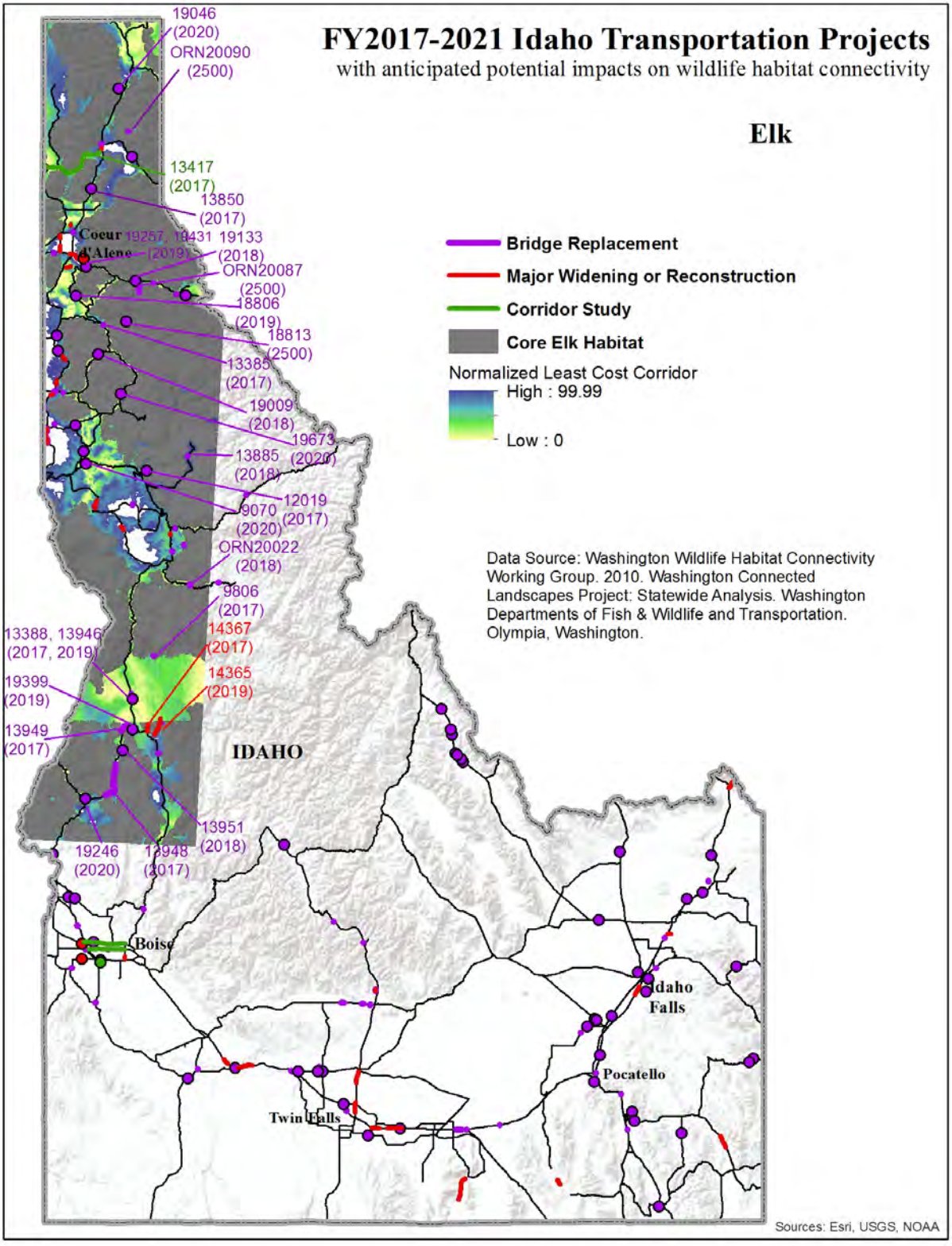
Map A


FY2017-2021 Idaho Transportation Projects
with anticipated potential impacts on wildlife habitat connectivity
Black Bear
Bridge Replacement
Major Widening or Reconstruction
Corridor Study
Black Bear Movement Corridor Intensity
High
Low
Data Source: Samuel A. Cushman, Jesse S. Lewis, Erin L. Landguth. 2013. Evaluating the intersection of a regional wildlife connectivity network with highways. Movement Ecology 1(1): 12.
Coeur d'Alene
ORN20177 (2500)
ORN20021 (2018)
IDAHO
Boise
Idaho Falls
Pocatello
Twin Falls
Sources: Esri, USGS, NOAA

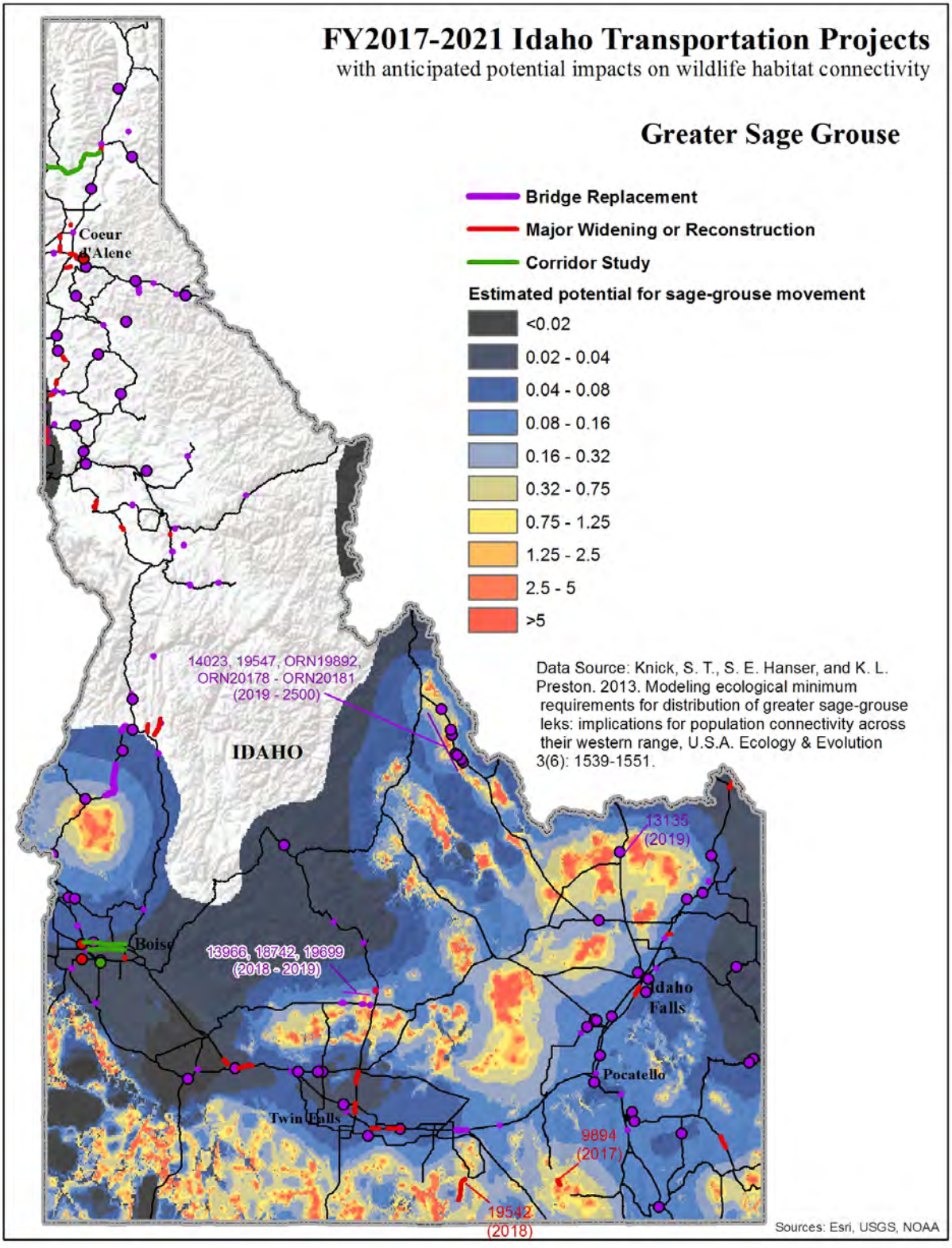
Map B


FY2017-2021 Idaho Transportation Projects
with anticipated potential impacts on wildlife habitat connectivity
Elk
Corridor Study
Major Widening or Reconstruction
Bridge Replacement
Data Source: Elk radio collar data, Montana Fish, Wildlife & Parks. Provided to Patty Cramer for the study "Idaho Wildlife Connectivity and Safety Solutions on US 20 and SH 87".
14054
(2021)
US-20-Targhee Pass Hwy
West Yellowstone
WYOMING
Big Springs
Island Park
0 2 4 8
Miles
Radiocollared Montana Elk Locations

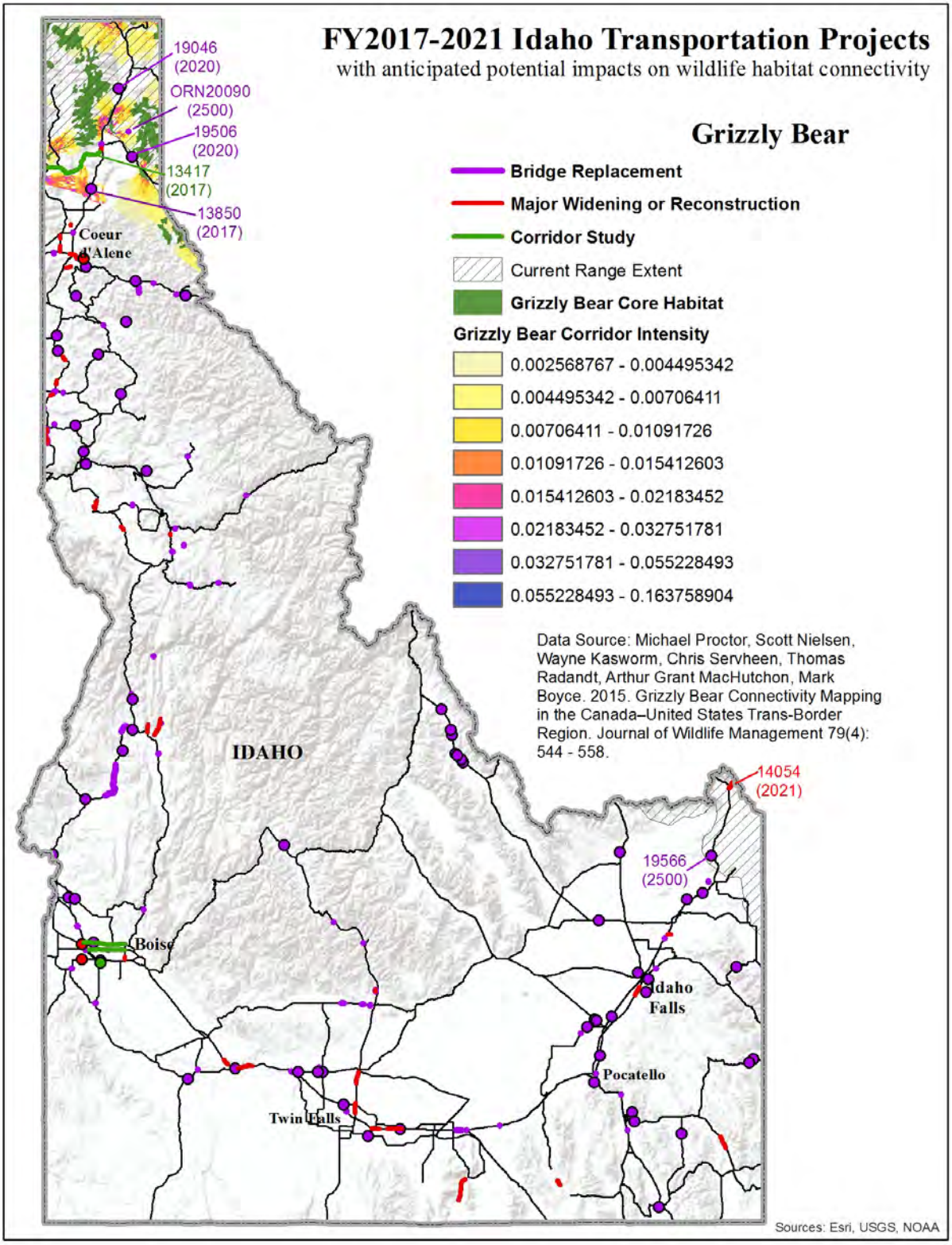
Map C


FY2017-2021 Idaho Transportation Projects
with anticipated potential impacts on wildlife habitat connectivity
Elk
Bridge Replacement
Major Widening or Reconstruction
Corridor Study
Core Elk Habitat
Normalized Least Cost Corridor
High : 99.99
Low : 0
Data Source: Washington Wildlife Habitat Connectivity Working Group. 2010. Washington Connected Landscapes Project: Statewide Analysis. Washington Departments of Fish & Wildlife and Transportation. Olympia, Washington.
19046 (2020)
ORN20090 (2500)
13417 (2017)
13850 (2017)
Coeur d'Alene
19257, 19431 (2019)
19133 (2018)
ORN20087 (2500)
18806 (2019)
18813 (2500)
13385 (2017)
19009 (2018)
19673 (2020)
13885 (2018)
12019 (2017)
9070 (2020)
ORN20022 (2018)
9806 (2017)
13388, 13946 (2017, 2019)
14367 (2017)
14365 (2019)
19399 (2019)
13949 (2017)
IDAHO
13951 (2018)
19246 (2020)
13948 (2017)
Boise
Idaho Falls
Pocatello
Twin Falls
Sources: Esri, USGS, NOAA

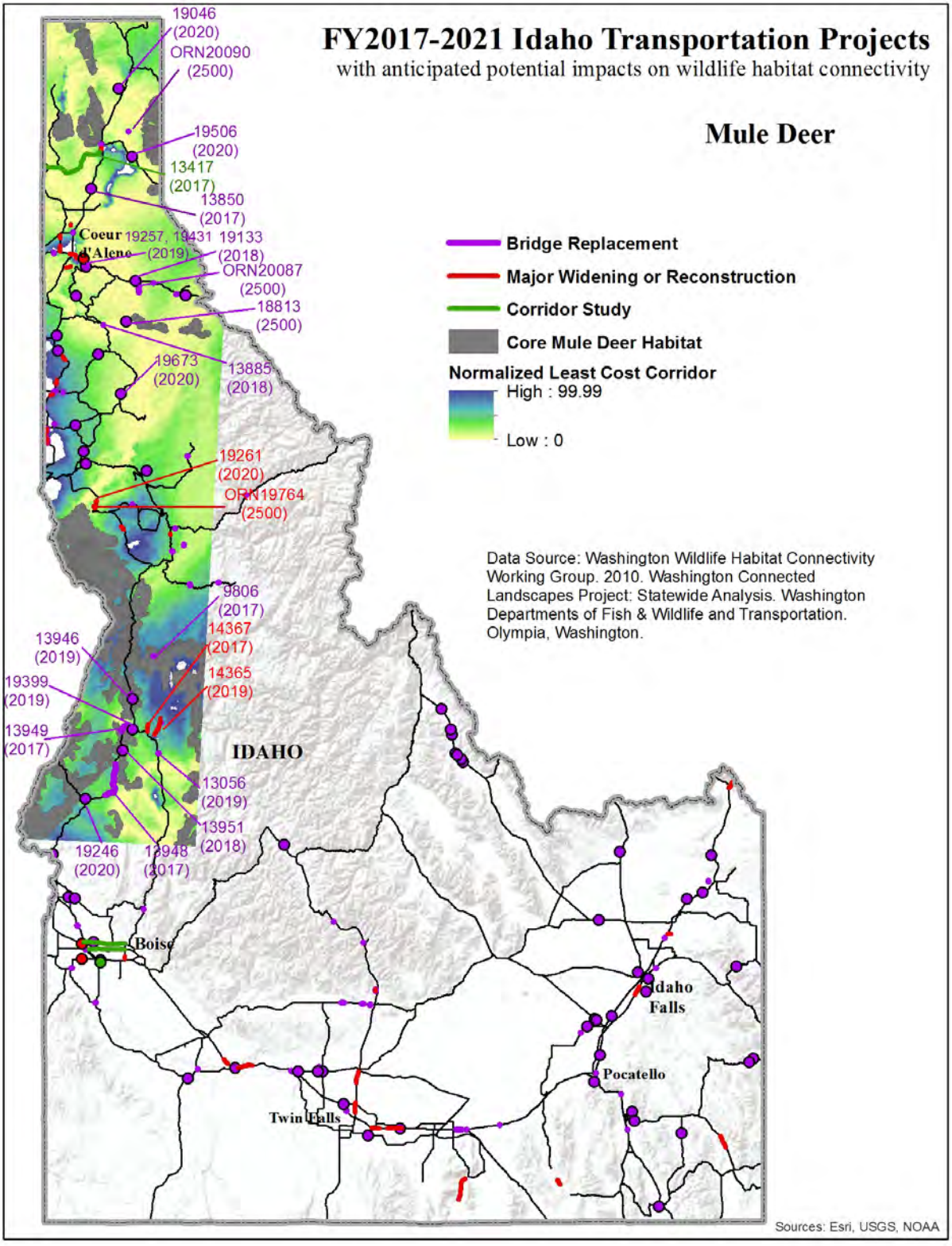
Map D


FY2017-2021 Idaho Transportation Projects
with anticipated potential impacts on wildlife habitat connectivity
Greater Sage Grouse
Bridge Replacement
Major Widening or Reconstruction
Corridor Study
Estimated potential for sage-grouse movement
<0.02
0.02 - 0.04
0.04 - 0.08
0.08 - 0.16
0.16 - 0.32
0.32 - 0.75
0.75 - 1.25
1.25 - 2.5
2.5 - 5
>5
Data Source: Knick, S. T., S. E. Hanser, and K. L. Preston. 2013. Modeling ecological minimum requirements for distribution of greater sage-grouse leks: implications for population connectivity across their western range, U.S.A. Ecology & Evolution 3(6): 1539-1551.
Coeur d'Alene
IDAHO
14023, 19547, ORN19892, ORN20178 - ORN20181 (2019 - 2500)
13135 (2019)
Boise
13966, 18742, 19699 (2018 - 2019)
Idaho Falls
Pocatello
Twin Falls
9894 (2017)
19542 (2018)
Sources: Esri, USGS, NOAA

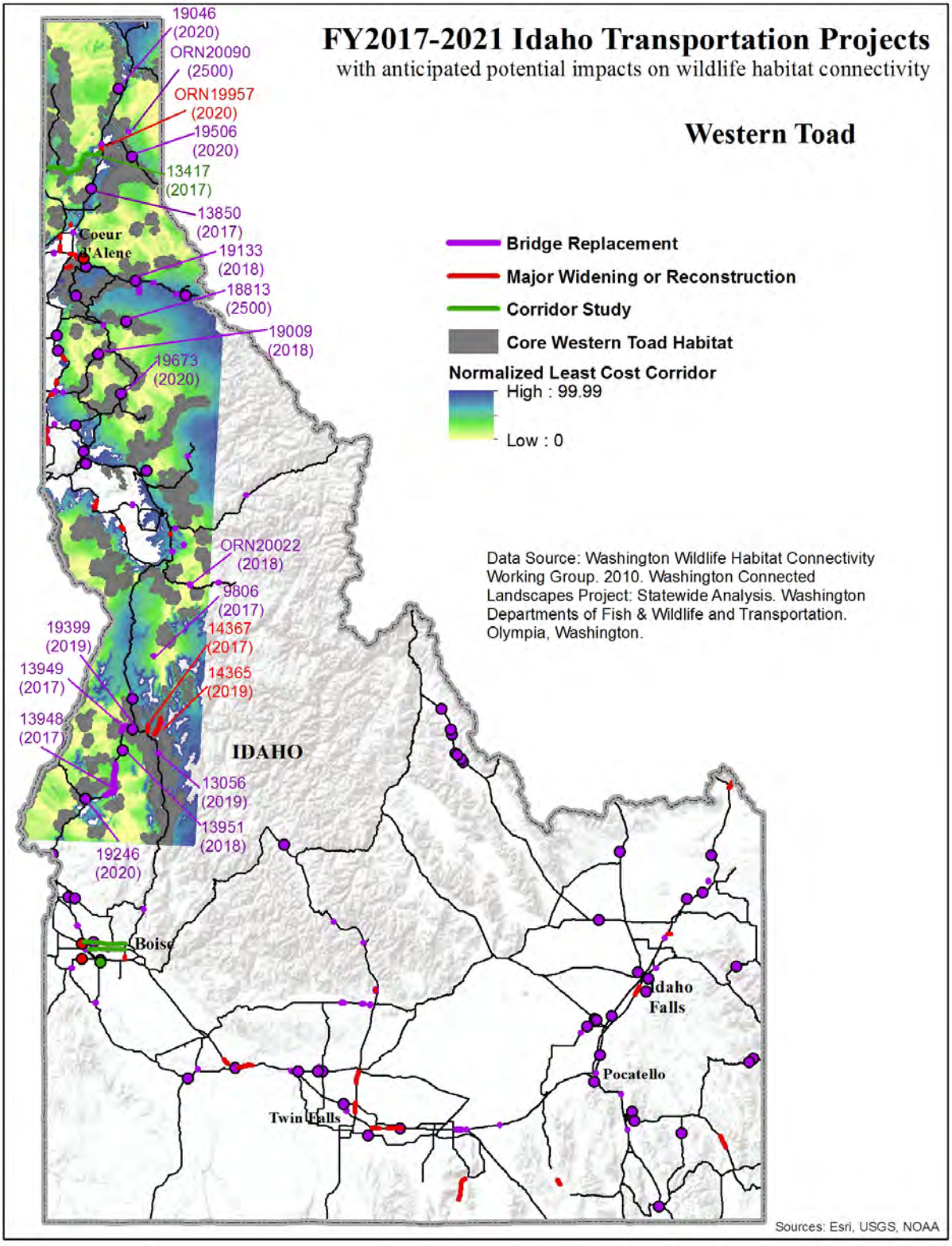
Map E


FY2017-2021 Idaho Transportation Projects
with anticipated potential impacts on wildlife habitat connectivity
Grizzly Bear
Bridge Replacement
Major Widening or Reconstruction
Corridor Study
Current Range Extent
Grizzly Bear Core Habitat
Grizzly Bear Corridor Intensity
0.002568767 - 0.004495342
0.004495342 - 0.00706411
0.00706411 - 0.01091726
0.01091726 - 0.015412603
0.015412603 - 0.02183452
0.02183452 - 0.032751781
0.032751781 - 0.055228493
0.055228493 - 0.163758904
Data Source: Michael Proctor, Scott Nielsen, Wayne Kasworm, Chris Servheen, Thomas Radandt, Arthur Grant MacHutchon, Mark Boyce. 2015. Grizzly Bear Connectivity Mapping in the Canada–United States Trans-Border Region. Journal of Wildlife Management 79(4): 544 - 558.
19046 (2020)
ORN20090 (2500)
19506 (2020)
13417 (2017)
13850 (2017)
14054 (2021)
19566 (2500)
Coeur d'Alene
IDAHO
Boise
Idaho Falls
Pocatello
Twin Falls
Sources: Esri, USGS, NOAA

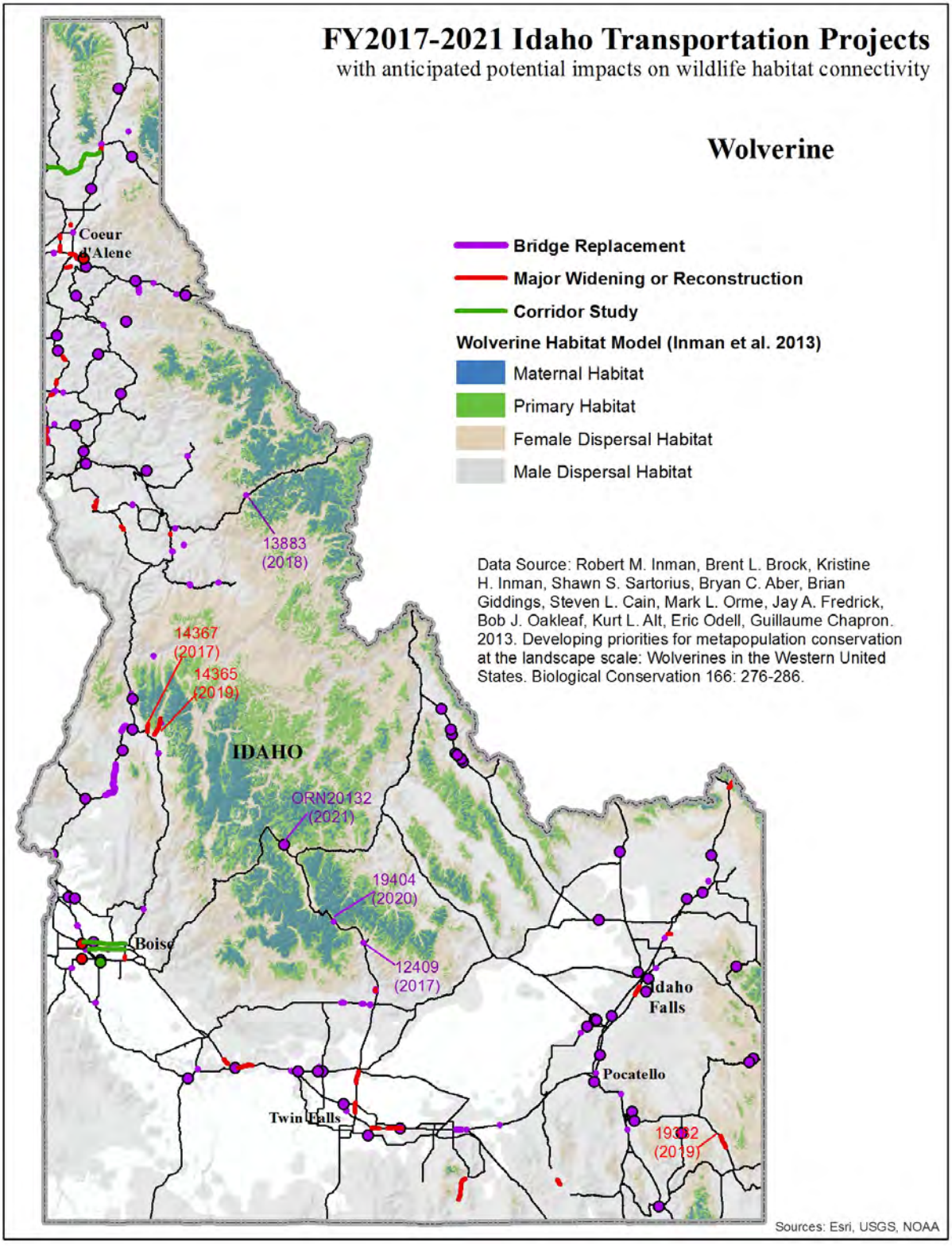
Map F


FY2017-2021 Idaho Transportation Projects
with anticipated potential impacts on wildlife habitat connectivity
Mule Deer
Bridge Replacement
Major Widening or Reconstruction
Corridor Study
Core Mule Deer Habitat
Normalized Least Cost Corridor
High : 99.99
Low : 0
Data Source: Washington Wildlife Habitat Connectivity Working Group. 2010. Washington Connected Landscapes Project: Statewide Analysis. Washington Departments of Fish & Wildlife and Transportation. Olympia, Washington.
19046 (2020)
ORN20090 (2500)
19506 (2020)
13417 (2017)
13850 (2017)
Coeur d'Alene
19257, 19431 (2019)
19133 (2018)
ORN20087 (2500)
18813 (2500)
19673 (2020)
13885 (2018)
19261 (2020)
ORN19764 (2500)
9806 (2017)
14367 (2017)
13946 (2019)
14365 (2019)
19399 (2019)
13949 (2017)
IDAHO
13056 (2019)
13951 (2018)
19246 (2020)
13948 (2017)
Boise
Idaho Falls
Pocatello
Twin Falls
Sources: Esri, USGS, NOAA

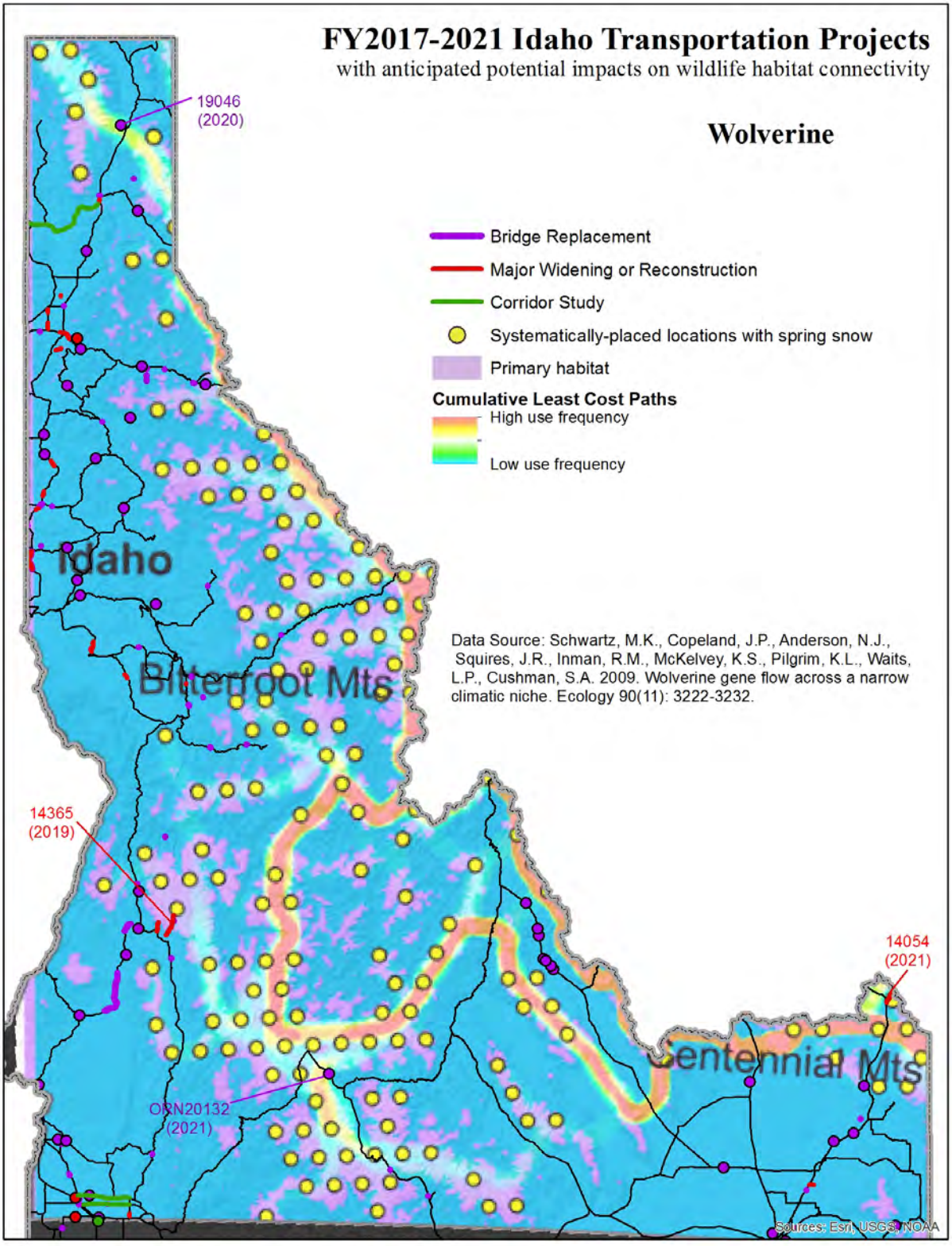
Map G


FY2017-2021 Idaho Transportation Projects
with anticipated potential impacts on wildlife habitat connectivity
Western Toad
Bridge Replacement
Major Widening or Reconstruction
Corridor Study
Core Western Toad Habitat
Normalized Least Cost Corridor
High : 99.99
Low : 0
Data Source: Washington Wildlife Habitat Connectivity Working Group. 2010. Washington Connected Landscapes Project: Statewide Analysis. Washington Departments of Fish & Wildlife and Transportation. Olympia, Washington.
19046 (2020)
ORN20090 (2500)
ORN19957 (2020)
19506 (2020)
13417 (2017)
13850 (2017)
Coeur d'Alene
19133 (2018)
18813 (2500)
19009 (2018)
19673 (2020)
ORN20022 (2018)
9806 (2017)
19399 (2019)
14367 (2017)
13949 (2017)
14365 (2019)
13948 (2017)
IDAHO
13056 (2019)
13951 (2018)
19246 (2020)
Boise
Idaho Falls
Pocatello
Twin Falls
Sources: Esri, USGS, NOAA

Map H


FY2017-2021 Idaho Transportation Projects
with anticipated potential impacts on wildlife habitat connectivity
Wolverine
Bridge Replacement
Major Widening or Reconstruction
Corridor Study
Wolverine Habitat Model (Inman et al. 2013)
Maternal Habitat
Primary Habitat
Female Dispersal Habitat
Male Dispersal Habitat
Data Source: Robert M. Inman, Brent L. Brock, Kristine H. Inman, Shawn S. Sartorius, Bryan C. Aber, Brian Giddings, Steven L. Cain, Mark L. Orme, Jay A. Fredrick, Bob J. Oakleaf, Kurt L. Alt, Eric Odell, Guillaume Chapron. 2013. Developing priorities for metapopulation conservation at the landscape scale: Wolverines in the Western United States. Biological Conservation 166: 276-286.
Coeur d'Alene
13883 (2018)
14367 (2017)
14365 (2019)
IDAHO
ORN20132 (2021)
19404 (2020)
Boise
12409 (2017)
Idaho Falls
Pocatello
Twin Falls
19382 (2019)
Sources: Esri, USGS, NOAA

Map I


FY2017-2021 Idaho Transportation Projects
with anticipated potential impacts on wildlife habitat connectivity
Wolverine
19046
(2020)
Bridge Replacement
Major Widening or Reconstruction
Corridor Study
Systematically-placed locations with spring snow
Primary habitat
Cumulative Least Cost Paths
High use frequency
Low use frequency
Idaho
Bitterroot Mts
Data Source: Schwartz, M.K., Copeland, J.P., Anderson, N.J., Squires, J.R., Inman, R.M., McKelvey, K.S., Pilgrim, K.L., Waits, L.P., Cushman, S.A. 2009. Wolverine gene flow across a narrow climatic niche. Ecology 90(11): 3222-3232.
14365
(2019)
14054
(2021)
Centennial Mts
ORN20132
(2021)
Sources: Esri, USGS, NOAA

IV. Recommendations

We ask ITD to amend the STIP to include sufficient funds to cover the project costs associated with analyzing and implementing appropriate wildlife mitigation measures, in cooperation with Idaho Department of Fish & Game and other relevant agencies, such as the U.S. Forest Service, National Park Service, Bureau of Land Management, National Wildlife Refuge, etc.

Wildlife-Friendly Practices Likely to Reduce WVCs

Across the U.S., state transportation departments are implementing innovative solutions to create wildlife-friendly roads. In addition to ITD's own efforts to provide safe passage, we urge ITD to consider adopting practices that are working well for other states.

For example, researchers have developed guidance regarding the types of mitigation measures that have proven most effective for specific wildlife groupings (Kintsch and Cramer, 2011). Department of transportation engineers have also created best management practices for certain mitigations - Appendix B provides a comprehensive list of these best management practices resources. These mitigation measures will not only improve safe passage across Idaho, but will reduce WVCs and help ITD as it works *Towards Zero Deaths.*

In particular, we request that bridge restoration/replacement designs accommodate safe wildlife passage where they span creek and river corridors, which often constitute important natural movement pathways for wildlife. Bridges often span locations ideal for wildlife movement. Bridge restoration/replacement is an ideal opportunity to include these mitigations: "Retrofitting existing structures will almost always be less expensive than building new structures... Existing culvert and bridge structures provide a cost- effective solution to maintaining and improving wildlife movement across road and highway rights-of-way"(Shilling et al. 2012).

We detail several specific wildlife-friendly practices likely to reduce WVCs here:

Expand the Span:

- To facilitate both aquatic and terrestrial wildlife passage, bridges should be extended/wide enough to span the stream to allow for some dry ground or an artificial ledge beneath the bridge on one or both sides.

Under the Bridge:

- Erosion-reduction treatments (revetment) are often made from rip-rap (large rocks), or a mixture of rip-rap and concrete. Typical bridge riprap can be a barrier to animal movement, including ungulates, along streambanks. Passage benches allow for movement of animals under the bridge, thereby increasing road safety of bridge approaches (MNDOT 2014, p17- 22).

- Alternative revetment involving soil and vegetation treatment of rip-rap can provide surfaces that are still resistant to erosion, but provide surfaces attractive for wildlife movement. Alternatively, a soil ledge away from regular stream erosion (e.g., near the bridge abutment) may provide a pathway for wildlife (Shilling et al. 2012).
- Install interlocking brick to support slopes instead of riprap to open up a pathway and facilitate wildlife passage (Clevenger and Huijser 2011).
- Maximize microhabitat complexity and cover within underpass using salvage materials (logs, root wads, rock piles, etc.) to encourage use by semi-arboreal mammals, small mammals, reptiles and species associated with rocky habitats (Clevenger and Huijser 2011).

Include Wildlife Fencing:

- Fencing may be required to encourage or 'train' animals to utilize the bench. Wildlife fencing is most effective and preferred method to guide wildlife to structure and prevent intrusions to the right-of-way (Clevenger and Huijser 2011).
- Mechanically stabilized earth walls, if high enough, can substitute for fencing and is not visible to motorists (Clevenger and Huijser 2011).
- Modify existing right-of way fencing by adding height to convert it to wildlife fencing to channel wildlife to existing bridge/crossing structure.

Passage Assessment System (PAS)

- We also encourage ITD to use a process to help identify opportunities for retrofitting existing structures - the Passage Assessment System (PAS). As can be viewed in Appendix F of Cramer et al. (2014), "the Washington State Department of Transportation (WSDOT) funded a study by Kintsch and Cramer to evaluate existing infrastructure for potential retrofits (modifications) to allow greater permeability for wildlife species to pass beneath the road. This method is to be used by a qualified DOT biologist somewhat familiar with different species preferences for crossing types and other infrastructure." This document can be found at http://www.wsdot.wa.gov/Research/Reports/700/777.1.htm.

Alternatives to Salt-based Deicers

- Salt-based deicers often attract ungulates onto the roadway, directly increasing wildlife deaths and increasing the risk of human fatalities. Use of salt-based deicers pose an extreme hazard for drivers. We encourage ITD to identify and prioritize the use of alternative deicing agents so that roads are safer for both drivers and wildlife.

Programmatic Mitigation Plans

- Several states are beginning to take advantage of provisions originally enacted in the 2012 *Moving Ahead for Progress in the 21st Century* (MAP-21), and recently continued under the *Fixing America's Surface Transportation* (FAST) Act, that permit states to develop programmatic mitigation plans to holistically assess the effect of roads on natural resources, including wildlife, rather than doing so on a project-by-

project basis.[4] We encourage ITD to use this provision to develop a statewide plan for mitigating the highest priority hot spots for wildlife-related mitigation measures, with an eye towards 'banking' any stand-alone mitigation projects against future related transportation projects, as appropriate.

Integration with Idaho Fish & Game's State Wildlife Action Plan

Two IDFG commission-approved documents identify transportation as a threat to wildlife and emphasize the importance of mitigating its effects:

1. **Management Plan for the Conservation of Wolverines in Idaho 2014-2019 (IDFG 2014)**

   This document identifies the potential threat of transportation corridors on wolverine movements and population viability. The document acknowledges that "Transportation corridors have the potential to reduce population viability by increasing mortality from vehicle collisions. Although incidents are rare, wolverine mortalities from vehicle collisions have been reported rangewide. Wolverines may also be vulnerable to collisions with vehicles while scavenging vehicle-killed wild ungulates (Squires et al. 2006)." The management plan also describes the long-term importance of "maintaining connectivity among wolverine metapopulations in the island-like habitat of the conterminous U.S.," and underscores the importance of monitoring highway mitigation projects: "Given limited data on wolverine response to highway mitigation projects, pre- and post-mitigation monitoring to evaluate project effectiveness and inform future mitigation approaches is important."

2. **Draft 2015 State Wildlife Action Plan (SWAP; IDFG 2016)**

   This document identifies priority threats for Species of Greatest Conservation Need (SGCN) and strategies and conservation actions to mitigate those threats. In five of the fourteen ecological sections described in this document, transportation is identified as a potential threat to SGCNs. Three ecological sections identify "transportation and service corridors" as a threat to SGCN's and recommend the completion of Comprehensive Transportation Management Travel Plans (Otter 2012). Two ecological sections further recommend the implementation of wildlife crossing structures in the form of either the "construction of over- and under-passes" or the "incorporation of best practices for wildlife crossing into highway planning and construction." Given the MOU between the ITD and IDFG, it would seem prudent that ITD consider these official stances of IDFG on issues pertaining to mitigating the effects of transportation on wildlife populations in Idaho.

[4] MAP-21 § 1311, 23 U.S.C. § 169.

Integration with the Cramer et al. Report

In Appendix C we include all of Chapter 3, the Conclusions and Recommendations chapter, from Cramer et al. (2014). Below are some conclusions provided in that report:

> Perhaps the major conclusion of this research is that ITD is dependent on its sister agency IDFG in order for this WVC Prioritization Process to work. This means IDFG is responsible for significantly increasing its involvement in ITD's transportation planning. In the future IDFG will need to develop data that represent where large ungulates and bear are known to reside near roads and thus be most susceptible to WVC. This will greatly inform the WVC Prioritization Process. IDFG at the state and regional level will need to be involved in transportation planning by meeting with their ITD counterparts at least quarterly. For their role, ITD will need to foster productive collaboration with IDFG for the above work and to actually make wildlife mitigation happen across the state. This WVC Prioritization Process will be a failure if it does not result in dozens of new wildlife mitigation measures in the next decade. Idaho is poised to create many opportunities to demonstrate how wildlife can be accommodated along transportation corridors. Both ITD and IDFG are capable of and need to make these changes in the coming year. Once this WVC Prioritization Process is finalized, it is time for both agencies to act! Suggested future steps are presented below. (Cramer et al. 2014, p. 65).

Additionally, future recommendations from Cramer et al. (2014) include:

> ITD and IDFG should form an "Interagency Wildlife Connectivity Committee" that oversees statewide efforts and guides the development of processes and methods, raises support, locates and encourages funding partners, and educates the public on the reduction of WVC and wildlife mitigation efforts. IDFG and ITD need to build partnerships that will result in regular meetings, common goals for wildlife mitigation along ITD roads, and a community of trust.
>
> ITD WVC carcass collection should be more consistently collected and reported across the state. This action specifically in ITD District 6 would help to identify WVC hotspots worthy of state ranking within the district. New technologies connected with "smart" phones that allow users to use a phone app to report carcasses are available from other states, such as Utah.
>
> Wildlife treatment actions should be monitored to evaluate their efficacy at meeting performance measures stated before the infrastructure was created.
>
> ITD personnel will need to be trained in the use of the WVC Prioritization Process.
>
> GIS mapping models will need to be improved. Most importantly, IDFG should create more accurate maps of wildlife habitats based on empirical field data and use those maps in the future prioritization process.

ITD and IDFG need to develop an agreed upon Needs Assessment Template document that each ITD district in conjunction with IDFG regions develops for those jurisdictions that details high priority road and wildlife areas in need of transportation mitigation efforts to prevent WVC and promote wildlife connectivity.

IDFG and ITD need to come to an agreement on values and methods used to conduct benefit-cost analyses. (p. xxvii).

Speed Considerations

Many of the projects in this ITIP draft involve constructing new right- and/or left-turn lanes, additional passing lanes, straightening out curves, and/or increasing lane and shoulder widths. It is important that ITD and the ITIP acknowledge that these projects will likely *increase the operating speed* at which motorists will be able to drive on Idaho roadways.

Numerous studies show that the operating speed of a highway is one of the most significant predictors of wildlife-vehicle collisions (*e.g.*, Newman *et al*. 2012), as it significantly reduces the driver's reaction time compared with reaction times at slower speeds. Other studies similarly indicate that road improvements, including straightening out curves, increasing lane and shoulder widths and paving gravel surfaces, are associated with an increase in wildlife-vehicle collisions. (Vokurka & Young 2008; Leblond *et al*. 2007; Jones 2000; Gunther *et al.* 1998.)

Rather than mitigating the safety risk of wildlife-vehicle collisions, these projects may indeed have the opposite effect. We recommend that ITD include specific actions to reduce the number of crashes involving wildlife in response to these improvements.

Roadkill Data Collection

We are aware that ITD has identified a need for improved and consistent roadkill data collection, and is considering a potential smartphone app to assist in the collection of this data. We would like to make ITD aware of the existence of such an app, Road Watch BC. Road Watch BC was developed in partnership with Wildsight, Western Transportation Institute, Yellowstone to Yukon Conservation Initiative and the Miistakis Institute to enable citizens living in Southeastern British Columbia to report wildlife sightings along major highways.

The app is designed to facilitate understanding of where wildlife are commonly crossing, involved in collisions, or moving adjacent to the highway. The app allows for the collection of sighting data in addition to roadkill data, which facilitates easy monitoring once transportation mitigation solutions have been implemented. In addition, it is very user friendly, and has been developed in such a way that it can be easily expanded beyond British Columbia. More information can be found at http://roadwatchbc.ca/index.php.

We would welcome the opportunity to discuss integrating this existing app with ITD's considerations for roadkill data collection and management.

V. Conclusion

We respectfully request that ITD amend the ITIP for the projects identified above to include project funds to cover the cost associated with a wildlife-vehicle collision mitigation analysis and to implement collision mitigation solutions, where appropriate. Finally, it is critical that ITD coordinate any proposed transportation projects with IDFG and other relevant natural resource and wildlife managers, as well as interested stakeholders.

We would be happy conduct site visits with you as you continue the design process for the above-mentioned projects. Wildlife mitigation can often be achieved by considering relatively minor adjustments to the project, such as lengthening bridges and/or increasing the number and size of culverts to provide safe passage.

If you would like to meet with us, please don't hesitate to contact us at the contact information below.

Respectfully submitted,

Renee Callahan, Center for Large Landscape Conservation
renee@largelandscapes.org

Elizabeth Domenech, Island Park Safe Wildlife Passage Coordinator
elizabeth.domenech@yale.edu

Meredith McClure, Center for Large Landscape Conservation
meredith@largelandscapes.org

Kylie Paul, Defenders of Wildlife
kpaul@defenders.org

Lacy Robinson, Yellowstone to Yukon Conservation Initiative
lacy@y2y.net

Kim Trotter, Yellowstone to Yukon Conservation Initiative
kim@y2y.net

and

Brian Brooks, Idaho Wildlife Federation
bbrooks.iwf@gmail.com

Carolyn Fifer, Montanans for Safe Wildlife Passage member
catfifer@gmail.com

Ryan Lutey, Vital Ground Foundation
rlutey@vitalground.org

Mary Pendergast, Wild Utah Project
mary@wildutahproject.org

Kathy Rinaldi, Greater Yellowstone Coalition
krinaldi@greateryellowstone.org

John Robison, Idaho Conservation League
jrobison@idahoconservation.org

Defenders of Wildlife, Center for Large Landscape Conservation, and Yellowstone to Yukon Conservation Initiative are members of Montanans for Safe Wildlife Passage, who collectively submitted comments to the 2016 Idaho Transportation Investment Plan.
www.montanans4wildlife.org

cc: Brian Ness, Director, Idaho Transportation Department
Sue Sullivan, Environmental Section Manager, Idaho Transportation Department
Virgil Moore, Director, Idaho Department of Fish and Game
Jeff Gould, Wildlife Bureau Chief, Idaho Department of Fish and Game
Gregg Servheen, Wildlife Program Coordinator, Idaho Department of Fish and Game
Mark Doerr, Chairman, Idaho Department of Fish and Game Commission
Michael Carrier, Idaho State Supervisor, USFWS
Mark Robertson, Branch Chief- Consultation/CPA, USFWS
Kathleen Hendricks, Branch Chief - Conservation Partnerships, USFWS
Cara Staab, Regional Wildlife Ecologist, USFS Region 1
John Shivik, Regional Wildlife Program Leader, USFS Region 4

Appendices:

A. Existing Wildlife Crossing Structures and Other Treatments in Idaho
B. Wildlife Mitigation BMP Resources for Transportation Departments
C. Cramer et al. 2014, Chapter 3: Conclusions and Recommendations
D. Wildlife Conservation Society: Elk and Moose Migrations Across US Highway 20

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Appendix H
Existing Wildlife Crossing Structures and Other Treatments in Idaho

Wildlife Crossings in Idaho as of November 2013

Primary investigator on the research project, Dr. Cramer, and Project Manager Caleb Lakey queried ITD and IDFG personnel for information on wildlife crossings and other mitigation for wildlife across Idaho to create the first comprehensive database of Idaho's efforts to mitigate transportation corridors for wildlife (Table 25). Mitigation is organized by IDFG regions and ITD districts. UTM coordinates may not all be accurate.

Table 25. Wildlife Crossings and Wildlife Mitigation in Idaho as of November, 2013

Crossing Name	Road	MP	UTM/GPS	UTM/GPS	Type	Height	Width/Span	Length	Target Species	Year Installed
IDFG Region 1 Panhandle / ITD District 1 Coeur d'Alene										
US-95 - Silverwood Bridge	US-95		47d52'51.11"	116d43'45.59"	Bridge	4 m	7 m	54 m	Deer, Elk, Moose	2013
US-95 Silverwood Fencing Length								14,354 ft	Deer, Elk, Moose	2013
US-95 Copeland Concrete Box Culvert	US-95		48d53'15.44"	116d20'48.61"	Culvert	4 m	7 m	40 m	Deer, Elk, Moose	2005
US-95 Copeland Concrete Box Culvert	US-95		48d53'37.39"	116d21'08.76"	Culvert	4 m	7 m	42 m	Deer, Elk, Moose	2005
US-95 Copeland Concrete Box Culvert	US-95		48d54'14.43"	116d20'55.32"	Culvert	4 m	7 m	54 m	Deer, Elk, Moose	2005
US-95 Copeland Fencing Length								~8,000 ft		2005
IDFG Region 2 Clearwater Lewiston / ITD District 2 Lewiston										
North of Moscow Wildlife Warning System	US-95	350 - 351			Break the Beam Warning System	n/a	n/a	n/a	Deer	2009 - 2010

Table 25 (cont.) Wildlife Crossings and Wildlife Mitigation in Idaho as of November, 2013

Potlatch River Tributary near Lewiston - Aquatic Culvert, Corrugated Metal Pipe with Weirs	SH-3				Culvert		15 ft	160 ft	Anadromous Fish, Steelhead, Salmon	2001
US-12, Wendover Creek - Warm Springs to Montana State Line - Aquatic Culverts Corrugated Metal Pipes 5 to 6 ft Baffled	US-12				Culvert	~6 ft	~6 ft	100 ft	Anadromous Fish, Steelhead, Salmon	2002
Riggins, Idaho County Trail Creek Aquatic Culvert Bottomless Metal Arch	US-95				Culvert	6 ft	6 ft	60 - 70 ft	Steelhead	2002
IDFG Region 3 Southwest Nampa / ITD District 3 Boise										
SH-21 Wildlife Bridge	SH-21	18.2	43,36.117	115,59.162	Bridge	4.88 m	21.03 m (9.144 m Width for 16 ft High Passage)	10.36 m	Mule Deer, Elk	Nov, 2010
SH-21 Fencing length								9,300 (as of 2013)		2010 /2011
SH 21 Aquatic Organism Passage	SH 21	82.7	44,06.267	115,27.226	Bridge	7.92 m	37.19 m	10.97 m	Fish	2011 & 2012
IDFG Region 4 Magic Valley Jerome / ITD District 4 Shoshone										
Ketchum - Driver Warning System Not an ITD Project, but Local County	SH-75				Driver Warning System				Mule Deer, Elk	2010?
North of Hailey - Reduced Speed Zones for Wildlife, *See Article in Appendix C*	SH-75								Mule Deer, Elk	2013
SH-75 near Hailey, East Fork of Wood River, near Greenhorn Gulch – Bridge Extension	SH-75	122.2	43,35'50.87"	114,20'47.86"	Ledge Under Bridge of Rock / Gravel	1.5 - 2m	1m path, each side of river	18m	Potential Riparian migration corridor for Canada lynx	2002

Table 25 (cont.) Wildlife Crossings and Wildlife Mitigation in Idaho as of November, 2013

Crossing Name	Road	MP	UTM/GPS	UTM/GPS	Type	Height	Width/Span	Length	Target Species	Year Installed
I-84 Sublet Mule Deer Herd - Deer Fence Keeping Off Highway	I-84								Mule Deer, Elk	1968 Removed 2012
IDFG Region 5 Pocatello / ITD District 5 Pocatello										
Fish Creek Bridge 1	US-30		44,44.05575	-112.72703	Bridge	3.61m, 4.26m	22.65m	16.6m	Mule Deer	1978
Fish Creek Bridge 2	US-30		45,43.06450	-113.22235	Bridge	3.33m, 4.09m	22.65m	16.6m	Mule Deer	1978
Fish Creek Bridge 3	US-30		46,43.13473	-113.32444	Bridge	5.99m, 3.11m	22.57m	20.55m	Mule Deer	1978
Fish Creek Fencing Length										1978
Portneuf River Bridge 1, *previously a culvert, see Appendix for diagrams*	US-30	364.2	44,44.05575	-112.72703						2010/ 2011
Portneuf River Bridge 2, *previously a culvert*	US-30	364.6	45,43.06450	-113.22235						2010/ 2011
Topaz, *was a bridge already & animals didn't use it then & still don't because of RR & canal & steep rock slopes*	US-30	365.3	46,43.13473	-113.32444						2010/ 2011
IDFG Region 6 Upper Snake Idaho Falls / ITD District 6 Rigby										
Targhee Creek Bridge	SH-87				Bridge				Yellowstone Cutthroat Trout	2005
Howard Creek Bridge	SH-87				Bridge				Yellowstone Cutthroat Trout	2005
Garden Creek Culvert	US-26				Culvert				Yellowstone Cutthroat Trout	2005

Appendix B

Appendix D: Wildlife Mitigation BMP Resources for Transportation Departments

Stream Crossings & Culverts

- Culvert Guidelines for Wildlife Crossings (Arizona Game and Fish Department) http://www.azgfd.gov/hgis/pdfs/CulvertGuidelinesforWildlifeCrossings.pdf
- Design for Fish Passage at Roadway-Stream Crossings (Federal Highway Administration) http://www.fhwa.dot.gov/engineering/hydraulics/pubs/07033/07033.pdf
- Maine Stream Crossings: new designs to restore stream continuity (Maine Forest Services and USFWS Gulf of Maine Coastal Program) http://maineaudubon.org/streamsmart/files/2014/11/Maine-Stream-Crossings-New-Designs-to-Restore-Stream-Continuity1.pdf
- Massachusetts Stream Crossings Handbook (Massachusetts Department of Fish and Game) http://www.mass.gov/eea/docs/dfg/der/pdf/stream-crossings-handbook.pdf
- Standards and Practices for Instream Works: Culverts (British Columbia) http://www.env.gov.bc.ca/wld/instreamworks/downloads/Culverts.pdf
- Stream Crossings: Guidelines & Best Management Practices (New York State Department of Environmental Conservation) http://www.dec.ny.gov/permits/49066.html

Bridge

- Bridge Maintenance: Avoiding and Minimizing Impacts to Fish and Wildlife (AASHTO) http://environment.transportation.org/environmental_issues/construct_maint_prac/compendium/manual/7_2.aspx
- Guidelines for Bridge Construction or Maintenance to Accommodate Fish & Wildlife Movement and Passage (Arizona Game and Fish Department) http://www.azgfd.gov/hgis/pdfs/BridgeGuidelines.pdf
- Standards & Practices for Instream Works: Bridges (British Columbia) http://www.env.gov.bc.ca/wld/instreamworks/downloads/Bridges.pdf

Overall Wildlife Crossing BMPs & Handbooks

- US State DOT Wildlife Crossing Structures (Library Connectivity & Development) http://guides.libraryconnectivity.org/Wildlife_Crossing
- Best Practices for the Repair or Replacement of Bridges, Culverts or Stormwater outfalls (Minnesota Department of Transportation) http://files.dnr.state.mn.us/waters/watermgmt_section/pwpermits/gp_2004_0001_introduction.pdf
- Critter Crossings: Linking Habitats and Reducing Roadkill (Federal Highway Administration) http://www.fhwa.dot.gov/environment/critter_crossings/main.cfm

- Designing to Accommodate Wildlife, Habitat Connectivity, and Safe Crossings http://environment.transportation.org/environmental_issues/construct_maint_prac/compendium/manual/3_4.aspx
- Passage Enhancement Toolbox (Washington State Department of Transportation) http://www.wsdot.wa.gov/NR/rdonlyres/AECC63E5-76FA-411B-9B28-15E1FB9388EF/0/PassageEnhanceToolbox.pdf
- Retrofitting Existing Structures for Wildlife Passage: Assessment Tools http://www.fs.fed.us/wildlifecrossings/resources/retrofitting-structures.php
- Vermont's Best Management Practices for Highways & Wildlife Connectivity (Vermont Agency of Transportation) http://roadecology.ucdavis.edu/files/content/projects/VTrans_BMP%20Manual_2012_Final.pdf
- Wildlife Crossing Structure Handbook: Design and Evaluation in North America (Federal Highway Administration) http://roadecology.ucdavis.edu/files/content/projects/DOT-FHWA_Wildlife_Crossing_Structures_Handbook.pdf
- Wildlife Friendly Guidelines: Community and Project Planning (Arizona Game and Fish Department) http://www.azgfd.gov/pdfs/w_c/WildlifeFriendlyDevelopment.pdf
- Wildlife-Vehicle Collision and Crossing Mitigation Measures: A Toolbox for the Montana Department of Transportation (Montana Department of Transportation) https://www.mdt.mt.gov/other/webdata/external/research/docs/research_proj/wildlife_crossing_mitigation/final_report.pdf

Detailed Studies

- Andreasen, A.M., Seidler, R. G., Roberts, S., Miyasaki, H., Zager, P., Hurley, M., Bergen, S., Meints, D., Atwood, P., Berger, J., Cramer, T., & Beckmann, J.P. 2014. US 20, Island Park Wildlife Collision Study and examination of Road Ecology in the Island Park Caldera: Elk and Mosse Migrations Across US Highway 20 Final Report. ITD Project Number: A011(963). Idaho Department of Transportation, Wildlife Conservation Society and Idaho Fish and Game.
- Cramer P., S. Gifford, B. Crabb, C. McGinty, D. Ramsey, F. Shilling, J. Kintsch, K. Gunson, and S. Jacobson. 2014. Methodology for Prioritizing Appropriate Mitigation Actions to Reduce Wildlife-Vehicle Collisions on Idaho Highways. Research Report 229, FHWA-ID-14-229. Prepared for Idaho Transportation Department. 280 pps.
- Kintsch, J. and P.C. Cramer. 2011. Permeability of existing structures for terrestrial wildlife: A passage assessment system. Research Report No. WA-RD 777.1. Washington State Department of Transportation, Olympia, WA.

- Venner, M. and URS Corporation. 2014. Practitioner's Guide to the Integrated Ecological Framework. SHRP 2 Report S2-CO6-RW-3. The Second Strategic Highway Research Program. Transportation Research Board. http://onlinepubs.trb.org/onlinepubs/shrp2/SHRP2_S2-C06-RW-3.pdf

Chapter 3
Conclusions and Recommendations

In conclusion, this research provided a robust stepping stone along the path to enable wildlife passage across Idaho's roads. This research incorporated many databases and information from both the transportation and ecological perspectives. The consensus on this work is that it is a beginning, and the WVC Prioritization Process can be updated in the coming months and years. This will reflect more up-to-date concepts, accurate information, and methods. Perhaps the major conclusion of this research is that ITD is dependent on its sister agency IDFG in order for this WVC Prioritization Process to work. This means IDFG is responsible for significantly increasing its involvement in ITD's transportation planning. In the future IDFG will need to develop data that represent where large ungulates and bear are known to reside near roads and thus be most susceptible to WVC. This will greatly inform the WVC Prioritization Process. IDFG at the state and regional level will need to be involved in transportation planning by meeting with their ITD counterparts at least quarterly. For their role, ITD will need to foster productive collaboration with IDFG for the above work and to actually make wildlife mitigation happen across the state. This WVC Prioritization Process will be a failure if it does not result in dozens of new wildlife mitigation measures in the next decade. Idaho is poised to create many opportunities to demonstrate how wildlife can be accommodated along transportation corridors. Both ITD and IDFG are capable of and need to make these changes in the coming year. Once this WVC Prioritization Process is finalized, it is time for both agencies to act! Suggested future steps are presented below.

Top Priority – Interagency Wildlife Connectivity Committee

It is prudent for Idaho to organize a standing "Interagency Wildlife Connectivity Committee" that oversees statewide priorities, and to form similar temporary committees that oversee individual projects. These groups would involve ITD, IDFG, federal landholders, interested public and non-profit groups, and members of the public. The USDA Forest Service and BLM are major landowners in the state and should be involved. The statewide committee would function more as a state-wide big picture group. Smaller, project-specific committees involving local representatives from the key agencies (counties and other local players for the specific project) would convene temporarily around a particular project to go through some of the on the ground steps in the prioritization process. ITD can learn about the committee process from ITD's District 3 where a similar partnership was brought together for the SH-21 Lucky Peak wildlife crossing and fencing, and in Colorado where the Colorado Department of Transportation (CDOT) convenes a Project Leadership Team and an "*A Landscape Level Inventory of Valued Ecosystem*" (ALIVE) Committee, both of which consult with CDOT. The Project Leadership Team helps CDOT to consider wildlife needs from the outset of planning to project design and implementation, and to conduct field trips and assess mitigation options. See the Memorandum of Understanding.

This Interagency Wildlife Connectivity Committee would be responsible for later WVC prioritization steps at the state level. It is not necessarily for the same people to be at the table through each of the

steps outlined in the WVC Prioritization Process. Having a long-term "big-picture" committee and temporary project committees can provide a better job of getting the right people to the table at the right time. Vermont Transportation Department (VTrans) and Vermont Fish and Wildlife (VTFW) have such working groups and hold meetings on a quarterly basis. Utah began these meetings concerning a specific road with several mitigation measures, and it has evolved into a statewide committee. Colorado's Wildlife Connectivity Committee holds regular meetings with the agency partners. Idaho would be wise to form such a committee as soon as possible. This committee would help take this research's WVC Prioritization Process to the next level.

The WVC Prioritization Process created by this research raises questions such as:

- Who is going to oversee that this process is used?
- Who is going to train ITD personnel responsible for carrying out this process?
- Who is going to document the different ITD District priorities and make sure they are included in a statewide analysis?
- How will we ensure that this process is carried out each year at each ITD District and then brought together at the state level?
- Who is going to document the changes in ITD and IDFG over time to see if progress is made toward the performance measure goals of this research?

The best people to answer these questions are those who take up the torch of this process and see it through to fruition; members of the Interagency Wildlife Connectivity Committee. This research project presented many ideas; it is up to the ITD and IDFG personnel committed to reducing WVC in Idaho to work out the details of individual responsibility.

Wildlife Mitigation Actions Recommendations

Several generalizations can be made about wildlife crossing structures types that work for different ungulate and bear species. Idaho has created 10 wildlife crossing structures for mule deer and other ungulates: 7 are bridges, and 3 are culverts. Research presented in this report verifies that mule deer will use both these types of structures. Culverts should be under 140 ft in length as the animals traverse the width of the road, a minimum of 10 ft high, and as wide as possible to allow these prey species escape opportunities. Bridge spans are typically wide enough to provide escape routes ungulates find necessary. Their open nature and the streams that are typically accommodated under these structures encourage multiple species use. Elk, pronghorn antelope, and bighorn sheep are the most difficult species to pass beneath roads, even with bridges. These three species are best accommodated at road interfaces with overpass structures, where the animals move above the flow of vehicles. Elk may use bridged underpass structures, but research in neighboring states find that at best, less than two dozen animals use each structure annually, and they are typically bull elk, and do not include cows and calves. Black and grizzly bear will readily use culverts and bridges, and can be accommodated more readily with different structure types than the elk, pronghorn antelope, and bighorn sheep. All these wildlife crossing structures should be placed in conjunction with wildlife exclusion fencing, 8 ft high. Fencing can extend

from several hundred feet to several miles. Placing of crossing structures should be no more than 1 mile apart. Ingress and egress points should have double cattle guards, wildlife guards, or electric mats to deter animals from entering roads. Those guards should have rounded rather than flat surfaces to help deter animals from walking across the support beams and bars. Escape ramps are placed along the fencing line to allow wildlife caught in the fenced area to jump over the fence. These ramps are typically spaced from 1 to 4 per mile in Utah. Idaho has placed these structures and fencing and has ample knowledge within agency ranks to place dozens more. Other options for allowing wildlife to pass across roads include: driver education campaigns; driver warnings with variable message boards; driver warning systems connected to animal detection systems; wildlife crossing zones with these driver warning systems; reduced speed zones with enforcement; and vegetation reduction to keep animals from entering the road right-of-way and to help motorists see wildlife. The entire practice of wildlife crossing structure planning, building, and maintaining would be best served with camera monitoring over several years at established and newly built structures. Adaptive management of the structures and fencing would help ensure the mitigation actions performed as intended.

ITD should develop a set of Best Management Practices (BMP) and guidelines for reducing WVC while promoting wildlife connectivity across or under roads. This would be a more formally developed set of guidelines that would be useful for planning and engineer teams. It would detail where different mitigation actions would work, where they should and shouldn't be used, and the pros and cons of each.

Consistent WVC Carcass Data Collection Across the State

WVC Data Collection by ITD maintenance personnel is crucial to WVC mitigation efforts. Reliable and continuous carcass data needs to be collected by ITD personnel across the state. ITD maintenance personnel should be brought into the information sharing process to better understand how their efforts can result in a decrease in WVC and thus fewer carcasses. **Upload this maintenance collected WVC carcass on a daily basis** to the TAMS site.

TAMS carcass data should be uploaded to IDFG WVC carcass website nightly. The steps necessary for this automated upload were begun during this research. This process was expected to be completed by the summer of 2014.

A statewide education effort could be made to expand the use of the Idaho Fish and Wildlife Information System (IFWIS) by ITD, IDFG, and the public which would increase the reliability of the data and expand on the collection of not only WVC carcass data but on temporal and spatial movements of wildlife.

Monitor Wildlife Mitigation Action Efforts

There should be wildlife monitoring research of all wildlife mitigation action efforts in the state to better evaluate effectiveness. Standards of monitoring should be applied, where data is tallied in scientific manners similar to other wildlife studies. No monitoring funds should be provided for studies unless the researchers agree that the resulting photographs from camera traps and other equipment are scientifically tallied and reports delivered. These actions will help with adaptively managing all infrastructure and motorists.

Train Personnel to Implement the WVC Prioritization Process

Personnel within ITD and IDFG need to receive regular (minimum of annually) training on:

- How to use the prioritization process and new incoming data.
- How to work collaboratively to use data to make informed decisions on where and type of mitigation is necessary in hotspots.
- To work proactively in defining and mitigating problem WVC areas across the state.
- How to budget time for district and region level meetings.

While there is currently no personnel qualified to train others, several District environmental planners have been conducting similar evaluations at their Districts, and could adapt their approach with this process to instruct others.

Improve GIS Mapping Models

Most Important: IDFG Creates Accurate Wildlife Habitat Maps Using Empirical Study Data

The habitat maps used in this process were heavily weighted toward mule deer and elk because they are the two species with the most data, and because more WVC occur with these species, except for White-tailed deer. Future mapping processes will need to include more updated data. For instance, it is important to introduce empirical data from studies where we have data points defining where we know grizzly bear, for example, are near the road and even crossing the road. These data are important and should be included. No researchers or agency personnel produced this type of data or maps for this project except for Tim Cramer in ITD's District 6 who produced grizzly bear data on GPS locations. This type of empirical data should be considered an important addition. It is also important for IDFG to create better quality maps for all other species.

IDFG Should Create More Accurate Maps of Mule Deer, Elk, White-Tailed Deer Populations and Other Species Based on Wildlife Management Units

Every state wildlife agency has an understanding of the population density of the different management units of a specific species. Hunter harvest data could be used to predict population densities, project future increases and decreases in populations and to create population density maps that would better

represent these species than just the presence-absence maps worked with for this project. These maps should also be developed in conjunction with wildlife linkage-connectivity mapping at the landscape level. It is critical that others species such as Species of Greatest Conservation Need (SGCN) and Threatened and Endangered Species (TES) be considered in these mapping processes.

Migration areas for large herbivores are important to locating WVC priority segments. Research team members and district level TAC members stressed the importance of migration areas that need to be better mapped and perhaps receive a higher score during this research project. This information is needed in future maps.

IDFG Should Use Actual GPS and Radio Locational Data to Verify the Accuracy of the WVC Prioritization Process Maps

The WVC prioritization map can also be validated in the future with actual wildlife locational data. This can be conducted in specific segments of road with radio collar data locations, GPS collar data locations, and other empirical data that could show how the species of interest move across and near roads.

Rank Wildlife Linkages in a Standard Process

The different ITD districts ranked their wildlife linkages slightly differently. Thus, some linkages in ITD District 6 did not float to the state top wildlife linkages, which then handicapped the district in the overall state ranking. In the future there needs to be a standard process for rating wildlife linkage areas.

Rank Rural Roads According to Their Higher Preponderance of WVC

Arizona's method of prioritizing WVC stretches looks at rural roads as possible areas of high "hotspot" problems with WVC. These areas do not typically rank high statewide because of low traffic volumes. Arizona's prioritization system looks at the percentage of single vehicle crashes that involved a wild animal. A high ranking is assigned to those mile segments where 20 percent or more of the single vehicle crashes were with wildlife. This helps these less traveled road areas rank higher. At this time, the TAC decided that the information involves roads other than ITD administered roads and that it is a task for future projects.

Rank Traffic Volume Differently

The ranking method used in this report ranks higher traffic volume areas as the highest rated category, insinuating a one-to-one direct cause-and-effect relationship that is not entirely consistent with published scientific studies. Future work could model traffic effects on wildlife species and also model projected future traffic volume. These data could be translated into maps or tables the users could consult during the prioritization process. At this time there is only a one point difference between traffic volume classes and thus only minor changes in values would be predicted.

Make Sure IPLAN Includes Transportation Planning Documents

Future IPLAN software will need to take into consideration Long Range Transportation Plans and the STIP so they can be used to assist in this prioritization process.

Next Step, Prioritize Other Species of Concern

This project focuses on large ungulates and bear most typically involved in WVC, and is supported with funding from the Office of Highway Safety at ITD. This is a first step, but should not be the end. The most progressive western states for prioritizing areas of road for wildlife mitigation - Washington, Colorado, and Arizona all include federally and state listed species and species of interest, from Grizzly Bear and Lynx to Preble's Jumping Mouse and Leopard Frogs. The next step would be to decide which additional species to include and create maps that are more informative on their locations than a simple presence-absence map. A formal linkages modeling effort should be conducted in Idaho prior to 2017, the 10 year anniversary of the first linkages report.

Include WGA CHAT in Next Round of the WVC Prioritization Process

Western Governors' Association Crucial Habitat Assessment Tool (CHAT) is used in the majority of western states to delineate areas of critical wildlife ranges and movement pathways. The map for Idaho should be incorporated in the next iteration of the prioritization process. Arizona has included this map (called AZGFD's HabiMap Arizona SERI and Species of Greatest Conservation Need (SGCN) GIS Layers, see Appendix A) in their prioritization process for mitigating roads. Arizona's maps are considered to be their wildlife diversity maps and are given a maximum of 20 points out of a total of 130. Due to Idaho's map's coarse scale (3 mile pixels), it should be used as an early planning tool. The CHAT should be used at a landscape level of planning, which would be in the early stages of transportation planning, as in long range, corridor and STIP planning.

Add Ecoregion Representation to the Process

Colorado added a section to their WVC prioritization process on ecoregions, to make sure the prioritization process included a priority in each ecoregion of the state. This may be a way to ensure ITD does something in the Great Basin ecoregion of southern Idaho, where pronghorn antelope are in need of safe crossing opportunities. Due to our rankings, this area does not come up as a priority. ITD's TAC on October 30, 2013 deemed this a future step in the process; outside of this project.

In the Future Explore How Changes in GIS Layer Rankings Affect Priorities Outcome

The GIS research team coded the GIS data so the ranking of different GIS layers' output was tabulated in a manner that allows rankings to be changed with little effort. This presentation of the values of data for each mile allows transparency and can allow future users to repeat the process with different scenarios. Future model iterations can use these tables to change rankings of GIS layers.

Crash Data Will Need to be Explored and Values Changed to Observe Effects on Various Road Segment Rankings

WVC crashes are typically under reported when tractor trailer truck are involved. As a result, when an ITD road has heavy truck traffic the WVC with those trucks are not typically reported in the ***crash*** data. Areas such as ITD District 5's US 30 through Montpelier may have heavy WVC but there are little crash data due to heavy tractor trailer traffic. As a result, this area did not receive as high a ranking in the overall state priorities as may be expected due to under reported WVC crashes. Future modeling of the GIS layers and WVC data may find a more appropriate crash ranking in areas where this may be the case.

Validate GIS Maps with District Environmental Planners' Realities

ITD could use the data in Table 21 in Appendix D to further evaluate the GIS mapping process priorities against what district environmental planners view as priorities. If the GIS processes used in this research do not produce maps accepted by ITD personnel, future efforts could use other GIS techniques, possibly more similar to those described by Fraser Shilling in Appendix A, 'Mapping Wildlife-Vehicle Collision GIS Considerations.'

ITD and IDFG Cooperative Agency Actions

Develop an ITD IDFG Needs Assessment Template for all ITD Districts and the State

ITD and IDFG, through coordination with the Statewide Interagency Wildlife Connectivity Committee should develop a "Needs Assessment" document template for each ITD District that details areas where IDFG and ITD agree that there are WVC problem areas that need mitigation actions. Those areas can then be prioritized for mitigation through a cooperative effort between the two agencies. Additional input could come from outside interests, such as federal and state natural resource agencies, cities and towns, non-profit organizations, and the public.

Establish ITD Approved WVC Benefit-Cost Analysis Method

This analysis can be standardized, much like Oregon Department of Transportation produces with an accepted spreadsheet that calculates costs and benefits in pre-programed cells. This benefit-cost analysis would also select an agreed upon value for WVC that are not reported as crashes and derived from WVC carcass data. The future Interagency Wildlife Connectivity Committee would also play a role in developing a state-wide standard that includes ecological values.

In the benefit-cost analysis assign value to long-term benefits of providing roadway permeability for wildlife, not just WVC avoidance. How do we compare the value of just placing a fence to deter WVC and a broader solution that involves a fence plus wildlife crossing structures? Although fencing is not a wildlife mitigation action that allows populations to survive, it will inevitably be considered an option. The cheaper fence-only action would rank as more efficient unless we recognize the fence itself may

lead to not only individual animal deaths due to reduced access to crucial resources, but entire populations. In other words, the user must place a value on wildlife populations staying alive. The user needs to evaluate how to include benefits of providing wildlife populations permeability across the landscape and thus a continued existence.

Motor Vehicle License Plates Can Raise WVC Mitigation Action Funds

There should be consideration to an increase of a $1 or $2 on wildlife specialty license plates (and possibly other specialty plates) that would go towards projects related to WVC mitigation strategies. This would help make projects come to fruition, as funds are a major reason for delays in WVC mitigation actions.

Performance Measures Can Be Used to Evaluate if This Research is Used

These could be an evaluation of how ITD is performing toward creating wildlife mitigation across the state as evaluated from a survey. The survey would ask ITD District Environmental Planners questions dealing with:

- How many existing wildlife crossing structures and other mitigation exist in your District?
- How many wildlife mitigation measures are in the "Planning Stage?"
- How many wildlife crossings are under construction?
- How many wildlife mitigation measures have been monitored in the past 12 months?
- How many times did you speak with your IDFG counterparts this year?
- How many times did you go out in the field with IDFG and other environmental entities this year?

Statewide, ITD and IDFG should evaluate how the effort to reduce WVC and provide wildlife connectivity across roads is advancing. Quantifiable measures are needed. The number of mitigation projects could be used, as a measure, but WVC total numbers may remain the same or continue at present levels or even increase over the years due to increasing numbers of motorists and miles driven. Therefore, a combination of measures should be used. When wildlife crossing are evaluated for success, there are several levels of performance measures. These are provided here to help evaluate not only individual projects, but to view the overall Idaho effort to mitigate roads for wildlife.

1. Reduce WVC by a percentage, in the range of 75 percent.

2. Reduce WVC by above level, and the mitigation measures pass a certain number of individuals of the target species annually.

3. Reduce WVC by above, pass a certain numbers of target species while also passing the majority of the population of the target species with different age and gender classes all using the structure.

4. All of the above performance measures plus evidence that the structure is passing a diversity of species in the area, typically mammals.

These measures should be applied at both the project level and the state level to help evaluate how cost-effective projects and the WVC-wildlife connectivity efforts were for the year.

Future Research

Many of the above actions could be included in future research projects. Overall these could be summarized into the following types of research:

1. GIS mapping procedures by IDFG will need to incorporate accurate field based data on wildlife locations, habitat, and movement patterns in relation to roads. These more accurate maps could be included in future iterations of the WVC Prioritization Process and could be used to test the results of the process for accuracy in selecting areas of highest WVC concern.

2. A future research project could examine how the ITD transportation planning process changed over time to include wildlife concerns. The above performance measures mentioned to examine the results of this work could be used to see if ITD progressed toward goals of including WVC mitigation actions.

3. Wildlife mitigation efforts need to be monitored in systematic scientific approaches to evaluate how well the structures performed in passing the target species, in increased wildlife use over time, in allowing for a diversity of species to use the structure, and in decreasing WVC in the area. Almost anyone can put out cameras to photograph animals. It is the systematic analyses of the photos to quantify results that are needed to provide accurate performance measures to evaluate the efficacy of wildlife infrastructure and provide evidence to the public that these structures work. These efforts also help agencies manage the infrastructure in an adaptive management context to ensure they continue to perform as intended.

4. A benefit-cost analysis of all actions performed by ITD to reduce WVC could help to quantify the success of such actions. Methods for analyses would need to be agreed upon by ITD and IDFG.

This research provided many future opportunities for ITD and IDFG to work toward an efficient set of methods and processes to mitigate WVC areas across the state. It is based largely on what has already happened to some degree in different ITD Districts throughout Idaho. These successful approaches can now be applied consistently across Idaho to help reduce WVC and make Idaho roads safer for all.

Appendix D

These maps were produced by the Partners (Wildlife Conservation Society, Idaho Department of Fish and Game, and Idaho Transportation Department) at the request of Montanans for Safe Wildlife Passage. The data contained in the maps are derived from the Partner's report: US 20, Island Park wildlife collision study: an examination of road ecology in the Island Park Caldera, elk and moose migrations across US Highway 20— Final Report. Methodology used herein to create the data layers can be found in the referenced report. Wildlife data were collected between 2010 and 2013 from the US Highway 20 area in eastern Idaho.

Citation for the report: Andreasen, A. M., R. G. Seidler, S. Roberts, H. Miyasaki, P. Zager, M. Hurley, S. Bergen, D. Meints, P. Atwood, J. Berger, T. Cramer, and Jon P. Beckmann. 2014. US 20, Island Park wildlife collision study: an examination of road ecology in the Island Park Caldera, elk and moose migrations across US Highway 20— Final Report. Wildlife Conservation Society, Idaho Transportation Department, and Idaho Department of Fish and Game. Pp. 148.

Questions regarding these maps can be directed to: Renee Seidler, Associate Conservation Scientist, Wildlife Conservation Society, North America Program, rseidler@wcs.org.

Elk

FY2017-2021 Idaho Transportation Projects

with anticipated potential impacts on wildlife habitat connectivity

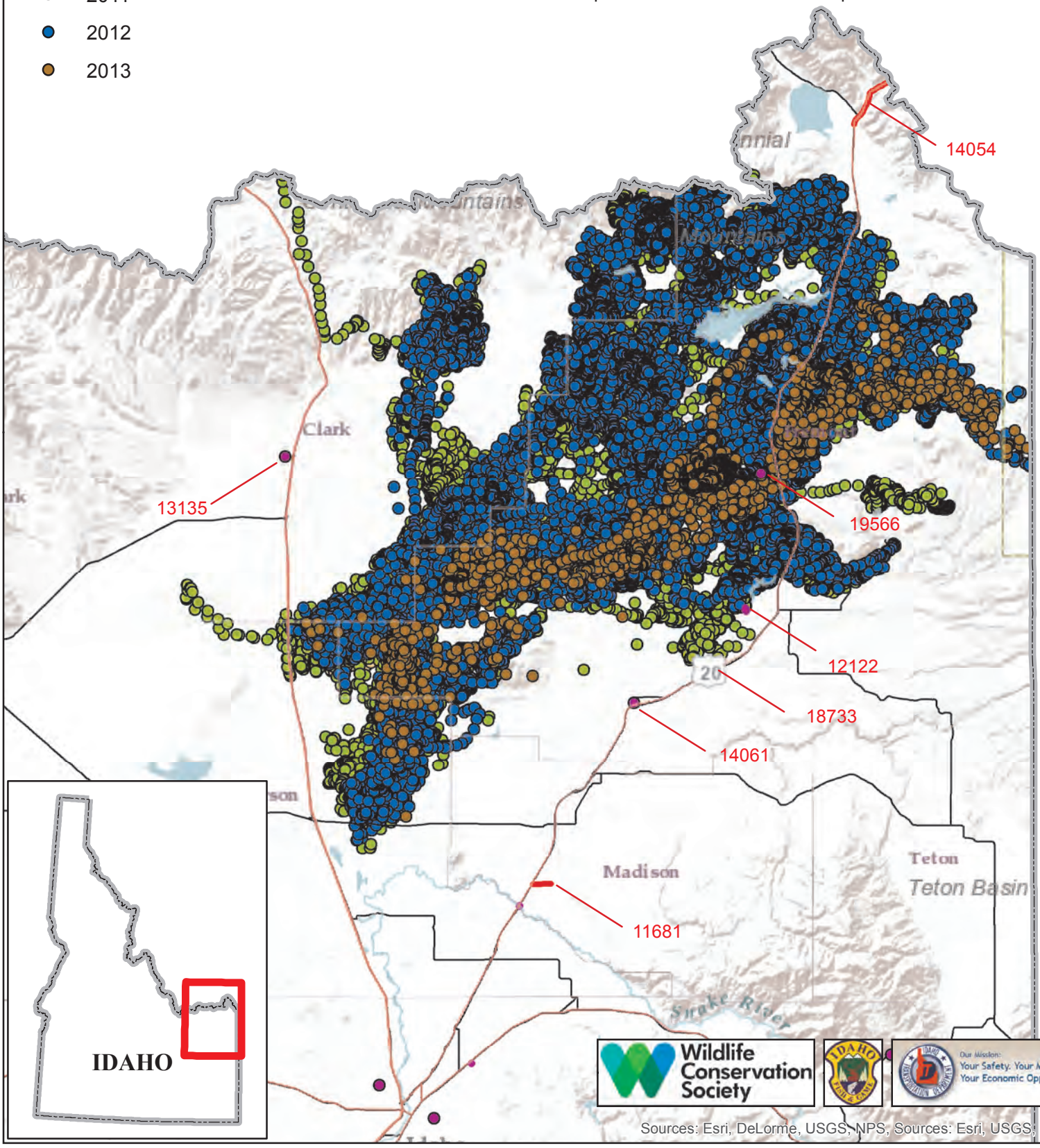
Major Widening or Reconstruction

Bridge Replacement

Elk GPS Collar Data (Andreasen et al. 2014)

- 2010
- 2011
- 2012
- 2013

Andreasen, A. M., R. G. Seidler, S. Roberts, H. Miyasaki, P. Zager, M. Hurley, S. Bergen, D. Meints, P. Atwood, J. Berger, T. Cramer, and Jon P. Beckmann. 2014. US 20, Island Park wildlife collision study: an examination of road ecology in the Island Park Caldera, elk and moose migrations across US Highway 20— Final Report. Wildlife Conservation Society, Idaho Transportation Department, and Idaho Department of Fish and Game. Pp.



Moose

FY2017-2021 Idaho Transportation Projects

with anticipated potential impacts on wildlife habitat connectivity

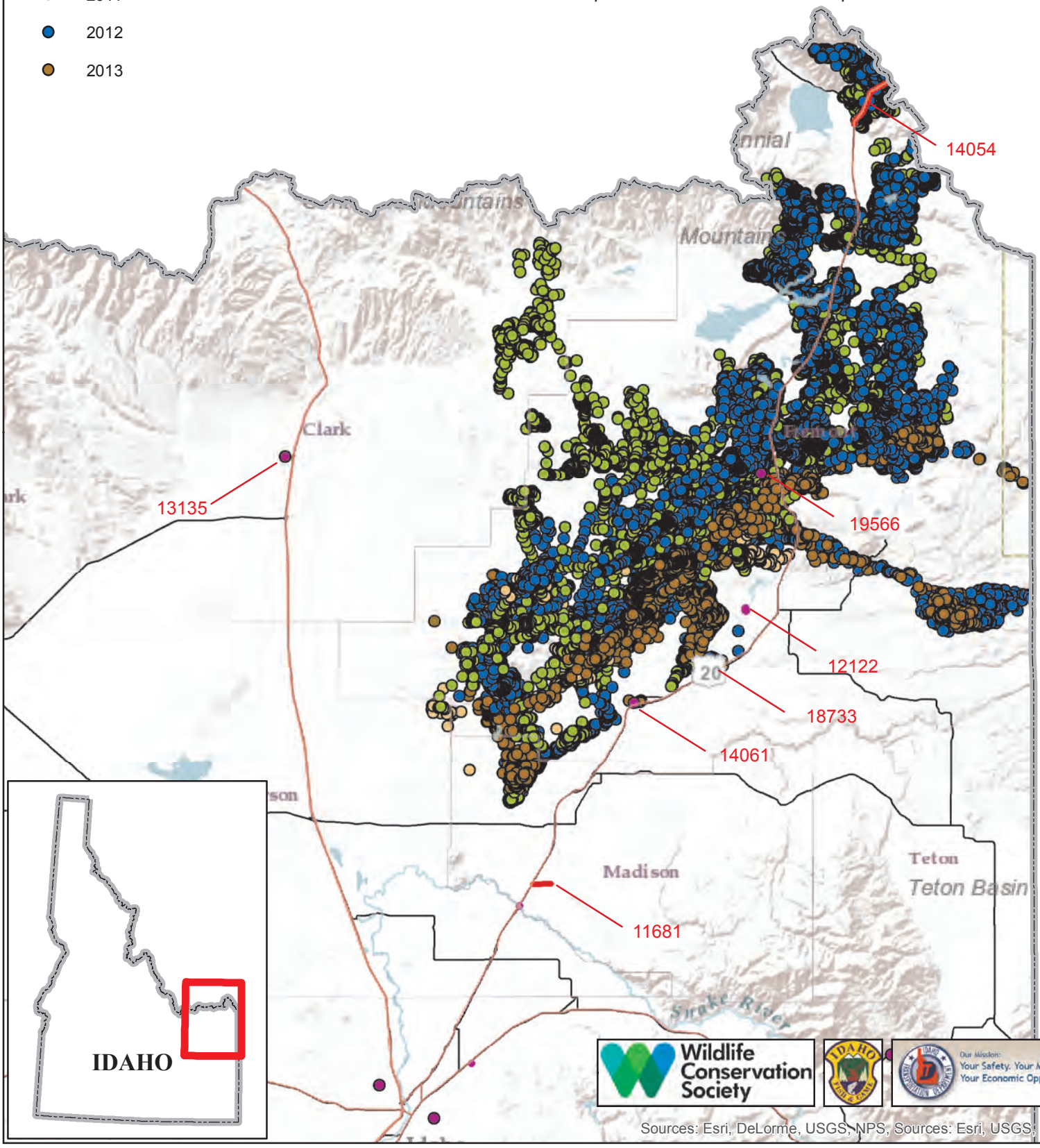
Major Widening or Reconstruction

Bridge Replacement

Moose GPS Collar Data (Andreasen et al. 2014)

- 2010
- 2011
- 2012
- 2013

Andreasen, A. M., R. G. Seidler, S. Roberts, H. Miyasaki, P. Zager, M. Hurley, S. Bergen, D. Meints, P. Atwood, J. Berger, T. Cramer, and Jon P. Beckmann. 2014. US 20, Island Park wildlife collision study: an examination of road ecology in the Island Park Caldera, elk and moose migrations across US Highway 20— Final Report. Wildlife Conservation Society, Idaho Transportation Department, and Idaho Department of Fish and Game. Pp.



Elk

FY2017-2021 Idaho Transportation Projects

with anticipated potential impacts on wildlife habitat connectivity

Major Widening or Reconstruction

Bridge Replacement

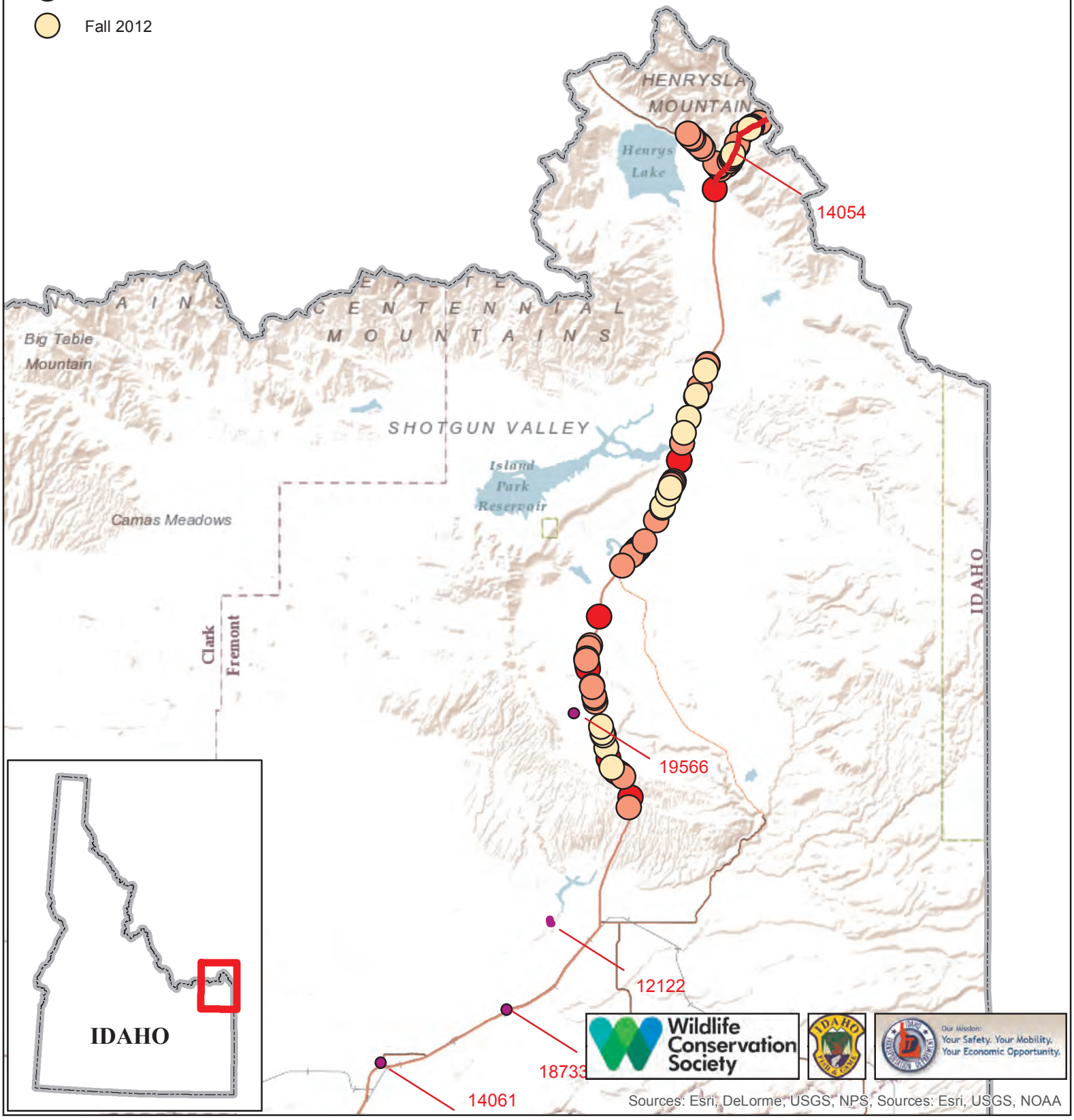
Elk Track Survey 2010-2012

Fall 2010

Fall 2011

Fall 2012

Andreasen, A. M., R. G. Seidler, S. Roberts, H. Miyasaki, P. Zager, M. Hurley, S. Bergen, D. Meints, P. Atwood, J. Berger, T. Cramer, and Jon P. Beckmann. 2014. US 20, Island Park wildlife collision study: an examination of road ecology in the Island Park Caldera, elk and moose migrations across US Highway 20— Final Report. Wildlife Conservation Society, Idaho Transportation Department, and Idaho Department of Fish and Game. Pp. 148.



Elk

FY2017-2021 Idaho Transportation Projects

with anticipated potential impacts on wildlife habitat connectivity

Major Widening or Reconstruction

Bridge Replacement

Elk Track Survey 2010-2012

Spring 2011

Spring 2012

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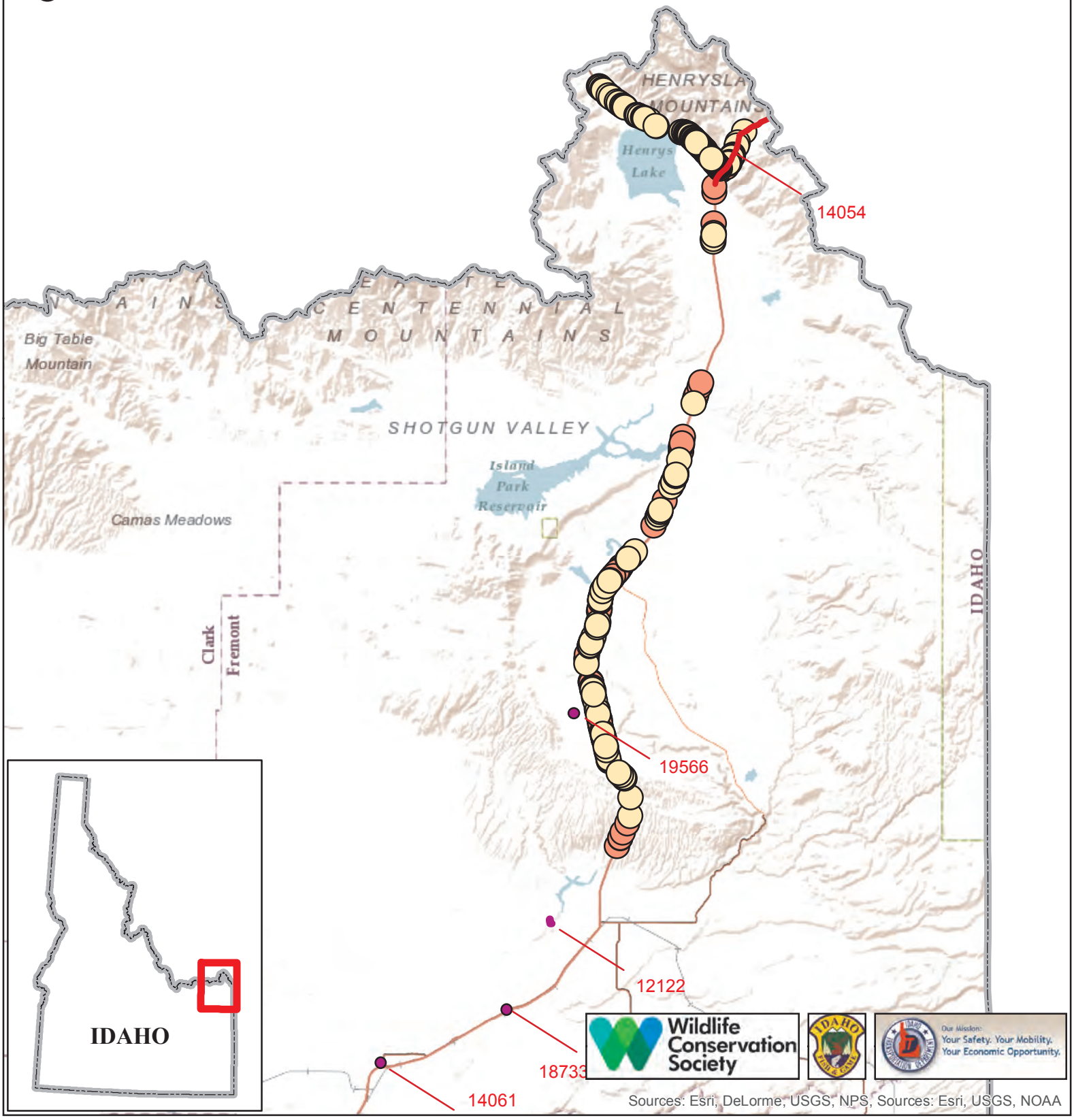


Moose

FY2017-2021 Idaho Transportation Projects

with anticipated potential impacts on wildlife habitat connectivity

Major Widening or Reconstruction

Bridge Replacement

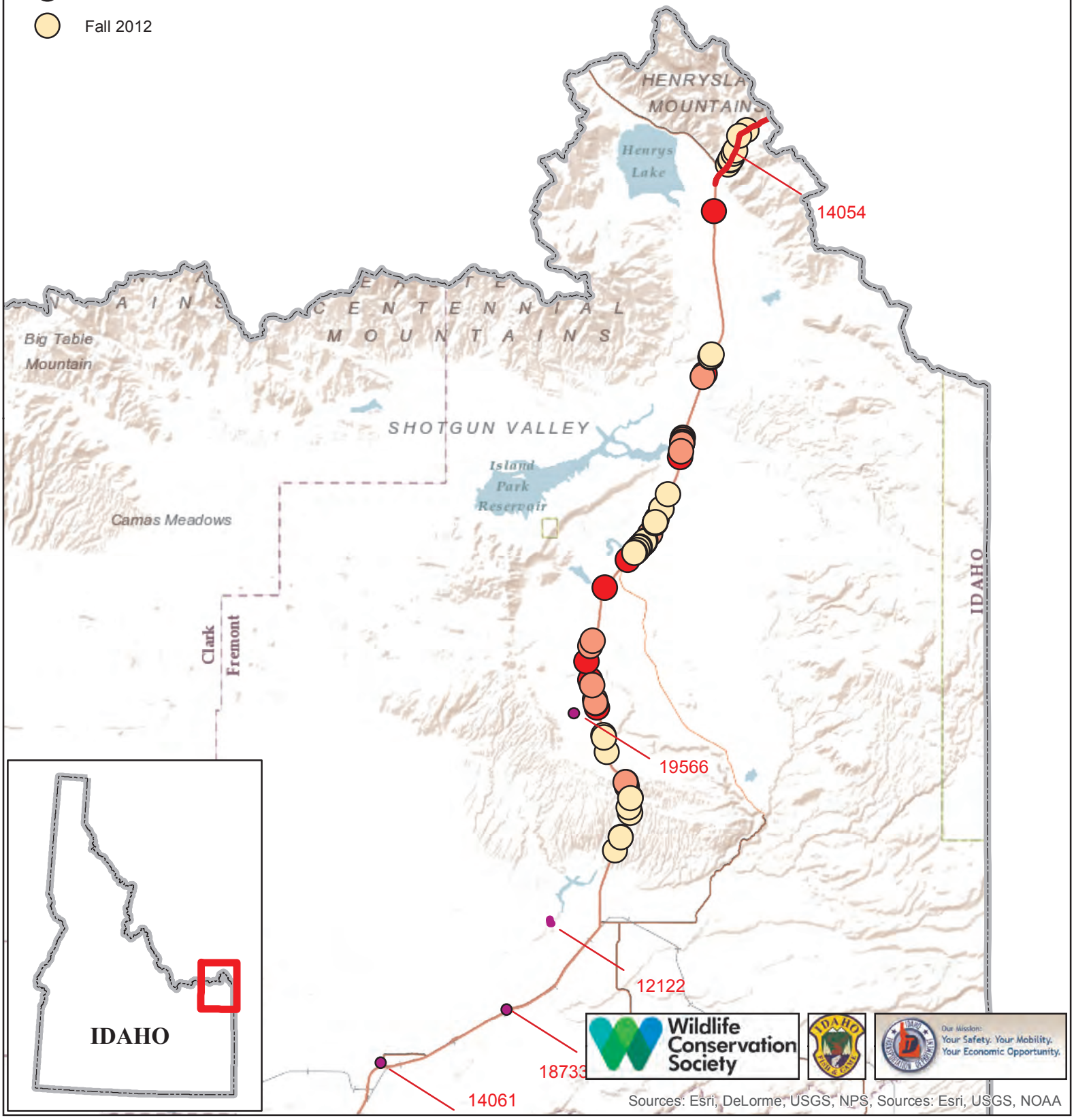
Moose Track Survey 2010-2012

Fall 2010

Fall 2011

Fall 2012

Andreasen, A. M., R. G. Seidler, S. Roberts, H. Miyasaki, P. Zager, M. Hurley, S. Bergen, D. Meints, P. Atwood, J. Berger, T. Cramer, and Jon P. Beckmann. 2014. US 20, Island Park wildlife collision study: an examination of road ecology in the Island Park Caldera, elk and moose migrations across US Highway 20— Final Report. Wildlife Conservation Society, Idaho Transportation Department, and Idaho Department of Fish and Game. Pp. 148.



Moose

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with anticipated potential impacts on wildlife habitat connectivity

Major Widening or Reconstruction

Bridge Replacement

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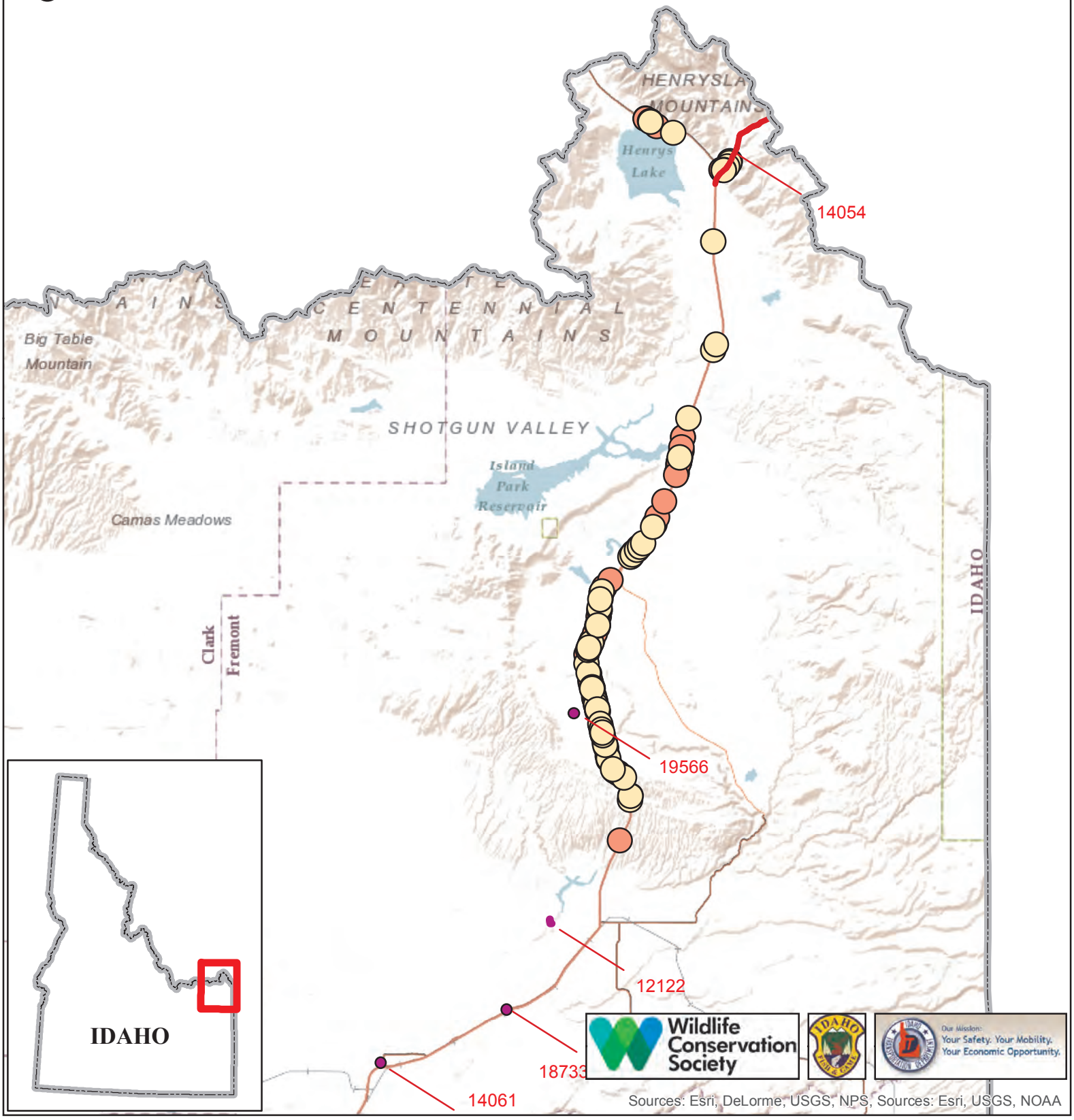


Moose

FY2017-2021 Idaho Transportation Projects

with anticipated potential impacts on wildlife habitat connectivity

Major Widening or Reconstruction

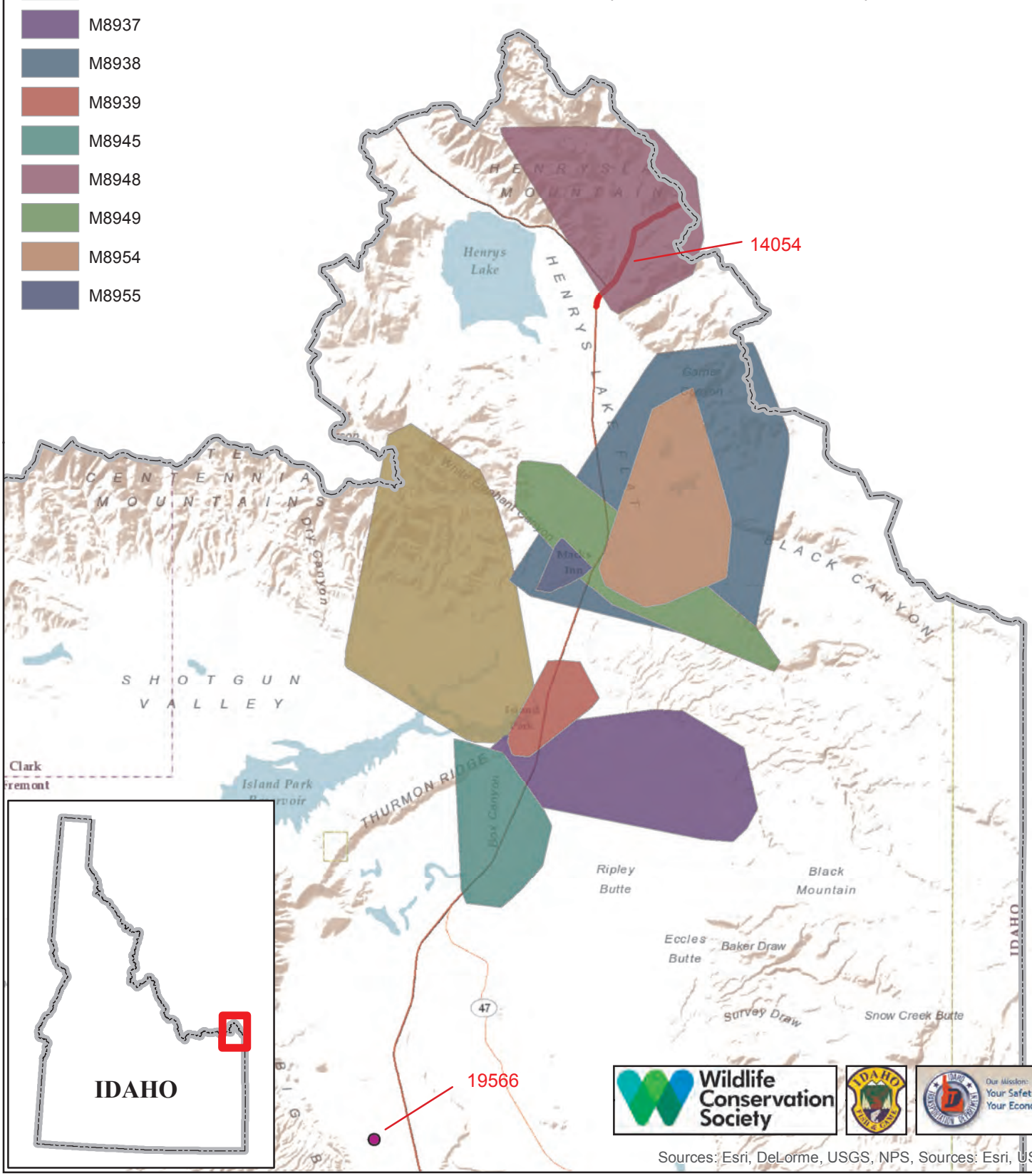
Bridge Replacement

Non-Migratory Moose Minimum Convex Polygons

2010-2013

- M8934
- M8937
- M8938
- M8939
- M8945
- M8948
- M8949
- M8954
- M8955

Andreasen, A. M., R. G. Seidler, S. Roberts, H. Miyasaki, P. Zager, M. Hurley, S. Bergen, D. Meints, P. Atwood, J. Berger, T. Cramer, and Jon P. Beckmann. 2014. US 20, Island Park wildlife collision study: an examination of road ecology in the Island Park Caldera, elk and moose migrations across US Highway 20— Final Report. Wildlife Conservation Society, Idaho Transportation Department, and Idaho Department of Fish and Game. Pp. 148.



Wildlife Conservation Society

Our Mission: Your Safety. Your Mobility. Your Economic Opportunity.

Sources: Esri, DeLorme, USGS, NPS, Sources: Esri, USGS, NOAA

Elk

FY2017-2021 Idaho Transportation Projects

with anticipated potential impacts on wildlife habitat connectivity

Major Widening or Reconstruction

Bridge Replacement

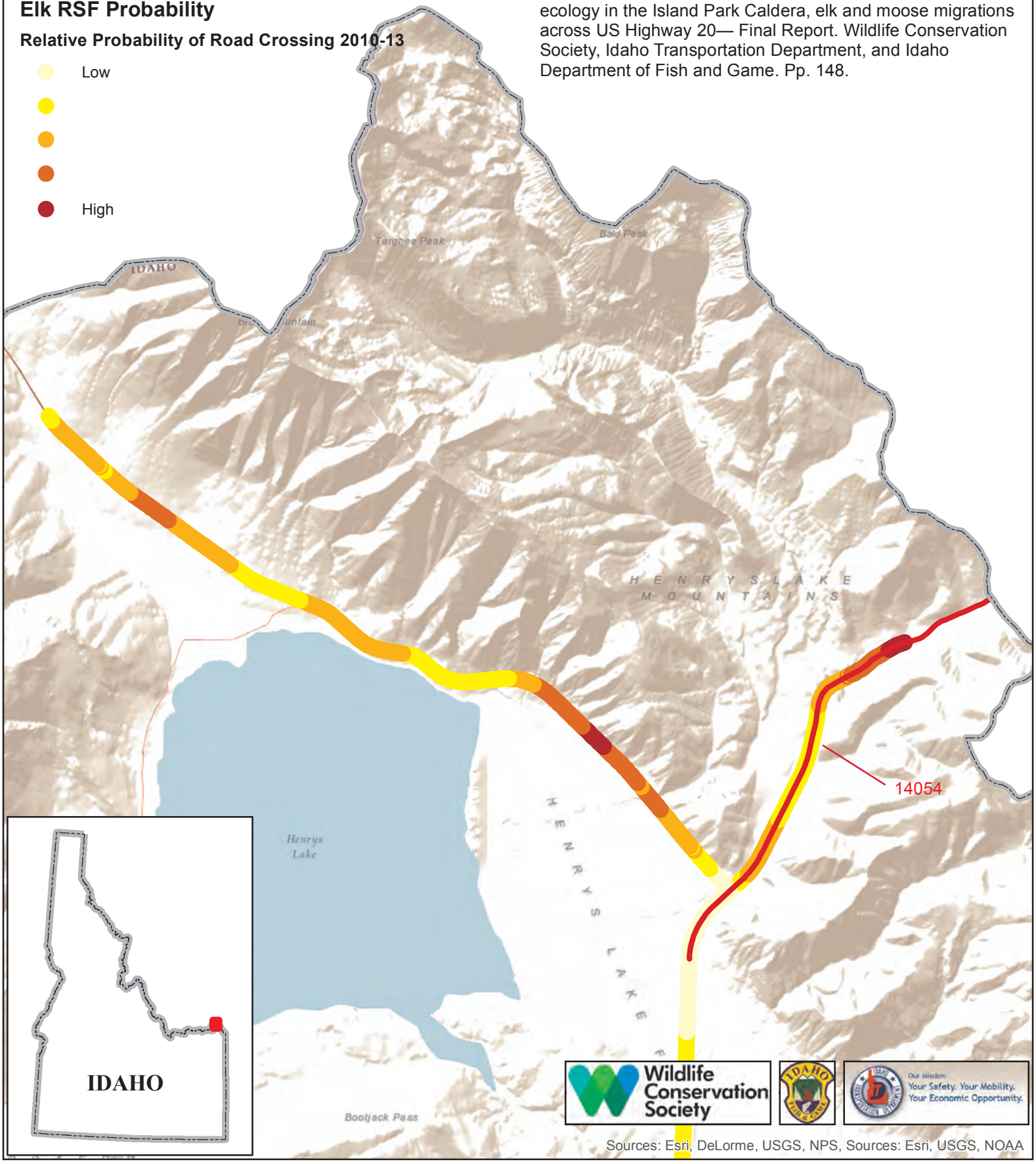
Elk RSF Probability

Relative Probability of Road Crossing 2010-13

Low

High

Andreasen, A. M., R. G. Seidler, S. Roberts, H. Miyasaki, P. Zager, M. Hurley, S. Bergen, D. Meints, P. Atwood, J. Berger, T. Cramer, and Jon P. Beckmann. 2014. US 20, Island Park wildlife collision study: an examination of road ecology in the Island Park Caldera, elk and moose migrations across US Highway 20— Final Report. Wildlife Conservation Society, Idaho Transportation Department, and Idaho Department of Fish and Game. Pp. 148.



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Moose

FY2017-2021 Idaho Transportation Projects

with anticipated potential impacts on wildlife habitat connectivity

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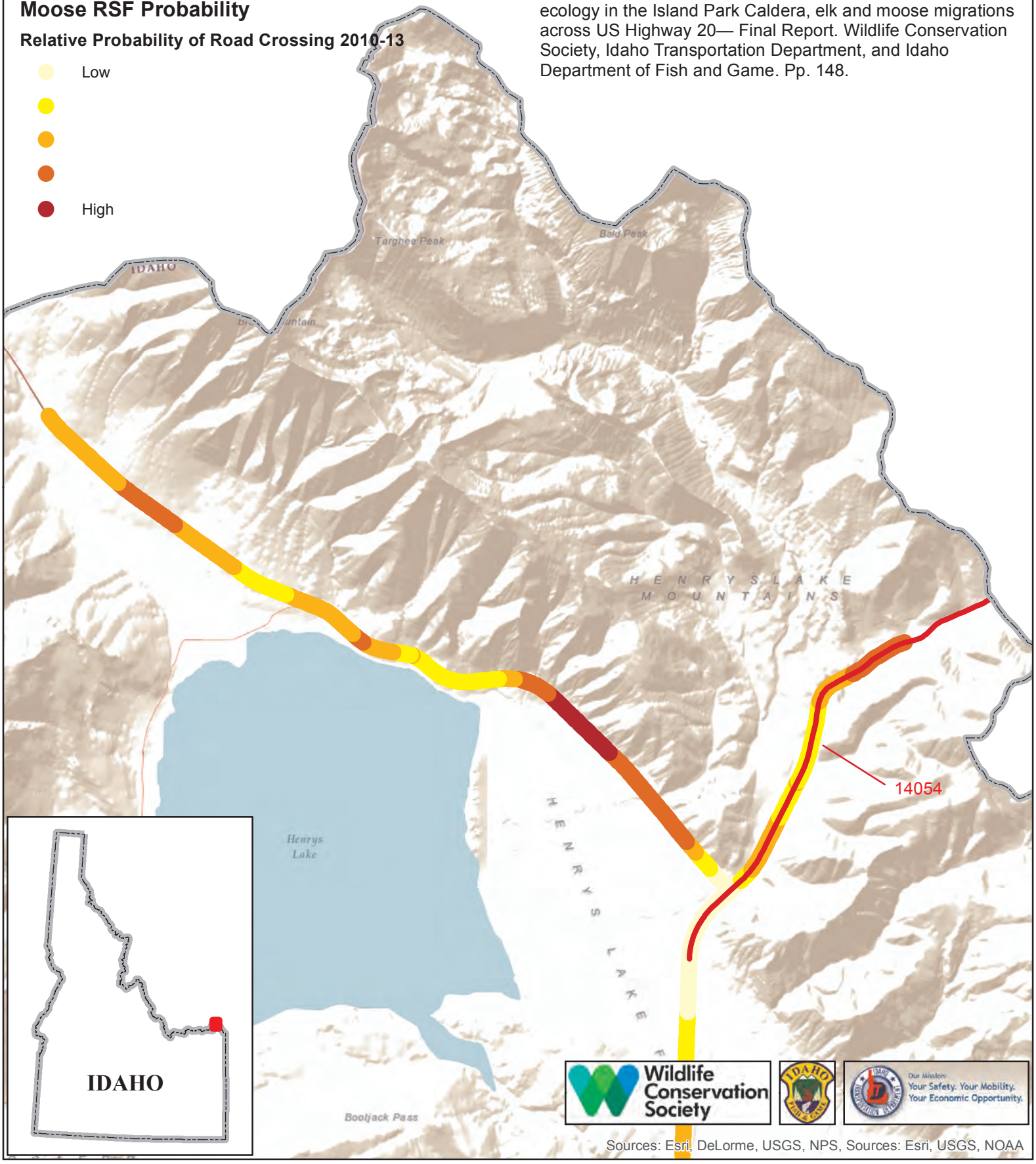

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The Nature Conservancy
Protecting nature. Preserving life.™

The Nature Conservancy of Idaho
Boise Office
950 W. Bannock St., Ste. 210
Boise, ID 83702

Tel (208) 343-8826
Fax (208) 343-8892

nature.org

July 28, 2016

Idaho Transportation Department
ITIP Comments, Attn: Adam Rush
PO Box 7129
Boise, ID 83707-1129

Dear Mr. Rush:

Thank you for the opportunity to comment on the draft *Idaho Transportation Investment Program*, FY2017 to FY2021. Please consider the following comments on behalf of the Idaho Chapter of the Nature Conservancy regarding safe transportation options for people and wildlife.

The Nature Conservancy works in local places across all 50 states to protect ecologically important lands and waters for the benefit of both nature and people. We use the best available science and a collaborative approach to achieve lasting, measurable results. Here in Idaho, we have worked with communities and landowners since 1976 when we purchased our first preserve, Silver Creek. Since then, we've helped conserve more than 400,000 acres of wildlife habitat in many of Idaho's iconic landscapes.

We appreciate the Department's work in recent years to reduce wildlife vehicle collisions and increase permeability of Idaho's transportation network for fish and wildlife. The Conservancy has been most closely involved with work in District 1 to reduce wildlife vehicle collisions in Boundary County, but we recognize this as a statewide issue of minimizing adverse effects on fish and wildlife while meeting Idahoans' transportation needs. We have appreciated District 1's leadership role in putting in place a state of the art animal detection system on Highway 95, in collaboration with the Conservancy and other partners in the Kootenai Valley Resource Initiative.

We hope you will continue to strive to mitigate transportation effects on wildlife across Idaho. Early planning to integrate fish and wildlife concerns with transportation needs is key to finding cost effective solutions. The Department's recent memorandum of understanding with Idaho Department of Fish and Game is a great example of proactive coordination. The Conservancy does not have the capacity to weigh in on every transportation project affecting fish and wildlife, so having the ITD/IDFG MOU in place gives us confidence that your Departments are working together in finding the best transportation solutions for people and wildlife.

Thank you for your consideration of our comments, and for your consideration of fish and wildlife impacts as you plan for Idaho's transportation future. Please contact me if you have questions or concerns about our comments or to suggest ways that the Conservancy can be of assistance.

Sincerely,

Bas Hargrove
Sr. Policy Representative

100% post-consumer materials