Biological Evaluation Supplemental Information Spreadsheet

This spreadsheet was produced to support the 2020 Forest Plan FEIS and Biological Evaluation FEIS Appendix.

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1	**Biological Evaluation of Regional Forester Sensitive Wildlife**	**Distribution and Abundance in the Plan Area**	**Population Trend in the Plan Area**	**Habitat Description**	**Habitat Trend in the Plan Area**	**Relevant Life History & Other Information**	**Threats Relevant In or To the Plan Area**	**Relevant Plan Components**	**Section of EIS relevant to species and Species Habitat (within Chapter 3, Affected Environment and**	**RFSS Determinatation**	**Rationale for RFSS Determination**	**Best Available Scientific Information**
2	Bald eagle (Haliaetus leucocephalus)	Observations have been frequent and widespread (>200 within 7 GAs). 8 territories recorded on or within 1/2 mile of NFS lands (3 GAs). However, because preferred nest sites are located along large reservoirs, lakes and rivers, most nests are not on NFS lands. (MNHP observation records; MBEWG 2016).	Unknown specific to plan area, but known nesting pairs have increased across Montana from 31 in 1980 to over 700 in 2014, with no indication of stabilizing other than a trend of smaller broods (MBEWG 2016).	Forested areas along rivers and lakes, especially during nesting season. Wintering habitat may include upland sites. Nests are usually built in the largest trees available (MNHP and MFWP 2016). In Montana, this is most often cottonwoods even when large conifers are present (MBEWG 2016).	Unknown, but based on the dramatic increase in territories statewide, prey and nest tree availability are not likely declining.	Long lived species with fidelity to nest areas and delayed age to first reproduction (4-6 years). Forages primarily on fish, waterfowl and carrion. Strong nationwide population recovery after pesticide prohibitions put in place. (MNHP and MFWP 2016)	No foreseeable population-level threats. Human activity could affect reproductive success but habituation is known to occur in this species where activities are not otherwise harmful (Guinn 2013).	FW-WTR-DC-01, 06, 09, 11; FW-WTR-STD-01; FW-WTR-GDL-01; FW-RMZ-DC-03; FW-FAH-DC-01, 07; FW-VEGT-DC-02, 03; FW-VEGF-DC-01, 04; FW-VEGF-GDL-01; FW-WL-DC-01 – 03, 06; FW-WL-GO-01 – 02; FW-WL-GDL-09; FW-REC-DC-04; FW-REC-GDL-01, 03; FW-RSUP-GDL-01; FW-WILD-DC-03, 04; FW-IRA-DC-01; FW-WSR-DC-01, 02; FW-WSR-GDL-01; FW-RT-DC-04; FW-FWL-DC-03	3.13.5; 3.13.6	May impact individuals or habitat, but will not likely result in a trend toward federal listing or loss of viability for the population or species.	Plan components for terrestrial ecosystems and vegetation will provide for very large trees used for nesting or roosting and limit the risk of disturbance during key time periods. Aquatic plan components will maintain or restore habitats used for feeding.	Guinn, J. 2013. Generational habituation and current bald eagle populations. Human-Wildlife Interactions 7:69-76. MBEWG. 2016. Bald eagle nesting populations and nest monitoring, 1980-2014. Final report. MFWP. 27 pp. MFWP and MNHP. 2016. Bald Eagle — Haliaetus leucocephalus. Montana Field Guide. Accessed from http://FieldGuide.mt.gov/speciesDetail.aspx?elcode=ABNKC10010 MNHP observation records
3	Bighorn Sheep (Ovis canadensis)	Multiple herds in Rocky Mountains GA, and smaller, more isolated herds in the Elkhorns and Big Belts GAs. There is recent (since 2014) evidence of small numbers of bighorn occurring again in the Little Belts GA after prolonged absence (MFWP data). According to MFWP (2017),the Sun River area of the Rocky Mountains GA has supported one of the most robust and resilient herds in Montana and has been the source for sheep translocated to other states and parts of Montana. This is despite several high mortality events noted since the 1930's.	Variable. Trend on Rocky Mountain front was up, declined due to disease between 2010 to 2013, now stable to increasing. The Elkhorns herd, which was translocated from elsewhere in 1990's) has experienced severe disease die-off and may not persist. Big Belts herd generally stable to increasing. Historical loss (early 1900's) of herds in Little Belts and Snowies (B. Lonner, MFWP, pers. comm. with W. Clark, HLC), although there are several recent verified reports of rams, ewes and lambs in the Little Belts (J. Kolbe, MFWP, and D. Kemp, HLC, pers. comm with W. Clark, HLC).	Require steeply sloped, often rocky escape terrain (>60% slopes) in close proximity to foraging areas (forbs, grasses and short shrubs). Favor areas with high visibility, and avoid dense timber or high horizontal cover. These factors are more important than cover type or climatic conditions.	Variable; forest succession has claimed some bighorn habitat while fire has created or restored other areas.	Herds in Rocky Mountains GA exists in a metapopulation structure, with ocassional movement of individuals between herds to provide genetic exchange. Herds in Elkhorns, Big Belts and Little Belts are more isolated, although recent verified use of Little Belts after a long period of absense suggests there is connectivity to this area.	Threats are complex for this species. Respiratory disease (pneumonia) epidemics are considered a primary limiting factor, which is facilitated by contact with healthy domestic sheep or other infected bighorn (Besser et al., 2012; WSWG and WAFWA 2012). Pneumonia die-offs can be moderate and localized, to severe (>90% mortality), and recovery can be lenghty or non-attainable for small herds. Effective separation of wild and domestic sheep can minize risk of pneumonia transmission. Currently there are no active domestic sheep allotments within 10 miles of any bighorn herd in the plan area. Other diseases and parasites can also impact bighorns, particularly when acting in combination. Habitat can be affected in some areas by noxious weeds and forest succession.	FW-VEGT-DC-02, 03; FW-VEGNF-DC-03; FW-VEGNF-GDL-01; FW-WL-DC-01 – 04, 07; FW-WL-GDL-01, 05 – 08, 14; PCAZ1-NCDE-STD-03; FW-REC-DC-04; FW-REC-GDL-01; FW-WILD-DC-03; FW-IRA-DC-01; FW-GRAZ-DC-02; FW-GRAZ-GO-01; FW-GRAZ-STD-03, 04; FW-GDL-04; FW-FWL-DC-01, 03; FW-FWL-GO-01; FW-FWL-GDL-01; BB-WL-DC-01; BB-WL-STD-01; EH-WL-DC-04; EH-WL-STD-01; EH-WL-STD-03; LB-WL-DC-01, 02; LB-WL-STD-01; RM-WL-DC-02; RM-WL-STD-01, 02; RM-WL-GDL-01; RM-CMA-DC-01	3.13.5; 3.13.6	May impact individuals or habitat, but will not likely result in a trend toward federal listing or loss of viability for the population or species.	Plan components for terrestrial ecosystems, vegetation, and grazing will provide for required habitat and reduce the potential effects of grazing and disease transmission from domestic livestock.	B. Lonner, MFWP, pers. comm. with W. Clark, HLC MFWP bighorn herd area data. J. Kolbe, MFWP, pers. comm. With W. Clark, HLC. D. Kemp, HLC, pers. comm with W. Clark, HLC. Besser, T, M. Highland, K. Baker and others. 2012. Causes of pneumonia epizootics among bighorn sheep, Western US, 2008-2010. Emerging Infectious Diseases MFWP. 2017. MFWP Comment letter on HLC forest plan proposed action dated 03/29/2017. Western Sheep Working Group and Western Association of Fish and Wildlife Agences. 2012. Recommendations for domestic sheep and goat management in wild sheep habitat.
4	Black-backed woodpecker (Picoides arcticus)	Well distributed, low density species. Records in 6 GAs but may occur in all 9 based on distribution of habitat. Approximately 50 MNHP observation records on NFS lands, the vast majority within the last 25 years. Only 5 records through IMBCR bird monitoring program which does not effectively monitor this species. Plan area occurs within large, genetically continuous population extending from the Rocky Mountains across the boreal zone to Quebec, indicating high genetic connectivity (Pierson 2009).	Unquantified; however, this species is likely increasing based on habitat trends. Populations fluctuate in response to prey availalbility.	Conifer forests containing wood boring beetles or bark beetles, major food items. Woodpecker density and reproductive output are highest in recently (3-5 yrs) burned forests colonized by woodboring beetles, followed by forests that host high (epidemic) levels of bark beetles. Black-backed densities and reproductive output are much lower within live mature or dense forests having normal (endemic) levels of beetles, but these forest structures may be particularly important to sustain species during periods when fire and insect activity are relatively low (e.g., wet periods). (Mohren et al. 2014)	Wildland fire acreage in the plan area has been increasing and this trend is expected to continue (see Assessment).	This species (particularly males) is known to mobilize large distances (up to 62 mi) to exploit new burns and areas with high bark beetle populations. Species abundance and reproductive output increase with ephemeral prey pulses (Murphy and Lehnhausen 1998, Yunick 1985, Dixon and Saab 2000). Juveniles delay dispersal from natal site to exploit these conditions. Black-backed woodpecker is an excellent ecological example of a highly resilient, boom/bust species that can persist for years at low levels across a landscape, then be highly responsive when ideal conditions emerge.	Timber harvest, fire suppression and salvage logging may affect populations if they are applied over large enough spatial scales to affect prey populations.	FW-FIRE-DC-01, 03; FW-VEGT-DC-01; FW-VEGF-DC-02 – 09; FW-VEGF-GDL-01, 02, 04, 05; FW-WL-DC-01 – 04, FW-WL-GO-01, 02, 05; FW-WILD-DC-02, 03; FW-WILD-SUIT-03; FW-WSA-DC-01; FW-FWL-DC-03; BB-WL-DC-02; DI-WL-DC-02; EH-WL-DC-03; EH-WL-GDL-01; UB-WL-DC-02	3.13.5; 3.13.6	May impact individuals or habitat, but will not likely result in a trend toward federal listing or loss of viability for the population or species.	Plan components for terrestrial ecosystems and vegetation plan components for timber will protect burned forests used for nesting and feeding.	Dixon, R. and V. Saab. 2000. Black-backed Woodpecker (Picoides arcticus), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from: http://bna.birds.cornell.edu/bna/species/509 Mohren, S. M. Rumble, and S. Anderson. 2014. Density and abundance of black-backed woodpeckers in a ponderosa pine ecosystem. Prairie Naturalist 46:62-68. MNHP species observation records Murphy, E. and W. Lehnhausen. 1998. Density and foraging ecology of woodpeckers following a stand replacement fire. J. Wildl. Manage. 62:1359-1372. Pierson, J. 2009. Genetic population structure and dispersal of two North American woodpeckers in ephemeral habitats. Ph.D. Dissertation, Univ. Montana, Missoula. 213pp. Samson, F. A conservation assessment of the northern goshawk, black-backed woodpecker, flammulated owl, and pileated woodpecker in the Northern Region. USDA Forest Service, Northern Region. Accessed from: http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5130737.pdf Yunick, R. 1985. A review of recent irruptions of the black-backed woodpecker and three-toed woodpecker in eastern North America. J. Field Ornithology 56:138-152.
5	Burrowing Owl (Athene cunicularia)	At issuance of the 2011 RFSS list, this species was suspected to occur on the Lewis and Clark portion of the plan area. To date, no occurrences have ever been documented, and it is no longer suspected to occur.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No impact.	Species is not known or suspected to occur in the plan area.	MNHP observation records.
6	Fisher (Pekania pennanti)	Five MNHP observations, all in the Rocky Mountain and Upper Blackfoot GAs, and all subsequent to fisher translocations that occurred west of the plan area from the 1950s-1980s. The plan area likely does not support resident fishers but may get occassional transient use by individuals seeking territories in suitable habitat (e.g., young males). Intense, recent, multi-year surveys across the SW Crown of the Continent area (which includes Upper Blackfoot GA) and Glacier Nat'l Park (adjacent to Rocky Mountain GA) have failed to detect fishers and concluded they are not likely present (Waller 2018, SWCCMT 2018).	Decrease since translocations occurred west of the plan area in the 1950's-1980's. No MNHP observation records in plan area prior to translocations. The last observation of a fisher in the plan area was in 2003. While this indicates that some reproduction and/or dispersal may have periodically occurred from the introduction efforts, there is no evidence that resident fisher currently occur in the plan area, or that fisher were native here historically.	Restricted to regions with tall mesic forests and wet mild climates (i.e., high mean annual precipitation and mid-range winter temperatures) (Olson et al.2014). In Montana, these conditions are rarely found east of the continental divide where the plan area occurs. Olson et al. (2014) modelled only small, isolated amounts of potential habitat in the plan area, widely separated by natural barriers (e.g., valleys) from core habitat in north central Idaho. Collectively, these data indicate the plan area provides neither sufficient habitat to support resident animals or to provide connectivity to other core habitats.	Unknown. Habitat is inherently very limited in the plan area.	Inherently low density species with large home ranges and relatively low dispersal distances (Vinkey et al. 2006, Sauder 2014). Generalist predator, consuming a wide variety of prey including red squirrels and snowshoe hare.	None identified, other than lack of natural habitat (tall mesic forests and wet mild climates). In other areas, loss of trees large enough to hold denning fishers (such as western red cedar) may be an issue.	FW-VEGT-DC-02, 03, 04; FW-VEGF-DC-02 – 05, 07; FW-VEGF-GDL-01 – 04; FW-WL-DC-01 – 04, 06; FW-WL-GO-01, 02; FW-WILD-DC-01 – 03; FW-FWL-DC-03; RM-WL-DC-01; UB-WL-DC-01	3.13.5; 3.13.6	May impact individuals or habitat, but will not likely result in a trend toward federal listing or loss of viability for the population or species.	Plan components for terrestrial ecosystems, vegetation, and riparian management zones will provide for very large trees (live and dead) used for denning and resting. A mosaic of successional stages will provide cover and feeding habitat.	MNHP observation records Olson, L., J. Sauder, N. Albrecht, R. Vinkey and others. 2014. Modeling the effects of dispersal and patch size on predicted fisher (Pekania [Martes] pennanti) distribution in the US Rocky Mountains. Biological Conservation 169, 89-98. Waller, J. 2018. Status of fisher in Glacier National Park, Montana. Northwestern Naturalist 99: 1-8.

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7	Flammulated Owl (Psiloscops flammeolus)	Documented in Upper Blackfoot, Divide, Big Belts and Elkhorns GA.	Unknown	Mature and oldgrowth ponderosa pine stands having low to moderate canopy closure and large snags (cavities) for nesting. Douglas-fir and aspen may also be present. (Seidensticker et al. 2013; Linkhart and McCallum 2013). As of 2015, about 25,000 acres of habitat is in plan area using the Samson (2006) methodology (see Flammulated Owl section of EIS).	Ponderosa pine forests have decreased in abundance and distribution, and their structure has changed over the last century. The ponderosa pine cover type is less prevalent in plan area than dry Douglas-fir, and is probably less abundant than it was historically (see Assessment).	Consumes insects. Relatively long-lived; longevity record is 14 years (Linkhart and Reynolds 2004). Summer migrant in plan area. Direct evidence of breeding not recorded (MNHP observation records). Non-breeding males may hold territories, which precludes use of singing as indicator of breeding (Linhart and McCallum 2013). Adults have high nest area and mate fidelity among years. Juveniles usually do not have high fidelity to natal area and often disperse long distances, likely contributing to the substantial genetic intermixing of flammulated owls in the western US and Canada (Arsenault et al. 2005, Linkhart and McCallum 2013).	Stand replacing fire and suppression of mixed severity fires can both reduce the amount of open mature ponderosa pine habitat used by this species. Past harvest of large ponderosa pine, and loss of large pine snags harvested along open roads also may have contributed to historic habitat loss.	FW-FIRE-DC-01, 03; FW-VEGT-DC-01; FW-VEGF-DC-01 – 09; FW-VEGF-GDL-01, 02, 04, 05; FW-WL-DC-01 – 04, FW-WL-GO-01, 02, 05; FW-WILD-DC-02, 03; FW-WILD-SUIT-03; FW-WSA-DC-01; FW-FWL-DC-03; BB-WL-DC-02; DI-WL-DC-02; EH-WL-DC-03; EH-WL-GDL-01; UB-WL-DC-02	3.8.6; 3.13.5; 3.13.6; 3.14.1; 3.14.11	May impact individuals or habitat, but will not likely result in a trend toward federal listing or loss of viability for the population or species.	Plan components for terrestrial ecosystems and vegetation and plan components for species of conservation concern will provide for snags used for nesting and restore the forest structure needed for feeding and roosting.	Arsenault, D., P. Stacey, and G. Hoelzer. 2005. Mark-recapture and DNA fingerprinting reveal high breeding-site fidelity, low natal philopatry, and low levels of genetic population differentiation in flammulated owls (*Otus flammeolus*). Auk 122:329-337. Assessment of the Helena-Lewis and Clark National Forests. Available at http://www.fs.usda.gov/detailfull/flathead/home/?cid=stelprdb5422786&width=full Cilimburg, A. 2006. Northern region landbird monitoring program: 2005 flammulated owl surveys final report. Avian Science Center, U. Montana, Missoula. Linkhart, B., and D. McCallum. 2013. Flammulated Owl (Psiloscops flammeolus). Cornell Lab of Ornithology, Ithaca. Accessed from the Birds of North America Online at http://bna.birds.cornell.edu/bna/species/093 doi:10.2173/bna.93 Reynolds, R. and B. Linkhart. 1990. Longevity records for male and female flammulated owls. J. Field Ornithology 61:243-244. Seidensticker, M., D. Holt, and M. Larson. 2013. Breeding status of flammulated owls in Montana. Northwestern Naturalist 94:171-179.
8	Gray Wolf (Canis lupus)	Well distributed, recovered population. 86 wolf observations in MNHP database since 2005. Most records are within Rocky Mountain, Upper Blackfoot and Divide GAs, but Highwoods, Little Belts, Elkhorn, Crazies and Snowies also reflected.	Increased under Endangered Species Act protections and after delisting in 2011. For example, in 2005, a minimum of 19 packs containing 126 individual wolves and 10 successful breeding pairs were verified in the Montana portion of the northwest Montana recovery area (Sime et al. 2006), compared with 85, 349, and 20, respectively, in 2015 (Coltrane et al. 2016). Relatively stable now with minor adjustments from management control, harvest, and recruitment. Statewide, at least 1,802 wolves, 302 packs, and 78 breeding pairs in 2014. The Northern Rocky Mountain population has exceeded recovery goals since 2002 and remains secure under State management (USFWS et al. 2015).	The gray wolf exhibits no particular habitat preference except for the presence of native ungulates (deer, elk and moose) within its territory on a year-round basis (MNHP and MFWP 2016). Some packs or individual wolves may prey on livestock but these animals are often removed from the population.	Likely stable, given abundant elk and deer populations.	Widely disperses; Up to 500 miles documented. Study in NW Montana showed average movement away from natal territories was 70 mi for males and 48 mi for females, before establishing a new territory or joining an existing pack (MTNHP and MTFWP 2016). Wolves naturally recolonized northwestern Montana after extirpation, through dispersal from Canada. This, along with dispersal from successful reintroductions in Yellowstone NP and central ID, led to exceedance of recovery goals and de-listing from ESA (MNHP and MFWP 2016). Gray wolf populations are managed by MFWP in accordance with the Montana Gray Wolf Conservation and Management Plan, which is approved by the FWS. (Bradley et al. 2015). Harvest is regulated in accordance with recovery goals.	No known threats to persistence in the plan area. Direct human-caused mortalities are the largest documented sources of wolf mortality statewide but these do not threaten persistence, as evidenced by continued recovery (Coltrane et al. 2016). For example, in 2015, a year of continued population recovery, about 98% of all 276 documented mortalities in Montana was attributable to humans (e.g., legal harvest, agency control, vehicle collisions, illegal kills, etc.). About 1% was due to natural causes, and the remaining 1% was unknown (Coltrane 2016).	FW-VEGT-DC-02, 03; FW-VEGNF-DC-03; FW-VEGNF-GDL-01; FW-WL-DC-01 – 05, 07; FW-WL-GDL-01, 05 – 08, 14; PCAZ1-NCDE-STD-03; FW-REC-DC-04; FW-REC-GDL-01; FW-WILD-DC-03; FW-IRA-DC-01; FW-GRAZ-DC-02; FW-GRAZ-GO-01; FW-GRAZ-STD-03, 04; FW-GRAZ-GDL-04; FW-FWL-DC-01, 03; FW-FWL-GO-01; FW-FWL-GDL-01; BB-WL-DC-01; BB-WL-STD-01; EH-WL-DC-04; EH-WL-STD-01; EH-WL-STD-03; LB-WL-DC-01, 02; LB-WL-STD-01; RM-WL-DC-02; RM-WL-STD-01, 02; RM-WL-GDL-01; RM-CMA-DC-01; FW-WSR-DC-01, 02; FW-WSR-GDL-01; FW-LAND-DC-03; FW-LAND-GO-01; BB-WL-DC-03; CR-WL-DC-01; DI-WL-DC-01; EH-WL-DC-02; RM-WL-DC-01; UB-WL-DC-01	3.13.5; 3.13.6	May impact individuals or habitat, but will not likely result in a trend toward federal listing or loss of viability for the population or species.	Plan components for wildlife diversity (including those for ungulate prey) will provide for prey species, and plan components for designated areas will limit the risk of disturbance during key time periods and protect denning and rendezvous sites.	Coltrane, J., J. Gude, B. Inman and others. 2016. Montana gray wolf conservation and management. 2015 annual report. MFWP, Helena. 60pp. MNHP and MFWP. 2016. Gray Wolf — Canis lupus. Montana Field Guide. Accessed from http://FieldGuide.mt.gov/speciesDetail.aspx?elcode=AMAJA01030 Sime, C., V. Asher, L. Bradley, and others. 2006. Montana gray wolf conservation and management 2005 annual report. Montana Fish, Wildlife & Parks. Helena, Montana. 95pp US Fish and Wildlife Service, Idaho Dept. Fish and Game, MFWP and others. 2015. Northern Rocky Mountain wolf recovery program 2014 interagency annual report. M. Jimenez and S. Becker, eds. USFWS Ecological Services, Helena Montana. Accessed from http://www.fws.gov/mountain-prairie/es/species/mammals/wolf/annualrpt14/2014_FINAL_NRM-Summary.pdf
9	Greater Sage-grouse (Centrocercus urophasianus)	No observation records in plan area. Species is not known or suspected to occur in plan area. Habitat is naturally limited in plan area, and is insufficient to support the species. The statement in the Assessment about sagebrush steppe providing habitat for sage-grouse was made in a general context and was not intended to imply that sage-grouse occur in the plan area.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No impact.	Species is not known or suspected to occur in the plan area.	MNHP observation records.
10	Greater Short-horned Lizard (Phrynosoma hernandesi)	At issuance of the 2011 RFSS list, this species was suspected to occur on the Lewis and Clark portion of the plan area. To date, no occurrences have ever been documented, and it is no longer suspected to occur.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No impact.	Species is not known or suspected to occur in the plan area.	MNHP observation records.
11	Harlequin Duck (Histrionicus histrionicus)	Found in 6 major drainage basins, all on Rocky Mtns GA. Within those, observed on approximately 19 separate streams, with broods noted on 12. Occasional records of non-breeding ducks (primarily males) in other GAs.	12 streams in the plan area have been surveyed for harlequin broods at least once, and about half of those have been monitored at least three times. Broods continued to be detected in nearly all of that latter category during the most recent year surveyed. This includes the 2 streams with the oldest known brood records (1935). These data suggest that the number of brood rearing streams have been stable in the plan area. Statewide trends data are not known.	Clear, fast flowing mountain streams with abundant aquatic insects. A variety of nest sites have been documented, including cliffs, down logs in burned areas, instream logjams, and streambanks with thick shrub or tree cover (Cassirer and Groves 1994, L. Bate pers. comm w/ R. Kuennen). Key habitat characteristics are high water quality and complex stream structure (L. Bate pers. comm. with R. Kuennen 2015). Calm back waters along rivers or beaver ponds may be important for brood rearing (Kuchel 1977).	Montane riparian vegetation is not monitored on the Forest, but is likely relatively stable due to long-standing direction that limits vegetation management activities within them. In general, stream habitat conditions are slightly degraded in managed subwatersheds when compared to unmanaged or lightly managed watersheds. Overall trends, when there are enough data collected, show some improvement in aquatic habitat. Some locations and/or some indicators do have negative trends. (PIBO Reports for the Helena Lewis and Cark, 2016)	Harlequin ducks are relatively long-lived, with low reproductive output, delayed reproduction, and high fidelity to breeding sites and mates. All of these traits may limit the extent to which populations can rebound from declines. The survival of adult females is likely the most critical factor in maintaining local populations (Wiggins 2005). Annual productivity may be influenced by the timing and intensity of spring water flows, as flooding may preclude or delay nest building, wash out nests, or possibly increase mortality of juveniles (Hansen et al. 2020, Hansen 2014, Kuchel 1977).	Threats are not well understood. Predation on coastal wintering areas by a growing bald eagle population is suspected to influence rates of mortality and return of breeding females to Montana (B. Maxell, MNHP, pers comm with C. Staab, USFS). Kuchel (1977), relying on very small sample sizes, found young harlequins may be sensitive to some types of human presence during their first 4 weeks of life. However, females nesting in high quality habitat may tolerate or habituate to high levels of human activity, particularly where vegetation is dense (Hansen 2014, Wallen and Grove 1989). Competition with some species of fish, climate change, and hunting in wintering areas may also affect the species.	FW-WTR-DC-01, 03, 06, 07, 10; FW-WTR-GDL-01; FW-RMZ-DC-01; FW-RMZ-STD-03, 05; FW-FAH-DC-01 – 07; FW-FAH-GDL-01, 04; FW-WL-DC-01 – 04, 06, 10; FW-WL-GO-01, 02, 04 – 06; FW-WILD-DC-02 – 04; FW-WSR-DC-01, 02; FW-WSR-GDL-01; FW-FWL-DC-03; RM-WL-DC-03; RM-WL-GDL-02; UB-WL-DC-03; UB-WL-GDL-02	3.8.6; 3.13.5; 3.13.6	May impact individuals or habitat, but will not likely result in a trend toward federal listing or loss of viability for the population or species.	Plan components for aquatic ecosystems (including riparian management zones), recreation and other stream uses will protect sites used for nesting and feeding and limit the risk of disturbance during key time periods.	Cassirer, E. and C. Groves. 1994. Ecology of Harlequin Ducks in northern Idaho. Idaho Dept. Fish Game, Boise. Hansen, W., L. Bate, S. Gniadek, and C. Breuner. 2019. Influence of Streamflow on Reproductive Success in a Harlequin Duck (Histrionicus histrionicus) Population in the Rocky Mountains. Waterbirds 42: 411-424. Hansen, W. 2014. Causes of annual reproductive variation and anthropogenic disturbance in harlequin ducks breeding in Glacier National Park, Montana. M.S. Thesis, Univ. Montana, Missoula. 90pp. Hendricks, P. and J. Reichel. 1998. Harlequin Duck research and monitoring in Montana: 1997. Montana Natural Heritage Program, Helena. 28 pp Kuchel, C. 1977. Some aspects of the behavior and ecology of harlequin ducks breeding in Glacier National Park. M.S. Thesis, Univ. Montana, Missoula. 163pp. B. Maxell, MNHP pers. comm. with C. Staab, USFS PIBO Reports for the Helena Lewis and Cark, 2016 Wiggins, D. 2005. Harlequin Duck (Histrionicus histrionicus): a technical conservation assessment. USDA Forest Service, Rocky Mountain Region. Available at http://www.fs.fed.us/r2/projects/scp/assessments/harlequinduck.pdf Wallen, R.L. and C.R. Groves. 1989. Distribution, breeding

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12	Northern Bog Lemming (Synaptomys borealis)	Only one MNHP observation, of a single female in 1993. This was recorded during the only bog lemming survey in the plan area, at one of four sites (757 total trap-nights), all in the Rocky Mountain GA (Reichel and Beckstrom 1994). However, this species is very difficult to detect even with targeted sampling, and a lack of detection is not a reliable indicator of absence. Also, this species is non-migratory and the habitat has not been degraded or disturbed to become unsuitable.Therefore this species is suspected to still occur in the plan area.	Unknown. Neither adequate baseline surveys nor repeated monitoring of the one known occupied site has occurred. This species is known to undergo population fluctuations in more northerly portions of its range, and although unstudied, such changes may be less dramatic in Montana (Reichel and Corn 1997).	The only known detection site on the HLC was a fen meadow - beaver pond complex having scattered trees and thick moss cover (Reichel and Beckstrom 1994). Statewide, species has been found in 22 sites characterized by at least 9 community types; however, wet meadows, fens (a type of peatland), and other bog-like environments are thought to be preferred, especially where mosses occur (MNHP and MFWP 2015). Sites as small as 1 acre have been utilized (Reichel and Corn 1997). The MNHP Mapped Wetlands and Riparian GIS layer shows 43 mapped peatlands ≥ 1 acre in the plan area. An additional 3,127 areas ≥1 acre in size have wet meadow characteristics (i.e., seasonally or temporarily flooded soils). Together, these important habitats total about 11,000 acres in the plan area.	Unknown. No fen or wet meadow vegetation monitoring data available. In general, due to their great mass of water-holding organic matter, peatlands are exceptionally stable and may persist for centuries. Without disturbance, peatlands support self-perpetuating communities (Chadde et al 1998). Heavy grazing was noted in riparian area adjacent to the plan area's known bog lemming site, during the same year of detection (Reichel and Beckstrom 1994); however, and distance to the site was not recorded, and there are no long-term data to indicate a chronic problem.	High reproductive potential and an unknown - but likely short - life span, similar to other rodents and r-selected species. Capable of producing 2 or 3 litters per year, and breeding during the summer of birth (MNHP and MFWP 2016). Reichel and Corn (1997) developed a population viability analysis (PVA) using life history data from a related species, but concluded the model lacks validity without species-specific population parameters.	Timber harvest, road building, and chronic grazing can alter structure and function of wetlands when not properly managed; however, these are not likely a significant threat to fen and wet meadow habitats on HLC due to long-standing riparian management direction to comply with the Clean Water Act and Endangered Species Act. In northern Idaho, Groves (1994) captured the bog lemming primarily in second-growth forest, once in old growth, and not at all in clear cuts. There is high uncertainty regarding the effect of projected climate change on fen and other wetlands utilized by bog lemmings.	FW-WTR-DC-01 – 05, 09, 10, 11; FW-WTR-STD-01; FW-WTR-GDL-01, 03; FW-RMZ-DC-01, 02; FW-RMZ-STD-02 – 06; FW-RMZ-GDL-01 – 12; FW-FAH-DC-01 – 07; FW-FAH-GDL-01, 03, 04, 05; FW-VEGNF-DC-01 – 03; FW-WL-DC-01 – 04, 06; FW-WL-STD-01; FW-WL-GDL-01, 03, 04, 07, 08, 13; FW-GRAZ-DC-02 – 04; FW-GRAZ-STD-01, 02; FW-GRAZ-GDL-01 – 07; HI-VEGNF-DC-01; FW-SOIL-DC-02; FW-VEGT-DC-06; FW-VEGF-DC-11	3.13.5; 3.13.6	May impact individuals or habitat, but will not likely result in a trend toward federal listing or loss of viability for the population or species.	Plan components for wilderness areas, riparian management zones, and forested and nonforested vegetation will provide for sites used for breeding and feeding.	Chadde, S, J.S. Shelly, R. Buskirk and others. 1998. Peatlands on national forests of the northern Rocky Mountains: ecology and conservation. USDA Forest Service Rocky Mountain Research Station. General Technical Report RMRS-GTR-11. MNHP and MFWP. 2016. Northern Bog Lemming — Synaptomys borealis. Montana Field Guide. Accessed from http://FieldGuide.mt.gov/speciesDetail.aspx?elcode=AMAFF17020 Reichel J. and S. Beckstrom. 1994. Northern bog lemming survey: 1993. A report to USDA Forest Service Kootenai, Flathead and Lewis and Clark NFs. MNHP, Helena. Reichel, J.D. and J.G. Corn. 1997. Northern bog lemmings: survey, population parameters, and population analysis. Unpublished report to the Kootenai National Forest. Montana Natural Heritage Program, Helena, MT. 27 pp USDA Forest Service. 2015. Helena - Lewis & Clark National Forests, Forest Plan Assessment.
13	Northern Leopard Frog (Rana pipiens)	16 MNHP observations within Highwoods GA of plan area.	Unknown, however, distribution of MNHP observation records collected between 2002 and 2007 is similar to those recorded in all years prior to that time period. Populations east of the continental divide appear to have been stable over the past decade (MNHP and MFWP 2020).	Low elevation and valley bottom ponds, spillway ponds, beaver ponds, stock reservoirs, lakes, creeks, pools in intermittent streams, warm water springs, potholes, and marshes. There is no evidence that this species in Montana has ever occupied high elevation wetlands (MNHP 2020); thus habitat is naturally limited in plan area.	Unknown.	This species is of concern in mountainous areas west of the continental divide, whereas populations in the central and eastern portions of Montana (where the plan area is) appear to be secure (MNHP and MFWP 2020).	In breeding ponds, threats may include removal of emergent vegetation, trampling by livestock, and presence of predatory fish (MNHP and MFWP 2020). No special management needs are currently recognized for populations in eastern Montana.	FW-WTR-DC-01 – 05, 09, 10, 11; FW-WTR-STD-01; FW-WTR-GDL-01, 03; FW-RMZ-DC-01, 02; FW-RMZ-STD-02 – 06; FW-RMZ-GDL-01 – 12; FW-FAH-DC-01 – 07; FW-FAH-GDL-01, 03, 04, 05; FW-VEGNF-DC-01 – 03; FW-WL-DC-01 – 04, 06; FW-WL-STD-01; FW-WL-GDL-01, 03, 04, 07, 08, 13; FW-GRAZ-DC-02 – 04; FW-GRAZ-STD-01, 02; FW-GRAZ-GDL-01 – 07; HI-VEGNF-DC-01	3.13.5; 3.13.6	May impact individuals or habitat, but will not likely result in a trend toward federal listing or loss of viability for the population or species.	Plan components for terrestrial ecosystems, vegetation, grazing, and riparian management zones will provide for areas used for breeding and feeding.	MNHP observation records. MNHP and MFWP. 2020. Northern Leopard Frog — Lithobates pipiens. Montana Field Guide. Accessed 3/26/2020 from http://FieldGuide.mt.gov/
14	Peregrine Falcon (Falco peregrinus)	Documented breeding in approx 12 locations across 3 GAs (Rocky Mountains, Big Belts, Little Belts), with many (>40) additional indirect- or non-breeding records in 2 others (U. Blackfoot, Snowies). (MNHP observation records)	Increased under Endangered Species Act protections and after delisting in 1999. For example, 5 new eyries documented in plan area post-delisting. (MNHP observation records, Sumner and Rogers 2015).	Nests typically are situated on ledges of vertical cliffs, often with a sheltering overhang. Ideal locations include undisturbed areas with a wide view, near water, and close to plentiful prey. Substitute man-made sites can include tall buildings, bridges, rock quarries, and raised platforms (MNHP and MFWP 2016).	Cliffs / nest sites are geologically stable. Forages on a variety of prey species and therefore is not very sensitive to changes in non-nesting habitat.	Peregrine Falcons feed primarily on birds (medium-size passerines up to small waterfowl), but also occasionally on small mammals (e.g., bats, lemmings), lizards, fishes, or insects (by young birds). Peregrine Falcons may hunt up to several km from nest sites (MNHP and MFWP 2016).	Pesticide effect on eggshell thickness led to federal listing of this species, but contaminant levels were reduced sufficiently to allow recovery and expansion of the species (USFWS 2003). No significant relevant threats in plan area currently.	FW-VEGNF-DC-01, 03; FW-VEGNF-GDL-01; FW-WL-DC-01 – 04, 06, 07; FW-WL-GO-01, 02, 05, 06; FW-WL-GDL-09; FW-FWL-DC-03; FW-EMIN-DC-03, 04	3.13.5; 3.13.6	May impact individuals or habitat, but will not likely result in a trend toward federal listing or loss of viability for the population or species.	Secure in plan area. Increasing population, stable habitat, no significant threats to populations.	MFWP and MNHP. 2016. Peregrine Falcon — Falco peregrinus. Montana Field Guide. Accessed from http://FieldGuide.mt.gov/speciesDetail.aspx?elcode=ABNKD06070 MNHP observation records Sumner, J. and R. Rogers. 2015. 2015 Montana peregrine falcon survey. Prepared for MFWP. 37 pp + appendices. USFWS. 2003. Monitoring Plan for the American Peregrine Falcon, A Species Recovered Under the Endangered Species Act. Accessed from https://www.fws.gov/endangered/esa-library/pdf/Peregrineplan2003.pdf
15	Plains Spadefoot (Spea bombifrons)	At issuance of the 2011 RFSS list, this species was suspected to occur on the Lewis and Clark portion of the plan area. To date, no occurrences have ever been documented, and it is no longer suspected to occur.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	No impact.	Species is not known or suspected to occur in the plan area.	MNHP observation records.
16	Townsend's big-eared bat (Corynorhinus townsendii)	18 MNHP observation records in 2 GAs (Big Belts and Little Belts), all but 6 since 2010. Four known hibernacula, no known maternity roosts.	Unknown, but use of known hibernacula appears stable. MNHP observation records show that all 4 known hibernacula have shown continued use by Townsend's bats in each year that monitoring occurred (2-4 visits per cave, spanning 2-20 years per cave).	Requires cavern-like structures for roosting during all life stages. Appears to be more closely tied to caves than many other bat species (Pierson et al. 1999). The number of caves is unknown in plan area, but suspected to be around 90. Old mine tunnels may be used for hibernacula if temperatures are suitable. Most caves and mines in Montana appear to be too cool in summer for use as maternity roosts. Other summer roosts (day and night) do not likely limit populations, and may include snags and old buildings (MFWP and MNHP 2016).	Likely stable due to inherent stability of caves. There is no data to support a notion that habitat trend for big-eared bats has been affected by human visitation of caves in the plan area. Snow likely limits access to and conceals the entrances to most caves (including hibernacula) during most winters.	Species does not appear to be susceptible to white-nosed syndrome, though may be a carrier of the fungus that causes the disease (Maxell 2015, USFWS 2020). In Montana, Townsend's bat has been found at summer and winter roosts in the presence of other bat species, although it usually found hibernating in the open and alone, rather than in clusters or wedged in cracks (MNHP and MFWP 2017).	Excessive human activity in or immediately around caves can disturb hibernating bats but there is no indication this limits the population of Townsend's bat in the plan area. Improper closure of caves, mines or roost structures can reduce roosting habitat availability and potentially trap bats if timing is not appropriate. Species does not appear to be susceptible to white-nosed syndrome, though may be a carrier of this disease (Maxell 2015, UFWS 2020).	FW-VEGT-DC-01 – 03; FW-VEGF-DC-03 – 06; FW-VEGF-GDL-01 – 05; FW-WL-DC-01 – 06, 08, 10; FW-WL-GO-01, 02, 05 – 07; FW-WL-GDL-10 – 12; FW-OFP-GDL-03; FW-FWL-DC-03; FW-EMIN-DC-01, 02; FW-EMIN-STD-02; FW-EMIN-GDL-03; FW-WILD-GDL-02	3.13.5; 3.13.6	May impact individuals or habitat, but will not likely result in a trend toward federal listing or loss of viability for the population or species.	Plan components for wildlife, caves, and terrestrial vegetation will provide for sites used as maternity roosts and hibernacula and limit the risk of disturbance during key time periods substantial threats relevant to the plan area.	Maxell, B. Coordinator. 2015. Montana Bat and White-Nose Syndrome Surveillance Plan and Protocols 2012 -2016. MNHP, Helena. 205 p. MFWP and MNHP. 2016. Townsend's Big-eared Bat — Corynorhinus townsendii. Montana Field Guide. Accessed from http://FieldGuide.mt.gov
17	Western Toad (Anaxyrus boreas)	There are 292 MNHP observation records in the plan area, well distributed throughout most GAs. The exceptions are the Snowies (which have no records) and the Highwoods and Castles (each of which have only one record). 94 (32%) of all observations have been recorded since 2005.	According to MNHP (B. Maxell, MNHP pers comm with C. Staab, USFS), the Rocky Mountain front seems fairly stable, but there may have been a decline in the Highwoods. However, only one MNHP record exists in the Highwoods GA, so it is possble that conditions are suboptimal there to support toad abundance.	Utilizes a wide variety of wetlands, including beaver ponds, reservoirs, streams, marshes, lake shores, potholes, wet meadows, marshes, fens, and tarns. Not sensitive to elevation; ranges from low elevation floodplains to upper treeline. Also occurs in urban settings, sometimes congregating under streetlights at night to feed on insects. (MFWP and MNHP 2015) Known to colonize wetlands in recently burned areas (Hossack and Corn 2008).	Unknown	High potential reproductive rate: up to 20,000 eggs per clutch noted in Montana (Maxell et al. 2002); however mortality of tadpoles and juveniles may also be high, and females may not breed every year (FWS 2012). Adults breed at 4-6 years and known to live at least 12 years (FWS 2012). Reoccupancy has been noted after temporary disruptions (e.g., fire) indicating resiliency &/or adaptability.	Invasive species: Chytrid fungus is widespread in Montana but apparently is not substantially limiting populations in the plan area. Chytrid has been implicated in declines of many amphibian species in many parts of the world (Olson et al. 2013). However, Pilliod et al. (2010) found that in the Rocky Mountains, chytrid may not cause rapid population declines of western toads, but instead may function as a low-level, chronic disease whereby not all individuals are infected, and some infected individuals survive. Trampling by vehicles and concentrated livestock has been identified as an issue for this species (MFWP and MNHP 2016).	FW-WTR-DC-01 – 05, 09, 10, 11; FW-WTR-STD-01; FW-WTR-GDL-01, 03; FW-RMZ-DC-01, 02; FW-RMZ-STD-02 – 06; FW-RMZ-GDL-01 – 12; FW-FAH-DC-01 – 07; FW-FAH-GDL-01, 03, 04, 05; FW-VEGNF-DC-01 – 03; FW-WL-DC-01 – 04, 06; FW-WL-STD-01; FW-WL-GDL-01, 03, 04, 07, 08, 13; FW-GRAZ-DC-02 – 04; FW-GRAZ-STD-01, 02; FW-GRAZ-GDL-01 – 07; HI-VEGNF-DC-01	3.13.5; 3.13.6	May impact individuals or habitat, but will not likely result in a trend toward federal listing or loss of viability for the population or species.	Plan components for aquatic ecosystems (including riparian management zones), wildlife diversity, and the specific restrictions of chemical application on or near breeding sites will protect sites used for breeding, feeding, and travelling.	Hossack, B. and S. Corn. 2008. Breeding sites by the boreal toad (Bufo boreas) in seasonal wetlands. Herp. Cons. Biol. 3:46-54. MNHP species observation records MFWP and MNHP. 2015. Western Toad — Anaxyrus boreas. Montana Field Guide. accessed from http://FieldGuide.mt.gov/speciesDetail.aspx?elcode=AAABB01030 Olson, D., D. Aanensen, K. Ronnenberg and others. 2013. Mapping the global emergence of Batrachochytrium dendrobatidis, the amphibian chytrid fungus. Pilliod, D, E. Muths, R. Scherer and others. 2010. Effects of amphibian chytrid fungus on individual survival probability in wild boreal toads. Cons. Biology 24:1259-1267. USFWS 2012. Endangered and Threatened Wildlife and Plants; 90-day finding on a petition to list the eastern or southern Rocky Mountain population of the boreal toad as an endangered or threatened distinct population segment. Fed. Reg. 77 (71) 21920-21936.

	A	B	C	D	E	F	G	H	I	J	K	L
18	Wolverine (Gulo gulo luscus)	See Biological Assessment. This species has proposed status under the Endangered Species Act, and has been evaluated under legal standards in the Biological Assessment.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
19	Westslope cutthroat Oncorhynchus clarki lewisi	There are between 12 and 15 known pure or almost pure population within the HLC planning area. These population occupy roughly 135 miles of stream.	Likely declining	Streams, rivers, lakes	Unknown. However, PIBO monitoring data indicates that aquatic conditions as a whole within the planning area are on a positive trajectory.	Westslope cutthroat trout have two possible life forms, resident and migratory. Migratory forms are further divided into adfluvial (migrates to lakes) or fluvial (migrates to rivers). All life forms spawn in tributary streams in the springtime when water temperature is about 10 Celsius and flows are high (Liknes & Graham, 1988). Cutthroat trout spawn when they are about 4 or 5 years old, and only a few survive to spawn again (McIntyre & Rieman, 1995). Fry emerge in late June to mid-July and spend one to four years in their natal streams. Resident fish spend their entire lives in tributary streams, while migratory forms may travel miles as they move between waterbodies and spawning habitat.	Habitat loss is considered a widespread problem. Cutthroat trout have declined across their range due to poor grazing practices, historic logging practices, mining, agriculture, residential development, and the lingering impact of forest roads. Locally on forest, logging and associated road building have had the greatest impact upon populations. Fish have been unable to use spawning habitat due to barriers created by dams and road culverts. Genetic introgression with rainbow trout threatens long-term persistence of westslope cutthroat trout, and is most likely the greatest threat (Hitt, Frissell, Muhlfeld, & Allendorf, 2003).	FW-WTR-DC-01-11, 13; FW-WTR-GO-01-04; FW-WTR-STD-01-03; FW-WTR-GDL-01, 03; FW-RMZ-DC-01, 02; FW-RMZ-STD-01-06; FW-RMZ-GDL-01-12; FW-FAH-DC-01 -08; FW-FAH-GO-02, 04, 05; FW-FAH-OBJ 01-03; FW-FAH-STD-01; FW-FAH-GDL-01-05; FW-CWN-DC-01; FW-CWN-OBJ-01, 02; FW-CWN-GDL-01-03; FW-VEGNF-DC-02; FW-INV-DC-02; FW-INV-GO-01; FW-WL-DC-01, 02; FW-GRAZ-STD-02, FW-GRAZ-GDL-01, 03-07	3.5.5; 3.5.6	May impact individuals or habitat, but will not likely result in a trend toward federal listing or loss of viability for the population or species.	The 2020 Forest Plan may impact individuals or habitat but will not likely result in a trend toward federal listing or reduced viability for the population or species because plan components for watershed, riparian management zone (RMZ), fisheries and aquatic habitat, conservation watershed networks, vegetation, wildlife, invasive species and grazing will prevent damages from occurring during project activities to known populations and habitats of this species.	Allendorf, Fred W., Robb F. Leary, Nathaniel P. Hitt, Kathy L. Knudsen, Laura L. Lundquist, and Paul Spruell. "Intercrosses and the US Endangered Species Act: should hybridized populations be included as westslope cutthroat trout?." Conservation Biology 18, no. 5 (2004): 1203-1213. Hessburg, Paul F., Carol L. Miller, Nicholas A. Povak, Alan H. Taylor, Philip E. Higuera, Suan J. Prichard, Malcolm P. North et al. "Climate, environment, and disturbance history govern resilience of Western North American Forests." Frontiers in Ecology and Evolution 7 (2019): 239. Holden, Z. A., Swanson, A., Luce, C. H., Jolly, W. M., Maneta, M., Oyler, J. W., et al. (2018). Decreasing fire season precipitation increased recent western US forest wildfire activity. Proc. Nat. Acad. Sci. U.S.A. 115, 8349–8357. doi: 10.1073/pnas.1802316115 Joyce, L.A.; Talbert, M.; Sharp, D.; and Stevenson, J. 2018. Chapter 2 Historical and Projected Climate in the Northern Rockies Region. In Halofsky, Jessica E., and David L. Peterson, eds. Climate change and Rocky Mountain ecosystems. Springer, 2018. Keane, R.E.; Mahalovich, M.F., Bollenbacher, B.L.; Manning, M.E.; Loehman, R.A; Jain, T.B; Holsinger, L.M, and Larson, A.J. 2018. Chapter 5: Effects of Climate Change on Forest Vegetation in the Northern Rockies. In Halofsky, Jessica E., and David L. Peterson, eds. Climate change and Rocky Mountain ecosystems. Springer, 2018. Luce, c. 2018. Chapter 4: Effects of Climate Change on Snowpack, Glaciers, and Water Resources in the Northern
20	Western pearlshell musse lMargaritifera falcata	Western Pearlshell Mussels observations include sites on the Blackfoot River, Sauerkraut Creek, and Buffalo Gulch west of the Continental Divide in the Blackfoot River drainage and in Prickley Pear Creek in the Missouri River drainage (D. M. Stagliano, 2015). All observations were downstream of the forest boundary on each stream. Stagliano (D. M. Stagliano, 2015) modelled predicted mussel habitat on the Lincoln, Helena, and Townsend Ranger Districts and connected waters, but surveys at some of the likeliest sites have not found mussels present.	Likely declining	Western pearlshell occurs in sand, gravel, and even among cobble and boulders in low to moderate gradient streams up to larger rivers. This species prefers stable gravel and pebble substrates in low-gradient trout streams and intermountain rivers. Western pearlshell is found in runs and riffles in stable main-current channel areas. This mussel is intolerant of silt and warm water temperatures	Unknown. However, PIBO monitoring data indicates that aquatic conditions as a whole within the planning area are on a positive trajectory.	Nearly all mussels require a host or hosts during the parasitic larval portion of their life cycle. Hosts are usually fish species, and hosts for *M. falcata* in Montana were typically and historically *Oncorhynchus* spp. (e.g., westslope cutthroat trout); but Salmo and *Salvelinus* (introduced species) and even *Rhinicthys* and *Catostomus* (dace and suckers) are anticipated to be suitable hosts as well.	Threats may include removal of emergent vegetation, trampling by livestock, and presence of predatory fish (MNHP and MFWP 2020). No special management needs are currently recognized for populations in eastern Montana.	FW-WTR-DC-01-11, 13; FW-WTR-GO-01-04; FW-WTR-STD-01-03; FW-WTR-GDL-01, 03; FW-RMZ-DC-01, 02; FW-RMZ-STD-01 – 06; FW-RMZ-GDL-01-12; FW-FAH-DC-01 -08; FW-FAH-GO-05; FW-FAH-OBJ 01, 3; FW-FAH-GDL-01, 03; FW-CWN-DC-01; FW-CWN-OBJ-01, 02; FW-WL-DC-01; FW-GRAZ-GDL-01, 03-07	3.5.5; 3.5.6	The 2020 Forest Plan may impact individuals or habitat but will not likely result in a trend toward federal listing or reduced viability for the population or species because plan components for watershed, riparian management zone (RMZ), fisheries and aquatic habitat, conservation watershed networks, vegetation, wildlife, invasive species and grazing will prevent damages from occurring during project activities to known populations and habitats of this species.	The 2020 Forest Plan may impact individuals or habitat but will not likely result in a trend toward federal listing or reduced viability for the population or species because plan components for watershed, riparian management zone (RMZ), fisheries and aquatic habitat, conservation watershed networks, vegetation, wildlife, invasive species and grazing will prevent damages from occurring during project activities to known populations and habitats of this species.	Stagliano D. 2015. Re-evaluation and Trend Analysis of Western Pearlshell Mussel (SWG Tier 1) Populations across Watersheds of Western Montana. Report of SWG FY2015 Activities to Montana Fish Wildlife and Parks FWP Agreement #150027. Montana Natural Heritage Program. Helena. Stagliano, D. 2010. Freshwater Mussels in Montana: Comprehensive Results from 3 years of SWG Funded Surveys. Montana Fish Wildlife and Parks, Helena, MT.

	A	B
1	**Acronym**	**Expansion**
2	BBS	Breeding Bird Survey
3	BCR	Bird Conservation Region
4	ESA	Endangered Species Act
5	FNF	Flathead National Forest
6	GA	Geographic Area
7	GIS	Geographic Information System
8	HLC	Helena and Lewis & Clark National Forest
9	IMBCR	Integrated Bird Monitoring in the Bird Conservation Regions
10	LC	Local Concern
11	MBEWG	Montana Bald Eagle Working Group
12	MNHP	Montana Natural Heritage Program
13	MFWP	Montana Fish Wildlife and Parks
14	N/A	Not Applicable
15	NF	National Forest
16	NFS	National Forest System
17	NRMRA	Northern Rocky Mountain Recovery Area (Wolf)
18	NRV	Natural range of variability
19	PIBO	Pacific fish - Inland fish Biological Opinion
20	RMADC	Rocky Mountain Avian Data Center
21	TC	Tribal Concern
22	USFWS	US Fish and Wildlife Service
23	USGS	US Geological Survey