Wildlife disturbance along the MSTI alternative routes includes any activities, either temporary or ongoing, that would disrupt wildlife, temporarily or permanently displacing animals from where they would typically exist. The wildlife species that occur in different vegetation communities are described in Section 3.0. Disruption along the MSTI alternative route links is most likely to come from: (1) increased noise levels (i.e. construction); (2) increased vehicle traffic (i.e. construction, maintenance); and (3) structure presence (i.e. towers and conductor). Our analysis focuses on these sources of disruption to wildlife along the MSTI alternative route links. Through the use of current literature, current governing policies, and GIS we have analyzed wildlife resources on a per link basis and compiled impacts into Alternative level analysis. Below is also a brief list of studies involving disturbance impacts related to wildlife.

- Pre- and post-development big game numbers are similar in numerous instances following construction activities involved in road and well development (Hayden-Wing 1991, Reeve 1996, and Geist *et al.* 1978, Easterly *et al.* 1981).
- Fewer elk occur around drill sites after CO_2 well development (Brekke 1998).
- Disruption of watering activities and migration routes increase stress to wildlife species due to change induced from development associated with oil and gas production (Campbell and Remington 1981).
- Avoidance behavior has been observed from numerous studies involving development (Johnson and Lockman 1990, Campbell and Remington 1981, Rost and Bailey 1978, and Hayden-Wing 1991) with the highest avoidance behavior observed during hunting and calving periods (Hayden-Wing 1991).

Waterways located within the Montana portion of the MSTI project area were inventoried and are discussed in the Water Resources Section of this Application (Vol. I-A pages 3-39 through 3-46). Aquatic habitat and species are discussed in the Biological Resources Section of this Application (Vol. I-A, pages 3-15, 3-16, 3-28, and 3-29). Impacts to aquatic resources would be minimal and include potential impacts to common fish species listed on page 3-29 in the Biological Resource Section of this Application (Vol. I-A). Temporary alterations in water quality may occur during construction and instillation of culverts across minor drainages. Major waterways would be spanned further minimizing impacts to aquatic resources. This disturbance would be temporary and not likely impose long term impacts to feeding or migration.

Waterways in Montana are popular for fishing. Fishing usage within FWP Region 3 was 61,448 angler day for 2007. New access to waterways would not likely increase as a result of the MSTI project. Existing road networks would be maximized and new road ways would manage access through gating. Specific road management implication would be identified in the development of road management plans during the POD.

Montana State Wildlife Management Areas (WMA) located within the MSTI project area were inventoried and are discussed in the Land Use Resource Section of this Application (Vol. I-A page 3-76). A habitat assessment was completed within the MSTI project area and is discussion in the Biological Resource Technical Report (Vol. II, pages 11-17). There are two WMA's within the MSTI project area; Mount Haggin (Links 7-9, 7-72, 11-21, and 11-22) and Fleecer Mountain (Links 11-21 and 11-22). Habitat along these links is dominated by grassland, shrubland and mixed conifer. Biological impacts to habitat and wildlife are described in the Biological Resource Section pages 4-6 through 4-19 (Vol. I-A). Impacts to biological resources would be minimal with the WMA's. Temporary disturbance during construction and maintenance activities would likely occur. Timing limitations would also be utilized to minimize impacts to wildlife.

There are no contiguous roadless areas greater than 5,000 acres identified within the biological study corridor.

Unique areas were identified under the land use section (Vol. I-A pages 3-69 through 3-78). The inventory included unique habitats and natural areas designated by the National Park Services, USDA Forest Service, BLM, or the State of Montana as national natural landmarks, natural areas, research natural areas, areas of critical environmental concerns, special interest areas, research botanical areas, or outstanding natural areas based on proximity to links (Vol. II, pages 63-80). Habitats and wildlife species associated with links are listed in the Biological Technical Report (Vol. II pages 11-17, 47-51, 57-62, Table 4.1-2) and can be cross referenced to the unique areas listed above. Impacts to unique area habitats and associated species would be minimized due to restrictions placed on these areas through managing agencies. Impacts to species and habitats are discussed in Biological Resource Section of this Application (Vol. I-A, pages 4-3 through 4-19).

4.2.2.3 Specific Mitigation Measures

Species Preliminary Environmental Protection measures would be incorporated in the Plan of Development (POD) that would directly and indirectly benefit biological resources and reduce impacts. In addition to project design measures specifically recommended mitigation measures are proposed to reduce impacts to biological resources. A summary of Preliminary Environmental Protection and mitigation measures can be found in Table 4.2-3.

Table 4.2-3 Preliminary Environmental Protection and Mitigation Measures Pertaining to Biological Resources

Environmental Protection (EPM) and Mitigation Measure (MM) No.	Abbreviated Description (details can be found in Section 2.6)	Biological Benefit
MITIGATION MEASURE		
1, 2, 3, 4	Limit road construction	Reduce potential mortality, injury, habitat loss and degradation
9	Timing limitations for construction and maintenance	Reduce potential mortality, injury, and disturbance
10	Span riparian areas	Reduce potential habitat loss and degradation
11	Limited tree trimming/removal	Reduce potential mortality, injury, habitat loss and degradation
12	Install marking devices	Reduce potential mortality and injury
13	See 9	See 9
14	Preconstruction surveys for ESA species	Reduce potential mortality, injury, habitat loss and degradation

4.2.3 Effects of Each Alternative

A summary of residual impacts, or impacts resulting after preliminary environmental protection and preliminary mitigations measures are applied, to biological resources is discussed below for each route alternative. The Environmental Protection Measures described in this document are preliminary measures part of the project description, but are not finalized or committed until further discussions with the MDEQ and other agencies are conducted. Likewise, the Specifically Recommended Mitigation Measures are preliminary, and not committed by to NorthWestern, until discussions are held on this subject with the MDEQ and other agencies. Residual impacts to biological resources are quantified by linear mile for each alternative route. Discrepancies may exist between the sum of residual impacts for each alternative route and linear mileage of route alignments. The discrepancies arise from numerical rounding and resource overlap based on the 0.1 mile scale used for impact analysis in GIS.

Wild and Scenic Rivers located within the MSTI project area are discussed in the Land Use Resource Section of this Application (Vol. I-A page 3-71). Wild and scenic rivers in the project area do not exist. However, Muskrat Creek, located along Link 4-2, has been proposed by the BLM for wild and scenic designation. Biological impacts to wild and scenic rivers would be similar to those described for aquatic resources (page 4-10 of Vol. I-A). Impacts to aquatic resources would be minimal and include potential impacts to common fish species listed on page 3-29 in the Biological Resource Section of this Application (Vol. I-A). Temporary alterations in water quality may occur during construction and instillation of culverts across minor drainages. Major waterways would be spanned further minimizing impacts to aquatic resources. This disturbance would be temporary and not likely impose long term impacts to feeding or migration.

4.2.3.1 No Action

Under the No Action Alternative, the MSTI project would not be constructed and no biological resource impacts would occur.

4.2.3.2 Townsend to Mill Creek (Melrose) Segment

The Townsend to Melrose route portion of the MSTI project includes the northern Montana portion of project. The route alternatives are collectively dominated by grassland communities and secondarily shrubland and conifer forest. Species that reside in grassland, shrubland, and conifer habitats would be dominant along the Townsend to Melrose Alternatives and therefore be most likely impacted. Impacts to biological resources from the proposed Alternatives are discussed below in the individual Alternative sections.