

3.7 WILDLIFE, HABITAT, AND UPLAND THREATENED AND ENDANGERED SPECIES

This section addresses upland habitat and wildlife species, including threatened and endangered, priority, and monitor species, and species of concern. Fish species are discussed in Section 3.8, Fish and Aquatic Habitat. Wetland habitat is discussed in Section 3.6, Wetlands.

3.7.1 Studies and Coordination

The Washington State Department of Natural Resources (WDNR), the Washington Department of Fish and Wildlife (WDFW), the U.S. Fish and Wildlife Service (USFWS), and the National Marine Fisheries Service (NMFS) provided information on wetlands, wildlife, vegetation, threatened and endangered species, and habitat resources documented within the study area. Preliminary information reviewed to assist the field investigation included databases of the WDNR Natural Heritage Data System (NHDS) and WDFW Priority Habitats and Species (PHS) Program. Records of plant or animal species and habitats known or expected to occupy the subject property were reported by these data sources. This information was presented on geographic information system (GIS) maps, which could be superimposed over maps showing the locations of proposed transportation improvements for each alternative. The maps were used to make preliminary assessments of substantial potential impacts to upland vegetation, habitat, wildlife, and federally listed species. Upland vegetation and habitat was further evaluated during field reconnaissance.

Land use in the analysis area was determined to be “Urban,” “Suburban,” or “Rural,” based on city and county comprehensive plans, U.S. Geological Survey (USGS) maps, and aerial photographs. Urban areas are typically highly developed (mostly industrial and commercial use) and sparsely vegetated, offering low habitat value to wildlife. Suburban areas are moderately developed (mostly residential use) and offer moderate habitat value to wildlife in the form of backyard vegetation, parks, and open space. Rural areas are mostly undeveloped (small farms and low-density residential development) and offer sufficient areas of usable habitat. All determinations were subsequently verified in the field.

3.7.2 Methodology

Potential direct impacts to wildlife such as habitat loss and disturbance from proposed construction were assessed. The linear distance of habitats encroached upon was used as an index to quantify habitat impacts. The documented occurrence of priority species and the level of use of wildlife within the analysis area were also evaluated. Indirect impacts to wildlife, such as post-construction disturbance, and potential wildlife mitigation measures were identified.

Each of the improvements that would result in impacts beyond the existing developed right-of-way was identified for each alternative. The location of each of these improvements was identified on base maps and then overlaid with WDFW PHS maps to identify habitat impacts. A field reconnaissance was also conducted to characterize habitat in the analysis area to further describe impacts. Because not enough project information is available to calculate the area of habitat that would be affected by each improvement and alternative, potential habitat impacts were quantified based on the linear distance where each of the improvements would require construction beyond the disturbed right-of-way. The linear distance of habitats encroached upon was used as an index to quantify habitat impacts. Therefore, this linear quantification of impacts assumes that if

construction outside of the developed road prism occurs, then impacts to the adjacent habitat would result. This worst-case approach assumes that impacts would occur even though they may be avoided if the functioning habitat does not occur immediately adjacent to the developed right-of-way.

The analyses in this section are based on the *I-405 Corridor Program Draft Upland Vegetation, Habitat, and Wildlife Expertise Report* (DEA, 2001), herein incorporated by reference.

3.7.3 Affected Environment

The following subsections describe the upland habitats that occur in the study area and address the presence of priority habitats, wildlife, and threatened and endangered species in the study area.

3.7.3.1 Upland Vegetation

Historically, land in the vicinity of the I-405 corridor was dominated by mature forests of western hemlock (*Tsuga heterophylla*) and Douglas fir (*Pseudotsuga menziesii*) in drier areas and mixed coniferous-deciduous forests, particularly red alder (*Alnus rubra*) and big-leaf maple (*Acer macrophyllum*), in wetter areas (Franklin and Dyrness, 1973). Much of the study area was logged around the turn of the century, and the land was cleared in the early 1900s for agricultural purposes. Since then, the remaining forests have been further fragmented as development has occurred.

At present, the largest portion of the study area falls within highly developed commercial, industrial, and residential areas categorized as urban areas and moderately developed, mostly residential areas categorized as suburban areas for the purposes of this study. Landscaped vegetation and non-native species have replaced most of the native vegetation in these areas. Many of the affected urban and suburban areas fall within road right-of-way, which is commonly vegetated with landscaped trees, sword fern (*Polystichum munitum*), Himalayan blackberry (*Rubus procerus*), or mowed grass.

In the low-lying area north of Woodinville, vegetation includes pasture grasses and cultivated crops. The remaining largely undeveloped rural areas falling within the study area contain a mix of landscaped vegetation, pastured areas, herbaceous and shrub vegetation along Bonneville Power Administration (BPA) powerlines, and pockets of forest. These forested pockets are commonly found along drainage ravines, undevelopable slopes, and areas preserved as open space. They are typically dominated by western red cedar (*Thuja plicata*), western hemlock, Douglas fir, red alder, and big leaf maple with an understory of sword fern and vine maple (*Acer circinatum*) scattered throughout.

3.7.3.2 Priority Habitats

Priority habitats are designated under the WDFW PHS program (WDFW, 2000) and are identified as areas with unique or significant value to many species. Priority habitats identified within the analysis area include freshwater wetlands, riparian zones, bald eagle habitat, great blue heron habitat, pileated woodpecker habitat, waterfowl concentration areas, and urban natural open space. Figure 3.7-1 shows the location of these habitats.

Vegetated uplands adjacent to wetland areas are considered to be some of the richest zones for mammals and birds. In Washington State, 85 percent of the terrestrial vertebrate species use

Legend: Existing Habitat within the Study Area

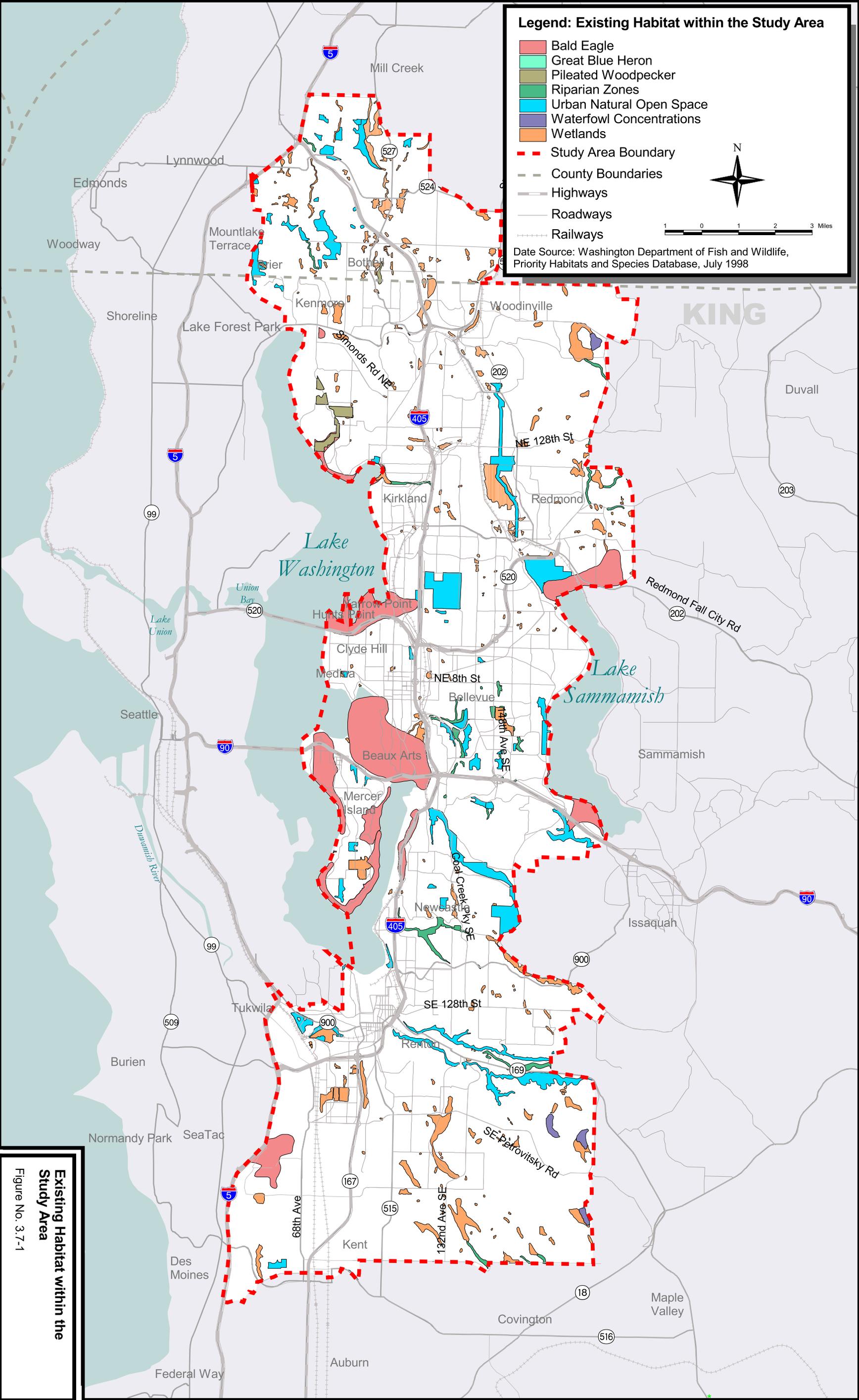
- Bald Eagle
- Great Blue Heron
- Pileated Woodpecker
- Riparian Zones
- Urban Natural Open Space
- Waterfowl Concentrations
- Wetlands

- Study Area Boundary
- County Boundaries
- Highways
- Roadways
- Railways



0 1 2 3 Miles

Date Source: Washington Department of Fish and Wildlife, Priority Habitats and Species Database, July 1998



Existing Habitat within the Study Area
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wetlands and/or the vegetated upland adjacent to wetlands for food, breeding, and shelter (Castelle, et al., 1992). Wetlands are discussed in detail in Section 3.6 and the I-405 Corridor Program Draft Wetlands Expertise Report (DEA, 2001a).

Riparian habitat in the study area occurs along lake shorelines and along the banks of streams and rivers and is of similar importance to wildlife. These riparian areas create a network of open space corridors that allow wildlife to move relatively freely among nesting and foraging areas. Riparian corridors in the vicinity of the I-405 Corridor improvements are associated with the Cedar River, May Creek, Panther Creek, Green River, Coal Creek, Springbrook Creek, Molasses Creek, Mercer Slough, Richards Creek, Juanita Creek, Swamp Creek, Horse Creek, North Creek, Bear Creek, and the Sammamish River, as well as Lake Washington, Lake Sammamish, and other smaller lakes and ponds. Although each of these riparian areas falls within the study area, only riparian areas mapped by WDFW along Forbes Creek, Kelsey Creek, and May Creek are encountered by the proposed improvements. However, impacts to unmapped riparian habitat could result along other water bodies in the analysis area.

Urban natural open space is land that has been preserved because it provides habitat for priority species or is an isolated remnant of natural habitat larger than 10 acres and surrounded by urban development. Identified urban natural open space falling within the analysis area includes numerous Bellevue parks, Coal Creek Park, Coal Creek riparian area, and Renton riparian forest.

3.7.3.3 Wildlife

Much of the urbanized portion of the study area is inhabited by species typical of developed areas. The prevalence of development and landscape maintenance activities in these areas have resulted in the predominance of species adapted to degraded and disturbed habitats. These species often include: American robin (*Turdus migratorius*), violet-green swallow (*Tachycineta thalassina*), house sparrow (*Passer domesticus*), European starling (*Sturnus vulgaris*), American crow (*Corvus brachyrhynchos*), raccoon (*Procyon lotor*), opossum (*Didelphis virginiana*), and several small mammal species. Fragmented areas of riparian vegetation provide limited corridor habitat through developed areas for wildlife.

The WDFW (2000) identifies five bald eagle territories within the study area, including the St. Edwards Park, Marymoor Park, Hunt's Point, Southeast Mercer Island, and Chism Beach territories. Bald eagle territories are typically proximate to water with an adequate food source and large trees that provide an unobstructed view of the water body.

Three waterfowl concentration areas occur in the southeast corner of the study area; another occurs in the eastern portion of Woodinville; and a fifth occurs at the north end of Lake Sammamish. Five patches of pileated woodpecker habitat occur in the Juanita area of Kirkland (WDFW, 2000).

The WDFW (2000) identifies one area on Mercer Island where osprey (*Pandion haliaetus*) (a State Monitor species) occur and four other territories are reported by WDFW in Bothell, Bellevue, and Tukwila. A single western pond turtle (*Clemmys marmorata*) (State Endangered, USFWS Species of Concern) has been documented in Redmond. The data also identify nine areas located in Bothell, Kenmore, Redmond, Kirkland, Bellevue, Renton, and Kent where great blue heron (*Ardea herodias*, a WDFW Priority species) rookeries occur within the analysis area.

The study area could potentially provide habitat for yuma myotis (*Myotis yumanensis*) and red-legged frog (*Rana aurora*), both USFWS Species of Concern.

Most of the area encountered by the improvements falls within road right-of-way described above in Section 3.7.3.1. This area, especially the maintained portions of the right-of-way, typically has relatively low habitat value to wildlife and is generally highly disturbed, especially in the clear zone. Wildlife could occasionally occupy these areas; however, such occurrence is often short term during movement between more suitable habitats. Nesting and other long-term habitat use is more common in the right-of-way outside of the clear zone where native habitat often occurs. Crows commonly scavenge roadkill and garbage in these right-of-way areas. Some of the more common species expected to use right-of-way areas vegetated with shrubs or small trees include black-capped chickadee (*Parus atricapillus*), chestnut-backed chickadee (*P. rufescens*), common bushtit (*Psaltriparus minimus*), ruby-crowned kinglet (*Regulus calendula*), Bewick's wren (*Thryomanes bewikii*), spotted towhee (*Pipilo erythrophthalmus*), dark-eyed junco (*Junco hyemalis*), song sparrow (*Melospiza melodia*), and rats (*Rattus* spp.).

Some species use mowed right-of-way for foraging or travel when shrub or tree cover is nearby. The most common species expected in the analysis area include red-tailed hawk (*Buteo jamaicensis*) (especially in Kent Valley and Woodinville Redmond area), American kestrel (*Falco sparverius*), northern flicker (*Colaptes auratus*), killdeer (*Charadrius vociferus*), brewer's blackbird (*Euphagus cyanocephalus*), rufous hummingbird (*Selasphorus rufus*), meadow mice (*Microtus* spp.), moles (*Scapanus* spp.), and coyote (*Canis latrans*). Many mowed road right-of-ways are regularly used for hunting by red-tailed hawks. They often perch on trees, fence posts, and utility poles located along the right-of-ways and prey on meadow mice and other small rodents that live along the right-of-way. Given the extensive level of development that has eliminated much of the former agricultural areas in the analysis area, these grass-dominated right-of-ways likely provide important hunting habitat for hawks.

Pockets of forested habitat along road right-of-ways may be used by forest species not overly sensitive to noise or habitat fragmentation. The most common species expected include downy woodpecker (*Picoides pubescens*), hairy woodpecker (*P. villosus*), pileated woodpecker (*Dryocopus pileatus*), Steller's jay (*Cyanocitta stelleri*), red-breasted nuthatch (*Sitta canadensis*), winter wren (*Troglodytes troglodytes*), varied thrush (*Ixoreus naevius*), western tanager (*Piranga ludoviciana*), raccoon, opossum, and eastern gray squirrel (*Sciurus carolinensis*). However, most of these species would occur only in the larger patches of native vegetation or patches connected to other undeveloped areas by wooded corridors. A more comprehensive list of species expected to utilize the right-of-way habitat is included in Appendix L.

3.7.3.4 Threatened and Endangered Species

The bald eagle (*Haliaeetus leucocephalus*) is the only terrestrial species listed as threatened under the Endangered Species Act (ESA) that is documented within 0.5 mile of the improvements (WDFW, 2000). The WDFW (2000) identifies five bald eagle territories in the analysis area (Section 3.7.3.3).

Nesting activities occur from January 1 through August 15 (USFWS, 1986). Bald eagle nesting territory parameters in the Pacific Northwest include proximity to water with an adequate food source, large trees with sturdy branching at sufficient height for nesting, and tree stand heterogeneity both vertically and horizontally (Grubb, 1976). Nest tree structure is more important than tree species, and nest trees are typically among the largest in the stand, providing an unobstructed view of an associated water body (USFWS, 1986).

In addition to nesting, bald eagles also winter in the vicinity of large bodies of water in tall stands of trees. Bald eagle wintering activities occur from November 15 through March 15 (USFWS, 1986). In the analysis area, bald eagles winter near such water bodies as Lake Washington, Lake Sammamish, and the Cedar River.

The western pond turtle (a state endangered species) is documented near Lake Sammamish. However, this record is not recent, and past surveys by the WDFW did not identify western pond turtles in the vicinity. Viable populations are not expected to occur in the analysis area.

Threatened and endangered fish species are addressed in the *I-405 Corridor Program Draft Fish and Aquatic Habitat Expertise Report* (DEA, 2001b).

3.7.4 Impacts

Impacts of each alternative on upland habitats are discussed in the following sections. Table 3.7-1 summarizes the impacts of the alternatives to priority habitat and land use types.

Table 3.7-1: Comparison of Linear Impacts by Habitat and Land Use Type (linear feet)

Habitat	No Action	Alternative 1 ^a	Alternative 2 ^a	Alternative 3 ^a	Alternative 4 ^a	Preferred Alternative ^a
Bald Eagle Habitat	3,600	40,100	54,160	41,260	50,460	60,880
Urban Natural Open Space	12,200	43,100	48,960	52,300	33,900	49,020
Riparian Area	0	12,340	20,900	13,560	11,120	13,560
Total	15,800	95,540	124,020	107,120	95,480	123,460
Urban	132,528	372,551	670,343	658,674	698,966	More than Alternatives 1, 2, and 3. Similar to Alternative 4
Suburban	241,296	478,918	1,051,329	999,057	1,219,919	
Rural	34,320	35,552	36,608	36,608	35,376	
Total	408,144	887,021	1,758,280	1,694,339	1,954,261	

^aImpacts include the No Action Alternative.

Note: The linear distances that the corridor improvements will encounter in each habitat type were used as an index for comparison of impacts among alternatives.

3.7.4.1 No Action Alternative

Under the No Action Alternative, a variety of improvements would result in impacts to various priority habitats. No improvements under the No Action Alternative encounter riparian habitats identified by WDFW (2000). The No Action Alternative affects 12,200 linear feet of urban natural open space resulting in habitat loss and disturbance to the periphery of habitats. The alternative could affect up to 3,600 linear feet of habitat located within bald eagle territories. Increased noise disturbance could occur at one bald eagle nest that is located within 0.5 mile from an improvement. Wetland habitats are also impacted and are discussed extensively in the *I-405 Corridor Program Draft Wetlands Expertise Report* (DEA, 2001a).

The No Action Alternative is not expected to have substantial adverse impacts on upland vegetation, habitat, wildlife, and endangered/threatened species. Most of the study area is at or near buildout and the opportunity for future development is limited. No Action Alternative improvements are extensions of already developed corridors and roadways, affecting mostly degraded habitats.

Construction Impacts

Construction impacts to upland habitats from the No Action Alternative would result primarily from road widening. Widening could impinge anywhere from a width of 5 to 20 feet in a linear fashion over a variety of priority and unclassified habitats. The majority of impacts would occur in presently degraded habitats such as mowed right-of-way. Along the I-405 corridor, most of the immediate area beyond the right-of-way is landscaped or disturbed from previous improvements and is now dominated by a variety of non-native plants. Although impacts to such habitat generally would have minimal effects on wildlife, these areas provide important habitat for some species. The loss of mowed right-of-way would reduce the available hunting habitat for many raptors, especially red-tailed hawks.

The temporal impacts associated with construction include visual and audible disturbance, and possible contaminant spills. Noise levels associated with construction machinery could affect wildlife, depending on the proximity to the activity and the proximity of other noise sources common in the vicinity. However, given the present levels of disturbance in the analysis area, the effects of construction disturbance to wildlife are likely to be minor for most species. Raptors are likely to be most affected by disturbance from construction. Construction activities could result in a temporary loss of use of raptor hunting habitat. Many fuels and chemicals are used in construction projects, and accidental spills are a possibility. Pollutant spills could impact vegetation and individual wildlife.

The USFWS bald eagle recovery plan asserts that construction activities within 0.25 mile of bald eagle nests and roosts should be regulated to avoid disturbance impacts. That distance increases to 0.5 mile when the nest or roost is in view of the construction activities. However, the bald eagle nests identified in this study are unique in that they occur in urban areas, and development activities commonly occur between the nests and the project areas. Not only are the individual birds habituated to a certain degree to disturbance, but disturbance associated with the improvements in this study would probably not substantially increase the level of disturbance that is already present. It may, however, decrease the overall quality of the habitat within the territory. The actual extent of impacts to bald eagles will not be identified until project-level information is generated. If construction extends well beyond the existing right-of-way, perch trees and prey habitat could be affected. This is most likely to result from improvements that have impacts on aquatic and wetland areas. Impacts to these habitats are addressed in the Fisheries and Wetlands expertise reports (DEA, 2001b and 2001a).

Project R-25 comes within 0.23 mile of a bald eagle nest located in Marymoor Park in Redmond. This area is already developed, and therefore disturbance from noise and human activity is already tolerated by the birds. Additional noise and activity impacts from this improvement would occur farther from the nest than those which already exist, and thus would not likely increase overall disturbance to the birds. However, the activity that would result from construction might differ from that to which the eagles are accustomed, and therefore might affect them differently. The overall impacts to habitat from the proposed improvements could also degrade the quality of the territory. Although unlikely, increased disturbance and/or habitat loss could result in nest abandonment.

Operational Impacts

Operational impacts could occur, yet roadways already exist and expansion would not result in a change in land use, only a slight increase in the level of disturbance. Because most

improvements are associated with the freeway, disturbance increases would be negligible. Disturbance associated with increased traffic along arterials and other road expansions would have a slightly greater impact on wildlife. Increases in traffic would likely result in more wildlife mortality from automobiles. The noise associated with traffic increases could reduce the suitability of habitat located within the right-of-way for the more disturbance-sensitive species such as raptors. Increased traffic levels increase the chance of pollution through road runoff and accidental fuel/oil spills.

Disturbance from more automobiles could possibly have impacts on eagle nests, perches, or roosts if they are located within 0.5 mile (with line of sight) and 0.25 mile (without line of sight) from the project areas. Considering the success the eagles in the analysis area have had in this already urbanized environment, they have demonstrated their ability to habituate to human disturbance. Although disturbance impacts to bald eagles could occur, the effects are likely to be insignificant. Nest abandonment is possible, but unlikely to result from operational impacts.

3.7.4.2 Alternative 1: HCT/TDM Emphasis

Alternative 1 includes a variety of improvements that could have linear impacts on various priority habitats. The alternative could impact 12,340 linear feet of riparian habitat identified by WDFW (2000) and is discussed in greater detail in the *I-405 Corridor Program Draft Fish and Aquatic Habitat Expertise Report* (DEA, 2001b). Alternative 1 could affect 43,100 linear feet of urban natural open space, resulting in habitat loss from the installation of the HCT system and disturbance to the periphery of habitats. The alternative could impact 40,100 linear feet of bald eagle habitat, over 10 times that of the No Action Alternative. Construction would occur within 0.3 mile of one bald eagle nest. Wetland habitats also could be impacted and are discussed extensively in the *I-405 Corridor Program Draft Wetlands Expertise Report* (DEA, 2001a). All impacts are in addition to those that would occur under the No Action Alternative.

Some improvements in this alternative, such as the HCT system, would affect some undeveloped areas, but these areas are all within already fragmented habitats within developed areas of the corridor. Further fragmentation may restrict the use of these areas by wildlife (see Section 3.7.3.3) by reducing suitable available habitat or associated cover and corridors. The precise impacts to specific areas cannot be fully assessed until project-level information is available.

Construction Impacts

Construction impacts under Alternative 1 would include those described under the No Action Alternative. In addition, Alternative 1 includes a physically separated, fixed-guideway HCT system that could impact areas previously unaffected by roadway improvements. This contributes to an increased loss of urban natural open space nearly three times that of the No Action Alternative. The additional improvements included under this alternative could result in a similar increase in construction disturbance. New improvements, such as the HCT system, could cause additional fragmentation of habitats and possibly obstruct existing wildlife corridors. In particular, three improvements may impact riparian zones in the May Creek basin, as they require new construction on the edge of a PHS area.

In addition to the encroachment to the Marymoor Park bald eagle nest discussed under the No Action Alternative, Alternative 1 would also encroach on a second bald eagle nest. Project R.HOV-56, under Alternative 1, runs along the eastern edge of Yarrow Bay, within 0.3 mile of a

bald eagle nest. Relatively low-density development occurs between the proposed improvement and the nest, but some sections of the current roadway run along the edge of the wetlands and would directly impact the edge of the habitat. The proximity of the improvement to the nest site leaves open the potential for noise disturbance. As under the No Action Alternative, nest abandonment is a possible result, but is unlikely due to the relatively small amount of habitat that would be affected in each nesting territory, and due to the eagles' apparent habituation to disturbance as indicated by their presence in an urbanized area.

Operational Impacts

Operational impacts are the same as in the No Action Alternative, but to a greater magnitude and with the addition of the HCT system. The HCT system would result in additional noise disturbance to surrounding habitats and increased fragmentation of habitats that are already fragmented with the loss of corridors across which species can migrate. Increasing capacity may also result in an increase in noise disturbance along road expansions. The Kennydale Hill climbing lane and Park Drive queue bypass in particular might impact a PHS riparian area in the May Creek basin. Although disturbance impacts to bald eagles could occur, the effects are likely to be insignificant. Nest abandonment is possible, but unlikely to result from operational impacts.

3.7.4.3 *Alternative 2: Mixed Mode with HCT/Transit Emphasis*

Alternative 2 includes a variety of improvements that could have linear impacts on various priority habitats. Alternative 2 would encounter 48,960 linear feet of urban natural open space in addition to that under the No Action Alternative, resulting in habitat loss from the installation of the new HCT system and disturbance to the periphery of habitats. The alternative could affect 54,160 linear feet of habitat within bald eagle territories. Increased noise disturbance and physical habitat disturbance could occur within this territory. Alternative 2 impinges on 20,900 linear feet of riparian habitat in comparison to none for the No Action Alternative. Riparian impacts are discussed in greater detail in the *I-405 Corridor Program Draft Fish and Aquatic Habitat Expertise Report* (DEA, 2001b). Wetland habitats also could be impacted and are discussed in the *I-405 Corridor Program Draft Wetlands Expertise Report* (DEA, 2001a).

Construction Impacts

Construction impacts under Alternative 2 would be the same as described under the No Action Alternative but with some additions. Alternative 2 includes a physically separated, fixed-guideway HCT system, basic I-405 improvements, and arterial (HOV and planned) improvements that could impact areas that would not be impacted under the No Action Alternative (Appendix B). This could contribute to an increased loss of urban natural open space three times that of the No Action Alternative. The additional improvements contained in this alternative could result in a similar increase in construction disturbance. New improvements, such as the HCT system, could cause additional fragmentation of habitats and possibly close corridors to wildlife. The Coal Creek Parkway arterial improvement widens an existing road crossing of an extensive PHS riparian area along May Creek (*see the I-405 Corridor Program Draft Fish and Aquatic Habitat Expertise Report* [DEA, 2001b] for assessment of the aquatic habitat impacts) and would likely cause some loss of riparian habitat. The addition of one lane on I-405 may also impinge on this area. These impacts are in addition to those described under Alternative 1.

Impacts to bald eagle nests would be the same as those described for Alternative 1, but there is a greater potential for impacts to other bald eagle habitat, as this alternative affects a much greater area of habitat.

Operational Impacts

Operational impacts are similar to those discussed under the No Action Alternative but with the addition of the HCT system and other improvements that increase capacity along various highways. The HCT system and capacity improvements would bring additional noise disturbance to surrounding habitats and increased fragmentation of habitats that could further limit wildlife movement between habitats.

3.7.4.4 *Alternative 3: Mixed Mode Emphasis*

The scale of improvements and impacts to upland habitat for Alternative 3 are similar to that of Alternative 2. Alternative 3 could affect 52,300 linear feet of urban natural open space in addition to that impacted in the No Action Alternative. The alternative could impact 41,260 linear feet of bald eagle habitat. One bald eagle nest could experience increased noise disturbance. Alternative 3 encroaches on 13,560 linear feet of riparian habitat in comparison to none for the No Action Alternative. Riparian habitat impacts are discussed in greater detail in the *I-405 Corridor Program Draft Fish and Aquatic Habitat Expertise Report* (DEA, 2001b). Wetland habitats also could be impacted and are discussed in the *I-405 Corridor Program Draft Wetlands Expertise Report* (DEA, 2001a).

Impacts to wildlife under this alternative would be similar to those under Alternative 1, but would result in somewhat less loss of suitable bald eagle habitat and slightly greater impacts on documented bald eagle nest territories. Impacts to red-tailed hawks, American kestrels, and other species that commonly occur in habitats located along highway right-of-ways would also be slightly greater.

Construction Impacts

Construction impacts under Alternative 3 would be the same as described under the No Action Alternative with the following additions. New improvements under Alternative 3 would result in additional impacts to urban natural open space, almost four times that of the No Action Alternative. The additional improvements involved would likely result in a proportionate increase in construction disturbance over the No Action Alternative. This could cause additional fragmentation of habitats and possibly further limit wildlife access to habitat.

Alternative 3 would result in the same impacts to endangered species as described in Alternative 1, with slightly greater impact to documented bald eagle territory.

Operational Impacts

Operational impacts under Alternative 3 are similar to those described for the No Action Alternative but with some additions. The addition of lanes on existing highways and the arterial improvements would increase disturbance in surrounding habitats. Increased capacity would potentially result in more wildlife mortality from increased traffic volumes and greater noise disturbance.

3.7.4.5 *Alternative 4: General Capacity Emphasis*

Alternative 4 encounters 33,900 linear feet of urban natural open space that could suffer habitat loss and disturbance. In addition to the bald eagle impacts identified under the No Action Alternative, Alternative 4 could affect 50,460 linear feet of bald eagle habitat. Alternative 4 encroaches on 11,120 linear feet of riparian habitat in comparison to none for the No Action Alternative. Riparian impacts are discussed in greater detail in the *I-405 Corridor Program Draft Fish and Aquatic Habitat Expertise Report* (DEA, 2001b). Wetland habitats also could be impacted and are discussed in the *I-405 Corridor Program Draft Wetlands Expertise Report* (DEA, 2001a).

Alternative 4 would result in a greater loss of habitat than the other alternatives. As is the case with the other action alternatives, much of the loss would occur in marginal, highly fragmented habitat. However, Alternative 4 would affect more rural area than the other alternatives. Therefore, impacts to higher quality wildlife habitat are more likely under Alternative 4. The majority of the improvements under Alternative 4 involve road expansions and additions, and may therefore affect more habitat located along right-of-ways. Further fragmentation of habitat might also limit the availability of suitable habitat to some wildlife species.

Construction Impacts

Alternative 4 would result in additional construction impacts to those described under the No Action Alternative. The majority of improvements under Alternative 4 are expansions of I-405 and arterials that would result in increased noise disturbance and loss of habitat. Alternative 4 improvements would encounter approximately twice the amount of urban natural open space as the No Action Alternative. The additional improvements involved under Alternative 4 would result in a proportionate increase in construction disturbance over the No Action Alternative. New improvements, such as road extensions, could cause additional fragmentation of habitats and possibly further restrict wildlife movement along corridors. Several road expansions, including four that are not proposed under any other alternative, cross or border riparian habitat along May Creek and would likely impact that high quality riparian area.

Alternative 4 improvements would encounter 14 times the amount of bald eagle habitat as the No Action Alternative. However, none of the improvements under Alternative 4 would occur within 0.5 mile of bald eagle nests. Therefore, impacts to habitat within eagle nest territories would be greater than under the No Action Alternative, but disturbance at nest sites would be the same under Alternative 4.

Operational Impacts

The addition of the new roads that would be built along the periphery of the corridor under Alternative 4 would result in increased wildlife mortality and additional noise disturbance from increased automobile use. Because Alternative 4 would result in more development in rural areas than the other alternatives, it would likely have the greatest disturbance-related impacts to wildlife. Because wildlife in the less developed portions of the analysis area are likely to be less tolerant of human disturbance than those that occur in the more developed areas, disturbance impacts under Alternative 4 are likely to be greater than would occur under the other alternatives.

3.7.4.6 Preferred Alternative

The Preferred Alternative would encounter approximately 3,280 linear feet less urban natural open space than Alternative 3. This would result from the shortening of the HOV improvements along Coal Creek Parkway where it abuts urban natural open space identified by the WDFW (2000).

The Preferred Alternative could affect 19,620 more linear feet of bald eagle habitat than Alternative 3 (Table 3.7-1). This would result from the addition of collector-distributor lanes within a bald eagle territory located between Renton and Bellevue. Disturbance from construction and traffic pose the greatest potential impact to bald eagles. Habitat alteration from highway improvements that occur within bald eagle territories is less likely to affect eagles than construction disturbance because most impacts will avoid the most suitable eagle habitat (lake shores, open water wetlands, riparian areas, mature forest) within and outside of these territories.

Encroachment on riparian habitat would be similar to that described for Alternative 3. Impacts to unclassified upland habitats in urban, suburban, and rural areas would be similar to those described under Alternative 4.

Construction Impacts

Construction activities would result in the direct loss of upland habitat. The majority of the habitat that would be impacted occurs along developed road right-of-way and is of relatively low quality. However, impacts would affect some higher quality habitat such as second-growth forest and riparian areas. The overall amount of habitat impacts to the Preferred Alternative would be similar to Alternative 4, but would be distributed (high and low quality) more similarly to the impacts under Alternative 3. This is because the Preferred Alternative improvements are more similar to the improvements under Alternative 3.

Construction would result in slightly greater disturbance to wildlife than what would occur under Alternative 3. Construction disturbance impacts would be less than what would result under Alternative 4, because Alternative 4 would affect more rural areas than the Preferred Alternative. The most notable effects from disturbance include the potential to disturb nesting bald eagles, great blue herons, and other priority wildlife species during their nesting seasons.

Operational Impacts

The addition of the new roads and additional lanes would result in increased wildlife mortality and additional noise disturbance from increased automobile use. Because the majority of the improvements would occur in urbanized areas, disturbance impacts to wildlife would generally not be substantial. However, increased traffic and pedestrian use near bald eagle and great blue heron nest sites could degrade the quality of the nesting sites. Operational impacts under the Preferred Alternative would be slightly greater than those that would result from Alternative 3 and less than what would occur under Alternative 4.

3.7.5 Mitigation Measures

Generally, the following mitigation measures apply to all alternatives where appropriate to the project. Timing restrictions on construction will be implemented to avoid or minimize disturbance that could threaten bald eagle nesting success. For WSDOT projects located within 0.25 mile of any bald eagle nests or roosts or within 800 feet of any great blue heron rookeries,

WSDOT will work with WDFW to develop management plans to avoid and minimize impacts which may occur during construction and operation of the project. (Typical avoidance and minimization strategies may include timing restrictions during construction, installation of noise barriers, protection of perch trees, and/or installation or establishment of visual barriers.) Where practicable, wildlife access corridors will be provided under roadways as a measure to reduce the effects of habitat fragmentation by maintaining connections between habitats. Roadsides and construction zones will be revegetated with native plants to offset loss of habitat from construction.

Other construction mitigation measures will also be employed. Mitigation needs and measures will be evaluated at the project level.