

**APPENDIX D:**

**MAMMAL, BIRD, AMPHIBIAN, REPTILE, AND SPECIAL STATUS SPECIES  
THAT OCCUR WITHIN THE PROJECT AREA**



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**D.1 SPECIES TABLES**

Tables D-1 through D-3 present information on the relative abundance, habitat, and potential impacts on wildlife species that occur within the project area. Table D-1 addresses mammals, Table D-2 addresses birds, and Table D-3 addresses amphibians and reptiles. Table D-4 presents information on the special status species that could occur within the project area.



**TABLE D-1 Mammal Species within the Project Area**

Species	Relative Abundance <sup>a</sup>	Habitat	Potential Project Impact <sup>b</sup>
Masked shrew ( <i>Sorex cinereus</i> )	U to C	Damp woodlands with grass, rocks, logs, or stumps; bogs; other moist areas	–
Water shrew ( <i>Sorex palustris</i> )	U	Wet areas, especially grass-sedge marsh or shrub zones along ponds and streams in coniferous forests	+
Smoky shrew ( <i>Sorex fumeus</i> )	U to C	Damp boulder-strewn upland woods with thick leaf mold; typically near streams with moss-covered banks; also clear-cuts in coniferous woodlands	0/+
Long-tailed shrew ( <i>Sorex dispar</i> )	R	Cold, deep coniferous forests, typically near moss-covered rocks and logs or woody talus slopes; also in deciduous or mixed forests	–
Pygmy shrew ( <i>Sorex hoyi</i> )	R to C	Wet or mixed habitat, less often in dry areas close to water; damp litter, especially near rotten stumps and logs in wooded areas; prefers grassy openings in coniferous forests	–/0
Short-tailed shrew <sup>c</sup> ( <i>Sorex breviceauda</i> )	C	Timbered and fairly open habitats; especially common along stream banks and in meadows with tall grasses or sedges, brush piles, and stone walls	0/+
Hairy-tailed mole ( <i>Parascalops breweri</i> )	C	Open woods and meadows; prefers areas with vegetative cover and sufficient moisture; avoids heavy, wet soils	0/+
Star-nosed mole ( <i>Condylura cristata</i> )	U to C	Prefers low, wet ground near bodies of water, swamps, wet meadows; occasionally in wet spots in fields or low-lying woods	0/+
Little brown myotis ( <i>Myotis lucifugus</i> )	C	Males roost in valleys near streams and marshes; female roost sites include hollow trees	–/0
Keen's myotis ( <i>Myotis keenii</i> )	U to C	Nursery colonies in tree cavities; roost sites include crevices under loose bark	–
Silver-haired bat ( <i>Lasionycteris noctivagans</i> )	R to U	Forested areas near lakes and streams; roosts in foliage of trees, tree cavities, and under loose bark	–
Big brown bat ( <i>Eptesicus fuscus</i> )	C	Hollow trees in wooded areas	–

TABLE D-1 (Cont.)

Species	Relative Abundance <sup>a</sup>	Habitat	Potential Project Impact <sup>b</sup>
Red bat ( <i>Lasiurus borealis</i> )	R to U	Roosts in trees in wooded areas; most numerous along fencerows or forest edges	0/+
Hoary bat ( <i>Lasiurus cinereus</i> )	R	Roosts in trees in wooded areas; prefers coniferous forests but also occurs in deciduous woods and woodland edges, hedgerows, and trees in city parks	-/0
Snowshoe hare <sup>c</sup> ( <i>Lepus americanus</i> )	C	Woodlands with dense brushy understory, coniferous swamps, cut-over areas, burns; prefers second-growth aspen and birch in vicinity of conifers	+
Eastern chipmunk <sup>c</sup> ( <i>Tamias striatus</i> )	C	Edges or interiors of deciduous woodlands with abundant cover or undergrowth, old logs, stone walls; also semiopen brushlands with ample cover	0/+
Woodchuck <sup>c</sup> ( <i>Marmota monax</i> )	C	Woodland edges, open cultivated land, pastures, meadows, open brushy hillsides; seldom in forest interiors	+
Gray squirrel <sup>c</sup> ( <i>Sciurus carolinensis</i> )	U	Deciduous and mixed forests, especially oaks; river bottomlands; woodlots in towns; city parks	-
Red squirrel <sup>c</sup> ( <i>Tamiasciurus hudsonicus</i> )	U to C	Forests, rural woodlots	-
Northern flying squirrel ( <i>Glaucomys sabrinus</i> )	U to C	Mature forests; favors cool, heavily wooded areas above 1,000 ft	-
Beaver <sup>c</sup> ( <i>Castor canadensis</i> )	C	Small to large slowly flowing waterways usually bordered by woodland	0
Deer mouse ( <i>Peromyscus maniculatus</i> )	C	Interiors or edges of coniferous or mixed forests, along field borders, stone walls; uses recent forest clear-cuts	0/+
Southern red-backed vole <sup>c</sup> ( <i>Clethrionomys gapperi</i> )	C	Cool moist forests among mossy rocks, logs, tree roots, or other cover; will use young clear-cuts	0/+

TABLE D-1 (Cont.)

Species	Relative Abundance <sup>a</sup>	Habitat	Potential Project Impact <sup>b</sup>
Meadow vole <sup>c</sup> ( <i>Microtus pennsylvanicus</i> )	A	Fields, pastures, orchards, marshes, meadows, borders of lakes and streams, open and wooded swamps, logs; less often in open woods and clear-cuts	0
Muskrat ( <i>Ondatra zibethicus</i> )	U to C	Marshes, shallow portions of lakes, ponds, swamps, sluggish streams, drainage ditches; most abundant in areas of cattails	0/+
Southern bog lemming ( <i>Synaptomys cooperi</i> )	U	Marshes, open meadows, orchards, moist deciduous and mixed forests; favors sphagnum bogs and deciduous woodlands with a thick layer of loose duff (partly decayed organic matter); uses clear-cuts and other small forest openings with adequate ground cover	0
Norway rat <sup>c</sup> ( <i>Rattus norvegicus</i> )	A	Waterfronts, farms, cities, dumps, rural and suburban residences	0/+
House mouse ( <i>Mus musculus</i> )	A	Buildings, fields, corncribs, and similar locations	+
Meadow jumping mouse <sup>c</sup> ( <i>Zapus hudsonicus</i> )	C	Moist, open grassy and brushy marshes and meadows; willow-alder thickets along water courses; swamps; transition areas between lowlands and wooded uplands; prefers areas with numerous shrubs and small trees	+
Woodland jumping mouse ( <i>Napaeozapus insignis</i> )	C	Areas with herbaceous ground cover and low, woody plants in forests; frequently in brush and herbaceous vegetation bordering streams, lakes, and ponds; uses recent clear-cuts with herbaceous cover	0/+
Porcupine ( <i>Erethizon dorsatum</i> )	U to C	Mixed or coniferous forests	-
Coyote <sup>c</sup> ( <i>Canis latrans</i> )	U to C	Edges of second-growth forests, open brushy fields, fallow agricultural lands, forest openings created by fire or logging	+
Red fox <sup>c</sup> ( <i>Vulpes vulpes</i> )	U to C	Mixture of forest and open areas preferred; forest edges used heavily	+

TABLE D-1 (Cont.)

Species	Relative Abundance <sup>a</sup>	Habitat	Potential Project Impact <sup>b</sup>
Black bear <sup>c</sup> ( <i>Ursus americanus</i> )	C	Fairly remote forests and swamps; prefers mixed woodlands with a well-developed understory	-/+
Raccoon <sup>c</sup> ( <i>Procyon lotor</i> )	C	Wooded areas interrupted by fields and water courses, not usually in dense forest, commonly encountered in wetlands near human habitation	+
Marten ( <i>Martes americana</i> )	U	Diversity of wooded habitats	-/0
Fisher <sup>c</sup> ( <i>Martes pennanti</i> )	U to C	Extensive forests of mixed hardwoods and conifers, less frequently in more open stands or burned areas	-/0
Ermine ( <i>Mustela erminea</i> )	U to C	Wooded or open country with thickets, rock piles, or other heavy cover; often close to watercourses	-/0
Long-tailed weasel <sup>c</sup> ( <i>Mustela frenata</i> )	U to C	Open woods and woodland edges, grasslands, river bottomlands, fencerows; prefers to be near water	+
Mink ( <i>Mustela vison</i> )	U to C	Stream banks, lakeshores, and marshes; prefers forested wetlands with abundant cover	0
Striped skunk ( <i>Mephitis mephitis</i> )	C	Semiopen county, woods, meadows, agricultural lands, suburban areas, trash dumps	+
River otter ( <i>Lutra canadensis</i> )	U	Borders of streams, lakes, or other wetlands in forested areas	0
Bobcat ( <i>Felis rufus</i> )	U to C	Mixed and hardwood forests; brushy and rocky woodlands broken by fields, old roads, farmlands; frequents cedar swamps and spruce thickets; favors areas with thick undergrowth	-/0
White-tailed deer ( <i>Odocoileus virginianus</i> )	C	Forest edge, swamp borders, areas interspersed with fields and woodland openings	-/+



**TABLE D-1 (Cont.)**

Species	Relative Abundance <sup>a</sup>	Habitat	Potential Project Impact <sup>b</sup>
Moose ( <i>Alces alces</i> )	U to C	Second-growth boreal forests interrupted with semiopen areas and swamps or lakes	+

<sup>a</sup> A = abundant, C = common, R = rare, U = uncommon.

<sup>b</sup> Qualitative assessment based on conversion of existing habitats (primarily forested uplands and wetlands) to right-of-way habitats (primarily small tree, scrub-shrub, and old-field habitats) and edge habitats:

+ = an overall increase in preferred habitat

0 = no major change in preferred habitat

- = an overall decrease in preferred habitat

A slash (e.g., 0/+) indicates that the impact is slight, except -/+ indicates one habitat requirement (e.g., summer habitat) would notably decrease while another (e.g., winter habitat) would notably increase.

<sup>c</sup> Observed in the vicinity of the proposed project during field surveys conducted in 1996, 1997, and 2002 (BHE 2005).

Sources: Information on relative abundance and habitat descriptions from DeGraaf and Rudis (1986) and Godin (1977).

TABLE D-2 Bird Species within the Project Area

Species	Relative Abundance <sup>a</sup>	Status <sup>b</sup>	Habitat	Potential Project Impact <sup>c</sup>
Common loon ( <i>Gavia immer</i> )	U to C	B	Lakes in open or densely forested areas	0
Pied-billed grebe ( <i>Podilymbus podiceps</i> )	C	B	Ponds with heavy emergent vegetation, marshes	0
American bittern ( <i>Botaurus lentiginosus</i> )	C	B	Marshes, meadows, swamps, bogs, sluggish rivers and streams with some dense bordering vegetation	0/+
Least bittern ( <i>Ixobrychus exilis</i> )	U to R	B	Wetlands, preferably with tall vegetation	0/+
Great blue heron <sup>d</sup> ( <i>Ardea herodias</i> )	C	B	Shallow shores of ponds, lakes, streams, rivers; wet meadows, swamps, bogs, marshes; requires tall trees for nesting	0/+
Green heron ( <i>Butorides virescens</i> )	U to C	B	Most aquatic and wetland habitats	0
Black-crowned night-heron ( <i>Nycticorax nycticorax</i> )	R	B	Varied aquatic and wetland habitats	0
Canada goose <sup>d</sup> ( <i>Branta canadensis</i> )	U to C	B/W	Shores of ponds and lakes, grassy fields (breeding); ice-free water, agricultural fields (wintering)	0/+
Wood duck <sup>d</sup> ( <i>Aix sponsa</i> )	U to C	B	Shallow water of ponds, lakes, and marshes with abundant vegetation; wooded swamps or open flooded lowland forests; requires trees with cavities for nesting	+
Green-winged teal ( <i>Anas crecca</i> )	C	B	Ponds, lakes, sedge meadows, marshes near grasslands, dry hillsides with brushy thickets or adjacent open woodlands	+
American black duck <sup>d</sup> ( <i>Anas rubripes</i> )	U to A	P/B	Marshy borders of water bodies; woody swamps, marshes, meadows (breeding); open marshes (wintering)	-/0 (B), 0/+ (W)

TABLE D-2 (Cont.)

Species	Relative Abundance <sup>a</sup>	Status <sup>b</sup>	Habitat	Potential Project Impact <sup>c</sup>
Mallard <sup>d</sup> ( <i>Anas platyrhynchos</i> )	U	P/B	Ponds, lakes, streams, rivers, marshes, wet meadows, swamps (breeding); ice-free ponds and rivers (wintering)	0
Ring-necked duck ( <i>Aythya collaris</i> )	C	B	Flooded swamps, marshes, bogs, sloughs, beaver flowage near larger wooded lakes or rivers	0
Common goldeneye <sup>d</sup> ( <i>Bucephala clangula</i> )	U	B	Ponds, lakes, shallow rivers, floodplain forests and bogs, slowly flowing streams with weedy margins; requires larger trees with cavities	–
Hooded merganser ( <i>Lophodytes cucullatus</i> )	U	B	Heavily wooded ponds, lakes, rivers, streams, swamps; requires wooded areas with cavities	–
Common merganser <sup>d</sup> ( <i>Mergus merganser</i> )	U to C	B	Clear ponds, lakes, and rivers with wooded shorelines; requires large trees with cavities	–
Red-breasted merganser <sup>d</sup> ( <i>Mergus serrator</i> )	U	B	Most clear water bodies in forested areas; ground nester	0
Osprey <sup>d</sup> ( <i>Pandion haliaetus</i> )	R to U	B	Near large bodies of water with abundant fish; requires elevated nest sites	+
Bald eagle <sup>d</sup> ( <i>Haliaeetus leucocephalus</i> )	R	B	Forest and open areas, mountains, usually near large bodies of water with abundant fish; requires large living trees and isolation from humans	–
Northern harrier ( <i>Circus cyaneus</i> )	U	B	Open country, marshes, swamps, bogs, wet meadows; requires open country with herbaceous or low woody vegetation	+
Sharp-shinned hawk ( <i>Accipiter striatus</i> )	U	P/B	Open mixed or coniferous woodlands, clearings, edges; requires isolation from human disturbance	0/+

TABLE D-2 (Cont.)

Species	Relative Abundance <sup>a</sup>	Status <sup>b</sup>	Habitat	Potential Project Impact <sup>c</sup>
Cooper's hawk ( <i>Accipiter cooperii</i> )	R	B	Extensive deciduous or mixed woodlands that are dense or open, scattered woodlots interrupted with open fields, floodplain forests, wooded swamps	+
Northern goshawk ( <i>Accipiter gentilis</i> )	R to U	P/B	Interiors of remote, heavily wooded coniferous and mixed forests	-
Red-shouldered hawk ( <i>Buteo lineatus</i> )	U	B	Moist hardwood or mixed woodlands, swamps, bottomlands, wooded margins of marshes often close to agricultural fields	-/+
Broad-winged hawk <sup>d</sup> ( <i>Buteo platypterus</i> )	U to C	B	Dry forests; wooded hillsides, usually away from human habitations; prefers continuous woods and to nest along untraveled roads in woods	-/0
Red-tailed hawk <sup>d</sup> ( <i>Buteo jamaicensis</i> )	U	P/B	Deciduous and mixed woodlands interspersed with meadows, brushy pastures, bogs, and swampy areas	+
Rough-legged hawk ( <i>Buteo lagopus</i> )	R	W	Restricted to open country, brushy fields, open meadows, marshes	0/+
American kestrel ( <i>Falco sparverius</i> )	C	B	Open areas with a few trees containing cavities, wet meadows, forest edges near open ground, orchards, farm buildings, cities	+
Spruce grouse <sup>d</sup> ( <i>Falcapennis canadensis</i> )	U	P	Tamarack swamps and bogs, lowlands bordering sluggish streams in coniferous forests; rarely uses open meadows or clearings	-
Ruffed grouse <sup>d</sup> ( <i>Bonasa umbellus</i> )	U to C	P	Areas with dense woody cover overhead and fairly open herbaceous ground cover; frequents stands of aspen, birch, or other hardwoods, alder thickets, recently logged areas next to shrubby wetlands, logging roads, small clearings, recently disturbed sites	+

TABLE D-2 (Cont.)

Species	Relative Abundance <sup>a</sup>	Status <sup>b</sup>	Habitat	Potential Project Impact <sup>c</sup>
Virginia rail ( <i>Rallus limicola</i> )	C	B	Marshes with abundant vegetation, especially sedges and cattails	0/+
Sora ( <i>Porzana carolina</i> )	C	B	Marshes, ponds, swamps, bogs, wet grassy meadows, sloughs; prefers sedges and cattails where mud and water are deep	0/+
Killdeer ( <i>Charadrius vociferous</i> )	C	B	Heavily grazed meadows, edges of pasture ponds, dry uplands; often close to human habitations	+
Spotted sandpiper <sup>d</sup> ( <i>Actitis macularia</i> )	U to C	B	Along edges of ponds, lakes, and rivers or far from water in dry fields, pastures, and weedy shoulders of roads; prefers open terrain	+
Upland sandpiper ( <i>Bartramia longicauda</i> )	U	B	Open pastures or grassy fields, alfalfa or clover hayfields, occasionally forest openings	0/+
Common snipe ( <i>Gallinago gallinago</i> )	C	B	Marshes with short vegetation, sedge bogs, alder and willow swamps, pond margins, lowlands associated with streams where soil is muddy and vegetation is sparse, wet meadows	0/+
American woodcock <sup>d</sup> ( <i>Scolopax minor</i> )	C	B	Moist woodlands in early stages of succession, swamps, stream banks, bogs, rich bottomlands; often in thickets of alders, willows, or maples	+
Herring gull <sup>d</sup> ( <i>Larus argentatus</i> )	C	B	Mainly on islands in lakes and rivers	0
Rock dove <sup>d</sup> ( <i>Columba livia</i> )	A	P	Open country, especially near human habitations	+
Mourning dove <sup>d</sup> ( <i>Zenaida macroura</i> )	C	B	Open mixed woodlands and woodland edges, evergreen plantations, orchards, farmlands, suburbs, cities; avoids dense forests	+

TABLE D-2 (Cont.)

Species	Relative Abundance <sup>a</sup>	Status <sup>b</sup>	Habitat	Potential Project Impact <sup>c</sup>
Black-billed cuckoo ( <i>Coccyzus erythrophthalmus</i> )	U	B	Brushy pastures, shrubby hedgerows at edges of fields, dry open upland woods and groves	+
Eastern screech-owl ( <i>Otus asio</i> )	R	P	Shade trees in towns, orchards, small woodlots, open woodlands; requires cavities in trees	-/+
Great horned owl ( <i>Bubo virginianus</i> )	U to C	P	Deep woods, large streams, or woodland ponds; mixed country-side of forests and fields; requires large abandoned bird nests or large cavities	-/+
Barred owl ( <i>Strix varia</i> )	U	P	Low, wet, deep woods; heavily wooded swamps often near open country; requires large trees with cavities	-/+
Long-eared owl ( <i>Asio otus</i> )	U	P/B	Open or dense woodlands, wooded parks, small woodlots, swamps, evergreen plantations	-
Short-eared owl ( <i>Asio flammeus</i> )	U	B	Open grasslands, plains, marshes, dunes; requires extensive open grasslands with abundant rodents	0/+
Northern saw-whet owl ( <i>Aegolius acadicus</i> )	U	P	Various habitats, including woodlots, roadside shade trees, coniferous and deciduous forests; requires cavities in trees	-/0
Common nighthawk ( <i>Chordeiles minor</i> )	R to C	B	Open areas such as plowed fields, barren areas with rocky soils, railroad rights-of-way, large woodland clearings, cities	+
Whip-poor-will ( <i>Caprimulgus vociferous</i> )	U to C	B	Dry, open, predominantly deciduous woodlands, often with small- to medium-sized trees of pine, oak, and birch; less often in mature forests	0/+
Chimney swift <sup>d</sup> ( <i>Chaetura pelagica</i> )	A	B	Vicinity of buildings in cities and farms	0

TABLE D-2 (Cont.)

Species	Relative Abundance <sup>a</sup>	Status <sup>b</sup>	Habitat	Potential Project Impact <sup>c</sup>
Ruby-throated hummingbird ( <i>Archilochus colubris</i> )	C	B	Mixed woodlands, shade trees in residential areas, orchards; often near streams and wooded swamps	+
Belted kingfisher <sup>d</sup> ( <i>Ceryle alcyon</i> )	C	B	Banks near water bodies; requires perches near water	-/0
Yellow-bellied sapsucker <sup>d</sup> ( <i>Sphyrapicus varius</i> )	C	B	Mixed forests, especially near water and small clearings; woodlots; occasionally orchards	-
Downy woodpecker <sup>d</sup> ( <i>Picoides pubescens</i> )	C	P	Interiors and edges of open mixed woodlots and forests, orchards, shade trees in cities and suburbs	-
Hairy woodpecker ( <i>Picoides villosus</i> )	C	P	Open woodlands with mature living and dead trees, swamps; prefers bottomlands with large trees	-
Three-toed woodpecker ( <i>Picoides tridactylus</i> )	R	P	Coniferous forest, especially with large stands of dead trees; logged areas and swamps with scattered dead trees	-
Black-backed woodpecker ( <i>Picoides arcticus</i> )	U	P	Coniferous forest, especially where burned or logged and swampy conditions predominate; also large tracts of balsam fir killed by spruce budworm	-
Northern flicker <sup>d</sup> ( <i>Colaptes auritus</i> )	C	B	Open woods, woodland edges, suburbs, farm woodlots, clear-cuts in dense forests, fields, meadows; requires medium to large dead or dying trees	-/+
Pileated woodpecker <sup>d</sup> ( <i>Dryocopus pileatus</i> )	U	P	Extensive second-growth and mature forests; often in lowlands near rivers and swamps; woodlots near farms and residential areas	-

TABLE D-2 (Cont.)

Species	Relative Abundance <sup>a</sup>	Status <sup>b</sup>	Habitat	Potential Project Impact <sup>c</sup>
Olive-sided flycatcher <sup>d</sup> ( <i>Contopus cooperi</i> )	U to R	B	Coniferous (spruce) forest near edges and clearings; often along wooded streams and borders of bogs; burned-over areas with a few dead trees for perching	0/+
Eastern wood-pewee ( <i>Contopus virens</i> )	C	B	Forest interiors and edges, bottomlands, uplands, farm woodlots, roadsides, parks	0/+
Alder flycatcher ( <i>Empidonax alnorum</i> )	C	B	Low, damp thickets bordering bogs, swamps, and marshes; often in alders, willows, sumacs, and viburnums; prefers open areas	+
Least flycatcher <sup>d</sup> ( <i>Empidonax minimus</i> )	C	B	Deciduous forest edges, woodlands, burns and clearings, open shrublands, orchards, well-planted residential areas, edges of country roads, overgrown pastures	+
Eastern phoebe ( <i>Saornis phoebe</i> )	C	B	Woodland cliffs, ravines, agricultural and residential areas, often near streams	0/+
Great crested flycatcher ( <i>Myiarchus crinitus</i> )	C	B	Woodland edges, swamps, old orchards, woodland clearings, sometimes along sides of ravines and deep forests; requires cavity trees	-/+
Eastern kingbird ( <i>Tyrannus tyrannus</i> )	C	B	Frequents orchards, pastures, shrubby borders, forest edges, areas along fields and highways, areas near streams with shrubby banks, swamps or marshes with dead stumps and snags	+
Horned lark ( <i>Eremophila alpestris</i> )	C	P	Plowed fields and large open areas with closely cropped grasses, golf courses, athletic fields, cemeteries, airports; prefers areas with minimum of vegetation	0/+



TABLE D-2 (Cont.)

Species	Relative Abundance <sup>a</sup>	Status <sup>b</sup>	Habitat	Potential Project Impact <sup>c</sup>
Tree swallow <sup>d</sup> ( <i>Tachycineta bicolor</i> )	A	B	Farmlands, river bottomlands, beaver ponds, wooded swamps, marshes with dead standing trees; requires cavity trees	-/+
Bank swallow <sup>d</sup> ( <i>Riparia riparia</i> )	U to C	B	Riverbanks, gravel pits, road cuts, hardwood sawdust piles, clay banks; prefers areas with grassland or cultivated fields at low elevations and near water	0/+
Cliff swallow ( <i>Petrochelidon pyrrhonota</i> )	U to R	B	Farmlands, villages, cliffs, bridges, dams, water areas, open forests	0/+
Barn swallow <sup>d</sup> ( <i>Hirundo rustica</i> )	C	B	Farmlands, rural and suburban areas	0/+
Gray jay <sup>d</sup> ( <i>Perisoreus canadensis</i> )	U to R	P	Coniferous forests and nearby deciduous or mixed woodlands, coniferous and mountain swamps	-
Blue jay <sup>d</sup> ( <i>Cyanocitta cristata</i> )	C	P	Woodlands, wooded islands, farms, cities, suburbs, parks, gardens	0
American crow <sup>d</sup> ( <i>Corvus brachyrhynchos</i> )	C	P	Interiors and edges of open forests and woodlots	0
Common raven <sup>d</sup> ( <i>Corvus corax</i> )	C	P	Remote mountain forests; prefers open woodlands, clearings; avoids extensive, dense forests; requires cliffs or tall trees	0/+
Black-capped chickadee <sup>d</sup> ( <i>Poecile atricapillus</i> )	C	P	Woodlands; frequents both heavily forested and residential areas	-/0
Boreal chickadee ( <i>Poecile hudsonicus</i> )	C	P	Coniferous woods, swamps, bogs; requires decaying trees	-
Red-breasted nuthatch <sup>d</sup> ( <i>Sitta canadensis</i> )	C	P/B	Coniferous forests, sometimes mixed woodlands; requires cavities in trees	-
White-breasted nuthatch <sup>d</sup> ( <i>Sitta carolinensis</i> )	C	P	Mixed or deciduous woodlands with large trees, villages; requires cavities in trees	-

TABLE D-2 (Cont.)

Species	Relative Abundance <sup>a</sup>	Status <sup>b</sup>	Habitat	Potential Project Impact <sup>c</sup>
Brown creeper ( <i>Certhia americana</i> )	U to C	B	Dense woodlands, swamps; requires standing dead trees with loose bark	–
House wren ( <i>Troglodytes aedon</i> )	U	B	Near human dwellings by adequate woody vegetation, woodland edges, farmlands, open forests and clearings, suburban gardens, orchards, swampy woodlands; requires cavities in trees	–/+
Winter wren ( <i>Troglodytes troglodytes</i> )	C	B	Usually in or near dense undergrowth of damp coniferous forests, in thickets near woodland streams, banks of marshy ditches, piles of slash, boreal bogs	0/+
Sedge wren ( <i>Cistothorus platensis</i> )	R	B	Sedge meadows, shallow sedge marshes with scattered shrubs and little or no standing water	0
Marsh wren ( <i>Cistothorus palustris</i> )	C	B	Large marshes with abundant tall herbaceous vegetation, shores of sluggish rivers, inland ponds	0
Golden-crowned kinglet <sup>d</sup> ( <i>Regulus satrapa</i> )	U to C	B	Mostly dense coniferous (spruce) forests; also pine, fir, hemlock, and tamarack woods and cedar bogs	–
Ruby-crowned kinglet ( <i>Regulus calendula</i> )	U to C	B	Coniferous forests in pure or mixed stands of spruce, fir, tamarack, or pine; forest edges; open stands; bogs	–/0
Eastern bluebird ( <i>Sialia sialis</i> )	R to U	B	Savannahs, open woods, swamps, farmlands, sparsely inhabited residential areas, roadside fence lines, woodland edges beside fields and meadows, clearings	+

TABLE D-2 (Cont.)

Species	Relative Abundance <sup>a</sup>	Status <sup>b</sup>	Habitat	Potential Project Impact <sup>c</sup>
Veery <sup>d</sup> ( <i>Catharus fuscescens</i> )	C	B	Low, moist deciduous woods, bottomland forests, swamps, damp ravines; prefers thickets in early deciduous second-growth and open woods with fairly dense undergrowth of ferns, shrubs, and trees	–
Swainson's thrush ( <i>Catharus ustulatus</i> )	C	B	Spruce-fir forests, especially in low damp areas near water; prefers interiors to edges	–
Hermit thrush ( <i>Catharus guttatus</i> )	C	B	Lowlands in swamps and damp forests; uplands in dry, brushy clearings in coniferous or mixed forests; also woodland edges and brushy pastures	0/+
American robin <sup>d</sup> ( <i>Turdus migratorius</i> )	A	P/B	Open woodlands, woodland edges, clearings, fields, orchards, shade trees in residential areas	+
Gray catbird <sup>d</sup> ( <i>Dumetella carolinensis</i> )	C	B	Dense thickets of shrubs, briars, vines along woodland borders; lowland tangles near streams, ponds, and swamps; shrubbery around buildings; forest clearings with brushy edges	+
Northern mockingbird ( <i>Mimus ployglottos</i> )	R	P	Woodland edges; pastures with fruit-bearing shrubs, small trees, or groves of large trees	+
Cedar waxwing <sup>d</sup> ( <i>Bombycilla cedrorum</i> )	U to C	B	Open woodlands, orchards, shade trees; semiopen country, commonly in agricultural areas and near water; avoids dense forests	–/0
Northern shrike ( <i>Lanius excubitor</i> )	R	W	Semiopen country with short grasses and scattered trees or shrubs for perches; fences and utility wires also used	+

TABLE D-2 (Cont.)

Species	Relative Abundance <sup>a</sup>	Status <sup>b</sup>	Habitat	Potential Project Impact <sup>c</sup>
European starling <sup>d</sup> ( <i>Sturnus vulgaris</i> )	A	P	Farms, cities, orchards, gardens, parks; prefers rural areas with pastures, cultivated fields, and hayfields	+
Blue-headed vireo <sup>d</sup> ( <i>Vireo solitarius</i> )	C	B	Coniferous or mixed woodlands, especially those with openings in canopy and a dense understory; prefers mountain elevations	-
Yellow-throated vireo ( <i>Vireo flavifrons</i> )	R	B	Tall deciduous trees in woodlands with partially opened canopy, seldom in dense or coniferous forests; frequents roadsides, stream borders, orchards, woodland borders, swampy woods	-/0
Warbling vireo ( <i>Vireo gilvus</i> )	U to C	B	Open mixed or deciduous woodlands, roadsides, village shade trees, bottomlands with mature trees, orchards	-
Philadelphia vireo ( <i>Vireo philadelphicus</i> )	U	B	Forests, woodland edges, clearings, burned-over areas with young deciduous trees, neglected farmlands, large to small trees and tall shrubs interspersed with clearings, thickets along streams	+
Red-eyed vireo ( <i>Vireo olivaceus</i> )	A	B	Open deciduous and second-growth woodlands with thick undergrowth of saplings; frequents residential areas with abundant shade trees	-
Tennessee warbler <sup>d</sup> ( <i>Vermivora peregrine</i> )	C	B	Associated with openings in deciduous or mixed woodlands with grasses, dense shrubs, and scattered clumps of young deciduous trees; often in boggy areas	+

TABLE D-2 (Cont.)

Species	Relative Abundance <sup>a</sup>	Status <sup>b</sup>	Habitat	Potential Project Impact <sup>c</sup>
Nashville warbler ( <i>Vermivora ruficapilla</i> )	C	B	Moist open deciduous woods, overgrown pastures and fields, swampy areas, woodland edges, clearings with young second-growth vegetation, particularly young trees 10- to 12-ft tall	+
Northern parula <sup>d</sup> ( <i>Parula americana</i> )	C	B	Wooded bogs, swamps; prefers conifers in areas where bearded lichen grows	-
Yellow warbler <sup>d</sup> ( <i>Dendroica petechia</i> )	C	B	Farmlands, orchards, roadsides, along streams and lakes; prefers scattered small trees or dense shrubbery	+
Chestnut-sided warbler <sup>d</sup> ( <i>Dendroica pensylvanica</i> )	C	B	Second-growth woodland edges, abandoned fields, brushy brooks and hillsides, roadside thickets, and woodland clearings	+
Black-throated blue warbler ( <i>Dendroica caerulescens</i> )	C	B	In or near mixed and deciduous forests with heavy undergrowth or at edges of woodland clearings; generally in moist places	-/0
Blackburnian warbler ( <i>Dendroica cerulea</i> )	C	B	Coniferous or mixed forests; generally stays in upper branches	-
Yellow-rumped warbler <sup>d</sup> ( <i>Dendroica coronata</i> )	C	B	Coniferous woods or young coniferous growth near the edge of woods; sometimes in mixed woods	-/0
Black-throated green warbler <sup>d</sup> ( <i>Dendroica virens</i> )	C	B	Deep coniferous woods or swampy woods where spruces are thickly draped with bearded lichen	-
Palm warbler ( <i>Dendroica palmarum</i> )	U	B	Bogs, open barrens, and dry spruce forest	-/0
Bay-breasted warbler ( <i>Dendroica castanea</i> )	R to C	B	Coniferous or mixed forests, especially in young trees along ponds, streams, bogs, forest clearings; prefers coniferous trees 6- to 10-ft tall	+

TABLE D-2 (Cont.)

Species	Relative Abundance <sup>a</sup>	Status <sup>b</sup>	Habitat	Potential Project Impact <sup>c</sup>
Blackpoll warbler ( <i>Dendroica striata</i> )	C	B	Among low coniferous trees at high elevations, swampy groves, stunted spruce and fir	0/+
Black-and-white warbler <sup>d</sup> ( <i>Mniotilta varia</i> )	C	B	Mature or second-growth deciduous or mixed woodlands	–
American redstart ( <i>Setophaga ruticilla</i> )	C	B	Orchards, saplings bordering pastures, second-growth deciduous woodlands, shade trees and shrubbery around dwellings, thickets bordering ponds and streams	0/+
Ovenbird <sup>d</sup> ( <i>Seiurus aurocapillus</i> )	C	B	Usually in closed-canopy, mature deciduous, or mixed woods; often among pines; prefers open forests with little underbrush and an abundance of fallen leaves, logs, and rocks	–
Northern waterthrush ( <i>Seiurus noveboracensis</i> )	U to C	B	Wooded swamps and bogs, less frequently along woodland brooks or streams and swampy wooded shores of ponds or lakes	+
Mourning warbler <sup>d</sup> ( <i>Oporornis philadelphia</i> )	U to C	B	Dense underbrush on the margins of a lowland swamp or bog; brushy hillsides; forest clearings grown up to brambles, shrubs, and saplings	+
Common yellowthroat ( <i>Geothlypis trichas</i> )	C	B	Wet brushy meadows and pastures, open swampy thickets on the margins of damp woods and woodland streams or ponds, in cattail beds of marshes, and dense tangles near water	+
Wilson's warbler <sup>d</sup> ( <i>Wilsonia pusilla</i> )	U	B	Swampy, brushy land such as tamarack bogs or swampy runs, willow and alder swales	+

TABLE D-2 (Cont.)

Species	Relative Abundance <sup>a</sup>	Status <sup>b</sup>	Habitat	Potential Project Impact <sup>c</sup>
Canada warbler ( <i>Wilsonia canadensis</i> )	C	B	Various habitats from lowlands to uplands; prefers shrubby undergrowth in cool, moist, mature woodlands, streamside thickets, cedar bogs, weedy ravines; less often in dry forest edges with young trees	-/0
Scarlet tanager ( <i>Piranga olivacea</i> )	C	B	Mature deciduous and mixed woodlands, roadside shade trees	-
Rose-breasted grosbeak <sup>d</sup> ( <i>Pheucticus ludovicianus</i> )	C	B	Edges of moist, deciduous second-growth woods; wooded borders of swamps and streams; thickets, suburban trees, old orchards	+
Indigo bunting <sup>d</sup> ( <i>Passerina cyanea</i> )	C	B	Edges of woods, old burns, open brushy fields, roadside thickets, brushy ravines	+
Eastern towhee ( <i>Pipilo erythrophthalmus</i> )	C	B	Woodland edges and dry open interiors and clearings, hedgerows, roadside thickets, brushy hillsides, pastures	+
Chipping sparrow ( <i>Spizella passerine</i> )	C	B	Suburban areas, farms, orchards, open mixed woodlands, forest clearings, woodland edges, borders of lakes and streams	+
Vesper sparrow ( <i>Pooecetes gramineus</i> )	U	B	Short-grass meadows, pastures, hayfields, cultivated grain fields, dry open uplands, burned and cut-over areas in forests, country roadsides	+
Savannah sparrow ( <i>Passerculus sandwichensis</i> )	U to C	B	Grassy swales, hayfields, meadows	+
Song sparrow <sup>d</sup> ( <i>Melospiza melodia</i> )	A	B	Brushy fields, swamps, forest edges, roadsides, hedgerows, farms, suburbs, cities, shores of ponds and streams	+

TABLE D-2 (Cont.)

Species	Relative Abundance <sup>a</sup>	Status <sup>b</sup>	Habitat	Potential Project Impact <sup>c</sup>
Swamp sparrow <sup>d</sup> ( <i>Melospiza georgiana</i> )	U to C	B	Marshes; swamps; bogs; sloughs with shrubs, rank grasses, sedges, or reeds; low swampy shores of lakes and stream banks	0/+
White-throated sparrow <sup>d</sup> ( <i>Zonotrichia albicollis</i> )	C	B	Forest edges, brushy clearings, open stunted tree growth, bog borders, cut-over and open second-growth woodlands	+
Dark-eyed junco <sup>d</sup> ( <i>Junco hyemalis</i> )	U to C	P/B	Coniferous and mixed forests, forest edges, stream borders, woodland clearings, sides of logging roads	+
Lapland longspur ( <i>Calcarius lapponicus</i> )	U	W	Cultivated fields, open weedy meadows, sunny waste places with sparse vegetation	0/+
Snow bunting <sup>d</sup> ( <i>Plectrophenax nivalis</i> )	U to C	W	Lakeshores, cultivated fields, windswept grasslands	0
Bobolink ( <i>Dolichonyx oryzivorus</i> )	U to C	B	Hayfields, meadows, marshes, fallow fields	0/+
Red-winged blackbird <sup>d</sup> ( <i>Agelaius phoeniceus</i> )	A	B	Marshes, swamps, wet meadows, ponds, dry fields; prefers wetlands with extensive growth of cattails, bulrushes, sedges, and reeds	0/+
Eastern meadowlark ( <i>Sturnella magna</i> )	U	P/B	Open farmlands (especially pastures, hayfields, and grassy meadows); may use areas with widely scattered shrubs and may favor moist lowland	0/+
Rusty blackbird ( <i>Euphagus carolinus</i> )	U to C	B	Swamps, tree-bordered marshes, beaver ponds, bogs, and stream borders with alder and willow thickets; rarely in fields	0/+
Common grackle <sup>d</sup> ( <i>Quiscalus quiscula</i> )	A	B	Farmlands, suburbs, marshes, swamps, meadows	0/+



TABLE D-2 (Cont.)

Species	Relative Abundance <sup>a</sup>	Status <sup>b</sup>	Habitat	Potential Project Impact <sup>c</sup>
Brown-headed cowbird ( <i>Molothrus bonariensis</i> )	C	B	Open woodlands, forest edges, agricultural lands, suburban areas	+
Baltimore oriole ( <i>Icterus galbula</i> )	C	B	Suburban and roadside shade trees, groves, orchards, parks, deciduous woodland edges, along streams and lakes	0/+
Pine grosbeak ( <i>Pinicola enucleator</i> )	U	W	Spruce-fir forests typically at high elevations, usually at edges of open areas in forests and along forest borders	0/+
Purple finch <sup>d</sup> ( <i>Carpodacus purpureus</i> )	C	P/B	Edges of coniferous forest, evergreen plantations, ornamental conifers in residential areas, parks, open mixed woodlands; winters largely in deciduous woodlands	0/+
Red crossbill <sup>d</sup> ( <i>Loxia curvirostra</i> )	R	P	Coniferous forests	-
White-winged crossbill <sup>d</sup> ( <i>Loxia leucoptera</i> )	U	P	Coniferous forests	-
Common redpoll ( <i>Carduelis flammea</i> )	U	W	Near alders and birches, snow-covered weedy fields	0/+
Hoary redpoll ( <i>Carduelis hornemanni</i> )	R	W	Old fields, pastures, birch or alder swamps	+
Pine siskin <sup>d</sup> ( <i>Carduelis pinus</i> )	R to A	P	Coniferous forests, alder thickets, weed patches adjacent to forests	0/+
American goldfinch <sup>d</sup> ( <i>Carduelis tristis</i> )	C	P/B	Open weedy fields, pastures with scattered trees near villages and farms, forest edges, open swamps	+
Evening grosbeak <sup>d</sup> ( <i>Coccothraustes vespertinus</i> )	C	P	Coniferous forests (breeding); coniferous and deciduous woodlands (winter)	-
House sparrow <sup>d</sup> ( <i>Passer domesticus</i> )	A	P	Urban and suburban areas, farms, parks; avoids heavily forested areas	+

Footnotes on next page.

**TABLE D-2 (Cont.)**

Species	Relative Abundance <sup>a</sup>	Status <sup>b</sup>	Habitat	Potential Project Impact <sup>c</sup>
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<sup>a</sup> A = abundant, C = common, R = rare, U = uncommon.

<sup>b</sup> B = resident during breeding season, P = permanent resident, P/B = project area is near transition between permanent and breeding resident range, W = resident during winter.

<sup>c</sup> Qualitative assessment based on conversion of existing habitats (primarily forested uplands and wetlands) to right-of-way habitats (primarily small tree, scrub-shrub, and old-field habitats) and edge habitats:

+ = an overall increase in preferred habitat

0 = no major change in preferred habitat

- = an overall decrease in preferred habitat

A slash (e.g., 0/+) indicates that the impact is slight, except -/+ indicates one habitat requirement

(e.g., feeding habitat) would notably decrease while another (e.g., breeding habitat) would notably increase.

<sup>d</sup> Observed in the vicinity of the proposed project during field surveys conducted in 1996, 1997, and 2002 (BHE 2005).

Source: Information on relative abundance, status, and habitat descriptions from DeGraaf and Rudis (1986).

**TABLE D-3 Amphibian and Reptile Species within the Project Area**

Species	Relative Abundance <sup>a</sup>	Habitat	Potential Project Impact <sup>b</sup>
Blue-spotted salamander ( <i>Ambystoma laterale</i> )	R	Woody, swampy, or moist areas	-/0
Spotted salamander ( <i>Ambystoma maculatum</i> )	C	Moist woods, stream banks; beneath stones, logs, boards; prefers deciduous or mixed woods on rocky hillsides and shallow woodland ponds or marshy pools	-/0
Red-spotted newt ( <i>Notophthalmus v. viridescens</i> )	C	Terrestrial juveniles in moist areas, usually in woody habitats; adults in still or slow-moving waters with aquatic vegetation	-/0
Northern dusky salamander ( <i>Desmognathus f. fuscus</i> )	C to A	Woodlands at margins of cool, running water	-/0
Redback salamander <sup>c</sup> ( <i>Plethodon cinereus</i> )	A	Mixed deciduous or coniferous woods; inhabits decaying logs, stumps; under stones, bark, and moist leaf litter	-/0
Four-toed salamander ( <i>Hemidactylium scutatum</i> )	U to R	Wet woodlands (preferably with sphagnum moss), shallow woodland pools, tamarack bogs	-/0
Northern two-lined salamander ( <i>Eurycea b. bisilineata</i> )	C to A	Floodplain bottoms, moist forest floors, along streams, boggy areas near springs and seeps, wet woodlands or pastures	-/0
Eastern American toad <sup>c</sup> ( <i>Bufo a. americanus</i> )	C	Most habitats, usually moist upland woods	0
Northern spring peeper ( <i>Pseudacris c. crucifer</i> )	C to A	Marshy or wet woods, second-growth woodlots, sphagnum bogs, nonwooded lowlands, near ponds and swamps	-/0
Gray treefrog <sup>c</sup> ( <i>Hyla versicolor</i> )	C	Forested areas with small trees, shrubs, and bushes near or in shallow water	0/+
Bullfrog ( <i>Rana catesbeiana</i> )	C	Near shorelines of large bodies of water with emergent vegetation, lakes, rivers, oxbows	0
Green frog <sup>c</sup> ( <i>Rana clamitans melanota</i> )	C	Riparian habitats, margins of shallow permanent and semipermanent waters	0

TABLE D-3 (Cont.)

Species	Relative Abundance <sup>a</sup>	Habitat	Potential Project Impact <sup>b</sup>
Mink frog ( <i>Rana septentrionalis</i> )	R to C	Edges of lakes and ponds, cold springs, inlets where cold streams enter ponds, and stream edges; prefers open water with abundant lily pads	0
Wood frog ( <i>Rana sylvatica</i> )	C	Terrestrial habitats in mesic woods or xeric woods with moist microhabitats	–
Northern leopard frog <sup>c</sup> ( <i>Rana pipiens</i> )	C	Wet open meadows and fields and wet woods during summer months	0/+
Pickerel frog <sup>c</sup> ( <i>Rana palustris</i> )	C	Water of lakes, ponds, clear streams, springs, sphagnum bogs, quarry pools, pastures, fields, woodlands	0
Common snapping turtle ( <i>Chelydra s. serpentine</i> )	C	Bottom dweller in any permanent and many semipermanent water bodies	0
Wood turtle ( <i>Clemmys insculpta</i> )	I to C	Slow-moving meandering streams with sandy bottoms and overhanging alders; fields, woods, and roadsides in summer	0
Eastern painted turtle ( <i>Chrysemys p. picta</i> )	C to A	Quiet, shallow ponds, marshes, rivers, lakeshores, wet meadows, bogs, slow-moving streams	0
Northern water snake ( <i>Nerodia s. sipedon</i> )	A	Aquatic and semiaquatic habitats; uncommon in deeply shaded woodland swamps and ponds	+
Northern redbelly snake ( <i>Storeria o. occipitomaculata</i> )	A	Moist woods, hillsides, sphagnum bogs, upland meadows, valleys; prefers woodlands	–/0
Eastern garter snake <sup>c</sup> ( <i>Thamnophis s. sirtalis</i> )	A	All terrestrial habitats; most common and widespread snake	0
Eastern ribbon snake ( <i>Thamnophis s. sauritis</i> )	R	Damp meadows, grassy marshes, sphagnum bogs; borders of ponds, lakes, and meandering streams	0/+
Northern ringneck snake ( <i>Diadophis punctatus edwardsi</i> )	C	Moist shady woodlands with abundant hiding cover, stony woodland pastures, rock and stone walls, woodpiles, debris, logs, boards	–

**TABLE D-3 (Cont.)**

Species	Relative Abundance <sup>a</sup>	Habitat	Potential Project Impact <sup>b</sup>
Eastern smooth green snake ( <i>Opheodrys v. vernalis</i> )	C	Upland areas, grassy fields, meadows, open aspen stands, sphagnum bogs, marshes, vines and brambles, hardwood stands	+
Eastern milk snake ( <i>Lampropeltis t. triangulum</i> )	C	Various habitats, usually with bushy or woody cover; farmlands, woods, meadows, river bottoms, bogs, rocky hillsides, pine forests, second-growth pine forests, bog woods, hardwoods, aspen stands	-/0

<sup>a</sup> A = abundant, C = common, I = infrequent, R = rare.

<sup>b</sup> Qualitative assessment based on conversion of existing habitats (primarily forested uplands and wetlands) to right-of-way habitats (primarily small tree, scrub-shrub, and old-field habitats) and edge habitats:

+ = an overall increase in preferred habitat

0 = no major change in preferred habitat

- = an overall decrease in preferred habitat

A slash (e.g., 0/+) indicates that the impact is slight.

<sup>c</sup> Observed in the vicinity of the proposed project during field surveys conducted in 1996, 1997, and 2002 (BHE 2005).

Source: Information on relative abundance and habitat descriptions from DeGraaf and Rudis (1986).

**TABLE D-4 Special Status Species That Could Occur within the Project Area<sup>a</sup>**

Species	Federal Status <sup>b</sup>	State Status <sup>b</sup>	Distribution within Maine and the Project Area	Habitat Information and Reason for Rarity
<b>Plants</b>				
Allegheny vine ( <i>Adlumia fungosa</i> )	-	T	Across southern Maine.  Recent records (1982 to the present) include northern Hancock County in the area near the middle of the alternative routes (except MEPCO South); historical records (before 1982) include southern Penobscot County near the western end of the alternative routes.	Wet or recently burned woods, rocky wooded slopes, and dry barrens. Known from young beech-ash woods.  Suitable habitat is scarce throughout its range.
Nantucket shadbush ( <i>Amelanchier nantucketensis</i> )	-	T	Southeastern and northwestern Maine.  Recent records include Hancock, Penobscot, and Washington Counties near the western portions of the alternative routes.	Pine barrens, pond margins, fields, edges, and thickets. Known from a transmission line ROW. Tolerates or requires disturbance; thus, some forms of transmission line maintenance may help to maintain populations.
Swamp birch ( <i>Betula pumila</i> )	-	SC	Mostly northern half of Maine.  Recent records include eastern Washington County near the eastern end of the alternative routes.	Suitable habitat scarce in the State. Threatened by forest succession and lack of natural fires.  Bogs and wooded swamps.  Scarcity of calcareous habitat.
Swarthy sedge ( <i>Carex adusta</i> )	-	E	Scattered records throughout the State, mostly from along the eastern coastal areas.  Penobscot County, north of the alternative routes. Historical record from south-central Penobscot County in the area near the western end of alternative routes.	Recent record from central, sandy roadsides and disturbed, dry clearings. It is a pioneer species of open areas where mineral soil has been exposed by fire or mechanical means. All populations occur in locations where natural or artificial disturbance maintains open conditions.  At southern limit of range; habitat may be ephemeral.

TABLE D-4 (Cont.)

Species	Federal Status <sup>b</sup>	State Status <sup>b</sup>	Distribution within Maine and the Project Area	Habitat Information and Reason for Rarity
Bicknell's sedge ( <i>Carex bicknellii</i> )	-	SC	Known from only one town in southern Penobscot County.  Known records from the area near the western portion of the alternative routes.	Open woods, fields, meadows in moist or dry soil. Responds well to fire and disturbance.  At northern edge of range.
Orono sedge ( <i>Carex oronensis</i> )	-	T	Throughout central, east-central, and south-central Maine.  Recent records throughout Penobscot County near the western end of the alternative routes, including the western half of the MEPCO South Route.	Fields, meadows, and clearings. Annual mowing can help to maintain populations by curtailing woody growth.  Changes in land use (e.g., development) and succession appear to be most obvious threats.
Dioecious sedge ( <i>Carex sterilis</i> )	-	T	Mostly northern Maine.  Recent records includes eastern Penobscot County north of the alternative routes; historical record in southern Penobscot County near western end of the alternative routes.	Wet calcareous soils; grows along gravelly river shores and circumneutral fens. Conservation considerations include maintenance of the hydrologic integrity of wetland and river shore habitats.  Suitable calcareous habitat is scarce.
Sparse-flowered sedge ( <i>Carex tenuiflora</i> )	-	SC	Northern two-thirds of the State.  Recent records in east-central Penobscot County (MEPCO South Route area) and eastern Washington County (near eastern end of the alternative routes). Historical record from southern Penobscot County near western end of the alternative routes.	Forested and open peatlands, usually in circumneutral fen communities.  At southern limit of range.

TABLE D-4 (Cont.)

Species	Federal Status <sup>b</sup>	State Status <sup>b</sup>	Distribution within Maine and the Project Area	Habitat Information and Reason for Rarity
Sheathed sedge ( <i>Carex vaginata</i> )	-	SC	Mostly northern Maine.  Recent record from Hancock County near eastern end of the alternative routes.	Edges of northern white cedar swamps.  At southern limit of range; habitat is naturally scarce.
Wiegand sedge ( <i>Carex wiegandii</i> )	-	SC	Throughout western two-thirds of the State.  Recent records from central Penobscot County (near MEPCO South alternative) and north-central Hancock County (near other alternative routes).	Boggy or peaty woods, particularly wooded borders of peatlands.  At southern limit of range; possibly also undercollected.
Prickly hornwort ( <i>Ceratophyllum echinatum</i> )	-	SC	South-central Maine.  Recent collections from south-central Penobscot County near western area of the alternative routes.	Quiet waters in nonforested areas.  At northern end of range; possibly overlooked in collections.
Northern wild comfrey ( <i>Cynoglossum virginianum</i> )	-	E	Scattered records throughout the State except for coastal counties.  Historical record from southern Penobscot County near western area of the alternative routes.	Borders and openings of coniferous or mixed woods, in sandy or rocky soil.  At northern limit of range. Primary threats include forest succession, fire suppression, and invasion by exotic species. It has been known to disappear from an area following logging.
Awned sedge ( <i>Cyperus squarrosus</i> var. <i>boreale</i> )	-	SC	One State record from Hancock County.  Only recent record from Hancock County in area of the alternatives routes (except MEPCO South route).	Along riverbanks and stream shores in damp sands, silts, and alluvium.  Northern edge of range.



**TABLE D-4 (Cont.)**

Species	Federal Status <sup>b</sup>	State Status <sup>b</sup>	Distribution within Maine and the Project Area	Habitat Information and Reason for Rarity
Ram's-head lady's-slipper ( <i>Cypripedium arietinum</i> )	–	E	Mostly southwestern Maine.  Historical record from Penobscot County near western area of the alternative routes.	Occurs in cool, dense, balsam/cedar/spruce swamps or in uplands of nearly pure sand, mulched with pine or cedar needles. Maine populations known from mixed forests, sometimes under nearly pure stands of hemlock. Partial removal of canopy may be beneficial as long as undergrowth does not overgrow the plants.  Loss of habitat through succession, development, or timbering.
Showy lady's-slipper ( <i>Cypripedium reginae</i> )	–	T	Throughout most of the State, rarer in western and southeastern portions of the State.  Recent records from Washington County (eastern area of the alternative routes), southern Penobscot County (western area of the alternative routes), and eastern Penobscot County (central portion of the MEPCO South Route).	Cold northern wetlands, swampy thickets, bogs, woodland glades, ravines, stream and lake edges, seepages on limestone or sandstone bluffs, damp calcareous slopes or shores, limestone quarries, wet calcareous meadows, circumneutral seep springs, forested fens, shrub borders of fens, and sandy shorelines. Requires constant moisture, some sunlight, and circumneutral soil conditions. Dense colonies often observed in deer yards.
Hyssop-leaved fleabane ( <i>Erigeron hyssopifolius</i> )	–	SC	Northern and central portions of the State.  Recent records from southern Penobscot County in western area of the alternative routes.	Scarcity of suitable habitat, habitat destruction, water contamination (e.g., from road salts), herbivory, development, and collecting.  Calcareous rocks, talus, and gravel in nontidal river shores and rocky summits and outcrops.  Southern limit of range; natural scarcity of calcareous substrates.

**TABLE D-4 (Cont.)**

Species	Federal Status <sup>b</sup>	State Status <sup>b</sup>	Distribution within Maine and the Project Area	Habitat Information and Reason for Rarity
Fall fimbry ( <i>Fimbristylis autumnalis</i> )	-	T	From central to southwestern Maine.  Recent and historical records from Penobscot County in western area of the alternative routes.	Sandy, wet soils of pond shores where water levels drop over the summer; typically beneath canopy of other herbaceous plants.  Near northern limit of range; outwash plain pond shore habitat naturally scarce. ATV use of sandy areas has degraded the plant's habitat in some locations.
Bog bedstraw ( <i>Galium labradoricum</i> )	-	SC	Scattered localities, mostly from northern and southeastern Maine.  Recent records from Washington County (eastern area of the alternative routes) and Penobscot County (western area of the alternative routes).	Peatlands, sedge meadows, northern white cedar swamps, and mossy woods.  The reason for rarity is unknown.
Common mare's-tail ( <i>Hippuris vulgaris</i> )	-	SC	Northern, central, and eastern portions of the State.  Recent records from Washington County (eastern area of the alternative routes) and Penobscot County near central area of the MEPCO South Route.	Quiet waters of lakes and ponds.  Southern edge of range.
Long-leaved bluet ( <i>Houstonia longifolia</i> )	-	SC	Primarily central and west-central Maine.  Recent records from Penobscot County near the western area of the alternative routes.	Slaty ledges or riverine gravels; usually found in slight cracks or depressions on river shore ledges.  Northern limit of range; habitat naturally scarce.

TABLE D-4 (Cont.)

Species	Federal Status <sup>b</sup>	State Status <sup>b</sup>	Distribution within Maine and the Project Area	Habitat Information and Reason for Rarity
Alpine clubmoss ( <i>Huperzia selago</i> )	-	T	Several localities in western and eastern Maine.  Recent record from Washington County near Hancock County line in area near middle of alternative routes (except the MEPCO South Route).	Damp or mossy rocks, barrens, cold woods, including disturbed sites near water and coniferous forests.  Southern limit of range. Populations could be threatened by heavy recreational use (e.g., hiking or ATVs).
Vasey rush ( <i>Juncus vaseyi</i> )	-	E	Scattered locations in northern two-thirds of the State.  Recent record from Washington County near the eastern end of the alternative routes.  Historical record from Penobscot County near the western end of the alternative routes.	Various wetland habitats (e.g., damp thickets, meadows, shores, seasonally inundated swales with sandy soils, wet prairies, and other intermittently wet ground).  Southern limit of range. Vulnerable to habitat conversion to residential or commercial use. It may not persist in sites with significant habitat fragmentation.
American shore-grass ( <i>Littorella uniflora</i> )	-	SC	Throughout the State, mostly from the southern half.  Recent records include Hancock and Penobscot Counties near the western end of the alternative routes.	Sandy, gravelly, or muddy shores and shallow margins of lakes and ponds.  Southern limit of range.
Swamp fly-honeysuckle ( <i>Lonicera oblongifolia</i> )	-	SC	Northern half of the State.  Recent records include Washington County near the eastern end of the alternative routes and Penobscot County near the middle of the MEPCO South Route.	Open areas of cool cedar swamps underlain by limestone.  Natural scarcity of specific habitat requirements.

TABLE D-4 (Cont.)

Species	Federal Status <sup>b</sup>	State Status <sup>b</sup>	Distribution within Maine and the Project Area	Habitat Information and Reason for Rarity
White adder's-mouth ( <i>Malaxis monophyllos</i> [= <i>brachypoda</i> ])	–	E	Mostly the northeastern, southeastern, and southwestern portions of the State.  Recent records from Washington County include one record from near the MEPCO South Route and another record from near the other alternative routes.	Damp calcareous gravels, talus, peat, swales, and fens. Natural habitat of calcareous or limy bogs is scarce.  It has been known to disappear following logging. Other threats include disturbance, road building, and wetland ditching.
Smooth sandwort ( <i>Minuartia glabra</i> )	–	SC	Mostly in the southern third of the State.  Recent records from Penobscot County near the western end of the alternative routes.	Open granitic ledges of mountains less than about 3,280 ft (1,000 m) tall.  At northern limit of its range.
Canada mountain-rice grass ( <i>Oryzopsis canadensis</i> )	–	SC	Mostly across southern third of the State.  Recent records in Hancock and Penobscot Counties near the middle of the alternative routes (except MEPCO South Route).	Dry, sandy, rocky woods; several sites are located in blueberry barrens.  The reason for scarcity is unknown.
Alga-like pondweed ( <i>Potamogeton confervoides</i> )	–	SC	Mostly the southern half of the State.  Recent records from Penobscot County near the MEPCO South Route and from Hancock and Washington Counties near the middle of the other alternative routes.	Acidic, clear-water ponds; substrate at least partly peaty, usually with an admixture of sand or gravel.  The reason for scarcity is unknown, possibly undercollected.
Indian grass ( <i>Sorghastrum nutans</i> )	–	E	Mostly the southern portion of the State.  Recent record from Hancock County near the middle of the alternative routes (except the MEPCO South Route); historic record near the western end of the alternative routes.	Dry slopes, prairies, and borders of woods. Has been documented from the shores of rivers and lakes in Maine.  Northern limit of range. Known populations are small; thus, they are susceptible to random fluctuations or localized disturbance.

TABLE D-4 (Cont.)

Species	Federal Status <sup>b</sup>	State Status <sup>b</sup>	Distribution within Maine and the Project Area	Habitat Information and Reason for Rarity
Water awlwort ( <i>Subularia aquatica</i> )	–	SC	Mostly central, southwestern, and southeastern portions of the State.  Recent records from Washington County near eastern end of the alternative routes.	Sandy or gravelly margins of lakes and slow streams. Most Maine populations on sand-bottomed ponds and lakes.  At southern limit of range.
Small purple bladderwort ( <i>Utricularia resupinata</i> )	–	E	Mostly southwestern and southeastern portions of the State.  Recent record from Washington County southward from the eastern end of the alternative routes.	Pond, lake, and river shores and margins.  Reasons for rarity unknown.
New England violet ( <i>Viola novae-angliae</i> )	–	SC	Primarily in the northern portion of the State, with some records from south-central Maine.  Recent records from Penobscot County near the western portion of the alternative routes (along Penobscot River).	Gravels, wet rocks, shores, and meadows. In Maine, it is restricted to calcareous slate ledges projecting into the Penobscot River.  Naturally small range, probably dwindling as a result of habitat loss.
Water stargrass ( <i>Zosterella dubia</i> )	–	T	Mostly known from south-central Maine.  Recent records from Hancock and Penobscot Counties near the western end of the alternative routes.	Damp sands, often submerged in quiet waters.  Northern limit of range.

TABLE D-4 (Cont.)

Species	Federal Status <sup>b</sup>	State Status <sup>b</sup>	Distribution within Maine and the Project Area	Habitat Information and Reason for Rarity
<b>Invertebrates</b>				
Yellow lampmussel ( <i>Lampsilis cariosa</i> )	-	T	St. George, Penobscot, and lower Kennebec River drainages.  The MEPCO South Route would cross the Penobscot River at two locations.	Predominantly a river species, but also found in some lakes and ponds; prefers sand and mixed sand/gravel/cobble substrates.  Limited distribution and abundance; fragmented distribution due to dams and geographic isolation.
Tidewater mucket ( <i>Leptodea ochracea</i> )	-	T	St. George, Penobscot, and lower Kennebec River drainages.  The MEPCO South Route would cross the Penobscot River at two locations.	Quiet waters of ponds, lakes; slow-moving sections of rivers and streams; typically on mud or sand substrates.  Limited distribution and abundance; fragmented distribution due to dams and geographic isolation.
Pygmy snaketail ( <i>Ophiogomphus howei</i> )	-	T	Saco, Crooked, Aroostook Rivers; East Branch, West Branch, main stem of Penobscot River; St. Croix and Machias Rivers.  The alternative routes cross some of the rivers known to harbor the species.	Flowing waters of medium to large unpolluted rivers.  Restricted distribution and low in number where it does occur.
Tomah mayfly ( <i>Siphonisca aerodromia</i> )	-	T	Tomah Stream; St. Croix Stream; and Mattawamkeag, Passadumkeag, East Machias, Allagash, Dead, and Sebasticook River drainages.  The MEPCO South Route crosses Tomah Stream and Passadumkeag River.	Seasonally flooded, sedge-dominated floodplains.  Limited distribution, only abundant at one site.

**TABLE D-4 (Cont.)**

Species	Federal Status <sup>b</sup>	State Status <sup>b</sup>	Distribution within Maine and the Project Area	Habitat Information and Reason for Rarity
<b>Fishes</b>				
Shortnose sturgeon ( <i>Acipenser brevirostrum</i> )	E	–	Kennebec and Penobscot River drainages.  The MEPCO South Route would cross the Penobscot River at two locations.	Large rivers, estuaries, and the sea. Prefers deep pools with soft substrates and vegetated bottoms. Spawning occurs well upriver from summer foraging and nursery grounds.  Pollution and habitat alteration (e.g., due to dams).
Atlantic salmon ( <i>Salmo salar</i> )	E	–	Sheepscoot, Ducktrap, Narragagus, Pleasant, Machias, East Machias, and Dennys River watersheds.  All alternative routes cross a number of streams considered essential fish habitat.	Freshwater habitat includes rocky runs and pools of small to large streams and rivers.  Habitat loss and degradation, water withdrawals, poor marine survival, interbreeding with non-native stocks.
<b>Birds</b>				
Upland sandpiper ( <i>Bartramia longicauda</i> )	–	T	Scattered locations from York to Aroostook Counties, with largest concentration in Washington County.  Alternative routes within range of upland sandpiper.	Large open grassy areas such as blueberry barrens, agricultural fields, and airports.  Fewer than 200 breeding pairs. Declining breeding habitat, now limited to intensely managed locations.
Sedge wren ( <i>Cistothorus platensis</i> )	–	E	Scattered reports from the southern two-thirds of the State.  Recent records (1990s) for only singing males in Hancock and Penobscot Counties (as well as several other counties outside the project area).	Nests in tall, dense stands of sedges and grasses of wet meadows. Avoids sites that are too dry or too wet.  Low population size, declining population trend, and a population distributed at fewer than five discreet sites. At present, no known breeding colonies in Maine.

**TABLE D-4 (Cont.)**

Species	Federal Status <sup>b</sup>	State Status <sup>b</sup>	Distribution within Maine and the Project Area	Habitat Information and Reason for Rarity
Bald eagle ( <i>Haliaeetus leucocephalus</i> )	T	T	Statewide distribution.  Portions of the alternative routes would occur near or cross eagle habitat (e.g., Penobscot and St. Croix Rivers and other larger rivers).	Shorelands and uplands adjacent to coastal waters, lakes, and large rivers.  Habitat loss, human disturbance, environmental contamination, and human-related deaths and injuries.
<b>Mammals</b>				
Eastern timber wolf ( <i>Canis lupus lycaon</i> )	E	SC	Potentially Statewide, but breeding status is uncertain. Only occasional sightings are reported; individuals may be dispersing into Maine from Quebec. Some sightings may be coyotes.  Could occur in areas along the alternative routes that are not close to human habitations. However, the potential for occurrence anywhere in the State is extremely rare.	All forested and nonforested habitats, except those disturbed by humans.  Human-caused direct mortality (e.g., trapping, shooting, poisoning, and reductions of prey populations). Habitat loss is also a threat.
Eastern cougar ( <i>Felis concolor cougar</i> )	E	SC	Potentially Statewide, but breeding status is uncertain. No evidence of a breeding population in northeastern United States. Occasional sightings in Maine believed to be escaped or released captive cougars.  Could occur in areas along the alternative routes that are not close to human habitations. However, the potential for occurrence anywhere in the State is extremely rare.	All forested and nonforested habitats, except those disturbed by humans.  Nearly or actually extinct due to habitat loss, hunting, and former scarcity of prey (e.g., low deer populations in the 1800s).

**Footnotes on next page.**



**TABLE D-4 (Cont.)**

<sup>a</sup> ATV = all-terrain vehicle, MEPCO = Maine Electric Power Company, ROW = right-of-way.

<sup>b</sup> E = threatened, SC = special concern, T = threatened, a dash indicates not listed.

Sources: MDIFW (2002); MNAP (2002); NatureServe (2005).

## D.2 REFERENCES

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