

## 10.19. Evaluation of Wildlife Habitat Use

### 10.19.1. General Description of the Proposed Study

The wildlife habitat evaluation study is an office-based, desktop analysis of both existing information and new survey data to be collected for the Project, which will be used in association with the specific wildlife habitat types being mapped for the Project (see Section 11.5) to rank habitat values categorically for the mapped habitat types for each bird and mammal species of concern that will be addressed by the impact assessments prepared during the FERC licensing process.

#### 10.19.1.1. Study Goals and Objectives

The goal of the study is to provide Project-specific habitat-evaluation information for birds and mammals to facilitate quantitative assessments of the impacts on wildlife habitats from development of the proposed Project.

The wildlife habitat evaluation has two fundamental objectives:

- Use Project-specific survey data and the scientific literature to determine local habitat associations for those bird and mammal species occurring in the Project area that are of conservation, management, cultural, or ecological concern and that are specific to the wildlife habitat types to be mapped in the Project area; and
- Categorically rank habitat values for each bird and mammal species of concern for each of the wildlife habitat types that will be mapped in the Project area.

The habitat-association data to be developed in this study, together with the wildlife habitats that will be mapped digitally in the vegetation and wildlife habitat mapping study (see Section 11.5), will be used in GIS-based, spatially explicit analyses to derive quantitative estimates of habitat loss, habitat alteration, and disturbance effects for birds and mammals (see below) in the impact assessment phase of the Project. These assessments will play an important role in the overall evaluations of impacts to wildlife during the FERC licensing process.

### 10.19.2. Existing Information and Need for Additional Information

Wildlife habitat evaluations for the Susitna basin were conducted in several studies in the early 1980s for the APA Susitna Hydroelectric Project and for another study effort in the lower portions of the drainage (AEA 2011). Those habitat evaluations were based on vegetative cover types that were mapped within 16 km (10 mi) on each side of the Susitna River between Gold Creek and the Maclaren River (TES 1982). That vegetation mapping and the subsequent habitat evaluations were conducted three decades ago.

Both the vegetation mapping and the habitat evaluations should be updated for the current Project, for three primary reasons. First, the wildlife habitat evaluations completed in the early 1980s were based solely on vegetation types, not wildlife habitat types. Wildlife habitat maps provide land-cover classifications that are better suited to evaluations of habitat use by birds and mammals than is a vegetation map alone, primarily through the incorporation of physiography, landform, and vegetation structure information (see Section 11.5). Second, populations of

wildlife species undoubtedly have fluctuated in size since the early 1980s, and it is known that habitat use by birds and mammals can be influenced by density (a greater diversity of habitats often is used when densities are high). Third, vegetation cover, structure, and even landforms are likely to have changed to some degree within the Project area because of landslides, erosion, thermokarst, fire, forest succession, expansion/contraction/decadence of birch and aspen clones, and increases in woody shrub cover associated with increased summer temperatures. To provide accurate information to use in evaluating the impacts of habitat loss and alteration for wildlife species during the FERC licensing process, it will be imperative that wildlife habitat evaluations be updated for the currently proposed Project, and that those habitat evaluations are based on a recently prepared wildlife habitat map for the Susitna basin.

### **10.19.3. Study Area**

The wildlife habitat evaluation study area will be identical to the area mapped for vegetation and wildlife habitats for the Project (see Section 11.5, Figure 11.5-1). The study area encompasses a 4-mi buffer surrounding those areas that could be directly affected by Project construction and operations (the proposed reservoir impoundment zone, areas for infrastructure of the dam and powerhouse and supporting facilities, the proposed access route and transmission-line corridors, and materials sites).

### **10.19.4. Study Methods**

#### *10.19.4.1. Habitat Evaluation Procedures*

The proposed methods for the wildlife habitat evaluation study involve the use of current and Project-specific survey data for birds and mammals in coordination and conjunction with the preparation of a current wildlife habitat map for the Project area. This study will be an office-based effort, performed after the wildlife habitat mapping for the Project area is completed. The methods to be used will follow those outlined in ABR (2008) and Schick and Davis (2008).

The first task in the wildlife habitat evaluation is selection of a set of bird and mammal species of concern, for which Project-related habitat impacts would be evaluated. The procedure for determining which animals are included will be made through consultation with the federal and state resource management agencies and other interested licensing participants. Specific criteria will be established for the species-selection process. It is proposed that a species be selected if it meets one or more of the following criteria:

- A federally or state-protected species;
- A bird species of conservation and management concern, determined from lists maintained by various management agencies, agency working groups, and non-governmental conservation organizations (as outlined in the FERC–USFWS MOU on migratory birds; FERC and USFWS [2011]);
- A bird or mammal species of management concern for federal and/or state management agencies (primarily game and furbearer species);
- A species that is an important subsistence resource or is culturally significant for Alaska Natives;

- An ecologically important species with demonstrable ecosystem effects, such as ecosystem engineers (e.g., beaver), and species which occupy prominent positions in the trophic structure as predators or prey.

As agreed to during consultation with resource management agencies (see Section 10.4 and Attachment 10.1), the preliminary list of bird species of concern for the Project area (Table 10.19-1) comprises those species listed in Table 2 of the wildlife data-gap report for the Project (ABR 2011) and in Table 4.8-2 of the Project PAD (AEA 2011), plus two additional shorebird species (Short-billed Dowitcher and Hudsonian Godwit) requested by USFWS. The list of mammal species of concern will include big game, furbearers, and selected species of smaller mammals, including the little brown bat and Alaska tiny shrew. The lists of bird and mammal species of concern both will be refined through further consultation with resource management agencies.

A matrix will be constructed listing each species of concern and each wildlife habitat type mapped in the Project area, and a habitat-value ranking will be assigned to each cell in the matrix. As with the species-selection process, the ranking procedure will be developed further through consultation with federal and state resource management agencies and other interested licensing participants, but it is likely that a habitat-value categorization system will be used (e.g., negligible, low, moderate, and high value). The habitat-value rankings will be derived in different ways among species, depending on the level of Project-specific data that are available to assess habitat use in each of the mapped wildlife habitat types. Observations of wildlife species will be tagged to mapped habitats using GPS coordinates and a GIS, and the data quality will be assessed for each species and mapped habitat type (e.g., adequately sampled, undersampled, or not sampled). Data-based quantitative evaluations of habitat use will be employed whenever possible in the habitat-value rankings, but in cases in which the habitats in question were undersampled or not sampled, or for which sufficient Project-specific data are not available, then habitat-use information from the scientific literature and from field experience with the species elsewhere will be used to derive habitat-value rankings.

Habitats will be ranked for the various life-history stages of each of the species of concern addressed (e.g., breeding/calving, post-calving, spring and fall migration, overwintering) to encompass the seasonal range of habitat use. Additionally, specific habitat-use maps can be prepared for high-value game animals such as caribou, moose, and bears to illustrate specific areas and seasons of use, in addition to identifying habitat types that are important to those species.

#### *10.19.4.2. Impact Assessment*

Data from the wildlife habitat evaluation study will be used directly in quantitative assessments of habitat loss and habitat alteration for each of the bird and mammal species of concern to be addressed in the FERC licensing process. With habitat-value rankings for each bird and mammal species of concern for each mapped habitat type, the areas within the Project footprint which are important for each species of concern can be identified, and the total areas of each to be directly affected (e.g., habitat loss and habitat alteration) by development of the Project can be determined quantitatively in GIS. Similarly, the indirect effects of disturbance will be assessed by applying species-specific disturbance buffers to the Project footprint and determining quantitatively the total areas of important habitats for each species of concern that could be

influenced indirectly by disturbance effects during Project construction and operations. Data from the wildlife habitat evaluation study also will be used to help address the potential for fragmentation of habitat patches for species of concern because of Project development.

As agreed to during consultation with resource management agencies (see Section 10.4 and Attachment 10.1), the finer-scale habitat types mapped in the Project area (see Section 11.5) will be “crosswalked” with the coarser-scale habitats (30-meter pixel resolution) mapped in the Alaska Gap Analysis Project (GAP). The habitat-value rankings for each bird and mammal species of concern in each mapped habitat type in the Project area also will be combined into the coarser-scale GAP habitats, as necessary. With the habitat-value rankings upgraded to the GAP habitat types, the habitat loss and habitat alteration effects from the proposed Project can be placed in a broader regional context (e.g., habitat impacts can be assessed at the ecoregional scale).

#### *10.19.4.3. Reporting and Deliverables*

The reports and deliverables for this study include:

**Study Reports.** Because the wildlife habitat evaluation study cannot be completed until after the wildlife habitat mapping for the Project area is completed in October 2014, a brief Initial Study Report and the Updated Study Report will be completed within 1 and 2 years, respectively, of FERC’s Study Plan Determination (i.e., February 1, 2013). The report will include descriptions of the methods used, including summaries of habitat use for each bird and mammal species assessed, and tables indicating habitat-values by species and habitat type.

#### **10.19.5. Consistency with Generally Accepted Scientific Practice**

The study methods discussed above have been used successfully for recent wildlife habitat evaluations on several projects in Alaska (e.g., ABR 2008, Schick and Davis 2008, PLP 2011). The methods have been favorably received by agency reviewers.

#### **10.19.6. Schedule**

The wildlife habitat evaluation study can be completed only after the wildlife habitat mapping for the Project area is available in October 2014. Preliminary information on habitat use rankings for the habitat evaluation matrix can be obtained through literature review in 2013 and earlier in 2014, however.

##### 2013

- Initial selection of species for analysis: February.
- Literature review of habitat-use information: March–April.

##### 2014

- Initial Study Report: February.
- Initial habitat-value ranking: February–March.
- Final selection of species for analysis: September.
- Data analysis and final habitat-value ranking: September–December.

## 2015

- Updated Study Report: February.

### **10.19.7. Level of Effort and Cost**

The wildlife habitat evaluation will be an office-based effort, and is expected to be completed relatively quickly once the wildlife habitat mapping task is finalized. The wildlife habitat evaluation study likely can be completed in several months. The habitat evaluation study will be conducted by up to two vegetation ecologists and four wildlife biologists (with specific expertise with various bird and mammal species groups). The total cost of this study over both years is estimated to be approximately \$200,000.

### **10.19.8. Literature Cited**

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**10.19.9. Tables**

Table 10.19-1. Bird species of conservation/management concern that are known or likely to occur in the Susitna River basin, Alaska.

English Name	USFWS BCC <sup>1</sup>	USFWS BMC <sup>2</sup>	ADFG <sup>3</sup>	BLM <sup>4</sup>	NAWCP <sup>5</sup>	NAWMP <sup>6</sup>	ASG (USSCP) <sup>7</sup>	BPIF (PIF) <sup>8</sup>
Greater White-fronted Goose (Tule)		■				■		
Snow Goose		■						
Brant		■				■		
Canada Goose		■				■		
Trumpeter Swan		■		■				
Tundra Swan		■						
Gadwall		■						
American Wigeon		■				■		
Mallard		■				■		
Blue-winged Teal		■				■		
Northern Shoveler		■						
Northern Pintail		■				■		
Green-winged Teal		■						
Canvasback		■				■		
Redhead		■				■		
Ring-necked Duck		■						
Greater Scaup		■						
Lesser Scaup		■				■		
Harlequin Duck		■						
Surf Scoter		■	■			■		
White-winged Scoter		■	■			■		
Black Scoter		■				■		
Long-tailed Duck		■				■		
Common Goldeneye		■				■		
Rock Ptarmigan			■					

Table 10.19-1. Continued.

English Name	USFWS BCC <sup>1</sup>	USFWS BMC <sup>2</sup>	ADFG <sup>3</sup>	BLM <sup>4</sup>	NAWCP <sup>5</sup>	NAWMP <sup>6</sup>	ASG (USSCP) <sup>7</sup>	BPIF (PIF) <sup>8</sup>
White-tailed Ptarmigan								■
Red-throated Loon	■		■	■*	■			
Pacific Loon			■					
Common Loon			■					
Horned Grebe	■		■		■			
Red-necked Grebe			■					
Osprey			■					
Bald Eagle			■					
Northern Harrier			■					
Sharp-shinned Hawk			■					
Northern Goshawk			■					
Red-tailed Hawk			■					
Golden Eagle			■	■				
Merlin			■					
Gyr Falcon			■					■
Peregrine Falcon <sup>9</sup>	■		■					
American Golden-Plover							■	
Solitary Sandpiper	■	■	■				■	
Lesser Yellowlegs	■	■	■				■	
Upland Sandpiper	■	■					■	
Whimbrel	■	■					■	
Hudsonian Godwit	■	■					■	
Ruddy Turnstone <sup>10</sup>							■	
Black Turnstone <sup>10</sup>							■	
Short-billed Dowitcher	■	■					■	
Surfbird							■	
Sanderling							■	
Wilson's Snipe		■						

Table 10.19-1. Continued.

English Name	USFWS BCC <sup>1</sup>	USFWS BMC <sup>2</sup>	ADFG <sup>3</sup>	BLM <sup>4</sup>	NAWCP <sup>5</sup>	NAWMP <sup>6</sup>	ASG (USSCP) <sup>7</sup>	BPIF (PIF) <sup>8</sup>
Black-legged Kittiwake			■					
Arctic Tern			■					
Great Horned Owl			■					
Snowy Owl			■					
Northern Hawk Owl			■					
Short-eared Owl			■	■				■
Boreal Owl			■					■
Belted Kingfisher			■					
Hairy Woodpecker			■					
American Three-toed Woodpecker			■					
Black-backed Woodpecker			■					■
Northern Flicker			■					
Olive-sided Flycatcher	■		■	■				■
Western Wood-Pewee								■
Northern Shrike								■
Violet-green Swallow			■					
Bank Swallow			■					
Cliff Swallow			■					
Boreal Chickadee			■					
Brown Creeper			■					
American Dipper								■
Golden-crowned Kinglet			■					
Gray-cheeked Thrush				■*				■
Hermit Thrush			■					
Varied Thrush			■					■
Bohemian Waxwing								■
Smith's Longspur	■		■					■
Blackpoll Warbler			■	■				■

Table 10.19-1. Continued.

English Name	USFWS BCC <sup>1</sup>	USFWS BMC <sup>2</sup>	ADFG <sup>3</sup>	BLM <sup>4</sup>	NAWCP <sup>5</sup>	NAWMP <sup>6</sup>	ASG (USSCP) <sup>7</sup>	BPIF (PIF) <sup>8</sup>
Townsend's Warbler			■	■*				■
Wilson's Warbler			■					
White-crowned Sparrow			■					
Golden-crowned Sparrow								■
Dark-eyed Junco			■					
Rusty Blackbird	■		■	■				■
Gray-crowned Rosy Finch			■					
Pine Grosbeak			■					
White-winged Crossbill			■					■
Pine Siskin			■					

Species list derived from Kessel et al. (1982) and APA (1985: Appendices E5.3 and E6.3), plus Townsend's Warbler, Hudsonian Godwit, Short-billed Dowitcher.

<sup>1</sup> USFWS (2008) Birds of Conservation Concern.

<sup>2</sup> USFWS (2009) Birds of Management Concern.

<sup>3</sup> ADF&G (2006) Featured Species.

<sup>4</sup> BLM (2010a) Sensitive Species; asterisk denotes Watch List Species (BLM 2010b).

<sup>5</sup> North American Waterbird Conservation Plan (Kushlan et al. 2002, 2006).

<sup>6</sup> North American Waterfowl Management Plan Committee (2004).

<sup>7</sup> Alaska Shorebird Group (2008).

<sup>8</sup> Boreal Partners in Flight Working Group (1999).

<sup>9</sup> Previously listed as threatened under the ESA, the American Peregrine Falcon (*Falco peregrinus anatum*) was delisted in August 1999.

<sup>10</sup> Species identity (Ruddy Turnstone, Black Turnstone) of sole record in the Susitna basin was unconfirmed (Kessel et al. 1982), but both are on the ASG list.