

**Susitna-Watana Hydroelectric Project  
(FERC No. 14241)**

**Surveys of Eagles and Other Raptors  
Study Plan Section 10.14**

**Initial Study Report  
Part B: Supplemental Information (and Errata) to  
Part A (February 3, 2014 Draft Initial Study Report)**

Prepared for

Alaska Energy Authority



**SUSITNA-WATANA HYDRO**

*Clean, reliable energy for the next 100 years.*

Prepared by

ABR, Inc.—Environmental Research & Services

Fairbanks, Alaska

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**PART B: SUPPLEMENTAL INFORMATION (AND ERRATA) TO PART A  
(FEBRUARY 3, 2014 DRAFT INITIAL STUDY REPORT)**

Part A Reference	Description
Passim	As explained in the ISR Overview and depicted in Figure 1, following release of the draft ISR in February 2014, AEA added a new north-south transmission and access corridor alignment from the dam site to the Denali Highway. This new alignment is referred to as the Denali East Option. For clarity, the north-south alignment studied to date (and historically referred to as the Denali Corridor) is now referred to as the Denali West Option. Hence, all references in Part A to the “Denali Corridor” are referencing the newly designated Denali West Option.
New Appendix to ISR 10.15, Part B	Supplemental information (ISR 10.15 Appendix T: Summary of 2013 Avian Migration Studies for the Susitna-Watana Hydroelectric Project) is presented in ISR 10.15 to summarize different bird migration survey tasks conducted in 2013 for Study 10.14 and Study 10.15, as discussed at the wildlife technical meetings on March 6, 2014 (see <a href="http://www.susitna-watanahydro.org/wp-content/uploads/2014/03/2014-03-06TT_Wildlife_MeetingNotes.pdf">http://www.susitna-watanahydro.org/wp-content/uploads/2014/03/2014-03-06TT_Wildlife_MeetingNotes.pdf</a> ) and April 9, 2014 (see <a href="http://www.susitna-watanahydro.org/wp-content/uploads/2014/05/Wildlife-Technical-Meeting-Notes_04092014.pdf">http://www.susitna-watanahydro.org/wp-content/uploads/2014/05/Wildlife-Technical-Meeting-Notes_04092014.pdf</a> ). This information was prepared to assist the reader in interpreting the migration data collected in 2013 and to compare results with other, similar studies conducted on interior and Southcentral Alaska.
Page 5, Section 4.1.1, sixth paragraph	<p>In the wildlife technical meeting on March 6, 2014 (see <a href="http://www.susitna-watanahydro.org/wp-content/uploads/2014/03/2014-03-06TT_Wildlife_MeetingNotes.pdf">http://www.susitna-watanahydro.org/wp-content/uploads/2014/03/2014-03-06TT_Wildlife_MeetingNotes.pdf</a>), USFWS requested clarification of the terms used by the study team to define nest occupancy. The following information is provided to supplement and clarify the text in this paragraph:</p> <p>Nest status was defined as occupied if the study team observed any of the following: paired adults near a nest, territorial behaviors (courtship display flights and/or aggressive or defensive flights or vocalizations), a bird in incubation posture, proof of nesting (eggs, eggshells, nestlings, fledglings), or if the nest was refurbished, decorated (e.g., with fresh spruce boughs) or contained fresh molted feathers judged to have been shed within that breeding season. Nest status was classified as unknown if the observers deemed the amount of evidence insufficient to confirm occupancy. For example, nests were classified as being of unknown occupancy if they showed minimal improvements or decoration (e.g., minimal vegetation of uncertain freshness) or if a non-territorial adult</p>

	<p>was present.</p>
<p>Page 12, Section 5.1.1.1</p>	<p>For clarification in response to the above request, this section has been revised as follows:</p> <p>“In 2013, the study team located 43 Golden Eagle nest structures (19 percent of all nests located) within the Golden Eagle study area that were occupied during at least one survey and the occupancy status of another 24 (10 percent) nests was classified as unknown (Table 5.1-2, Figure 5.1-1). In addition, four Golden Eagle nests were occupied by other raptor species. One nest occupied by a Golden Eagle and another nest of unknown occupancy were &lt;70 m (230 ft) outside the Golden Eagle study area, so their territories were considered to fall within the study area. Overall, the nests examined in 2013 represented 37 occupied territories and 19 territories of unknown occupancy (90.9–137.0 km<sup>2</sup> [35.1–52.9 mi<sup>2</sup>]/territory); Table 5.1-2). Breeding pairs were observed at five (14 percent) of the occupied Golden Eagle territories (1,000 km<sup>2</sup> [386 mi<sup>2</sup>]/breeding pair). The mean inter-nest distance of the 37 occupied territories was 6.6 km (4.1 mi; based on the centroids of occupied nests within a territory), whereas the mean inter-nest distance for breeding pairs was 15.4 km (9.6 mi). Only two of the 37 occupied territories (five percent) were successful, producing a total of two young, for a mean brood size of 0.05 young/occupied territory (1.0 young/successful territory; Table 5.1-2). Another eight nest structures, representing two additional territories of unknown occupancy (no breeding pairs), were found incidentally outside of the Golden Eagle study area (Appendices B and C) in 2013.”</p>
<p>Page 13, Section 5.1.1.2</p>	<p>For clarification in response to the above request regarding nest occupancy definitions, the first and second sentences have been revised as follows:</p> <p>“Breeding-season surveys identified 23 occupied Bald Eagle nests (58 percent of all nests located) and another three nests (eight percent) for which the occupancy status was unknown (142.9–125.0 km<sup>2</sup> [55.2–48.3mi<sup>2</sup>]/territory; Table 5.1-2). The 26 nests represented 23 occupied territories and one unknown occupancy territory in the raptor study area. Breeding pairs were found in 13 (57 percent) of the occupied territories (250.0 km<sup>2</sup> [96.5 mi<sup>2</sup>]/breeding pair).”</p>
<p>Page 18, Section 5.3.1.2, first and second paragraphs</p>	<p>Correction of errors in passage-rate calculations required corresponding changes in these paragraphs, as follows, as well as in Figures 5.3-1 and 5.3-2 (which follow this table):</p> <p>“The overall mean daily passage rate of all birds during spring surveys was 0.15 ± 0.12 birds/h (<i>n</i> = 29 survey days). Passage rates on individual days averaged across all species ranged from 0 birds/h (April 12 and 16) to 0.71 ± 0.58 birds/h (May 5). In general, raptors had</p>

	<p>relatively low mean daily passage rates during spring surveys (<math>0.084 \pm 0.055</math> birds/h overall; Golden Eagle = <math>0.206 \pm 0.122</math> birds/h; Bald Eagle = <math>0.054 \pm 0.046</math> birds/h; other raptors = <math>0.078 \pm 0.052</math> birds/h). Golden Eagles had the third-highest overall mean daily passage rate and the highest daily passage rate of any raptor species or species-group in spring (Figure 5.3-1).”</p> <p>“Passerines had the highest overall mean daily passage rate (<math>0.70 \pm 0.53</math> birds/h), with the highest rates recorded on April 13 (<math>6.0 \pm 6.0</math> birds/h) and May 9 (<math>3.56 \pm 2.68</math> birds/h) (Figure 5.3-2). Swans had the second-highest overall daily mean passage rate (<math>0.58 \pm 0.49</math> birds/h), peaking on May 5 (<math>8.40 \pm 6.90</math> birds/h).”</p>
<p>Page 20, Section 5.3.2.2, first paragraph</p>	<p>Correction of errors in passage-rate calculations required corresponding changes in this paragraph, as follows, as well as in Figures 5.3-6 and 5.3-7 (which follow this table):</p> <p>“The overall mean daily passage rate of all birds during fall surveys was <math>0.59 \pm 0.38</math> birds/h (<math>n = 25</math> survey days). Passage rates on individual days averaged across all species ranged from <math>0.046 \pm 0.032</math> birds/h (October 4) to <math>2.26 \pm 1.96</math> birds/h (October 1). Raptors had relatively low mean daily passage rates throughout the fall surveys (<math>0.067 \pm 0.054</math> birds/h overall; Bald Eagle = <math>0.085 \pm 0.068</math> birds/h; Golden Eagle = <math>0.080 \pm 0.062</math> birds/h; other raptors = <math>0.068 \pm 0.053</math> birds/h) (Figure 5.3-6). Passerines had the highest overall mean passage rate (<math>5.93 \pm 3.58</math> birds/h), with the highest rate recorded on October 1 (<math>19.95 \pm 18.69</math> birds/h) (Figure 5.3-7). Sandhill Cranes had the second-highest overall mean passage rate (<math>0.40 \pm 0.31</math> birds/h), peaking on October 1 (<math>8.85 \pm 6.47</math> birds/h).”</p>
<p>Section 6.3, Page 28, last paragraph</p>	<p>The final sentence on page 28 (which extends onto Page 29) has been revised to reflect the corrected passage rates described above for the Results section:</p> <p>“Passage rates for Golden Eagles in this study were about 3.4 times higher than at the nearby Eva Creek migration study in the spring and were similar to Eva Creek in the fall (Shook et al. 2011; 0.06 birds/h in spring and 0.07 birds/h in fall).”</p>

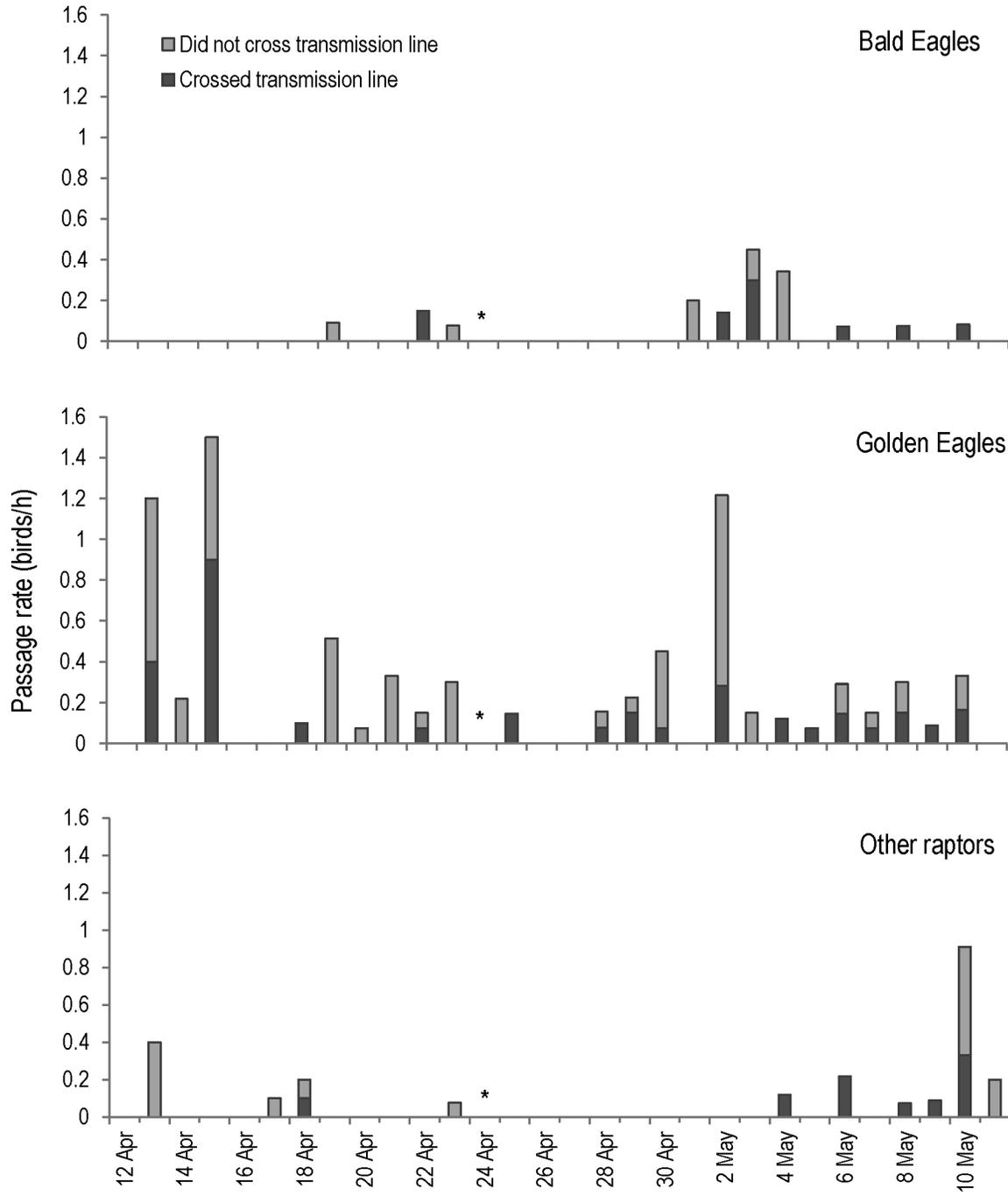


Figure 5.3-1. Mean Daily Passage Rates (birds/h) and Crossing Behavior of Raptors, Spring 2013. Asterisks (\*) indicate days on which no sampling was conducted.

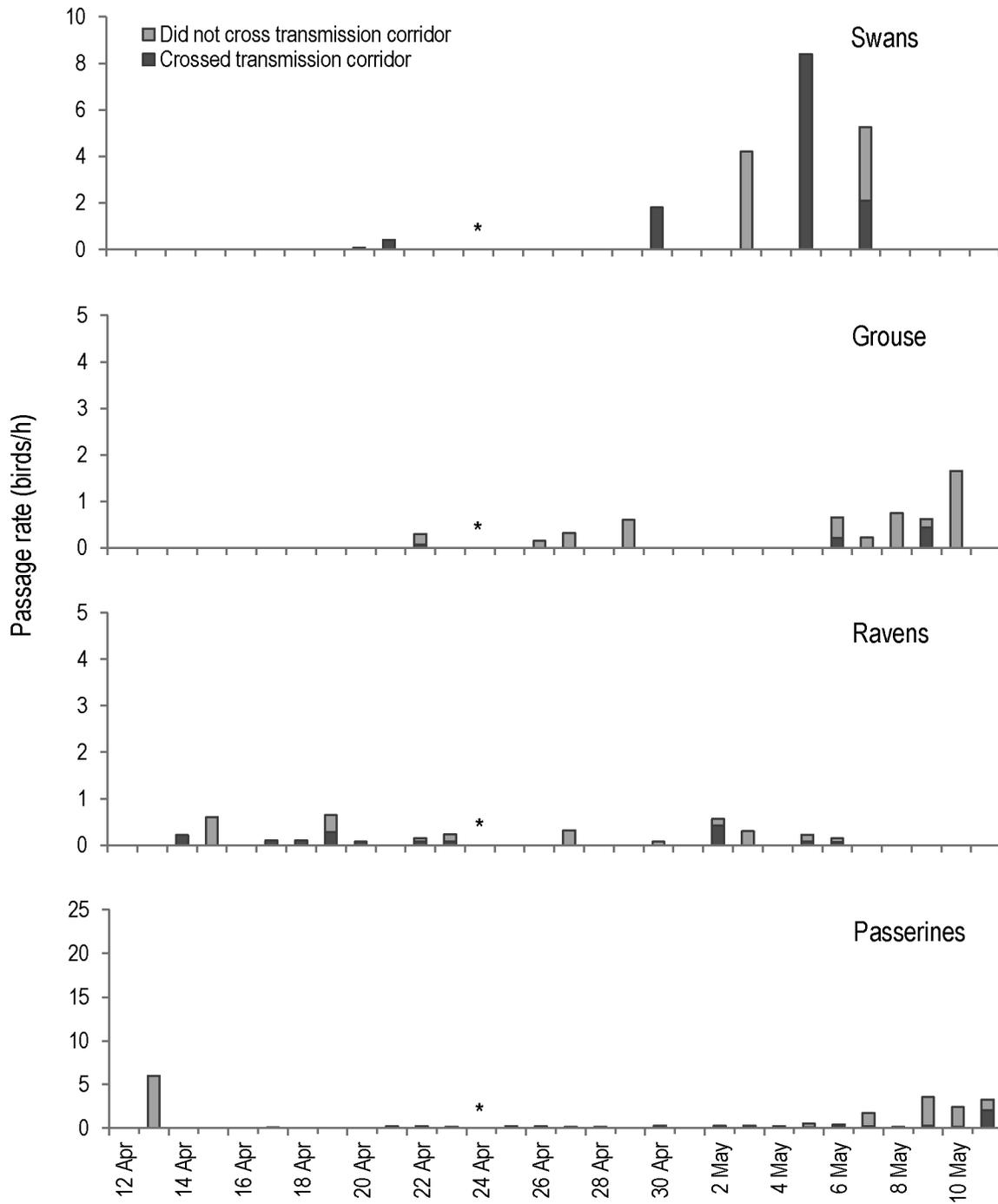


Figure 5.3-2. Mean Daily Passage Rates (birds/h) and Crossing Behavior of Non-raptors, Spring 2013. Asterisks (\*) indicate days on which no sampling was conducted.

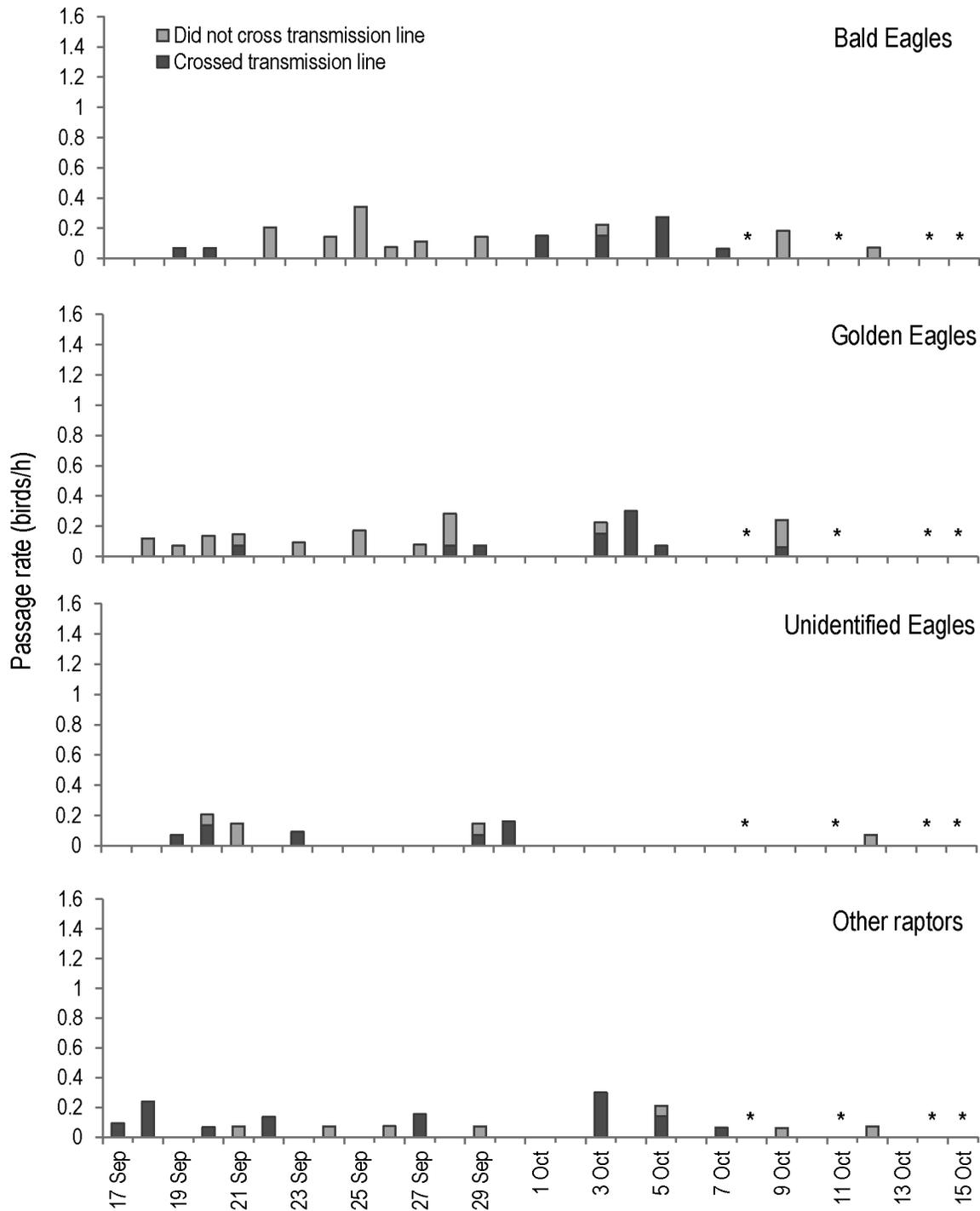


Figure 5.3-6. Mean Daily Passage Rates (birds/h) and Crossing Behavior of Raptors, Fall 2013. Asterisks (\*) indicate day on which no sampling was conducted.

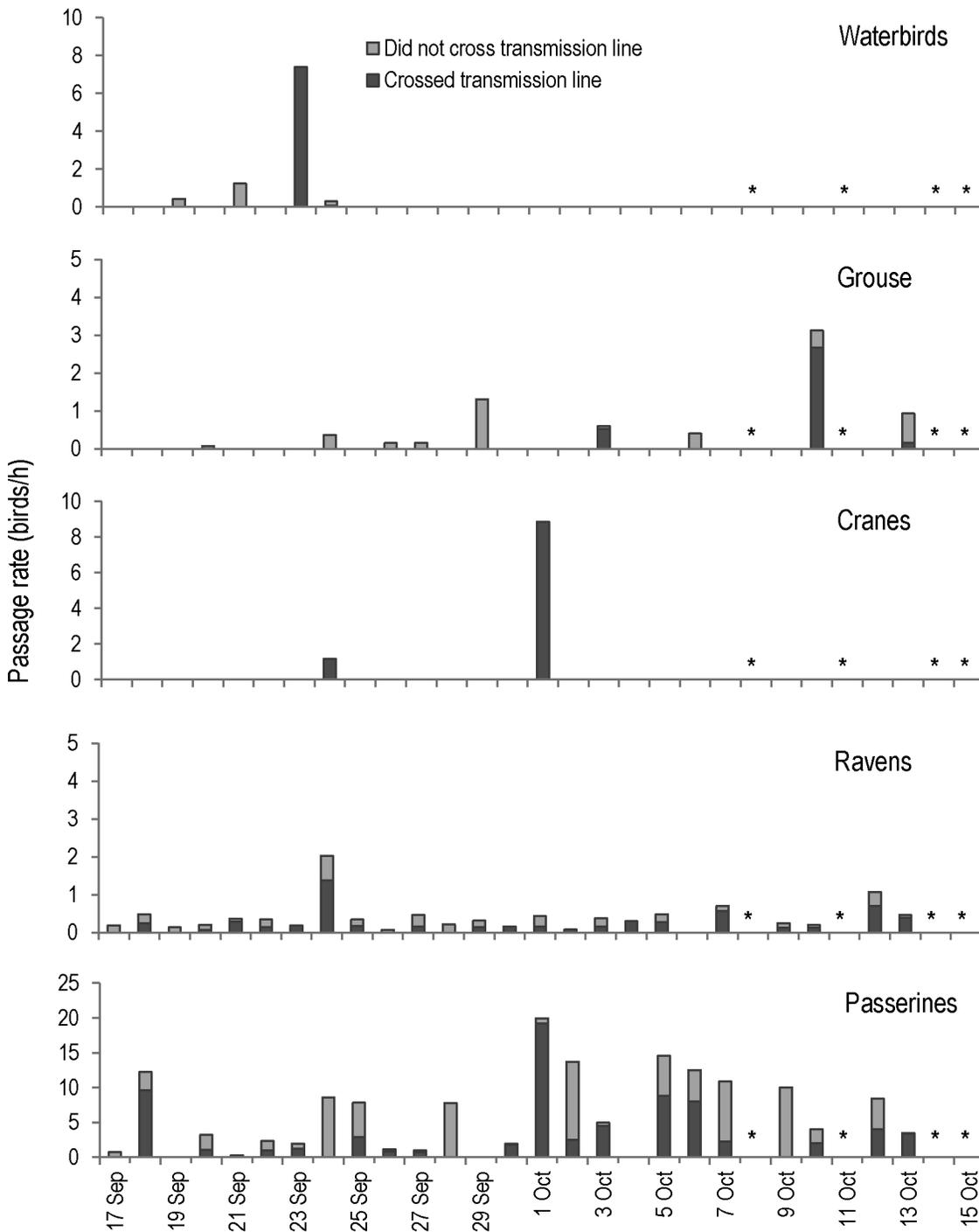


Figure 5.3-7. Mean Daily Passage Rates (birds/h) and Crossing Behavior of Non-raptors, Alaska, Fall 2013. Asterisks (\*) indicate days on which no sampling was conducted.