

APPENDIX. Summary of species and subspecies, sample size of nest visits (and clutches), data type (Con = continuous, Cat = categorical, with five categories), location, and source of data used to predict hatching date in shorebirds.

Species	<i>n</i> (clutches) <sup>a</sup>	Data type: Float angle, height	Site <sup>b</sup>	Location <sup>b</sup>	Source
Charadriidae					
Charadriinae					
Black-bellied Plover ( <i>Pluvialis squatarola</i> )	23 (6)	Con, Con	A	70°21'N, 149°34'W	J. R. Liebezeit and S. W. Zack
	7 (5)	Con, Con	B	70°27'N, 153°07'W	J. R. Liebezeit and S. W. Zack
	6 (1)	Con, Con	C	70°27'N, 148°55'W	J. R. Liebezeit and S. W. Zack
American Golden-Plover ( <i>Pluvialis dominica</i> )	41 (8)	Con, Con	D	70°12'N, 148°19'W	R. B. Lanctot
	28 (6)	Con, Con	A	70°21'N, 149°34'W	J. R. Liebezeit and S. W. Zack
	10 (10)	Con, Con	E	71°17'N, 157°04'W	R. B. Lanctot
	4 (4)	Con, Con	F	70°10'N, 146°15'W	R. J. Rodrigues
	3 (2)	Con, Con	C	70°27'N, 148°55'W	J. R. Liebezeit and S. W. Zack
	2 (2)	Con, Con	B	70°27'N, 153°07'W	J. R. Liebezeit and S. W. Zack
	2 (1)	Con, Con	G	70°10'N, 145°51'W	S. Kendall
Pacific Golden-Plover ( <i>Pluvialis fulva</i> ) <sup>c</sup>	16 (16)	Con, Con	H	73°04'N, 80°30'E	H. Schekkerman and I. Tulp
Common Ringed Plover ( <i>Charadrius hiaticula</i> ) <sup>c</sup>	14 (5)	Con, Con	I	74°28'N, 20°34'E	H. Meltofte
Piping Plover ( <i>Charadrius melodus circumcinctus</i> ) <sup>c</sup>	84 (47)	Con, Con	J	50°55'N, 104°20'W	C. Gratto-Trevor

Species	<i>n</i> (clutches) <sup>a</sup>	Data type: Float angle, height	Site <sup>b</sup>	Location <sup>b</sup>	Source
Haematopodidae					
Black Oystercatcher ( <i>Haematopus bachmani</i> )	29 (18)	Cat, Cat	L	59°50'N, 149°39'W	J. Morse
Recurvirostridae					
Black-necked Stilt ( <i>Himantopus mexicanus</i> )	23 (20)	Cat, Cat	K	40°40'N, 120°10'W	J. A. Robinson
American Avocet ( <i>Recurvirostra americana</i> )	161 (146)	Cat, Cat	K	40°40'N, 120°10'W	J. A. Robinson
Scolopacidae					
Willet ( <i>Tringa semipalmata inornatus</i> ) <sup>c</sup>	61 (60)	Con, Cat	M	50°34'N, 111°54'W	C. Gratto-Trevor
Marbled Godwit ( <i>Limosa fedoa fedoa</i> ) <sup>c</sup>	39 (39)	Con, Cat	M	50°34'N, 111°54'W	C. Gratto-Trevor
Ruddy Turnstone ( <i>Arenaria interpres interpres</i> )	41 (16)	Con, Con	I	74°28'N, 20°34'E	H. Meltofte
Sanderling ( <i>Calidris alba</i> )	32 (11)	Con, Con	I	74°28'N, 20°34'E	H. Meltofte
Semipalmated Sandpiper ( <i>Calidris pusilla</i> )	84 (20)	Con, Con	D	70°12'N, 148°19'W	R. B. Lanctot
	68 (47)	Con, Con	C	70°27'N, 148°55'W	J. R. Liebezeit and S. W. Zack
	52 (22)	Con, Con	A	70°21'N, 149°34'W	J. R. Liebezeit and S. W. Zack
	48 (45)	Con, Con	E	71°17'N, 157°04'W	R. B. Lanctot
	32 (24)	Con, Con	B	70°27'N, 153°07'W	J. R. Liebezeit and S. W. Zack
	14 (6)	Con, Con	G	70°10'N, 145°51'W	S. Kendall

Species	<i>n</i> (clutches) <sup>a</sup>	Data type: Float angle, height	Site <sup>b</sup>	Location <sup>b</sup>	Source
Western Sandpiper ( <i>Calidris mauri</i> )	39 (22)	Con, Cat	N	66°30'N, 163°30'W	D. M. Tracy
	11 (11)	Con, Con	F	70°10'N, 146°15'W	R. J. Rodrigues
	32 (23)	Con, Con	O	61°22'N, 165°08'W	B. McCaffery
	32 (16)	Con, Cat	N	66°30'N, 163°30'W	D. M. Tracy
Little Stint ( <i>Calidris minuta</i> )	102 (100)	Con, Con	H	73°04'N, 80°30'E	H. Schekkerman and I. Tulp
Temminck's Stint ( <i>Calidris temminckii</i> )	44 (27)	Con, Cat	P	68°36'N, 64°42'E	D. M. Tracy
Pectoral Sandpiper ( <i>Calidris melanotos</i> )	7 (2)	Con, Con	H	73°04'N, 80°30'E	H. Schekkerman and I. Tulp
	72 (28)	Con, Con	A	70°21'N, 149°34'W	J. R. Liebezeit and S. W. Zack
	43 (20)	Con, Con	G	70°10'N, 145°51'W	S. Kendall
	16 (3)	Con, Con	D	70°12'N, 148°19'W	R. B. Lanctot
	15 (15)	Con, Con	F	70°10'N, 146°15'W	R. J. Rodrigues
	7 (7)	Con, Con	H	73°04'N, 80°30'E	H. Schekkerman and I. Tulp
	Dunlin ( <i>Calidris alpina pacifica</i> )	37 (31)	Con, Cat	N	66°30'N, 163°30'W
<i>C. a. arctica</i>	30 (13)	Con, Con	I	74°28'N, 20°34'E	H. Meltofte
<i>C. a. alpina</i>	23 (23)	Con, Con	H	73°04'N, 80°30'E	H. Schekkerman and I. Tulp
<i>C. a. arctica</i>	89 (86)	Con, Con	E	71°17'N, 157°04'W	R. B. Lanctot
<i>C. a. arctica</i>	16 (14)	Con, Con	B	70°27'N, 153°07'W	J. R. Liebezeit and S. W. Zack

Species	<i>n</i> (clutches) <sup>a</sup>	Data type: Float angle, height	Site <sup>b</sup>	Location <sup>b</sup>	Source
<i>C. a. arctica</i>	7 (7)	Con, Con	F	70°10'N, 146°15'W	R. J. Rodrigues
<i>C. a. arctica</i>	6 (3)	Con, Con	G	70°10'N, 145°51'W	S. Kendall
<i>C. a. arctica</i>	3 (3)	Con, Con	C	70°27'N, 148°55'W	J. R. Liebezeit and S. W. Zack
<i>C. a. arctica</i>	2 (2)	Con, Con	A	70°21'N, 149°34'W	J. R. Liebezeit and S. W. Zack
Curlew Sandpiper ( <i>Calidris ferruginea</i> ) <sup>c</sup>	48 (48)	Con, Con	H	73°04'N, 80°30'E	H. Schekkerman and I. Tulp
Stilt Sandpiper ( <i>Calidris himantopus</i> )	7 (5)	Con, Con	C	70°27'N, 148°55'W	J. R. Liebezeit and S. W. Zack
	6 (5)	Con, Con	B	70°27'N, 153°07'W	J. R. Liebezeit and S. W. Zack
	5 (3)	Con, Con	A	70°21'N, 149°34'W	J. R. Liebezeit and S. W. Zack
	5 (2)	Con, Con	G	70°10'N, 145°51'W	S. Kendall
Buff-breasted Sandpiper ( <i>Tryngites subruficollis</i> )	28 (14)	Con, Con	D	70°12'N, 148°19'W	R. B. Lanctot
	14 (14)	Con, Con	E	71°17'N, 157°04'W	R. B. Lanctot
	4 (1)	Con, Con	A	70°21'N, 149°34'W	J. R. Liebezeit and S. W. Zack
Long-billed Dowitcher ( <i>Limnodromus scolopaceus</i> )	26 (9)	Con, Con	A	70°21'N, 149°34'W	J. R. Liebezeit and S. W. Zack
	18 (18)	Con, Con	E	71°17'N, 157°04'W	R. B. Lanctot
	12 (10)	Con, Con	B	70°27'N, 153°07'W	J. R. Liebezeit and S. W. Zack
	8 (2)	Con, Con	C	70°27'N, 148°55'W	J. R. Liebezeit and S. W. Zack

Phalaropodinae

Species	<i>n</i> (clutches) <sup>a</sup>	Data type:		Site <sup>b</sup>	Location <sup>b</sup>	Source
		Float angle, height				
Red-necked Phalarope ( <i>Phalaropus lobatus</i> )	85 (29)	Con, Cat	N	66°30'N, 163°30'W	D. M. Tracy	
	29 (6)	Con, Con	A	70°21'N, 149°34'W	J. R. Liebezeit and S. W. Zack	
	10 (5)	Con, Con	G	70°10'N, 145°51'W	S. Kendall	
	8 (3)	Con, Con	D	70°12'N, 148°19'W	R. B. Lanctot	
	2 (1)	Con, Con	E	71°17'N, 157°04'W	R. B. Lanctot	
	1	Con, Con	H	73°04'N, 80°30'E	H. Schekkerman and I. Tulp	
Red Phalarope ( <i>Phalaropus fulicaria</i> )	30 (13)	Con, Con	G	70°10'N, 145°51'W	S. Kendall	
	25 (17)	Con, Con	E	71°17'N, 157°04'W	R. B. Lanctot	
	21 (19)	Con, Con	B	70°27'N, 153°07'W	J. R. Liebezeit and S. W. Zack	
	12 (3)	Con, Con	A	70°21'N, 149°34'W	J. R. Liebezeit and S. W. Zack	
	6 (6)	Con, Con	H	73°04'N, 80°30'E	H. Schekkerman and I. Tulp	
	2 (2)	Con, Con	F	70°10'N, 146°15'W	R. J. Rodrigues	
	1	Con, Con	D	70°12'N, 148°19'W	J. R. Liebezeit and S. W. Zack	
	1	Con, Con	Q	66°02'N, 73°08'W	P. Smith	

<sup>a</sup> *n* = the number of float values after averaging individual eggs within each clutch; value in parentheses is the number of clutches sampled.

<sup>b</sup> See Figure 1 in Condor 109: 32-47 for location of study sites. A = Kuparuk Oilfield, Alaska, USA; B = Teshekpuk Lake, Alaska, USA; C = Prudhoe Bay, Alaska, USA; D = Prudhoe Bay, Alaska, USA; E = Barrow, Alaska, USA; F = Pt. Thomson, Alaska, USA; G = Arctic National Wildlife Refuge, Alaska, USA; H = Medusa Bay, Taimyr Peninsula, Siberia, Russia; I = Zackenberg, Greenland; J = Big Quill, Saskatchewan, Canada; K = Honey Lake, California, USA; L = Kenai Fjord National Park, Alaska, USA; M = Brooks,

Alberta, Canada; N = Cape Espenberg, Alaska, USA; O = Yukon Delta National Wildlife Refuge, Alaska, USA; P = NE Enontekio, Finland; Q = Great Plain, West Baffin Is., Canada.

<sup>c</sup> Species used in the multispecies analyses and the early incubation, single species analyses, but excluded from late incubation single species analyses because  $n < 10$ .