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DISTRIBUTION, ABUNDANCE, AND STATUS OF
SPECTACLED EIDERS IN ARCTIC ALASKA

Report to

U. S. Fish and Wildlife Service
Alaska Fish and Wildlife Research Center
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By

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PREFACE

I began the literature search for this project in 1988 while I was an employee of the Alaska Fish and Wildlife Research Center. After I left the Research Center I finished reviewing the literature and wrote this report largely on my own time, but with the assistance of some resources of the Research Center and Western Alaska Ecological Services. This documented is intended to be a working document for the use of the Research Center, and as such, it may be revised or excerpted from by employees of the Research Center as is deemed necessary, without concerns for protocol regarding authorship.

This document is intended to pull together data from the existing published and unpublished literature, with my personal observations incorporated for the benefit of users and hopefully the resource. It was not my intent to search out personal records of other observers, which undoubtedly exist. Other observers with records should document them themselves.

INTRODUCTION

Spectacled eiders (*Somateria fischerii*) nest in Alaska from Baird Inlet on the Yukon-Kuskowim delta north to along the Arctic Coast (Palmer 1976). At one time the Colville River delta was the easternmost known breeding location of spectacled eiders, although the species had been observed as far east as 35 miles west of the Alaska-Yukon boundary (Palmer 1976). Numerous field studies have since located more breeding locations, including some farther east, than reported by Gabrielson and Lincoln (1959) and Palmer (1976). Only one spectacled eider sighting has occurred in arctic Canada, at Banks Island (Godfrey 1966). The primary breeding range in Alaska is the Yukon-Kuskokwim delta (Palmer 1976). Dau (1974) and Inoué and Kistchinski (1977) provided information on the distribution of spectacled eiders in western Alaska. The distribution of spectacled eiders in the Soviet Union is described in Dementev and Gladkov (1967), Bellrose (1976), and Portenko (1981). This paper summarizes the scarce literature providing information on the distribution and abundance of spectacled eiders in northern Alaska, and incorporates my observations, which include 16 percent of nest and brood records on the North Slope, into the data base.

DISTRIBUTION AND ABUNDANCE

Spectacled eiders occur at Icy Cape primarily as migrants (Lehnhausen and Quinlin 1981); 484 (93.4%) of 518 observations occurred in June, with 440 of those occurring in the first 2 weeks of June. None were observed in May or September. Only 1 nest was located (Table 1). Bailey (1948) reported this species occurred sparingly between Wales and Wainwright, but that Point Hope should be excellent nesting habitat. Spectacled eiders made up only 2 percent

Table 1. Spectacled eider nest and brood records from arctic Alaska.

Location	Date	Comments	Source
Point Hope	15 June 1917	Nest with 9 eggs	Bent (1925)
Icy Cape	22 June 1980	1 nest, unsuccessful	Lehnhausen and Quinlin (1981)
Barrow	15 June 1898	Nest with 6 eggs	Reed (1965)
Barrow	1916 (?)	Several nests with 5-9 eggs	Bent (1925)
Meade River	1977	1 nest, 10 broods	Derksen et al. (1977)
East Long Lake	1977	1 nest, 1 brood	Derksen et al. (1977)
East Long Lake	7 July 1988	Nest with 6 eggs	Pers. data
East Long Lake	13 July 1988	Female with 4 young	Pers. data
Goose Lake	24 July 1979	Female with 2 young	Taylor et al. (1980)
Colville R. Delta	4 July 1909	Nest with 8 eggs	Anderson (1913)
Colville R. Delta	June-July 1958	3 nests (and later 6 broods) in 5 mi ²	Myres (1958)
Colville R. Delta	20 June 1981	Nest with 2 eggs	Rothe et al. (in prep.)
Colville R. Delta	24 June 1982	1 nest	Simpson et al. (1982)
Colville R. Delta	15 June 1983	1 nest	Renken et al. (1983) ¹
Colville R. Delta	9 August 1983	Female with 8 young	Renken et al. (1983) ¹
Colville R. Delta	17 June 1984	Nest with 1 egg	Pers. data
Colville R. Delta	25 June 1984	Nest with 4 eggs	Pers. data
Colville R. Delta	30 June 1984	Nest with 2 eggs	Pers. data
Colville R. Delta	2 July 1984	Nest with 3 eggs	Pers. data
Colville R. Delta	8 August 1984	Female with 5 young	Pers. data
Colville R. Delta	8 August 1984	2 females w/ 8 young	Pers. data
Colville R. Delta	13 August 1984	Female with 4 young	Pers. data
Colville R. Delta	20 August 1984	Female with 2 young	Pers. data
Colville R. Delta	24 June 1986	2 nests	Nickles et al. (1987)
Colville R. Delta	3 July 1986	1 nest	Nickles et al. (1987)
Colville R. Delta	13 July 1986	1 brood	Nickles et al. (1987)
Colville R. Delta	20 July 1986	1 brood	Nickles et al. (1987)
Colville R. Delta	24 June 1987	1 nest	Gerhardt et al. (1988)
Colville R. Delta	22 July 1987	1 brood	Gerhardt et al. (1988)
Colville R. Delta	3 August 1987	1 brood	Gerhardt et al. (1988)
Sakonowak	7 July 1986	1 nest	Nickles et al. (1987)

Table 1. Continued.

Location	Date	Comments	Source
Sakonowak	20 June 1987	1 nest	Nickles et al. (1987)
Beechey Point	31 July 1987	1 brood	Gerhardt et al. (1988)
Milne Point	1978	1 nest	Johnson and Richardson (1980)
Storkersen Point	1972	2 nests	Bergman et al. (1977) ²
Storkersen Point	1973	1 nest	Bergman et al. (1977) ²
Storkersen Point	27 June 1974	1 nest	Abraham (1978) ³
Prudhoe Bay	17 June 1982	1 nest	Troy (1985, 1987)
Prudhoe Bay	15 June 1984	1 nest	Troy (1985, 1987)
Shaviovik R. Delta	15 June 1987	1 nest	Gerhardt et al. (1988)
Shaviovik R. Delta	28 June 1987	1 brood	Gerhardt et al. (1988)
Canning R. Delta	1979	3 broods (including 1 on 28 July)	Martin and Moitoret (1981) ⁴
Canning R. Delta	24 August 1980	1 brood	Martin and Moitoret (1981) ⁴
Okpilak	19 June 1985	1 nest (brood on 16 July)	Garner and Reynolds (1986)

¹Supplemented by pers. data.

²Clutch sizes of 2 nests were 4 and 5 eggs. One of 3 nests successful. No nests were found in 1971. Estimated that first egg was laid 21 June in 1972.

³Brood of 5 from this nest was raised by Pacific loons.

⁴See also Garner and Reynolds (1986).

of 1226 eiders identified to species during spring migration counts, 29 May - 13 June 1983, at Peard Bay (Gill et al. 1985); and 0.1 spectacled eiders per count (n=32 counts) and 0.2 spectacled eiders per count (n=55) were observed during sweep counts 16 - 20 July and 26 August - 5 September, respectively

Murdock (1885) listed spectacled eiders as regular but rare summer visitors at Barrow. Bailey (1948) stated few nested near Barrow, and he believed the main breeding grounds may be on the tundra near Cape Simpson and Cape Halkett. Pitelka (1974) considered spectacled eiders irregular breeders at Barrow. Nest records at Barrow are few (Table 1).

Spectacled eiders are rare at Barrow in late summer. Thompson and Person (1963) saw none from 14 July - 1 September 1953 while making migration counts 1 hour/day. Johnson (1971) checked hunters bags from 15 July - 7 September 1970, and of 2191 eiders taken, only 5 (0.2%) were spectacled eiders. Bee (1958), however, reported several flocks flew along the Arctic Coast at Birnich (Barrow) 28 July 1951. However, he may have misidentified molting common eiders (S. mollissima; pers. obs.).

Myres (1958) found spectacled eiders were the most abundant eider in inland migration along the Meade and Inaru Rivers, south of Barrow. He counted 299 in 23 hours of observations.

Derksen et al. (1979) found a mean monthly density of 0.3 spectacled eiders/km² at Meade River in 1977 (Table 2). Derksen et al. (1979) observed only 2 spectacled eiders at Singiluk in 1977, and none at Square Lake in 1978, both inland study sites.

Table 2. Densities of spectacled eiders at several locations in the National Petroleum Reserve - Alaska, and Prudhoe Bay area¹.

Location	Year	Number/km ²			Source
		June	July	August	
Meade River	1977	0.8	0.3	0.1	Derksen et al. (1979)
East Long Lake	1977	1.42	1.03		Derksen et al. (1979)
East Long Lake	1978	1.03	0.71	0.58	Derksen et al. (1979)
Island Lake	1978	0.6	0.1	0.0	Derksen et al. (1979)
Goose Lake	1979	2.65	0.32		Taylor et al. (1980)
Prudhoe Bay	1981 ²	0.68	1.11	0.0	Troy (1985)
Prudhoe Bay	1982 ²	1.56	1.45		Troy (1985)
Prudhoe Bay	1984 ³	0.56	0.21	0.14	Troy (1985)
		1.16	0.94		

¹I calculated densities at Prudhoe Bay from combined experimental and control plot data in Troy (1985).

²Sample period 4 is included in June totals, but the sample period included a few days in early July.

³Sample period 4 is included in July totals, but the sample period included a few days in late June.

Bailey (1948) speculated the species main breeding grounds in the arctic may be on the tundra near Cape Halkett. Several studies from 1977 - 1988 have found relatively large numbers of spectacled eiders in the vicinity of Cape Halkett. Derksen et al. (1979) found mean densities of spectacled eiders at East and West Long Lakes to be $0.62/\text{km}^2$ and $0.45/\text{km}^2$ in 1977 and 1978, respectively, and $0.13/\text{km}^2$ at Island Lake in 1978 (Table 2). Taylor et al. (1980) found a mean density of $0.69/\text{km}^2$ at Goose Lake in 1979. In 1987, spectacled eiders were considered uncommon to rare (Derksen et al. 1988). In 1988 they were uncommon breeders at East and West Long Lakes (unpubl. data).

The Colville River delta also contains a relatively large population of spectacled eiders. Anderson (1913) reported spectacled eiders were fairly common west of the delta, and on the delta itself in July, 1909. Myres (1958) found 3 nests (and later 6 broods) in a 5 mi^2 plot on the Colville River delta in 1958. From 1982 - 1984 and in 1986 spectacled eiders were considered uncommon breeders on the Colville River delta (Simpson et al. 1982, Renken et al. 1983, North et al. 1984, Nickles et al. 1987), but in 1987 they were considered rare breeders (Gerhardt et al. 1988).

Johnson and Richardson (1980) observed small numbers at Pingok Island and Oliktok Point in 1979 and 1980. Spectacled eiders were uncommon (Nickles et al. 1987) to rare (Gerhardt et al. 1988) breeders at Beechey Point and farther inland at Sakonowak. Bergman et al. (1977) observed the species annually from 1971 - 1975 at Storkersen Point. Maximum densities during June, July and August were 1.8 , 0.4 and $0.6/\text{km}^2$, respectively. Spectacled eiders occurred in small numbers at Egg Island, 4 km northeast of the Kuparuk River delta (Schamel 1978). Troy (1987) found an overall density of 1.3 spectacled eiders/ km^2 in his plots at Prudhoe Bay, but he found only 2 nests during 4

years of study. Koski (1975) saw no spectacled eiders at Prudhoe Bay in 1975. Hohenberger et al. (1985) considered spectacled eiders to be common, regular breeders at Prudhoe Bay.

Spectacled eiders were rare visitors (Nickles et al. 1987) or rare breeders (Gerhardt et al. 1988) at the Shaviovik River delta. Only one spectacled eider was observed at Kadleroshilik in 1986 and 1987 (Nickles et al. 1987, Gerhardt et al. 1988), but Koski (1975) observed 4 there in 1975.

Spectacled eider broods were observed on the Canning River delta in 1979 and 1980 (Table 2; Martin and Moitoret 1981, Garner and Reynolds 1986). Garner and Reynolds (1986) summarized the scarce observations of spectacled eiders along the Arctic National Wildlife Refuge Coastal Plain since 1970: a few in 1970, 5 in 1980, 2 pairs in 1982, and a brood at Okpilak in 1985.

Additionally, Andersson (1973) saw a pair on the Aichilik River delta in 1970. Brooks reported Dixon collected 5 spectacled eiders at Humphrey Point in 1914, however, Dixon (1943) did not include the species in the list of species he observed. [Dixon, however, lost his field notes (Brooks 1915), so the statement by Brooks that Dixon collected 5 spectacled eiders may be accurate]. Contrary to references by Garner and Reynolds (1986) and Johnson and Herter (1989), Brooks (1915) himself did not collect 5 spectacled eiders at Humphrey Point and he did not see one on 1 September at Demarcation Point. Anderson (1917, in Johnson and Herter 1989) collected 1 male on 29 June (year not given) on Barter Island.

NESTING

Only 34 nest records exist for the North Slope (Table 1). Few nests were reported west of Point Barrow. Numerous nests or broods have been found at

Meade River, the Teshekpuk Lake Special Area, and the Colville River delta. The nest located at Okpilak (Garner and Reynolds 1986) is the easternmost known breeding location.

Composites of the distribution of clutch sizes and brood sizes are presented in Table 3. Some nests were probably found during the laying stage and therefore clutches may not have been complete. Little is known about nest success. Lehnhausen and Quinlin (1981) found 1 nest and it was unsuccessful. Only 1 of 3 nests found by Bergman et al. (1977) was successful.

BROOD-REARING

Nothing is known about brood-rearing, other than habitat use which is discussed later. Abraham (1978) documented a case where 5 spectacled eider young were raised by a pair of Pacific loons (Gavia pacifica) at Storkersen Point.

MIGRATION

Spring Migration. Spectacled eiders arrive on the arctic breeding grounds already paired (pers. obs.) from undiscovered wintering grounds. First arrival on the breeding grounds (Table 4) and the main migration (Lehnhausen and Quinlin 1981, pers. obs.) usually occur during the first half of June. A lack of observations of migrating flocks of spectacled eiders at Barrow may indicate many follow an inland migration route south of Barrow (Myres 1958).

Male Departure. Males remain on the breeding grounds only 2 - 4 weeks. Males complete their departure of the breeding grounds from 25 June - 11 July

Table 3. Clutch and brood sizes of spectacled eiders in arctic Alaska. Data are from Table 1.

Clutch or Brood Size	No. Clutches	No. Broods
1	1	
2	2	2
3	1	1
4	2	2
5	1	2
6	2	
7		
8	1	1
9	1	
Mean	4.55	4.12
s.d.	6.56	3.84

Table 4. Spring arrival dates of spectacled eiders in arctic Alaska.

Location	Date(s) of First Arrival	Source
Icy Cape	4 June 1980	Lehnhausen and Quinlin (1981)
Barrow	2 June 1976	Woodby and Divoky (1982)
East/West Long Lakes	10 June 1978	Rothe et al. (1978)
East/West Long Lakes	10 June 1988	pers. data
Goose Lake	3 June 1979	Taylor et al. (1980)
Colville R. Delta	27 May 1981	Rothe et al. (in prep.)
Colville R. Delta	4 June 1982	Simpson et al. (1982)
Colville R. Delta	3 June 1983	Renken et al. (1983)
Colville R. Delta	8 June 1984	North et al. (1984)
Colville R. Delta	6 June 1986	Nickles et al. (1987)
Colville R. Delta	3 June 1987	Gerhardt et al. (1988)
Pingok Island - Oliktok Point	6 June 1977	Johnson and Richardson (1980)
Beechey Point	6 June 1986	Nickles et al. (1987)
Beechey Point	7 June 1987	Gerhardt et al. (1988)
Sakonowak	17 June 1986	Nickles et al. (1987)
Sakonowak	1 June 1987	Gerhardt et al. (1988)
Storkersen Point	7-16 June 1971-75	Bergman et al. (1977)
Prudhoe Bay	31 May 1972, 1973	Hohenberger et al. (1985)
Shaviovik R. Delta	6 June 1987	Gerhardt et al. (1988)
Canning R. Delta	1 June 1979	Martin and Moitoret (1981)
Canning R. Delta	5 June 1980	Martin and Moitoret (1981)
Demarcation Point	12 June 1914	Brooks (1915) ¹
Demarcation Point	12 June (1980?)	Garner and Reynolds (1986)

¹See text for discussion on spectacled eider observations of Brooks-Dixon expedition.

(Derksen et al. 1981, Rothe et al. 1981, Nickles et al. 1987, Gerhardt et al. 1988, pers. data). The destination of departing males is still unknown.

Fall Migration. Little is known about fall migration. Female spectacled eiders remain with their broods at least until late August (Martin and Moitoret 1981, pers. data; Table 1). Johnson and Richardson (1980) estimated only 32 spectacled eiders migrated west past Pingok Island and Oliktok Point for molting grounds 26 June - 10 July, and none from 11 - 31 July 1977. In the same interim, they also estimated only 1899 common eiders and 228 king eiders (S. spectabilis) moved west in molt migration. Three males and 1 female on 1 September 1970 are the only fall records for Arctic National Wildlife Refuge (Garner and Reynolds 1986). Murdock (1885) observed no spectacled eiders in fall migration at Barrow. Bent (1925) listed the latest departure date from Point Barrow as 17 September. See also Bee (1958), Thompson and Person (1963), and Johnson (1971) for information on fall migration at Barrow. Lehnhausen and Quinlin (1981) observed the last spectacled eiders at Icy Cape on 24 August 1980.

MORTALITY

Virtually nothing is known about mortality of spectacled eiders on the North Slope. Bailey (1948) stated many were killed for food by natives at Barrow, but Johnson (1971) documented otherwise from 15 July - 7 September 1970.

HABITAT USE

Nest Sites. Spectacled eiders seem to prefer nesting near water (Bergman et al. 1977, Lehnhausen and Quinlin 1981, Rothe et al. in prep.). Bergman et al.

(1977) found nests were located near Class V (Deep open) lakes. Lehnhausen and Quinlin (1981) found 1 nest on a small peninsula in a Class III (Shallow-Arctophila) pond. I found 2 nests on ice wedge ridges between Class II (Shallow-Carex) polygons and 2 nests on low, wet shorelines of Class III basins on the Colville River delta in 1984. I also found 1 nest on a dry mound in flooded Carex aquatilis <10 m from an adjoining Class IV (Deep-Arctophila) at East Long Lake in 1988. McIlhenny found a nest on dry tundra near Barrow in 1898 (Reed 1965).

Broods. The limited data available indicate Class II wetlands are preferred by females with broods (Table 5).

General. Spectacled eiders seem to prefer Class II wetlands during the breeding season. Derksen et al. (1979) found Class II and IV wetlands in the National Petroleum Reserve in Alaska were preferred during the nesting period. Rothe et al. (in prep.) stated spectacled eiders on the Colville River delta in June showed a strong affinity for Class II wetlands. Lehnhausen and Quinlin (1981) found spectacled eiders on Class II, III, and IV wetlands, but none in salt marsh areas at Icy Cape. Bergman et al. (1977), however, observed spectacled eiders mostly near Class V lakes at Storkersen Point.

Taylor et al. (1980) reported quantitative data from Goose Lake in 1979. In June, 22.8% of spectacled eiders (n=57) were observed on Class I wetlands, 31.6% were on Class II wetlands, and 45.6% were on Class IV wetlands. In July, the distribution of eiders (n=14) shifted to 71.4% on Class II wetlands, 7.1% on Class III wetlands, and 21.4% on Class IV wetlands.

Table 5. Numbers of broods observed on wetlands in arctic Alaska. Wetland classes are those of Bergman et al. (1977).

	Wetland Class								Rivers	Source
	I	II	III	IV	V	VI	VII	VIII		
National Petroleum Reserve		10	1	2	4				1	Derksen et al. (1981)
Goose Lake		1								Taylor et al. (1980)
East Long Lake		1								Pers. data
Colville River Delta		1	1							Pers. data
Total	0	13	2	2	4	0	0	0	0	
Percent	0	59	9	9	18	0	0	0	4	

LITERATURE CITED

- Abraham, K. F. 1978. Adoption of spectacled eider ducklings by arctic loons. *Condor* 80:339-340.
- Anderson, R. M. 1913. Report on the natural history collections of the expedition. Pages 436-527 in Stefansson, V. *My life with the Eskimos*. MacMillan Co., New York. 527 pp.
- Anderson, R. M. 1917. Preliminary list of specimens collected by the Canadian Arctic Expedition, 1914-1916. *Geol. Surv. Sess. Paper* 26:376-381.
- Andersson, M. 1973. Birds of Nuvagak Point, Northeastern Alaska. *Arctic* 26:186-197.
- Bailey, A. M. 1948. Birds of arctic Alaska. *Colorado Mus. Nat. Hist. Pop. Series* 8. 317 pp.
- Bellrose, F. C. 1976. Ducks, geese, and swans of North America. Stackpole Books, Harrisburg, Pa. 544 pp.
- Bent, A. C. 1925. Life histories of North American wild fowl. *U. S. Natl. Mus. Bull.* 130. 314 pp.
- Bergman, R. D., R. L. Howard, K. F. Abraham, and M. W. Weller. 1977. Water birds and their wetland resources in relation to oil development at Storkersen Point, Alaska. *U. S. Fish Wildl. Serv. Resour. Publ.* 129. Washington, D. C. 38 pp.
- Brooks, W. S. 1915. Notes on birds from east Siberia and arctic Alaska. *Bull. Mus. Comp. Zool.* 59:359-413.
- Dau, C. P. 1974. Nesting biology of the spectacled eider *Somateria fischeri* (Brandt) on the Yukon-Kuskokwim delta, Alaska. Unpubl. M.S. Thesis, Univ. Alaska, Fairbanks. 72 pp.
- Dau, C. P., and S. A. Kistchinski. 1977. Seasonal movements and distribution of the spectacled eider. *Wildfowl* 28:65-75.
- Dementev, G. P., and N. A. Gladkov. 1967. Birds of the Soviet Union, Vol. IV. *Israel Prog. Sci. Transl.*, Jerusalem. 683 pp.
- Derksen, D. V., K. S. Bollinger, M. R. North, D. H. Ward, M. W. Weller, K. C. Jensen, and E. J. Taylor. 1988. Effects of aircraft on the behavior and ecology of molting brant near Teshekpuk Lake, Alaska: 1987 progress report. Unpubl. Rep., U. S. Fish Wildl. Serv., Anchorage, Alas. 79 pp.

- Derksen, D. V., W. D. Eldridge, and T. C. Rothe. 1977. Waterbird populations and habitat analysis of selected sites in NPRA. Unpubl. Rep., U. S. Fish Wildl. Serv., Anchorage, Alas. 81 pp.
- Derksen, D. V., W. D. Eldridge, and T. C. Rothe. 1979. Waterbird and wetland habitat studies. Pages 229-311 in Lent, P. C., ed. Studies of selected wildlife and fish and their use of habitats on and adjacent to NPR-A 1977-1978. Vol. 2. U. S. Fish Wildl. Serv., Anchorage, Alas. 423 pp.
- Derksen, D. V., T. C. Rothe, and W. D. Eldridge. 1981. Use of wetland habitats in the National Petroleum Reserve - Alaska. U. S. Fish Wildl. Serv. Resour. Publ. 141, Washington, D. C. 27 pp.
- Dixon, J. S. 1943. Birds observed between Point Barrow and Herschel Island on the arctic coast of Alaska. Condor 45:49-57.
- Gabrielson, I. N., and F. C. Lincoln. 1959. Birds of Alaska. Stackpole Books, Harrisburg, Pa., and Wildlife Management Institute, Washington D. C. 922 pp.
- Garner, G. W., and P. E. Reynolds, eds. 1986. Baseline study of the fish, wildlife, and their habitats. Birds. Final rep., U. S. Fish Wildl. Serv., Anchorage Alas. 392 pp.
- Gerhardt, F., R. Field, and J. Parker. 1988. Bird and habitat associations on the North Slope, Alaska: chronological species summaries, 1987. Unpubl. Rep., U. S. Fish Wildl. Serv., Anchorage, Alas. 55 pp. and appendices.
- Gill, R., C. Handel, and P. Connors. 1985. Bird utilization of Peard Bay and vicinity. Pages 244-323 in Kinney, P. J., editor. 1985. Environmental characterization and biological utilization of Peard Bay. Final Rep., Outer Cont. Shelf Environ. Assess. Prog., Nat. Oceanic Atmospheric Admin. 342 pp.
- Godfrey, W. E. 1966. The birds of Canada. Natl. Mus. Canada Bull. 203. 428 pp.
- Hohenberger, C. J., W. C. Hanson, and T. C. Rothe. 1985. An avifaunal review of the Prudhoe Bay, Franklin Bluffs, and Central Foothills regions of Arctic Alaska. Draft unpubl. rep.
- Johnson, L. L. 1971. The migration, harvest, and importance of waterfowl at Barrow, Alaska. Unpubl. M.S. Thesis, Univ. Alaska, Fairbanks. 87 pp.
- Johnson, S. R., and W. J. Richardson. 1980. Beaufort Sea barrier island - lagoon ecological process studies: final report, Simpson Lagoon. Part 3. Birds. Pages 109-383 in Env. Assess. Alaskan Cont. Shelf. Final Rep. Principal Invest. Vol. 7. Biol. Stud. NOAA/BLM. 678 pp.

- Johnson, S. R., and D. R. Herter. 1989. The birds of the Beaufort Sea. BP Exploration (Alaska) Inc., Anchorage. 372 pp.
- Koski, W. 1975. Continuing surveys of terrestrial bird populations on the Yukon-Alaskan North Slope: June and July, 1974. Chapter 3 in Gunn, W. W. H., et al., eds. Ornithological studies conducted in the area of the proposed gas pipeline route: Northwest Territories, Yukon Territory, and Alaska, 1974. Arctic Gas Biol. Rep. Series Vol. 30. 56 pp.
- Lehnhausen, W. A., and S. E. Quinlin. 1981. Bird migration and habitat use at Icy Cape, Alaska. Unpubl. Rep., U. S. Fish Wildl. Serv., Anchorage, Alas. 298 pp.
- Martin, P. D., and C. S. Moitoret. 1981. Bird populations and habitat use, Canning River delta, Alaska. Unpubl. Rep., U. S. Fish Wildl. Serv., Fairbanks, Alas. 188 pp.
- Murdoch, J. 1885. Report of the International Polar Expedition to Point Barrow, Alaska. Part IV. Natural History. II. Birds. Pages 104-128 in Exec. Doc. House Rep. Sec. Session 48th Congress, Vol. 23. No. 44.
- Myres, M. T. 1958. Preliminary studies of the behavior, migration, and distributional ecology of eider ducks in northern Alaska, 1958. Interim Prog. Rep., Arctic Inst. N. Am. 14 pp.
- Nickles, J. R., R. Field, J. Parker, R. Lipken, and J. Bart. 1987. Bird-habitat associations on the North Slope, Alaska: 1986 progress report. Unpubl. Rep., U. S. Fish Wildl. Serv., Anchorage, Alas. 202 pp.
- North, M. R., J. L. Schwerin, and G. A. Hiemenz. 1984. Waterbird studies on the Colville River delta, Alaska: 1984 summary report. Unpubl. Rep., U. S. Fish Wildl. Serv., Anchorage, Alas. 22 pp.
- Palmer, R. S., ed. 1976. Handbook of North American birds. Vol. 3. Yale Univ. Press, New Haven, Conn. 560 pp.
- Pitelka, F. A. 1974. An avifaunal review for the Barrow region and North Slope of arctic Alaska. Arct. Alpine Res. 6:161-184.
- Portenko, L. A. 1981. Birds of the Chukchi Peninsula and Wrangel Island. Vol. 1. Translated from Russian for Smithsonian Inst. and Nat. Sci. Found., Washington, D. C. by Amerind Publ. Co. Pvt. Ltd., New Delhi. 446 pp.
- Reed, C. A. 1965. North American Birds Eggs. Dover Publications, Inc., New York. 372 pp.

- Renken, R., M. North, and S. G. Simpson. 1983. Waterbird studies on the Colville River delta, Alaska: 1983 summary report. Unpubl. Rep., U. S. Fish Wildl. Serv., Anchorage, Alas. 19 pp.
- Rothe, T. C., C. J. Markon, L. L. Hawkins, and P. S. Koehl. In prep. Waterbird populations and habitats in the Colville River delta, Alaska. Unpubl. Rep., U. S. Fish Wildl. Serv., Anchorage, Alas.
- Rothe, T. C., M. R. Ryan, and T. S. Taylor. 1978. Waterbird populations and wetland habitats at Teshekpuk Lake study site: 1978 final report. Unpubl. Rep., U. S. Fish Wildl. Serv., Anchorage, Alas. 56 pp.
- Schamel, D. 1978. Bird use of a Beaufort Sea barrier island in summer. Can. Field-Natur. 92:55-60.
- Simpson, G., J. Barzen, L. Hawkins, and T. Pogson. 1982. Waterbird studies on the Colville River delta, Alaska: 1982 summary report. Unpubl. Rep., U. S. Fish Wildl. Serv., Anchorage, Alas. 24 pp.
- Taylor, E. J., S. G. Simpson, and M. S. Bromley. 1980. Waterbird populations and wetland habitats at Goose Lake study site, 1979. Unpubl. rep., U. S. Fish Wildl. Serv., Anchorage, Alas. Unnum. pp.
- Thompson, D. Q., and R. A. Person. 1963. The eider pass at Point Barrow, Alaska. J. Wildl. Manage. 27:348-356.
- Troy, D. M. 1982. Prudhoe Bay waterflood project bird monitoring program. Unpubl. Rep., LGL Alaska Res. Assoc., Fairbanks, Alas. 62 pp. and append.
- Troy, D. M. 1985. Prudhoe Bay waterflood environmental monitoring project. Terrestrial studies. Unpubl. Rep., LGL Alaska Res. Assoc., Anchorage, Alas. 163 pp.
- Troy, D. M. 1987. Bird use of the Prudhoe Bay oilfield during the breeding season. Draft Unpubl. Rep., LGL Alaska Res. Assoc., Anchorage, Alas. 76 pp. and append.
- Woodby and G. J. Divoky. 1982. Spring migrations of eiders and other waterbirds at Point Barrow, Alaska. Arctic 35:403-410.