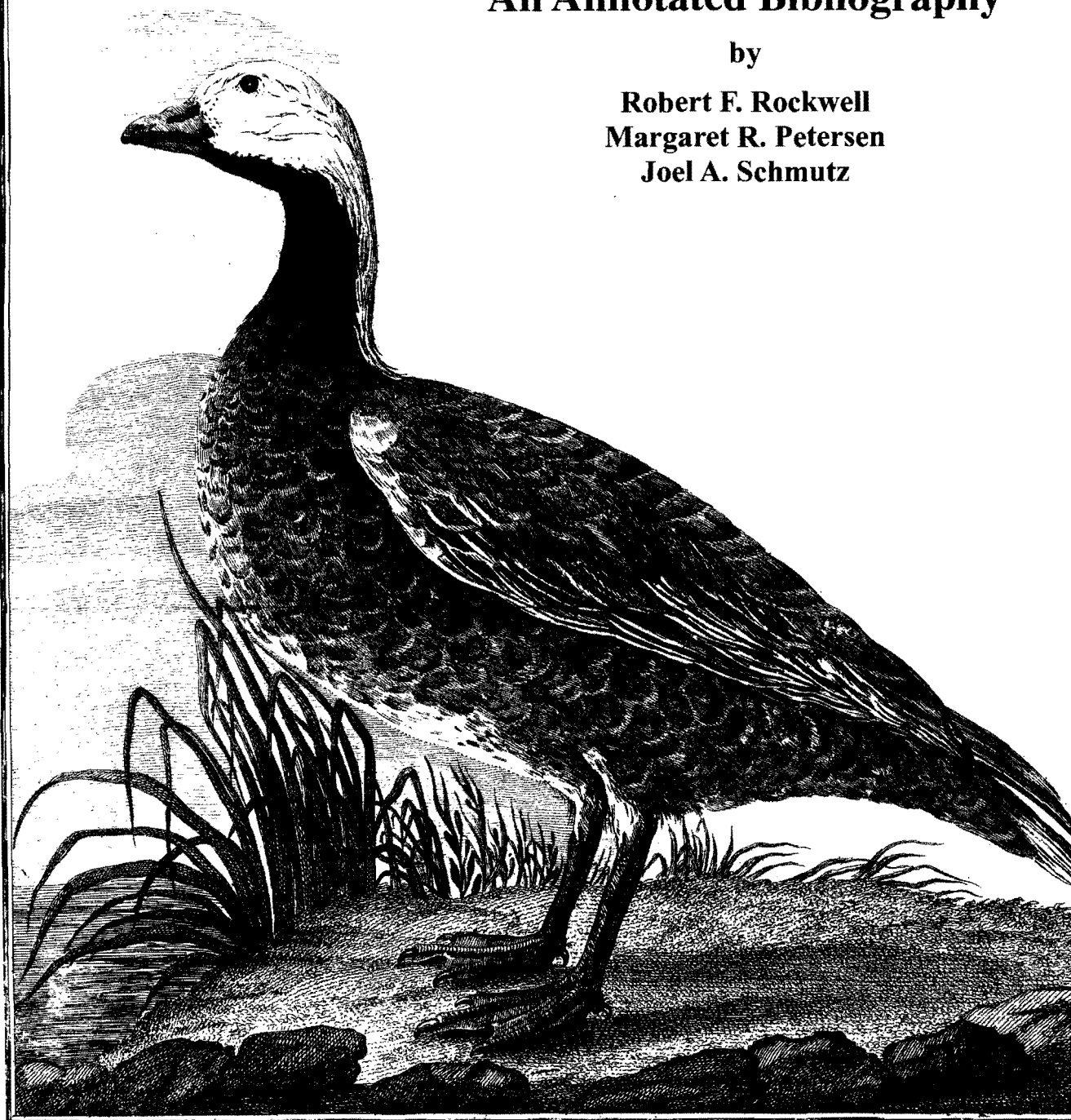


The Emperor Goose: An Annotated Bibliography

by

Robert F. Rockwell
Margaret R. Petersen
Joel A. Schmutz



Anas Canagica

INSTITUTE OF ARCTIC BIOLOGY
BIOLOGICAL PAPERS OF THE UNIVERSITY OF ALASKA

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Note on the Cover: The cover is taken from a photograph of an original print included as Table X in Sewastianoff (1802). Nelson (1883) refers to it as a "...miserable wood-cut..." We let the readers judge.

This publication is printed on acid-free paper.

BIOLOGICAL PAPERS OF THE UNIVERSITY OF ALASKA

The Emperor Goose: An Annotated Bibliography

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Abstract

This bibliography contains more than 500 published and unpublished references relevant to the emperor goose (*Chen canagica*). The referenced works date from the early exploration of Beringia and Alaska through the formal description of the species in 1802 to 1993.

Key Words: emperor goose, *Chen canagica*, Alaska, Beringia, distribution, population dynamics.

The emperor goose (*Chen canagica*) is a uniquely Beringian species. Except for scattered occurrences in the lower 48 of the United States, the species breeds, stages, and winters in western Alaska and eastern Russia. Although this white-crowned, blue-gray goose with orange legs may have first been seen by Europeans in the mid 1700's, it was not formally named and described until 1802 by Sewastianoff. In the mid to late 1800's, the numbers of emperor geese were so high that Dall and Bannister (1869:296) remarked "This magnificent bird abounds in profusion in the Kusilvak Slough, or mouth of the Yukon, to the exclusion of all the other species". In the twentieth century, however, the species has not been as successful (Raveling 1984; King and Derksen 1986).

The quantitatively documented decline that began in the 1960's may have only recently waned (U.S. Fish and Wildlife Service unpublished data). Although average population growth rate from 1983-1993 was near 1.0, it is not stable (Butler 1992). We undertook this literature review in part to identify factors that might be related to those historical changes in population size and growth rate and that might influence population dynamics of the species in general. A second but related objective was to identify surveys that would allow us to compare current and historical geographic distributions of emperor geese.

These objectives required examining much of the earliest literature on the species and the exploration of Beringia. Because documenting the historical distribution was one aim, evidence of absence of emperor geese was as important as evidence of their presence. Because the former is not as reliable as the latter, we included citations to reliable early works and diaries of explorations whose authors reported neither emperor geese nor anything resembling them. Reliability is based on the author's attention to detail and consistency with other published works. We noted the presence or absence of emperor geese in the annotation of each relevant reference. We also indicated the extent of descriptive detail on other species in our annotations because we think that these early works, many of which are foreign and/or obscure, will be useful to researchers studying other species.

Chen canagica has been known as the beach goose, painted goose, Aleutian goose, Caesar's goose and by several native names that mean goose with a white hood. Its most common name, emperor goose, resulted from confusion. According to Collins et al. (1945), the Aleuts often referred to the species with the Russian word "tsiesarka" (guinea hen). This was misunderstood by earlier explorers to be "tsarskia" (imperial) and they dubbed the species the emperor goose. There has also been confusion associated with the scientific name for this species (Appendix A). Although originally named *Anas canagica* by Sewastianoff (1802), the species was at one time considered a member of almost every genera of goose (Salvadori 1895). It shares with Ross' goose (*Chen rossi*) the distinction among North American geese of having had its own separate genus erected (*Philacte* Bannister). Perhaps most interestingly, it was included with kelp and upland geese (*Chloephaga*) especially by early explorers who reached Beringia via Tierra del Fuego (Salvadori 1895).

We used several types of resources in compiling this bibliography. The first is a class of systematics books generally referred to as catalogs. Along with geographical information, they provide lists of alternate names used for the species (synonomies) and give citations to papers using those names. In the older catalogs, many of the cited papers are original descriptions of the species, its historical distribution and its natural history. While we include and annotate all of those relevant to the emperor goose below, the most important one for bibliographical work on any bird species is the *Catalogue of Birds* from the British Museum. This multivolume set, published in the late 1800's, was authored by various individuals, depending on the bird families included in a particular volume. The relevant one for waterfowl is volume 27 by Salvadori (1895).

As a second source, we used diaries, narratives, autobiographies and biographies of early explorers of the region. We found these by searching the Alaska, Siberia, Russia and Beringia geographical and exploration sections of card catalogs of both the main and rare book libraries of the American Museum of Natural History. Once we found the books, we searched their indices and tables of contents for entries corresponding to birds, waterfowl, ducks (which geese were originally called), geese and the various common and scientific names for emperor geese (Appendix A). Because many of these works were foreign, we had to translate our search terms into several languages (Danish, Dutch, French, German, Latin, Russian and Swedish).

As a third source, we used the common and scientific names for emperor geese, as well as key historical citations from the catalogs and explorers' works as entry points for several standard reference systems (e.g., Bioabstracts, Science Citation Index). We made similar use of several avian bibliographies, including those by Phillips (1926) and Kuroda (1946). Particularly useful were Volumes 1 and 3 of Coues' *American Ornithological Bibliography* (1871, 1879). Although not exhaustive, the latter provide geographic and taxonomic cross-references to much of the early literature on North American ornithology. They also provide enjoyable, pithy commentary on many of those works.

We also included unpublished reports to state and federal agencies because they provide valuable details on distribution, productivity, and survival. We located many of these using the U.S. Fish and Wildlife Service computer index to unpublished internal reports. We found the remainder of them as citations from those in the computer index and through conversations with regional state and federal waterfowl biologists.

We excluded recent field guides and general references unless they provided unique information on emperor geese. We have no doubt inadvertently omitted some important references and we apologize to those authors.

Our annotations differ somewhat from recent ones (Campbell and Cornely 1992). Rather than giving all references detailed treatment, we concentrated more on those that are difficult to access; especially those publications that can be found only in the stacks or rare book rooms of major libraries and those publications that are not in English. In all cases, our attempt is to convey the type of information available in the reference rather than providing exact detail. For example, we state that the reference provides morphometrics but we do not iterate the morphological values. When several references by a single author provide a series of updates, we summarized them in a single annotation under the earliest reference. All of the published works cited can be found in the library of the American Museum of Natural History. All of the unpublished and many of the published works can be found in the library of Region 7, U.S. Fish and Wildlife Service.

The spellings of several words and locations changed during the timespan covered in this bibliography. We preserved the author's original spellings in title citations and direct quotes as etymological benchmarks. Finally, our annotations preserve the exact spellings of the genus and species designations of each citation.

Acknowledgments

We thank D.V. Derksen who correctly thought that this would be a fruitful endeavor and that we were the ones who could do it. The staff of the Alaska Science Center has been most cooperative and patient. Mary LeCroy (Ornithology Department, American Museum of Natural History) taught us the use and value of several important systematic indices. Stephen Bach translated Sewastianoff's initial description of the emperor goose from period French. Irina Kharitonova, Sergei Kharitonov, and Vladimir Ovtsharenko translated several old Russian papers. Jackie Beckett (Photography Studio, American Museum of Natural History) pains-takingly photographed the print from Sewastianoff (1802). Finally, Debra Colchamiro and Sarah Granato (Library Services, American Museum of Natural History) patiently taught us to find, properly use, and appreciate many rare and priceless books. James Bartonek and James Sedinger reviewed this bibliography.

Cited Literature

- Butler, W.I. 1992. Report to Pacific Flyway committee and waterfowl conservation committee on the 1985-1992 breeding ground surveys of geese and swans in the coastal, Yukon-Kuskokwim Delta, Alaska. Unpublished U.S. Fish and Wildlife Service Report. Anchorage, Alaska.
- Campbell, B.H. and J.E. Cornely. 1992. The Dusky Canada Goose: an Annotated Bibliography. Resource Publication 187. U.S. Fish and Wildlife Service, Washington, D.C. 30 pp.
- Collins, H., A. Clarke, and E. Walker. 1945. The Aleutian Islands: Their People and Natural History. Smithsonian Institution, Washington, D.C. 131 pp.
- Coues, E. 1871. American Ornithological Bibliography - Volume 1. U.S. Geological and Geographical Survey of the Territories, Washington, D.C. 218 pp.
- Coues, E. 1879. American Ornithological Bibliography - Volume 4. U.S. Geological and Geographical Survey of the Territories, Washington, D.C. 552 pp.
- Dall, W.H. and H.M. Bannister. 1869. List of the birds of Alaska, with biographical notes. Transactions of the Chicago Academy of Science i:267-310.
- King, J.G. and D.V. Derksen. 1986. Alaska goose populations: past, present and future. Transactions of the North American Wildlife and Natural Resources Conference 51:464-497.
- Kuroda, N. 1942. A bibliography of the duck tribe, Anatidae, mostly from 1926 to 1940, exclusive of that of Dr. Phillips' work. The Herald Press, Tokyo. 852 pp.
- Phillips, J.C. 1926. A Natural History of the Ducks. Volume IV. Houghton Mifflin Company, Boston. 447 pp.
- Raveling, D.G. 1984. Geese and hunters of Alaska's Yukon Delta: management problems and political dilemmas. Transactions of the North American Wildlife and Natural Resources Conference 49:555-575.
- Salvadori, T. 1895. Catalogue of the British Museum XXVII, Chenomorphae, Cryturi and Ratitae. British Museum, London.

Annotated Bibliography

1. Adams, E. 1878. Notes on the birds of Michalaski, Norton Sound. *Ibis* 2:420-442.
Adams describes a white-headed goose that he concludes must be *Chloephaga canagica*.
2. Adams, P.D., J.L. Buckley, and U.C. Nelson. 1952a. Waterfowl breeding ground survey in Alaska. Pages 1-9 in *Waterfowl Populations and Breeding Conditions, Summer 1952*. U.S. Fish and Wildlife Service, Washington, D.C.
They provide a summary of banding and aerial surveys for waterfowl conducted throughout Alaska in 1952.
3. Ainley, D.G. and G.A. Sanger. 1979. Trophic relations of seabirds in the northeastern Pacific Ocean and Bering Sea. Pages 95-112 in J.C. Bartonek and D.N. Nettleship, editors. *Conservation of Marine Birds of Northern North America*. U.S. Fish and Wildlife Service Wildlife Research Reports 11.
They review literature on diets for 70 species of birds, including geese, that use the northeast Pacific Ocean and Bering Sea. Trophic relations among species are discussed based on these diet characterizations.
4. Aldrich, T.W., J.S. Sedinger, and D.G. Raveling. 1980. Breeding biology and productivity of geese on the Yukon-Kuskokwim Delta, Alaska. Unpublished Annual Report Number 3. University of California, Davis, California. 43 pp.
See No. 379.
5. Aldrich, T.W., B.-J. Aldrich, and D.G. Raveling. 1981. Breeding biology and productivity of geese on the Yukon-Kuskokwim Delta, Alaska. Unpublished Annual Report Number 4. University of California, Davis, California. 28 pp.
See No. 379.
6. Allen, J.A. 1905. Report on the birds collected in northeastern Siberia by the Jesup North Pacific Expedition with field notes by the collectors. *Bulletin of the American Museum of Natural History* 19:219-257.
Four *Philacte canagica* were collected at Novo Marinsk.
7. Alpheraky, S.N. 1905. *Geese of Europe and Asia*. Rowland Ward, London.
The name is also spelled Alferaki. Alpheraky refers to emperor geese as *Philacte canagicus*. He details Sewastianoff's original description of *Anser canagicus* (sic) and then relates a story of how 20 years later, Sewastianoff "renamed" the same species *Anas canadicus*. The latter was based on a reference to a "white-headed" goose in Krasheninnikov's (1818) *Opisani Kamchatka* ii, p. 473. (See Krasheninnikov 1755.) Alpheraky includes basic natural history of emperor geese nesting in Siberia.

8. Andrew, J. 1986. Proposal for the designation of Izembek Lagoon as a wetland of international importance under the Ramsar Convention. Unpublished report. U.S. Fish and Wildlife Service, Anchorage, Alaska. 19 pp.
This proposal reports peak population numbers of emperor geese and other goose species for eight years at Izembek Lagoon.
9. Angell, T. and K.C. Balcomp. 1982. Marine birds and mammals of Puget Sound. University of Washington Press, Seattle. 145 pp.
They note that emperor geese are rare winter visitors to Puget Sound.
10. Anthony, R.M. and N. Barten. 1991. Effects of arctic fox removal on production of geese at Manokinak River, Yukon-Kuskokwim Delta: Summary of results 1988-1990. Unpublished report. U.S. Fish and Wildlife Service, Anchorage, Alaska. 27 pp.
They report on a study on the effects of arctic fox (*Alopex lagopus*) removal on the nesting success of emperor geese, cackling Canada geese, and greater white-fronted geese. See No. 12.
11. Anthony, R.M. and M.A. Wotawa. 1989. Effects of arctic fox removal on production of geese at Manokinak River, Yukon-Kuskokwim Delta, Alaska. Unpublished report. U.S. Fish and Wildlife Service, Anchorage, Alaska. 29 pp.
See No. 12.
12. Anthony, R.M., M.A. Wotawa, and P.E. Seiser. 1988. Effects of arctic fox removal on production of geese at Manokinak River, Yukon-Kuskokwim Delta, Alaska. Unpublished report. U.S. Fish and Wildlife Service, Anchorage, Alaska. 30 pp.
This is the first in a series of progress reports from a multi-year study. Subsequent reports include: No. 10 and 11.
13. AOU Code of Nomenclature and Check List. 1886. Edition 1. J. Wilson and Son, Cambridge. 392 pp.
The first edition refers to emperor geese as *Philacte canagica*. This was retained through Edition 5 in 1957. It was changed to *Chen canagica* with no stated reason in Edition 6, 1983.
14. Arnold, T.W. 1988. Life histories of North American game birds: a reanalysis. Canadian Journal of Zoology 66:1906-1912.
Arnold includes data on reproductive success for *Chen canagica*.
15. Audubon, J.J. 1839. A Synopsis of the Birds of North America. A. and C. Black, Edinburgh. 359 pp.
Audubon makes no mention of emperor geese.

16. Avilova, K.V. 1986. On the morphology of the bill and its tip organ in geese. *Moskovskoe Obshchestvo Ispytatelei Pripody Biulleten: Otdel Biologicheskii* 91:48-53.
Avilova presents a detailed comparative study of the nail on the bills of geese.
17. Bailey, A.M. 1923. The haunts of the emperor goose. *Natural History* 23:172-181.
Bailey presents data on arrival and nesting dates for emperor geese at Cape Prince of Wales. He also summarizes the basic natural history of the species.
18. Bailey, A.M. 1925. A report on the birds of northwestern Alaska and regions adjacent to the Bering Strait. Part V. *Condor* 27:197-207.
Bailey reports that emperor geese breed on St. Lawrence Island and near Kotzebue.
19. Bailey, A.M. 1943. The birds of Cape Prince of Wales, Alaska. *Proceedings of the Colorado Museum of Natural History* 18:1-113.
Bailey presents summaries of arrival and nesting dates for emperor geese at Cape Prince of Wales. He summarizes the basic natural history of the species.
20. Bailey, A.M. 1948. Birds of Arctic Alaska. *Colorado Museum of Natural History, Denver*. 317 pp.
Bailey provides details on the arrival and nesting dates and reproductive success of emperor geese north of Cape Wales in 1922.
21. Bailey, A.M, C.D. Brower, and L.B. Bishop. 1933. Birds of the region of Point Barrow, Alaska. *Chicago Academy of Science Program of Activities* V:15-40.
They indicate that emperor geese are present but rare in the Point Barrow region.
22. Bailey, E.P. 1972. Aleutian Islands National Wildlife Refuge and Izembek National Wildlife Refuge. Unpublished report. U.S. Fish and Wildlife Service, Cold Bay, Alaska. 28 pp.
See No. 252. There is a subsequent report by the same author for 1973 (26 pages).
23. Baird, S.F. 1859. *Catalogue of North American Birds*. Smithsonian Institution, Washington. 21 pp.
Baird refers to emperor geese as *Chloephaga canagica* Bonap., the painted goose.
24. Baird, S.F., J. Cassin, and G.N. Lawrence. 1858. Birds of North America. Pages 768-770 in *Reports of Explorations and Surveys to Find the Most Practicable and Economical Route for a Railroad from the Mississippi River to the Pacific Ocean*. Vol. 9. War Department, Beverley Tucker, Printer, Washington, D.C.
They refer to emperor geese as *Chloephaga canagica* Bonap. They provide general information on ecology of the species.

25. Baird, S.F., T.M. Brewer, and R. Ridgway. 1884. Water-Birds of North America, Volume i. Little, Brown and Company, Boston. 537 pp.

They refer to emperor geese as *Philacte canagica*.

26. Baker, C.M.A. and H.C. Hanson. 1966. Molecular genetics of avian proteins VI: Evolutionary implications of blood proteins of eleven species of geese. *Comparative Biochemistry and Physiology* 17:997-1006.

They report that *Anser canagica* is similar to all other *Anser* geese. None of them differ substantially from *Branta*, however.

27. Bannister, B.H. 1870. A sketch of the classification of the American ANSERINAE. *Proceedings of the Academy Natural Sciences of Philadelphia* 22:130-132.

Bannister erects the genus *Philacte* and places it in the same "section" as the *Taenidiestes*, both genera being characterized by having a "skull with well marked rough supraorbital depressions. Tarsus as short as or shorter than the middle toe with its claw. Habits littoral." Refers to emperor geese as *Philacte canagica*.

28. Barrett-Hamilton, G.E.H. 1900. Notes on the birds observed during three visits to Kamchatka in 1896 and 1897. *Ibis* 6:271-298.

Barrett-Hamilton provides details of both observations and collections. No emperor geese were included.

29. Barry, T.W. 1964. Brant, Ross' Goose and Emperor Goose. Pages 145-154 in J.P. Linduska and A.L. Nelson, editors. *Waterfowl Tomorrow*. U.S. Fish and Wildlife Service, Washington.

Barry provides a narrative account of the breeding biology of emperor geese. He summarizes the sources of mortality for emperor geese with particular reference to the Yukon-Kuskokwim Delta.

30. Bart, J., D. Conway, and J. Slats. 1985. An ornithological reconnaissance of the Kashunuk River, Alaska. Unpublished report. U.S. Fish and Wildlife Service, Bethel, Alaska. 50 pp.

They provide a detailed species list of the area along with habitat descriptions.

31. Bartonek, J.C. and S.G. Sealy. 1979. Distribution and status of marine birds breeding along the coast of the Chukchi and Bering Seas. Pages 21-31 in J.C. Bartonek and D.N. Nettleship, editors. *Conservation of Marine Birds of Northern North America*. U.S. Fish and Wildlife Service Wildlife Research Reports 11.

They present numerous species-specific maps that indicate the location and size of breeding colonies or aggregations for alcids, gulls, geese, and some other marine birds.

32. Bartonek, J.C., J.G. King, and H.K. Nelson. 1971. Problems confronting migratory birds in Alaska. Paper presented at the 36th North American and Natural Resources Conference, March 7-10, 1971. Portland, Oregon. 16 pp.

They provide an objective, thorough, and interesting overview of the potential problems for wildlife that will result from development of various natural resources.

33. Bayer, R.D. 1987. Oregon's first emperor goose. *Oregon Birds* 13:280-281.

Bayer provides a chronological summary of fall and winter sightings of emperor geese in Oregon.

34. Beaglehole, J.C., editor. 1967. *The Journals of Captain James Cook on His Voyages of Discovery - The Voyage of the Resolution and Discovery 1776-1780*. Cambridge University Press, Cambridge. 1647 pp.

This is a thorough and annotated collection of journals from the third voyage, including those of the officers such as Anderson, King and Clerke. Although there are numerous references to "flocks of geese" during the travels through the Aleutians, the Bering Sea islands, and coastal Alaska, few are described in detail. Contrary to Stressmann's (1949) assertion, there is no specific reference to snow geese. There are unmistakable descriptions of Canada and brant geese. Most importantly, there is Clerke's October 1778 description from Samgoonoodha (Resolution or English Bay) Unalaska: "The grey Goose, is smaller than ours, the Head and upper part of the Neck are white, the Body grey, the Extremities of the Feathers tip'd with black, the Wings grey striped with black; I believe it to be the same they call the grey & speckled goose of Kamtschatka". Although Clerke did not recognize this as new species, he provided an accurate description of the emperor goose 24 years before it was formally named and described by Sewastianoff. Unfortunately, he does not provide any reference to the "they" or the "grey & speckled goose of Kamtschatka". Dement'ev and Gladkov (1967) note that grey goose is an ancient Russian name for the greylag goose (*Anser anser*) which historically occurred in Kamtschatka. Latham's (1824) great goose (*Anas grandis*) also occurred there and could be considered speckled. According to Salvadori (1895), however, this was most likely a race of the bean goose (*Anser fabalis*). Finally, the white-fronted goose (*Anser albifrons*) has long been known as the speckled or speckle-bellied goose and did occur in Kamtschatka. Although he did not recognize it and name it as a new species, Commander Charles Clerke provided the first clear written description of the species in 1778.

35. Bean, T.H. 1882. Notes on birds collected during the summer of 1880 in Alaska and Siberia. *Proceedings of the U.S. National Museum* v:144-173.

Bean was an accomplished and thorough collector. He lists 77 species with specific collecting (and observing) locations but includes no emperor geese. He provides details on distribution and ecology for many of the species.

36. Beck, R.H. 1934. Another emperor goose in California. *Condor* 36:114.

This is one of a series of casual sightings of emperor geese along the Pacific Coast.

37. Bellrose, F.C. 1976. *Ducks, Geese and Swans of North America*. 2nd ed. Stackpole Books, Harrisburg. 544 pp.

Bellrose provides a detailed account of the biology and taxonomy of emperor geese.

38. Bent, A.C. 1912. Notes on birds observed during a brief visit to the Aleutian Islands and Bering Sea in 1911. *Smithsonian Miscellaneous Collections* 56:1-29.
The trip was made during June and no emperor geese were observed.
39. Bent, A.C. 1925. Life History of North American Wild Fowl - Order Anseres. U.S. National Museum Bulletin 130. Government Printing Office, Washington.
Bent provides a detailed account of all facets of the biology of emperor geese with many quotes from the early literature.
40. Bent, A.C. 1962. Life Histories of North American Wild Fowl, Part 2. (Reprint of U.S. National Museum Bulletin 130, 1925). Dover Publications, New York. 314 pp.
Bent provides a detailed account of all facets of the biology of emperor geese with many quotes from the early literature. Reprinting of No. 42.
43. Bianchi, V.L. 1909a. Apercu de la faune ornithologique des les Comandores. *Bulletin de L'Academie Imperiale des Sciences de St.-Petersbourg* III:162.
This is essentially an abstract of a lunch presentation, communicated by N.B. Nassanov (a member of the Academie), that outlined the findings of Bianchi's evaluation of a collection made by Sokolnikoff on the Commander Islands in the mid-1900's. (See Hartert 1920). No specifics are given except that there are now 155 species, up from the 144 reported by Stejneger (1887). The full article and species list is to appear elsewhere but the location is not given. In Russian but includes the French translation of the title.
42. Bianchi, V.L. 1909b. Rapport sur une mission scientifique a la Kamtschatka. *Bulletin de L'Academie Imperiale des Sciences de St.-Petersbourg* III:23-52.
Bianchi reports on numerous species of birds found in Kamtschatka. The list includes several ducks, a swan (*Cygnus cygnus*), and two geese - *Anser albifrons* and *Melanonyx serrirostris*. There is no mention of the emperor goose. In Russian but includes the French translation of the title.
43. Blaauw, F.E. 1916. A note on the emperor goose (*Philacte canagica*) and on the Australian teal (*Nettion castaneum*). *Ibis* (series 10) 4:252-254.
Blaauw provides a detailed narrative on rearing captive emperor geese. He includes descriptions of plumage and molt of goslings.
44. Blandamer, J.S. and P.J.K. Burton. 1979. Anatomical species of birds in the collections of the British Museum. *Bulletin of the British Museum (Natural History) Zoology Series* 34:125-180.
The British Museum has one alcoholic specimen of *Anser canagica*.
45. Blurton Jones, N.G. 1972. Moults migration of emperor geese. *Wildfowl* 23:92-93.
Blurton Jones provides evidence that non-breeding emperor geese from the Yukon-Kuskokwim Delta perform a northern molt migration, likely to St. Lawrence Island.

46. Bolle, C. 1859. Literarische Berichte of Denkwürdigkeiten einer Reise nach dem russischen Amerika, nach Micronesien und durch Kamtschatka by H.F. von Kittlitz. *Journal für Ornithologie* vi:45-51.

Bolle provides a narrative summary of von Kittlitz' expedition to Beringea. There is no specific reference to emperor geese in this summary.

47. Bonaparte, C.L. 1826. Observations on the nomenclature of Wilson's Ornithology. Anthony Finley, Philadelphia. 42 pp.

Bonaparte does not mention the absence of emperor geese in Wilson's work even though the date of Wilson's folio is 24 years after Sewastianoff's (1802) paper.

48. Bonaparte, C.L. 1856. Excursion dans les divers Musees D'Allemagne, de Hollande et de Belgique (suite et fin), et Tableaux paralleliques de l'ordee de Palmipedes. *Comptes Rendus* XLIII:648-652.

In a large table Bonaparte refers to emperor geese as *Chloephaga canagica* Sewart. (*picta*, Pall. nec Forst). "Sewart." is likely a misspelling of the abbreviation for Sewastianoff since there are no prior references or citations to a "Stewart" in the literature. The mistake changed to Stewart (no period) in Gray 1871 and was retained in that form by Boucard (1876). Pallas referred to the species as *Anser pictus*. The nec Forst. indicates that *picta* had been previously assigned to another species by Forster.

49. Bonnaterre, M.A. 1791. Tableau encyclopedique et methodique des trois Regnes de la Nature. Ornithologie ii. Panckoucke, Paris.

This volume contains countless black and white wood-cut and copper plate prints of most fanciful birds. This was one of the definitive works of the time. Many species of geese (=ducks) are there and recognizable, although artistic liberties were taken. Both "Magellanica" (pl. 29) and "Antarctica" (pl. 30) were included, listed, and recognizable as Upland and Kelp geese, respectively. There is nothing, other than those two members of *Chloephaga*, that resembles the emperor goose even though the specimen Sewastianoff's description was based on was in Europe at the time this volume was produced. There are no page numbers.

50. Boucard, A. 1876. *Catalogus Avium*. Published by the author, London. 352 pp.

Specimen 1549 is referred to as *Chloephaga canagica*, Stewart, Aleutians. This is likely a perpetuation of Gray's (1871) errors. See No. 50.

51. Bower, W.T. 1919. Alaska fisheries and fur industries in 1918. Appendix VII to the Report of the U.S. Commissioner of Fisheries for 1918. Bureau of Fisheries Document Number 872. Bureau of Fisheries, Department of Commerce. Government Printing Office, Washington, D.C.

Bower provides a list of birds, including emperor geese, seen on the Pribilof Islands by Dr. G. Dallas Hanna. Specimens were deposited at the U.S. National Museum.

52. Brandt, H. 1943. *Alaska Bird Trails*. Bird Research Foundation, Cleveland. 464 pp.
Brandt includes a brief narrative on the natural history of emperor geese.

53. von Brandt, J.F. 1836a. *Descriptiones et Icones Animalium Rossicorum Novorum vel minus rite cognitorum. Aves Fasciculus*. Jussu et Sumptibus Academiae Scientiarum, Petropoli. 64 pp.

This is the full paper describing the confusion between Pallas and Latham over the incorrect use by the former of the latter's description and designation *Anser pictus*. It is in Latin and there are six pages of prose that include measurements. It has six beautiful plates, the first of which is modeled after Pallas' emperor goose and is labeled *Anser pictus*. See Latham (1824), Pallas (1831), and von Brandt (1836b).

54. von Brandt, J.F. 1836b. *Note sur l'Anser canadensis et l'Anser pictus de la Zoographie de Pallas*. Bulletin Scientifique de l'Academie Imperial des Sciences des Saint Petersburg. i:37.

von Brandt refers to emperor geese as *Anser canagicus*. This paper sorts out Pallas' mistake in labeling his painting of an emperor goose as *Anser pictus* after Latham (see Latham 1824) and erects the name *Anser canagicus* Nob. as a combined form from Pallas and Sewastianoff's *Anas canagica*.

55. von Brandt, J.F. 1842. *Dissertatio inauguralis sistens topographiam mediam portus novarchangelensis*. Blaschke, St. Petersburg.

This is cited in Coues (1880) from Baird who took it from Baer and Helmerston, who are said to state that it contains a list of the birds of Russian America by von Brandt.

56. von Brandt, J.F. 1844. *Eine Liste von Thieren, welche der Gouverneur Kuprianoff aus den Russich Americanischen Colonien geschenkt hat*. Oken's Isis xxxvii:133.

von Brandt provides a list of birds from Alaska that were in Kuprianoff's collection. *Anser canagica* was among them.

57. Bretherton, B.J. 1896. *Kodiak Island. A contribution to avifauna of Alaska*. The Oregon Naturalist 3:45-49.

Bretherton reports that no emperor geese winter on Kodiak Island. Subsequent reports are found in The Oregon Naturalist 3:61-63, 3:77-79, 3:100-102.

58. Brooks, A. 1934. *Far-flying wild fowl and their foes*. National Geographic 66:486-528.

Brooks provides a nice overview of the problems confronting several species of waterfowl. He includes a copy of one of his paintings of *Philacte canagica* in mixed goose company.

59. Brooks, W.S. 1915. Notes on birds from East Siberia and Arctic Alaska. *Bulletin of the Museum of Comparative Zoology* 59:361-413.
Brooks observed nesting emperor geese in June 1913 in Providence Bay in Siberia and found them numerous along the coast of St. Lawrence Island.
60. Bryant, H.C. 1914. More records of emperor geese in California. *Condor* 16:92.
This is one in a series of casual observations of emperor geese along the Pacific Coast.
61. Bryant, H.C. 1915. Another record of the occurrence of the emperor goose in California. *Condor* 17:58.
This is one in a series of casual observations of emperor geese along the Pacific Coast.
62. Burke, B. 1977. *Waterfowl studies for the decoy maker and collector, hunter, bird watcher, waterfowl artist and naturalist*. Winchester Press, New York. 254 pp.
Burke provides a brief narrative on the natural history of emperor geese.
63. Butler, W.I. 1986. Report to the Pacific Flyway study committee on the 1985 and 1986 breeding pair indices for geese and swans from aerial surveys of the coastal zone, Yukon Delta, Alaska. Unpublished memorandum. U.S. Fish and Wildlife Service, Anchorage, Alaska. 3 pp.
See No. 65.
64. Butler, W.I. 1993. Memo on results from 1985-1993 breeding ground surveys of geese and swans in the coastal zone, Yukon-Kuskokwim Delta, Alaska. Unpublished report. U.S. Fish and Wildlife Service, Anchorage, Alaska. 8 pp.
See No. 65.
65. Butler, W.I. and R.A. Malecki. 1986. Development of an aerial breeding pair survey for geese nesting in the coastal zone of the Yukon Delta. Unpublished report. U.S. Fish and Wildlife Service, Anchorage, Alaska. 20 pp.
This is the first in a series of analytical syntheses of breeding ground surveys on the Yukon-Kuskokwim Delta, Alaska. Subsequent related reports include: Nos. 63, 64, 68, and 70.
66. Butler, W.I. and M.R. Petersen. 1989. Fall productivity estimates of emperor geese from aerial photographs from 1985-1989. Unpublished memorandum. U.S. Fish and Wildlife Service, Anchorage, Alaska. 4 pp.
See No. 67.
67. Butler, W.I., M.R. Petersen, J. Sarvis, and C.P. Dau. 1985. Fall 1985 productivity estimates of emperor geese from aerial photographs on the Alaska Peninsula. Unpublished report. U.S. Fish and Wildlife Service, Anchorage, Alaska. 7 pp.

This is the first of what became annual fall surveys of emperor goose productivity based on a series of oblique photographs of goose flocks along the north coast of the Alaska Peninsula. Subsequent related reports include: Nos. 66 and 69.

68. Butler, W.I., R.A. Stehn, and C.J. Lensink. 1987. Development of an aerial breeding pair survey for geese nesting in the coastal zone of the Yukon Delta. Unpublished report. U.S. Fish and Wildlife Service, Anchorage, Alaska. 24 pp.

See No. 65.

69. Butler, W.I., M.R. Petersen, J. Sarvis, and C.P. Dau. 1988. Fall 1987 productivity estimates of emperor geese from aerial photographs on the Alaska Peninsula. Unpublished report. U.S. Fish and Wildlife Service, Anchorage, Alaska. 8 pp.

See No. 67.

70. Butler, W.I., R.A. Stehn, and W.D. Eldridge. 1988. Development of an aerial breeding pair survey for geese nesting in the coastal zone of the Yukon Delta. Unpublished report. U.S. Fish and Wildlife Service, Anchorage, Alaska. 26 pp.

See No. 65.

71. Byrd, G.V. 1981. The distribution, density, and productivity of cackling Canada, white-fronted and emperor geese on the Yukon NWR in 1981. Unpublished report. U.S. Fish and Wildlife Service, Bethel, Alaska. 13 pp.

Byrd provides a summarization of nesting ecology information on geese nesting along the coastal zone of the Yukon-Kuskokwim Delta, Alaska. Information was gathered from multiple field camps located in disparate areas of goose concentration. This is one in a series of annual reports.

72. Byrd, G.V. 1989. Observations of emperor geese in the Aleutian Islands, October 1988 - April 1989. Unpublished report. U.S. Fish and Wildlife Service, Adak, Alaska. 13 pp.

See No. 73.

73. Byrd, G.V. 1991. Winter observations of emperor geese in the Aleutian Islands, Alaska, October 1988 - April 1991. Unpublished report. U.S. Fish and Wildlife Service, Adak, Alaska. 13 pp.

Byrd provides a summary of three winters of observations of emperor geese at Shemya, Adak, and Amchitka. He includes flock composition and size, marked birds observed, and timing of arrival and departure.

74. Byrd, G.V. and R.H. Day. 1986. The Avifauna of Buldir Island, Aleutian Islands, Alaska. *Arctic* 39:109-118.

Emperor geese are present except during the summer.

75. Byrd, G.V. and M.F. Smith. 1981. A summary of data from 160-acre random plots surveyed on the Yukon Delta National Wildlife Refuge in 1981. Unpublished report. U.S. Fish and Wildlife Service, Bethel, Alaska. 15 pp.
- They provide clutch sizes, numbers of nests, and goose species composition from random plots.
76. Byrd, G.V., D.D. Gibson, and D.L. Johnson. 1974. The birds of Adak Island, Alaska. *Condor* 76:288-300.
- They provide arrival and departure dates for 124 species with additional distributional comments for many of them. They note that emperor geese (*Philacte canagica*) generally leave by mid-May but that stragglers are seen in June.
77. Byrd, G.V., S. Finger, C.A. Janik, M. Joseph, and P. Paniyak. 1982. The status of geese and swans nesting in the coastal fringe of the Yukon Delta National Wildlife Refuge in 1982. Unpublished report. U.S. Fish and Wildlife Service, Bethel, Alaska. 43 pp.
- This is one of several reports detailing nesting chronology, nesting success and nesting ecology at one or more of the study sites on the Yukon-Kuskokwim Delta in Alaska. Subsequent reports with similar information include: Nos. 139, 140, 171, 172, 174, 175, 240, 397, and 476.
78. Byrd, G.V., J.C. Williams, and A. Durand. 1992. Observations of emperor geese in the Aleutian Islands during the winter of 1991-1992. Unpublished report. U.S. Fish and Wildlife Service, Adak, Alaska. 21 pp.
- They report on monthly surveys of geese at Adak, Amchitka, and Shemya Islands and include observations of marked geese over several years. Some oiled birds were seen.
79. Cade, T.J. 1952. Notes on the birds of Sledge Island, Bering Sea, Alaska. *Condor* 54:51-54.
- Cade records *Philacte canagica* in June on Sledge Island.
80. Cahn, A.R. 1947. Notes on the birds of the Dutch Harbor area of the Aleutian Islands. *Condor* 49:78-82.
- Cahn provides a species list with some behavioral and ecological notes.
81. Campbell, D.M. 1990. Migration, staging and nesting of migratory waterfowl, southwest Alaska - status report of the 1990 waterfowl monitoring efforts on the Togiak National Wildlife Refuge. Unpublished report. U.S. Fish and Wildlife Service, Dillingham, Alaska. 35 pp.
- Campbell provides details on the movement of emperor geese through the Togiak area, including arrival and departure dates and numbers of individuals. Subsequent reports include: Nos. 427.

82. Campbell, D. and P. Greci. 1986. Waterfowl staging and migration in Nanvak Bay, Fall, 1986. Unpublished report. U.S. Fish and Wildlife Service, Dillingham, Alaska. 6 pp.

They provide details on arrival and departure dates and numbers of emperor geese in Nanvak Bay. They include a 12 page attachment of data sheets.

83. Campbell, R.W. 1968. A sight record of the emperor goose at White Rock, British Columbia. Murrelet 49:14.

This is one of a series of casual observations of emperor geese along the Pacific Coast.

84. Campbell, R.W., M.G. Shepard, and R.H. Drent. 1972. Status of birds in the Vancouver area in 1970. Syesis 5:137-167.

Emperor geese occur rarely in the winter.

85. Cantor, S.E. and M.R. Petersen. 1989. Staging of emperor geese along the Alaska Peninsula - Spring 1989. Unpublished report. U.S. Fish and Wildlife Service, Anchorage, Alaska. 26 pp.

See No. 86.

86. Cantor, S.E., R.J. Wilk, W.D. Eldridge, and M.R. Petersen. 1988. Staging of emperor geese at Cinder Lagoon, Alaska - Spring, 1988. Unpublished report. U.S. Fish and Wildlife Service, Anchorage, Alaska. 22 pp.

This is the first of several reports on results of reobservations of marked individuals during spring (No. 85) and fall (No. 87) migration. Also see reports by Schmutz (No. 404) and Schmutz et al. (Nos. 405-407).

87. Cantor, S.E., M.R. Petersen, and P.E. Seiser. 1989. Staging of emperor geese along the Alaska Peninsula - Fall 1988. Unpublished report. U.S. Fish and Wildlife Service, Anchorage, Alaska. 24 pp.

See No. 86.

88. Carver, W.H. 1928. Notes from St. George's Island, Alaska. Murrelet 9:63-65.

Emperor geese were observed during winter on St. George Island.

89. Cassin, J. 1858. United States Exploring Expedition, Mammalogy and Ornithology. Vol. 8. C. Sherman and Son (Lippincott), Philadelphia. 466 pp.

Cassin catalogues the collections and observations of the Expedition lead by Charles Wilkes during the period 1838-1842. No mention is made of emperor geese. Magellan (Upland) geese from Tierra del Fuego are mentioned and referred to as *Bernicla magellanica*.

90. Cassin, J. 1862. Catalogue of birds collected by the United States North Pacific surveying and exploring expedition in the command of Captain John Rogers, United States Navy, with notes and descriptions of new species. *Proceedings of the Academy Natural Sciences of Philadelphia* 14:312-328.
- Cassin catalogues the extensive collections made during the exploration led by John Rogers to west coast Alaska and the Bering Straits. No emperor geese were seen or obtained.
91. Christoleit, E. 1929. Remarks on the biology of geese. *Journal fur Ornithologie* 77:351-386.
- Christoleit groups the emperor goose with other members of the genus *Anser* based on morphology and basic biology.
92. Clark, A.H. 1910. The birds collected and observed during the cruise of the U.S. Fisheries Steamer Albatross in the North Pacific Ocean, and in the Bering, Okhotsk, Japan, and Eastern Seas from April to December, 1906. *Proceedings of the U.S. National Museum* 38:25-74.
- Several species of ducks and many *Branta canadensis hutchinsii* were seen and collected. No emperor geese reported.
93. Clapp, R.B., V.M. Kleen, and D.L. Olson. 1969. First records of emperor geese from the northwestern Hawaiian Islands. *Elepaio* 30:51-52.
- This is one in a series of casual extralimital observations of emperor geese.
94. Clapp, R.B., M.K. Klimkiewicz, and J.H. Kennard. 1982. Longevity records of North American birds: Gaviidae through Alcidae. *Journal of Field Ornithology* 53:81-124.
- Based on band recovery data through 1982, the oldest emperor goose was age 6 years and 3 months when it died.
95. Coinde, J.P. 1860. Notice sur la faune ornithologique de l'île de St. Paul, suivie de l'enumeration de quelques especes d'insectes (Coleopteres) des Aleoutiennes et du Kamtschatka. *Revue et Magasin de Zoologie* xii:396-405.
- Coinde reports that there were no emperor geese on Isle St. Paul in 1857.
96. Collins, H., A. Clarke, and E Walker. 1945. *The Aleutian Islands: Their People and Natural History*. Smithsonian Institution, Washington. 131 pp.
- They discuss the origin of the name emperor goose from confusion between Russian words. The Aleuts used the Russian word "tsiesarka" (guinea hen) for emperor geese. According to the authors, early explorers misunderstood this to be "tsarskia" which means imperial and they dubbed the bird the emperor goose. This is Part 21 of the War Background Series.
97. Conant, B. and D.J. Groves. 1992. Alaska-Yukon waterfowl breeding population survey, May 24 to June 21, 1992. Unpublished report. U.S. Fish and Wildlife Service, Juneau, Alaska. 25 pp.

This is the 36th survey in this series that provides extensive aerial survey coverage of Alaska and the Yukon. See No. 261.

98. Conant, B., J.G. King, J.I. Hodges, and L.M. Dresch. 1979. Alaska productivity surveys of geese, swans, brant and bald eagles 1979. Unpublished report. U.S. Fish and Wildlife Service, Juneau, Alaska. 18 pp.

This is one of a series of annual reports summarizing productivity data of geese and other birds throughout Alaska.

99. Conover, H.B. 1926. Game birds of the Hooper Bay region of Alaska. *Auk* 43:162-180.

Conover provides the first full description and pictures of downy young. He notes that he did not notice the strong, rank odor mentioned by many authors.

100. Cook, J.A. 1842a. *Voyages*. Vol. I. William Smith, London. 596 pp.

This volume details the first and second voyage that do not reach Beringia. There is no specific mention of a "painted duck" allegedly seen on the first voyage and described by Latham as the Painted Goose from a painting owned by Sir Joseph Banks. Consulting Lysaght (1959) and Beaglehole's (1961) volumes that chronicle Cook's first and second voyages and are annotated from the journals of his officers, it is clear that on the first voyage the only possible candidate is the yellow-billed or Chilean teal (*Anas flavirostris*) which was collected in Tierra del Fuego, painted by Parkinson and described by Solander. According to Lysaght, this was the only Anatidae collected and was eventually named *Anas antarctica*. The bird and Latham's description of the Painted Goose do not match. On the second voyage, many ducks and geese were reported, thoroughly described and painted, although not named binomially. Included from Statenland were paintings by Georg Forster of both the kelp goose (*Chloephaga hybrida*) and the upland goose (*Chloephaga picta*). According to Lysaght, the latter was the basis of Latham's account of the Painted Goose, later named *Anas picta* by Gmelin. (The painting is actually the type specimen for this species!) She claims the painting of *C. hybrida* was likely the basis of Latham's description of the Magellanic Goose. However, from a careful reading of Latham (1790), it clearly fits his description of the Antarctic goose. Curiously, this species was initially named *Anas antarctica*, an overlap from above that could have led to confusion over which voyage led to Cook's observation. de Montlezun asserts that the upland goose is indeed Cook's painted duck.

101. Cook, J.A. 1842b. *Voyages*. Vol. II. William Smith, London.

This is an early publication of Cook's journals from the third voyage. There are references to flocks of geese but no details. See Beaglehole (1967).

102. Copp, J.D. 1985. Critique and analysis of Eskimo waterfowl hunter surveys conducted by the U.S. Fish and Wildlife Service on the Yukon-Kuskokwim Delta, Alaska 1980-1984. Unpublished report. U.S. Fish and Wildlife Service, Anchorage, Alaska. 234 pp.

This is an analysis of subsistence harvest survey data collected on the Yukon-Kuskokwim Delta from 1980-1984. See No. 104.

103. Copp, J.D. 1988. Results of the 1987 survey of waterfowl hunting on the Yukon-Kuskokwim Delta, Alaska. Unpublished report. U.S. Fish and Wildlife Service, Bethel, Alaska. 146 pp.

See No. 104.

104. Copp, J.D. and G.M. Roy. 1986. Results of the 1985 survey of waterfowl hunting on the Yukon-Kuskokwim Delta, Alaska. Unpublished report. U.S. Fish and Wildlife Service, Bethel, Alaska. 161 pp.

This is one of a series of reports of subsistence harvest of ducks, geese, and other birds. Estimates are based on a sample of households in selected villages on the Yukon-Kuskokwim Delta. Subsequent related reports include: Nos. 102, 103, and a summary report by Wentworth (No. 480).

105. Copp, J.D. and B.J. McCaffery. 1987. Results of the 1986 survey of waterfowl hunting on the Yukon-Kuskokwim Delta, Alaska. Unpublished report. U.S. Fish and Wildlife Service, Bethel, Alaska.

See No. 104.

106. Cottman, C. and P. Knappen. 1939. Food of some uncommon North American birds. *Auk* 56:138-169.

They provide a detailed analysis of the stomach contents of more than 30 emperor geese. Plant material is most common.

107. Coues, E. 1871. Ornithological results of the exploration of the north-west. *American Naturalist* iv:367-371.

Coues reports *Chloephaga canagica* is so numerous in the Yukon River mouth, other species excluded. This is likely an unattributed reference to Dall and Banister (1869).

108. Coues, E. 1872. Key to North American Birds. Estes and Lauriat, Boston. 361 pp.

Coues refers to emperor geese as *Philacte canagica*.

109. Coues, E. 1873. Check List of North American Birds. Naturalists Agency, Salem. 327 pp.

Coues refers to emperor geese as *Philacte canagica*.

110. Coues, E. 1874. Birds of the North-West. Government Printing Office, Washington. 791 pp.

Coues refers to emperor geese as *Philacte canagica*.

111. Coues, E. 1882. Coues Check List of North American Birds. 2nd ed. Estes and Lauriat, Boston. 108 pp.

Coues refers to emperor geese as *Chloephaga canagica*. He mentions that local natives call themselves Kanagiamoot.

112. Coues, E. 1884. Key to North American Birds. 2nd ed. Estes and Lauriat, Boston. 863 pp.

Coues refers to emperor geese as *Philacte canagica*. He states that the supraorbital depression found in emperor geese is missing in all other North American geese.

113. Coues, E. 1903. Key to North American Birds. 5th ed. Dana Estes and Company, Boston. 1144 pp.

Coues refers to emperor geese as *Philacte canagicus*.

114. Dall, W.H. 1870. Alaska and its Resources. Lee and Sheppard, Boston. 627 pp.

Dall provides a detailed summary on ecology and natural history of *Chloephaga canagica*.

115. Dall, W.H. 1871. A winter's day in the Yukon territory. American Naturalist iv:218-225.

This is an enjoyable essay about northern Alaska - which Dall refers to as the Yukon.

116. Dall, W.H. 1873. Notes on the avifauna of the Aleutian Islands, from Unalashka eastward. Proceedings of the California Academy of Natural Sciences v:1-11.

Dall refers to emperor geese as *Chloephaga canagica*. He asserts that it is not found here and that the natives are unaware of it.

117. Dall, W.H. 1874. Notes on the avifauna of the Aleutian Islands, especially those west of Unalashka. Naturalist's Agency, Salem. 12 pp.

Dall refers to emperor geese as *Philacte canagica*. He claims it rarely winters on Unalashka and not at all to the westward. He reports that a Mr. Thompson, an otter hunter, claims they occur in great numbers on Sannakh Island. This is an extract printed in advance from the Proceedings of the California Academy of Natural Sciences.

118. Dall, W.H. and H.M. Bannister. 1869. List of the birds of Alaska, with biographical notes. Transactions of the Chicago Academy of Science i:267-310.

They refer to emperor geese as *Chloephaga canagica* and provide basic information on morphology, breeding, and ecology. They note "This magnificent bird abounds in profusion in the Kusilvak Slough, or mouth of the Yukon, to the exclusion of all the other species". Both authors comment on flavor: "The raw flesh and skin have an intolerable odor of garlic, which rendered it a very disagreeable task to skin them; but when cooked this passes away, and the flesh is tender and good eating" - Dall.

119. Dall, W.H., C. Keeler, H. Gannett, W.H. Brewer, C.H. Merriam, G.B. Grinnell, and M.L. Washburn. 1901. *Alaska - Volume II. History, Geography and Resources*. Doubleday, Page and Company, New York. 383 pp.
- This work is part of the Harriman Alaska Expedition. It summarizes faunistic inventories and includes emperor geese among the birds.
120. Dau, C.P. 1981. Survey of emperor geese in southwestern Alaska, 23 to 27 April 1981. Unpublished report. U.S. Fish and Wildlife Service, Cold Bay, Alaska. 16 pp.
- See No. 261. There are subsequent reports by Dau with the same title from 1982 (22 pages), 1983 (21 pages), and 1984 (31 pages).
121. Dau, C.P. 1983. 1983 productivity appraisal for emperor geese at Izembek National Wildlife Refuge. Unpublished memorandum. U.S. Fish and Wildlife Service, Cold Bay, Alaska. 2 pp.
- One of an annual series of family group counts and age ratios from Izembek National Wildlife Refuge.
122. Dau, C.P. 1987. Birds in nearshore waters of the Yukon-Kuskokwim Delta, Alaska. *Murrelet* 68:12-23.
- Dau reports on 32 species, including emperor geese, observed during the summer and fall.
123. Dau, C.P. and R.J. King. 1985. Spring survey of emperor geese in southwestern Alaska, 12-16 May 1985. Unpublished report. U.S. Fish and Wildlife Service, Cold Bay, Alaska. 26 pp.
- See No. 261. Subsequent report by the same authors with the same title published in 1986 (25 pages).
124. Davis, J.M. 1940. Random notes from the Humboldt Bay area. *Condor* 42:222.
- This is one of many extralimital observations of emperor geese along the Pacific Coast.
125. DeGange, A.R. and G.A. Sanger. 1987. Marine Birds. Pages 479-524 in D.W. Hood and S.T. Zimmerman, editors. *The Gulf of Alaska. Physical Environment and Biological Resources*. Government Printing Office, Washington, D.C.
- They provide a detailed review of use of the Gulf of Alaska by marine birds. They note that while a small number of emperor geese winter on Kodiak Island, this species is a minor contributor to geese using the larger region.
126. Degland, C.D. and Z. Gerbe. 1867. *Ornithologie Europeene*. Vol. ii. J.B. Bewailer et Fils, Paris. 637 pp.
- They refer to emperor geese as *Bernicla canagica* (see p.492) and claim that Gray (1844:607) tome iii, shifted the species into *Bernicla*.

127. Delacour, J. 1954. *The Waterfowl of the World*. Vol. 1. Country Life Limited, London. 284 pp.

Delacour provides standard details on morphology, ecology, and distribution. He also summarizes captive breeding of the species.

128. Dement'ev, G.P. and N.A. Gladkov, editors. 1967. *Birds of the Soviet Union*. Volume IV. Israel Program for Scientific Translation, Jerusalem. 683 pp.

They provide detailed discussion on all aspects of *Philacte canadica* which is known commonly as the blue goose and the white-throat. They also note that grey goose is an ancient Russian term for *Anser anser*, a point relevant to comments under Beaglehole (1967). The use of "*canadica*" is likely related to Sewastianoff's renaming of the species in the mid-1800's (Alpheraky 1905).

129. Dick, M. 1977. Notes on the winter seabirds of Chiniak Bay, Kodiak Island, Alaska. Unpublished report. U.S. Fish and Wildlife Service, Anchorage, Alaska. 19 pp.

Dick provides arrival, activity, and feeding notes on emperor geese and 37 other species of sea birds.

130. Dixon, G. 1789. *A Voyage Round the World; but more particularly to the Northwest Coast of America: performed in 1785, 1786, 1787 and 1788 by Nathaniel Portlock and George Dixon*. John Stockdale, London. 407 pp.

This is Dixon's account of the voyage made with Portlock. Chronological and geographical details are summarized under Portlock (1789). The general account in this volume is similar in content but differs in style from Portlock's. This is a series of letters written by an individual identified only by the initials W.B. to his wife or girlfriend, Hamlen, who is in England. There is a natural history appendix that includes plates and descriptions attributed to Latham of several bird species. None of them are waterfowl. As in Portlock's account, there are references to geese and shooting geese, but no specific descriptions are given. The only prose actually initialed by Dixon is a brief introduction that gives no clue as to W.B.'s identity.

131. Dixon, J. 1916. Migration of the yellow-billed loon. *Auk* 33:370-376.

Dixon noted that while there were many emperor geese near St. Lawrence Island, few, if any, nested there.

132. Dresser, H.E. 1904. *A Manual of Palaearctic Birds*. Vol. 2. Published by the Author, London. 922 pp.

Dresser refers to emperor geese as *Chen canagica*.

133. Dufresne, F. 1924. Report on investigation of wildfowl of the Hooper Bay section of Alaska during the spring and summer of 1924. Unpublished report. U.S. Fish and Wildlife Service, Anchorage, Alaska. 69 pp.

Federal investigators, with the assistance of local natives, captured emperor geese and other goose species, some of which were preserved and others banded and released. Species accounts and dates of spring arrival are also noted.

134. Dufresne, F. 1942. Mammals and Birds of Alaska. Circular Number 3. U.S. Fish and Wildlife Service, Anchorage, Alaska. 37 pp.

Dufresne presents short plumage and range descriptions for all Alaska goose species. Emperor geese are noted as "Alaska's most beautiful goose."

135. Dunagan, T.T. 1957. *Paramonostomum malerischi* n. sp. (Trematoda: Digenea; Notocotylidae) from the emperor goose (*Philacte canagica*, L.) in Alaska. Journal of Parasitology 43:586-589.

Dunagan describes a new species of trematode obtained from an emperor goose collected near Nome.

136. Dunning, J.B. 1984. Body weights of 686 species of North American birds. Western Bird Banding Association Monograph 1:1-38.

The mean mass of emperor geese was 2743 grams.

137. Durand, A. and N. Benjamin. 1993a. Trip report: winter wildlife and oil contamination surveys, Amchitka Island, Alaska, 19-24 February 1993. Unpublished report. U.S. Fish and Wildlife Service, Adak, Alaska. 28 pp.

There is a subsequent report by the same authors for the March survey (24 pages). See No. 312.

138. Durand, A. and N. Benjamin. 1993b. Trip report: winter wildlife and oil contamination surveys, Shemya Island, Alaska, 1-6 March 1993. Unpublished report. U.S. Fish and Wildlife Service, Adak, Alaska. 29 pp.

See No. 313.

139. Dzinbal, K.A., C.R. Scafidi, and R.L. Jarvis. 1984a. An evaluation of productivity and mortality factors influencing goose populations - A status report of the 1984 monitoring effort at Manokinak River, Alaska. Unpublished report. Department of Fisheries and Wildlife, Oregon State University, Corvallis, Oregon. 78 pp.

See No. 77.

140. Dzinbal, K.A., J.J. Scanlon, S.L. Fristenskiy, M.S. Hudson, C.A. Janik, and R.L. Jarvis. 1984b. An evaluation of productivity and mortality factors influencing goose populations: a summary of the 1984 waterfowl monitoring effort at Yukon Delta NWR, Alaska. Unpublished report. Department of Fisheries and Wildlife, Oregon State University, Corvallis, Oregon. 36 pp.

See No. 77.

141. Eadie, J.M., F.P. Kehoe, and T.D. Nudds. 1988. Pre-hatch and post-hatch brood amalgamation in North American anatidae: A review. *Canadian Journal of Zoology* 66:1709-1721.
- Cites Eisenhauer and Kirkpatrick (1977) that nest parasitism occurs in emperor geese.
142. Einarsen, A.S. 1965. *Black Brant: Sea Goose of the Pacific Coast*. University of Washington Press, Seattle. 142 pp.
- Einarsen provides some details on emperor geese in comparison to brant, especially with regard to use of marine habitat.
143. Eisenhauer, D.I. 1976. *Ecology and Behavior of the Emperor Goose (Philacte canagica Sewastianov) in Alaska*. M.Sc. Thesis, Purdue University, West Lafayette. 442 pp.
- See No. 145.
144. Eisenhauer, D.I. and D.A. Frazer. 1972. Nesting ecology of the emperor goose (*Philacte canagica* Sewastianov) in the Kokechik Bay region, Alaska. Unpublished report. Department of Forestry and Conservation, Purdue University, West Lafayette. 82 pp.
- See No. 145.
145. Eisenhauer, D.I. and C.M. Kirkpatrick. 1977. Ecology of the emperor goose in Alaska. *Wildlife Monographs* 57:1-62.
- This is the definitive early ecological study of the species. Related citations from this study include: Nos. 144, 146, and 239.
146. Eisenhauer, D.I., C. Strang, and C.M. Kirkpatrick. 1971. Waterfowl populations, production and habitat ecology on the Yukon-Kuskokwim Delta, Alaska: populations and ecology of emperor geese. Unpublished report. Bureau of Sport Fisheries and Wildlife, Bethel, Alaska. 66 pp.
- This is the first in a series of annual reports from field work conducted from 1971-1973 on emperor geese and associated waterbirds at Kokechik Bay, Alaska. See No. 145.
147. Eldridge, W.D. and K.S. Bollinger. 1988. Molting emperor goose survey of St. Lawrence Island, Alaska, 22 July 1988. Unpublished report. U.S. Fish and Wildlife Service, Anchorage, Alaska.
- This is one of several surveys for molting (flightless) emperor geese. This is the only area in North America where non- and failed nesting emperor geese congregate to molt.
148. Elison, G. 1982. Emperor goose survey - Egegik Bay to Moffet Lagoon, October 2, 1982. Unpublished trip report. U.S. Fish and Wildlife Service, King Salmon, Alaska. 4 pp.

See No. 181.

149. Elkins, W.A. 1951. Alaska waterfowl breeding ground survey (Project W-3-R-6 unpublished report). U.S. Federal Aid in Wildlife Restoration 6(1):9-15.
This is one of many Federal Aid Reports that provides miscellaneous observations on nesting emperor geese and survey results.
150. Elliot, D.G. 1866. The New and Heretofore Unfigured Species of the Birds of North America. Vol. II. Published by the author, New York.
Elliot refers to emperor geese as *Chloephaga canagica* but also lists them as *Bernicla picta* Pall., the Aleutian goose. Plate 45 is beautiful.
151. Elliot, D.G. 1898. The Wildfowl of the United States and its Possessions. F.P. Harper, New York. 316 pp.
Elliot refers to emperor geese as *Philacte canagica*.
152. Elliott, H.W. 1872. A Monograph of the Seal Islands of Alaska. Special Bulletin 176. U.S. Fish Commission, Washington.
This is cited in Coues (1879) Bibliography and is said to refer to emperor geese as *Philacte canagica*. His results are summarized by Turner (1886), Nelson (1887), and Townsend (1887).
153. Elliott, H.W. 1873. Report on the Prybilov Group, or Seal Islands, of Alaska. Pages 166-212 in E. Coues, editor. Ornithology of the Pribiloff Islands. Government Printing Office, Washington, D.C.
Elliot refers to emperor geese as *Philacte canagica*. He comments on the "...intolerable odor of garlic, which renders it a very disagreeable task to skin them, but when cooked this entirely passes away, and the flesh is tender and good eating".
154. Ely, C.R., J.S. Sedinger, and D.G. Raveling. 1979. Breeding biology and productivity of geese on the Yukon-Kuskokwim Delta, Alaska. Unpublished Annual Report Number 2. University of California, Davis, California. 58 pp.
See No. 382.
155. Ely, C.R., C.A. Babcock, K. Kuska, and B.E. Anderson. 1992. Nesting ecology of geese along the Kashunuk River, Yukon-Kuskokwim Delta, Alaska. Unpublished report. U.S. Fish and Wildlife Service, Anchorage, Alaska. 18 pp.
See No. 382.
156. Eyerdam, W.J. 1936. Notes on birds collected or observed during the summer of 1932 in the eastern Aleutian Islands, Alaska. Murrelet 17:48-52.
Eyerdam collected *Philacte canagica*: one on Unalaska 5/4/32 and one on Unimak 8/7/32.

157. Eyton, T.C. 1838. A monograph of the Anatidae or duck tribe including the geese and swans. Longman and Company, London, London.

This is one of the rarest volumes on systematics of migratory waterfowl. Referring to it, Baird (1858) wrote: "The genus *Chloephaga* was separated by Eyton, Mon. Anat. in 1838, from *Bernicla*, to accommodate species with a shorter bill and more convex culmen, the legs robust, the membranes of the toes scalloped out, the colors different from *Bernicla*". See Eyton (1869).

158. Eyton, T.C. 1869. Synopsis of the Anatidae. Published by the author for private circulation, London. 141 pp.

In the Preface, Eyton refers to this volume as the second edition of his 1838 monograph. He creates the genus *Chloephaga* as: "Feet robust, posterior toes moderate, armed with a curved claw, with the membranes between the toes scalloped out in front. Tarsi large and strong. Bill robust with culmen slightly arched, armed with a large nail. Nostrils linear, placed in the middle of the bill. Lamellae small, obliterated anteriorly" *Chloephaga nobis*. Type specimen is *Chloephaga magellanica*.

159. Fannin, J. 1895. The emperor goose in British Columbia. Auk 12:76.

Fannin refers to emperor geese as *Philacte canagica* and notes they occur rarely during the winter in British Columbia.

160. Fay, F.H. 1961. The distribution of waterfowl to St. Lawrence Island, Alaska. Wildfowl 12:70-80.

Fay provides details on nesting emperor geese, including estimates of numbers and distribution of nests. Fay also reports seeing large numbers of emperor geese that are likely molt migrants.

161. Fay, F.H. and T.J. Cade. 1959. An ecological analysis of the avifauna of St. Lawrence Island, Alaska. University of California Publications in Zoology 63:73-150.

They provide numbers and distribution of breeding emperor geese as well as large molt-migrant flocks. (See Blurton Jones 1972.)

162. Felix, J. 1970. Emperor geese nesting in the Prague zoo. Ziva 18:73-74.

Felix provides details on captive nesting emperor geese.

163. Fienup-Riordan, A. 1988. The problem of translation: Animals as infinitely renewable or finite resource. Unpublished presentation. Alaska Anthropological Association 15th Annual Meeting, Fairbanks, Alaska. 28 pp.

Fienup-Riordan provides a discussion of how failure to understand the native traditional view of the relation of man and animal can lead to conflicts in management programs.

164. Finsch, O. 1872. Zur Ornithologie Nordwest-Amerikas. Abhandlungen Naturwissenschaftlicher Vereine zu Bremen iii:17-86.
Finsch refers to emperor geese as *Anser canagicus* and states that there is a figure of this species in Brandt 1836 that is labeled *Anser pictus*. Indeed there is.
165. Fisher, D.C. 1948. Occurrences of the emperor in California. Condor 50:133-134.
Fisher provides a summary of winter records. This is one of several records of extralimital observations of emperor geese.
166. Forsell, D.J. and P.J. Gould. 1981. Distribution and abundance of marine birds and mammals wintering in the Kodiak area of Alaska. (FWS/OBS-81/13). Unpublished report. U.S. Fish and Wildlife Service, Anchorage, Alaska. 72 pp.
They provide details on local density and distribution of emperor geese as well as other sea birds wintering in the Kodiak area.
167. Frazer, D.A. and C.M. Kirkpatrick. 1979. Parental and brood behavior of emperor geese in Alaska. Wildfowl 30:75-85.
They provide detailed accounts of both female and male behavior during the period from nest initiation through fledging.
168. Friedmann, H. 1932. The birds of St. Lawrence island. Proceedings of the U.S. National Museum 80:1-31.
Friedmann reported on emperor geese collected on St. Lawrence Island in 1930.
169. Friedmann, H. 1934. Bird bones from Eskimo ruins on St. Lawrence Island, Bering Sea. Journal of the Washington Academy of Science 24:83-96.
Friedmann found emperor goose bones among the ruins on St. Lawrence Island.
170. Friedmann, H. 1937. Bird bones from archeological sites in Alaska. Journal of the Washington Academy of Science 27:431-438.
Friedmann reported that bones from *Anser canagica* were found at archeological sites on Kodiak Island.
171. Gabrielson, I.N. 1951. Alaskan waterfowl and their management. Pages 103-104 in H.B. Collins, editor. Science in Alaska. Arctic Institute of North America, Washington, D.C.
This is a short summary of a presentation concerning management problems facing waterfowl in Alaska in 1950.
172. Gabrielson, I.N. and F.C. Lincoln. 1956. The Birds of Alaska. Stackpole Company, Harrisburg, and the Wildlife Management Institute, Washington. 922 pp.
They provide a detailed account of the history, distribution, and ecology of emperor geese.

173. Garrett, K. and J. Dunn. 1981. Birds of Southern California: Status and Distribution. Los Angeles Audubon Society, Los Angeles. 408 pp.

This is another of several publications describing extralimital observations along the Pacific Coast.

174. Garrett, R. and M.L. Wege. 1985. An evaluation of goose productivity on the Yukon Delta NWR: summary report 1984. Unpublished report. U.S. Fish and Wildlife Service, Bethel, Alaska. 24 pp.

See No. 77.

175. Garrett, R.L., W.I. Butler, and M.L. Wege. 1983. An evaluation of productivity and mortality factors influencing goose populations - A status report of the 1983 waterfowl effort on the Yukon Delta NWR, Alaska. Unpublished report. U.S. Fish and Wildlife Service, Bethel, Alaska. 57 pp.

See No. 77.

176. Garrod, A.H. 1873. On certain muscles of the thigh of birds and on their value in classification. Proceedings of the Zoological Society of London 1873:626-644.

Chloephaga sp. is included among the Anseres that were examined. It is not clear whether this was a South American form or *Chloephaga cangica*. All Anseres have the same classification of thigh muscles under Garrod's scheme.

177. Giebel, C.G.A. 1872. Thesarus Ornithologiae. Vol. i. F.A. Brockhaus, Leipzig. 868 pp.

Giebel refers to emperor geese as *Anser canagicus*.

178. Gill, G. 1978. A Gallery of Waterfowl and Upland Birds. Petersen Publishing Company, Los Angeles. 121 pp.

Gill provides a brief narrative on the natural history of emperor geese.

179. Gill, R.E. 1981. Fall survey of emperor geese from Hooper Bay to Umiak Island and along the Alaska Peninsula from Umiak Island to Wide Bay, October 3-8, 1981. Unpublished report. U.S. Fish and Wildlife Service, Anchorage, Alaska. 7 pp.

See No. 181.

180. Gill, R.E. 1989. Winter mortality in emperor geese. Unpublished report. U.S. Fish and Wildlife Service, Anchorage, Alaska. 2 pp.

Reports on observation by Paul M. Gundersen of Nelson Lagoon on timing and weather conditions associated with birds freezing into the ice.

181. Gill, R.E. and B. Conant. 1979. Aerial waterbird survey - Bethel to Bechevin Bay, Alaska (October 1-4, 1979). Unpublished report. U.S. Fish and Wildlife Service, Anchorage, Alaska. 12 pp.

This is the first of what developed into annual systematic surveys of emperor geese and other water birds during the fall migration from the coast of the Yukon-Kuskokwim Delta, along the north side of the Alaska Peninsula to Umiak Pass, and along the south side of the Alaska Peninsula. Subsequent related surveys include: Nos. 179, 183, 269, 270, and 271.

182. Gill, R.E. and K.L. Kincheloe. 1993. Are bald eagles important predators of emperor geese? *Journal of Raptor Research* 27:34-36.

They describe a successful attack on a juvenile emperor goose and an unsuccessful one by six eagles on an adult. They make the point that eagle predation on emperor geese may be more common than thought and is likely more successful with young and/or weak birds.

183. Gill, R.E. and R.J. King. 1980. Aerial water bird survey - Bethel to Bechevin Bay, Alaska (October 4-8, 1980). Unpublished report. U.S. Fish and Wildlife Service, Anchorage, Alaska. 11 pp.

See No. 181.

184. Gill, R.E., P.D. Jorgensen, A.R. DeGange, and P. Kust. 1977. Avifaunal assessment of Nelson Lagoon, Port Moller and Herendeen Bay, Alaska. Unpublished report. U.S. Fish and Wildlife Service, Anchorage, Alaska. 21 pp.

See No. 186.

185. Gill, R.E., M.R. Petersen, C.M. Handel, J. Nelson, A.R. DeGange, A. Fukuyama, and G.A. Sanger. 1978. Avifaunal assessment of Nelson Lagoon, Port Moller and Herendeen Bay, Alaska - 1977. Unpublished report. U.S. Fish and Wildlife Service, Anchorage, Alaska. 25 pp.

See No. 186.

186. Gill, R.E., M.R. Petersen, and P.D. Jorgensen. 1981. Birds of the northcentral Alaska Peninsula, 1976-1980. *Arctic* 34:286-306.

They provide details on fall arrival and spring departure times, as well as winter distribution across habitat types. Related reports include: Nos. 184 and 185.

187. Gillham, C.E. 1941. Report of Alaska waterfowl investigations, summer 1941, lower Yukon River, Chevak, Hooper Bay. Unpublished report. U.S. Fish and Wildlife Service, Juneau, Alaska. 148 pp.

Gillham provides a complete inventory of animals and plants encountered in the Chevak and Hooper Bay region during the summer of 1941.

188. Gillham, C.E. 1942. Report of waterfowl, Hooper Bay, Alaska 1941: supplement to the report of 1941. Unpublished report. U.S. Fish and Wildlife Service, Juneau, Alaska. 16 pp.

Gillham adds spring and early summer observations to his 1941 inventory of waterfowl in the Hooper Bay region.

189. Gladwin, D.N., K.M. Mancini, and R. Vilella. 1988. Effects of aircraft noise and sonic booms on domestic animals and wildlife: Bibliographic abstracts U.S. Fish and Wildlife Service. (Publication NERC 88/32). National Ecology Research Center, Fort Collins. 78 pp. (Concurrent Series: U.S. Air Force Engineering and Services Center Technical Report 88-14.)

This presents a series of abstracts summarizing the potential effects of aircraft noise on wildlife. Work at Izembek Lagoon on emperor geese is included.

190. Godfrey, W.E. 1986. The Birds of Canada. National Museums of Canada, Ottawa. 595 pp.

Godfrey summarizes information on Canadian distribution of emperor geese.

191. Golder, F.A. 1922. Bering's Voyages - Volume 1. American Geographical Society, New York. 371 pp.

This volume contains annotated translations of the journals of Bering's first and second voyages, the journal of Gvozdev's voyage in 1732 and the journals, diaries, and letters of the senior officers involved in all of them. The annotations are by Golder who also cites comments by Pallas and Stejneger. Bering's first voyage left the Russian side of the Bering Strait (East Cape) and headed north east. They did not reach mainland Alaska and returned to East Cape via the Diomedes and, possibly, St. Lawrence Islands. There is reference to "game for the table" but no specifics. Gvozdev traveled east from East Cape to islands and a mainland, allegedly occupied by the Chukchi. They note shooting deer but make no mention of ducks or geese. Bering's second voyage took him south of the Aleutians to Kayak (St. Elias) Island. The return trip was more coastal and through the Aleutians. In the log, there are many notations of "shore-ducks of various sizes" (as well as descriptions or references to many other birds). There is also a reference to many "white-backed ducks" encountered when they ran aground on Adak Island. There are no mentions in these journals to geese or anything resembling emperor geese. More details on ducks (e.g., red-billed ducks) are found in the report of Waxel and the journal and report of Chirikov. There are, however, no specific references to geese, emperor-like or not.

192. Golder, F.A. 1925. Bering's Voyages - Volume 2. American Geographical Society, New York. 290 pp.

This volume includes Stejneger's translation of Steller's journal of the sea voyage from Kamchatka to America and return on the second expedition 1741-1742. It includes notations made both by Stejneger and Pallas in addition to Golder's own. This complements the journals in Golder's Volume 1, adding natural history to the navigational and geographic information. There are descriptions of numerous birds including several ducks (e.g., harlequin duck). There are also descriptions and comments on various alcids and cormorants - including the now extinct form found on Bering Island. It is worth speculating on the lack of any mention of geese in Steller's journal or the ships journal (Golder, Volume 1). It is possible that some of the "shore-ducks" were really geese. The term "duck" was historically used in a taxonomic sense to include both geese and ducks (Pennant 1781). Sewastianoff (1802) named the

emperor goose "*Anas canagica*" and referred to it as "canard" (duck) in his description. It is also possible that the timing of the voyage minimized potential encounters with geese and especially emperor geese. Bering's ship (the St. Peter) did not reach land (St. Elias Island) until mid-July. It departed soon after, touching shore at several spots along the Gulf of Alaska, the Kodiak Island region and the Shumagins. They continued west and cleared the Andreanofs by late September. The timing and general track of the other ship (St. Paul under Chirikov) was similar.

193. Grass, A. 1968. An emperor goose record for British Columbia. *Blue Jay* 26:144.
This is one of several extralimital observations of emperor geese along the Pacific Coast.
194. Gray, G.R. 1840. *A List of the Genera of Birds*. R. and J. Taylor, London. 80 pp.
This is Gray's revision of the genera of birds. For the Anserinae, he accepts: *Chloephaga* Eyton over *Anas*, *Bernicla*, *Chenalopex* for type *C. magellanica*; *Bernicla* Briss. over *Anas*, *Branta*, *Anser* for type *B. branta*; *Anser* Briss. over *Anas* for type *A. ferus*; *Chen* Boie over *Anas*, *Anser* for type *C. hyperborea*.
195. Gray, G.R. 1841. *A List of the Genera of Birds*. 2nd ed. R. and J. Taylor, London. 115 pp.
There are no changes in Anserinae from Gray (1840).
196. Gray, G.R. 1842. Appendix to "A List of the Genera of Birds". R. and J. Taylor, London. 16 pp.
There are no changes in Anserinae from Gray (1841).
197. Gray, G.R. 1849. *The Genera of Birds*. Vol. iii. Longmans, London.
This is Gray's revision of the genera of birds. He sinks the genus *Chloephaga* without explanation. He retains for genera in the Anserinae: *Cereopsis*, *Nettupus*, *Anser*, and *Bernicla*. Species included in *Bernicla* are: *anartica*, *anticola*, *branta*, *canadensis*, *canagicus*, *grandis*, *hutchinsii*, *indica*, *inornata*, *jabuta*, *leucopareia*, *leucopsis*, *magellanica*, *melanoptera*, *ruficollis*, *sandwichensis*.
198. Gray, G.R. 1871. *Hand-list of the genera and species of birds*. Vol. iii. Longmans, London. 350 pp.
Gray refers to emperor geese as *Chloephaga canagica*. More specifically, the listing for specimen 10592 on page 77 is *Chloephaga* (Eyton 1838) *canagica*, Stewart, N. Act. St. Petersburg. XIII, t. 10; Schl. De Dier fig p. 278; Elliot BNA pl 45. *pictus*, Pall. Zoogr t. 67. As mentioned under Bonaparte (1856), "Stewart" is a further mistake from what should have likely been Sewast. in the Bonaparte reference. The citation after Stewart is the plate from the Sewastianoff reference. There is no mention of a Stewart in that text or on the plate.

199. Grinnell, J. 1900a. Notes on some birds of Cape Nome, Alaska. *Condor* 2:112-115.
Grinnell records seeing numerous groups of *Philacte canagica* in the region of Cape Nome.
200. Grinnell, J. 1900b. Pacific Coast Avifauna Number 1: Birds of the Kotzebue Sound region, Alaska. Cooper Ornithological Club, Santa Clara. 81 pp.
Grinnell reports that emperor geese nest on the south side of Kotzebue Sound and coastally southwest of Cape Espenberg.
201. Grinnell, J. 1931. Further occurrences of emperor geese in California. *Condor* 33:38.
This is one of several extralimital observations of emperor geese along the Pacific Coast.
202. Grinnell, J. and A.W. Miller. 1944. Distributional list of the birds of California. *Pacific Coast Avifauna* 27:1-608.
They provide a detailed summary of extralimital winter records of emperor geese in California. They note that most are in association with fresh water and other geese.
203. Grinnell, J., H.C. Bryant, and T.I. Storer. 1918. *Game Birds of California*. University of California Press, Sacramento. 642 pp.
They provide a thorough description of distribution and biology of the emperor goose. They note that only a few individuals winter in California each year and that, curiously for a marine species, most of the records are inland.
204. Handel, C.M. and R.E. Gill. 1986. Arctic geese during brood rearing on the central Yukon-Kuskokwim Delta: analysis of patterns of distribution. Unpublished report. U.S. Fish and Wildlife Service, Anchorage, Alaska. 42 pp.
They present a thorough description of brood distribution of several species of geese including emperor geese along a portion of the coastal Yukon-Kuskokwim Delta.
205. Hanna, G.D. 1919. Birds. Pages 105-107 in W.T. Bower, editor. *Alaska Fisheries and Fur Industries in 1918*. (Bureau of Fisheries Document 872). Government Printing Office, Washington, D.C.
Hanna reports that emperor geese are present on several of the islands where seals are taken.
206. Hanna, G.D. 1922. Bird drives in the Yukon Delta. *Condor* 24:100-101.
Hanna describes the use of skin boats to herd mixed flocks of flightless geese (including emperor geese) into pockets where they are killed with sticks.
207. Hansen, H.A. 1961. Loss of waterfowl production to flood tides. *Journal of Wildlife Management* 25:242-248.
Hansen provides details on the frequency of flood tides, their impact on nesting geese (including emperor geese), and the reaction of individual birds to the flood tides.

208. Hanson, H.C. 1959. The incubation patch of wild geese: its recognition and significance. *Arctic* 12:139-150.
- Hanson presents a comparative study of incubation patches in several species of geese including *Anser canagica*.
209. Harris, S.W. 1966. Summer birds of the lower Kashunuk River, Yukon-Kuskokwim Delta, Alaska. *Murrelet* 47:57-65.
- Harris provides detailed censuses of birds, including emperor geese, from trips on the Kashunuk River.
210. Hartert, E. 1920a. Die Vogel der palaarhtischen Fauna. Vol. 2. R. Friedlander und Sohn, Berlin. 1764 pp.
- Hartert refers to emperor geese as *Anser canagicus*. He provides detailed descriptions of adult plumage and includes morphometric data from specimens.
211. Hartert, E. 1920b. The birds of the Commander Islands. *Novitates Zoologicae* 27:128-158.
- Hartert reviews all works on the Commander Islands through 1920 as well as his own work based on the second collection made by Sokolnikoff in the 1900's for the Petrograd Museum. The first collection was evaluated by Bianchi (1909). The latter collection, of more than 860 skins, was sold to Lord Rothschilds when it could not be sent to the Museum. Among the geese are: *Anser fabilis serrirostris*, *Anser albifrons*, *Anser caerulescens*, *Branta canadensis hutchinsii*, *Branta canadensis minima*, *Branta bernicla nigricans*, and *Anser canagicas*. The emperor goose specimens (all from Bering Island) included adults collected in October, November, January, February, and April. Young of the year were collected in December.
212. Harting, J.E. 1871. Catalogue of an arctic collection of birds presented by Mr. J. Barrow, FRS, to the University Museum of Oxford: with notes on the species. *Proceedings of the Zoological Society of London* 39:110-123.
- Harting provides summaries of the collection notes from Barrow. Localities and measurements are included for emperor goose specimens.
213. Hatler, D.F., R.W. Campbell, and A. Dorst. 1978. Birds of Pacific Rim National Park. (Occasional Paper 20). British Columbia Provincial Museum, Victoria. 194 pp.
- They note that although emperor geese should be seen rarely at Pacific Rim National Park, none had been as of 1978.
214. Headley, P.C. 1966. Ecology of the emperor goose. Unpublished Quarterly Progress Report. Alaska Cooperative Wildlife Research Unit, University of Alaska, Fairbanks, Alaska. 25 pp.
- See No. 215.

215. Headley, P.C. 1967. Ecology of the emperor goose. Unpublished report. Alaska Cooperative Wildlife Research Unit, University of Alaska, College, Alaska. 106 pp.

Headley provides data on arrival and nesting dates, reproductive success, and habitat use by emperor geese in the Hooper Bay region during 1965 and 1966. He also summarizes wintering ground feeding and habitat use observations at Izembek Lagoon. Related reports include: No. 214.

216. Heine, F. and A. Reichenow. 1890. Nomenclator Musei Heineani Ornithologica. R. Friedlander und Sohn, Berlin. 373 pp.

They refer to emperor geese as *Chloephaga canagica* (Sewart.), based on one male specimen from Unalashka. "Sewart." is likely a perpetuation of the misspelling in Bonaparte (1856).

217. Hellmayr, C.E. and B. Conover. 1948. Catalogue of the Birds of America. Vol. XIII. Field Museum, Chicago.

They provide detailed synonymies and distributional information on emperor geese.

218. Henshaw, H.W. 1903. Occurrence of emperor goose in Hawaii. Auk 20:164-167.

Henshaw reports on four emperor geese seen on 12/12/1903 in Hawaii.

219. Hersey, F.S. 1916. A list of the birds observed in Alaska and northeastern Siberia during the summer of 1914. Smithsonian Miscellaneous Collections Volume 66. Smithsonian Institution, Washington, D.C.

Hersey provides a list of the birds, including emperor geese, observed in Alaska and northeastern Siberia.

220. Hersey, F.S. 1917. The present abundance of birds in the vicinity of Ft. St. Michael, Alaska. Auk 34:147-159.

Hersey reports on observing several species of geese and although no emperor geese were identified, he assumes they must be present.

221. Herter, D.R. 1988. A review of the historical literature on goose nesting distribution in coastal western and northern Alaska. Unpublished report. U.S. Fish and Wildlife Service, Anchorage, Alaska. 62 pp.

Herter provides detailed historical distribution of all species of geese in Alaska. The commentary on early declines in emperor geese are particularly illuminating and well-documented.

222. Hicks, B.A. 1985. Brood mortality of the emperor goose at Kokechik Bay, Alaska. Unpublished report. Wildlife Cooperative Research Unit, Ohio State University, Columbus, Ohio. 8 pp.

Hicks provides estimates of gosling mortality and suggests that mortality is mainly due to gull and fox predation.

223. Hinkley, F.C. 1900. Notes on the animal and vegetable life of the region of the Sushitna and Kuskokwim Rivers. Pages 76-85 in J.E. Spurr, editor. *A Reconnaissance in Southwestern Alaska in 1898*. U.S. Geological Survey, Washington.

Hinkley provides faunistic and floristic accounts for the Sushitna and Kuskokwim Rivers.

224. Hoffman, R.R. 1954. Waterfowl production study, lower Kashunuk River, Yukon Delta 1954 (Project W-3-R-9 unpublished report). *U.S. Federal Aid in Wildlife Restoration* 9(1):29-39.

This is one of many Federal Aid in Wildlife Restoration Reports that provide some information on emperor geese.

225. Hogan, M.E. and M.B. Rearden. 1987. Emperor goose survey of St. Lawrence Island, Alaska, 9 June, 1987. Unpublished report. U.S. Fish and Wildlife Service, Anchorage, Alaska. 5 pp.

They conclude that the density of emperor goose nesting is low. This was one of several periodic surveys of St. Lawrence Island.

226. Hohn, E.O. 1965. Ornithological observations in the Askinuk Mountains and Scammon Bay area, Yukon Delta, Alaska. *Arctic* 18:260-261.

Two observers traversed Kokechik Bay, Scammon Bay, and the Askinuk Mountains. Eighty-seven bird species were recorded; no specific data on the biology of emperor geese were provided.

227. Holmes, R.T. and C.P. Black. 1973. Ecological distribution of birds in the Kolomak River-Askinuk Mountain region, Yukon-Kuskokwim Delta, Alaska. *Condor* 75:150-163.

They provide brief accounts of 88 species of birds including emperor geese that use or pass through the area.

228. Hooper, C.L. 1884. Report of the Cruise of the Revenue Steamer Thomas Crown in the Arctic in 1881. Government Publishing Office, Washington. 147 pp.

Hooper noticed large flocks of emperor geese near St. Lawrence Island.

229. Hooper, D.C. 1954. Quarterly refuge narrative report of the Aleutian Island National Wildlife Refuge for the period Sept.-Dec. 1953. Unpublished report. U.S. Fish and Wildlife Service, Cold Bay, Alaska. 10 pp.

Hooper provides fall survey data on emperor geese from Izembek Bay.

230. Hopkinson, E. 1935. Duck breeding records: summary of records to date (August 1935). *Avicultural Magazine* 13:280-286.

Hopkinson includes records of captive breeding emperor geese.

231. Hout, J.L. 1964. Clarence Rhode National Wildlife Refuge. Unpublished report. U.S. Fish and Wildlife Service, Bethel, Alaska. 38 pp.

In this annual refuge report, Hout summarizes migration data, phenology, and productivity data for 1951, 1954, 1961, 1963, and 1964. Also, he provides a narration on collecting eggs for aviculturists and raising the goslings. He reports on the results of the spring survey from Port Moller to Quinagak in which 139,000 emperor geese were counted.

232. Hoyt, D.F., R.G. Board, H. Rahn, and C.V. Paganelli. 1979. The eggs of the anatidae: Conductance, pore structure and metabolism. *Physiological Zoology* 52:438-450.

They provide data and estimates on conductance, pore size, and metabolism for *Anser canagica* eggs.

233. Hudson, G.E. 1957. Birds observed in the Kotzebue Sound area of Alaska during the summer of 1956. *Murrelet* 38:26-29.

Hudson reports that nesting emperor geese were observed in Kotzebue sound during the summer of 1956. He notes that one adult and two downy young were collected.

234. Humphreys, P.N. and J.V. Beer. 1971. Atherosclerosis in a wildfowl collection. *Veterinary Record* 88:417-421.

They note evidence of atherosclerosis in emperor geese.

235. Hurley, J.H. 1931. Birds observed in the Bristol Bay region, Alaska. *Murrelet* 12:7-11.

There are subsequent papers that, together, provide the entire list on observations made at Bristol Bay. Emperor geese are not recorded. The others are: *Murrelet* 12:34-42 (1931); *Murrelet* 12:71-75 (1931); *Murrelet* 13:16-21 (1932); *Murrelet* 13:38-40 (1932).

236. Irving, L. 1955. Nocturnal decline in the temperature of birds in cold weather. *Condor* 57:362-365.

The temperature of emperor geese declines 2.2 degrees centigrade at night.

237. Irving, L. 1960. Birds of Anaktuvuk Pass, Kobuk and Old Crow. Bulletin 217. U.S. National Museum, Washington, D.C. 409 pp.

Philacte canagica were not recorded in Anaktuvuk or Old Crow. One emaciated emperor goose was found at Kobuk.

238. Isleib, M.E.P. and B. Kessel. 1973. Birds of the North Gulf Coast - Prince William Sound Region, Alaska. (Biological Papers 14). University of Alaska, Fairbanks.

General descriptions of habitats, narrative of the timing of migration for various taxa, and an annotated list of species are given.

239. Jackson, M.T. 1981. Vegetation patterns of an emperor goose nesting area near Kokechik Bay, western Alaska. National Geographic Society Research Report 13:287-296.

This is the first quantitative plant ecology study of the coastal tundra in the Yukon-Kuskokwim Delta. It was conducted in conjunction with a study on the nesting ecology of emperor geese (No. 145).

240. Janik, C.A. and R.L. Jarvis. 1984. An evaluation of productivity and mortality factors influencing goose populations: a status report of the 1984 waterfowl monitoring effort at Kigigak Island, Alaska. Unpublished report. Department of Fisheries and Wildlife, Oregon State University, Corvallis, Oregon. 72 pp.

See No. 77.

241. Jaques, F.L. 1930. Waterbirds observed on the Arctic Ocean and the Bering Sea, in 1928. Auk 43:353-366.

Jaques reports seeing small numbers of emperor geese (*Philacte canagica*) on St. Lawrence Island and at Teller in 1928. Curiously, he reports on several birds from the Shumagins with short necks and white on the back of the head and concludes they are *Phalacrocorax auritus cincinatus*, the double-crested cormorant.

242. Jarvis, R.L. and J.C. Bartonek, editors. 1979. Management and Biology of Pacific Flyway Geese. A Symposium. Oregon State University Book Stores, Corvallis. 346 pp.

Several papers in this symposium proceedings refer to emperor geese.

243. Jenness, A. 1970. Dwellers of the Tundra, Life in an Alaskan Eskimo Village. Crowell-Collier Press, New York. 117 pp.

The narrative provides details on the harvest and use of geese by members of a coastal Eskimo community. There are several pictures of a fall round-up and harvest.

244. Jewett, S. 1926. Notes on some unusual Oregon birds. Condor 28:41.

This is one of several reports of extralimital observations of emperor geese along the Pacific Coast.

245. Johansen, H. 1961. Revised list of the birds of the Commander Islands. Auk 78:44-56.

Johansen refers to emperor geese as *Philacte canagica*. He claims they do not breed on the Commander Islands but occur regularly as small flocks along the coast from October to April.

246. Johnsgard, P.A. 1960. Hybridization in the Anatidae and its taxonomic implications. Condor 62:23-25.

Johnsgard reports that captive emperor geese hybridize with Ross', snow, white-fronted, and brant geese.

247. Johnsgard, P.A. 1965. Handbook of Waterfowl Behavior. Cornell University Press, Ithaca. 378 pp.

Johnsgard provides a brief description of emperor goose courtship and mating behavior.

248. Johnson, S.R. 1975. Spring movements and abundance of birds at Northwest Cape, St. Lawrence Island, Bering Sea, Alaska. *Syesis* 9:31-44.

Johnson reports on movements and abundance of over 65 species at Northeast Cape, St. Lawrence Island in the late spring of 1973. Emperor geese were seen both in the field and in the possession of native hunters.

249. Johnston, D.W. 1988. A morphological atlas of the avian uropygial gland. *Bulletin of the British Museum (Natural History) Zoology Series* 54:199-259.

The Anseriformes all have a large bilobed gland. *Anser canagica* was one of several species examined.

250. Jones, R.D. 1963. Quarterly refuge narrative report of the Aleutian Islands National Wildlife Refuge. Unpublished report. U.S. Fish and Wildlife Service, Cold Bay, Alaska. 15 pp.

Information from this quarterly report is included in the annual report for the refuge. See No. 252.

251. Jones, R.D. 1964. Waterfowl migration study spring 1964. Unpublished report. U.S. Fish and Wildlife Service, Cold Bay, Alaska. 14 pp.

Jones includes 13 pages of data on emperor geese and other waterbirds at lagoons from Shemya to Ugashik Bay. See No. 261.

252. Jones, R.D. 1965. Aleutian Islands National Wildlife Refuge and Izembek National Wildlife Refuge. Unpublished report. U.S. Fish and Wildlife Service, Cold Bay, Alaska. 74 pp.

In this and similar reports, information on emperor geese generally includes the percent young in the population, family size, and migration dates. There are subsequent reports by the same author from 1967 (68 pages), 1968 (76 pages), 1969 (39 pages), 1970 (63 pages), 1971 (30 pages). Additional reports include: Nos. 22, 253.

253. Jones, R.D. and V.D. Berns. 1963. Aleutian Islands National Wildlife Refuge and Izembek National Wildlife Refuge. Unpublished report. U.S. Fish and Wildlife Service, Cold Bay, Alaska. 19 pp.

See No. 252.

254. Kalchreuter, H. 1991. On the impact of hunting on goose populations - A literature search. *Ardea* 79:211-216.
Kalchreuter summarizes references that specifically address the impact of hunting on goose populations.
255. Kear, J. 1985. *Wildfowl*. Kroom Helm, Ltd., London. 153 pp.
Kear provides a brief narrative on the natural history of emperor geese.
256. Kennard, FH. 1918. Ferruginous stains on waterfowl. *Auk* 35:130.
Kennard records a specimen of emperor goose from Bristol Bay.
257. Kenyon, K. 1961. Birds of Amchitka Island, Alaska. *Auk* 78:305-326.
Kenyon provides a detailed summary of wintering emperor geese on Amchitka Island.
258. Kessel, B. 1989. *Birds of the Seward Peninsula, Alaska*. University of Alaska Press, Fairbanks. 330 pp.
Kessel provides a summary of nesting ecology and migration information for emperor geese on the Seward Peninsula and elsewhere in Alaska.
259. Kessel, B. and D.D. Gibson. 1978. Status and distribution of Alaska birds. *Studies in Avian Biology* 1:1-100.
This monograph reports no additional information from that presented in Gabrielson and Lincoln (1956).
260. Kessel, B., H.K. Springer, and C.M. White. 1964. June birds of the Kolomak River, Yukon-Kuskokwim Delta, Alaska. *Murrelet* 45:37-47.
They provide details on abundance of breeding emperor geese on the Kolomak River.
261. King, J.G. 1963. Emperor goose counts on the Alaska Peninsula March 26 to April 11, 1963. Unpublished memorandum. U.S. Fish and Wildlife Service, Bethel, Alaska. 2 pp.
This is the first of what was to become annual surveys of emperor geese and other waterbirds staging along the Alaska Peninsula during spring migration. Subsequent surveys occurred in 1964 (Jones 1964) and from 1981 to present (Dau 1981-1984; Dau and King 1985-1986; King and Dau 1987-present). See Nos. 120, 123, 251, and 272.
262. King, J.G. 1966. *Cape Newenham Alaska: A wildlife metropolis*. Unpublished report. U.S. Fish and Wildlife Service, Juneau, Alaska. 35 pp.
Here King presents general information on the use of Nanvak and Chagvan bays and adjacent areas by staging emperor geese.

263. King, J.G. 1969. Cape Newenham National Wildlife Refuge Annual Report. Unpublished report. Bureau of Sport Fisheries and Wildlife, Bethel, Alaska. 13 pp.

King provides a nice historical overview, especially with respect to Cook's early visits. He documents the presence of emperor geese from fall through spring.

264. King, J.G. and B. Conant. 1983. Alaskan-Yukon waterfowl breeding pair survey, May 16 to June 11, 1983. Unpublished Pacific Flyway Report. U.S. Fish and Wildlife Service, Juneau, Alaska. 24 pp.

This is one of a series of annual surveys and reports that began in 1956. They have involved King, Conant, and a variety of coauthors.

265. King, J.G. and C.P. Dau. 1981. Waterfowl and their habitats in the eastern Bering Sea. Pages 739-753 *in* D.W. Hood and J.A. Calder, editors. The Eastern Bering Sea Shelf: Oceanography and Resources. Volume 2. University of Washington Press, Seattle.

Species accounts and population numbers in North America and Bering Sea habitats are given for 30 species or subspecies of waterfowl. Various Bering Sea habitats are also described.

266. King, J.G. and D.V. Derksen. 1986. Alaska goose populations: past, present and future. Transactions of the North American Wildlife and Natural Resources Conference 51:464-479.

They provide details on the decline of emperor geese and note that much of it is related to harvest on nesting grounds and during molt. They discuss various management options.

267. King, J.G. and C.J. Lensink. 1971. An evaluation of Alaska habitat for migratory birds. Unpublished report. Bureau of Sport Fisheries and Wildlife, Washington, D.C. 26 pp.

They describe habitats in different regions of Alaska. Aerial survey, banding, and recovery data are given in a series of tables.

268. King, J.G. and M.A. Monson. 1968. Report of field inspection trip of bird resources of Bristol Bay, April 22-23, 1968. Unpublished report. Bureau of Sport Fisheries and Wildlife, Juneau, Alaska. 5 pp.

They report that over 250,000 emperor geese were present in Bristol Bay on April 22-23, 1968.

269. King, R.J. 1986. 1986 fall emperor goose study. Unpublished memorandum. U.S. Fish and Wildlife Service, Fairbanks, Alaska. 5 pp.

See No. 181.

270. King, R.J. and K.S. Bollinger. 1982. Fall survey of emperor geese and other associated water birds of coastal southwest Alaska, 6-10 October 1982. Unpublished report. U.S. Fish and Wildlife Service, Fairbanks, Alaska. 9 pp.
See No. 181.
271. King, R.J. and A.W. Brackney. 1990. Fall population survey of emperor geese (*Chen canagica*) on coastal southwest Alaska, October 17-19, 1990. Unpublished report. U.S. Fish and Wildlife Service, Fairbanks, Alaska. 5 pp.
See No. 181.
272. King, R.J. and C.P. Dau. 1987. Spring survey of emperor geese in southwestern Alaska, 30 April - 4 May, 1987. Unpublished report. U.S. Fish and Wildlife Service, Fairbanks, Alaska. 13 pp.
See No. 262. There are subsequent reports with the same title by the same authors from 1989 (18 pages, including 1988 data), 1990 (14 pages), and 1991 (13 pages).
273. King, R.J. and L. Denlinger. 1989. Fall population survey of emperor geese (*Chen canagica*) in coastal southwest Alaska. Unpublished report. U.S. Fish and Wildlife Service, Fairbanks, Alaska. 16 pp.
See No. 181.
274. King, R.J. and D.V. Derksen. 1983. Fall survey of emperor geese of southwest coastal Alaska, 10-16 October, 1983. Unpublished report. U.S. Fish and Wildlife Service, Fairbanks, Alaska. 9 pp.
See No. 181.
275. King, R.J. and D.V. Derksen. 1984. Fall survey of emperor geese of southwest coastal Alaska, 3-8 October, 1984. Unpublished report. U.S. Fish and Wildlife Service, Fairbanks, Alaska. 11 pp.
See No. 181.
276. King, R.J. and D.V. Derksen. 1986. Waterfowl survey of St. Lawrence Island, Alaska, 13 July, 1984. Unpublished report. U.S. Fish and Wildlife Service, Anchorage, Alaska. 6 pp.
They provide data showing that the population of molt-migrating emperor geese has declined substantially since the 1960's.
277. King, R.J. and W.D. Eldridge. 1985. Fall survey of emperor geese (*Chen canagica*) - Southwest coastal Alaska, 10-14 October, 1984. Unpublished report. U.S. Fish and Wildlife Service, Fairbanks, Alaska. 9 pp.
See No. 181.

278. King, R.J. and W.D. Eldridge. 1987. Fall population survey of emperor geese (*Chen canagica*) southwest coastal Alaska, 2-5 October 1987. Unpublished report. U.S. Fish and Wildlife Service, Fairbanks, Alaska. 9 pp.

See No. 181.

279. Kingsley, J.S. 1885. The Standard Natural History. S.E. Cassino and Company, Boston. 588 pp.

Kingsley refers to emperor geese as *Philacte canagica* and summarizes the basic ecological and natural history information available for the species.

280. Kistchinski, A.A. 1971. Biological notes on the emperor goose in north-east Siberia. Wildfowl 22:29-34.

Kistchinski provides a wide array of biological information on emperor geese with special attention to those nesting in Siberia.

281. Kistchinski, A.A. 1976. Waterfowl populations on the Chukotski Peninsula. Moskovskoe Obshchestvo Ispytatelei Pripody Biulleten: Otdel Biologicheskii 81:40-50.

Kistchinski summarizes data on all aspects of emperor geese nesting on the Chukotski peninsula.

282. Kistchinski, A.A. 1979. Migrations of emperor goose - *Philacte canagica* (Sew.). Pages 178-179 in A.A. Kistchinski, editor. Migrations of Birds of Eastern Europe and Northern Asia: ciconiformes-anseriformes. Publishing House "Nauka", Moscow.

This article provides information on the migration of emperor geese. The book is in Russian with translated titles.

283. von Kittlitz, H.F. 1858a. Denkwürdigkeiten einer Reise nach dem russischen Amerika, nach Micronesien und durch Kamtschatka. Vol. I-II.

These diaries cover exploration of the entire Beringia region, especially the Siberian side. Palmen's note that there is a reference to emperor geese in Kamtschatka on page 384 volume ii is correct and they are referred to as *Anser pictus*. However, Stejneger (1888) asserts that von Kittlitz incorrectly identified the specimen and that it is really *Branta hutchinsii*.

284. von Kittlitz, H.F. 1858b. Nachtragliche Bemerkungen zu den im Verlage von Justus Perthes in Gotha so eben erschienenen: "Denkwürdigkeiten einer Reise nach dem russischen Amerika, nach Micronesien und durch Kamtschatka". Journal für Ornithologie vi:387-390.

von Kittlitz gives some highlights from his two volume description of his exploration of Beringia. See von Kittlitz (1858a).

285. Klein, D.R. 1966. Waterfowl in the economy of the Eskimos on the Yukon-Kuskokwim Delta, Alaska. *Arctic* 19:319-336.
- Klein provides a detailed accounting of seasonal waterfowl harvest by various native communities of the Yukon-Kuskokwim Delta.
286. Kortwright, F.H. 1942. *The Ducks, Geese and Swans of North America*. American Wildlife Institute, Washington. 476 pp.
- Kortwright provides a readable summary of the basic biology and ecology of the emperor goose.
287. Krasheninnikov, S.P. 1755. *Opisani Zemli Kamchatki*. Volumes I and II. Imperial Academy of Science, St. Petersburg. 438 and 319 pp.
- An 1818 translation of this work is referred to by Alpheraky, who states that there is a reference to a white-headed goose from Kamchatka that was really an emperor. In the 1755 original version, there is a list of seven species of geese including the white-necked goose which could well be an emperor goose. Krasheninnikov makes a passing attribution to Steller, who explored the region at the same time and whose treatise on birds was lost (Stejneger 1936). If the "white-necked" goose is indeed the emperor, then the first non-native, written reference to the species occurred 47 years before its description.
288. Krechmar, A.V. and A.Y. Kondratiev. 1982. Ecology of nesting of *Philacte canagica* in the north of Chukot Peninsula. *Zoologicheskii Zhurnal* 61:254-264.
- They provide details of incubation activity, nest temperatures, and hatching success of emperor geese.
289. Kumari, E., editor. 1972. *Geese in the USSR*. (Proceedings of a conference in Estonia, May 1970). Akademie Nauk Estonskoi SSR, Tallinn. 180 pp.
- Contains descriptions of basic reproductive biology and habitat use of emperor geese on the Chukotka Peninsula. Observers found nesting densities of three pairs per 40 km².
290. Kuroda, N. 1968. Distribution of the Anserine birds found in the Japanese Islands. *Tori* 18:392-405.
- Kuroda provides details on the record of an emperor goose near Sendai City, Japan, during the winter of 1964-1965.
291. Laing, K.K. 1986. Feeding ecology of emperor geese nesting at Kokechik Bay, Yukon-Kuskokwim Delta, Alaska. Unpublished report. U.S. Fish and Wildlife Service, Anchorage, Alaska. 14 pp.
- See No. 293.

292. Laing, K.K. 1987. Feeding ecology of emperor geese nesting at Kokechik Bay, Yukon-Kuskokwim Delta, Alaska. Unpublished report. U.S. Fish and Wildlife Service, Anchorage, Alaska. 14 pp.

See No. 293.

293. Laing, K.K. 1991. Habitat and food selection, behavior and body composition of nesting emperor geese. MSc Thesis, University of California, Davis. 84 pp.

This thesis presents information on habitat, food selection, behavior, and body composition of emperor geese nesting on the Yukon-Kuskokwim Delta. Progress reports include Nos. 291 and 292. A publication from the thesis includes No. 294.

294. Laing, K.K. and D.G. Raveling. 1993. Habitat and food selection by emperor goose goslings. *Condor* 95:879-888.

See No. 293.

295. Latham, J. 1790. *Index Ornithologicus, Systema Ornithologie*. Vol. II. Leigh et Southeby, London. 920 pp.

This is the Latin precursor of his series, *A General History of Birds*. It includes all the South American geese. He describes a Painted Goose (later named *Anas picta*) which is clearly the kelp goose, *Chloephaga picta*. He states it is from Statenlandia (the old name of the main island off the coast of Tierra del Fuego). He lists several geese from the area appropriate for emperor geese (including citations to specimens from Siberia), but nothing sounding like an emperor. He does list an *Anas beringii* that sounds like a Steller's eider and a curious *Anser grandis* that weighs in at 25 or 30 Russian pounds and has a large, feathered throat pouch.

296. Latham, J. 1824. *A General History of Birds*. Vol. X. Jacob and Johnson, London, London. 456 pp.

The multivolume series is an English language update of the original (1790). This volume masterfully covers the accumulated knowledge on migratory waterfowl through the late 1700's. Pallas (1831) associated the name *Anser pictus* with his painting by reference to Latham's description of the Painted Goose. Pallas' bird is clearly an emperor goose, and Latham's descriptions in this and the original (1790) Latin edition are not. See further comments on this point under Cook (1842), von Brandt (1836a,b), Latham (1790), and Lysaght (1959).

297. Lauridsen, P. 1889. *Vitus Bering: the Discoverer of the Bering Strait*. S.C. Griggs and Company, Chicago. 223 pp.

This edition is a translation of Bering's journals from the Danish by J.E. Olson. It is supplemented by translations from the journals and diaries of his officers. See Golder (1922).

298. Lensink, C.J. 1985. Restoration of brant and geese nesting on the Yukon Delta. Unpublished report. U.S. Fish and Wildlife Service, Anchorage, Alaska. 9 pp.
Presented at the annual meeting, Alaska Chapter, the Wildlife Society, Anchorage, February 22-23, 1985.
299. Leopold, A.S., R.J. Gutierrez, and M.T. Bronson. 1981. North American Game Birds and Mammals. Charles Scribners and Sons, New York. 198 pp.
They provide a nice, basic summary of the biology of the emperor goose.
300. Lichtenstein, M.H. 1854. Nomenclator Avium Musei Zoologici Berolinensis. Berlin Zoological Museum, Berlin. 123 pp.
Lichtenstein refers to emperor geese as *Bernicla canagica*. There are several species of *Chloephaga* mentioned, but all are South American.
301. Lincoln, F.C., S.R. Peterson, and P.A. Anastasi. 1979. Migration of Birds. 3rd ed. (U.S. Fish and Wildlife Service Circular 16). Government Printing Office, Washington. 119 pp.
In reference to arctic nesting geese, the authors provide generic descriptions of migration routes used by emperor geese and sympatrically nesting cackling Canada geese.
302. Loomis, L.M. 1901. The emperor goose in the interior of California. Auk 18:105-106.
This is another of several incidental observations of emperor geese along the Pacific Coast.
303. Lysaght, A.M. 1959. Some eighteenth century bird paintings in the library of Sir Joseph Banks (1743-1820). Bulletin of the British Museum (Natural History) Historical Series 1:254-371.
Lysaght provides a complete accounting of the published and unpublished paintings and prints in Bank's collection. That collection included basically everything from Cook's three voyages, as well as the early explorations of Newfoundland and Labrador. Since many of the specimens were lost or deteriorated before they could be studied, these paintings were the basis for the descriptions of most of the species collected on those voyages. In many cases the paintings themselves are the type specimen for the species. Each reference to a painting or print is annotated with reference to the accounts of Latham (1790) and the binomial originally assigned by Gmelin. She includes detailed lists of the specimens collected on Cook's first voyage (even date, latitude, and longitude).
304. Mallory, M.L. and P.J. Weatherhead. 1990. Effects of nest parasitism and nest location on eggshell strength in waterfowl. Condor 92:1031-1039.
They include data on *Chen canagica* in their analyses of nest parasitism, nest location, and eggshell strength.

305. Mattocks, P.W., E.S. Hunn, and T.R. Wahl. 1976. A checklist of the birds of Washington state with recent changes annotated. *Western Birds* 7:1-24.

They report that emperor geese are rare but do occur in Washington.

306. McGregor, R.C. 1902. A list of birds collected in Norton Sound, Alaska. *Condor* 4:135-144.

McGregor reports on collections and observations made from July through September. There is no mention of emperor geese.

307. McKinney, F.C. 1961. Waterfowl at Cold Bay, Alaska, with notes on the display of the black scoter. *Wildfowl* 10:133-140.

McKinney provides details on family grouping and individual behavior of emperor geese.

308. McKnight, D.E. 1970. Report of survey and inventory activities part III - waterfowl and small game (Project W-17-2). Unpublished Federal Aid in Wildlife Restoration Report. Alaska Department of Fish and Game, Juneau, Alaska. 33 pp.

This is one of several Federal Aid Reports that provide reports of observations of emperor geese. These generally include clutch size, brood size, migration dates, and general spring conditions. There are subsequent reports from 1971 (76 pages) and 1973 (64 pages).

309. McLenegan, S. 1887. Exploration of the Noatak River, Alaska. Pages 53-80 in M.A. Healy, editor. Report of the Cruise of the Revenue Steamer Corwin in the Arctic Ocean in the Year 1885. Signal Service, U.S. Government Printing Office, Washington, D.C.

During the exploration of the Noatak River, they found many white-fronted geese and white-cheeked geese along the banks but no emperor geese.

310. McRoy, C.P. and C. Helfferich. 1979. Applied aspects of seagrasses. Pages 297-343 in R.C. Phillips and C.P. McRoy, editors. *Handbook of Seagrass Biology: An Ecosystem Perspective*. Garland STPM Press, London.

They note that emperor geese are among the species that feed on seagrasses.

311. Meares, J. 1790. *Voyages Made in the Years 1788 and 1789 from China to the North West Coast of America*. Logographic Press, London. 372 pp.

There is a 50-page appended Introduction that describes Meares initial trip in 1786-1787 on the Nootka. They stopped at several islands in the Aleutians in June and gradually made their way to the Shumagins, Kodiak Island, and Cook Inlet. From there they went to Snug Corner Cove in western Prince William Sound in early fall. The weather worsened and they remained there for the winter. Much of the crew was lost during the winter and they were found in the spring by Captain Portlock (see Portlock 1789). There are references to ducks and geese in both the fall and spring at Snug Corner Cove but they are general and provide no clues as to species. The

remainder of the book chronicles voyages by the ships Iphigenia and Felice during 1788-1789. The Felice sailed directly from the Sandwich Islands to Nootka. There are passing references to ducks throughout, but no details. Chapter XXII is titled "Various Kinds of Birds - Aquatic Fowls" and deals with the area surrounding Nootka, south of the Queen Charlotte Islands. It provides little information short of there being "... sea gulls and shags; many kinds of ducks and divers; the sea parrot and many others, of which we knew not the names". The Iphigenia sailed an initially more northerly route and made many stops along the Shumagins, the Alaska Peninsula, Cook Inlet, Prince William Sound, and along the coast to Nootka. While there are a few references to ducks and geese, there are no details. As with Meares' initial voyage and the exploration by Steller (see Golder 1925), the timing of the voyage (June through July) minimized the chance of encountering emperor geese in this part of Alaska.

312. Meehan, J. and M. Krom. 1993a. Trip report: winter wildlife and oil contamination surveys, Amchitka Island, Alaska, 18-23 December 1992. Unpublished report. U.S. Fish and Wildlife Service, Adak, Alaska. 15 pp.

This is one of a series of reports of numbers and age composition of emperor goose flocks, as well as observations of oil spotted geese observed in winter 1992-1993 at Amchitka Island. See No. 137.

313. Meehan, J. and M. Krom. 1993b. Trip report: winter wildlife and oil contamination surveys, Shemya Island, Alaska, 10-15 December 1992. Unpublished report. U.S. Fish and Wildlife Service, Adak, Alaska. 24 pp.

This is one of a series of reports of numbers and age composition of emperor goose flocks, as well as observations of oil-spotted geese observed in winter 1992-1993 at Shemya Island. See No. 138.

314. Mickelson, P.G. 1975. Breeding biology of cackling Canada geese and associated species on the Yukon-Kuskokwim Delta, Alaska. *Wildlife Monographs* 45:1-35.

Mickelson includes information on nesting ecology of emperor geese.

315. Miller, A.H. 1937. Structural modifications in the Hawaiian goose (*Nesochen sandvicensis*) - A study in adaptive evolution. University of California Publications in Zoology XLII:1-79.

Although oriented primarily at terrestrial adaptations of the Hawaiian goose, this is a detailed comparative morphological study of North American geese. Miller focuses on hind limb muscle anatomy but includes fore limb muscles and the entire skeleton. He examines *Nesochen sandvicensis*, *Branta canadensis minima*, *Branta nigricans*, *Philacte canagica*, *Anser albifrons*, and *Chen hyperborea* for all characters and includes skeletal examinations of *Chloephaga leucoptera*. In making comparisons Miller strives to discriminate products of common adaptation from those of recent common descent. Of relevance to emperor geese, he concludes that although they share some traits almost exclusively with *Chloephaga*, those traits are likely the result

of convergent evolution rather than recent ancestry. He concludes that *Philacte* is closest to *Anser* and *Chen*.

316. de Montlezun, M.A. 1886. Sur les palmipedes lamelliorostres. Bulletin de la Societe nationale d'acclimatation de France (series 4) III:132-167.

de Montlezun refers to emperor geese as *Bernicla canagica* and provides an accurate description. He claims (incorrectly) that Verreaux moved the species from *Chloephaga* to *Bernicla*. His paper includes descriptions and prints of *Bernicla antarctica* (recognizable as *Chloephaga hybrida*, the kelp goose), and *Bernicla magellanica* (recognizable as *Chloephaga picta*, the upland goose). de Montlezun asserts that this is Cook's painted duck from Staten Land.

317. Munt, H. 1911. Exhibition of a nest and a clutch of five eggs of the emperor goose (*Philacte canagica*) taken at Goodness (sic) Bay, Alaska. Bulletin of the British Ornithologists' Club 27:48.

Munt displayed a nest and five eggs of an emperor goose at a club meeting held at Pagani's Restaurant, Portland Street, London.

318. Murdoch, J. 1885a. Birds. Pages 104-128 in P.H. Ray, editor. Report of the International Expedition to Point Barrow, Alaska. Signal Service, Washington.

Refers to emperor geese as *Philacte canagica*. None were seen but a skin was obtained as a gift from Lt. F. Schwatka on St. Michaels Island.

319. Murdoch, J. 1885b. Notes on some species of birds attributed to Point Barrow, Alaska. Auk 2:200-201.

Murdoch chides Nelson for haste and sloppiness in the Corwin paper. Emperor geese are not mentioned.

320. Murie, O.J. 1924. Report on investigations of birds and mammals of the Hooper Bay section of Alaska during the spring and summer of 1924. Unpublished Biological Survey Report. U.S. Department of Agriculture, Washington, D.C. 109 pp.

Murie reports on general observations of emperor geese.

321. Murie, O.J. 1936. The birds of St. Lawrence Island, Alaska. Pages 359-376 in W.W. Geist and F.G. Rainey, editors. Archeological Excavations at Kukulik. University of Alaska, Washington.

Murie reports on collections made during the thirties. Emperor goose bones were found.

322. Murie, O.J. 1959. Fauna of the Aleutian Islands and Alaska Peninsula. North American Fauna 61. U.S. Fish and Wildlife Service, Washington, D.C. 406 pp.

Murie provides a wide-ranging discussion on the distribution and biology of the emperor goose.

323. Murie, O.J. 1979. The Alaskan bird sketches of Olaus Murie, with excerpts from his field notes. Alaska Northwest Publishing Company, Anchorage. 57 pp. (compiled by M.E. Murie)
Murie provides a brief narrative on emperor geese.
324. Narver, D.W. 1970. Birds of the Chignik River Drainage, Alaska. Condor 72:102-105.
This author lists emperor geese as rare on the Black River.
325. Neff, J.A. 1948. A Russian-banded emperor goose killed in California. Condor 50:271.
This is a record of what was probably an emperor goose that was probably banded on the Chukotsk Peninsula. The bander was killed in the war and all records lost.
326. Nelson, E.W. 1883. Birds of the Bering Sea and Arctic Ocean. Pages 56-118 *in* Cruise of the Revenue Steamer 'Corwin' in Alaska and the Northwestern Arctic Ocean 1881. Signal Service, Washington.
Nelson refers to emperor geese as *Philacte canagica* on p. 95. He notes that Nordenskiöld had seen several at East Cape (Siberia) and lists several other sites in the Bering Sea and the Aleutians where they have been observed. He quotes from Sewastianoff's original description and notes that "a miserable wood-cut accompanies the description".
327. Nelson, E.W. 1885. Counter - "notes on some species of birds attributed to Point Barrow, Alaska". Auk II:239-244.
Nelson counters the criticism of Murdoch (1885b). See No. 319.
328. Nelson, E.W. 1887. Report upon Natural History Collections made in Alaska between the years 1877 and 1881. Signal Service, Washington. 337 pp.
Nelson states: "Among the various species of birds more or less peculiar to Alaska this goose is perhaps the most noteworthy." He refers to emperor geese as *Philacte canagica* and summarizes distributional reports made through the mid-1880's. He states that Sewastianoff's specimen was provided by Billings, who visited the Aleutians in 1790 and claims the species was described by Sauer, who noted the species arrived on Unalaska August 31 and departed the following April. He provides some information on nesting and measurements of 15 specimens.
329. Nelson, E.W. 1913. The Emperor Goose. Bird Lore 15:129-132.
Nelson provides a general summary of the biology of emperor geese.
330. Nelson, E.W. 1914. The Emperor Goose. Pages 57-61 *in* E. Ingersoll, editor. Alaska Bird Life as Depicted by Many Authors. National Association of Audubon Societies, New York.

Nelson provides a basic summary of distribution and biology of emperor geese in an easy-reading, delightful essay.

331. Nelson, U.C. 1949. Investigations on breeding and wintering populations, nesting studies and banding of migratory waterfowl (Project 3-R-4 unpublished report). U.S. Federal Aid in Wildlife Restoration 4(1):4-40.

One of many Federal Aid in Wildlife Restoration Reports that provide some information on emperor geese.

332. Nelson, U.C. 1951. Migratory waterfowl studies, breeding and wintering populations, nesting and banding (Project 3-R-6 unpublished report). U.S. Federal Aid in Wildlife Restoration 6:3-61.

One of many Federal Aid in Wildlife Restoration Reports that provide some information on emperor geese.

333. Nelson, U.C. 1953. Migratory waterfowl studies (Project W-3-R-8 unpublished report). U.S. Federal Aid in Wildlife Restoration 8(1):11-42.

One of many Federal Aid in Wildlife Restoration Reports that provide some information on emperor geese.

334. Newton, A. 1893. Dictionary of Birds, part 2. A. and C. Black, London. 1088 pp.

Newton refers to emperor geese as *Chen canagica*.

335. Newton, I. 1977. Timing and success of breeding in tundra nesting geese. Pages 113-126 in B. Stonehouse and C. Perrins, editors. Evolutionary Ecology. University Park Press, Baltimore.

Anser canagica is included in this early synthesis of information addressing the general problem of timing and nesting success. While we have accumulated more details, many of Newton's generalizations remain valid. This is a classic paper on the topic.

336. Nichols, J.D., D.V. Derksen, R.L. Jarvis, and J.T. Ratti. 1988. Workshop summary: species and population status and distribution. Pages 571-574 in M.W. Weller, editor. Waterfowl in Winter. University of Minnesota Press, Minneapolis.

They note the extreme decline in three species of geese breeding in Alaska (49% decrease in *Chen canagica* between 1964 and 1984) and discuss some of the problems associated with attempting to halt the decline.

337. Nordenskiöld, A.E. 1881. Voyage of the Vega Round Europe and Asia (2 volumes). MacMillan and Company, London. 524 and 482 pp.

These diaries (translated by A. Leslie) provide details of exploration of Beringia, including visits to the Seward Peninsula, St. Lawrence Island, the Diomed Islands, and the coast of Chukotski, where he reports seeing *Anser pictus* (Volume 2, page 42).

338. O'Farrel, T.P. and A.M. Sheets. 1962. Birds observed wintering on Middleton Island, Alaska. *Condor* 64:440-441.
They report that five emperor geese were seen during the winter on Middleton Island.
339. Ogilvie, M.A. 1978. *Wild Geese*. Buteo Books, Vermillion. 350 pp.
Ogilvie provides a detailed account of the biology of the species in a comparative context with other northern-hemisphere geese.
340. Olson, S.T. 1951. A study of goose and brant nesting in the Yukon-Kuskokwim Delta (Project 3-R-8 unpublished report). U.S. Federal Aid in Wildlife Restoration 6:34-42.
This is one of many Federal Aid in Wildlife Restoration Reports that provide some information on emperor geese.
341. Orr, R.T. 1944. A coastal record of the emperor goose in California. *Condor* 46:90.
This is one of many extralimital observations of emperor geese on the Pacific coast.
342. Ornithological Society of Japan. 1974. *Check List of Japanese Birds*. 5th Edition. Gakken Company, Tokyo.
This lists emperor goose status as a rare straggler with only one record. See Kuroda (1968).
343. Osgood, W.H. 1904. A biological reconnaissance of the base of the Alaska Peninsula. *North American Fauna* 24:1-86.
Osgood reports on one bird collected by C.L. McKay in 1882 on the Nushagak River, two at Ugashik in 1881, and eleven in Bristol Bay in 1881. The specimens were sent to the National Museum.
344. Osgood, W.H. and L.B. Bishop. 1900. *Results of Biological Reconnaissance of the Yukon River Region*. *North American Fauna* 19:1-100.
They report that emperor geese commonly nest in the Yukon River region.
345. Osgood, W.H., E.A. Preble, and G.H. Parker. 1915. *The Fur Seals and other Life of the Pribilof Islands, Alaska*. Government Printing Office, Washington, D.C. 172 pp.
This is a government reprint from the *Bulletin of the Bureau of Fisheries*, Volume XXXIV, 1914. They note that *Philacte canagica* is present in the Pribilofs, but that the numbers are low.
346. Owen, M. 1980. *Wild Geese of the World: Their Life History and Ecology*. B.T. Batsford, Ltd., London. 236 pp.
Owen provides a summary of the biology of the species including comparisons to captive birds at Slimbridge.

347. Pacific Flyway Council. 1993. Pacific Flyway management plan for the emperor goose. Unpublished report. Emperor Goose Subcommittee. Pacific Flyway Study Committee. U.S. Fish and Wildlife Service, Portland, Oregon.

This plan reviews the current knowledge of emperor geese and provides recommendations for management of this species.

348. Pallas, P.S. 1831. Zoographia Russo-Asiatica Imperica Rossici. Vol. II. Edition MDCCCXXXI. Academie Imperial, Petropolis. 374 pp.

Pallas incorrectly uses the name *Anser pictus* for what is clearly an emperor goose on pl. lxxvii. He apparently chose this name after misreading Latham's (1790) description of *Anser pictus*. See Latham (1790), von Brandt (1836a, b). The three-volume set by Pallas was originally printed in 1811 by the Academie, but only in limited numbers. It was reprinted in 1831 and more widely distributed. We have compared an 1811 edition of Volume 1 to an 1831 edition and they are identical. We assume the same is true for Volume 2 cited here, but since we were not able to examine an 1811 version we cite it as 1831 with the notation of an 1831 edition.

349. Palmen, J.A. 1883. Sweden Special Catalogue. Great International Fisheries Exchange, London.

This is cited in Coues American Ornithological bibliography. It is said to refer to emperor geese as *Anser pictus*. This is a paper resulting from the Voyage of the Vega.

350. Palmen, J.A. 1887. Bidrag Till Kannedomen Om Sibriska Ishafskustens Fogelfauna enligt Vega-Expeditionens Iakttagelser Och Samlingar Bearbetade. Vega Expedition, Vetenskapliga Iakttagelser. Vol. V., Stockholm. 511 pp.

This Swedish book is an account of Nordenskiöld's expedition (1878-1879) on the Vega. Palmen refers to emperor geese as *Anser (Philacte) canagicus* (Sevast.) Brandt. He gives a detailed description of encounters with them during the Vega Voyage (pages 421-425). A detailed table of distribution of birds by degree block is also included.

351. Palmer, R.S., editor. 1976. Handbook of North American Birds. Vol. 2. Yale University Press, New Haven. 521 pp.

Palmer provides a detailed summary of all aspects of the biology of the emperor goose.

352. Palmer, W. 1899. Avifauna of the Pribiloff Islands. Pages 355-431 in J.S. Jordan, editor. Fur Seals and the Fur Seal Islands of the North Pacific Ocean. Part 3. Government Printing Office, Washington.

Palmer provides details on the history of ornithological studies on the islands as well as summarizing the actual work. There is a short summary of emperor geese. There is a major summation on Alcids.

353. Pamplin, W.L. 1986. Cooperative efforts to halt population declines of geese nesting on Alaska's Yukon-Kuskokwim Delta. *Transactions of the North American Wildlife and Natural Resources Conference* 51:487-506.

Pamplin summarizes the problems associated with harvest and declines of goose populations on the Yukon-Kuskokwim Delta. He discusses possible solutions.

354. Pennant, T. 1781. *Genera of Birds*. B. White, London. 70 pp.

This work defines the genera of birds as they were understood at the time. There were two divisions: land birds and water birds. Coincident with this there were nine orders, of which the waterbirds comprised the last three. They were: VII - Cloven-footed or waders, comprised of genera 59-75; VIII - Pinnated-feet, comprised of genera 76-78; IX - web-footed, comprised of genera 79-95. Among these are the albatrosses, auks, divers, gulls, mergansers, ducks, "penguins", and pelicans. The diagnosis of a duck (*Anas*) is: Bill - strong, broad, flat or depressed; and commonly furnished at the end with a nail. Edges marked with sharp lamellae. Nostrils - small, oval. Tongue - broad, edges near the base fringed. Feet - middle toe the longest. The emperor goose would have met these and been called *Anas*, just as Sewastianoff did.

355. Pennant, T. 1784. *Arctic Zoology*. Volumes I and II with a Supplement. Henry Hughes, London. 586 and 163 pp.

Provides a complete description of the species of birds recognized to occur in the arctic at that time. In accord with Pennant 1781, the geese are designated as *Anas*. Included as species are: Canada, bean, greyleg, blue-winged (*caerulescens*), white-fronted, snow, brent (both *hrota* and *bernicla*), barnacle, great, Chinese (*cygnoides*), and red-breasted. There is no mention of emperor geese nor a description that comes close.

356. Petersen, M.R. 1982a. Nesting ecology and habitat requirements of geese at Kokechik Bay, Alaska: annual report. Unpublished report. U.S. Fish and Wildlife Service, Anchorage, Alaska. 27 pp.

This is the first of five reports of field work conducted primarily on emperor and cackling Canada geese at Camp Lake, Kokechik Bay, Alaska. Annual reports include 1983 (48 pages), 1984 (28 pages), and 1985 (16 pages). The final report was completed in 1987 (51 pages) and summarizes the data from 1982-1986. Publications from these data include: Nos. 360, 361, 362, 363, and 364.

357. Petersen, M.R. 1982b. Numbers of water birds observed during surveys along the north side of the Alaska Peninsula between Port Heiden and Bechevin Bay - Fall 1979. Unpublished report. U.S. Fish and Wildlife Service, Anchorage, Alaska. 6 pp.

The number of emperor geese and other water birds estimated at staging areas along the Alaska Peninsula are presented in this report.

358. Petersen, M.R. 1983. Observations of emperor geese feeding at Nelson Lagoon, Alaska. *Condor* 85:367-368.

Petersen provides details on feeding activity in relation to tide cycle.

359. Petersen, M.R. 1985. The emperor goose. Pages 453-457 in R.L. Di Silvestro, editor. Audubon Wildlife Report 1985. National Audubon Society, New York.
Petersen provides a basic summary of the biology of the species and discusses its current and future population prospects.
360. Petersen, M.R. 1990. Nest-site selection by emperor geese and cackling Canada geese. *Wilson Bulletin* 102:413-426.
Emperor and cackling Canada geese differ in nest-site selection.
361. Petersen, M.R. 1991. Reproductive ecology of emperor geese. Ph.D. Thesis, University of California, Davis. 171 pp.
This is the definitive work on reproductive ecology of the species. Publications from this dissertation include Nos. 360, 362, 363, and 364.
362. Petersen, M.R. 1992a. Intraspecific variation in egg shape among individual emperor geese. *Journal of Field Ornithology* 63:344-354.
Petersen documents variation in egg shape among individuals and discusses its use in evaluating intraspecific nest parasitism.
363. Petersen, M.R. 1992b. Reproductive ecology of emperor geese: annual and individual variation in nesting. *Condor* 94:383-397.
Petersen provides a detailed analysis of reproductive performance in the species.
364. Petersen, M.R. 1992c. Reproductive ecology of emperor geese: survival of adult females. *Condor* 94:398-406.
Petersen provides estimates of survival using a Kaplan-Meier analysis. She also evaluates the relation of survival and reproductive performance.
365. Petersen, M.R. and R.E. Gill. 1982. Population status of emperor geese along the north side of the Alaska peninsula. *Wildfowl* 33:31-38.
They provide a detailed evaluation of population density and productivity between 1964 and 1981.
366. Petersen, M.R., D.N. Weir, and M.H. Dick. 1991. Birds of the Kilbuck and Ahklun Mountain Region, Alaska. *North American Fauna* 76:1-158.
They provide a summary of published and unpublished observations of spring and fall migration through Nanvak and Chagvan bays and summarizes information on emperor geese seen in the region.
367. Peterson, R.T. and J. Fisher. 1955. *Wild America*. Houghton Mifflin Company, Boston. 433 pp.
They provide an enjoyable account of the species and the people working with them in one of the main study areas.

368. Piatt, J. and J. Wells. 1987. Observations of emperor geese at St. Lawrence Island, 1987. Unpublished report. U.S. Fish and Wildlife Service, Anchorage, Alaska. 11 pp.
- They provide information on emperor geese collected by natives and anecdotal information on nesting and molting geese.
369. Pitelka, F.A. 1974. An avifaunal review for the Barrow region and the north slope of arctic Alaska. *Arctic and Alpine Research* 6:161-184.
- Pitelka reports that the emperor goose is a straggler in this region.
370. Platte, R.M. and W.I. Butler. 1993. Waterbird abundance and distribution on Yukon Delta National Wildlife Refuge, Alaska. Unpublished report. U.S. Fish and Wildlife Service, Anchorage, Alaska. 52 pp.
- They provide numerical and geographical summaries of waterbirds, including emperor geese, nesting in the Yukon Delta of Alaska.
371. Ploeger, P.L. 1968. Geographic differentiation in arctic Anatidae as a result of isolation during the last glacial. *Ardea* 56:1-159.
- Ploeger claims that *Anser canagica* likely used the Beringial refuge during the last glaciation.
372. Pogson, T., M. Lisac, and S. Johnson. 1984. Biology and subsistence hunting of geese at Chagvan Bay. Unpublished report. U.S. Fish and Wildlife Service, Dillingham, Alaska. 17 pp.
- They report information on staging emperor geese, timing of subsistence hunting in spring, and numbers of birds taken by hunters.
373. Portenko, L.A. 1981. Birds of the Chukchi Peninsula and Wrangel Island. Vol. 1. (Smithsonian Institution and National Science Foundation). Amerind Publishing Limited, New Delhi.
- This is a translation from the original Russian. Portenko provides a detailed biological and ecological discussion, especially summarizing observations made on the species in Siberia. He notes that early Russian settlers called it "Caesar's goose" and that the Chukchian natives used a word that meant "white-headed". We were unable to find and verify several of the numerous citations to Russian works that may be important to those interested in Eastern Siberia. This reference should be consulted for summaries of and citations to those works.
374. Portlock, N. 1789. A Voyage Round the World; but more particularly to the Northwest Coast of America: performed in 1785, 1786, 1787 and 1788 by Nathaniel Portlock and George Dixon. John Stockdale, London. 384 pp.
- Captain Portlock was the Commander of a two-vessel expedition, charged primarily with establishing a fur trade with natives along the northwest coast of America. He was also Captain of the ship King George. Captain Dixon was in command of the

smaller ship, the Queen Charlotte. They arrived at Cook Inlet on July 19, 1786, explored the inlet and then sailed along the coast to Prince William Sound. They headed southeast toward King Georges Sound in September, but failed to find it and sailed to the Sandwich Islands for the winter. There are notations that geese and swans were sighted along coastal Alaska, but no details are given. They returned to Prince William sound on April 17, 1787. They saw many geese and ducks that were so shy they could not get off a shot. Again, they provide no details on the birds. They encountered Captain John Mearns of the Nootka, who had sailed there the previous year from the orient, had spent the winter and had buried many of his men who died from scurvy. There is a description of natives from the area of Portlock Harbor (north of Herbert Graves Island) rounding up and clubbing flightless geese during early August. He departed for the orient on September 16, 1787.

375. Preble, E.A. and W.L. McAtee. 1923. Birds. Pages 10-101 in E.A. Preble and W.L. McAtee, editors. A Biological Survey of the Pribilof Islands, Alaska. North American Fauna 46. Vol. I. U.S. Department of Agriculture, Washington.

They record the emperor goose as a regular spring and fall visitor to the Pribilof Islands. They provide details on early collections of the species.

376. Quinn, T.W., G.F. Shields, and A.C. Wilson. 1991. Affinities of the Hawaiian goose based on two types of mitochondrial DNA data. *Auk* 108:585-593.

They provide data from rflp analyses of mtDNA on relations among brant, Canada, emperor, and Hawaiian geese.

377. Rankin, I. 1954. Haunts of the emperor goose. *Country Life* 96:2242-2244.

Rankin provides a brief narrative on the natural history of emperor geese.

378. Raveling, D.G. 1983. Biology and productivity of geese on the Yukon-Kuskokwim Delta, Alaska - 1983. Unpublished Interim Progress Report. University of California, Davis, California. 9 pp.

See No. 380.

379. Raveling, D.G. 1984. Geese hunters of Alaska's Yukon Delta: management problems and political dilemmas. *Transactions of the North American Wildlife and Natural Resources Conference* 49:555-575.

Raveling summarizes population status of all goose species from the Yukon-Kuskokwim Delta and discusses the relation of declines to native harvest.

380. Raveling, D.G., C.R. Ely, and J.S. Sedinger. 1978. Breeding biology and productivity of geese on the Yukon-Kuskokwim Delta, Alaska. Unpublished Annual Report Number 1. University of California, Davis, California. 32 pp.

This is the first of a series of annual reports by various authors of goose productivity at the Old Chevak Camp, Kashunuk River, Alaska. Data for emperor geese are contained in these reports. Analytical emphasis has been on cackling Canada and

white-fronted geese. Reports from studies at Old Chevak include: Nos. 4, 5, 154, 155, 378, and 475.

381. Reeves, H.M., R.E. Munro, and A.D. Marmelstein. 1975. USFWS activities in application of satellite imagery to goose management. Pages 113-125 in *Workshop on Remote Sensing of Wildlife*. (Proceedings) Ministere du Tourisme, Quebec City.

They suggest that satellite imagery should be used in goose management.

382. Reeves, H.M., F.G. Cooch, and R.E. Munro. 1976. Monitoring arctic habitat and goose production by satellite imagery. *Journal of Wildlife Management* 40:532-541.

The authors review the use of satellite imagery of ice and snow cover to assist with predicting variation in productivity of geese in arctic habitats.

383. Reichenbach, L. 1845. *Avium Systema Naturae*. Vol. 101. Zoological Museum, Dresden.

Reichenbach refers to emperor geese as *Bernicla canagica*.

384. Ridgway, R. 1881. *Nomenclature of North American Birds*. Government Printing Office, Washington. 94 pp.

Ridgway refers to emperor geese as *Philacte canagica*.

385. Ridgway, R. 1887. *A Manual of North American Birds*. J.B. Lippincott, Philadelphia. 631 pp.

Ridgway refers to emperor geese as *Philacte canagica*. He diagnoses the genus primarily on position of nasal fossae and attributes of the mandible.

386. Rodgers, J.E. 1974. *Shorebirds and Predators*. J.J. Douglas, Limited, Vancouver. 199 pp.

Emperor geese are listed as a potential prey species.

387. Rohwer, F.C. and D.I. Eisenhauer. 1989. Egg mass and clutch size relationships in geese, eiders and swans. *Ornis Scandinavia* 20:43-48.

There is no relation between egg mass and clutch size in emperor geese. As in other geese, clutch size declines with laying date. They claim that unlike other geese, intraclutch variation in egg mass increases with clutch size. It is likely, however, that this result stems from their failure to exclude parasitic eggs from the analyses. Data for emperor geese are from Eisenhauer's study (No. 144) at Kokechik Bay, Alaska.

388. Rohwer, F.C. and S. Freeman. 1989. The distribution of conspecific nest parasitism in birds. *Canadian Journal of Zoology* 67:239-253.

The authors discuss conspecific nest parasitism and cite Eisenhauer and Kirkpatrick (1977) for its occurrence by emperor geese.

389. Rowe, R.A. 1943. A record of emperor geese in southern Oregon in April, 1943. *Murrelet* 24:29.

This is one of many extralimital observations of emperor geese in the Pacific Northwest.

390. Rue, L.L. 1973. *Game Birds of North America*. Outdoor Life, New York. 490 pp.

Rue provides a brief narrative on the natural history of emperor geese.

391. Ruthven, J.A. and W.H. Zimmerman. 1976. Top flight speed index to waterfowl of North America. 7th ed. Moebius Printing Company, Milwaukee. 112 pp.

They conclude that the flight speed of emperor geese is more rapid than most geese.

392. Ryser, F.A. 1985. *Birds of the Great Basin: A Natural History*. University of Nevada Press, Reno. 604 pp.

Ryser reports that emperor geese have only been reported from Malheur National Wildlife Refuge in Oregon.

393. Salvadori, T. 1895. *Catalogue of the British Museum XXVII, Chenomorphae, Cryturi and Ratitae*. British Museum, London.

This is the key starting point for the systematic literature of migratory waterfowl (members of the Chenomorphae) prior to 1895. Salvadori also includes some descriptive and distributional information on emperor geese.

394. Sarvis, J. 1979. Izembek National Wildlife Refuge. Unpublished report. U.S. Fish and Wildlife Service, Cold Bay, Alaska. 35 pp.

This is one of many annual narrative reports for the Izembek National Wildlife Refuge. Information on staging emperor geese is generally provided each year. There is a subsequent report by the same author from 1980 (30 pages).

395. Sauer, E.G.F. and E.K. Urban. 1964. Bird notes from St. Lawrence Island, Alaska. *Bonner Zoologische Beitrug* 15:45-58.

Sauer commented on large numbers of emperor geese on St. Lawrence Island.

396. Saunders, H. 1883. On the birds exhibited in the international fisheries exhibition. *Ibis* (series 5) 1:346-352.

Saunders refers to emperor geese as *Bernicla canagica* and reports that specimens were exhibited.

397. Scanlon, J.J. and R.L. Jarvis. 1984. An evaluation of productivity and mortality factors influencing goose populations: a status report of the 1984 monitoring effort at Kokechik Bay, Alaska. Unpublished report. Department of Fisheries and Wildlife, Oregon State University, Corvallis, Oregon. 72 pp.

See No. 77.

398. Schalows, H. 1891. J.F. von Brandt: Uber die Vogel-fauna der Aleuten, Kurilen und der russisch-americanischen Colonien. *Journal fur Ornithologie* 39:235-271.
Schalows reviews von Brandt's contributions and summarizes all birds in the region. He provides a short basic summary of *Anser canagicus* Nob.
399. Schiller, E.L. 1951. Studies on the helminth fauna of Alaska VI: the parasites of the emperor goose (*Philacte canagica*, L.) with a description of *Hymenolysis canagica* n. sp. *Journal of Parasitology* 37:217-220.
Sixteen emperor geese collected on St. Lawrence Island were heavily infected with helminth parasites.
400. Schiller, E.L. 1954. Studies of the helminth fauna of Alaska XVIII: Cestode parasites in young anseriformes on the Yukon Delta nesting grounds. *Transactions of the American Microscopical Society* 73:194-201.
All of the emperor geese collected at Igiak Bay (Kokechik Bay) were infected with helminth parasites. Except in one male whose gut was perforated, the parasites appeared to do no serious damage. Schiller concludes that the heavy infestation does not increase mortality per se but might make individuals more susceptible to other stresses.
401. Schlegel, H. 1866. Anseres. Pages 1-122 in *Revue Methodique et Critique des Collections Desposees dans cet Etablissement*. Vol. VI. (Monograph 31) *Museum D'Histoire Naturelle, Pays-Bas*.
Schlegel refers to emperor geese as *Anser canagicus* and provides a brief description. With the exception of *Ceropsis* (Cape Barren Goose), all geese are lumped under the genus *Anser*. No explanation is provided.
402. Schmutz, J.A. 1992. Survival and migration ecology of emperor geese along the Alaska Peninsula. Unpublished report. U.S. Fish and Wildlife Service, Anchorage, Alaska. 17 pp.
See No. 405.
403. Schmutz, J.A. 1993. Survival and pre-fledging body mass in juvenile emperor geese. *Condor* 95:222-225.
Schmutz demonstrates that survival from fledging through the early fall depends on body mass.
404. Schmutz, J.A. 1994. Age, habitat and tide effects on feeding activity of emperor geese during autumn migration. *Condor* 96:46-51.
Schmutz provides data on feeding relative to tide cycles, habitat type, and the age composition of flocks. He also examines feeding rates of adults and juveniles.
405. Schmutz, J.A., S.E. Cantor, J.D. Mason, and M.R. Petersen. 1990a. Survival and ecology of emperor geese along the Alaska peninsula. Unpublished report. U.S. Fish and Wildlife Service, Anchorage, Alaska. 19 pp.

This is one of a series of annual reports providing information on staging ecology and migration of emperor geese and an estimate of annual survival. Subsequent reports include: Nos. 402, 406, and 407. Publications from this study include: Nos. 403, 404, and 409.

406. Schmutz, J.A., M.R. Petersen, A.C. Fowler, J.D. Mason, and P.C. Ryan. 1990b. Survival and migration ecology of emperor geese along the Alaska Peninsula. Unpublished report. U.S. Fish and Wildlife Service, Anchorage, Alaska. 15 pp.

See No. 405.

407. Schmutz, J.A., A.C. Fowler, J.D. Mason, N.L. Barten, K.S. Bollinger, T.H. Pogson, F. Bossuyt, J. Pratt, A.L. Seidl, and M.R. Petersen. 1991. Survival and migration ecology of emperor geese along the Alaska peninsula - Progress report, March 1991. Unpublished report. U.S. Fish and Wildlife Service, Anchorage, Alaska. 25 pp.

See No. 405.

408. Schmutz, J.A., R.F. Rockwell, and M.R. Petersen. 1993. Population modeling of emperor geese - Progress report, April, 1993. Unpublished report. U.S. Fish and Wildlife Service, Anchorage, Alaska. 18 pp.

This is a preliminary report on the status of a population modeling study using reproductive parameters and survival estimates of emperor geese.

409. Schmutz, J.A., S.E. Cantor, and M.R. Petersen. 1994. Seasonal and annual survival of emperor geese. *Journal of Wildlife Management*. 58:525-535.

This is a thorough analysis of seasonal and annual survival of emperor geese based on reobservations of marked geese at spring and fall staging areas. See No. 405.

410. Science Applications Incorporated. 1979. Environmental assessment of the Alaskan continental shelf: Lower Cook inlet interim synthesis report. U.S. Government Printing Office, Washington. 241 pp.

They report that emperor geese are a rare migrant in lower Cook Inlet.

411. Sclater, P.L. 1880. List of the certainly known species of Anatidae, with notes on such as have been introduced into the zoological gardens of Europe, and remarks on their distribution. *Proceedings of the Zoological Society of London*:496-536.

Sclater refers to emperor geese as *Anser canagicus* and notes that as of that date none had been introduced in European zoos and parks.

412. Scott, J.M. and T.W. Haislip. 1969. An Oregon record of the emperor goose. *Murrelet* 50:38.

This is one of many reports of extralimital observations of emperor geese along the Pacific Northwest.

413. Scott, P. 1947. The emperor goose. *Avicultural Magazine* 53:197-198.
Scott provides basic reproductive information on emperor geese, especially on captive rearing.
414. Sedinger, J.S. 1984. An evaluation of productivity and mortality factors influencing geese at the Tutakoke River, Alaska: A report of results from 1984. Unpublished report. U.S. Fish and Wildlife Service, Anchorage, Alaska. 53 pp.
This is one of a series of annual reports from the Tutakoke River study area, Yukon-Kuskokwim River Delta, Alaska, on basic nesting parameters of geese. The primary study is on black brant; however, the reports also include data collected on emperor geese. Subsequent reports that include data on emperor geese: Nos. 415 and 416.
415. Sedinger, J.S. 1986. The status and biology of geese nesting at Tutakoke, 1986: A progress report. Unpublished report. U.S. Fish and Wildlife Service, Anchorage, Alaska. 24 pp.
See No. 414.
416. Sedinger, J.S., D.H. Ward, and D. Walsh. 1985. The status and biology of geese nesting at Tutakoke, 1985: A progress report. Unpublished report. U.S. Fish and Wildlife Service, Anchorage, Alaska. 24 pp.
See No. 414.
417. Sellers, D. 1979. Reconnaissance trip to Pilot Point - Cinder River, Alaska. Unpublished memorandum. Department of Fish and Game, Anchorage, Alaska. 7 pp.
This memorandum also reports fall concentrations of emperor geese in 1968, 1969, 1970, 1975, and 1976.
418. Sewastianoff, L. 1802. Description d'une nouvelle espece de canard et d'une variete de l'huitrier quise trouvent dans le cabinet d'histoire naturelle de l'academie imperiale des sciences. *Nova Acta Academiae Scientiarum Imperialis Petropolitanae* XIII:346-351.
This is the initial description of the species as *Anas canagica*. It is based on a specimen collected by a Captain Billings near the Island of Canaga or Kyktak in the Aleutians (see Turner 1886). Sewastianoff found the specimen among the bird collection of Catherine II. He recognized it as unique and described it in detail. He included both measurements and a beautiful print as Table X (reproduced on the cover of this publication). Steve Bach translated the period French for us and the following descriptive snippet is taken from that translation. "This duck has the face, the top of the head and the nape covered by white feathers, which enwrap the posterior part of the neck descending and narrowing down to the back. The throat, the sides and the middle of the neck are black, marked with white points, which become rays on the feathers which cover the top or beginnings of the breast, covering up to the beginning of the belly the feathers of a color of bright gray bordered by black and white. But as these feathers are situated very close to one another and overlap each other, the bright gray color which forms the base of each feather is not readily apparant". Sewastianoff

comments that the species may have been domesticated although this more likely reflects on his interpretation of stories of the manner in which natives of the region herd molting birds into traps for harvest. The translation of the period French by Bach is available from the authors.

419. Sexton, C.W. and G.L. Hunt. 1979. An annotated checklist of the birds of Orange County, California. Museum of Systematic Biology, University of California, Irvine. 95 pp.

They provide a summarization of extralimital observations of emperor geese in Orange County, California.

420. Shepherd, P.E.K. 1961. Report of State of Alaska to the Pacific Flyway. Unpublished Pacific Flyway Report 46. U.S. Fish and Wildlife Service, Juneau, Alaska. 8 pp.

There are subsequent reports from 1962 (4 pages) and 1963 (3 pages) by this author. The 1963 report describes the effects of flood tides on the nesting success of ducks and geese on the lower Kashunuk River study area.

421. Sherrod, S.K., C.M. White, and F.S.L. Williamson. 1976. Biology of the bald eagle on Amchitka Island, Alaska. *Living Bird* 15:143-182.

They describe an eagle catching an adult emperor and carrying it to a sea stack.

422. Shoffner, R.N. 1977. Chromosomal polymorphisms and heteroploidy in birds. *Nucleus* 20:112-118.

See No. 424.

423. Shoffner, R.N., J.C. Otis, and F. Lee. 1973. Trisomy and abnormal chromosome segregation in Ross-Emperor hybrids. *Genetics* 74:253.

See No. 424.

424. Shoffner, R.N., N. Wang, F. Lee, R. King, and J.S. Otis. 1979. Chromosome homology between the Ross goose and the emperor goose. *Journal of Heredity* 70:395-400.

They describe formation of F1 and F2 hybrids between the species and discusses the chromosomal homologies. While the hybrid F1 birds were fertile, there was high embryonic mortality. Interestingly, the color phenotypes of the hybrids are very similar to those of heterozygous blue geese (*Anser caerulescens*). Similar publications include: Nos. 422 and 423.

425. Short, B.E. and H. Johnson. 1992. Migration, staging and nesting of migratory waterfowl, southwest Alaska - A status report of the 1992 waterfowl monitoring efforts on Togiak National Wildlife Refuge. Unpublished report. U.S. Fish and Wildlife Service, Dillingham, Alaska. 35 pp.

See No. 81.

426. Smith, R.H., F. Dufresne, and H.A. Hansen. 1964. Northern watersheds and deltas. Pages 51-66 in J. Linduska, editor. *Waterfowl Tomorrow*. U.S. Department of Interior, Washington, D.C.

They discuss the importance of the Yukon-Kuskokwim Delta as one of the important northern watersheds for production of migratory waterfowl.

427. Sowls, A.L., S.A. Hatch, and C.A. Lensink. 1978. *Catalog of Alaskan seabird colonies*. (U.S. Fish and Wildlife Service Office of Biological Services Publication 78/78). Government Printing Office, Washington. 356 pp.

The authors report where emperor geese were observed during seabird colony surveys.

428. Spencer, D.L. 1949. Yukon-Kuskokwim waterfowl survey, June 10-21, 1949. (Project 3-R-4 unpublished report). U.S. Federal Aid in Wildlife Restoration Quarterly 4(1):6-10.

Spencer summarizes the results of aerial surveys, ground counts, and banding of waterfowl, including emperor geese, on the Yukon-Kuskokwim Delta.

429. Spencer, D.L., U.C. Nelson, and W.A.E. Wilkins. 1951. America's greatest goose-brant nesting area. Pages 290-295 in *Transactions 16th North American Wildlife Conference*. Wildlife Management Institute, Washington.

They highlight the importance of the Yukon-Kuskokwim Delta to migratory waterfowl.

430. Stehn, R.A. 1986. Nesting success of geese in the coastal tundra region of the Yukon-Kuskokwim Delta, 1985. Unpublished report. U.S. Fish and Wildlife Service, Anchorage, Alaska. 41 pp.

This is the first of a series of annual reports on data collected from a series of randomly-located 0.324-square-kilometer plots selected on the Yukon-Kuskokwim Delta and searched during goose incubation. The 1986 data are reported by Stehn (12 pages). Subsequent reports from this study include: Nos. 432, 434, 435, 436, 437, and 477.

431. Stehn, R.A. 1987. An evaluation based on goose nesting density of certain native land holdings on the Yukon-Kuskokwim Delta. Unpublished report. U.S. Fish and Wildlife Service, Anchorage, Alaska. 10 pp.

Preliminary analysis suggests that 19.5% of the emperor geese nesting in the area do so on Native land inholdings on the Yukon-Kuskokwim Delta.

432. Stehn, R.A. 1991. Nesting populations and production of geese on the Yukon-Kuskokwim Delta. Unpublished report. U.S. Fish and Wildlife Service Report, Anchorage, Alaska. 45 pp.

See No. 430.

433. Stehn, R.A. and D. Dragoo. 1984. An evaluation of productivity and mortality factors influencing geese at South Nelson Island, Alaska. Unpublished report. U.S. Fish and Wildlife Service, Anchorage, Alaska. 35 pp.

This report is a summarization of data on nesting geese at South Nelson Island, Yukon-Kuskokwim Delta, Alaska.

434. Stehn, R.A., A. Loring, M.R. Petersen, J.S. Sedinger, C.R. Ely, and K. Kertell. 1985. Nesting success of geese in the coastal tundra region of the Yukon-Kuskokwim Delta: 1985 field report. Unpublished report. U.S. Fish and Wildlife Service, Anchorage, Alaska. 10 pp.

See No. 430.

435. Stehn, R.A., M. Wege, J. Morgart, and G. Walters. 1990. Population size and production of geese and spectacled eiders nesting on the Yukon-Kuskokwim Delta, Alaska. Unpublished report. U.S. Fish and Wildlife Service, Anchorage, Alaska. 10 pp.

See No. 430.

436. Stehn, R.A., M. Wege, and G. Walters. 1991. Population size and production of geese nesting on the Yukon-Kuskokwim Delta, Alaska. Unpublished report. U.S. Fish and Wildlife Service, Anchorage, Alaska. 17 pp.

See No. 439.

437. Stehn, R.A., M. Wege, and G. Walters. 1992. Population size and production of geese nesting on the Yukon-Kuskokwim Delta, Alaska. Unpublished report. U.S. Fish and Wildlife Service, Anchorage, Alaska. 17 pp.

See No. 430.

438. Stejneger, L. 1885. Results of Ornithological Explorations in the Commander Islands and in Kamtschatka. Bulletin 29 of the U.S. National Museum. Government Printing Office, Washington. 382 pp.

The expedition to the Commander Islands and Kamtschatka was in 1882-1883. Bean, white-front, Canada, and brant geese were collected. Snow geese were mentioned by the natives. No emperor geese were seen or collected. On page 318 Stejneger asserts that von Kittlitz' (1858) record of *Anser pictus* was likely *Branta canadensis hutchinsii*.

439. Stejneger, L. 1887. Contributions to the natural history of the Commander Islands, No. 7, Revised and annotated catalogue of the birds inhabiting the Commander Islands. Proceedings of the U.S. National Museum 10:117-145.

Stejneger refers to emperor geese as *Philacte canagica*. He collected two specimens on 6 April 1885 on Bering Island. He notes that they and those collected by Nordenskiöld on the Tschatka Peninsula are the only "old world" records for the species. Measurements for Stejneger's birds 1, 2 (in mm) are: wing: 386, 402; Tail

feathers: 125, 130; Exposed Culmen: 37, 41; Tarsus: 69, 73; Mid toe with claw: 71, 76.

440. Stejneger, L. 1888. Palmen's contributions to the knowledge of the bird fauna of the Siberian coasts of the Arctic sea. *Auk* 5:306-311.
- Stejneger provides a review of Palmen's book on the Voyage of the Vega. Much of the paper deals with shorebird taxonomy, but the closing paragraph asserts that Palmen's claim that authors have overlooked von Kittlitz' (1858) statement regarding emperor geese in Kamtschatka is incorrect. Stejneger notes that the bird in question was really *Branta hutchinsii*.
441. Stejneger, L. 1889. Birds of the Kuril Islands. Proceedings of the U.S. National Museum 21:269-296.
- Stejneger summarizes avifauna of the Kuril Islands from his own collections as well as the work and diaries of others. The only geese mentioned are *Anser segetum middendorffi*, *Anser albifrons gambeli*, *Branta canadensis hutchinsii*, and *Branta nigricans*. No emperor geese are reported.
442. Stejneger, L. 1936. Georg Wilhelm Steller - The Pioneer of Alaskan Natural History. Harvard University Press, Cambridge. 623 pp.
- This is an amazingly detailed and well-written account of Steller and especially his explorations as the naturalist on Bering's Second Expedition. This work is based not just on Steller's journal (see Golder 1925) but on all of his available letters, diaries, and papers, which are referenced. The bulk of the translations are by Stejneger. There are annotated accounts of descriptions of the numerous plants, mammals, fish, and birds found and reported by Steller. The only reference to a goose is *Branta canadensis hutchinsii*.
443. Stirling, D. 1965. A sight record of the emperor goose (*Philacte canagica*) at Victoria, British Columbia. *Murrelet* 46:36.
- This is one of several records of extralimital observations of emperor geese in the Pacific Northwest.
444. Strang, C.A. 1976. Feeding Behavior and Ecology of Glaucous Gulls in Western Alaska. Ph.D. Thesis, Purdue University, West Lafayette.
- Strang provides some details of emperor goose goslings as prey for this species.
445. Stresemann, E. 1949. Birds collected in the north Pacific area during Captain James Cook's last voyage (1778 and 1779). *Ibis* 91:244-255.
- Stresemann provides details on the route of Cook's third voyage including likely names of Alaskan sites. He notes that they saw both blue and white phase snow geese in the Vancouver Island area. Given the scarcity of blue phase snow geese on the west coast and the fact that the observation was in the spring, the blue geese could have been emperor geese. However, Stresemann's claim is specifically refuted by Beaglehole (1967), and we found no reference to snow or blue geese in any of the journals

associated with Cook's voyage. The closest is Vancouver's (1798) reference to white and brown geese north of Vancouver Island.

446. Sutton, C.M. and R.S. Wilson. 1946. Notes on the wintering birds of Attu. *Condor* 48:83-91.

They note that emperor geese are very common on Attu.

447. Swarth, H.S. 1934. Birds of Nunivak Island, Alaska. *Pacific Coast Avifauna* 22:1-64.

Swarth provides details on collected individuals.

448. Taber, R.D. 1946. The winter birds of Adak, Alaska. *Condor* 48:272-277.

Taber provides details on fall arrival and spring departure, distributions of wintering flocks, and daily activity of emperor geese on Adak.

449. Taczanowski, L. 1877. Revue critique la faune ornithologique de la Siberie orientale. *Bulletin de la Societe Zoologique de France* 2:40-52.

His list of geese includes: *Anser rubrirostris*, *Anser grandis*, *Anser segetum*, *Anser albifrons*, *Anser minutus*, *Eulabeia indica*, *Cygnopsis cygnoides*, *Chen hyperboreus*, *Bernicla leucopsis*, *Bernicla brenta*, and *Bernicla ruficollis*. He synonymizes these to Latham (1824) and Pallas (1831). None of these (e.g., *A. grandis*) fit the description of emperor geese.

450. Taczanowski, L. 1893. Faune ornithologique de la Siberie Orientale. *Memoires de l'Academie Imperiale des Sciences de Saint Petersburg* XXXIX:1112-1113.

Taczanowski refers to emperor geese as *Philacte canagica*. He provides some ecological details.

451. Talmadge, R.R. 1947. Emperor geese again on Humboldt Bay, California. *Condor* 49:172-173.

This is one of several records of extralimital observations of emperor geese in the Pacific Northwest.

452. Taylor, J.T. 1984. Fall survey of emperor geese and other waterfowl of the Alaska Peninsula. Unpublished report. U.S. Fish and Wildlife Service, King Salmon, Alaska. 4 pp.

This report provides data from a survey for emperor geese on the Alaska Peninsula.

453. Thayer, E.S. 1951. Shishmaref waterfowl project report. Unpublished report (3-R-6). Alaska Game Commission Federal Aid in Wildlife Restoration Quarterly Progress Report 6:3-16.

He reports observations of natural history of nesting emperor geese on the Seward Peninsula. Other waterfowl species accounts include: brant, mallard, pintail, greater

scaup, oldsquaw, Pacific eider, and red-breasted merganser. Thayer also discusses the effect of predation and native harvest.

454. Thayer, J.E. and O. Bangs. 1914. Notes on the birds and mammals of the arctic coast of east Siberia. *Proceedings of the New England Zoology Club* 5:1-48.

They note that emperor geese are rare along the north coast of the Chukchi Peninsula.

455. Thompson, C.F. 1967. Notes on the birds of the Northeast Cape of St. Lawrence Island and of the Penuk Islands, Alaska. *Condor* 69:411-419.

Thompson observed a single possibly nesting emperor goose.

456. Thompson, S.C. 1987. Incubation behavior of emperor geese. M.Sc. Thesis, University of California, Davis. 80 pp.

This thesis is from a study on the incubation behavior of emperor geese at Kokechik Bay, Alaska. Publications from the thesis include: Nos. 457 and 458.

457. Thompson, S.C. and D.G. Raveling. 1987. Incubation behavior of emperor geese compared with other geese: interactions of predation, body size, and energetics. *Auk* 104:707-716.

They provide a detailed evaluation of incubation behavior of emperor geese. See No. 456.

458. Thompson, S.C. and D.G. Raveling. 1988. Nest insulation and incubation constancy of arctic geese. *Wildfowl* 39:124-132.

They provide detailed information on incubation behavior and insulation quality of nest material. See No. 456.

459. Timm, D. 1972. Report of survey and inventory activities part III - waterfowl and small game (Project W-17-4). Unpublished Federal Aid in Wildlife Restoration Report. Alaska Department of Fish and Game, Juneau, Alaska. 46 pp.

This is one of many Federal Aid in Wildlife Restoration Reports that provide some information on emperor geese.

460. Tirre, W.J. 1947. The emperor goose at Seattle, Washington. *Murrelet* 28:41.

This is another report of an extralimital observation of emperor geese along the Pacific Northwest.

461. Tougarinov, A.J. 1941. Faune de L'URSS. Aves, Anseriformes. Vol. I, number 4. L'Academie des Sciences de L'URSS, Moscow. 382 pp.

Tougarinov provides a summary of taxonomy and natural history for the species breeding in Russia.

462. Townsend, C.H. 1886. Four rare birds in northern California. *Auk* iii:490-491.
One emperor goose was shot in Humboldt Bay in 1885. This is an early extralimital record of an emperor goose in the Pacific Northwest.
463. Townsend, C.H. 1887a. Field notes on the mammals, birds and reptiles of northern California. *Proceedings of the U.S. National Museum* X:159-241.
Townsend refers to emperor geese as *Philacte canagica*. One was shot by Mr. Fiebig of Eureka in winter of 1884.
464. Townsend, C.H. 1887b. List of the midsummer birds of the Kowak River, northern Alaska. *Auk* iv:11-13.
Emperor geese are not mentioned.
465. Townsend, C.H. 1887c. Notes on the mammals, birds and fishes collected at various places between the Aleutian Islands and Kotzebue Sound. Pages 98-101 in M.A. Healy, editor. Report of the Cruise of the Revenue Marine Steamer 'Corwin' in the Arctic Ocean in 1885. Signal Service, U.S. Government Printing Office, Washington, D.C.
"St. Michaels is a famous place for geese in the fall. Natives brought them on board by the dozen, the assortment consisting of white fronts, canadas and emperors." AMNH specimen #61602 is one of these. Emperor geese are rare on St. Paul Island.
466. Townsend, C.H. 1887d. Notes on the natural history and ethnology of northern Alaska. Pages 90-94 in M.A. Healy, editor. Report of the Cruise of the Revenue Marine Steamer 'Corwin' in the Arctic Ocean in 1885. Signal Service, U.S. Government Printing Office, Washington, D.C.
From surveys of Kowak River, Kotzebue Sound, white-fronted geese were most common and both hutchinson and cackling Canada geese were reported. No emperor geese were seen. He says they often roasted fledgling geese stuffed with potatoes and wild onions.
467. Turner, L.M. 1885. Notes on the birds of the Nearer Islands, Alaska. *Auk* ii:154-159.
Turner refers to emperor geese as *Philacte canagica*.
468. Turner, L.M. 1886. Contributions to the natural history of Alaska. Pages 115-196 in Arctic Series of Publications. Vol. II. Signal Services, Washington.
Turner refers to emperor geese as *Philacte canagica* and provides numerous details on the history, distribution, ecology, and hunting of the species. He notes the confusion of the Russian words for guinea hen and tsar (see Collins et al. 1945). He also points out that in the Aleutians the Russian name for this goose is Lidenna (beach), while on St. Michaels the same term is applied to the white-cheeked goose, *Branta canadensis hutchinsii*. The latter is called the Tundrina goose in the Aleutians, a name used on St. Michaels for the white-fronted goose, *Anser albifrons*. Turner resolves the confusion over the place of origin of Sewastianoff's specimen, noted there as Canaga or Kyktak.

The island Kanaga is too far west to have been "...situe derriere la cap Aliazka", an additional descriptor in the original paper. Turner explains that this is likely the island Kodiak whose Inuit names were Kaniag or Kanaguk. He also notes that Kyktak is simply one of the many spellings of the Inuit word Kikhtuk or island. There is a detailed accounting of native harvest and use of this species throughout the year. He provides a palatability review and ranking of geese occurring in the area and concludes that *Philacte canagica* is "scarcely to be thought of as food".

469. Udvardy, M.D.F. 1979. Zoogeographic and taxonomic relationships of seabirds in North America. U.S. Fish and Wildlife Service Wildlife Research Reports 11:167-170.

This is a brief summarization of the zoogeographic and taxonomic relationships of marine birds from north and northwestern North America.

470. Vancouver, G. 1798. A Voyage of Discovery to the North Pacific Ocean and Round the World. Volumes 1 to 4. G.G. & J. Robinson, London.

Vancouver went up the coast from Nootka to Cook Inlet. He explored that as far as Turnagain Arm and then sailed south past Kodiak and left the region. The descriptions of natural history and birds for the region are not extensive and are vague. For example, he notes seeing white and brown geese at Nootka.

471. Vieillot, L.P. 1807. Histoire Naturelle Des Oiseaux de l'Amerique Septentrionale, contenant un grande nombre d'especies descrite ou figures pour la premiere fois. E.A.M. Chez Desray, Paris.

This is a two-volume series that addresses the "new" birds of North America and includes gorgeous plates. Unfortunately, it follows the systematic order of the period which places water birds last. Like several of these treatments, the author died before he reached the ducks and geese.

472. Verreaux, J. 1868. Description de quelques nouvelles especes d'Oiseaux. Nouvelle Archives du Museum Paris 4:85-89.

Verreaux makes a passing reference to Gray (1849) who reassigned several species, but no specific reference to emperor geese.

473. Walker, A. 1921. A record of the emperor goose in Oregon. Condor 23:65.

This is one of several extralimital records of observations of emperor geese in the Pacific Northwest.

474. Walkinshaw, L.H. 1950. Some bird observations at Chevak, Alaska. Auk 67:249.

Walkinshaw found *Philacte canagica* nesting at Chevak.

475. Wege, M.L. 1985. An evaluation of productivity and mortality factors influencing goose populations - A status report of the 1984 waterfowl monitoring effort at Old Chevak field camp. Unpublished report. Oregon State University, Corvallis, Oregon. 54 pp.

See No. 380.

476. Wege, M.L. 1986. An evaluation of productivity and mortality factors influencing goose populations - A status report of the 1986 waterfowl monitoring effort at Kigigak Island field camp. Unpublished report. U.S. Fish and Wildlife Service, Bethel, Alaska. 25 pp.

See No. 77.

477. Wege, M.L. 1993. Population size and production of geese nesting on the Yukon-Kuskokwim Delta, Alaska. Unpublished report. U.S. Fish and Wildlife Service, Bethel, Alaska. 18 pp.

See No. 430.

478. Wentworth, C. 1993. Subsistence waterfowl survey Yukon-Kuskokwim Delta. Unpublished report. U.S. Fish and Wildlife Service, Anchorage, Alaska. 177 pp.

Wentworth provides a seasonal summary of harvest. There is an earlier preliminary version of this report dated 1991.

479. Wilbur, S.R. and C.F. Yokom. 1971. Unusual geese in the Pacific coast states. *Murrelet* 52:16-19.

They provide details on all unusual sightings of emperor geese in the Pacific coast states.

480. Wilk, R.J., K.I. Wilk, and R.C. Kuntz. 1986. Abundance, age composition and observations of emperor geese in Cinder Lagoon, Alaska Peninsula, 17 September - 10 October, 1986. Unpublished report. U.S. Fish and Wildlife Service, King Salmon, Alaska. 41 pp.

The authors present information on the abundance, age composition, and behavior of emperor geese staging in fall at Cinder Lagoon, Alaska. Subsequent reports include: No. 481.

481. Wilk, R.J., K.I. Wilk, and K.M. Sowl. 1987. Emperor geese at Cinder River Lagoon, Alaska Peninsula during fall staging and migration - 1987. Unpublished report. U.S. Fish and Wildlife Service, King Salmon, Alaska. 28 pp.

See No. 480.

482. Willet, G. 1921. Bird notes from southeastern Alaska. *Condor* 23:156-159.

Emperor geese are recorded.

483. Williams, L. 1946. The emperor goose on Carmel Bay, California. *Condor* 48:139.

This is one of several records of extralimital observations of emperor geese along the Pacific Coast.

484. Williamson, F.S.L., M.C. Thompson, and J.Q. Hines. 1966. Avifaunal Investigations. Pages 437-480 in N.J. Wilimovsky and J.N. Wolfe, editors. *Environment of the Cape*

Thompson Region. U.S. Atomic Energy Commission Division of Technical Information, Washington, D.C.

The authors present information on bird populations in the Cape Thompson region, Alaska, during spring and summer 1959-1961.

485. Wilson, A. 1814. American Ornithology. Vol. 8. Bradford and Innskeep, Philadelphia. 146 pp.

Wilson does not mention emperor geese.

486. Wilson, A. 1832. American Ornithology. Vol. iii. Wittaker, Treacher and Arnot, London. 523 pp.

Wilson does not mention emperor geese.

487. Wilson, R.S. 1948. The summer bird life of Attu. Condor 50:124-129.

Wilson notes that this normal winter resident leaves for the summer.

488. Wotton, M. and P. Thompson. 1979. Further observations of the birds of Kokechik Bay, Yukon-Kuskokwim Delta, Alaska, April 27 - July 2, 1979. Unpublished report. U.S. Fish and Wildlife Service, Bethel, Alaska. 14 pp.

The authors present observations of several species including emperor geese they encountered at Kokechik Bay, Alaska, in spring and early summer.

489. Wright, J.M. 1978. Reindeer grazing in relation to bird nesting in the northern Seward Peninsula. Unpublished report. U.S. Fish and Wildlife Service, Fairbanks, Alaska. 81 pp.

The author provides basic habitat descriptions of nesting birds, including emperor geese, and basic habitat descriptions of areas preferred by reindeer.

490. Young, H.G. and L.M. Ashcroft. 1985. The behavior of emperor geese (*Anser canagica*) during one breeding season. Dodo (Journal of the Jersey Wildlife Preservation Trust) 22:71-84.

They provide behavioral details on families of captive emperor geese whose exact lineages are known.

491. Zammuto, R.M. 1986. Life histories of birds: clutch size, longevity, and body mass among North American game birds. Canadian Journal of Zoology 64:2739-2749.

Anser canagica is included in a comparative analysis that shows a negative relationship between annual clutch size and longevity. The effect is more pronounced when body mass is removed as a covariate.

492. Zerlang, L. and J.T. Fraser. 1931. Emperor geese in Humboldt County. Condor 33:74.

This is one of several extralimital observations of emperor geese in the Pacific Northwest.

493. Zwiefelhofer, D. 1990. Emperor goose survey. Unpublished report. U.S. Fish and Wildlife Service, Kodiak, Alaska. 3 pp.

Zwiefelhofer reports on numbers of emperor geese recorded on 11 January 1990 at Sitkinak Island and Sukhoi Lagoon on Kodiak Island. He also references numbers seen on similar counts in January 1988 and 1989.

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Appendix A. Scientific nomenclature used for emperor geese.

	Citation Number
<i>Anas canadicus</i>	7
<i>Anas canagica</i>	192, 418
<i>Anas canagicus</i>	7
<i>Anser canagica</i> ¹	26, 44, 54, 56, 91, 170, 208, 232, 249, 335, 490, 491
<i>Anser canagicas</i>	211
<i>Anser canagicus</i>	54, 164, 177, 210, 350, 398, 401, 410
<i>Anser pictus</i>	48, 53, 54, 164, 283, 296, 337, 348, 349, 438
<i>Bernicla canagica</i>	126, 300, 316, 383, 396
<i>Bernicla picta</i>	150
<i>Chen canagica</i> ¹	13, 14, 132, 271, 272, 278, 304, 334, 335
<i>Chloephaga canagica</i>	1, 23, 24, 48, 50, 107, 111, 114, 116, 118, 150, 158, 176, 198, 216
<i>Chloephaga picta</i>	48
<i>Chloephaga pictus</i>	198
<i>Philacte canadica</i>	6, 13, 128, 237, 241, 245, 279
<i>Philacte canagica</i> ¹	25, 27, 44, 58, 76, 79, 108, 109, 110, 112, 117, 135, 143, 144, 151, 152, 153, 156, 159, 288, 317, 318, 326, 328, 345, 384, 385, 399, 439, 443, 450, 463, 467, 468, 474
<i>Philacte canagicus</i>	113, 350

¹Scientific designations that are currently in use.