Sea Duck Joint Venture
Annual Project Summary for Endorsed Projects
FY 03 – (October 1 to Sept 30)

Project Title: No. 25: Breeding biology and habitat use of King Eiders on the Coastal Plain of Northern Alaska

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Partners: Coastal Marine Institute, North Slope Borough, Conoco/Phillips Alaska, Inc.

Project Description: Little is known about the breeding biology of King Eiders (*Somateria spectabilis*), partly because they typically nest in remote areas in low densities. The western North American population of King Eiders declined by more than 50% between 1979 and 1996 for unknown reasons. Additionally, NPR-A is being leased for oil and gas exploration and may potentially be developed. Within the northeast planning area of NPR-A is the highest known density of nesting King Eiders on the north slope of Alaska. During the summers of 2002 and 2003 we studied King Eiders in an area to the southeast of Teshekpuk Lake and in the Kuparuk oilfields on the North Slope of Alaska to evaluate the potential impacts of development and to provide information on their basic breeding biology and habitat use. We will examine and compare timing of nesting, clutch size, reproductive success, and habitat use between a relatively undisturbed site at Teshekpuk Lake and an area with considerable human activity at Kuparuk.

Objectives: Our primary objectives are to document basic breeding biology of King Eiders in a developed and undeveloped site. This includes documenting arrival and departure dates, and timing of nest initiation on the North Slope over multiple years. In addition, we are estimating nest success and documenting apparent causes of failure, brood survival, and movement of broods. Finally, we will compare nest site characteristics between the two study areas.

Preliminary Results: Nest initiation in 2003 ranged from 11 June - 4 July at Teshekpuk and 5 June - 30 June at Kuparuk. We monitored 40 active King Eider nests at Teshekpuk Lake and 39 at Kuparuk. Apparent nest success was 17.5% at Teshekpuk and 35.1% at Kuparuk in 2003. King Eider nests hatched between 9 - 17 July at Teshekpuk and 8-25 July at Kuparuk. Mean clutch size was 4.18 ± 0.15 (SE, n = 33) at Teshekpuk and 3.97 ± 0.17 (SE, n = 34) at Kuparuk. Eight hens were trapped at Teshekpuk during the last week of incubation (5-15 July 2003) and radio transmitters were attached subcutaneously. Of the hens trapped, only three successfully hatched eggs. Two of the hens with broods were followed for over a week before they traveled too far away to be located on foot. Twelve hens were trapped and had transmitters attached at

Kuparuk (3-20 July). Nine of these hens successfully hatched chicks and seven broods were followed. Direction and distance traveled by these broods has not yet been analyzed, however, there does not appear to be a clear pattern among broods.

Project Status: We plan to analyze our data in the following year, including estimations of nest success and brood survival and comparing nest site characteristics of our two study sites. We have decided to continue and expand this study for another two years (Rebecca McGuire will become a PhD student on the project). We will continue to monitor nests at the two study sites over the next two field seasons and will expand the study to include the use of remote videography to document nest predators.