Title	Over Water Migration Movements of Black Brant
Administered by	Pacific OCS Region
BOEM Contact(s)	David Pereksta (david.pereksta@boem.gov)
Procurement Type(s)	Interagency agreement
Performance Period	FY 2020–2024
Date Revised	March 7, 2019
PICOC Summary	Write one or two sentences for each of the following elements, as appropriate.
Problem	Migrating waterfowl may be impacted by offshore wind turbines including possible turbine avoidance, thus, a reduction in habitat, as well as risk of collision. Black Brant have been identified as a species that could be impacted during their oversea migration along the Pacific Coast.
Intervention	Attach tracking devices to 150 Black Brant over three years on their breeding grounds in Alaska prior to their southbound migration. Collect time series data for up to five years including latitude, longitude, and altitude of the birds as they migrate.
Comparison	Identify oversea Black Brant migratory routes from Alaska to the U.S. Pacific Coast to understand pathways, timing, and flight altitude.
Outcome	Use the data collected to characterize potential risk to the species from offshore wind energy development and incorporate into offshore wind turbine micrositing decisions.
Context	Pacific Coast of North America (Alaska to California)

BOEM Information Need(s): BOEM needs to address potential bird interactions with offshore wind energy infrastructure off the U.S. West Coast. Stakeholder input regarding offshore wind development offshore California has identified that impacts to migratory birds are a concern. In particular, several stakeholders have specific concerns about potential impacts to the Black Brant; a migratory species of goose that breeds in the Arctic and winters along the Pacific Coast of the U.S. and Mexico. Black Brant have an oversea migration and fly over the Gulf of Alaska (GOA) *en masse* during fall migration. The entire migrating population have been known to simultaneously depart Izembek Lagoon National Wildlife Refuge, located at the tip of the Alaska Peninsula for long overwater flight to wintering areas on the Pacific Coast. Several critical wintering areas for Black Brant along the coast of California are close to BOEM's Wind Energy Call Areas (Humboldt Bay and Morro Bay). The information collected by this study will be used by BOEM to analyze the effects to Black Brant and other waterfowl from offshore wind energy projects off the Pacific Coast of the U.S. and influence the micrositing of turbines if appropriate.

Background: Numerous bird species fly over open ocean throughout their annual cycle. Some species utilize open ocean habitats on a daily basis while other species use the open ocean biannually for long-distance migrations. For the latter group, minimal observational information is available about threat avoidance. There are inadequate

data available on these birds for informing avian risk assessments at offshore development sites. It is known that waterfowl leave southwest Alaska and fly over the GOA to make landfall between the Alaska panhandle and the southern tip of Baja California, but exact spatial data of these migrations is unknown. Where they make landfall depends on prevailing winds. The migratory movements of several species of Arctic-nesting geese are being tracked from the Arctic. Recent data collected on Greater White-fronted Geese and Snow Geese show that they migrate north in the spring through the interior and along the Pacific Coast to breeding areas in Alaska. However, during the fall migration to wintering areas , all surviving tagged geese flew directly from southwest Alaska over open ocean to the northern California Coast, passing near the proposed offshore wind development areas.

Swans and geese are sensitive to disturbance from offshore wind energy infrastructure (Desholm 2009). In a recent vulnerability assessment for marine birds of the California Current System, Black Brant were found to have a "medium" population collision vulnerability and a "high" population displacement vulnerability (Adams *et al.*, 2016). Current tracking data has shown that studies like the one proposed can provide information to assess the potential effects of offshore wind development on migrating waterfowl, including Black Brant. The larger body size of Black Brant allows them to carry larger and more accurate detailed tracking devices (Global System for Mobile Communications [GSM] collars). Identifying the oversea migratory routes of Black Brant from Alaska to the Pacific Coast will allow BOEM to assess the potential collision and displacement risks to the species from offshore wind energy development and cite projects in a way that minimize effects to the species.. In addition, if tracking of Black Brant continued during the development and operation of wind energy installations, the data collected during this proposed study would facilitate measuring the actual effects of the projects to the species.

Objectives: Collect data on over water migration routes for Black Brant along the Pacific Coast of North America to facilitate assessing potential collision and displacement impacts to the species from offshore wind energy development.

Methods: Fifty (50) Black Brant per year for three years would be outfitted with Global Positioning System (GPS)/GSM collars prior to their southbound migration. These devices provide minute-by-minute data for up to five years including latitude, longitude, and altitude of the birds as they migrate. Black Brant tagging can be incorporated into one or more of several ongoing projects in Alaska (Izembek National Wildlife Refuge or Yukon Delta National Wildlife Refuge).

Specific Research Question(s):

1. What are the migratory routes of Black Brant from the Arctic to the Pacific Coast of the U.S. including their spatial location, timing, and flight altitudes?

2. What is the overlap of these migratory routes with proposed call areas for wind energy development off the Pacific Coast of the U.S.?

3. What is the risk to migrating Black Brant and other waterfowl from offshore wind energy development?

References:

Adams, J., Kelsey, E.C., Felis, J.J., and Pereksta, D.M., 2017. *Collision and displacement vulnerability among marine birds of the California Current System associated with offshore wind energy infrastructure* (ver. 1.1, July 2017): U.S. Geological Survey Open-File Report 2016-1154, 116 p.

Desholm, M., 2009. *Avian sensitivity to mortality—Prioritizing migratory bird species for assessment at proposed wind farms*: Journal of Environmental Management. v. 90, no. 8. p. 1,672–1,679.