

**EIDER NEST SEARCHES AT THE CD-3 PAD, ICE ROAD, AND
SPILL-RESPONSE SITES ON THE COLVILLE RIVER DELTA,
2011**

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ANCHORAGE, ALASKA



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FAIRBANKS, ALASKA

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FINAL REPORT

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EXECUTIVE SUMMARY

Spectacled Eiders (*Somateria fischeri*) and Steller's Eiders (*Polysticta stelleri*) occur on the Colville River Delta and are listed as threatened species under the Endangered Species Act (ESA). ConocoPhillips Alaska, Inc. (CPAI) operates the Alpine Satellite Development Project (Alpine Oilfield), an oil and gas development on the Colville River Delta, in areas of potential breeding habitat for these 2 species of eiders. The Spectacled Eider is a common nester in the northern parts of the Colville River Delta, while the Steller's Eider is rarely sighted on the Colville River Delta and no nests or broods have been recorded on the delta. The nesting range of Steller's Eiders once included the Colville River Delta, but over the last 3–4 decades that range has retracted westward to the Barrow area. To comply with the ESA and to avoid disturbance of Spectacled Eiders during the nesting season, CPAI documented the location of Spectacled Eider nests in areas slated for off-pad activities (e.g., tundra clean-up, surveying, spill prevention). Once the locations of active nests were identified, CPAI delayed scheduled work activities near the nest locations until after the nesting season or, if it was necessary to pre-deploy boom across the river channel to comply with CPAI's Oil Discharge Prevention and Contingency Plan, nest attendance by eiders was closely monitored to document the fate of the nests near boom deployment sites.

This is the third year CPAI has contracted ABR, Inc., to conduct nest searches for eiders in areas where off-pad work was scheduled during the eider nesting season. In 2011, these areas included the CD-3 pad and airstrip, the ice road from CD-2 to CD-3, and 14 Alaska Clean Seas (ACS) spill-response equipment sites. Other ACS sites were evaluated for suitable eider nesting habitat during the 2009 and 2010 nesting season, but were excluded from the 2011 nest search because either eider habitat was lacking at a specific site or no activities were scheduled at these sites during the

eider nesting season. Search areas were delineated as 200-m buffers around identified work sites. The search area for the ice road was a 200-m buffer on each side of the ice road centerline.

In 2011, a total of 5 Spectacled Eider, 1 King Eider (*Somateria spectabilis*), and 1 unidentified eider nests were discovered during nest searches. One of the active Spectacled Eider nests was located outside the search buffer >200 m from the ice road centerline. Three Spectacled Eider nests (2 active and 1 inactive) and 1 unidentified eider nest (inactive) were found in the CD-3 pad and airstrip buffers. One active Spectacled Eider nest was found in the search buffer at ACS Site 3, and 1 inactive King Eider nest was found in the search buffer at ACS Site 9. We found no Steller's Eiders or their nests in any of the areas searched in 2011.

ABR provided CPAI field environmental compliance staff the coordinates of active eider nest locations. CPAI staff then instructed the helicopter pilots and off-pad workers of areas to avoid. At the end of the nesting season, 2 of the 4 Spectacled Eider nests that were active when discovered hatched young. A time-lapse camera was placed to monitor the Spectacled Eider nest at ACS Site 3 during deployment of spill-containment equipment; camera images documented that nest's failure from arctic fox predation, which was unrelated to the activities during deployment. Workers at Site 3 may have caused the incubating eider to conceal on its nest, but the hen maintained normal incubation and did not leave the nest during work at the site.

A review was conducted of Spectacled Eider nest locations recorded in 2011 and previous years along with an assessment of nesting habitat available in the areas searched. Based on the review and assessment, we recommend continuing nest searches around the CD-3 pad and airstrip, ice road, 12 of 19 the spill-response sites, and all 3 pipeline-bridge sites, if off-pad activities are expected in these locations during the 2012 breeding season.

TABLE OF CONTENTS

EXECUTIVE SUMMARY	iii
LIST OF FIGURES	v
LIST OF TABLES.....	v
ACKNOWLEDGMENTS	v
INTRODUCTION	1
OBJECTIVES.....	1
METHODS.....	3
RESULTS	5
CD-3 PAD.....	5
ICE ROAD.....	5
SPILL-RESPONSE SITES	5
SUMMARY.....	12
LITERATURE CITED	13

LIST OF FIGURES

Figure 1. Study area map of areas searched for Spectacled Eider nests at CD-3, the ice-road route, spill-response equipment sites, and pipeline-bridge sites on the Colville River Delta, Alaska, 2009–2011	2
Figure 2. Eider nest locations at CD-3, the ice-road route, and spill-response equipment sites on the Colville River Delta, Alaska, June 2011	4

LIST OF TABLES

Table 1. Numbers of nests of Spectacled Eiders and other large waterbirds found in search areas at CD-3, the ice road from CD-2 to CD-3, and 14 spill-response equipment sites, Colville River Delta, Alaska, 20–28 June 2011	6
Table 2. Site descriptions and eider habitat assessments for 19 spill-response equipment sites and 3 pipeline bridges on the Colville River Delta, Alaska, 2009–2011	7

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INTRODUCTION

The Colville River Delta is within the current or historic ranges of 2 species of eider ducks that are listed as threatened under the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 et seq.): the Spectacled Eider (*Somateria fischeri*) and Steller's Eider (*Polysticta stelleri*). Spectacled Eiders are common breeders on the Colville River Delta and occur at relatively high densities on the outer portions of the delta. In contrast, Steller's Eiders in Alaska breed primarily near Barrow, and although their historic range included all of the Arctic Coastal Plain of Alaska, they are extremely rare on the Colville River Delta (Quakenbush et al. 2002).

Evidence of nesting by Steller's Eiders east of Barrow has been reported only 3 times in the last 24 years: single broods were seen inland along the Colville River in 1987 (T. Swem, unpubl. data), near Prudhoe Bay in 1993 (M. M. Johnson, pers. comm.), and near the upper Chipp River, approximately 80 km inland from the Dease Inlet/Admiralty Bay area in 1997 (King and Dau 1997). In the last 14 years, Steller's Eiders have been sighted only 3 times on the Colville River Delta (1995, 2001, and 2007) (J. Bart, Boise State University, pers. comm.; Johnson et al. 2002, 2008a), and there is no record of a Steller's nest or brood from the delta.

The outer Colville River Delta is where ConocoPhillips Alaska, Inc. (CPAI), operates the CD-3 drill pad as part of the Alpine Oilfield (Figure 1). Section 9 of the ESA prohibits harming, harassing, and disrupting normal activities of threatened and endangered species, without special exemption. However, under section 7(b)(4) and 7(o)(2) of the ESA, Incidental Take Statements allow actions that are prohibited under Section 9 if they comply with specific terms and conditions. In the Biological Opinion issued prior to construction of CD-3 (part of the Alpine Satellites Development Project [ASDP]), the U.S. Fish and Wildlife Service (USFWS) stipulated terms and conditions in the Incidental Take Statement for the project that restrict human activity to existing gravel fill within 200 m of occupied Spectacled Eider nests during 1 June–1 August (USFWS 2004). Where minimal summer support or construction activities must occur off existing gravel fill during the restricted

period, USFWS-approved nest surveys for Spectacled Eiders must be conducted each year during the nesting period prior to those activities. CPAI conducts off-pad activities annually (e.g., tundra clean-up after the ice-road season, pipeline inspections, and civil surveys) on the tundra in portions of the nesting habitat of the Spectacled Eider during the breeding season (June and July). These off-pad activities have the potential to disturb nesting Spectacled Eiders, as the cryptic female eiders are difficult to detect from a distance and difficult to identify. Without knowledge of nest locations, workers could unintentionally flush birds from their nests, leaving the nest exposed to predators. In particular, helicopter landings and clean-up crews picking up debris from the tundra near gravel pads and along ice-road routes could inadvertently disturb nesting Spectacled Eiders. Similarly, seasonal mobilization at spill-response sites and pipeline-bridge inspections may affect eiders nesting near work sites.

To comply with the Incidental Take Statement issued in the Biological Opinion for ASDP (USFWS 2004) and to reduce inadvertent disturbance to breeding Spectacled Eiders, CPAI Operations requires documentation of the presence or absence of Spectacled Eider nests prior to initiating off-pad activities and then modifies those activities to avoid disturbance if nests are found. Consequently, CPAI contracted ABR, Inc., to conduct nest searches for eiders in areas of the Colville River Delta where off-pad activities were scheduled during the 2011 breeding season. In this report, we document eider nest locations within search areas around the CD-3 pad and airstrip, the ice road from CD-2 to CD-3, and 14 Alaska Clean Seas (ACS) spill-response equipment sites on the Colville River Delta. This is the third year that eider nest searches have been conducted in advance of the off-pad work, and included in this report is a summary of nesting habitat and prior nest searches for all 19 spill-response equipment sites and 3 pipeline-bridge sites visited during 2009–2011 (Seiser and Johnson 2010, 2011).

OBJECTIVES

The primary objective of nest searching in 2011 was to identify the locations of nesting Spectacled Eiders prior to off-pad activities in

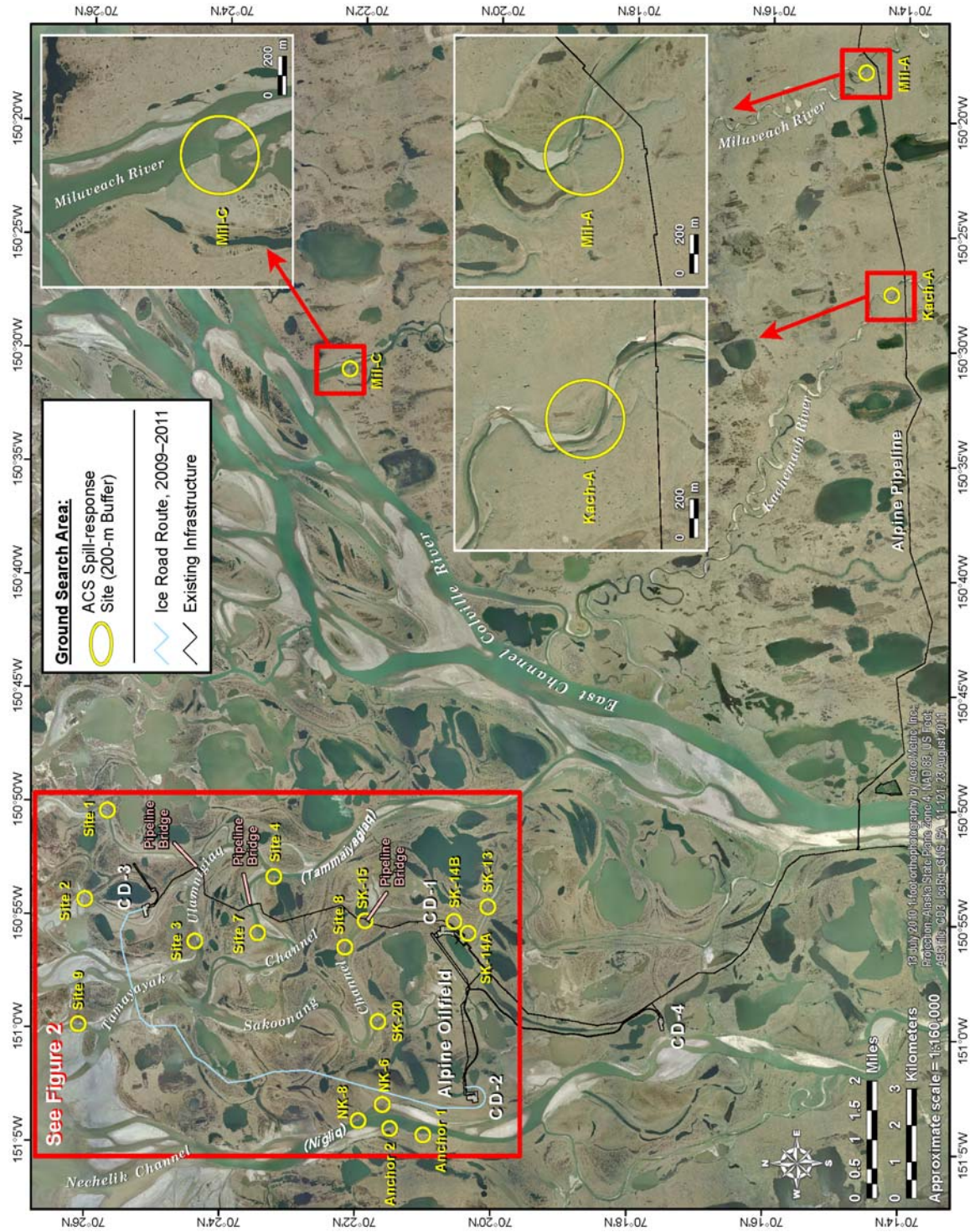


Figure 1. Study area map of areas searched for Spectacled Eider nests at CD-3, the ice-road route, spill-response equipment sites, and pipeline-bridge sites on the Colville River Delta, Alaska, 2009–2011.

elder nesting habitat. Documentation of nest locations allowed CPAI to modify planned activities occurring near nests, either by delaying activities until after the nesting season or by maintaining a 200-m zone of no activity around nests. A list of Spectacled Eider nest locations was transmitted to CPAI field environmental compliance staff on the completion of field work to inform helicopter pilots and off-pad workers of areas to avoid.

METHODS

We conducted intensive ground-based nest searches for Spectacled Eiders in areas on the Colville River Delta and nearby areas where tundra cleanup, pipeline inspections, mobilization and maintenance of spill-response equipment, or other tundra-based activity was proposed to occur during the breeding season (Figure 1). We searched a 200-m buffer around the majority of work sites. The 200-m buffer around work sites is based on terms and conditions in the Incidental Take Statement contained within the USFWS' Biological Opinion (USFWS 2004). While regulatory guidelines have not been issued on the extent of area around human activity that should be monitored for nesting activity, or conversely, the area around nests in which human activity should be avoided, we have applied the 200-m buffer as a zone outside of which human activity is not likely to cause severe disturbance. Data on flushing distances for nesting Spectacled Eiders over the last 18 years of nest searching suggest that this species rarely flushes from a nest when people are greater than 25 m away (ABR, unpublished data).

Crews of 3–13 people searched for nests by walking a regular search pattern with 10–20 m between searchers, which provided total coverage of the tundra between searchers. Crews were transported by helicopter to search sites, except for a few sites near Alpine that were reached by airboat or by walking. All nest locations were recorded with handheld GPS units and on aerial-photo maps. Each nest was recorded as active if occupied, or inactive if empty. We tried to avoid disturbing incubating Spectacled Eiders, but when a female Spectacled Eider was flushed inadvertently, we floated the eggs to estimate hatch dates and installed in the nest an artificial

temperature-sensing egg. Temperature data recorded by the artificial egg were used to determine nest fate (success or failure), the timing of hatch or nest failure, and incubation constancy. After hatch, we returned to retrieve the artificial eggs and record the fate of nests. Inactive nests were identified to species based on size and color pattern of contour feathers (Anderson and Cooper 1994). In this report the designation of unidentified eider species refers to the determination of nests belonging to either Spectacled Eiders or King Eiders (*Somateria spectabilis*). Both Steller's Eiders and Common Eiders (*Somateria mollissima*) are extremely rare in the study area and not documented to nest there (Johnson et al 2004b, 2008b).

The CD-3 pad, airstrip, and ice road areas are scheduled annually for summer tundra clean-up. At CD-3, we searched within a 200-m buffer around the drill pad, airstrip, and connecting road (Figure 2). For the ice road, we searched the entire length from CD-3 to CD-2, within a 200-m buffer on each side of the road centerline (Figure 2).

We did not search any spill-response sites or ice roads south of Alpine on the Colville River Delta because previous studies have shown Spectacled Eiders are rarely observed there (Johnson et al. 2004b). In a meeting between USFWS, CPAI, and ABR on 2 May 2011, the parties agreed to a list of 13 spill-response sites for nest searches (letter from Caryn Rea to Sarah Conn, dated June 2011). In 2011, we searched 14 spill-response equipment sites (Figure 2), where maintenance and inspection activities were planned. Two sites from the list of 13 were not searched because no spill-response activities were planned for those locations in 2011. Two new spill-response sites, not on the list, were searched downstream of the Alpine Pipeline crossing on the Kachemach and Miluveach rivers (Kach-A and Mil-A, Figure 1). One site not on the list of 13 (Site 7, contained a small amount of potential nesting habitat) was searched because of miscommunication while in the field. At sites where spill-response storage containers were already in place, we searched within a 200-m radius of the container, otherwise we searched a 200-m radius around the coordinates provided by ACS.

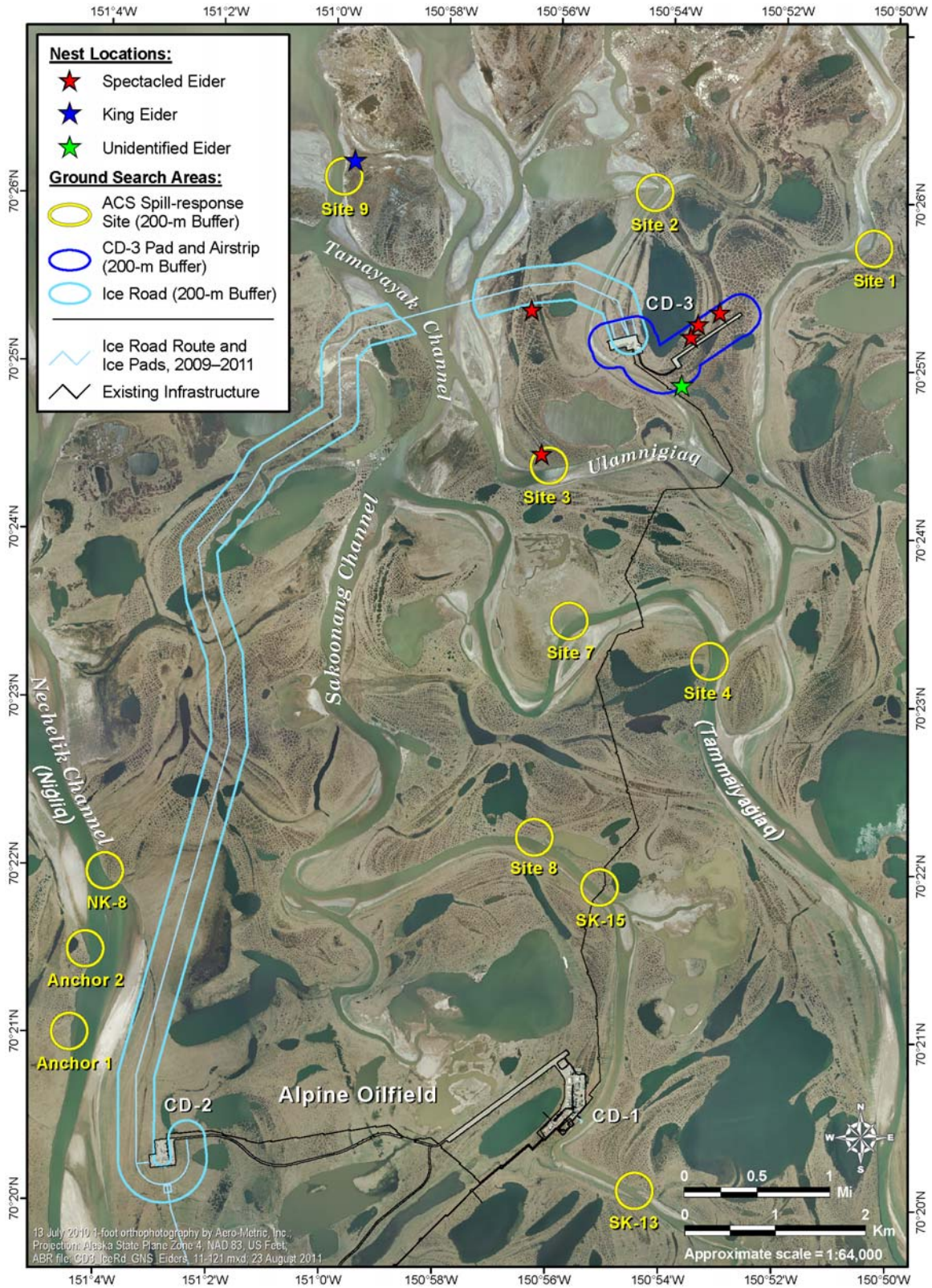


Figure 2. Eider nest locations at CD-3, the ice-road route, and spill-response equipment sites on the Colville River Delta, Alaska, June 2011.

We evaluated the quality of habitat for nesting eiders within the 200-m buffer of each spill-response equipment site by overlaying the buffers on the wildlife habitat maps produced for the Colville River Delta area (Johnson et al. 1997) and the Alpine Transportation Corridor pipeline (Jorgenson et al. 1997). Habitats we considered to have the highest potential for nesting included Brackish Water, Salt-killed Tundra, Salt Marsh, Deep Water (both with and without islands), Shallow Water (both with and without islands), Deep Polygon Complex, Sedge Marsh, Grass Marsh, and Patterned Wet Meadow, because these habitats were preferred or highly used by nesting and pre-nesting Spectacled Eiders (Johnson et al. 2008b). For sites where habitat mapping was unavailable, we visually assessed the available habitat during the nest search.

RESULTS

CD-3 PAD

On 26 and 28 June, we searched 200-m-wide buffers around the CD-3 pad, airstrip, and access road to the airstrip (Figure 2). We located 2 active Spectacled Eider nests, 1 failed Spectacled Eider nest, and 1 failed unidentified eider nest in the search area, which totaled 103.8 ha. The identity of the failed Spectacled Eider nest was based on evaluation of the color pattern of contour feathers found in the nest (Anderson and Cooper 1994). We revisited the 2 active Spectacled Eider nests on 25 July. We found evidence of hatch at 1 nest but we postponed our visit to the second nest because of the presence of a female Spectacled Eider near the nest site and the potential for disturbing a brood. We retrieved the temperature-sensing egg from this nest on 1 August. Data from the temperature sensor indicated hatch occurred on 8 July.

Although our nest search focused on eider species, we also located 68 nests of other large waterbirds in the CD-3 search area (Table 1). No Steller's Eider adults or nests were sighted in the CD-3 search area in 2011.

ICE ROAD

In 2011, we searched a 200-m-wide buffer on each side of the centerline along the length (13.8 km) of the ice road that connected CD-2 to CD-3

on 22–25 and 28 June (Figure 2). The total area searched was 546 ha. We did not find eider nests within 200 m of the ice road, however we did locate 1 active Spectacled Eider nest ~ 270 m from the ice road centerline (Figure 2, Table 1). On 22 June, we placed a temperature-sensing egg in this nest. On 3 July, we revisited the nest and found no evidence of hatch. Data from the temperature-sensing egg indicated that nest was attended and incubated by the hen 13 minutes after instrumentation but failed 23 h later. We suspect an arctic fox took this nest, because a fox was in the area when the nest was instrumented. Incidental to the search for eider nests, we recorded 172 nests of other large waterbirds within the ice-road search area (Table 1).

SPILL-RESPONSE SITES

We found 1 active Spectacled Eider nest and 1 failed King Eider nest among the 14 spill-response sites we visited on 20–23 June (Table 1). The active Spectacled Eider nest was located 21 June at Site 3, an area with previous records of nesting Spectacled Eiders from nest searches conducted during studies at the CD-3 location (Johnson et al. 2000, 2002, 2003a, 2004a, 2004b, 2005, 2006, 2007, 2008b; Seiser and Johnson 2010). The failed King Eider nest was found at Site 9. We identified it as a King Eider nest based on color patterns on the contour feathers in the nest. Forty-one nests belonging to 6 other species of large waterbirds were also found among the 14 spill-response sites (Table 1). In previous years, we had conducted nest searches at 12 of the 14 sites. Kach-A and Mil-A were new sites in 2011 located on the Kachemach and Miluveach rivers southeast of the Colville River Delta ~350 m downstream of the Alpine pipeline. We lack historical data on nesting at these 2 sites, but pre-nesting aerial survey data suggest that the area surrounding these sites is not used by Spectacled Eiders (Anderson and Shook 2004; Anderson 2005, 2006, 2007, 2009a, 2009b; Stickney et al. 2010). Suitable Spectacled Eider nesting habitat covered <10% of the Kach-A site. Suitable habitat was more abundant but still a minor portion of the site at Mil-A, with estimated coverage of 20–30% in Pattern Wet Meadow, Non-patterned Wet Meadow, and Old Basin Wetland Complex (Table 2).

Table 1. Numbers of nests of Spectacled Eiders and other large waterbirds found in search areas at CD-3, the ice road from CD-2 to CD-3, and 14 spill-response equipment sites, Colville River Delta, Alaska, 20–28 June 2011.

Search Area	Eiders			Other Large Waterbirds													Total		
	Spectacled Eider	King Eider	Unidentified eider	Greater White-fronted Goose	Snow Goose	Brant	Cackling/Canada Goose ^a	Unidentified goose	Tundra Swan	Northern Pintail	Long-tailed Duck	Willow /Rock Ptarmigan ^b	Red-throated Loon	Pacific Loon	Bar-tailed Godwit	Sabine's Gull		Arctic Tern	Parasitic Jaeger
CD-3 Pad and Airstrip	3	-	1	51	-	-	7	1	-	-	-	3	1	1	-	1	2	1	72
CD-2 to CD-3 Ice Road	1 ^c	-	-	134	1	15	-	1	1	2	5	3	3	2	2	-	2	1	172
ACS Spill-response Sites																			
Anchor 1	-	-	-	2	-	-	-	-	-	-	-	-	1	-	-	-	-	-	3
Anchor 2	-	-	-	4	-	-	-	-	-	-	1	-	-	-	-	-	-	-	5
Kach-A	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	1
Mil-A	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1	-	-	-	2
NK-8	-	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4
Site 1	-	-	-	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7
Site 2	-	-	-	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7
Site 3	1	-	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7
Site 4	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
Site 7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
Site 8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0
Site 9	-	1	-	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	3
SK-13	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
SK-15	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Total of Spill-response Sites	1	1	0	35	0	1	0	0	0	2	1	0	1	0	1	0	0	0	43

^a Nest belonging to either Cackling or Canada goose species

^b Nest belonging to either Willow or Rock ptarmigan species

^c Nest located 270 m from ice road centerline

Table 2. Site descriptions and eider habitat assessments for 19 spill-response equipment sites and 3 pipeline bridges on the Colville River Delta, Alaska, 2009–2011.

Site Name	Location	Site Description	Wildlife Habitat ^a	Habitat Description	Nesting Habitat Present ^b	Search History / Nesting Records	Years Searched	Search in Future Years?	Comments
Anchor 1	N70.35003 W151.07447	Western bank of the Nechelik Channel	NWM, MSSM, PWM	Shrubs, low-relief low-center polygons	Yes	No/No	2009 2010 2011	Yes	Marginal nesting habitat because of prevalence of shrubs. Used by nesting Greater White-fronted Geese and ptarmigan
Anchor 2	N70.35828 W150.07022	Western bank of the Nechelik Channel	PWM, DOWIP	Shrubs, low-relief low-center polygons	Yes	No/No	2009 2010 2011	Yes	Marginal nesting habitat because of prevalence of shrubs. Used by nesting Greater White-fronted Geese
Kach-A	N70.23750 W150.45838	Kachemach River, just north of the pipeline	MSSM MTTU NWM TLDS	Small pocket of wet meadow surrounded by drier habitat	No	No/No	2011	No	Poor habitat because NWM is <10% of the total area and the surrounding area is shrubs, MSSM and MTTU.
Mil-A	N70.24403 W150.29674	Miluveach River, just north of the pipeline	PWM MSSM TLDS	Diverse site, west side well drained, east side is MSSM grading to PWME	Yes	No/No	2011	No	Conexes are located on a well drained bluff (non-eider habitat). Search area on the opposite bank, near boom anchor point, contained marginal nesting habitat.
Mil-C	N70.37038 W150.51505	Shoreline and islands ~800m upstream of Miluveach River mouth	NWM, BAR, SKT	NWM on river banks, BAR and SKT on islands	Yes	No/No	2010	No	No habitat mapping available for this site; marginal nesting habitat on both banks and islands, based on appraisal in field
NK-6	N70.360-7 W15-05275	Eastern bank of the Nechelik Channel.	TLDS, MSSM	Low willow shrubs and non-patterned grass/sedge	No	No/No	2009	No	No nesting habitat at this site for eiders or most other species of waterfowl; recommend dropping from list of sites to search

Table 2. Continued.

Site Name	Location	Site Description	Wildlife Habitat ^a	Habitat Description	Nesting Habitat Present ^b	Search History / Nesting Records	Years Searched	Search in Future Years?	Comments
NK-8	N70.36606 W15-.06483	NW bank of the Nechelik Channel.	PWM, MSSM	Low willow shrubs with some polygons, river bank with polygon troughs	Yes	No/No	2009 2010 2011	Yes	Marginal nesting habitat because of prevalence of shrubs, contains some polygonal areas
Site 1	N70.42874 W150.85064	Container on western bank, site includes both sides of the Tamayayak	NWM, PWM, BAR, SOW	Vegetated areas on west side are predominately NWM and PWM; opposite bank is mostly barren.	Yes	Yes ^c /Yes	2009 2010 2011	Yes	Eider nesting habitat consists of polygon ponds 100 m inland from the container; nesting habitat is easily delineated from the rest of the site by distinct rise in elevation above the current river bank and container location
Site 2	N70.43417 W150.90533	Container on western bank, site includes both sides of the of the West Ulamnig'iaq	MSSM, PWM, NWM, BAR, SM, SKT	Half of site is vegetated. MSSM is on the west bank and SM, with NWM grading into PWM is on the east bank	Yes	Yes ^c /No	2009 2010 2011	Yes	Marginal nesting habitat; site borders better nesting habitat; driftwood lines indicate flooding is common at this site; in future, search only east side
Site 3	N70.40692 W150.93553	Container on northern bank of Ulamnig'iaq; site spans the channel and mud flats on south bank	NWM, PWM, BAR	North bank is 50% NWM and 50% PWM	Yes	Yes ^c /Yes	2009 2010 2011	Yes	Eider nesting habitat on the north side; a Spectacled Eider nested just beyond 200-m search radius in 2009 and 4 other female Spectacled Eiders were observed nearby

Table 2. Continued.

Site Name	Location	Site Description	Wildlife Habitat ^a	Habitat Description	Nesting Habitat Present ^b	Search History / Nesting Records	Years Searched	Search in Future Years?	Comments
Site 4	N70.38775 W150.88718	Container on western bank of the Tamayayak	PWM, MSSM, DOWIP, BAR	~30% dry, low-relief PWM; ~10% high-relief PWM; ~10% DOWIP; ~50% channel and mud bars	Yes	No/No	2009 2010 2011	Yes	Marginal nesting habitat in the high relief area because of prevalence of shrubs
Site 7	N70.39152 W150.92881	Container on NW bank of Tamayayak; site includes mud bar in the of middle channel	NWM, TLDS, BAR	Well-drained NWM and low shrubs along the river channel	No	No/No	2009 2011	No	No suitable nesting habitat; area dry and shrubby; no lakes within 200 m; recommend dropping from list of sites to search. Location has been updated to the 2011 location of conex.
Site 8	N70.37003 W150.93819	Predominately on the northern bank of the Sakoongang Channel. Site barely spans the channel.	PWM, TLDS, BAR	~20% low-relief PWM, ~30% high-relief PWM, and ~50% shrub habitats (MSSM & TLDS) on north bank, TLDS and BAR on south bank	Yes	No/No	2009 2010 2011	Yes	Nesting habitat limited to PWM bordering the large deep lake NE of site 8. Two female Spectacled Eiders flew over the site in 2010
Site 9	N70.43531 W150.99748	Container on eastern side of Tamayayak.	SM, SKT, BAR	Salt-affected vegetation and abundant drift wood on east bank, river channel and BAR	Yes	No/No	2009 2010 2011	Yes	Marginal nesting area with sparse vegetation, but better habitat ~250 m east of the container in low-center polygon area; area probably used extensively by molting/brood-rearing geese in late July and early-mid August

Table 2. Continued.

Site Name	Location	Site Description	Wildlife Habitat ^a	Habitat Description	Nesting Habitat Present ^b	Search History / Nesting Records	Years Searched	Search in Future Years?	Comments
SK-13	N70.33506 W150.90711	Both banks of Sakoongang just south of Alpine	PWM, NWM, TLDS, BAR	Low-relief PWM with narrow bands of TLDS, BAR, and NWM	Yes	Yes ^d /No	1998–2000 2009 2011	Yes	Potential eider nesting habitat in areas of PWM. In 2011, a Spectacled Eider pair was sighted 550 m north of SK-13.
SK-14A	N70.33975 W50.92675	Site is adjacent to the Alpine flare pit; on the Sakoongang.	PWM, NWM, TLDS, BAR	Gravel pad, high-relief polygons, and shrubs are on the NW bank. The east bank contains TLDS, NWM, and PWM.	Yes	Yes ^d /No	1996–2001 2009	No	Marginal nesting habitat because of shrubs and habitat modification. The NW bank habitat is modified by gravel pad and flare and SE bank is relatively dry. Previous searches have not found eider nests; recommend dropping from list of sites to search
SK-14B	N70.34325 W150.91836	Site is NW of the Alpine boat ramp	PWM, NWM, TLDS, BAR	PWM, gravel pad and NWM on NE bank, TLDS and PWM on SW bank	Yes	Yes ^d /No	1996–2001 2009 2010	No	Eider nesting habitat adjacent to the Alpine gravel pad and to a lesser degree on the west side of the channel. Snow banks on the pad edge may delay availability. Previous searches have not found eider nests; recommend dropping from list of sites to search
SK-15	N70.36514 W150.91869	~2.5 km north of Alpine and next to a pipeline bridge on the Sakoongang	PWM, NWM, MSSM, TLDS, BAR	TLDS, NWM, and BAR on NW bank, MSSM with aquatic centers on SE bank	Yes	No/No	1998 1999 2009 2010 2011	Yes	Nesting habitat on both sides of the channel in areas of PWM and NWM
SK-20	N70.361156 W150.99228	Near the intersection of channels on the Sakoongang	PWM, NWM, TLDS, BAR	10% PWM, 50% low relief MSSM, 40% riverine habitats	Yes	No/No	2009	Yes	Nesting habitat on both sides of the channel in areas of PWM, but not in the willows on the island.

Table 2. Continued.

Site Name	Location	Site Description	Wildlife Habitat ^a	Habitat Description	Nesting Habitat Present ^b	Search History / Nesting Records	Years Searched	Search in Future Years?	Comments
Sakoonang Pipeline Bridge	N70.36444	First Colville River channel-	PWM, NWM,	PWM on NE bank, SW bank is	Yes	Yes ^c /No	1998	Yes	Polygons in the southwest end of the site area have nesting potential. Marginal nesting habitat on the NE side because of prevalence of shrubs
	W150.91888	crossing north of Alpine, adjacent to SK-15	TLDS, BAR	shrubs with low-centered polygons in PWM			1999		
Tamayayak Pipeline Bridge	N70.39277	Second Colville River channel-	PWM, NWM,	PWM and NWM on north bank, south bank is	Yes	No/No	2010	Yes	Willows along channel, suitable nesting habitat away from channels
	W150.90805	crossing north of Alpine	TLDS BAR	barrens, shrub, and NWM					
Ulammiġiaq Pipeline Bridge	N70.39277	Third Colville River channel-	PWM, NWM,	PWM and NWM on north bank, south bank is	Yes	Yes ^c /No	2000-	Yes	The majority of this site contains suitable nesting habitat
	W150.90805	crossing north of Alpine	BAR	NWM			2007	2010	

^a Wildlife Habitats = Salt Marsh (SM), Salt-killed Tundra (SKT), Deep Open Water without Islands (DOW), Deep Open Water with Islands or Polygonized Margins (DOWIP), Shallow Open Water without Islands (SOW), Nonpatterned Wet Meadow (NWM), Patterned Wet Meadow (PWM), Moist Sedge-Shrub Meadow (MSSM), Moist Tussock Tundra (MTTU), Tall, Low, Dwarf Shrub (TLDS), and Barrens (BAR)

^b Areas containing SM, SKT, DOWIP, DOW, SOW, NWM, PWM, or DPC (Deep Polygon Complex)

^c CD-3 nest searches conducted during 2000–2007; Spectacled Eider and unidentified eider nests were found at these sites during some years (Johnson et al. 2008b)

^d Alpine nest searches conducted in 1995–2001 (Johnson et al. 2003b)

The occurrence of an active Spectacled Eider nest at Site 3 invoked protections listed under the terms and conditions in the Biological Opinion (USFWS 2004), which prohibits off-pad activities within 200 m of Spectacled Eider nests. However, a regulatory conflict exists between that prohibition on disturbance under the Endangered Species Act and the requirement that CPAI protect channels from possible spills. The Oil Discharge Prevention and Contingency Plan obligates CPAI to deploy spill equipment during the ice-free season, which encompasses all of the nesting season for Spectacled Eiders. To minimize possible disturbance from the work at Site 3, the boom was pulled across the channel by boat rather than by helicopter. In addition, at the request of CPAI, a time-lapse camera was installed on 23 June to monitor the nest. ACS workers boated to the site on 25 June and deployed boom across the channel from ~09:00 to 11:30 h. Images (2 images/min) during that time show the eider incubating normally. The hen concealed on the nest (lowered its head into the sedges and flattened its profile on the nest) at 09:00–09:03 h and again at 11:45 h (for ~30 sec), which may have been in response to the boats arriving and departing. The camera did not capture the work activity because it was pointed at the nest in a different direction. The hen did not leave the nest during the spill-response activity. Images taken later show that an arctic fox caused the nest to fail on 29 June, well before its expected hatch date of 12 July (determined by egg floating). The timing of the fox attack on the nest appears to be unrelated to the spill-response activities at Site 3. The camera was retrieved on 25 July.

SUMMARY

Five Spectacled Eider nests (4 active and 1 inactive), 1 King Eider (inactive), and 1 unidentified eider nest (inactive) were found in the CD-3, ice-road, and spill-response search areas in 2011. We found no Steller's Eiders or their nests in any of the areas searched in 2011, which is consistent with past results of nest search efforts on the delta. Observations of Steller's Eiders on the Colville River Delta are rare. It has been 4 years

since the last known sighting of Steller's Eiders occurred; 5 were seen on the outer delta in 1995, a pair was seen near CD-3 in 2001, and a male in flight was observed in 2007, but no nests of Steller's Eiders have been documented on the Colville River Delta despite nearly annual search efforts from 1992 to 2011.

During 2009–2011, we visited 19 spill-response sites and 3 pipeline-bridge sites and found eider nesting habitat varied in quality and abundance among the sites (Table 2; Seiser and Johnson 2010, 2011). We found 7 of these 22 sites either lack sufficient eider habitat (Site 7, NK-6, Kach-A, Mil-A, Mil-C) or nesting habitat has been degraded (e.g., flare at SK-14A, snow berms at SK-14B), and propose to drop them off the list of sites to be searched. The majority of the sites were adjacent to suitable nesting habitat for eiders. Therefore, sites should be re-evaluated if their locations are shifted in future years.

The remaining 12 spill-response sites and 3 pipeline-bridge sites contain habitat that could potentially attract nesting Spectacled Eiders. Assuming there will be continued human activity at these sites during the breeding season, we recommend continuing nest searches at 12 spill-response and 3 pipeline-bridge sites (Table 2). Pipeline-bridge sites are on a 3-year inspection cycle and they were last inspected in 2010; therefore, we don't expect to revisit the pipeline-bridge sites until their next inspection in 2013.

Because of the relative high density of eiders in the area along the CD-2 to CD-3 ice road, we recommend continuing nest searches along this route during the breeding season. The areas searched along the ice road and around CD-3 have abundant habitat suitable for nesting Spectacled Eiders. In 2011, we found 3 Spectacled Eider nests near CD-3, and in 2010, we located 3 Spectacled Eider nests within the ice-road buffer (Seiser and Johnson 2010). As long as clean-up and other off-pad activities continue in these areas during the breeding season, we recommend searching for Spectacled Eider nests so that human-caused disturbance to nesting eiders in these areas can be avoided.

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