

Preassessment Data Report #9:

**Bird Species Found Oiled, December 2004 – January 2005, at Unalaska Island
Following the M/V *Selendang Ayu* Oil Spill**



Live visibly-oiled common murre, Skan Bay, December 26, 2004. USFWS photo by A.L. Sows

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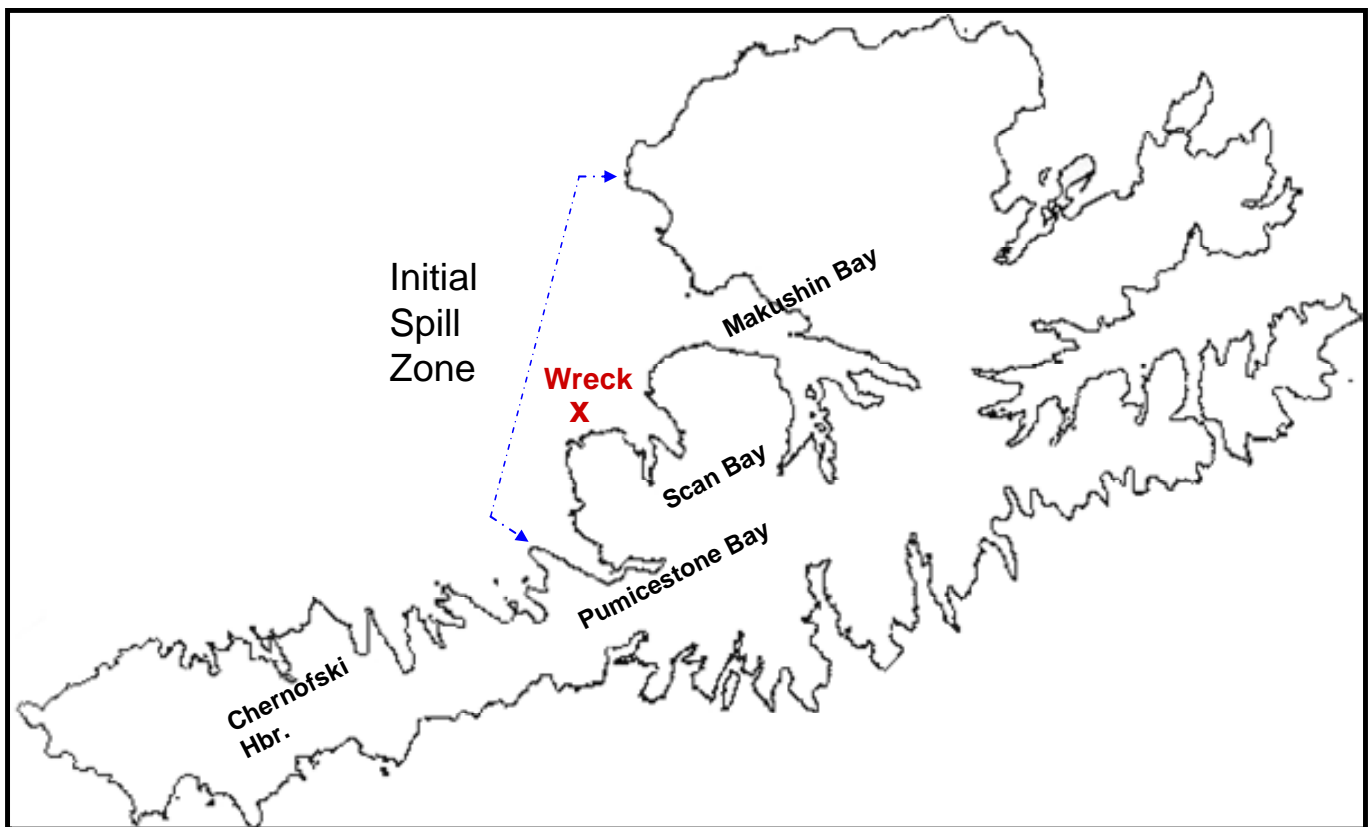
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INTRODUCTION

On 8 December 2004, the M/V *Selendang Ayu* ran aground and broke in half in rough seas off Unalaska Island, Alaska (53°38'N, 167° 07'W). An estimated 354,218 gallons of oil (339,538 gallons of bunker oil [IFO 380] and 14,680 gallons of marine diesel and miscellaneous oils) were discharged. It is believed that much of this oil went ashore in the stretch of shoreline between Volcano Bay and Pumicestone Bay (Fig. 1), but oil was also found ashore outside this contiguous spill area. Some oil was also documented to be located on subtidal sediments and in the open water. Observations of live, visibly-oiled wildlife in the spill area were recorded during live animal rescue attempts by International Bird Rescue Research Center (IBRRC). Similar observations were made during efforts to collect and remove oiled wildlife carcasses from beaches as part of the response to the oil spill. Additionally, pre-assessment of injury was conducted by the Fish and Wildlife Service (FWS) which included collection of carcasses on beaches and observations of live, visibly-oiled birds.

This report summarizes data from observations of these live, visibly-oiled birds and oiled carcasses found on beaches as a basis for determining the diversity of birds that were injured in the period following the *Selendang Ayu* oil spill (based on observations December 13, 2004 – January 31, 2005).

Figure 1. Location of the *Selendang Ayu* shipwreck on the coast of Unalaska Island. The core oil spill area extends between Volcano Bay, just south of Cape Kovrizhka, to Pumicestone Bay, just south of Spray Cape.



METHODS

Due to strong winds and rough seas during and following the oil spill, few observations of birds could be made in the vicinity of the wreck until nearly one week after the event, although observers making incidental observations of wildlife during overflights of the area in a Grumman goose accounted for some records of birds in the area December 9-12. IBRRC crews were among the first on the scene in a boat, and they attempted to capture and rehabilitate live, visibly-oiled birds in the spill area from December 13 - 19 and again December 24 - January 6. The capture effort was demobilized on January 7 because no visibly-oiled birds were caught after December 25 (Callahan et al. 2006). Observations of live, visibly-oiled birds were made incidental to the IBRRC capture efforts by Art Sowls, Steve Ebbert, and Angie Doroff, all FWS employees who accompanied IBRRC personnel during most of the period until December 24. Additionally, between mid-December 2004 and mid-February 2005, observations of live, visibly-oiled birds were made by FWS and other personnel involved in response to the spill and in pre-assessment of bird injury. The vast majority of live birds encountered could not be observed well enough to determine whether or not they were oiled. Only those live birds definitely oiled were used to make this species list of visibly-oiled birds.

Besides the observations of live, visibly-oiled birds, carcasses of oiled birds were collected as early as mid-December, although most were collected between December 24, 2004 and February 1, 2005. Carcasses were labeled and stored for later identification because many of the remains were oiled beyond recognition or had been scavenged before recovery and often only wings or sterna were left. Retrieved carcasses were later identified either at the National Wildlife Forensics Lab in Ashland, Oregon or at the University of Alaska Museum of the North in Fairbanks, Alaska.

RESULTS AND DISCUSSION

We documented injury to at least 41 species of birds (Tables 1 and 2, Appendix A), including most of the species known to be in the spill area based on aerial surveys (Stehn et al. 2005) and other observations made during preassessment of natural resource damage after the spill. The aerial surveys documented 8 species of birds in the area for which we had no direct evidence of oiling. At least some of these, however, particularly the 5 species of ducks, were likely exposed to the oil but not detected. Seven of the 8 species include surf scoter, common goldeneye, bufflehead, gadwall, merganser, herring gull and merlin. The eighth, Steller's eider, was not recorded as oiled in the spill zone. At least one oiled Steller's eider was seen in Unalaska Bay (S. Golodoff, pers. comm.) on December 18, however the source of the oil was not determined. Further, our methods likely underestimated the relative abundance of live oiled birds that were foraging or scavenging on oiled beaches, and some of these birds probably died later, outside the surveyed areas. Particularly numerous in the totals of oiled birds were alcids, especially auklets. Other commonly found birds include cormorants, waterfowl, gulls, tubenoses, grebes and loons.

Alcids (*Alcidae*), particularly crested auklets (*Aethia*), were a major component of both the live, visibly-oiled and carcass totals. Unalaska Island is at the western edge of a major wintering area for crested auklets (*Aethia cristatella*) (Gibson and Byrd 2007, Appendix B), and flocks were seen in the immediate and surrounding area of the wreck during and immediately after the spill event (reviewed in Appendix B). Murres (*Uria*) also were relatively well-represented in the raw totals, and nearly every species of alcid known to winter in the region was recorded as oiled. Cormorants (*Phalacrocorax*), particularly pelagic cormorants (*P. pelagicus*), were relatively common in the raw counts of live, visibly-oiled birds (more

than 40 observations of visibly-oiled pelagic cormorants in Scan Bay December 14-16, Table 2) and carcasses. All three species of cormorant (red-faced (*P. urile*), pelagic, and double-crested (*P. auritus*)) that winter in the vicinity of Unalaska Island were affected. Waterfowl also were particularly vulnerable to the oil, at least nine species were definitely recorded. Harlequin ducks (*Histrionicus histrionicus*) were the most frequently recorded species in the list of oiled ducks (based on carcasses, Table 1, and visibly-oiled birds, Table 2), followed by long-tailed ducks (*Clangula hyemalis*) and black scoters (*Melanitta nigra*) (Table 1). At least three of the four species of gulls wintering in the region were known to have been oiled. Although mew gulls (*Larus canus*) were not documented to be oiled directly, observations of live, visibly-oiled unidentified small gulls probably included this species. Glaucous-winged gulls (*Larus glaucescens*) were seen frequently on oiled beaches and the number of birds actually oiled was likely far greater than indicated by the raw data since this species was a main scavenger of carcasses. Offshore tubenoses, or procellariids, (e.g., fulmars (*Fulmarus glacialis*), albatrosses (*Phoebastria* spp.), shearwaters (*Puffinus* spp.), and storm-petrels (*Oceanodroma* spp.) were affected by the oil to some degree, as were more inshore grebes (*Podiceps* spp.) and loons (*Gavia* spp.).

Relative abundance of oiled birds was likely underestimated for species that were contaminated while foraging on oiled beaches (e.g., emperor geese (*Chen canagica*), rock sandpipers (*Calidris ptilocnemis*), black oystercatchers (*Haematopus bachmani*), song sparrows (*Melospiza melodia*), winter wrens (*Troglodytes troglodytes*)) or while scavenging on oiled carcasses (e.g., gulls, bald eagles (*Haliaeetus leucocephalus*), common ravens (*Corvus corax*), red foxes (*Vulpes vulpes*)) because some of these scavengers, injured by secondary exposure, may have died later outside surveyed areas.

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Table 1. Birds observed as live, visibly-oiled or as carcasses at Unalaska Island in the vicinity of the *Selendang Ayu* oil spill.

SPECIES	CARCASSES	LIVE-OILED^a
Unidentified auklets ^b	753	X
Crested auklet	449	X
Whiskered auklet	8	
Least auklet	4	
Subtotal auklets	1214	
Unidentified Murre	86	X
Common murre	11	X
Thick-billed murre	10	
Subtotal murrees	107	
Unidentified <i>Brachyramphus</i>	3	
Marbled murrelet	2	
Subtotal <i>Brachyramphus</i>	5	
Unidentified puffins	11	
Tufted puffin	6	
Horned puffin	4	
Subtotal puffins	21	
Pigeon Guillemot	12	X
Unidentified Alcids ^c	18	X
<i>TOTAL ALCIDS</i>	<i>1377</i>	
Unidentified cormorants	87	
Pelagic cormorant	15	X
Red-faced cormorant	5	
Double-crested cormorant	0	X
<i>TOTAL CORMORANTS</i>	<i>107</i>	
Harlequin duck	40	X
Long-tailed duck	11	X
Black scoter	9	X
White-winged scoter	3	
Black or white-winged scoter	1	
King eider	2	
Common eider	1	
King or Common eider	3	
Green-winged teal	1	
Mallard	0	X
Unidentified merganser	0	X
Unidentified duck	23	
<i>TOTAL DUCKS</i>	<i>94</i>	

Unidentified gull	2	
Unidentified <i>Larus</i> gull	35	
Glaucous-winged gull	3	X
Glaucous gull	0	X
Black-legged kittiwake	1	
Unidentified kittiwake	4	
<i>TOTAL GULLS</i>	<i>45</i>	
Northern fulmar	17	
Laysan albatross	5	
Unidentified albatross	5	
Short-tailed shearwater	3	
Unidentified shearwater	1	
Fork-tailed storm-petrel	2	
<i>TOTAL PROCELLARIDS</i>	<i>33</i>	
Horned grebe	12	X
Red-necked grebe	2	X
Unidentified grebe	3	
Yellow-billed loon	0	X
Common loon	0	X
Unid. Loon	1	
<i>TOTAL LOONS & GREBES</i>	<i>18</i>	
Bald eagle	8	X
Peregrine falcon	1	
Common raven	1	
<i>TOTAL BIRDS OF PREY</i>	<i>10</i>	
Rock sandpiper	7	X
Black oystercatcher	0	X
<i>TOTAL SHOREBIRDS</i>	<i>7</i>	
Emperor goose	2	
Gray-crowned rosy finch	1	
Song sparrow	0	X
American dipper	0	X
Unid. Bird	101	
<i>TOTAL OTHER BIRDS</i>	<i>104</i>	
<i>TOTAL ALL BIRDS</i>	<i>1795</i>	
<i>TOTAL IDENTIFIED SPECIES</i>	<i>41</i>	

^a Live Oiled = see Table 2

^b Unidentified auklets= Genus *Aethia*

^c Unidentified Alcids = Family alcidae

Table 2. Live, visibly-oiled birds observed December 13, 2004 – January 31, 2005 following the *Selendang Ayu* oil spill at Unalaska Island.

<i>Bird Species</i>	12/13	12/14	12/15	12/16	12/17	12/18	12/19	12/24	12/25	12/27	12/28	12/29	12/30	12/31	1/1	1/7	1/9	1/10	1/13	1/16	1/21	<i>Totals</i>
Mallard																						1*
Unidentified Merganser																						1*
Harlequin Duck	1 ^a 2 ^c	11 ^c	21 ^c	8 ^c									1 ^b					4 ^e				48
Black Scoter		1 ^c																				1
Long-tailed Duck	1 ^a 3 ^c						1 ^a															5
Common Loon			1 ^c																			1
Yellow-billed Loon															1 ^d							1
Horned Grebe		1 ^a	1 ^c		1 ^b	1 ^b																4
Red-necked Grebe	1 ^c		2 ^c					1 ^b				1 ^d			1 ^d				2 ^e			8
Double-crested Cormorant	1 ^c																					1
Pelagic Cormorant		1 ^a 6 ^c	22 ^c	15 ^c																		44
Bald Eagle			3 ^c							1 ^e				2 ^b								6
Black Oystercatcher																						1*
Rock Sandpiper					2 ^b																	2
Glaucous-winged Gull		4 ^c		1 ^c		1 ^a	1 ^a	2 ^b			13 ^d								3 ^d		4 ^d	29
Glaucous Gull			1 ^c																			1
Common Murre	1 ^a		2 ^a	1 ^a	1 ^b	1 ^a		1 ^b	1 ^a								1 ^d				1 ^e	10
Pigeon Guillemot	1 ^c	2 ^c	1 ^c	2 ^c		1 ^b					1 ^d											8
Crested Auklet				6 ^a 3 ^c	2 ^b	2 ^a	1 ^a		1 ^a		5 ^d											20
Unidentified Auklet				3 ^c																		3
American Dipper															1 ^d							1
Song Sparrow																2 ^d				1 ^e		3

* reported on pre-scat survey, no date given.

^a captured by IBRRC (see Callahan et al.);

^b Steve Ebbert on M/V Excito (field notes);

^c Art Sowls on M/V Cape Flattery (field notes);

^d Tiglax beach surveys (see Williams et al);

^e other pre-scat surveys (see database).

Appendix A. List of avian carcasses from the Selendang Ayu oil spill identified by the National Fish and Wildlife Forensics Laboratory and the University of Alaska Museum.

***Selendang Ayu Avian Carcass Identification
Species List***

LOWEST TAXONOMIC IDENTIFICATION		NUMBER OF CARCASSES
<u>Scientific name</u>	<u>Common name</u>	
Aethia sp. (identification to genera auklet)		753
Aethia cristatella	Crested Auklet	449
Aves (identification classified to bird)		101
Phalacrocorax sp. (identification to genera cormorant)		87
Uria sp. (identification to genera murre)		86
Histrionicus histrionicus	Harlequin Duck	40
Larus sp. (identification to genera gull)		35
Anatidae (identification to family duck)		23
Alcidae (identification to family seabird)		18
Fulmarus glacialis	Northern Fulmar	17
Phalacrocorax pelagicus	Pelagic Cormorant	15
Podiceps auritus	Horned Grebe	12
Cephus columba	Pigeon Guillemot	12
Clangula hyemalis	Long-tailed Duck	11
Fratercula sp. (identification to genera puffin)		11
Uria aalge	Common Murre	11
Uria lomvia	Thick-billed Murre	10
Melanitta nigra	Black Scoter	9
Aethia pygmaea	Whiskered Auklet	8
Haliaeetus luecocephalus	Bald Eagle	8
Calidris ptilocnemis	Rock Sandpiper	7
Fratercula cirrhata	Tufted Puffin	6
Phalacrocorax urile	Red-faced Cormorant	5
Phoebastria sp. (identification to genera albatross)		5
Phoebastria immutabilis	Laysan Albatross	5
Aethia pusilla	Least Auklet	4
Fratercula corniculata	Horned Puffin	4
Rissa sp. (identification to genera kittiwake)		4
Larus glaucescens	Glaucous-winged Gull	3
Melanitta fusca	White-winged Scoter	3
Podiceps sp. (identification to genera grebe)		3
Puffinus tenuirostris	Short-tailed Shearwater	3

LOWEST TAXONOMIC IDENTIFICATION	NUMBER OF CARCASSES
Somateria sp. (identification to genera eider – not Steller’s)	3
Brachyramphus sp. (identification to genera murrelet)	3
Brachyramphus marmoratus	2
Chen canagica	2
Laridae (identification to family gull)	2
Oceanodroma furcata	2
Podiceps grisegena	2
Somateria spectabilis	2
Anas crecca	1
Falco peregrinus	1
Gavia sp. (identification to genera loon)	1
Leucosticte tephrocotis	1
Melanitta sp. (identification to genera scoter)	1
Puffinis sp. (identification to genera shearwater)	1
Rissa tridactyla	1
Somateria mollissima	1
Corvus corax	1
TOTAL NUMBER OF CARCASSES IDENTIFIED	1,795

Appendix B. Distribution of Crested Auklets in winter in the eastern Aleutian Islands and Observations in the vicinity of the *Selendang Ayu* oil spill

Crested Auklets (*Aethia cristatella*) are thought to be particularly susceptible to oil spills because of “large local concentrations...at favored wintering areas” (Jones 1993, p. 11). Indeed, during severe storms, such as the one occurring when the *Selendang Ayu* oil spill occurred at Unalaska Island, crested auklets sometimes seek shelter in bays. For instance, in February 1971 tens of thousands of crested auklets were seen in protected waters near the Semidi Islands (G. V. Byrd, Alaska Maritime National Wildlife Refuge, unpubl. data).

The only bird observations in the vicinity of the *Selendang Ayu* wreck (i.e., Makushin and Skan Bays) at Unalaska Island on December 8, 2004 were overflights in a Grumman Goose with the primary objective of observing the distribution of oil and the condition of the wrecked ship. Typically the aircraft traveled at about 100 knots (115 mph) and at elevations of 100-150 ft. Wildlife observers had relatively poor visibility through the small windows of the aircraft but they were able to record some information. For instance, the day after the spill (December 9, 2004), Arthur L. Sowls (Alaska Maritime National Wildlife Refuge, field notes) noted that flocks of unidentified small dark alcids [probably crested auklets], ranging from about 10 to over 250 per flock, were seen below the plane, which was flying over the wreck to assess extent of oil. Sowls observed in Makushin Bay large flocks (100's+) of small dark alcids too far away to be counted or identified to species but almost certainly crested or whiskered auklets or both. He wrote that because of poor visibility, additional flocks of these small dark colored alcids were likely missed entirely. Sowls classified relative abundance of small alcids during the flight in different areas as follows: Cape Starichkof (medium numbers, low hundreds), Makushin Bay (high numbers, high hundreds as indicated above), and Pumicestone Bay (medium numbers, low hundreds).

On December 11, 2004, Steve Ebbert (Alaska Maritime National Wildlife Refuge, briefing report) stated, “the aircraft [the goose] visited Naginak (sp?) Cove [Anderson Bay]. In the middle of the bay, there were 1000 auklets...”.

On December 12, 2004, Steve Ebbert (Alaska Maritime National Wildlife Refuge, field notes) noted crested auklets again in Anderson Bay: “at least 50 crested auklets sat just north of the largest island in this bay. There were probably more. ...I was surprised to see crested auklets further inside (south) of the western arm”.

Auklets were still present in the area on December 25, 2004 when Jeff Williams (Alaska Maritime National Wildlife Refuge, report to IC Dutch Harbor) saw a “couple thousand” crested auklets and approximately 250 whiskered auklets from the M/V *Tiglox* during a trip between Volcano Bay to Cape Starichkof. Williams also noted 14 crested auklets deep in Anderson Bay.

Unalaska Island is near the western edge of a major wintering area for crested auklets. Gibson and Byrd (2007) summarize this as follows:

“Locally abundant in winter in EASTERN Aleutians at edge of continental shelf off Unimak (“hundreds of thousands,” 13 February 1992, off ne shore, C. P. Dau & C. F. Zeillemaker; large flocks totaling c. 150,000 birds, 23 February 1984, in an area 3-6 km

off ne shore, CPD; and 10 large flocks totaling 100,000+ birds, 9 March 1994, off n shore [Slime Bank], CPD & R. P. Schulmeister). During boat surveys in winter 1987, Crested Auklet was the most numerous bird in Unimak Pass area, averaging 318/km² and with maximum density of 13,000/km² off nw coast of Unimak (Troy & Bradstreet 1991)”

The primary diet of crested auklets is zooplankton, particularly euphausiids (*Thysanoessa*), which they capture within the top 30 m of the water column (Jones 1993), and it is likely that the large wintering flocks move around, at least within the region of Unimak Pass, following the peregrinations of the clusters of prey. Unalaska Island is probably near the western edge of this region.