

1 Preliminary Summary of Reported Whale-Vessel 2 Collisions in Alaskan Waters: 1978-2006

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7 ABSTRACT

8 The rate of occurrence and the nature of collisions between whales and vessels are not well understood in Alaska or worldwide.
9 Here we summarize all reported large whale-vessel collisions that have occurred in Alaskan waters from 1978 through 2006 to
10 increase current knowledge on this issue.

11 SHIP STRIKES, STRANDINGS, MORTALITY RATE, PACIFIC OCEAN, NORTH AMERICA

12 INTRODUCTION

13 Ship strikes are an important source of injury and mortality for large whales worldwide but documentation of
14 these events and their outcomes is a significant challenge. The rate at which whale-vessel collisions occur, the
15 types of vessels involved, and the extent to which they affect particular whale stocks are largely unknown,
16 especially in remote areas like Alaska. Accurate documentation of whale-vessel collisions is difficult for several
17 reasons, including cases where collisions between whales and large vessels go undetected, vessel operator
18 avoidance of reporting due to fear of reprisal or lack of awareness that such incidents should be reported,
19 difficulty in accurately assessing the condition of the whale after the collision, incomplete data gathering on the
20 details surrounding ship strikes, and difficulty in determining whether stranded whales with evidence of ship
21 strike were dead or alive when struck. Other investigators have compiled accounts of ship strikes regionally and
22 worldwide (Laist et al. 2001, Jensen and Silber 2003, Douglas et al. submitted, Lammers et al. in prep.). Some
23 of the Alaska whale-vessel collisions that we report here have been included in previous compilations (Laist et
24 al. 2001, Jensen and Silber 2003) but many are new records. Here we present a preliminary summary of all
25 available records of whale-vessel collisions that have occurred in Alaskan waters, with the intent of augmenting
26 current knowledge of this issue.

27 METHODS

28 Reports of ship strikes originated from a variety of sources, including the U.S. Coast Guard, NMFS
29 Enforcement, vessel owners, tour operators, the media and anecdotal personal accounts. These reports were
30 opportunistically collected by the authors since 1978 and systematically collected by NMFS since the mid-1980s,
31 and subsequently entered in the Alaska Marine Mammal Stranding Database. Records entered in the database
32 were coded according to the confidence standards developed by the NMFS National Marine Mammal Stranding
33 Database. We examined, error-checked and compiled these records for presentation here.

34 RESULTS AND DISCUSSION

35 Figure 1 shows the location of each of the 62 whale-vessel collisions listed in Table 1. Motorized, non-
36 motorized, large and small vessels, engaged in a variety of activities, have all been reported to strike humpback,
37 fin, gray, and sperm whales, as well as other unidentified species of large whales. Small (less than 15 m) private
38 vessels were the most commonly documented in whale-vessel collisions, although several factors can affect the
39 reporting rates of different vessel types (Jensen and Silber 2003). In 49 cases, the outcome of the vessel strike
40 was unknown, in 11 cases the whale was dead, and in three cases the individually-identified whale is known to
41 be alive to the present day (NPS and UAS unpublished data).

42 The available data suggest that the frequency of whale-vessel collision reports is increasing but additional
43 analysis would be necessary to evaluate any possible trend. The number of reported vessel strikes undergoes
44 marked annual variability, with a peak of nine reports in 2005. The great majority of ship strikes reported
45 affected humpback whales in southeastern Alaska, an area where vessels and a population of over 1,000
46 humpback whales overlap (Straley et al. in press). It seems likely that humpback whale population increase
47 (Straley et. al in press) may be a cause of the apparent increase in reports over time, but increases in public
48 awareness and reporting are also likely factors. Some of the apparent increase over time is also likely

49 attributable to increases in vessel traffic associated with the dramatic growth of the whale watching and tourism
50 industries in Alaska over the last twenty years.

51 Although we attempted to capture all whale-vessel collisions throughout Alaska, we acknowledge that the
52 likelihood of our hearing about the event, and thus being able to record it, is much higher in southeastern Alaska
53 where the authors are located. A better understanding of the geographic extent of ship strikes in Alaska could be
54 obtained by a one-time effort to actively solicit information about past events from resource managers, law
55 enforcement officers, the media and the maritime community throughout the state. Maintaining NMFS' current
56 focus on systematic data collection about ship strikes as they occur will also facilitate equal representation of all
57 parts of Alaska. Similarly, increasing efforts to perform thorough necropsies on all large whale strandings would
58 increase the proportion of cases where it could be confidently determined whether ship strike was the cause of
59 death and consequently allow a more accurate determination of the rate of ship strike mortality. Necropsy data
60 are also essential to determining whether the animal was dead or alive when struck, reducing uncertainty about
61 the rate of ship strikes as a cause of mortality. Once these data collection improvements are made, a much more
62 accurate analysis of trends would be possible, as well as in-depth analyses of the role of vessel type and vessel
63 speed (e.g. Vanderlaan and Taggart 2007) in the likelihood of ship strike whale mortality in Alaska.

64 **ACKNOWLEDGEMENTS**

65 Our sincere thanks to the many organizations and individuals who reported and collected data on whale-vessel
66 collisions including the members of the Alaska Region Marine Mammal Stranding Network; the U.S. Coast
67 Guard; NMFS Enforcement; the Alaska Department of Fish & Game; the Alaska State Troopers; tour operators;
68 vessel captains, pilots and crew; harbor masters; fishermen; and recreational boaters. A special thanks to Mary
69 Sternfeld who shepherded the NMFS Alaska Region Stranding Database through its infancy and to Erika
70 Phillips, spatial analyst for NMFS Alaska Regional Office, for preparing the map.

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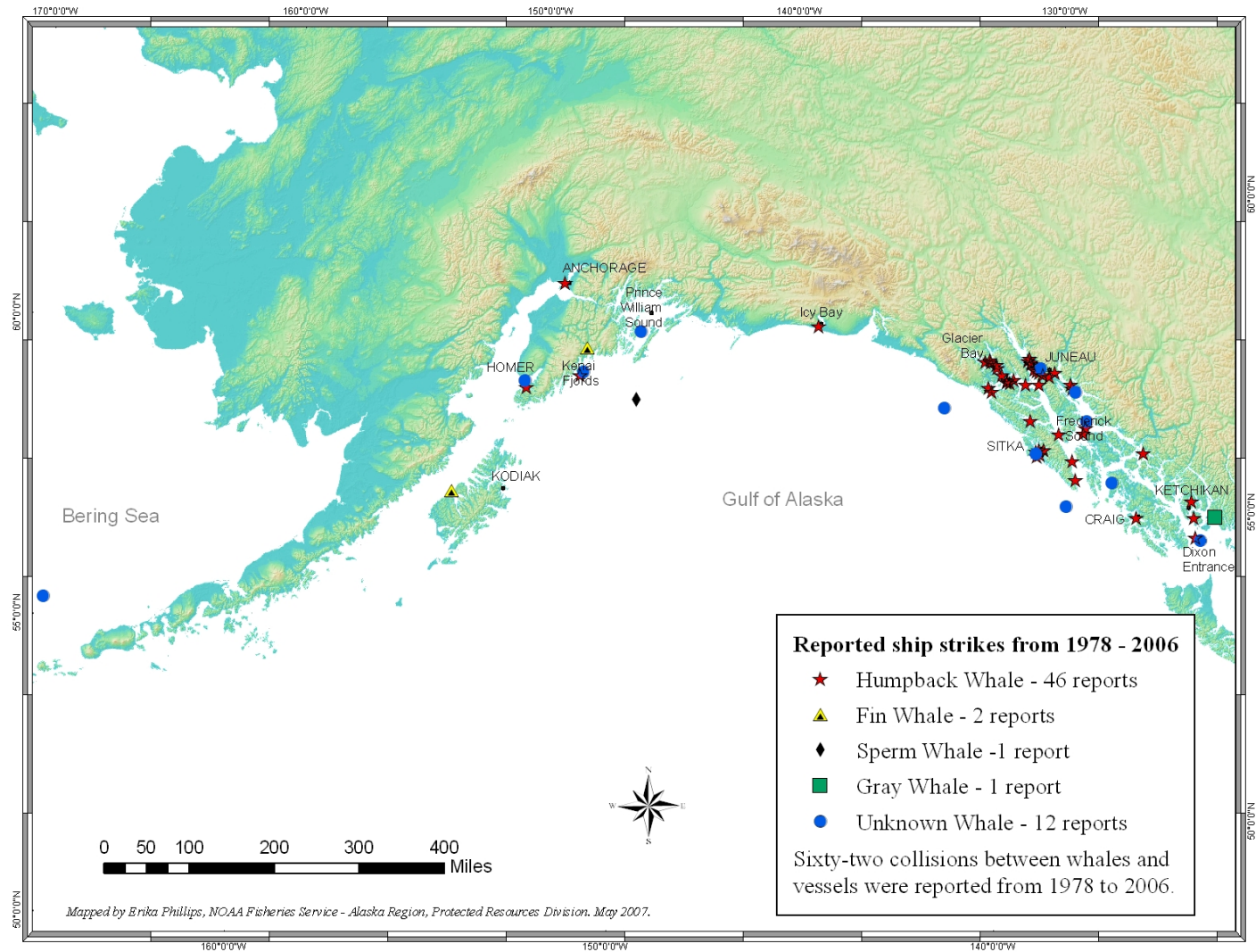
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84 Table 1. Details of reported incidences of whale-vessel collisions in Alaskan waters: 1978-2006. Note: These
85 data are provisional. Records have been collected opportunistically and are provided through NMFS' Alaska
86 Regional Marine Mammal Stranding Database and Glacier Bay National Park records. Record # is either
87 Accession # from NMFS database or a temporary code. Unk = unknown. Confirmation Codes are defined as
88 follows: Unconfirmed = anecdotal only, or first hand report neither dependable nor well noted; Confirmed-low =
89 dependable first hand but lacks evidence or notes; Confirmed-medium = external exam of whale, expert
90 testimony or evidence with notes but strike not witnessed; Confirmed-high = actual strike witnessed or concrete
91 evidence found, excellent notes. Initial condition defined as follows: Mdecomp = moderately decomposed,
92 Fdead= freshly dead. Please acknowledge NOAA Fisheries Alaska Regional Office, Glacier Bay National Park
93 and Preserve, and the Alaska Marine Mammal Stranding Network in any use of this information.

Record #	Date	Location	Species	Confirmation Code	Initial Condition	Vessel Type	Vessel Length (m)	Vessel Mass (gross tons)	Vessel Speed	Outcome
1978050	1978June-22	Sitka, Eastern Channel	humpback whale	Confirmed-low	Fdead	cruise ship	190	55,000	unk	dead whale stranded on Galankin Island near Sitka, examined but no necropsy.
1986121	1986June-15	Glacier Bay	humpback whale	Confirmed-high	Alive	tour boat	20	unk	~5 knots (Vessel going 10 knots or less when whale surfaced in front at anchor	alive til present day with no persistent visible injuries or scars
1986111	1986June-24	Juneau, Point Retreat	humpback whale	Confirmed-high	Alive	private small craft	9	unk		fate unknown
1986122	1986July-1	Taku Inlet	humpback whale	Confirmed-low	Alive	private small craft	7	unk	drifting with engine off	fate unknown
GBNP5	1987June-9	Icy Strait, Point Adolphus	humpback whale	Confirmed-med	Alive	charter boat	~7.9	unk	unk	alive til present day, propeller scars on left flank
GBNP60	1991Aug-unk	SE Baranof Island, Little Port Walter	humpback whale	Confirmed-high	Fdead	unk	unk	unk	unk	dead, skull shattered from the top of the cranium to the base of the skull, rest of the body in good condition
1991031	1991Nov-28	Sitka, Eastern Channel	humpback whale	Confirmed-low	Alive	private small craft	unk	unk	in transit on step, cut engine when whale surfaced in boat's path	no apparent injury, fate unknown
GBNP8	1992Aug-10	Icy Strait, Point Adolphus	humpback whale	Confirmed-low	Alive	commercial fishing vessel	15	unk	~2-4 knots	no apparent injury, fate unknown
1993037	1993unk-unk	Sitka	humpback whale	Confirmed-med	Alive	private small craft	5	unk	unk	fate unknown
1994074	1994June-1	Sitka	humpback whale	Confirmed-med	Alive	charter boat	7	unk	~20 knots but seconds before collision, backed off on throttle	skin left on bow of vessel, no apparent injury, fate unknown
95010	1995June-1	Shakan Bay, Prince of Wales Island	unknown cetacean	Confirmed-low	Alive	commercial fishing vessel	27	unk	9 knots	whale observed swimming in circles, fate unknown
1995034	1995June-8	S. side Admiralty Island	humpback whale	Confirmed-low	Alive	private small craft	5	unk	29.5 knots	no injuries reported; fate unknown
1995035	1995July-3	Frederick Sound	humpback whale	Confirmed-med	Alive	charter boat	9	unk	drifting with engine off	no apparent injury, fate unknown
95015	1995July-27	Craig	humpback whale	Confirmed-low	Alive	private small craft	5	unk	drifting with engine off	fate unknown
temp96a	1996Aug-17	Juneau	humpback whale	Confirmed-low	Alive	private small craft	8	unk	22 knots but throttled back when whale surfaced ahead	fate unknown
96006	1996May-17	Gulf of Alaska, open water	unknown cetacean	Confirmed-low	Alive	USCG cutter	115	unk	15 knots	blood observed in water, fate unknown
97016	1997May-20	near Ketchikan, Kah Shakes Cove	gray whale	Confirmed-low	Mdecomp	unk	unk	unk	unk	dead, carcass examined, left at site
97200	1997May-29	Kenai Fjords National Park	humpback whale	Confirmed-low	Alive	commercial fishing vessel	9	unk	unk	fate unknown
97025	1997May-29	Kenai Fjords	unknown baleen whale	Confirmed-med	Alive	tour boat	29	unk	22 knots but throttled back when whale surfaced ahead of ship	no apparent injury, fate unknown
97032	1997July-12	Juneau, NW Shelter Island	humpback whale	Confirmed-med	Alive	private small craft	5	unk	drifting with engine off	fate unknown
GBNP16	1997Aug-18?	Glacier Bay, Gilbert Peninsula	humpback whale	Confirmed-high	Alive	canoe	< 6	< 200 lb	< 5 kts	no apparent injury, fate unknown
97045	1997Aug-31	Dixon Entrance	unknown cetacean	Unconfirmed	Alive	cruise ship	231	37	unk	fate unknown
97056	1997Oct-12	Prince William Sound (60 mi. SW Middleton Island)	sperm whale	Unconfirmed	Alive	commercial fishing vessel	unk	unk	unk	no apparent injury, fate unknown
1998060	1998Aug-11	Juneau, North Pass	humpback whale	Confirmed-med	Alive	commercial whale-watch boat	24	unk	2 knots (but captain had just put engines in full reverse idle)	no apparent injury, fate unknown
1998074	1998Sep-24	Juneau, North Pass	humpback whale	Confirmed-low	Alive	commercial whale-watch boat	7	unk	15-18 knts	fate unknown
1999132	1999June-21	Stephens Passage	unknown cetacean	Confirmed-low	Alive	commercial fishing vessel	10	unk	at anchor	fate unknown
1999136	1999July-7	Sitka, Whale Bay	humpback whale	Confirmed-med	Alive	sailboat, wooden	22	unk	at anchor	baleen left in side of boat; fate unknown
1999095	1999July-28	Juneau, Stephens Passage	humpback whale	Confirmed-low	Fdead	cruise ship	285	82,000	19 knots	dead, whale carcass found on bulbous bow of ship
1999133	1999Sep-6	Icy Strait, Sisters Island	humpback whale	Confirmed-low	Alive	sailboat, fiberglass	9	unk	underway	no apparent injury, fate unknown
199124	1999Oct-31	Metlakatla	humpback whale	Confirmed-low	Alive	private small craft	6	unk	12 knots	skin left on bow of vessel; fate unknown

Record #	Date	Location	Species	Confirmation Code	Initial Condition	Vessel Type	Vessel Length (m)	Vessel Mass (gross tons)	Vessel Speed	Outcome
2000106	2000Aug-16	Kodiak, Uyak Bay	fin whale	Confirmed-low	Alive	USCG cutter	34	153	17 knots	no apparent injury, fate unknown
2001012	2001June-19	Dixon Entrance	humpback whale	Confirmed-low	Alive	USCG cutter	34	135	unk	no apparent injury, fate unknown
2001061	2001Sep-18	Anchorage	humpback whale	confirmed-low	Fdead	container ship	216	20,968	unk, but cruising speed avg. 18-19 kts, 12 kts when in Cook Inlet	dead, whale removed from bow and floated up Knik Arm
GBNP24	2001July-unk	Icy Strait, Pleasant Island	humpback whale	Confirmed-low	Alive	commercial whale-watch boat	14	28	unk	no apparent injury, fate unknown
2001038	2001July-13	Glacier Bay, lower Sitakaday Narrows	humpback whale	Confirmed-high	Mdecomp	cruise ship	232	78,000	14 knots and accelerating	dead, full necropsy, injuries consistent with ship strike
2001052	2001Aug-unk	Pacific Ocean	unknown cetacean	Unconfirmed	unk	unk	unk	unk	unk	fate unknown
GBNP26	2001Sept-20	Cross Sound, near Elfin Cove	humpback whale	Unconfirmed	Alive	private small craft	unk	unk	unk	fate unknown
2002temp69	2002June-22	Cross Sound, Fern Harbor	humpback whale	Confirmed-low	Alive	charter boat	19	51	underway, then shifted engine into neutral when whales surfaced	no apparent injury, fate unknown
GBNP28	2002June-30	Glacier Bay, Gilbert Peninsula	humpback whale	Confirmed-med	Alive	single sea kayak	< 20	< 100 lb	drifting	fate unknown
GBNP29	2002Sept-5	Glacier Bay, Bartlett Cove	humpback whale	Confirmed-low	Alive	charter boat	30	163	at anchor	fate unknown
2003022	2003May-unk	Icy Bay	humpback whale	Confirmed-high	Mdecomp	unk	unk	unk	unk	dead, full necropsy, injuries consistent with ship strike
GBNP31	2003July-9	Icy Strait, entering Glacier Bay	humpback whale	Confirmed-med	Alive	private small craft	7	unk	~2-3 knots, then in reverse at time of impact	fate unknown
2003088	2003July-26	Auke Bay	unknown large cetacean	Confirmed-med	Alive	private small craft	6	unk	unk	fate unknown
2003094	2003Aug-2	Bering Sea open water	unknown baleen whale	Confirmed-low	Alive	unk	unk	unk	unk	fate unknown
GBNP32	2003Aug-13	Gulf of Alaska, south of Sitka	humpback whale	Confirmed-low	Alive	cruise ship	237	61,000	underway	fate unknown
GBNP33	2003Aug-15	Chatham Strait	humpback whale	Confirmed-low	Alive	private small craft	6	unk	in transit	fate unknown
2003140	2003Oct-30	Sitka Sound	humpback whale	Confirmed-med	Alive	research vessel	7	unk	underway, then shifted engine into neutral when whale surfaced ahead,	no apparent injury, fate unknown
GBNP62	2004June-25	Icy Strait, east of Inian Islands	humpback whale	Confirmed- high	Alive	research vessel	7	unk	~ 5 knots	alive, whale sighted in subsequent years
2004064	2004May-27	Lynn Canal, Benjamin Island	humpback whale	Confirmed-low	Alive	unk	unk	unk	unk	"blubber" left on boat; fate unknown
GBNP35	2004July-30	Glacier Bay, Strawberry Island	humpback whale	Confirmed-high	Fdead	unk	unk	unk	unk	dead, full necropsy found damage consistent with blunt trauma (rib fractures)
2004051	2004Aug-unk	Juneau, Douglas Island	humpback whale	Confirmed-high	Fdead	unk	unk	unk	unk	dead, necropsy found damage consistent with vessel strike (severely fractured scapula)
2005089	2005May-30	Ketchikan, George Inlet	humpback whale	Confirmed-low	Alive	commercial whale-watch boat	15	unk	unk	no apparent injury, fate unknown
2005060	2005June-21	Homer	unknown large cetacean	Confirmed-low	Alive	charter boat	9	unk	unk	observed blood in water; fate unknown
2005102	2005July-2	Prince William Sound	unknown large cetacean	Confirmed-med	Alive	private small craft	12	unk	19 knots	fate unknown
2005084	2005July-7	Icy Strait, Point Adolphus	humpback whale	Confirmed-med	Alive	commercial whale-watch boat	8	unk	Underway at unk. speed, captain reduced speed and was "barely 25 knots"	no apparent injury, fate unknown
2005044	2005Aug-13	Frederick Sound, between Turnabout Island and Kupreanof Island	humpback whale	Unconfirmed	Alive	private small craft	9	unk	unk	fate unknown
2005200	2005Aug-unk	near Juneau	humpback whale	Unconfirmed	Alive	tour boat	44	97	unk	no apparent injury, fate unknown
2005202	2005Aug-25	Stephens Passage south of Taku Inlet	humpback whale	Unconfirmed	Alive	tour boat	17	unk	unk	fate unknown
2005201	2005Sept-14	Frederick Sound, near Brothers Islands	unknown large cetacean	Unconfirmed	Alive	cruise ship	unk	unk	19-20 knots	fate unknown
2005079	2005Oct-15	Peril Strait	humpback whale	Confirmed-med	Mdecomp	unk	unk	unk	unk	dead, necropsy found injuries consistent with ship strike (severe blunt trauma with mandibular and cervical muscle damage)
2006200	2006Aug-15	Juneau, North Pass	humpback whale	Confirmed-high	Alive	commercial whale-watch boat	13	13	idling, then engine in reverse at time of impact	no apparent injury, fate unknown
2006201	2006Aug-19	Seward	fin whale	Confirmed-high	Dead	cruise ship	294	91,000	unk	dead, brought into harbor on ship's bulbous bow; final necropsy results pending



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97 Figure 1. Locations of reported vessel collisions with large whales in Alaskan waters: 1978-2006