# CETACEAN STRANDINGS AND ENTANGLEMENT IN FISHING GEAR ON THE CANADIAN WEST COAST DURING 1991

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### **ABSTRACT**

Forty-four records of seven species of cetaceans that stranded or became entangled in fishing gear in British Columbia (B.C.), Canada, in 1991 are presented. This is a larger number than reported in any previous year, likely due to an increase in reporting effort. Based on results of previous studies and on stranding programs from other areas in North America, it seems likely that these records represent only a small proportion of the total cetacean mortality in B.C. Three of the seven species were caught in fishing operations. One gray whale (Eschrichtius robustus) was caught in a set gillnet from a fishery for herring (Clupea harengus), the first record of a cetacean caught in a net from this fishery. Two harbour porpoises (Phocoena phocoena) which were found stranded in B.C. were likely killed in a U.S. Native American set gillnet fishery for salmon (Oncorhynchus spp.) in northern Washington State, possibly the first recorded cetacean incidental mortality in this fishery. One Dall's porpoise (Phocoenoides dalli) and two harbour porpoises were also killed in the commercial salmon drift gillnet fishery in B.C. Other species recorded as stranded in this study were Pacific white-sided dolphin (Lagenorhynchus obliquidens), minke whale (Balaenoptera acutorostrata), sperm whale (Physeter macrocephalus), Cuvier's beaked whale (Ziphius cavirostris), and an unidentified beaked whale in the genus Mesoplodon.

### INTRODUCTION

Whales, porpoises and dolphins which have stranded alive or washed ashore dead can provide information on causes of mortality and baseline data on parasite loads, food habits, reproductive parameters, and seasonal distributions. Information from strandings can be used for both scientific and educational purposes: records of locations of animals can be used to help determine range and relative abundance of rare or unusual species; tissue samples can be tested for environmental contaminants and used in genetic studies; and skeletons can be donated to museums, parks or schools for both educational and research uses.

This fifth annual report summarizes records collected through the Stranded Whale and Dolphin Program of British Columbia (SWDP) of cetacean strandings and entanglements in fishing gear on the west coast of Canada during 1991. Annual summaries of records for 1987 through 1990 have been previously presented (see references in Baird et al. 1991). One of the objectives of this program is to record occurrences of cetaceans which: 1) are found dead, either floating or on shore; 2) become entangled in fishing gear; 3) strand alive and return to the water (with or without human assistance); or 4) strand alive and subsequently die. The program also tries to maximize the research and educational uses of collected specimens. The purposes of this report are to: 1) summarize records obtained from 1991; 2) encourage further research use of this information; 3) encourage reporting of future records; and 4) briefly discuss information on incidental mortality of cetaceans in B.C. derived through the SWDP.

### **METHODS**

The SWDP publicizes a toll-free telephone number province-wide for members of the public to report strandings (both current and historical). When full post-mortem examinations are possible, external morphometrics, blubber thicknesses, stomach contents, and tissue and organ samples are taken. All samples are archived for potential future analyses. When a carcass is not recovered, an attempt is made to have the animal marked for future identification, to avoid the possibility of duplicate records. As well, efforts are made to obtain photographs, which may allow for future matching of records.

## **RESULTS AND DISCUSSION**

Since the SWDP began in 1987, the number of records reported each year has increased (see references cited in Baird et al. 1991). The 44 records for 1991 (Table 1) are the largest number recorded for a single year in B.C. This trend may reflect an increase in awareness and likelihood to report strandings, rather than an increase in the number of strandings or entanglements occurring annually. Details on some records are received from several sources, especially when a carcass remains on a beach for extended periods. However, many strandings are reported by only one source, and often this record is received months or years after the occurrence, implying that many records are not reported. The importance of reporting a stranding, regardless of whether it is thought that someone else may have reported it, cannot be overemphasized. Individuals with details on any stranded cetaceans from British Columbia from 1991, or from other years, are greatly encouraged to contact the authors.

From the 44 records, 7 species were positively identified in 1991. These include 17 harbour porpoises (<a href="Phocoena phocoena">Phocoena phocoena</a>), 7 gray whales (<a href="Esschrichtius robustus">Esschrichtius robustus</a>), 4 Dall's porpoises (<a href="Phocoenoides dalli">Phocoenoides dalli</a>), 2 Pacific white-sided dolphins (<a href="Lagenorhynchus obliquidens">Lagenorhynchus obliquidens</a>), 2 minke whales (<a href="Balaenoptera acutorostrata">Balaenoptera acutorostrata</a>), 1 sperm whale (<a href="Physeter macrocephalus">Physeter macrocephalus</a>), and 1 Cuvier's beaked whale (<a href="Ziphius cavirostris">Ziphius cavirostris</a>). As well, 1 beaked whale of the genus <a href="Mesoplodon">Mesoplodon</a>, and 9 animals that were not positively identified to species, were recorded.

Stranding records were obtained throughout the year, with the greatest number of records reported in the spring and summer (Fig. 1). This is likely due to increased observer effort along the coast during these months. Monthly surveys along the coast of central California indicate that marine mammal carcass deposition increases during late winter and early spring (Bodkin and Jameson, 1991). However, the seasonal distribution of stranding

records for the B.C. coast has not been consistent each year since 1987, hence few conclusions can be made. The number of records has been consistently low during winter months for all years however, making it likely that the majority of strandings during this time are unreported.

As seen in Fig. 2, relatively few strandings are recorded from the more northern and unpopulated areas of B.C. Animals stranding in such areas are probably not often reported. The majority of records from northern B.C. and from isolated areas on the west coast of Vancouver Island were of medium to large size whales, while around southern B.C. more porpoise and dolphin strandings were recorded (Fig. 2). Since Pacific white-sided dolphins in B.C. appear to be more common in northern than southern areas (Stacey and Baird, 1991), and Dall's porpoise appear to be relatively evenly distributed along the coast (Jefferson, 1990), it seems unlikely that fewer small cetaceans are stranding in northern rather than southern B.C. Thus, records of small versus large animals likely reflects differences in the time these animals are recognizable on the beach. Decomposition of large animals can be prolonged for several months, while carcasses of small cetaceans may become unrecognizable within a few days due to scavengers and decomposition (see Wynne, 1990). As well, there may be an increased likelihood of smaller animals drifting back out to sea at a high tide. Bodkin and Jameson (1991) found that marked pinniped carcasses remained on the beach for 6 to 135 days with an average of 28.2 days. It is likely that a small cetacean carcass would decompose or be scavenged much faster than a small pinniped, due to differences in the strength of the hide (Wynne, 1990). Small carcasses on a beach for short periods could easily go unnoticed in unpopulated areas, or in populated areas during bad weather, when beaches are frequented less often. In 1987, 58 stranded cetaceans were recorded by the Northwest Marine Mammal Stranding network on the coast of Washington and Oregon (Scording, 1991). There is no a priori reason to believe that cetaceans are less abundant on the B.C. coast, and since the coast is longer, it is probable that more animals should strand in B.C. However, in 1991 fewer strandings were recorded in B.C. than in Washington and Oregon in 1987. One factor which may be responsible for a smaller number of stranding reports in B.C. is the higher proportion of isolated areas. As well, most of the B.C. coastline is rocky, which may affect how visible an animal is on the shore.

Three of the incidentally caught Dall's and harbour porpoises (Table 1) were taken by the B.C. salmon (Oncorhynchus spp.) drift gillnet fishery. Two harbour porpoises which washed up on shore in B.C. appeared to have been killed incidentally in a monofilament set gillnet fishery for salmon by U.S. Native Americans in northern Washington. These appear to be the first recorded cases of cetacean incidental mortality in this fishery. Such records may have management implications for this fishery, under the U.S. scheme for categorizing fisheries according to the level of marine mammal incidental takes. One gray whale was observed trailing gear from the B.C. herring (Clupea harengus) set gillnet fishery, which appears to be the first record of an animal caught in the nets used in this fishery. Two additional animals, one Dall's porpoise and one harbour porpoise, showed signs of net entanglement, but the fishery type was not determined. The total number of small cetaceans recorded, both as incidentally caught or stranded, is just over 50% of the minimum number estimated as being killed annually in fisheries in B.C. (Stacey et al. 1990). This also emphasizes that only a small proportion of stranding and gear entanglement incidents are likely being reported.

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Table 1.

Strandings and incidental catches from 1991, and previously unreported records from 1990. (V.I. = Vancouver Island). All records are of single individuals.

RECORD NUMBER¹	DATE²	SPECIES	LOCATION	LATITUDE AND LONGITUDE	TYPE' SEX	X RECOVERED <sup>6</sup>	ا ي
SWDP90-39	17 November 1990	sperm whale	98 nm W of Tofino, V.I.	49°4′N, 128°27′W	A M.	<b>&gt;</b>	
SWDP90-40	July/August 1990	small cetacean	Port Clements, Graham I.	53°41'N, 132°11'W	·	z	
SWDP90-41	July 1990	beaked whale?	E Copper I.	52°21'N, 131°10'W	' <b>∢</b>	z	
SWDP90-42	summer 1990	porpoise sp.	off Port San Juan, V.I.	48°31'N, 124°27'W	В,Н	z	
SWDP91-01	14 January 1991	harbour porpoise	Hornby I.	49°30'N, 124°41'W	∢	>	
SWDP91-02	8 February 1991	harbour porpoise	Kildonan, V.I.	49°1'N, 125°0'W	A	<b>&gt;</b>	
SWDP91-03	19 March 1991	Dall's porpoise	William Head, V.I.	48°20'N, 123°32'W	B> ■	<b>&gt;</b>	
SWDP91-04	20 March 1991	gray whale	Hesquiat, V.I.	49°24′N, 126°28′W	Δ	<b>&gt;</b>	
SWDP91-05	23 March 1991	gray whale	Cleland I.	49°10'N, 126°5'W	C,F	>	
SWDP91-06	8 April 1991	harbour porpoise	Pedder Bay, V.I.	48°20'N, 123°33'W	· •	z	
SWDP91-07	16 April 1991	harbour porpoise	White Rock	49°2′N, 122°52′W	ŋ		
SWDP91-08	18 April 1991	harbour porpoise	White Rock	49°2′N, 122°53′W			
SWDP91-09	26 April 1991	harbour porpoise	Victoria, V.I.		Σ	<b>&gt;</b>	
SWDP91-10	27 April 1991	gray whale	Pulteney Pt., Malcolm I.			>	
SWDP91-11	12 April 1991	killer whale?	N tip Saltspring I.	50°46'N, 126°39'W	· •	z	
SWDP91-12	28 April 1991	gray whale	Eagle Creek, Graham I.	53°49'N, 131°51'W			
SWDP91-13	9 May 1991	harbour porpoise	Esquimalt, V.I.				
SWDP91-14	11 May 1991	Dall's porpoise	Becher Bay, V.I.	48°19′N, 123°39′W			
SWDP91-15	12 May 1991	gray whale	Boundary Bay	49°5′N, 122°56′W	Ψ.		
SWDP91-16	14 May 1991	harbour porpoise	Boundary Bay	49°3′N, 123°2′W	ŋ		
SWDP91-17	15 May 1991	harbour porpoise	Saxe Pt., Esquimalt, V.I.	48°26'N, 123°25'W	∢	> 1	
SWDP91-18	22 May 1991	sperm whale	Benson Pt., Nootka I.	49°47'N, 126°53'W	<b>4</b>	>	
SWDP91-19	≈03 May 1991	unidentified small	Ououkinsh Inlet, V.I.	50°9′N, 127°29′W	· •	z	
SWDP91-20	April 1991	beaked whale	Long Beach, V.I.	49°3′N, 125°43′W	٠	<b>&gt;</b>	
SWDP91-21	25 May 1991	minke whale	Hardy Bay, V.I.		· •	>	
SWDP91-22	1 June 1991	Pacific white-sided dolphin	2 1/2 mi SSW Currie I. light		4		
SWDP91-23	11 June 1991	unidentified large	Yaku Pt., Graham I.		` <b>V</b>	z	
SWDP91-24	15 June 1991	harbour porpoise	Craig Bay, V.I.	49°19′N, 124°15′W			
SWDP91-25	11 July 1991	gray whale	Nuchatlitz Inlet, Nootka I.	•	Ψ V		
SWDP91-26	June 1991	unidentified	Fife Sound	50°47'N, 126°39'W	· •	z	
SWDP91-27	18 July 1991	gray whale	Orveas Bay, V.I.		Ψ V		
SWDP91-28	27 June 1991	unidentified large	2 mi N Spearer Pt., Banks I.	53°15′N, 130°4′W	· •	z	
SWDP91-29	22 July 1991	minke whale?	N of Deadman Pt., Banks I.	53°38′N, 130°30′W	, 4		
SWDP91-30	10 July 1991	Cuvier's beaked whale	N side Langara I.	54°15′N, 133°2′W	4		
SWDP91-31	14 July 1991	harbour porpoise?	Edye Pass, Porcher I.	54°3′N, 130°33′W	В,Н	z	
SWDP91-32	14 August 1991	Pacific white-sided dolphin	Round I., Queen Charlotte Strait	50°44'N, 127°22'W	4		
SWDP91-33	13 August 1991	Dall's porpoise	Johnstone Strait	50°30′N, 126°35′W	В,Н	z	
SWDP91-34	19 August 1991	Pacific white-sided dolphin?	between Pine and Egg I.	51°5′N, 127°48′W	٠	z	
SWDP91-35	23 August 1991	harbour porpoise	NE shore Hornby I.	49°32′N, 124°37′W			
SWDP91-36	20 August 1991	harbour porpoise	NE shore Hornby I.	49°32'N, 124°37'W	Σ	<b>&gt;</b>	
SWDP91-37	25 August 1991	Dall's porpoise	Metchosin, V.I.	48°22′N, 123°32′W	ш	>	

RECOVERED*	
	> Z > Z > > >
SEX	ц, Σ, ΣΣΣ
TYPE*	4 4 Q 4 8, 8, 4 H, H,
LATITUDE AND LONGITUDE	49°12'N, 123°50'W 52°17'N, 128°41'W 48°49'N, 125°8'W 49°2'N, 122°53'W 49°22'N, 124°26'W 48°40'N, 124°52'W 48°36'N, 124°45'W
LOCATION	Gabriola I. McInnes I. Burlo I., Bamfield Inlet White Rock Qualicum, V.I. Nitinat, V.I. Carmanah Pt., V.I.
SPECIES	harbour porpoise minke whale harbour porpoise unidentified porpoise harbour porpoise harbour porpoise
DATE <sup>2</sup>	7 September 1991 8 September 1991 7 September 1991 mid July 1991 15 October 1991 257 October 1991 30 December 1991
RECORD NUMBER'	SWDP91-38 SWDP91-39 SWDP91-40 SWDP91-41 SWDP91-42 SWDP91-43

Notes to Table 1.

'SWDP = Stranded Whale and Dolphin Program of B.C. Consecutive record numbers are given as each record is received, therefore records are not in chronological order.

<sup>2</sup>Date shown is earliest date reported. Many records were also reported from later dates.

<sup>3</sup>Location noted is last known location. In some cases, animals were seen in one location one day, with later reports of what we believe is the same animal reported at a nearby location on a later date.

4Type: A, found dead; B, incidental catch, died; C, collided with fishing gear, trailing gear; D, collided with fishing gear, not killed; E, live stranded, died; F, Herring set gillnet; G, likely U.S. Native American salmon set gillnet; H, salmon drift gillnet.

<sup>5</sup>Recovered: Y. Recovered whole or in part, and/or photographs or measurements taken; N. Not recovered.

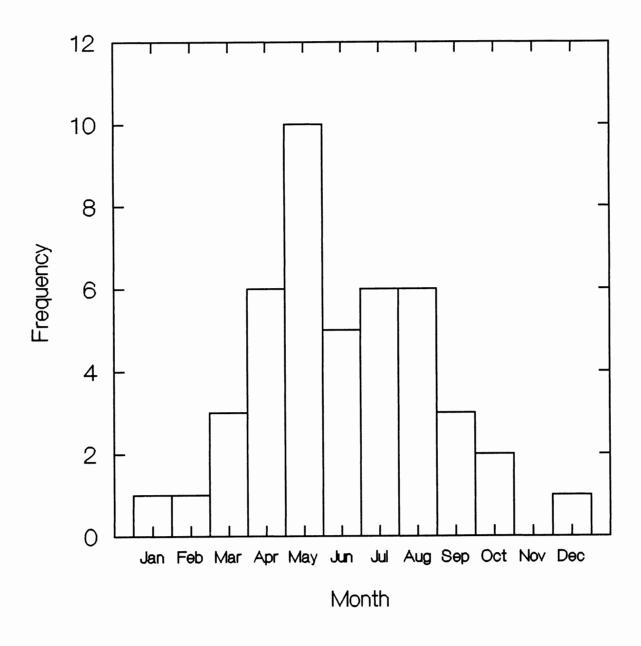


Figure 1. Seasonal distribution of stranding and entanglement records.

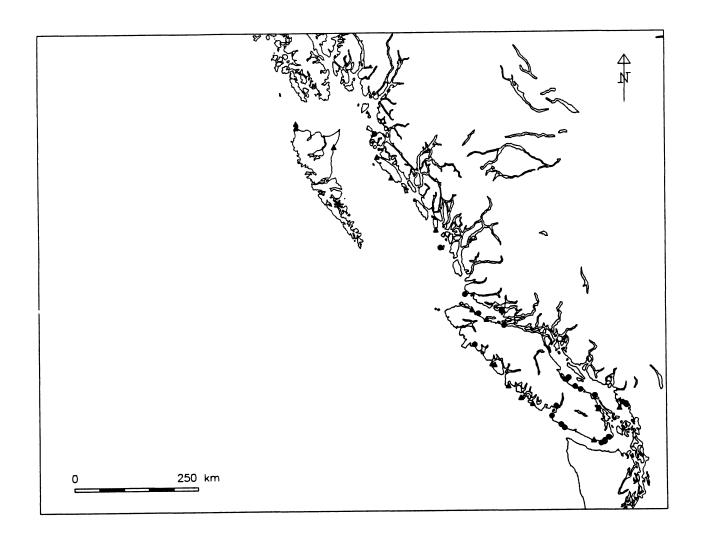


Figure 2. Geographic distribution of stranding and entanglement records. Filled circles represent small cetaceans. Filled triangles represent medium to large sized cetaceans. The filled square represents an animal of undetermined size.