INCIDENTAL ENTRAPMENTS BY INSHORE FISHING GEAR REPORTED IN 1989

by

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EXECUTIVE SUMMARY

Assistance was provided to inshore fishermen in Newfoundland and Labrador who incidentally caught large whales and sharks so that the animals could be removed from the fishing gear quickly and gear damage and animal mortality minimized. This is the tenth year this program has operated.

Humpback whales (N = 68) were reported entrapped in codtraps and groundfish gillnets in record numbers. Mortality of humpbacks was low as a result of entrapment (5.9%) as were typical damage to fishing gear. Mortality of minke whales entrapped (N = 12) was high (83%) due to the size of the animal and its behaviour during entrapments. Other species reported entrapped in inshore fishing gear included beluga whales, harbour porpoise, white-sided dolphins and a bowhead whale.

In total it is estimated at about 650 collisions occurred by large whales and sharks during 1989 costing fishermen about $200,000. in gear losses.

Ice entrapments and strandings of cetaceans were also reported to the Whale Research Group. Several species of sharks and marine turtles were occasionally reported entrapped in fishing gear. Reports from several areas indicate a substantial incidental catch of harp seals occurred during 1989.

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The entrapment assistance and stranding program is large and requires the help and good will of many to operate effectively. That is works well is a credit to all those who cooperate so well in making it a success.

We are appreciative to the Development Branch, Fisheries and Oceans - Newfoundland Region for their continued financial support of the entrapment assistance program. Additional funds were made available from the Newfoundland and Labrador Department of Fisheries. Supplementary funds which helped manage the effort were provided by the Island Foundation, the National Museum of Natural Science, Environment Canada and World Wildlife Fund (Canada).

Hal Whitehead, Steven Katona, Phil Hammond, Herb Gaskill and G.B. Stenson deserve special mention for their efforts on the expert advisory committee.

Finally we would especially like to acknowledge the contribution that inshore fishermen have made to the program. Without their cooperation, support and help the program would certainly fail. They deserve full credit for any success it has achieved.

INTRODUCTION

Since 1978, Memorial University of Newfoundland, in cooperation with the Department of Fisheries and Oceans and the Newfoundland/Labrador Department of Fisheries, has offered assistance to inshore fishermen in Newfoundland and Labrador who incidentally entrapped large whales and sharks in their fishing gear. Each summer, substantial numbers of the animals are caught and present a difficult problem for fishermen who must remove them quickly with a minimum of gear damage. The entrapment assistance program helps fishermen with this task and has been able to substantially reduce mortality in large whales and minimize gear and down-time losses to the fishermen (1988).

The entrapment assistance program operated again during 1989 with support from the Development Branch - Department of Fisheries and Oceans, the Newfoundland and Labrador Department of Fisheries and Memorial University of Newfoundland.

METHODS

During 1989 the entrapment assistance program operated using methods similar to those of previous years (Lien et al. 1987; Lien 1980). Again, for the second time, then entrapment assistance crew consisted of fishermen who where hired as the primary entrapment crew.

Entrapment assistance was widely advertised by a variety of publications and advertisements, through Fisheries and Oceans field offices and by Department of Fisheries field workers.

Fishermen could call a 24 hour toll-free phone service for advice and assistance. If assistance was requested, a crew was dispatched to help remove the entrapped animal as quickly as possible. Calls were received which reported a variety of problems in addition to the entrapment of large whales and sharks, including marine mammal strandings, ice entrapments of cetaceans and entrapment of marine turtles and seals. As appropriate, fishermen were given information, access to tools or field assistance.

RESULTS

Humpback Whales: Humpbacks (Megaptera novaeangliae) remain the major problem species for inshore fishermen. A listing of humpbacks reported incidentally caught in fishing gear during 1989 is present in Table 1 and locations of these accidents are shown in Figure 1.

There were a total of 70 humpback entrapments reported during 1989. All entrapments of humpbacks were reported by fishermen except two that were reported by media after fishermen called them. Thus we would estimate that under-reporting of entrapment events involving humpbacks is low, probably under 10%.

As a result of entrapment only four animals died (5.7%). Several were able to self release (7%) before receiving human assistance. A total of 12 animals (17%) towed gear off before human assistance could arrive. All remaining animals were released alive without significant amounts of gear left on them.

Most humpback entrapments occurred in July (54%) or June 26%) but were reported from April through November. Percentages of humpback entrapments per month are shown in Figure 2.

Most (48.5%) humpbacks were caught in fleets of groundfish gillnets (Table 2). Codtraps (31.4%) were the next most common gear involved in incidental catches; gillnets for salmon or lumpfish (14.2%) were also inshore gear that caught humpbacks.

Minke Whales: A total of 12 minke whales (Baalaenoptera acutorostrata) were reported caught (Table 3). Of these reports only 8 came from fishermen; 4 reports originated from other sources. Thus its likely that under-reporting of minkes is higher than that for humpbacks. An under-reporting estimate of about 25% is reasonable.

Most (83%) minke whales died as a result of entrapment; only two animals were released. Groundfish gillnets (50%) caught most; codtraps (42%) accounted for others. Most minkes (67%) were caught in July or June (16%) but were reported caught from May through August.

Other Cetacean Entrapments: Four other species of cetacea were reported entrapped (Table 4) including two white whales (Delphinapterus leucas), four harbour porpoise (Phocoena phocoena) and a single white-sided dolphin (Lagenorhynchus acutus). An entrapped bowhead whale (Balaena mysticetus), probably towing seal nets was reported on Baffin Island via Fisheries and Oceans personnel in the area.

Strandings and ice entrapments of whales: There were few ice entrapments of cetaceans during 1989 (Table 5). One blue whale (Balaenoptera musculus) was entrapped on the SW Coast. We are unsure if it was killed as a result of ice.

There were 17 reported cetacean stranding during 1989 (Table 6). Many (35%) of these reports involved very old carcass which were not examine. In several cases local people "saved" live stranded animals by removing them from beach areas. Two stranding records are worth noting. One is the stranding of an unidentified beaked whale in Bonavista in early August. Unfortunately the animal was removed from the beach before it could be examined. The second is the stranding of pygmy sperm whale (Kogia breviceps) on Langlade in early September; it was examined in early October.

Sharks Reported: Basking sharks (Cetorhinus maximus) (Table 7) were reported caught only 7 times during 1989. Other species of sharks reported incidentally taken (Table 8) included porbeagles

(Lamna nasus), blues (Prionace glauca) and greenland sharks (Somniosus microcephalus). Very few animals were sold this year; markets for fins (Terra Nova Fisheries) and liver (Carino) were very poor.

Marine Turtle Sightings and Entrapments: Four sightings of leatherback turtles (Dermochelys coriacea) were reported in 1989 (Table 9). Five leatherbacks were caught in fishing gear; two died as a result of entrapment. These were examined and skeletons of both animals were collected.

Incidental Seal catches: Routinely reports of seal entrapment in fishing gear are now referred to the Sea Mammals Group, Science Branch, Fisheries and Oceans, St. John's. However, incidental reports are irregularly received.

Calls about a harbour seal (Phoca vitualina) in Harbour Grace, C.B. which took up residence along the main road were received over a four month period. The animal became a town pet. Eventually the animal was examined and tagged. On 30 October it was killed by a member of the R.C.M.P.

Damages to Fishing Gear: From 1979-1985 the ratio of humpback entrapments to the frequency of reported collisions averaged 1:9.3. Since 1986 total damages to fishing gear by large whales and sharks has been estimated using this method rather than monitoring gear damages directly through a damage report card system (Lien et al. 1985). This approach was adopted as reporting of damages by fishermen is voluntary, which presents serious problems in reporting bias, and a damage card system was expensive and difficult to maintain.

Using this method, given 70 humpback entrapments in 1989, it is estimated that there were about 651 instances of damage to fishing gear. Average cost of collisions between 1979-1985 was about $300. (Lien et al. 1986). Thus damages to fishing gear due to whales and sharks is estimated to be $195,300.00.

DISCUSSION

Humpback Entrapments

Humpback whale entrapments with inshore fishing gear have nearly returned to the very high levels experienced in 1979-1980. Through the quick removal of the animals from gear mortality and cost of entrapment have been considerably reduced.

Prior to the Entrapment Assistance Program mortality of humpbacks entrapped in fishing gear was estimated to be about 50%. In the first year of the Entrapment Assistance Program mortality was 30%. Mortality has declined further to about 10% since 1985 (Fig. 3). This years mortality record for humpbacks was the lowest achieved to date (Lien et al. 1989).

Damages to fishing gear are also reduced as a result of the quick removal of entrapped animals from gear. It is difficult to make accurate assessments of this reduction. As a rough guide, however, live entrapments of humpbacks where whales were not released from gear with assistance (1979-1988), was $1,255.00. Average cost of gear damage resulting from a humpback entrapment released with human assistance was $264.00

While numbers of humpback whales reported entrapped has increased markedly in the last two years, numbers of minke whales incidently caught in inshore fishing gear has remained low and more or less constant over the period from 1979-1989 (Fig. 2). There are a number of important factors to consider in evaluating this change including: (1) willingness of fishermen to report; (2) increases in numbers of whales; (3) bait conditions producing a redistribution of whales; and (4) increases in inshore fishing effort. These will be considered in turn.

(1) Willingness of fishermen to report entrapments varies with the species of animal caught, location of the entrapment, anticipation of sales or compensation and the relative state of the fishery (Lien et al. 1985). Although, our estimates of under-reporting have decreased between 1979-1989 (Lien 1988), the major decrease was between 1980 and 1981 (Lien et al. 1982). Our estimates of under-reporting of humpback entrapments has not changed substantially in the past several years. Thus the increase in humpback entrapments is not likely due to a change in fishermens' willingness to report entrapments.

There is a broad realization now among fishermen that the quick, professional removal of large entrapped animals from gear saves money. Thus it is likely there is some enhanced motivation to report entrapments. Minke whales, although smaller than humpbacks, because of their behaviour while entrapped cause approximately similar amounts of gear damage. However, under-reporting of entrapment of this species would appear to be at least several times that of humpbacks. Additionally, the numbers of minke whales entrapped would appear to be about constant over the last decade.

Willingness to report entrapments is complex and it is possible that this may account for some variation in the reported entrapments we deal with each year. However, the increase in humpback entrapments appears to be a robust, real phenomena, and not simply an artifact of reporting tendencies.

(2) Increases in Numbers of Whales. Whitehead (1989) has considered the increase in humpback entrapments in Newfoundland and Labrador in relation to increases in the population and has calculated estimates of the Newfoundland and Labrador feeding sub-population of humpbacks. Using an estimated annual rate of increase of the population of 0.048, population increases ranging from 24-87% are estimated, with a "best estimate of 53%.

Thus, while it is likely that humpback whales have increased a total of about 50% since 1980 when maximum entrapment damage with fishing gear occurred, population increase, by itself, cannot explain an entrapment rate increase of about 250% since 1981 (Whitehead 1989). It is, however, quite likely that some steady increase in the problem is explainable by whale numbers.

(3) Redistribution of Whales: In the late 1970's to 1980, humpback whales began appearing in inshore waters of Newfoundland and Labrador in unprecedented numbers producing record losses of fishing gear. Whitehead and Carscadden (1985) have been able to account for about 90% of the variation in inshore numbers of humpback whales by variation in the biomass of immature capelin (Mallotus villosus) offshore. When immature capelin bait is not available offshore, humpbacks will redistribute to feed on spawning capelin in inshore waters.

In 1988 and 1989, both years of increased humpback entrapments inshore, capelin stocks appear to be strong (J. Carscadden, pers. comm.). At present, it is believed that capelin abundance is not clearly related to any redistribution of humpbacks. However, we are examining these data further as a possible explanation of recent entrapment levels.

(4) Effort in the Inshore Fishery: There is extremely poor data on effort in the inshore fishery. Additionally, subtle differences in effort, not evident by numbers of fishermen or licenses, may substantial differences in effort which is potentially effective in incidental catches of whales.
Fisheries and Oceans presently has a program underway through the 1988 Federal-Provincial Fisheries Agreement to collect catch and effort information from fishermen. This program will provide information to evaluate the contribution of inshore effort to rate of reported whale entrapment in future years.

In response to the rather dramatic increase in humpback entrapments an expert advisory committee has been organized to assist in evaluating the problem. Members include Hal Whitehead, Dalhousie University; Phil Hammond, Cambridge University; Steve Katona, College of the Atlantic; G.B. Stenson, Fisheries and Oceans and Herb Gaskill and Jon Lien, Memorial University of Newfoundland. Organization of the group has been facilitated by a grant from World Wildlife Fund (Canada). Applications for funding have been made to conduct investigations which evaluate population sizes of problem whale species in waters off Newfoundland and Labrador. The advisory committee will meet periodically to give advice on both population and distribution studies.

Incidental Captures of Seals:

As calls about incidentally caught harp (Phoca groenlandica) are routinely referred to Fisheries and Oceans, we do not record them. It is clear from calls by fishermen and reports from Fisheries and Oceans and Department of Fisheries field officers that incidental take of harp seals remains high. More alarming is

the emotionality of some of the reports.

We have kept informal track of reports of the harp seal by-catch in local media. This is presented in Figure 6. Many have concluded that the seals are "eating all the fish" and should be immediately culled. Managers, as quickly as possible, should provide as much information as possible to all concerned with this problem to insure that decisions will be made, and supported by the concerned public, on a rational basis.

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TABLES

Table 1: Humpback whales reported entrapped in fishing gear during 1989.

Date	Location	Type of gear	Comments
Apr 17	Trepassey	Groundfish gillnets	Towed gear off
May 9	Harbour Mille	Groundfish gillnets	Released alive
11	Southern Harbour	Codtrap	Released alive
20	50nm E- St. John's	Crabpots	Released alive
21	Port au Port	Lump gillnet	Released alive
30	Heart's Delight	Groundfish gillnets	Towed gear off
June 6	Calvert	Salmon gillnet	Released alive
7	Salvage, B.B.	Crabpots	Towed gear off
14	Fox Hbr., P.B.	Groundfish gillnets	Self release
15	Lamaline	Codtrap	Released alive
17	Raleigh	Groundfish gillnets	Released alive
20	Cape Broyle	Codtrap	Self release
21	Kingman, So. Shore	Codtrap	Released alive
22	Renews	Codtrap	Released alive
22	Renews	Codtrap	Dead
22	Riverhead, S.M.B.	Codtrap	Self release
24	La Scie	Codtrap	Released alive
24	Red Island, P.B.	Groundfish gillnets	Towed gear off
26	Bonavista	Codtrap	Released alive
26	Pouch Cove	Codtrap	Released alive
28	Deadman's Bay	Salmon gillnet	Released alive
28	Twillingate	Codtrap	Released alive
28	Cape Freels	Groundfish gillnets	Released alive
30	Catalina	Groundfish gillnets	Released alive
July 1	Jean de Baie	Salmon gillnet	Released alive
3	Lawn	Codtrap	Released alive
4	Hans Hbr., T.B.	Codtrap	Self release
4	Woodstock, W.B.	Codtrap	Dead
4	Burin	Salmon gillnet	Self release
4	Fortune	Groundfish gillnets	Towed gear off
4	Bay of Exploits	Groundfish gillnets	Released alive
5	Portugal Cove So.	Codtrap	Released alive
10	Newtown, B.B.	Codtrap	Released alive
10	Catalina, B.B.	Groundfish gillnets	Released alive
11	Gaskiers, S.M.B.	Codtrap	Released alive
11	Burnt Point, C.B.	Codtrap	Released alive
11	Burnt Point, C.B.	Codtrap	Self release
12	Deep Bay, Fogo Is.	Codtrap	Released alive
13	Fairhaven, P.B.	Groundfish gillnets	Partial release
13	Seal Cove, W.B.	Groundfish gillnets	Towed gear off
13	St. Shotts	Groundfish gillnets	Towed gear off
14	St. Shotts	Groundfish gillnets	Released alive
15	Tilting, Fogo Is.	Groundfish gillnets	Dead
17	Portugal Cove	Groundfish gillnets	Released alive
19	Leading Tickles	Groundfish gillnets	Released alive

19	Valleyfield, B.B.	Groundfish gillnets	Released alive
20	Badger's Quay, B.B.	Groundfish gillents	Released alive
21	Harbour Deep, W.B.	Codtrap	Released alive
22	Newtown, B.B.	Groundfish gillnets	Towed gear off
24	Valleyfield, B.B.	Groundfish gillents	Released alive
24	Fogo Island	Groundfish gillnets	Towed gear off
24	Petty Harbour	Codtrap	Released alive
24	Petty Harbour	Codtrap	Released alive
24	Fleur-de-lys	Codtrap	Released alive
24	Wesleyville	Groundfish gillnets	Towed gear off
25	Fortune Hbr. N.D.B.	Groundfish gillnets	Released alive
25	Musgrave Hbr.	Groundfish gillnets	Released alive
26	Fogo, Fogo Is.	Groundfish gillnets	Released alive
28	Murray Hbr. Lab.	Codtrap	Released alive
28	Tilting, Fogo Is.	Groundfish gillnets	Released alive
28	Twillingate	Groundfish gillnets	Released alive
31	Tilting, Fogo Is.	Groundfish gillnets	Released alive
Aug. 1	Petty Harbor	Hook and line	Released alive
1	Tilting, Fogo Is.	Groundfish gillnets	Released alive
5	Exploits Is.,N.D.B.	Groundfish gillnets	Towed gear off
22	Garnish, F.B.	Groundfish gillnets	Dead
31	Raleigh	Codtrap	Released alive
Sept.16	Chapel Arm, T.B.	Squid trap moorings	Released alive
Oct. 11	Bonavista, B.B.	Salmon gillnet	Released alive
Nov. 7	La Scie	Groundfish gillnet	Towed gear off

Table 2: The type of fishing gear reported to incidentally catch humpback whales during 1989.

Type of fishing gear	N Reports	Percentage
Gillnets		
groundfish	34	48.5
salmon	9	12.8
lumpfish	1	1.4
Traps		
Cod	22	31.4
Squid	1	1.4
Crab pots	2	2.8
Other	1	1.4

Table 3: Minke whales reported entrapped in inshore fishing gear during 1989.

Date	Location	Type of gear	Comments

May	23	Port Kirwan, So. Shore	Groundfish gillnet	Dead
June	15	Harbour Deep, W.B.	Codtrap	Dead
	20	Bay St. George	Groundfish gillnet	Dead
July	1	Portugal Cove So.	Codtrap	Dead
	4	Mortier	Salmon gillnet	Released alive
	4	Portugal Cove So.	Codtrap	Dead
	9	Portugal Cove So.	Codtrap	Dead
	16	Tilting, Fogo Is.	Codtrap	Dead
	17	Cuslett, Cape Shore	Groundfish gillnet	Dead
	19	Trepassey	Groundfish gillnet	Dead
	24	Bell Is., Con. Bay	Groundfish gillnet	Towed gear off
Aug.	10	Cappahaden, So. Shore	Groundfish gillnet	Dead

Table 4: Assorted species of cetaceans reported entrapped in fishing gear during 1989.

Date		Species	Location	Comments
May	2	White whale	Chance Cove, T.B.	Dead; In codtrap
	12	White whale	Elliston, B.B.	Dead; In codtrap
June	26	Hbr. porpoise	Portugal Cove	2 released alive
July	9	Hbr. porpoise	Fairhaven, P.B.	1 released alive
	12	White-sided dolphin	Fairhaven, P.B.	dead; gfish gillnet
	22	Hbr. porpoise	Long Pond, C.B.	dead; gfish gillnet
Aug.	15	Bowhead	Cumberland Sound Baffin Is.	alive; towing gear

Table 5: Ice entrapments of cetaceans reported during 1989.

Date	Location	Species	Comments
Feb. 20	Torbay	?	Released with ice change
April 4	Flat Bay	Blue	Lg. blue with small one Dissappeared but believed dead.

Table 6: Stranded cetaceans reported during 1989.

Date	Location	Species	Comments

March	1	Conception Hbr.,C.B.	Sperm	Dead male; examined
	2	Point Lance	White-beaked dolphin	Dead; fresh
April	4	Witless Bay	?	Dead; old, Very large
	6	Terranceville	White -beaked dolphin	Dead; old
	16	Cow head	?	Floating; large
June	28	Cappahayden	Minke	Examined; skull collected
	28	Cappahayden	Humpback	Same whale killed in fishing gear in Renews
July	11	Clarks Beach, C.B.	Hbr. Porpoise	Examined
	20	Sandy Point, Port au Port	Unidentified dolphin	"Saved" by locals towing off beach
	27	Black Bank Beach, Stevenville	Unidentified dolphin	2 m. long; buried by parks
Aug.	5	Bonavista	Unidentified beaked whale	Dead; towed off before examined
	8	Dildo, T.B.	Hbr. Porpoise	Alive; eventually left beach area
	14	Dover, B.B.	Lg. ?	Decomposed badly
	31	Swift Currant	Minke	Decomposed
Sept.	19	Port au Port	Lg. ?	Floating
Oct.	2	Langlade	Pigmy Sperm	Examined
	23	Portugal Cove	Unidentified dolphins	Brief activity near beach - may not have stranded
Nov.	2	42,54.0' N 64, 40.3'W	Killer whale	floating
	17	Bay Vert	pothead	fresh dead - towed off

Table 7: Basking sharks reported incidentally caught in inshore fishing gear during 1989.

Date		Location	Gear
July	14	Little Harbour, P.B.	Codtrap
	14	Lawn	Codtrap
	15	St. Shotts	Codtrap
	16	Point au Gaul	Groundfish gillnet
August	4	Quidi Viddi	Salmon gillnet
	22	La Poile	Groundfish gillnet
	24	Bishops Cove, C.B.	Herring gillnet

Table 8: Other species of sharks reported incidentally taken in inshore fishing gear during 1989.

Date	Location	Species	Type of gear
May 9	Bay de Verde	Greenland	Lump gillnet
June 29	Portugal Cove	Porbeagle	Salmon gillnet
July 27	St. Anthony	Porbeagle	Groundfish gillnet
Aug. 12	Lanse aux Meadows	Blue	Many caught/in a variety of gear
13	Hermitage	Blue	Groundfish gillnet; U.S. NMFS Tag
17	Raleigh	4.5 m ?	Groundfish gillnet
18	Petty Hbr	Blues	Many caught; hook & line
Oct. 23	Little Bay E.	Blues	Many live stranded on beach.

Table 7: Leatherback turtles sighted and entrapped in inshore fishing gear that were reported during 1989.

Date	Location	Comments
Aug 1	Port aux Basque	Sighting
8	Witless Bay	Dead; Caught in codtrap mooring; Examined; Skeleton to Nfld. Museum
13	La Poile	Released alive; Caught in Herring gillnet; Male; Not examined.
Sept 4	Burnt Cv. So. Shore	Released alive; Caught in trawls; Male.
11	Flatrock	Sighting; Seen over whole day.
11	Long Pond, C.B.	Sighting; Noted presence of pilot fish with turtle.
21	St. Pierre	Release alive; Caught in trawls
Oct 2	Fermuse	Dead; Caught in crabpots; Skeleton at M.U.N.; Male.
12	Portugal Cove	Sightings over 2-3 days.