

MAINTENANCE OF THE NORTH ATLANTIC RIGHT WHALE CATALOG  
1 JANUARY - 30 JUNE, 1998

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## CATALOG STATUS

The right whale photo-identification catalog presently contains 12,688 photographed records of 388 right whales collected between 1935 through June, 1998. The sex of 81% of the cataloged animals is known: 41% (n=158) are male, 40% (n=155) are female, and 19% (n=75) are of unknown gender.

We update each whale's age classification at the end of each year. As of the end of 1997, 96% of the cataloged whales had been assigned to a known age class. There were 204 adults (147 of unknown age that were either calving females or had sighting histories of eight years or greater, 56 with known ages of nine years or greater, and one of known age under nine years that had given birth), 77 were juveniles (i.e. whales that had not calved and were between the ages of 0 (calves in 1997) and 8), 10 were known dead, 83 were presumed to be dead (after five years with no sightings) and the remaining 14 were whales of unknown age class.

In 1994 a project was initiated to protect the existing photo-catalog should a calamitous disaster occur in which all data in the office are lost. The goal of this project is to pull a single slide or print (when we hold the originals) for each day an animal is photographed and place them at an off-site location. This project has been funded primarily by the Aquarium's Right Whale Sponsorship Program and we attempt to maintain it as new data is collected. We are currently in the process of performing this task on the 1997 slides.

In a further effort to protect the photographic catalog, we continue to maintain field primaries for each cataloged whale which are kept off-site. The field primaries have the next best photographic information after the primary archive files which are kept at the Aquarium in fire proof safes. Both are updated with current photographs simultaneously (along with redrawing the whales composite drawing with new scars if necessary), a task which we attempt to perform once a year, generally during the summer. This process will steadily improve the quality of the field files allowing us to perform much of the photographic matching in the field. Due to the large volume of sightings in 1997, we are still in the process of updating the photofiles and redrawing composites for the 1997 sightings.

## COMPUTERIZED DATABASE

All of the survey data from January 1 to June 30, 1998 have been entered, proofed and corrected in the URI format. These computer data and copies of all the hard copy data have been sent to URI.

We currently maintain four primary databases for photoidentification data: *Catalog*, *Eg*, *Cows*, and *Egdemo*. The *Catalog* has the exact location data for each sighting, the date, area, observer, comments and the age of the animal at the time of the sighting. *Eg* summarizes in which years each individual was documented as well as their matriline, age, sex, whether we have a skin sample from them, who their mother is, whether or not they have a white belly, and their callosity pattern code. *Cows* is a separate database for all known females. It summarizes in what area and year each female was seen, if and when they were with calves and who their calves were. *Egdemo* is similar to cows, but has summary information for all whales in the population and their ages at each year, regardless of whether or not they were sighted. All four databases can be linked by the animal's catalog number. These databases are currently in dBase III. The catalog is updated as new information comes in, but the other databases are updated in the spring of each year for all sightings through the end of November the previous year. After that update, we save a "frozen" version of all four databases. The 1997 version was frozen in August, 1998, later than usual, again due to the large volume of sightings in 1997.

To minimize the amount of effort in maintaining the databases each year, we are currently in the process of transferring the data into three tables in Microsoft Access. These tables will be: *Sightings*, *Whale* and *Whale Age*. *Sightings* will have all the sightings and will eventually have all photographed sightings- not just those that have been identified. It resembles the *Catalog* currently, but will not have age or sex. *Whale* will have all the information that remains constant for a whale (e.g. sex, name, composite code, belly patterns etc.) and *Whale Age* will have the age for each whale for every year since it was first sighted and will have separate fields for whether the whale is dead/presumed dead and its age class (as opposed to its actual age). This project is being funded independent of this contract.

## PHOTO-ANALYSIS AND INTEGRATION

There have been a minimum of 737 matched identifications from slides and prints that have been collected and/or analyzed between January and June. The majority of these images were collected either during the winter of 1997/1998 season in the southeastern U.S. or during the 1998 winter/spring season in Massachusetts Bay.

## NEW ANIMALS

Calves are only made into new animals and given identification numbers if they are sighted with their mother in the northern feeding grounds and are photographed well enough to be subsequently matched. Eighteen live calves were photographed in 1997 in the southeast and 14 of those were also photographed in the northeast. In addition, one calf was photographed solely in the northeast on Jeffreys Ledge. Of the total of 19 calves born, 12 were photographed well enough to catalog and were drawn and incorporated into the matching books a month after this reporting period, in July of 1998. One additional calf (cow #1412's) has photographs of marginal quality, but possibly sufficient to match future sightings. We will assign this whale a catalog number only if we match at least one future sighting to it.

Lastly, one more calf from 1996 (#1160's) was made into a whale after we received better photographs from Woods Hole Oceanographic Institution.

At the present time, we expect to have no identified calves from 1998- the first time since dedicated photographic effort began. None of the five live calves seen in the southeast were photographed in Cape Cod Bay and possibly none were photographed in the Bay of Fundy (none were seen by the NEAQ team). A sixth calf was born, but then died on the calving ground and was discovered on January 10th (see Mortality section). Sightings of all five of the documented mothers and calves after January 10th prove that this calf was in fact a sixth calf and not one of the known five.

A "new" non-calf right whale is "created" (i.e. given a number and classified within the catalog) when enough good quality photographs exist for it to be matched to subsequent sightings and when no matches with existing cataloged animals can be found. Sometimes it takes several years to collect enough photographs of an individual before it can be classified as a new animal. The majority of new animals appear to be young whales, indicating that no high-quality photographs were taken of them as calves. No new non-calf animals were created between January and June, 1998.

## PRESUMED DEAD ANIMALS

Any animal in the catalog that is not sighted during five consecutive years becomes classified as "presumed dead" at the end of the sixth year of no sightings. This gap could actually be as long as six years and 11 months. For example, if a whale was sighted in January of 1990, it would not be classified as presumed dead until December 31, 1996. The length of the sighting gap used was based on an analysis of individual sighting histories which indicated only 1-2% of the sighting intervals were longer than five years (see Knowlton et. al., 1994). Note that although a whale becomes "presumed dead" in a given year, it does not mean that the whale actually died in that year. Therefore, an animal that becomes classified as presumed dead in 1995, may actually have died at any time during the previous five years.

We caution that the levels of presumed mortalities in recent years may well be effected by changes in survey effort in the Great South Channel and Browns Bank which has been limited during the last five years. To investigate the bias that this skewed survey effort may have caused, Hain *et al.* (in progress) did an analysis of the catalog in which they separated individuals into two categories: "offshore" whales (i.e. those more likely to be documented in the offshore habitats of Great South Channel and Browns Bank) and "inshore whales" (i.e. those more frequently sighted along the southeast U.S., Massachusetts Bay, and the Bay of Fundy). Their analysis showed that many of the whales who became presumed dead in recent years were "offshore" whales. Their apparent disappearance could well be an artifact of the lack of survey effort in the offshore waters over the past five years.

The presumed dead analysis is done at the end of each calendar year after the sightings from January through November have been compiled. The next analysis will be reported in the final catalog report for 1998 which is due March, 1999. However, initial results show that three whales will be resurrected: #1321- a mother photographed in the southeast that had last been sighted in 1991 and had been classified as presumed dead in 1997; #1270, photographed in Cape

Cod Bay and had last been sighted in 1990 and was presumed dead in 1996; and #1173-photographed on the Northeast Peak of George's Bank and had last been sighted in 1989 and had been presumed dead in 1995. In addition to these resurrections, three of the other mothers from the southeast were all due to become presumed dead in 1998 as they had not been sighted since 1992 (No's 1233, 1315 and 1515).

#### MORTALITIES

One mortality was documented between January 1 and June 30, 1998. This was a newborn calf which was discovered floating 30 nm offshore from Saint Simons Island, Georgia on January 10. The carcass was towed to shore and transported via flat-bed trailer to the University of Florida in Gainesville where a full necropsy was performed. It was determined to be a perinatal death, mostly likely caused by complications during birthing. A full report on this mortality is on file at the Northeast Fisheries Science Center in Woods Hole.

#### ENTANGLEMENTS AND LIFE-THREATENING WOUNDS

There were no entanglements or life threatening wounds documented between 1 January and 30 June. A full report on the entanglements of whale #2212 (who was disentangled in July and August in Cape Cod Bay) and whales #1209 and 1901 (trapped in a fishing weir in Grand Manan, New Brunswick) will be supplied in the year end report.

#### INTERACTIONS WITH THE USER COMMUNITY

Photos have been processed from 12 different organizations or individuals from the first half of 1998 (including the NEAq's winter surveys) and integrated into the photo-id catalog database. A summary is provided in Table 1. All contributors of right whale photographs mentioned in Table 1 have received a letter along with a sightings history of the right whales they sighted.

Table 1. List of organizations/people whose photographs were analyzed during the period 1 January and 30 June, 1998 including the number of identifications (all photographed sightings including multiple sightings of the same individual), those that have been matched, those that are unmatched, and total number of different individuals. Sightings reported on in the 1997 catalog report that now have substantially more matches are italicized. 1998 calves are not counted as individuals because none have been yet. A listing of the contributors' full names and addresses can be found in Appendix 1.

ORGANIZATION/ AREA/YEAR	# OF IDENTS	(MATCHED	UNMATCHED)	# OF INDIV.
USCG 1995 Georges Bank	3?	1	2?	1
ECE 1997 Bay of Fundy				
<i>Vessel</i>	276	200	76	104
Aerial*	85	0	85	0
<i>BIWSC 1997</i> <i>Bay of Fundy</i>	78	61	17	47
IFAW 1997 Roseway Basin Northeast Peak	6**	4	2	4
H. Carter/ECE 1997 Cape Breton	1	0	1	0
FL DEP 1997/98 Southeast				
Offshore	39+ 4 calves	24+ 4 calves	15	19+ 3 calves
Inshore	13+ 5 calves	10+ 5 calves	3	19+ 3 calves
NEA 1997/98 Southeast	80+ 28 calves	61+ 28 calves	19	20+ 5 calves
CSA 1997/98 Southeast	13+ 2 calves	6+ 2 calves	7	4+ 2 calves
A. Brady 1998 Cape May, NJ	2	0	2	0
WHOI 1998 Mass. Bay	41	37	4	25

Table 1. Cont.

ORGANIZATION/ AREA/YEAR	# OF IDENTS	(MATCHED	UNMATCHED)	# OF INDIV.
CCS 1998 Mass. Bay and Northeast Peak	406	331	75	77
USCG 1998 Mass. Bay	2	2	0	2
CRU 1998 Jeffreys Ledge	1	0	1	0
TOTALS	1046+ 39 calves	737+ 39 calves	309	

\* ECE aerals for October '97 were not received until May, 1998 and no matching had been attempted by the end of June

\*\* IFAW may have seen more whales than 6, but there were only 6 heads photographed. The remainder of the photographs were unidentified flukes.

APPENDIX 1  
List of Contributors  
Photos Analyzed 1 Jan.-30 Jun., 1998

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Mark and Tina Timmons (sighting and photos submitted by both Hamilton Carter and ECE)  
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United States Coast Guard (USCGC Campbell (1995 sighting) and CGC 47209 (1998 sighting))  
Sightings submitted by:  
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APPENDIX 1 (cont.)  
List of Contributors  
Photos Analyzed 1 Jan.-30 Jun., 1998

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