

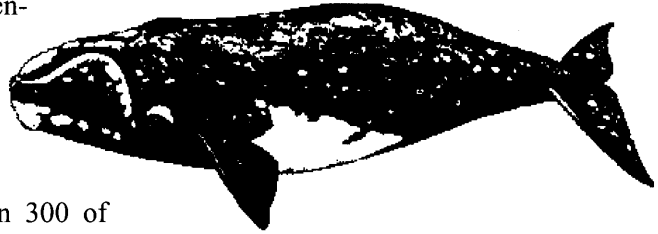
RIGHT WHALES - WRONG PLACES?

North Atlantic Right Whales in the Bay of Fundy

A Battle Won!

The well-armed warships of NATO nations may be the scourge of submarines in the North Atlantic, but they are no match for Lucky, Gemini, Baldy and Necklace cruising the turbulent waters of the Bay of Fundy. Plans for naval manoeuvres in late June of 1996 at the mouth of the Bay were abruptly cancelled when these North Atlantic right whales sailed in for their annual summer sojourn in the area. From the outset, whale researchers had expressed alarm at the prospect of 36 large naval vessels and dozens of large whales cruising together in such a confined body of water. Deborah Tobin, a biologist with East Coast Ecosystems on Long Island, Nova Scotia protested that it is "a dangerous time to be increasing ship traffic the whales are just moving into the area". Jerry Conway, marine mammal advisor with Canada's Department of Fisheries and Oceans put the matter even more bluntly. "I can assure you if one right whale is killed due to a military endeavour, it will not only generate a tremendous amount of adverse publicity....but it will have an impact on the whole species". This was hardly an understatement,

given that there are fewer than 300 of these animals left in the North Atlantic and most endangered large whales in the world. At least half of them spend their summers in Nova Scotia's coastal waters, particularly the outer reaches of the Bay of Fundy. The Navy insists that, from the outset, it was aware of the whale situation, monitored it closely and had contingency plans to withdraw if whales appeared. Whale supporters are convinced that it was their urgent intervention with the Minister of Defense that triggered this last minute change in plans. Whatever the truth of the matter, the whales had clearly triumphed in one small battle of a much larger war that they may be slowly losing.



Losing the War?

It is thought that right whales once roamed the North Atlantic in their tens of thousands. Whaling, begun as early as the 11th century, initially had little impact on the populations, given the primitive hunting technology of the time. This changed dramatically in the 18th and 19th century when there was an increasing demand for a wide range of raw materials, including the oil, flesh and baleen (plates of filtering bristles that line the mouth) of the large whales. The oil was highly valued, initially as a lamp fuel, and later as an industrial lubricant, while flexible strips of the baleen were much sought after as stiffeners for clothing, folding fans and other decorative articles. Unfortunately for the right whale, it was extremely well endowed with both high quality oil and very long plates of baleen. It was also very abundant in coastal waters. Unfortunately for the whale, its slow swimming made

it easy to catch and its thick blubber layer made it float when dead, making it easy to land for processing. The whaling frenzy that followed created great wealth, but by the end of the century had virtually exterminated the population, making the hunt unprofitable. Right whales were "commercially extinct" when, belatedly, in 1935 the League of Nations rubber-stamped a legal end to the hunt worldwide and raised hopes that devastated populations might soon recover.

However, 60 years later there is little evidence that the number of whales is increasing significantly. Several biological factors are partly to blame for this. The animals are long-lived and slow growing, so one would expect recovery to be protracted. Although no one knows just how long they can live, one readily identifiable animal has been sighted regularly over a 50 year period. Perhaps more importantly, the reproductive rate is very low. They become sexually mature after 7 years of age and then only reproduce every 3-5 years at most. After the one year pregnancy they give birth to only a single calf that is not weaned for at least another year. The situation is made even more perilous by the fact that there are now as few as 53 actively reproducing females. Researchers such as Moira Brown of the College of the Atlantic and East Coast Ecosystems, are concerned that the small population size results in too much inbreeding. This increases the probability of genetic abnormalities that could further impair the already poor survival and reproduction. With these natural constraints, growth of the population would be slow at the best of times. Between 1980 and 1992 an average of 11 whale calves were born each year, but since then that number has dropped to only 6 a year. This alarmingly small production of young whales is barely sufficient to compensate for the deaths of animals of all ages from accidents.

In fact, few animals now die from natural causes. The leading cause of death nowadays is collisions with commercial and recreational vessels plying coastal waters. Philip Hamilton, of the New England Aquarium, suggests that "This is a much more common problem than most mariners think a lot of these vessels that hit the whales have no idea they have done so." Over 30% the right whales killed in recent years were struck by ships. In the first three months of 1996 alone, three of the seven dead whales found along the eastern seaboard had crushed skulls, severe fractures or other internal injuries

indicative of collisions. Their annual migration from winter calving grounds in Florida to summer feeding and nursery grounds off Nova Scotia, takes them through some of the North Atlantic's busiest shipping lanes. Often, they loll lethargically at the surface, oblivious to looming danger. Hamilton has seen "large vessels cruising to within 50 feet of whales that are just lying on the surface with no apparent change in their behaviour.....the whales may just be completely tuning them out". Clearly, some of them survive such encounters

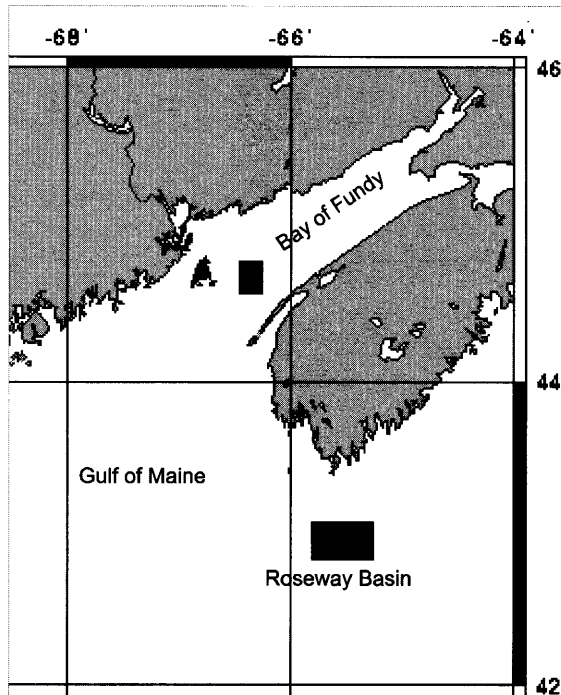
because they bear tell-tale scars, such as large gashes from propellers. Even more of them, up to 58%, bear the characteristic scars of entanglement with fishing gear. Although only three animals are known to have died as a direct result of such entan-

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gements between 1975 and 1986, it is, nevertheless, a worrisome problem. Deborah Tobin sees whales "that are tangled in fishing gear and trying to swim and feed. Its like walking around with a ball and chain and trying to do your work". Other, more subtle, indirect effects, arising from degradation of their coastal habitats, probably kill the remaining whales found dead each year, but with no visible signs of collision or entanglement. Coastal habitats along the entire east coast are being contaminated with a wide array of industrial and agriculture chemicals, petroleum hydrocarbons, untreated municipal sewage and radioactive wastes. Dredging of harbours and shipping channels, and dumping of contaminated dredge spoils, are degrading even larger areas. The short and long-term effects of these many toxins that are routinely observed in whale tissue samples are not fully known. The likelihood is that survival, growth, reproduction and behaviour are being subtly impaired and that the animals are being made more susceptible to diseases.

Monitoring Mug Shots

Although Lucky, Gemini, Baldy and Necklace won't come when they are called, their names and others are often on the lips of Fundy's whale watchers. They have been frequent summer visitors to the Bay over the years and the observers anxiously await their reappearance. Right whales have the rare distinction of being one of the few species in which it is not only possible to readily distinguish individuals, but the population is so small that it is feasible to assign names, or code numbers, to virtually every individual that exists. The key to naming them is the unique pattern of "callosities" on their head. These are patches of thickened, hard, calloused skin on the forehead, chin, above the eyes and behind the blow



Right Whale conservation areas in the Bay of Fundy and off southwestern Nova Scotia.

hole. The irregular patches appear white because of infestation by small parasitic whale lice. The pattern of the patches and callosities are unique to each animal, just as fingerprints are in humans. Scars from encounters with boats or fishing gear are also distinctive. In 1980 the New England Aquarium began a right whale catalog to help identify animals and keep track of sightings throughout their range. Each animal has a code number or EGNO (*Eubalaena glacialis* number) linked to its distinctive "mug shot" in a file containing all available information. There are now more than 375 individuals in the catalog, of which 296 are thought to be still alive. Each time an animal is sighted its photo and relevant data is added to its file. Some files have more than 500 photographs in them, while the total sightings in the catalog exceeds 7000. Most whale research groups and the hundreds of whale watching enterprises operating throughout the animals' range, regularly contribute to the catalog. This database provides invaluable information about the whales' abundance and distribution. Perhaps more importantly, resightings of particular individuals can be used to monitor reproductive status, social structure,

family relationships, life span and seasonal migration patterns.

Education or Exploitation?

Their rarity and individual identities also makes them ideal candidates for Whale Adoption Programs such as that sponsored by the East Coast Ecosystems Research Organization. This very popular program has not only greatly increased public awareness of the plight of the whales, but has also raised much-needed funds to support ongoing whale research programs. The growing public interest in whales has also been reflected in the very rapid expansion in the number of operators conducting whale watching tours during the past decade. There are now almost 30 of them operating in the Bay of Fundy alone, and hundreds of others along the entire length of the eastern seaboard. This has had the beneficial effect of educating thousands more people about whales and their conservation, and providing additional funds for research. However, there are concerns that overly aggressive whale watching may unduly disturb the animals. Some tour operators such as Harold Graham of Brier Island Whale and Seabird Cruises remembers that in the early days "the whale had a lot more time to himself". But these days, "when we leave the whale, somebody else is on it, and somebody else".

At present the industry is largely unregulated, and anyone with a boat meeting Coast Guard safety regulations can start a whale watching venture. Both federal and provincial governments have been reluctant to act, each claiming that the other is responsible. In fact, the tourism departments of both provincial governments have exacerbated the situation by running major advertising campaigns featuring whales and whale watching. They are

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eager to take full advantage of the phenomenon, but not to accept any responsibility for ensuring its sustainability. "We do not intend to get into the regulating business", emphasised a representative from the New Brunswick Department of Economic Development and Tourism. While DFO

has regulations against ships and aircraft harassing whales, and guidelines for whale watch operators, there has been little if any real attempt to enforce them. Some concerned tour operators in the Fundy region have recently banded together to develop voluntary guidelines and a code of ethics for whale watching.

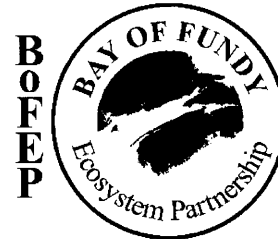
Too Little, Too Late?

The end of commercial whaling in Canada in the 1960's triggered a decline in DFO's research and management interest in large whales. Nowadays, Jerry Conway, marine mammal advisor in DFO's Scotia Fundy region, ruefully admits that he is a "one man shop" and that "marine mammal issues are not a high priority with the department." Fortunately, academic research groups, such as the University of Guelph and East Coast Ecosystems, are trying to fill the void. Their monitoring efforts and vocal lobbying convinced the Canadian Government in 1993 to designate seasonal (June to October) Right Whale Conservation Areas in two habitats critical to the animals, namely the mouth of the Bay of Fundy and the nearby Roseway Basin. According to Moira Brown, "There are no other known locations in the western North Atlantic where such consistently large aggregations of right whales have been observed between July and early November. In fact, these two areas represent the only known locations in the world where right whales can be observed in the summer and fall". Similar "critical habitat" designation was given in 1994 to areas in U.S. waters frequented by the whales. Both national initiatives involve alerting vessels to the presence of whales in the areas and issuing voluntary guidelines for subsequent vessel conduct. Recognising these areas is a promising small step in protecting the whales but is likely to be only minimally effective. More stringent regulation of vessel operations will be needed to successfully reduce the threat of fatal collisions.

Jerry Conway is clearly pessimistic in feeling that "We may be too late" and that "unless there is a dramatic change in our attitude towards these animals and we make some fairly significant efforts to understand what's going on with research, we're witnessing the demise of one of the largest marine mammals in the world". Hopefully, the growing interest in whale watching, and increasing public concern about the animals' plight, will help to change attitudes and activities involving coastal waters. Perhaps then these gentle giants can continue to cavort in Fundy's waves and awe future generations of whale watchers.

Further Reading

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- Reproduction of North Atlantic right whales.** A.R. Knowlton, S.D. Kraus and R.D. Kenney. Canadian Journal of Zoology. Volume 72, pages 1297-1305. 1994.
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The Fundy Issues Series is an initiative of the Bay of Fundy Ecosystem Partnership. These publications describe our present scientific understanding of some of the environmental issues confronting the Bay. We hope that they will enhance your understanding of the biological richness and complexity of this unique marine area. Such awareness may encourage you to help in protecting it for the use and enjoyment of all, particularly future generations who may also come to rely on its bounty and rare beauty. The origin, evolution and aims of the Bay of Fundy Ecosystem Partnership are described in the first issue of this series.

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