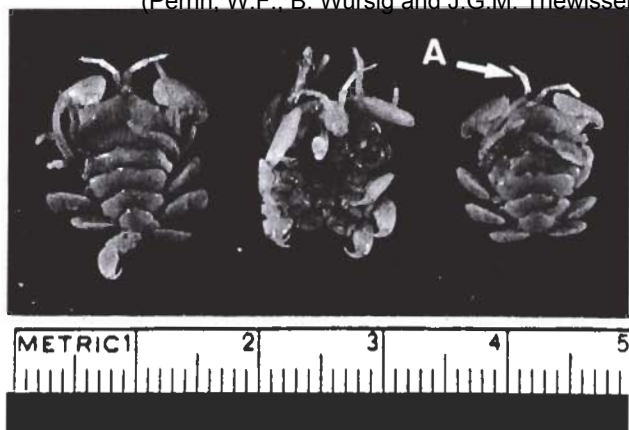


Hoyt, E. 2002. "Whale Watching". In *Encyclopedia of Marine Mammals* (Perrin, W.F., B. Würsig and J.G.M. Thewissen, eds.) Academic Press, San Diego, CA, pp. 1305-1310.  
*See Also the Following Articles*

Baleen Whales Callosities Parasites

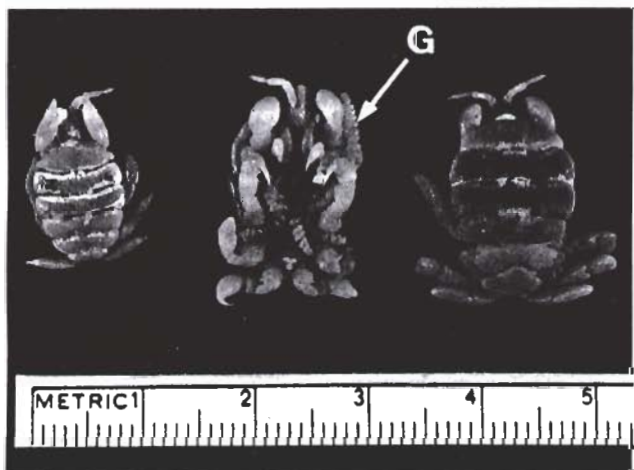
## References

- Balbuena, J. A., and Raga, J. A. (1991). Ecology and host relationships of the whale-lice *Isocyamus delphini* (Amphipoda: Cyamidae) parasitizing long-finned pilot whales (*Globocephala melas*) off the Faroe Islands (Northeast Atlantic). *Can. J. Zool.* **69**, 141-145.
- Berzin, A. A., and Vlasova, L. P. (1982). Fauna of the Cetacea Cyamidae (Amphipoda) of the world ocean. *Invest. Cetacea* **13**, 149-164.
- Leung, Y. M. (1967). An illustrated key to the species of whale-lice (Amphipoda: Cyamidae), ectoparasites of Cetacea, with a guide to the literature. *Crustaceana* **12**, 279-291.
- Leung, Y. M. (1970). First record of the whale-lice Genus *Syncyamus* (Cyamidae: Amphipoda) from the western Mediterranean, with notes on the biology of odontocete cyamids. *Invest. Cetacea* **2**, 243-247.
- Leung, Y. M. (1976). Life cycle of *Cyamus scammoni* (Amphipoda: Cyamidae), ectoparasite of gray whale, with a remark on the associated species. *Sci. Rep. Whales Res. Inst.* **28**, 153-160.
- Levin, M. J., and Pfeiffer, C. J. (1999). Photoreceptor ultrastructure of the amphipod, *Cyamus cetti* (Linné, 1758), an ectoparasite of bowhead, right and gray whales. *J. Submicroscop. Cytol. Pathol.* **31**, 397-405.
- Lincoln, R. J., and Hurley, D. E. (1974). *Scutoyamus parvus*, a new genus and species of whale-lice (Amphipoda: Cyamidae) ectoparasitic on the North Atlantic white-beaked dolphin. *Bull. Br. Mus. (Nat. Hist.) Zool.* **27**, 59-64.
- Margolis, L. (1955). Notes on the morphology, taxonomy and synonymy of several species of whale-lice (Cyamidae: Amphipoda). *J. Fish. Res. Bd. Canada* **123**, 121-133.
- Pfeiffer, C. J., and Viers, V. (1998). Microanatomy of the marsupium, juveniles, eggs and cuticle of cyamid ectoparasites (Crustacea: Amphipoda) of whales. *Aqu. Mamm.* **24**, 83-91.
- Pfeiffer, C. J., and Low, K. J. (1989). Cirral structure of the pedunculated marine barnacle *Lepas anatifera* L. (Crustacea: Cirripedia). 1. Ultrastructure of the neuromuscular apparatus. *Acta Zool.* **70**, 243-252.
- Rice, D. L., and Wolman, A. A. (1971). Parasites and epizooites. In "The Life History and Ecology of the Gray Whale (*Eschrichtius robustus*)" (J. N. Lanynne, ed.), Spec. Publ. No. 3, pp. 100-108. Am. Soc. Mammal, Provo, UT.
- Rowntree, V. (1983). Cyamids: The louse that moored. *Whalewatcher* **17**, 14-17.
- Rowntree, V. (1996). Feeding, distribution, and reproductive behavior of cyamids (Crustacea: Amphipoda) living on humpback and right whales. *Can. J. Zool.* **74**, 103-109.
- Schell, D. M., Rowntree, V. J., and Pfeiffer, C. J. (2000). Isotopic evidence that cyamids (Crustacea: Amphipoda) feed on whale skin. *Can. J. Zool.* **78**, 721-727.
- Waller, G. N. H. (1989). Two new species of whale lice (Cyamidae) from the ziphioid whale *Berardius bairdii*. *Invest. Cetacea* **22**, 292-297.



**Figure 1** Three specimens of *Cyamus ovalis* showing ventral surface on center specimen. The head region faces the top. Note segmented body and antennae (A).

tant for mates or serves some other function. Electron microscopic evidence has shown many tactile sensillae on the antennae and head regions of cyamids, some of which are also likely chemoreceptors. One can question if they always sit on their sole food source, why they have evolved so many sensillae. Female cyamids have a brood pouch (four-plated) or marsupium on their ventral surface, and both unhatched eggs and juvenile whale lice are retained in this cavity. A clutch of 1078 eggs was observed in the marsupium of one female *C. scammoni* (Leung, 1976). The young cyamids measure only about 0.5 mm in length and crawl in and out of the marsupium during development and remain there for at least 2-3 months, when they become about 1.5 mm in length for *C. scammoni*. Several workers have proposed a seasonality for cyamid reproduction, but partly due to the migratory habits of whales, detailed data are not yet available on potential seasonal changes.



**Figure 2** Three specimens of *Cyamus scammoni* showing ventral surface on center specimen. The gills (G) of this species have a spiral shape.

## Whale Watching

ERIC H Hoyt

North Berwick, Scotland, United Kingdom



Whale watching is the human activity of encountering cetaceans in their natural habitat. It can be for scientific, educational, and/or recreational purposes

(sometimes all three). Mostly, whale watching refers to a commercial enterprise, although it is sometimes undertaken privately. The wide variety of whale watching activities includes tours lasting from 1 hr to 2 weeks using platforms ranging from kayaks to cruise ships, from land points including cliffs and beaches, from sea planes and helicopters in the air, as well as SWIMMING and diving activities in which the whale watcher enters the water with cetaceans. Whale watching grew out of the traditions of bird watching and, to a lesser extent, other forms of land-based wildlife watching. To this day, the better whale and dolphin trips include sea birds, seals, turtles, and other marine fauna in order to appeal to more people as well as to give a well-rounded ecological interpretation.

### I. The Birth of Whale Watching

The species originally responsible for the development of whale watching was the gray whale (*Eschrichtius robustus*). Beginning in the mid-1940s, students from Scripps Institution of Oceanography, led by Carl L. Hubbs, began participating in annual gray whale counts from university buildings such as Ritter Hall and from coastal headlands and lighthouses. In 1950, the Cabrillo National Monument in San Diego was converted into a public land-based whale watch lookout, attracting 10,000 people the first winter. Year after year, more and more people came to watch whales.

In 1955, the first commercial whale watch operation charged \$1 USD to see gray whales on their winter MIGRATION off San Diego. Although the gray whales passed close to shore, the boat tours allowed a closer look. Beginning in 1959, Raymond M. Gilmore, a U.S. Fish and Wildlife Service biologist who had taken over the gray whale counting chores from Carl Hubbs, began serving as the first naturalist on whale watch trips out of San Diego. Through the 1960s, boat tours and land-based whale watching spread slowly up the coast of California to Oregon and Washington, although southern California remained the heart of the industry. In 1972, the first long-range commercial whale watch trip to the Mexican calving lagoons was organized out of San Diego.

In 1971, the Montreal Zoological Society began offering whale watch tours to go down the St. Lawrence River in Canada to see mainly fin (*Balaenoptera physalus*) and minke whales (*Balaenoptera acutorostrata*) and belugas (*Delphinapterus leucas*). This was the first commercial trip on the east coast of North America. These trips became an annual event.

It was the HUMPBACK WHALE (*Megaptera novaeangliae*), however, that really made commercial whale watching into a big industry. Humpback whales tend to be much more active at and above the surface than gray or other whales, frequently breaching clear of the water—ideal for whale watchers wanting photographs. Added to this is the phenomenon of “friendly” behavior—the tendency of certain individual humpback whales to habituate to the presence of whale watch boats and to approach them regularly. This behavior, first observed commonly in humpback whales, has now also been found in certain gray whales, particularly in the mating and calving lagoons of Baja California, Mexico; in certain minke whales; and in orcas (*Orcinus orca*) and bottlenose dolphins (*Tursiops truncatus*), among others.

In New England and Hawaii, tours to see humpbacks began in 1975. For more than a decade before, the Wailupe Whale Watchers, a local club on Oahu, sponsored loosely organized, infrequent tours, but when whale watching began in earnest from Lahaina on Maui, where the humpbacks were more numerous and accessible, it immediately became the center of the humpback whale-watch industry in the Pacific. Most of the Hawaiian tours were strictly commercial.

In New England, however, operators established their own brand of commercial whale watching with strong scientific and educational components—naturalists on every trip who were often working researchers. Educational programs to introduce school children to wild cetaceans—began in southern California by such groups as the American Cetacean Society—were expanded in New England. Within a decade, the New England industry would attract even more participants than Californian and Hawaiian whale watching. New England was fortunate to have humpback whales on the feeding grounds centered on Stellwagen Bank, 7 miles north of the tip of Cape Cod, as well as North Atlantic right (*Eubalaena glacialis*), fin, minke, and sometimes long-finned pilot whales (*Globicephala melas*), and Atlantic white-sided dolphins (*Lagenorhynchus acutus*). From a commercial point of view, Stellwagen Bank was ideally located close to the large population centers of the U.S. east coast.

### II. Scientific Whale Watching

Whale watching for the purposes of research can be traced back to Aristotle, who spent time on boats and with fishermen in the Aegean Sea. In “*Historia Animalium*,” Aristotle writes that the fishermen would nick the tails of the dolphins and that they could tell them apart. This practice foreshadows the studying of animals by watching them, a key feature of the ethology approach for studying birds and land animals pioneered by Konrad Lorenz, Niko Tinbergen, and others. It took longer to attempt such research with cetaceans because of the greater difficulties of approaching close and conducting research at sea. The photographic identification (photo ID) research of cetaceans began in the early 1970s with humpback whales in the North Pacific and North Atlantic, gray whales and killer whales in the eastern North Pacific, and southern right whales (*E. australis*) and bottlenose dolphins off Argentina.

A successful partnership between science and commercial whale watching began in Provincetown, Massachusetts, in 1975, when Al Avellar of the *Dolphin* fleet asked Charles Stormy Mayo to be his naturalist. Mayo soon saw the possibilities for using the boat as a platform for studying whales. He set up the Center for Coastal Studies as a research and educational institution, and the close ties with commercial whale watching have been maintained ever since.

The arrangement works as follows: The Center provides naturalist guides for the *Dolphin* fleet. They are paid a modest amount for helping to direct the boat to the whales, presenting an informal educational lecture, and answering questions. The Center sells T-shirts and other merchandise on board. Most important, Center researchers can conduct their own photo ID research, and often collect other data. Sometimes more than one researcher will come aboard to ensure the maximum use of boat time.

Hoyt, E. 2002. "Whale Watching". In *Encyclopedia of Marine Mammals* (Perrin, W.F., B. Würsig and J.G.M. Thewissen, eds.) Academic Press, San Diego, CA., pp. 1305-1310.

This key partnership between science and commerce has determined the course of whale watching, as well as the practice of whale research, throughout southern New England. As of 1995, 18 of the 21 whale watching operators that mainly go to the Stellwagen Bank area had naturalists guiding boats and lecturing whale watchers, while 10 operations were taking and contributing ID photos. Despite the competitive atmosphere of commercial whale watching in New England, the researchers and their representative institutions have cooperated in setting up the North Atlantic Humpback Whale Catalogue—a photo catalogue and data base covering more than 10,000 individual whales. As a measure of the scientific value of whale watching, at least 30 published papers in refereed journals have come largely from research aboard whale watching boats on Stellwagen Bank.

The New England model of successful whale watching and research, like Yankee WHALING from an earlier century, has had an impact on the development of whale watching in locales as diverse as the Gulf of St. Lawrence in Quebec, northern Norway, and Dominica in the eastern Caribbean. Of course, a large part of scientific research on cetaceans does not lend itself to being conducted from commercial whale watch trips (such as transect surveys, biopsy darting, and collecting skin and fecal samples). In some cases the research and commercial enterprise operate separately, using different boats and personnel, but the commercial operation supports or contributes to the research. In several areas, whale watch operations have discovered new populations of cetaceans, accessible for study. In all, whale watching worldwide has led to at least 50 cetacean photo-ID programs supported in part or conducted aboard commercial whale watch boats. This has contributed to considerable

public support for research through much greater familiarity with research programs.

### III. The Growth of Commercial Whale Watching

The value of whale watching in 1981 was estimated to be \$4.1 million USD in direct revenues and \$14 million in total revenues (including travel, accommodation, food, and souvenirs), based on approximately 400,000 boat-based whale watchers. By 1988, these numbers had expanded by more than three times, with the industry still based largely in New England and California with a small amount in Canada, Mexico, and the U.S. northwest (see Table I).

In the late 1980s, whale watching began to spread rapidly to other parts of the world. Between 1987 and 1991, new whale watch industries started up in the Canary Islands, the Azores, Belize, Costa Rica, Dominica, Italy, Madagascar, and New Zealand, while existing industries expanded rapidly in Argentina, Australia, South Africa, and in parts of Canada. The diverse opportunities for whale watching included boat tours to view rare species (Havisdie's dolphins, *Cephalorhynchus heavisidii*, in South Africa), observing sperm whales, *Physeter macrocephalus*, from the air (New Zealand), land-based whale watching of southern right whales (South Africa, Australia), and glimpsing various beaked whales in the Azores and the Bahamas. However, by the 1990s whale watching meant for the most part going to sea on large, fast, comfortable purpose-built ships that could take 150 to 400 people to see the whales and get them back to the dock in 2–4 hr.

TABLE I  
Estimated Growth of Whale Watching Worldwide

Year <sup>a</sup>	No. of whale watchers	Direct expenditures USD <sup>b</sup>	Total expenditures USD <sup>c</sup>
1981	400,000 <sup>d</sup>	\$4.1 million	\$14 million
1988	1,500,000 <sup>d</sup>	\$11–16 million	\$38.5–56 million
1991	4,046,957 <sup>e</sup>	\$77.0 million	\$317.9 million
1994	5,425,506 <sup>e</sup>	\$122.4 million	\$504.3 million
1998	9,020,196 <sup>e</sup>	\$299.5 million	\$1049.0 million

<sup>a</sup>1981: Kaza, S. (1982). Recreational whale-watching in California: A profile. *Whalewatcher* 16, 6–8; Kelly, J. E. (1983). The Value of Whale-Watching. Whales Alive Conference, Boston. June 7–11, 1983. Unpublished pp. 1–5, i–iv; David Sergeant, personal communication.

1988: Kraus, S. D. (1989). Whales for profit. *Whalewatcher* 23, 18–19.

1991: Slightly revised from Hoyt, E. (1992). Whale watching around the world: A report on its value, extent and prospects. *Int. Whale Bull.* 7, summer, pp. 1–8.

1994: Hoyt, E. (1995). "The Worldwide Value and Extent of Whale Watching," pp. 1–34. Whale and Dolphin Conservation Society, Bath, UK.

1988: Hoyt, E. (2001). "Whale Watching 2001: Worldwide Tourism Numbers, Expenditures, and Expanding Socioeconomic Benefits." pp. 1–158. International Fund for Animal Welfare, Yarmouth Port, MA.

<sup>b</sup>Cost of whale watch tour (ticket price).

<sup>c</sup>Amount spent by tourists going whale watching from point of decision, including transport, food, accommodation, and souvenirs, as well as ticket price, but not including international air fares.

<sup>d</sup>Estimates made by author based on direct revenues; does not include land-based whale watchers.

<sup>e</sup>Includes land-based whale watchers.

During this same period, whale watching became important in Norway and Japan, two countries with strong whaling interests. In both countries, the number of whale watchers increased rapidly year by year until, in 1998, Norway had more than 21,000 whale watchers spending \$6.9 million USD, while more than 102,000 whale watchers in 27 Japanese communities spent \$32.4 million USD. Norway's whale watching industry has about a dozen operators working from four communities and offering sperm and other whales from May to September or killer whales in October and early November; whale watchers (visitors) primarily come from other European countries. Japan's whale watching industry, however, is a 99% domestic industry with diverse attractions including Bryde's whales (*Balaenoptera edeni*) and sperm whales at several warm-water locations from Shikoku Island and adjacent Honshu; humpback whales in tropical Okinawa and Ogasawara, both island groups off southern Japan; and minke whales, Dall's porpoises (*Phocoenoides dalli*), and Pacific white-sided dolphins (*Lagenorhynchus obliquidens*) from Hokkaido in the north, as well as multiple locations for watching and swimming with bottlenose (*Tursiops truncatus*) and other dolphins off southern and eastern central Japan.

In the late 1990s, Iceland, with accessible populations of blue, fin, humpback, and minke whales, as well as orcas, became the fastest growing whale-watch destination in Europe, with eight communities hosting more than 30,000 whale watchers in 1998 with total expenditures of more than \$6.4 million USD. In 1998, three countries attracted more than a million whale watchers per year: the United States, Canada, and Spain's Canary Islands. According to the most recent worldwide figures (1998), more than 9 million people are going whale watching in 87 countries and overseas territories and spending more than \$1 billion USD (see Table I).

#### IV. Whale Watching Conflicts and Regulations

Such explosive whale watching growth has led to management problems. Typical scenarios include too many boats on the water in a limited area, too many close approaches and sometimes collisions with cetaceans, strain on the infrastructure of local communities from too many visitors, and a lack of guidelines or regulations and/or enforcement of them.

Some operators have formed associations to devise self-imposed guidelines, but most have waited for researchers or NGOs to suggest guidelines or for government to try to impose regulations. Yet even where regulations do exist, enforcement tends to be minimal or absent. In the United States, however, cases have been prosecuted with substantial fines levied against boat operators, as well as researchers and photographers, who approach too close or too aggressively to whales or who operate without a permit. In Hawaii, a film maker was fined for harassing whales when his close-up underwater footage of a pilot whale (*Globicephala macrorhynchus*) mouthing a woman researcher was sold to television.

In 1983, the first whale-watch fatality occurred when a mature gray whale overturned a small boat in Scammons Lagoon, Mexico, killing two tourists. Until 1995, this was the only fatal whale

watch accident. Then, all in the space of a year, in the Dominican Republic, the upper deck of a crowded boat collapsed after being hit by a wave, killing one tourist and injuring others, whereas in Kaikoura, New Zealand, a boat overturned, fatally trapping a person underneath. In the same period, on a sightseeing trip near Baffin Island in the Canadian Arctic, a surfacing whale overturned an 18-foot boat and four tourists died of exposure. Only their guide survived. He was wearing a survival suit.

The number of injuries and fatalities is small considering the millions of people who go whale watching every year. Whale watching is by and large safe for both whales and people. Boats have been accidentally overturned by whales, but more accidents have happened due to problems with the boats themselves or with overloading—things that are not specific to whale watching but could happen as part of any marine tourism. Indeed, most if not all of the accidents to date could have been avoided with due care and precaution.

Perhaps the greatest concern for safety is for the tours involving swimming or diving with cetaceans. Even these have a good safety record with thousands of encounters with dolphins in such places as New Zealand, the Bahamas, and Japan. These generally well-regulated enterprises maintain a strict protocol of no touching and approaching the cetaceans. However, some have suggested that swimming with cetaceans should be limited to certain dolphin populations or known individual animals and that experienced researchers should be present as guides to help interpret behavior and ensure safety. Swimming with whales, such as humpback whales on their mating grounds where there is surface active behavior, is potentially more dangerous to humans; despite criticism it continues in several areas of the world, and it remains controversial.

There are other concerns about whale watching—the amount of time boats stay around the same whales, day in and day out, and the presence of boats on critical mating and calving grounds—but little can be determined with certainty until more time passes and more research is done.

#### V. Whale Watching and Conservation

In 1983, the INTERNATIONAL WHALING COMMISSION (IWC) cosponsored the "Whales Alive" conference in Boston, Massachusetts, which looked at "nonlethal" uses of whales, but it was not until 10 years later, in 1993, that the IWC adopted a whale watching resolution prepared by the Whale and Dolphin Conservation Society and successfully proposed by the United Kingdom at the IWC annual general meeting in Kyoto, Japan. The underlying strength of the argument that the IWC should become involved in whale watching was that, since the IWC moratorium on whaling, the most prevalent "use" of cetaceans among IWC members has been whale watching. However, despite majority agreement on the relevance of whale watching to the IWC, delegates from Japan have repeatedly stated that the IWC has "no competence" concerning whale watching matters.

Beginning in 1995, a series of international workshops, organized by the International Fund for Animal Welfare (IFAW), with assistance from the Whale and Dolphin Conservation Society, Tethys Research Institute, World Wide Fund for Nature, and others, have brought together more than a hundred

Hoyt, E. 2002. "Whale Watching". In Encyclopedia of Marine Mammals (Perrin, W.F., B. Würsig and J.G.M. Thewissen, eds.) Academic Press, San Diego, CA., pp. 1305-1310.

cetacean experts from some 25 countries to explore the socioeconomic, educational, and legal aspects of whale watching, as well as the scientific aspects of management and the special aspects of watching SPERM WHALES.

The first of these, the seminal Scientific Aspects of Managing Whale Watching workshop, held in Italy, determined that, to date, there were no detrimental long-term effects on cetacean populations attributable to boat-, air-, or land-based whale watching. The participants took the view, however, that the individual welfare of wild cetaceans needs to be considered as well as the health of populations. Even if whale watching is not lessening a whale's ability to survive, it might be diminishing a whale's quality of life. Also, participants acknowledged that long-term effects might not show up for some time. Of course, it is important to recognize human socioeconomic needs when determining whale watching regulations and policy. The workshop recommended a precautionary approach to management with a periodic review of regulations based on continuing research and monitoring into possible effects on cetaceans (sample guidelines for boat operators are provided in Table II).

The overall impact of this and later workshops is still in the early stages, but they have focused the debate on the future of whale watching, pointing out that better regulations were needed as well as enforcement, that whale watching had substantial unrealized potential in terms of education and science, and that, economically, whale watching was worth far more than had previously been determined, although some values were difficult to measure in terms of dollars. A more detailed and complete valuation of whale watching is now underway in a number of communities.

Perhaps the most valuable legacy of whale watching has been the building of a constituency out of the general public that is interested in and sympathetic to marine mammals, the sea, and marine conservation. The designation of Stellwagen

**TABLE II**  
**Brief, Useful Guidelines for Boat Operators<sup>a,b</sup>**

1. Do not pursue, overtake, head-off, or encircle cetaceans or cause groups to separate
2. Never approach whales/dolphins head on
3. Avoid sudden changes in noise level (gear shifts, avoid reverse unless necessary to back away slowly from a surfacing whale or dolphin group)
4. Reduce speeds in areas where whales may be sighted; approach and leave whales cautiously and slowly
5. Extreme caution is required when the following is present: (1) feeding whales, (2) cow/calf pairs and juveniles, (3) resting, (4) breeding or rowdy and/or (5) socially active groups. Cetaceans behaving in these ways are particularly sensitive to disturbance and may be vulnerable to collisions

<sup>a</sup>Adapted from IFAW, WWF, and WDCC (1997), used with permission.

<sup>b</sup>This is not a complete list covering every situation but is meant to provide some general suggestions and overall direction for the use of operators offering whale watch tours as well as wildlife managers who are establishing guidelines or regulations on whale watching.

**TABLE III**  
**Educational Values of Whale Watching<sup>a</sup>**

1. Whales are emblems for promoting awareness of endangered species and habitat protection
2. Whale watching provides the opportunity for people across all ages and cultures to become familiar with environmental issues and to become involved in conservation efforts on a personal, local, regional, national, and international level
3. The development of education programs forges links between the whale watch industry and local communities as well as building bridges between the general public and scientific communities
4. Natural history knowledge gained through whale watching has intrinsic value
5. Whale watching provides an opportunity to observe animals in the wild, transmitting factual information and dispelling myths
6. Whale watching is a model for marine educational programs in adventure travel and ecotourism
7. Whale watching provides the opportunity for appreciation and understanding of local history, culture, and environment

<sup>a</sup>Adapted from IFAW, WWF, and WDCC (1997), used with permission.

Bank as a U.S. National Marine Sanctuary in 1993 was largely the result of public interest in whales in New England and in the northeastern United States through whale watching. Several million people encountered whales in the wild between 1975 and 1992, saw the research being conducted on whale watching boats, and learned about the whales and problems of the sea, which led to overwhelming popular support for the sanctuary.

Since the late 1980s in most areas of the world, however, whale watching has been much less educational (see Table III). A 1998 world SURVEY of whale watch operations found that only 35% of all operators had enlisted naturalists to guide their trips. In terms of the scientific content, about 9% of operators worldwide have researchers or naturalists on board who conduct regular photo ID and other research as part of their trips, whereas 57% never conduct scientific research or even offer information to scientists. Most operations were strictly commercial ventures. Clearly, a great deal more could be done to encourage whale watching tours to offer the maximum benefits to local communities and regions in terms of education, science, and conservation, as well as tourism dollars, while at the same time protecting the whales and ensuring that they will remain in coastal waters and accessible to whale watchers for generations to come.

### *See Also the Following Articles*

Abundance Estimation    Ethics and Marine Mammals    Popular Culture and Literature

### *References*

- Birnie, P., and Moscrop, A. (1999). Report of the Workshop on the Legal Aspects of Whale Watching. Punta Arenas, Chile. Submitted as IWC/51/WW1, International Whaling Commission.

- Hoyt, E. 2002. "Whale Watching". In *Encyclopedia of Marine Mammals* (Perrin, W.F., B. Würsig and J.G.M. Thewissen, eds.) Academic Press, San Diego, CA., pp. 1305-1310.
- Colgan, K., Prasser, S., and Jeffery, A. (eds.) (1996). *Encounters with Whales: 1995 Proceedings*, Australian Nature Conservation Agency, Canberra, ACT, Australia.
- Hoyt, E. (1994). "Whale Watching and the Community: The Way Forward," pp. 1-29. Whale and Dolphin Conservation Society, Bath, UK.
- Hoyt, E. (1994). Whale watching worldwide: An overview of the industry and the implications for science and conservation. In "European Research on Cetaceans" (P.G.H. Evans, ed.), pp. 24-29. Proc. 8th Ann. Conf. ECS, 2-5 Mar. 1994. Montpellier, France, European Cetacean Society, Cambridge, UK.
- Hoyt, E. (1995). "The Worldwide Value and Extent of Whale Watching: 1995." Whale and Dolphin Conservation Society, Bath, UK. Presented as IWC/47/WW2 to the Whale Watching Working Group, International Whaling Commission (IWC), annual meeting, Dublin, Ireland, pp. 1-4 (attached summary by UK government); pp. 1-34.
- Hoyt, E. (1995). Whale watching takes off. *Whalewatcher* 29, 3-7.
- Hoyt, E. (1998). Watch a whale; learn from a whale: Enhancing the educational value of whale watching. In "Proceedings of the 1998 International Forum on Dolphins and Whales," pp. 5-19. Muroran, Japan.
- Hoyt, E. (2001). "Whale Watching 2001: Worldwide Tourism Numbers, Expenditures, and Expanding Socioeconomic Benefits." International Fund for Animal Welfare, Yarmouth Port, MA.
- Hoyt, E., and Hvenegaard, G. (1999). "The Development, Value and Study of Whale Watching in the Caribbean." Paper to the Scientific Committee, International Whaling Commission, Grenada, May 1999.
- IFAW (1996). Report of the Workshop on the Special Aspects of Watching Sperm Whales, Roseau, Commonwealth of Dominica.
- IFAW (1999). Report of the Workshop on the Socioeconomic Aspects of Whale Watching. Kaikoura, New Zealand.
- IFAW, Tethys Research Institute and Europe Conservation (1995). Report of the Workshop on the Scientific Aspects of Managing Whale Watching, Montecastello di Vibio, Italy.
- IFAW, WWF, and WDCS (1997). Report of the International Workshop on the Educational Values of Whale Watching, Provincetown, MA.
- Smith, A., and Hoyt, E. (1995). "Dolphin Watching and Swimming Regulations Worldwide." Paper to Dolphin Workshop at Biennial Meeting of the Society of Marine Mammalogy, Orlando, FL.

His "Ochther" was Othere (or Ottar), a Norseman in the service of King Alfred of Wessex around the year 890 A.D. Alfred (called Alfred the Great) is known for his defense of England against the marauding Danes, and also for the initiation of the *Anglo-Saxon Chronicle*, the first history of England. (Our word "whale" comes from the Anglo-Saxon *hwael*, which means "wheel," and probably refers to the shape of the whale's back as it rolls in the water.) Alfred translated many Latin texts, including the one that concerns us here, a description of Europe by one Orosius, who lived four centuries before. To the work of Orosius, Alfred added a description of the northern voyage of Othere, wherein was described the whale and walrus hunting of a northern people known as the Biarmians. From the location (the White Sea in northern Russia), and description of the whales hunted ("50 ells" in length, which by one calculation works out to 187 feet), it would appear that the larger ones—whose size was greatly exaggerated—were bowheads, whereas Othere's "horsewhales" were walruses (*Odobenus rosmarus*). In the history of British *Voyages and Discoveries* compiled in the 16th century, Richard Hakluyt, a diplomat and scholar, wrote that the principal purpose of Ochther's expedition was "to increase the knowledge and discovery of these coasts and countries, for the more commodity of fishing for horse-whales, which have in their teeth bones of great price and excellency: whereof he brought some at his return unto the King. Their skins are also very good to make cables for ships, and so used."

In medieval Scandinavia, whales were very much a part of the lives of the people and were therefore incorporated into their literature. A 13th-century Icelandic account known as *Konungs skuggsjá* (*Speculum Regale* in Latin; *Konegspiel* in German; "King's Mirror" in English) describes the whales that are found off Iceland and includes such mysterious creatures as the horse whale, the red whale, and the pig whale, but also discusses recognizable species, such as the killer whale (*Orcinus orca*), the narwhal (*Monodon monoceros*), and the sperm whale (*Physeter macrocephalus*). The right whale (*Eubalaena glacialis*) is described thus:

People say it does not eat any food except darkness and the rain which falls on the sea. And when it is caught and its intestines opened, nothing unclean is found in its stomach as would be in other fish that eat food, because its stomach is clean and empty. It cannot open its mouth easily, because the baleen that grows there rise up in the mouth when it is opened, and often causes its death because it cannot shut its mouth. It does no harm to ships: it has no teeth, and is a fat fish and edible.

There is an almost complete lack of information on Norse whaling, but the waters in which they sailed were then (and are still) among the whale-richest in the world. There are right whales, humpbacks (*Megaptera novaeangliae*), fin whales (*Balaenoptera physalus*), sperm whales, belugas (*Delphinapterus leucas*), narwhals, pilot whales (*Globicephala melas*) and various species of dolphins in the cold, productive waters of the North Atlantic. The Norse sagas are silent on the subject of whales and whaling, but it would be hard to imagine these hardy seafarers ignoring a plentiful source of food and oil as they plied the otherwise inhospitable seas around Iceland, Greenland, and Labrador. There are references, however, to battles royal between various "families" as they dispute the ownership of whale

## Whaling

### Whaling, Early and Aboriginal

RICHARD ELLIS

*American Museum of Natural History,  
New York, New York*

Jenkins (1921) writes, "Although the general opinion is that the Basques were the earliest whalers, Noel de la Moriniere says that this is a misapprehension and that the Northmen were really the first in the field." He says that a man called "Ochther" hunted whales and walruses beyond the North Cape, but then he notes that "there is no evidence that it developed into a regular fishery such as that of the Basques."