

The *Potential* of Whale Watching
in the Caribbean: 1999+

by Erich Hoyt

A New Report from the
Whale and Dolphin Conservation Society

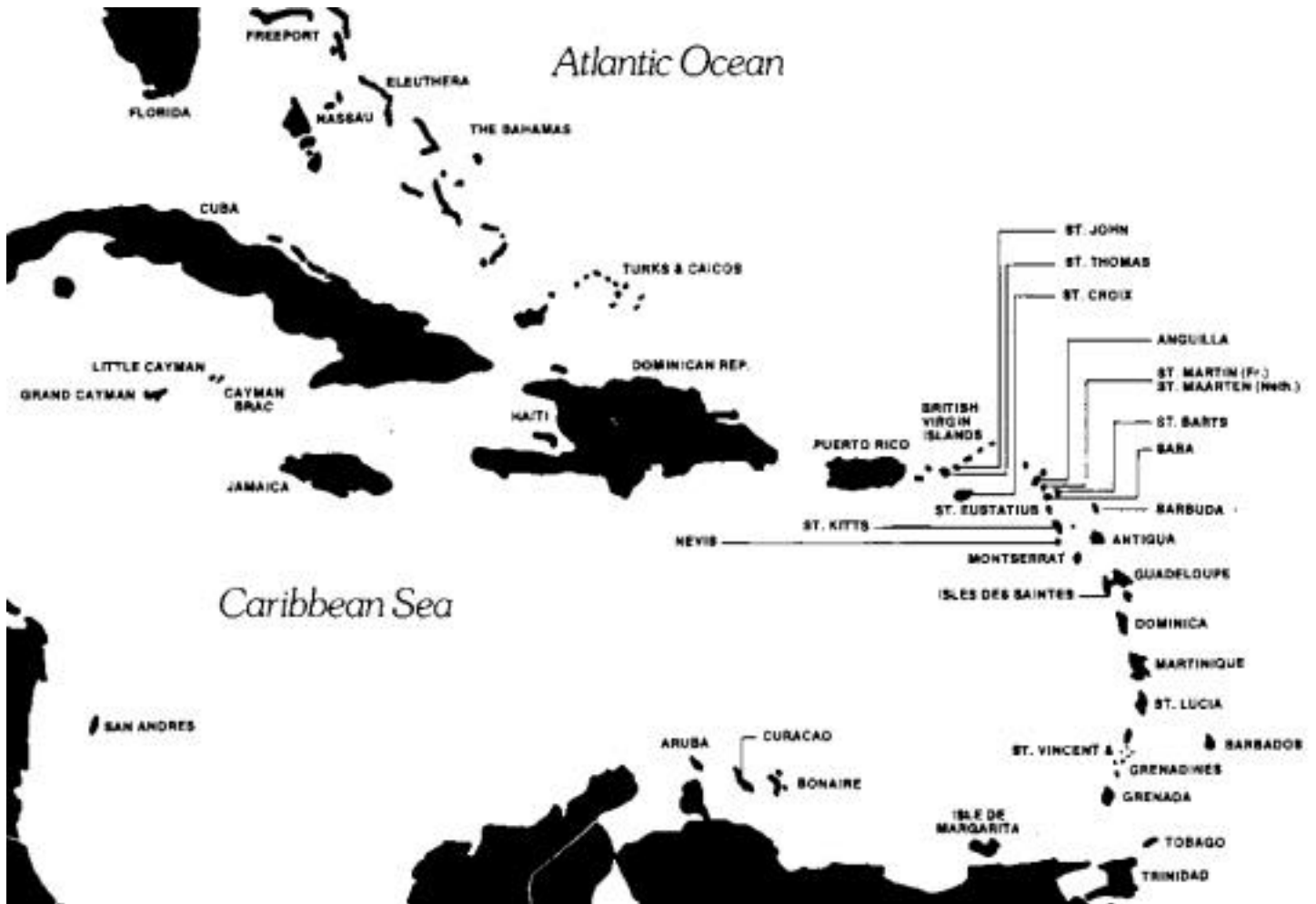
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Registered Charity No. 1014705

ISBN: 1 901386 07 4

Citation: Hoyt, E. 1999. The *Potential* of Whale Watching in the Caribbean: 1999+. Whale and Dolphin Conservation Society, Bath, UK, pp. 1-80.



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EXECUTIVE SUMMARY

In the Greater Caribbean — comprising some 23 island nations and overseas territories of France, Britain and the Netherlands — whale watching is still a fairly new idea. Begun in southern California in 1955, commercial whale watching did not spread to the Caribbean until the early to mid 1980s with the development of dolphin watching and swimming tours in the Bahamas and humpback whale watching off the Dominican Republic. In 1988, commercial whale watching started up in the eastern Caribbean with tours to see sperm whales and various dolphins off Dominica.

Whale watching in the above three countries has grown steadily and spread to other nations and nearby islands and, by the mid-1990s, whale watching was attracting visitors in the Turks & Caicos Islands, the US and British Virgin Islands, Puerto Rico, Martinique, Grenada, and St. Vincent and the Grenadines. Recently, whale watch tours have also started up in St. Lucia, St. Kitts-Nevis, St. Barthélemy, and Guadeloupe. Whale watching in the Caribbean occurs by land, air and sea and on a wide variety of craft; some of the whale watching is actually based more on dolphins — 'whale watching' is used to mean watching any of the 81 species of cetaceans. However, despite the great diversity of platforms and species watched, and the continual expansion to new islands, whale watching in the Caribbean, in general, has grown more slowly than expected and has had some growing pains, particularly in the past 5 years.

Here is a summary of the findings in this report and some of the implications:

- In 1998, an estimated 39,000 people went whale watching in the Greater Caribbean. Estimated total revenues were nearly \$10 million USD (£6.2 million UK). Based on the numbers of whale watchers, the average annual increase between 1994 and 1998 was 20.2%. Between 1991 and 1994, whale watch tourism in the region grew much faster — at 113.8% per year. While such a high rate would be unlikely to be sustained beyond the initial phase of whale watching in a given area, it is surprising that the annual increase rate has declined so much. Still, 20.2% is almost certainly higher than the current world growth rate. The world whale watching growth rate from 1991-1994 was 10.3% per year.
- In 1994, there were 10 whale watching countries or island territories in the Caribbean. As of 1999, there are 14 countries and territories. Several of these countries, such as St. Lucia, Guadeloupe, and the Turks & Caicos Islands, have seen dramatic increases in whale watching since January 1999 which are not included in the 1998 whale watching census figures cited above.
- The most valuable whale watch industry in the Caribbean in terms of total expenditures is in the Dominican Republic (\$5.2 million USD) followed by the Bahamas (\$2.97 million USD). Various problems, however, have kept the current numbers from expanding to a much greater extent, despite considerable promise and capacity. Also, a relatively high percentage of the expenditures in these two countries leak out of and thus do not benefit the local economy.
- Whale watching in Dominica now produces a million dollars US (\$970,000 USD) in total revenues, with four operators working out of the southwest around Roseau attracting the core whale watch income. This is the third most valuable whale watch industry in the Caribbean, and it clearly shows the possibilities for the eastern Caribbean in terms of capturing a much larger portion of the international whale watch market.
- In eight countries or overseas territories, there are now draft or final regulations or guidelines for whale watching. This represents more than half of all the countries or territories that have some commercial whale watching. Of the eight places with guidelines or regulations, however, only two (25%) have the force of law. Enforcement of whale watch regulations in the Caribbean, as in most other parts of the world, is almost nonexistent.

- Caribbean whale watch operations include some of the world's most outstanding educational opportunities, such as the Bahamas Marine Mammal Survey and Wild Dolphin Project in the Bahamas, and Paul Knapp's whale-listening tours in the British Virgin Islands, among others. These operations all feature naturalist guides — the key to an excellent whale watch tour. They offer a mix of education, science, and conservation benefits for the whales, plus good fun for the participants. These projects draw tourists from many different countries.
- Community-based whale watching has featured at various locations around the Caribbean. On the west coast of Puerto Rico, the annual arrival of the humpback whales during the winter provides an exciting community focus, with numerous land-based whale watchers visiting the Punta Higuera Lighthouse and spending the day at the park. On the island of Carriacou, in the Grenadines of Grenada, the educational programme of the Kido Project has a community basis for some of its activities. In and around the town of Samaná, in the Dominican Republic, there are new businesses and infrastructure directly attributable to the increase in visitors during the whale watch season. Community members have started to improve and extend facilities and to encourage land-based whale watching as well. Besides Samaná, whale watching is having a real impact on local economies in such places as Roseau, in Dominica, and north Bimini, in the Bahamas.
- The whale watching potential for the Caribbean ranges from considerable to outstanding in about half of the countries listed. The overall potential is certainly largely yet to be realised.

Tourism is the main industry throughout most of the Greater Caribbean region. For the 23 island nations and territories, in 1997, there were 15 million visitors arriving by air. In addition, 10.6 million cruise ship passengers stopped in one or more ports. Total tourist expenditures were \$13.5 billion USD (CTO 1997). Whale watching is a comparatively small though growing part of this, but it is arguably a crucial aspect of image making. For those countries that have successful whale watching tours, the presence of whales and dolphins and the possibility of seeing them can lend a romantic, natural allure which can feed into existing national images or help create new ones. If tourism is largely about selling an image, whales and dolphins offer considerable possibilities. But for this to be successful, attention must be paid to the educational, scientific, conservation, as well as to the commercial aspects.

AUTHOR'S NOTE

'Whale watching', in this report, refers to tours by sea or land, formal or informal, with some commercial aspect, to see any of the some 81 species of whales, dolphins and porpoises collectively known as cetaceans. As well as tours that are strictly whale or dolphin oriented, we also include general marine nature tours and cruises which feature or include whales and dolphins as part of the trip. This definition is essentially the same as that widely used in various workshops and reports (e.g., Hoyt 1995, Hoyt 1996b; IFAW, Tethys & Europe Conservation 1995; IFAW 1999).

For the purposes of this report, the Caribbean refers exclusively to the island nations and territories in the wider or Greater Caribbean, from the Bahamas in the North to Trinidad and Tobago in the south.

Many people have provided detailed information, spoken and written, on the various countries and island territories. Some of the information, inevitably, is conflicting. I have tried to be fair and balanced and to sort out inconsistencies. In any case, the final assessments are my own, and I am responsible for them.

A word about species identifications: in the Caribbean, dolphins are typically referred to as 'porpoise' while 'dolphin' can refer to the dolphin fish. In fact, there are no true porpoises found in the Caribbean. Also, there are many local names for other small cetaceans which vary from island to island, some of which lump various species together, others of which distinguish by species. There is no doubt that the confusion in terminology and identification results in many lost sightings or misidentifications, as well as the difficulties in assessing the extent of dolphin hunting particularly in the southeastern Caribbean. In this report, if the species identification was reasonably certain I have used it; otherwise I have simply used 'tropical dolphin' or 'blackfish' in an attempt to be as specific as warranted by the evidence. Common names are those followed by Leatherwood and Reeves in the *Sierra Club Handbook of Whales and Dolphins* and Jefferson *et al* in *Marine Mammals of the World*.

I have followed the same procedures as in earlier reports to determine the direct, indirect, and total revenues, and the exchange rates used. Exchange rates, if necessary, are made from local currencies to the US dollar at rates prevailing on April 15, 1999. Conversion to £ sterling (UK) is made at \$1.62 = £1.00. Direct revenues are the cost of the tours (ticket price); indirect revenues include food, accommodation, travel, film, souvenirs and other expenses incurred in the course of whale watching. Total revenues are direct + indirect revenues. In general, the total revenues from whale watching near urban centres are approximately 3.5x the direct revenues. In remote centres which entail considerable travel, total revenues are usually at least 7.67x the direct revenues. Estimated total revenues for dedicated whale watching, based on these multiples, are given for areas where detailed figures are unavailable (see Hoyt 1995, p. 5 for further explanation and references). However, no multiples are used for incidental or spontaneous whale watching, where the decision to go whale watching is made at the departure site (equivalent to impulse buying), thus incurring no additional revenues beyond the actual ticket price, plus purchases on board and immediately after the trip.

This report is aimed at a wide audience including tourism departments, marine operators of every description (dive, yacht, etc.), fisheries and environment ministries, local and international NGOs (non-governmental organisations) concerned with whale watching and ecotourism. Because of this wide audience, a decision was made not to reference every point in the text as in a scientific paper. However, each country section is followed by a list of acknowledgments; many are personal communications except those noted with dates which are publications listed in the back under references. In addition to the acknowledgments listed under individual countries, I would like to thank Sue Fisher, Kate O'Connell, and Cathy Williamson for reading and commenting on the entire text.

— Erich Hoyt

INTRODUCTION

Slightly larger in area than the Mediterranean, the Caribbean, at 970,000 sq mi (2,515,900 sq km) is the second largest of the world's major seas (after the South China Sea), but it is by far the deepest, with an average depth of 8,450 feet (2,575 meters). The Greater Caribbean boasts the deepest point in the Atlantic Ocean, the Puerto Rico Trench, at 28,374 feet (8,648 meters) deep. It also contains numerous underwater banks, coral reefs, mangroves, sea grass beds, and other diverse marine features which provide habitat at least part of the year for some 30 species of whales and dolphins. With the extraordinary diversity and number of islands, islets and cays stretching from northern South America to offshore Florida, there is a considerable diversity of potential whale/ dolphin watch opportunities.

Whale watching began in the wider Caribbean in the early 1980s. Of course, pleasure boaters, sailors and cruise ship passengers have always enjoyed the company of bow-riding dolphins and passing whales around the Caribbean. However, it was the discovery of a friendly and accessible group of spotted dolphins north of Grand Bahama Island in the 1970s that eventually led to the commercialisation of whale watching. At first, whale and dolphin researchers and film crews from around the world began to make special pilgrimages there. Following this, a solid research programme began alongside expanding tourist ventures to watch and swim with the dolphins on 7- to 10-day tours.

About the same time, in waters a little farther south, New England humpback whale researchers, using photo-identification of humpback tails to identify the whales, began to realize that most of the North Atlantic humpbacks were spending their winters between the Bahamas-Turks & Caicos and the Dominican Republic. These are the mating and calving grounds of Silver, Navidad and Mouchoir banks. In 1986, as humpback whale watching was just starting up in the Dominican Republic, then president Joaquin Balaguer was persuaded to make a far sighted move: to protect the entire Silver Bank as a marine protected area for humpback whales: The Silver Bank Humpback Whale Marine Sanctuary. The 'brand name' recognition that resulted from this effectively kick-started whale watching in the Dominican Republic. The country became known as the place where humpbacks mate, calve and raise their young. By the early 1990s, the Dominican Republic was attracting more than 15,000 whale watch visitors a year and had become the most popular spot in the Caribbean for whale watching. It still is, although the visitor numbers appear to have levelled off in recent years at about 20,000 per year.

In the late 1980s, a third wave of whale watch tourism began in the eastern Caribbean. The little country of Dominica led the way with trips to see resident sperm whales and an exciting array of smaller whales and dolphins, some of them rarely seen by whale watchers anywhere in the world. Since then, whale watching has spread to many of the other islands in the eastern Caribbean and whale watching in each place offers its own character and selling points.

Whale watching is eagerly embraced by many island economies around the world that are dependent on tourism because it offers a powerful attraction, additional activity and reason for visitors to come and stay extra days. Islands such as Maui, in the Hawaiian Islands, and Tenerife in the Canary Islands have experienced several hundred thousand visitors a year going whale watching (10-20 times the numbers of the entire Caribbean). Even if whale or dolphin sightings cannot be promised, the chance of seeing them adds value to any marine nature cruise or excursion. This value is not limited to tourism revenues. Whales and dolphins help confer a powerful, attractive identity on many communities and offer an experience that visiting tourists remember, tell their friends about, and return to enjoy themselves. Whales and dolphins also introduce people to the marine environment and help teach stewardship of marine resources. Living on a shrinking planet with a shared ocean, we can all stand to be reminded of this important lesson.

Community-based whale watching features at various locations around the Caribbean:

- Around Rincón, Puerto Rico, the annual arrival of the humpback whales during the winter provides an exciting community focus, with thousands of land-based whale watchers visiting the Punta Higuera Lighthouse and spending the day at the park. Whales are not the only reason people visit, but they are a key reason during the winter, and park concessions report increases related to whale watching. The whales can be seen from the lighthouse, as well as from various points on the hills around Rincón. Whales are even advertised on the internet and in brochures to attract potential visitors and buyers looking for villas.
- From the Roseau area of Dominica, total revenues, most of which go into the community, have now reached an annual \$1 million USD (including food, accommodation, travel, souvenirs, as well as the cost of the tickets themselves).
- On the island of Carriacou, in the Grenadines of Grenada, the educational programme of the Kido Project provides a community basis for some of its activities which include whale watching and other marine and land-based programmes.
- In and around the town of Samaná, in the Dominican Republic, there are new businesses and infrastructure directly attributable to the increase in visitors during the whale watch season. Community members have started to improve and extend facilities and to encourage land-based whale watching as well. Although much work remains to be done so that local people can receive the maximum benefits from whale watching, it has clearly become part of the essential fabric of the town.

Whale watching is having a real impact on local economies in these and other Caribbean locales. At present, however, the West Indies, or Greater Caribbean, is 'lightly developed' for whale watching. The only area that shows development to rival other areas of the world is Samaná Bay. There, in 1998, 21,784 people went whale watching in a three-month season — an average of more than 7,000 people a month. By comparison, whale watching in southern New England and at Tadoussac, Québec, Canada, attracted an estimated 600,000 to 1 million participants over 3-5 months (120,000-333,000 people per month).

Thus, the potential for whale watching in the Greater Caribbean is outstanding and largely untapped through most of the region. What is needed, for those islands that might wish to start or enhance their whale watching, is a careful development plan both to learn from some of the mistakes made in other parts of the world, as well as to work on establishing and promoting their own unique brand of whale watching (see Table 1.)

On the following pages, I will explore the potential of whale watching, country by country, in the broadest sense of the word 'potential'. It is the economic potential, of course, but because whales and dolphins are wild animals living in the waters around a country, the scientific, educational and conservation potential are also discussed. I have made a number of suggestions in each country section, as well as in the conclusions.

This report seeks to promote high quality, well-balanced whale and dolphin watching in the Greater Caribbean. 'Well balanced' whale watching is whale watching that provides the maximum benefit to cetaceans and people. It should make money for the operator and be fun for the participant, but it should also help support scientific programmes, contribute significantly to education, and all these things together should contribute to the conservation of cetaceans. Without all these elements, whale watching cannot be said to be successful, sustainable and to have achieved its full potential.

Table 1. Checklist for starting, expanding and adding value to whale watch tours

1. Prepare a comprehensive survey of the waters accessible to the ports where whale watching might be undertaken.
2. Assess the infrastructure (public transport to the area, hotels and guest houses available, restaurants) and determine if sufficient to support/ attract tourism and what kind (adventure travellers, divers, middle class tourists, luxury tourists, etc.)
3. Consider inviting successful whale watch operators or NGOs working on whale watching for advice and comment.
4. Determine the special character of whale and dolphin watching in your area and then seek to publicise and exploit it. In some cases, such as in the British Virgin Islands, it may be a special type of whale watching: whale listening tours.
5. Set up a local whale watch association with various parts of the community represented including whale watch boat owners, researchers, and naturalists, and meet regularly (at least before and after every whale watch season).
6. Prepare business plan including marketing — both national and international.
7. Draw up guidelines or regulations based on best practices in other areas of the world and work with local authorities for appropriate legislation. Consider including permit or licensing system to help control number and size of boats.
8. Train or import quality naturalist guides.
9. Prepare educational commentaries to be incorporated into each trip, as well as educational brochures, sales material, signs, advertisements.
10. Assess skills, needs of local operators; consider training if necessary on how best to find and operate around cetaceans.
11. Consider a pilot whale watch season(s) or year when whale watch tours are open to the public but can learn on the job without full commercial pressure.
12. Build in provisions for periodic review at every stage — including reviews of regulations, educational programmes, community relations, etc.
13. Surveys should not stop once reliable whale watch areas have been found. Whale and dolphin distribution changes from time to time, and new or undiscovered populations may be present just offshore, even if seasonally. New surveys every year or two will encourage new discoveries and help monitor distribution changes.

Adapted from Hoyt 1996a, 1998; additional notes, V. Williams.

CARIBBEAN PROFILES

1. The Bahamas (Commonwealth). The main islands are Grand Bahama Island, Great Abaco (Abaco Islands), Bimini Islands, Andros Island, New Providence, Eleuthera, Cat Island, San Salvador, Exuma, Rum Cay, Long Island, Crooked Island, Acklands Island, Mayaguana Island, and Great Inagua Island.

Population: 265,300.
Land area: 13,864 sq km.
Tourist arrivals by air: 1,617,595 (-0.9% on prev. yr.)
Tourist arrivals by cruise ship: 1,743,736 (+3.4% on prev. yr.)
Total Tourist Expenditures: \$1,415.9 million USD.
Tourism Budget: \$53.9 million USD.
GDP at factor cost: \$3,939 million USD.
1994 figures on whale watching: 1,500 people and total revenues of \$2.475 million USD.
1998 figures on whale watching: 1,800 people and total revenues of \$2.97 million USD (prov.)
Whale-watching ports (current or potential): West End, Grand Bahama; Alice Town, Bimini; Hope Town, Elbow Cay, Great Abaco.
Land-based viewing sites: Hole-in-the-Wall Lighthouse, Great Abaco; Elbow Cay lighthouse, Great Abaco; North Bimini.
Whale-watching potential: Outstanding.
(Figures above are latest figures for 1997, except as noted.)

The Bahamas includes more than 700 islands scattered over more than 100,000 square miles (260,000 sq kms) of ocean. Only 24 of them are inhabited, and the most developed islands are in the northern part of the country, nearest to the United States. These islands, which are where the main dolphin watching/swimming tours occur, both gain and suffer from proximity to the USA. They gain in sheer numbers of tourists who can depart from southeast Florida ports and arrive in the islands in a few hours by boat or less than an hour by plane. But on the negative side, the nearest islands can be crowded with tourists, and the big cruise ships as well as the self-contained boat tours from Florida, such as those used for dolphin watching/swimming, leave comparatively little money in the Bahamas. The Bahamas has certainly captured the interest of great numbers of tourists, but the country does not always capture as much of the tourist dollar as it could. Nevertheless, the revenues are considerable, as is the potential for capturing a higher percentage of them.

Tourism is the largest industry in the Bahamas by a substantial measure. In 1996, some 3.4 million vacationers and cruise ship visitors arrived and spent \$1.45 billion USD. Nearly half of these (1.6 million) were one or two-day cruise ship stopovers. The Bahamas (mainly Nassau) receives about 50% of all cruise ship passenger visits in the Caribbean. In 1997, these figures (except cruise ship visitors) declined slightly due to refurbishment of hotel properties on Grand Bahamas. Still, the projected number of visitors is 4 million a year by 2000, 80% of which are expected to come from North America, mainly the USA. Since 1992, the government has promoted a huge development programme for tourism, investing in infrastructure as well as overseas promotion. The introduction of laws such as the Hotels Encouragement Act, which eliminated property taxes for hotel owners, has led to substantial new building and restoration, and hotels with as few as five rooms can qualify for preferential treatment. Eco-friendly tourism development in some of the more remote islands is also being encouraged (see below).

Dolphin watching/ swimming began in the late 1970s on Little Bahama Bank. As word spread that the dolphins would visit boats and would not disperse when divers entered the water, cetacean researchers and many enthusiasts from around the world made a pilgrimage here to swim with them. The Bahamas quickly became one of a dozen prime whale and dolphin watching spots in the world.

For much of the last two decades, dolphin watching and swimming in the Bahamas has originated mainly with US (Florida-based) operators who make extended diving or

swim-with-dolphin excursions into Bahamian waters for a week or ten days. These have been largely self-contained trips, although the boats stop at West End or other Bahamian ports to pay customs fees and take on supplies. The economic impact, besides the sales price of the tour which goes to the (US) operator, includes a night or more in the Bahamas on shore, with a minimum of \$130-180 USD spent on food, hotel and shopping. The US boats bringing tourists to the dolphins are charged \$1,000 USD plus 4 percent of their passenger income.

The dolphin swimming trips have focused on the waters north of Grand Bahama Island. The relative remoteness of this location and the fact that people need to commit a week or ten days to a trip have helped ensure that the numbers of people and boats have not become a severe management problem, though at times in summer it has been overcrowded and some boat captains are less polite and patient than others. In the past couple years, however, some of existing operators have opened up trips to the Biminis where mainly spotted dolphins and some bottlenose dolphins are found much closer to shore and where boats can operate with greater comfort and flexibility for their customers. This has relieved some of the pressure on the populations of dolphins north of Grand Bahama. The Biminis are also closer to the coast of southeastern Florida, so trip journeys are shorter from Florida and tour operators have the option of allowing people to stay on shore and take day trips to see the dolphins. This has the potential at least to provide more local income for the Bahamas.

In 1998, some operators of the Bahamas swim-with-dolphin trips noticed a slight decline in interest, with fewer people signing up for the trips. Several factors may be involved:

1. the modest quality of some of the trips, lack of education or naturalist component,
2. the competition with higher quality ecotourism trips (not only whale and dolphin watching) which have expanded greatly around the world in the past few years,
3. the proliferation of swim-with-dolphin programmes in New Zealand, Japan, and other areas (originally the Bahamas was the only area offering these programmes), and
4. the criticism by some commentators and NGOs of swim-with-dolphin programmes in general.

As a result, a few operators have recently stopped offering the tours while dive operators have reduced or eliminated the numbers of days visitors can spend with dolphins. Other operators have permanently moved their operations to the Biminis. In addition, some operators have starting shifting the focus of their trips from ecotourism or mainstream tourism to 'human potential' tourism. This niche market is generally respectful toward the wild dolphins, but does little in the way of gathering photo-IDs useful for scientific programmes. In some cases, there is little education beyond 'New Age'-oriented education. It would be beneficial if ecological concepts could also be included and promoted.

The other dolphin tours are mostly recreationally oriented, based around diving tours or yachting cruises. Few carry naturalists or scientists or have a substantial educational programme. This needs to be urgently addressed. Denise Herzing, a scientist who carries some passengers on her research-oriented trips north of Grand Bahama, has promoted suggested guidelines for swimming with the dolphins and distributed them through the entry port of West End on Grand Bahama.

The Bahamas has vast dolphin watching potential and even some whale watching potential in the 'Out Islands' or, as the Bahamian tourism ministry calls them, the 'Family Islands' (Abacos, Andros, Eleuthera, Cat Island, Ragged Island, Crooked Island, Great Inagua, Mayaguana, etc.) These essentially include all of the Bahamas except the two populated islands of New Providence and Grand Bahama where respectively Nassau and Freeport are located (80% of the population live here). The Family Islands extend out from the somewhat developed Andros, Abacos and Eleuthera, to the far remote and undeveloped southern and eastern parts of the Bahamas. A great deal of work needs to be

done in terms of cetacean surveys and in establishing a basic infrastructure before whale or dolphin tourism can be considered, particularly in the more remote areas. The Bahamian Tourism ministry supports the development of these islands and the director-general of tourism has even been quoted as saying that they are the future for tourism in the Bahamas. As of 1997, there were 264,000 tourist arrivals in the Family Islands, a figure which has climbed steadily since 1995, and now represents a 16.3% share of all tourist arrivals to the Bahamas. Currently, Abacos, which is the island adjacent to Grand Bahama, represents the 'frontier' in terms of dolphin watching, so there is still considerable unexplored territory in the Bahamas.

By far the best weather season is summer, with some possibilities for late spring. (Hurricane season is June to November, but the period late August-September usually offers the worst weather conditions.) The dolphins live in the Bahamas all year round but trips cannot be consistently and confidently offered outside of summer. To develop more winter trips in the Bahamas, it would be necessary to offer them as day trips, for dolphin populations that are close to land, and with the flexibility that dolphin trips would only occur when the weather and seas are reasonable. This way, if tourists on a week or ten-day trip could build some flexibility in terms of when they would take the trips, it would be possible to have a good chance to see dolphins. Probably the best base for such tourism would be Abacos where some day trips and multi-day dolphin tours have been offered from Marsh Harbor in the past. However, for this to develop into regular tours, a local operator or company would need to set up a base on Abacos (or another island), ideally combining day tours with a partly land-based component. This might be easiest to do on Abacos where there is a known inshore bottlenose dolphin population, as well as others offshore, and the chance to see other whale and dolphin species.

For nearly 10 years, Bahamian Diane Claridge's and American Ken Balcomb's Bahamas Marine Mammal Survey, supported largely through Earthwatch, has been based out of Abacos, first at Tilloo Cay and now from Hole-in-the-Wall Lighthouse. Every year, they have combed the surrounding area, focusing on Northeast and Northwest Providence Channels, the deep passage through the Bahama Banks that connects the open North Atlantic with Florida coastal waters and the Gulf Stream. The long-term goal of this excellent project is to characterise the marine mammals of the Bahamas for both scientific and conservation purposes. They have identified 20 species of cetaceans, including (in order of how commonly they are seen) spotted dolphins and bottlenose dolphins year round, plus sperm whales, dwarf & pygmy sperm whales, humpback whales, false killer whales, and pilot whales, as well as rare tropical beaked whales. The survey has photographically identified the resident population of 90 some bottlenose dolphins off central Abaco, as well as finding five new cetacean species in the islands. Most exciting of all is a life-history study on the rare dense-beaked whale which lives in the deep waters offshore. About 100 individual dense-beaked whales have been photo-identified and a number of them have been resighted within the year and from year to year, suggesting that at least some of them are residents. Since 1992, an average of 70 EarthCorps volunteers per year have participated in these multi-day educational field study tours for the Bahamas Marine Mammal Survey. Each pays \$1,800 USD to participate for 10 days, 80 percent of which covers expenses.

In 1996, Claridge and Balcomb started Bahama Naturalist Expeditions and began taking whale watchers on day tours. They escorted 150 people on day tours at a cost of \$85 USD per person but the tours stopped after 8 months when they embarked on a new project, moving to the more remote southern tip of Abacos, to Hole-in-the-Wall Lighthouse. Besides being a good land-based lookout when the waters are calm, Claridge and Balcomb would like to turn it into a well-equipped research station and ecotourist lodge. While they have continued to lead the Earthwatch tours, they are now planning to offer multi-day land-based and marine tours out of splendid Abaco National Park (with its pine and hardwood forests and its native endangered Bahama parrots) which will feature whale and dolphin watching.

At present, however, despite in principle agreements made with the Bahamian government, they have been waiting 3 1/2 years to hear whether a lease arrangement can be made for the lighthouse and surrounding land, which would allow them to invest in restoring the existing buildings for the now automated lighthouse. They want to build classrooms for university students, a lab and darkroom for scientific work and low key environmentally-friendly cottages for ecotourists. It would be difficult to find a more

worthy plan for this area, or one that would better help to diversify tourism while providing education and science as part of the deal. In other parts of the world such valuable multi-purpose facilities would receive substantial government funding.

Also located on Abaco is Marsh Harbour — a centre for boating in the Bahamas, and a good departure point for farther afield and the more remote islands and islets. East of Marsh Harbour, on Elbow Cay, there is another lighthouse with a superb view out on the Atlantic. The town also has a small cetacean museum on Bay St with a map showing whale sightings in nearby waters.

Here are a few highlights and possibilities from some of the various other islands:

- Off Andros, humpback whales have been found in Tongue of the Ocean, the deep channel on the eastern side of Andros, in winter. Andros also has dolphins and the third longest reef in the world after the Great Barrier Reef and Belize.
- At Six Shilling Cay and Egg Island (west of northern Eleuthera), pilot whales have been seen repeatedly.
- At Cay Lobos, Guinchos Rock and Orange Cay, in the far southern part of the Bahamas (30 miles from Cuba), fishermen often report sightings of spotted dolphins.
- Great Inagua — the most southern of the Bahamas, lying about half way between the Turks and Caicos Islands and Cuba — has a national park, the Inagua National Park, and stunning birdlife with its system of interior lakes. It may also be a good environment for various dolphins and whales, but is as yet unexplored. Humpback whales have been seen passing by the island enroute to their breeding grounds north of the Dominican Republic.
- Near Long Island and Mayaguana Island in winter, humpback whales are regularly reported.
- Cat Island has Mt. Alvernia, the Bahamas highest peak, which offers 360° views over protected inshore waters to the west as well as the open Atlantic to the east — good potential cetacean waters.

But these are just a few leads. The Bahamas has large areas, which remain unsurveyed and unexplored for cetaceans. With two thirds of the Greater Caribbean cetacean species reported here already, the possibilities are outstanding for creating new cetacean-based marine nature trips.

Before dolphin and whale tourism expands, however, and even if it doesn't happen, the government of the Bahamas needs to put in place a permitting system and regulations to control the numbers of boats, to prevent touching or harassing the dolphins, to insist on trained naturalist guides and quality educational programmes on the boats, and to assist with scientific programmes (by mandating or encouraging the collection of photo-IDs, etc.). There needs also to be provision for enforcement. Three years ago, a comprehensive marine mammal plan covering these and other aspects was put forward by Denise Herzing and Diane Claridge. To date, however, the Bahamian government still has the recommendations under consideration.

In future, the Bahamas might profitably develop a solid policy toward ecotourism. At present, the image of the Bahamas may be confused by the presence of a number of shore-based captive cetacean facilities which allow visitors to feed and/or swim with captive or what are sometimes called semi-wild dolphins (such as at Sanctuary Lagoon on Grand Bahama and Blue Lagoon Island near Nassau). These facilities have been widely challenged and even condemned by ecotourists, certain scientists and a wide range of NGOs who do not recommend breaking up dolphin families and bringing them into captivity, even if the conditions are by human definition 'semi-wild'. The need to establish regulations and define an ecotourism policy is not unique to the Bahamas; indeed it is a concern throughout the world. It is necessary to have more than just basic laws against animal harassment; what is needed is a comprehensive policy and programme to address these matters. It is a key part of the image building of a country.

The Bahamas: Dolphin swimming guidelines

Guidelines for interactions with wild dolphins were first developed and used as a voluntary code of conduct by the Oceanic Society (San Francisco, CA, USA) for their trips to the Bahamas and have been modified in view of their experience there and in Belize. Following is the latest 1999 version.

Oceanic Society Guidelines For Interactions With Wild Dolphins

An experienced biologist should oversee any interactions with wild dolphins. Dolphins do not behave in a predictable, uniform manner, and individuals have varying levels of tolerance.

The number of swimmers allowed in the water at one time should be determined by a biologist in response to the behavior of the dolphins.

1. Never try to touch or chase a dolphin. Recommended attitude in water is to gently dolphin-kick with arms held at side or behind the back. Swimmers should not emit loud noises.
2. Do not offer small floating objects or ropes to the dolphins as they may ingest the small objects or become entangled in the rope.
3. Look for signs of aggression. Tail slapping and jaw clapping in the vicinity of swimmers or boaters are definite signs of aggressive behavior, and indicate that the animal is not happy. Dolphins may ram swimmers with their rostrum. This can cause severe internal damage or death to the swimmer. When a dolphin makes speed runs towards a boat or swimmer it is a good indication to leave the vicinity immediately.
4. Never feed a marine mammal. Fish that has been handled improperly can make a marine mammal ill. Once sick, they may not eat, and it would be impossible to treat a wild cetacean. Feeding bad or improperly handled fish could lead to the death of a wild cetacean. Even properly handled fish may not be the proper diet, and feeding wild dolphins may disrupt normal foraging behaviors, and make dolphin's dependent on human hand-outs.
5. Swim in the vicinity at your own risk. As adolescent dolphins mature, they become much more aggressive and their play becomes much more rough. A dolphin playing rough with a human could cause injury. Also, male dolphins are known to bite other dolphins as a means of communication, and a bite can cause serious injury to a swimmer.
6. People with any illness, or infections should not enter the water or interact in any way with wild cetaceans. Cetaceans are susceptible to a variety of human ailments, and are especially susceptible to Candida (yeast) infections.
7. People with immune system problems should not breathe the breath of a dolphin, as dolphins carry the bacteria *Vibrio* sp. which can be very pathogenic to humans.

In 1996, Denise Herzing worked with various operators and agencies to come up with the following mutually acceptable dolphin watching and swimming guidelines for the Bahamas. These guidelines are produced as a handout and are displayed at Customs at West End, Grand Bahama Island (Herzing, pers. comm.)

Bahamian Dolphin Guidelines

These guidelines are developed and supported by: Wild Dolphin Project, Bahamas National Trust, Bahamas Dept. of Fisheries, Bottomtime Adventures, Jennifer Marie, Crown Diving Corporation, Dream Team, Sea Fever, Wren of Aln, Shearwater Excursions, Gulfstream Eagle, and Island Chaser. Special thanks: Whale and Dolphin Conservation Society.

While you are travelling in the Bahamas you may encounter dolphins or other marine mammals. Marine mammals are protected in Bahamian waters by Department of Fisheries regulations. These include rules against harassment, capture, molesting and feeding dolphins.

If you happen to encounter dolphins with your vessel or while you are in the water, there are a few simple things you can do to help protect these animals.

Q. WHAT IF THE DOLPHINS APPROACH OUR VESSEL AND BOW RIDE?

A. Most operators allow the dolphins to bow ride both large and small vessels at times. Care should be taken during approaches and vessels are encouraged to let the dolphins leave, without pursuit, if they appear uninterested in such activities.

Q. CAN WE SAFELY DISPOSE OF OUR WASTE PRODUCTS NEAR DOLPHINS?

A: Dumping holding tanks, especially untreated ones, near any marine life, is discouraged. If you must dump tanks it is recommended that you do so off the shallow sand banks, in deeper water with better current flow. At no time should trash, other than biodegradable food waste, be dumped overboard. U.S. registered vessels are subject to fines by USCG and Bahamian Defense Force.

Q. WHAT DO I DO IF A DOLPHIN APPROACHES ME IN THE WATER?

A. LET THE DOLPHINS VOLUNTARILY APPROACH YOU. Touching, riding, or feeding the dolphins is highly discouraged. Capturing dolphins is illegal. Aggressive activities include rapid swimming or grabbing at the dolphins which will frighten the dolphins away. Scratching with fingernails or touching the dolphins may cause skin infections and they could possibly contract human diseases. Keeping your arms along side your body or behind your back increases your chances for a close and successful encounter.

Q. HOW LONG DO THE DOLPHINS STAY WITH SWIMMERS AND DO I HAVE TO KEEP UP WITH THEM?

A. You can never keep up with a dolphin. If the dolphins want to interact with you they will stay nearby. Stay near the boat for safety reasons and if you do find yourself away from the boat, return to the vessel and the dolphins will often return with you.

Q. IS IT BETTER TO SNORKEL OR SCUBA WITH THE DOLPHINS?

A. Most boats familiar with dolphin encounters encourage snorkeling. Scuba can be encumbering and will limit your movement with the dolphins. The use of scooters is discouraged because they allow the diver to stray too far from the vessel.

Q. DO THE NUMBERS OF PEOPLE IN THE WATER AFFECT THE DOLPHINS?

A. It is not known whether a high ration of people to dolphins in the water has adverse affects. Dolphin etiquette IN THE WATER is probably more important. Initially, a low ratio of people to dolphins in the water is recommended. Low ratios make the encounter more enjoyable for people.

Q. DOES MUSIC ATTRACT THE DOLPHINS?

A. Since dolphins are acoustic animals it is important that this acoustic channel remain open for their communication. Excluding the use of listening devices, putting sounds into the water should be used judiciously. For example, the use of killer, false killer, and pilot whale sounds, continuous music, or sounds from species not normally in the area are discouraged. Bahamian research permits are encouraged for such activities.

Q. WHAT DO I DO IF I FIND MYSELF IN AN AREA WITH OTHER BOATS TRYING TO INTERACT WITH DOLPHINS?

A. If you find yourself around other boats interacting with dolphins the most important things to do are 1) communicate with the vessel to make sure you know the location of any swimmers they may have in the water, 2) honor at least a 1/2 nautical mile distance so as not to interfere with the other boats.

Q. SHOULD I TRY TO KEEP UP WITH THE DOLPHINS OR ANCHOR THE BOAT?

A. Many boats that have experience with wild dolphins prefer to anchor the boat and minimize movement. This is both to insure the least invasive behavior with the dolphins and to allow the dolphins to choose to come over to the boat when THEY want to. Secondary boat movement, such as the use of a zodiac or skiff on a regular basis, is discouraged to not harass the dolphins every time they are sighted. Behaviorally, when you see large groups of slow moving dolphins at the surface they are often at rest. Approaching the dolphins during this time is discouraged.

Q. WHAT DO I DO IF I SEE ANOTHER BOAT WHO DOESN'T APPEAR TO FOLLOW THESE GUIDELINES?

A. These guidelines have been developed to share and distribute as needed to minimize dolphin harassment and increase positive encounters between people and dolphins. Often questionable behavior is just a problem with open communication lines between vessels or lack of information. Feel free to share this information and discuss it with boats in the area for further feedback and guidance.

Acknowledgments: Denise Herzing (Wild Dolphin Project); Diane Claridge and Ken Balcomb (Bahamas Marine Mammal Survey), CTO 1997, Bahamas Ministry of Tourism, Baker 1998, CTO 1997.

2. Cuba

Population: 11,066,300.

Land area: 110,860 sq km.

Tourist arrivals by air: 1,170,100 (+16.5% on prev. yr.)

Tourist arrivals by cruise ship: 2,000.

Total Tourist Expenditures: \$1,500 million USD.

Tourism Budget: \$1.5 million USD.

GDP at factor cost: \$14,572 million USD.

1994 figures on whale watching: Nil.

1998 figures on whale watching: Nil.

Whale-watching ports (current or potential): Las Martinas, Júcaro, Varadero, Cayo Congrecho.

Land-based viewing sites: Limited information.

Whale-watching potential: Moderate to considerable

(Figures above are latest figures for 1997, except as noted.)

Cuba is the most westerly and by far the largest of the Caribbean islands. Surrounding the main island of Cuba, and part of the Republic of Cuba, are many hundreds of islets and cays. Located just 140 miles (225 kms) south of the peninsula of Florida, and even closer to the Florida Keys, Cuba is, after 40 years of relative isolation from American influence, a world away. In tourism terms this can be both an asset (unspoilt, unique character) and a liability (lack of infrastructure in some areas). Due to its size and its comparative lack of development, as well as considerable reforestation efforts since the 1959 revolution, Cuba has the greatest species diversity in the West Indies and the most endemics or unique species. This applies to both land and marine areas, as Cuba's extensive wetlands and mangrove forests give it a vast, remarkable coastline — the

longest coastline in the Caribbean. Thus there are certainly many areas around the country where dolphins and possibly nearshore whale populations can be found.

To date, however, there are no dedicated dolphin- or whale-watching tours in Cuba, and no comprehensive cetacean surveys of Cuban waters. Certainly most of the species found in the Greater Antilles, as well as those that have turned up in Gulf of Mexico surveys, are likely to be found around Cuba (see Schmidly 1981, Mignucci 1989, Jefferson and Lynn 1994, Mignucci-Giannoni 1998, and especially Ward *et al* in prep.). This includes at least 15 species of cetaceans, nearly the same diversity found in the Bahamas. Historically, sperm whales were caught in large numbers in the Straits of Florida which separate Cuba from Florida and this area was also singled out as a prime cetacean area on Jefferson and Lynn's 1991 survey. Also, bottlenose dolphins have been captured over the past few decades around Cuba, often in inshore waters, for local and foreign aquariums. For example, various bottlenose dolphins currently held in Europe (in Spain and France) and Latin America (in the Dominican Republic and Mexico), came from Cuba, and other dolphins captured in local waters are locally exhibited. At present, dolphin watching in Cuba means going to an aquarium — such as the facility at Varadero, 75 miles (120 kms) east of Habana on the coast, with its swim-with-captive-dolphins programme — and if you ask Cubatur (the Cuban national tourism agency) about dolphins, this is the only information provided.

One of the candidate areas for starting dolphin watching found by Doug Carlidge on a recent trip is at Cayo Congrecho, on the northeast coast, which is also one of the main dolphin capture areas. There appear to be a number of 'resident' pods of bottlenose dolphins in the area. The largest local diving company, based in Varadero, has considered dolphin watching tours, but is yet to be convinced of the market for such tourism. The situation may be complicated, in terms of promoting wild dolphin tourism, because the military owns one of the main dolphin facilities and appears to have an interest in promoting captive dolphin tourism. Probably diving companies will be the easiest and most direct route for starting such tours as part of or as extensions of existing diving tours, although there are other possibilities too.

Fishing trips to Jardines de la Reina, a group of islands south of Cuba, for example, regularly encounter dolphins. Departure port is usually the fishing village of Júcaro. Dolphins are also commonly seen in large numbers in the Archipiélago de los Canarreos, off south western Cuba, due south of Habana.

In terms of large whales, sperm whales were seen in June in great number by Hal Whitehead close to shore in the Yucatán Channel off Cabo San Antonio off the western tip of Cuba, east off Cabo Corrientes and Cabo Francés. In this area, the 100 and 900 fathom contours (200-1800 meters) come very close to shore. The nearest port is Las Martinas, more than 150 miles (240 kms) southwest of Habana. Further studies would be needed to see how long the whales stay around and if they are accessible in good weather.

In 1996, representatives from WDCCS visited Cuba to look at the dolphin capture operations and met officials from the Ministry of Environment, the National Protected Areas Centre, aquarium personnel, and others. They encountered some enthusiasm over the idea of starting whale watch tours. In particular, Antonio Perera Puga, the Director of CITMA (Centre Nacional de Areas Protegidas), is working on a marine protected area which includes one of the prime bottlenose dolphin areas where the captures have occurred. He was very interested in developing responsible ecotourism, and expressed some alarm at the Varadero development with its captive swim with dolphin programme. Others have pointed out that it has developed too fast and is in urgent need of control.

The average annual growth rate in terms of numbers of tourists is the highest in the Caribbean over the period 1992-1997 — 20.5%. It remains for some far sighted entrepreneur, NGO, or international scientist to work with the local researchers at the University of Habana to do more research and start whale or dolphin watch tours, perhaps in partnership with existing diving companies. The market for such tours would be tourists from Canada, Europe, or Latin America — as US tourists are still not normally allowed to visit Cuba. When that does change, Cuba's tourism can be expected to grow even more, and it cannot be long before dolphin watching starts.

Acknowledgements: Niki Entrup, Doug Carlidge, Sarah Cameron, Chris Stroud, Kate O'Connell, Hal Whitehead (Dalhousie University), Jonathan Watts (Canada-Cuba Sports & Cultural Festivals), Antonio Perera Puga, the Director of CITMA (Centre Nacional de

Areas Protegidas), Schmidly 1981, Mignucci 1989, Jefferson and Lynn 1994, Mignucci-Giannoni 1998, Ward *et al* in prep, CTO 1997.

3. Turks & Caicos Islands (UK)

Population: 15,640.
Land area: 417 sq km.
Tourist arrivals by air: 92,076 (+6.4% on prev. yr.)
Tourist arrivals by cruise ship: None.
Total Tourist Expenditures: \$112.9 million USD.
Tourism Budget: \$1.3 million USD.
GDP at factor cost: \$137.8 million USD (1996).
1994 figures on whale watching: >100 people a year with total revenues of \$35,000 USD.
1998 figures on whale watching: 1,500 people a year with total revenues of \$150,000 USD (prov.)
Whale-watching ports (current or potential): Cockburn Town on Grand Turk Island, Balfour Town and North Beach on Salt Cay, Cockburn Harbour on South Caicos, and Providenciales on 'Provo'.
Land-based viewing sites: Provo (dolphins), west coast Grand Turk and Salt Cay (especially north and west — humpback whales).
Whale-watching potential: Outstanding.
(Figures above are latest figures for 1997, except as noted.)

Perennially 'off the beaten track' in the greater Caribbean, the Turks & Caicos Islands, due east of the Bahamas, are beginning to stir. The potential for all kinds of tourism, including whale watching, is only starting to be tapped.

The Turks & Caicos (TCI) is a British crown colony (UK dependency) whose 40 islands and cays cover some 193 square miles (500 sq kms). The islands are surrounded by a long coral reef. The deep water Turks Island Passage, an important transit for migrating humpback and possibly other whales, divides the Turks from the Caicos islands.

A small seasonal whale-watching industry, depending on wintering humpback whales, grew out of the diving industry in the early 1990s. The limited number of whale watchers have been mainly due to the total numbers of tourists available and lack of advertising for what are superb opportunities. Since 1992 when there were 52,000 visitors to the islands, visitor arrivals have almost doubled (92,000 in 1997). With steady increases each year, TCI has been one of the faster growing areas for tourist (not including cruise ship) arrivals in the Caribbean. Yet, TCI still gets only a tiny fraction of the numbers of tourists that come to the Bahamas, the Dominican Republic, Jamaica, or Puerto Rico.

At present, most TCI visitors arrive via the two international airports on Grand Turk and Provo. American Airlines, for example, currently has daily flights to Provo from Miami. Most of the other flights are Caribbean-based; there are no direct flights from Europe, except charters. The main cruise lines do not stop in the TCI (exceptions are the American Canadian Caribbean Line and Windjammer Barefoot Cruises). However, the planned cruise ship terminal on little-visited East Caicos could change all that. This proposed US \$450 million project includes plans for a bridge link with South Caicos and other islands. This would expose many more visitors to the islands, even if most do not stay overnight.

Bottlenose and other dolphins live around all the islands year-round and are often found inshore in particular spots. They are seen regularly by divers, other boaters, and tourists, but there is no dolphin tourism per se. By far, the most famous local dolphin is JoJo, a male who has hung around Provo's Grace Bay beach and Pine Cay since the early 1980s. In 1995 JoJo swam across the deep Turks Island Passage and spent a month off Grand Turk to the delight of visitors there. He regularly approaches the beaches and sometimes interacts with people. Unfortunately, carelessness has led to boat propeller and jet ski accidents with JoJo and he has been injured many times, including quite recently, despite the vigilance of JoJo's 'wildlife warden' and protector Dean Bernal who has helped look after him for about a decade as part of the 'JoJo Dolphin Project'. It is not known how long JoJo will stay; he has already stayed longer than most other lone, sociable dolphins. Declared a 'national treasure' by the Ministry of Natural Resources, JoJo provides a

magnet for tourists and is a good ambassador for the excitement of dolphin watching, even for most who just hear about him or see him at a distance from the beach. In Ireland, where the dolphin Fungie, or the 'Dingle dolphin', as he is known locally, lives, more than 150,000 visitors a year watch from shore or take small boat excursions to see him in the harbor, creating a year-round local industry, and this has led to regular marine nature and dolphin tours in western Ireland. Although few would like to see as large a number of people descend on TCI, there is little doubt that dolphin tourism could be started with more land-based facilities, as well as short trips off the coast. First, however, it will be necessary to establish dolphin watching regulations and an enforcement programme.

Whale watching has been pursued at a low level since the early 1990s with about a hundred or so whale watchers per year, mainly associated with diving tours. However, over the past two winters, humpback whales have been showing up in the waters off Salt Cay in some numbers, particularly in mid-season, with guaranteed sightings through February. The months of January, March and even April offer fewer sightings. Nearly a dozen operators from Grand Turk and Provo, most of them diving companies, have offered whale watching as part of their dive tours or on separate whale watch trips, although only three or four companies have bothered to advertise and focus on whale watching. The numbers have not been officially kept but are estimated to be at least 1,500 whale watchers in 1998 and 2,000 or more in 1999. Dean Bernal, who criticizes the boat operators for the aggressive, often too close approaches, prefers to operate mainly from a land base, offering week-long humpback swimming trips from the coast of Salt Cay (no boat necessary), and has also taken excursions from Provo by plane to outer islands for whale watching.

Whales and dolphins are often seen from land, such as from the west side of Grand Turk, and north and west of picturesque Salt Cay, 8 miles (13 km) southwest of Grand Turk. Any spot with a good view out over Turks Island Passage offers a chance to see passing humpbacks in season. Humpbacks sometimes approach the bay on the north side of Salt Cay, and they can be seen from various other points around the island. Salt Cay clearly has the best potential for developing a full fledged land-based whale watch programme with solid educational and scientific dimensions, as well as commercial implications.

Throughout the TCI, there are other sea lookouts and coastal nature trails, though nothing specifically for cetaceans. Some could certainly be adapted for cetaceans, with information boards and naturalists to show people how best to look from land. Many of the remoter cays can be visited though too many visitors would spoil the experience for others. The Turks & Caicos National Trust and TCI's Department of Environment & Coastal Resources have developed a management plan to try to minimise the impact of visitors. They would need to be brought in from the beginning on any plans to develop whale watching more intensively.

At present the whale watch companies and dive operators urgently need to meet with local scientists, tourism and other appropriate government officials, to sort out and update the 1990 whale watch guidelines. Establishing regulations with enforcement provisions would be the best option. A whale watching workshop is currently being planned in the TCI for the year 2000, so hopefully this will put all the stakeholders together to address regulations as well as other matters. In terms of future development, most of the tours operate out of Provo and Grand Turk, and most are involved in diving, fishing and other marine tours around the relatively short winter whale watch season from January through April. Following the establishment of regulations, there may well be room for more expansion here, as well as diversity in the types of whale and dolphin trips offered (different size platforms, sailboats, kayaks, land-based, etc.)

The humpback whale distribution and the inshore presence of bottlenose dolphins are fairly well known. However, a comprehensive detailed marine mammal survey of the waters around these islands might well turn up more cetacean species within acceptable reach of the main marinas on South Caicos (the Sea View Marina, Cockburn Harbour) and on Provo (the Leeward Marina, Turtle Cove Marine, Caicos Marina and the South Side Basin Marina).

Unlike many other places with great natural splendours, TCI has already taken major steps to protect the native flora and fauna, both land and marine-based. It has one of the most advanced system of national parks, sanctuaries and protected areas in the Caribbean, with some 33 areas set aside in the past 10 years. This includes much of the bottlenose dolphin habitat around the islands as well as the humpback whale wintering

grounds on Mouchoir Banks, which are administered by the Turks & Caicos Department of Environment & Coastal Resources. One NGO that has led the effort to protect the islands is the Society to Protect our Reefs and Islands from Degradation and Exploitation, founded by Chuck Hesse, a local conch farmer.

As in other areas of the world, these marine protected areas will provide brand name recognition as well as some measure of protection for whales and dolphins. At present there are bans against spearfishing, jet-skiing, and diving for conch and lobster within marine reserves. It is encouraging to see such protection before it is needed rather than after severe problems develop, as is usually the case. However, as stated above, specific enforceable provisions need to be made for whale and dolphin watching, especially if it is to expand to the more remote parts of the Turks & Caicos Islands.

In 1990, the first large hotel in the TCI, the Turquoise Reef Resort & Casino, opened at Grace Bay, Provo — a turning point for tourism. Provo has continued to expand its tourism facilities with other resort hotels. Still, most of TCI income comes from a mix of finance, tourism, and fishing (conch and lobster) industries. The islands are comparatively dry with some water problems; farming is limited to small holdings. Thus, the islands depend on aid from Britain. The further development of whale watching and marine nature tourism will depend on conscious decisions being made by the Turks & Caicos government, as well as help from the outside. Although building large ports and resorts will encourage much larger numbers of tourists, this may well strain drinking water supplies as well as other infrastructure. There is also the consideration of what kind of tourism to promote. At the moment, the spectacular diving and potential whale watching have their own 'ecotouristic' character; but with many more large hotels and resorts, cruise ship ports, expanded airports, and too many visitors, that distinctive character could be lost. But there is still room for considerable expansion over the next few years before that level is reached. Although TCI is far behind the Dominican Republic in whale watch numbers, with care and planning, TCI could assume the top position for quality whale watching in the Caribbean, and could conceivably challenge the DR numbers.

Turks & Caicos Islands: Whale watching guidelines

According to a government pamphlet on the humpback whale, published in 1990, special rules exist for anyone seeing whales in the Turks and Caicos Islands because this is a breeding ground and the young calves and mothers are particularly sensitive to disturbance. The rules are designed to protect this endangered species and to ensure that people watch whales in safety (Carlson 1998).

Vessels should observe the following restrictions:

1. Boats should not approach nearer than 100 yards of a whale. This also applies to swimmers and divers who should not get into the water with whales (being so close can disturb whales and may be dangerous).
2. If whales approach within 100 yards of your vessel, put engine in neutral until whales are observed at the surface, clear of the vessel. (This avoids the risk of injury to the whale or of damage to the vessel by a frightened whale.)
3. Avoid speeds over 10 knots or sudden changes in speed or direction within 1500 feet of a whale; do not travel faster than the slowest whale when paralleling or following them. (Whales are easily startled by unfamiliar objects, many have come from areas where contact with boats is rare and some may even have been hunted).
4. Do not allow your vessel to cause the whale to change direction. (Disturbance has driven whales away from critical habitats.)
5. Do not call other boats to a whale and if more than one boat is present ensure that the whale is free to move in any direction. (Too many boats confuse whales; an arc of 180 degrees should always remain open in front of the whales.)
6. Never allow a boat or person to come between a mother and a calf. (Disruption of parental care may reduce a calf's chance of survival and mothers may be aggressive).
7. In all cases, do not change the normal behavior or movement of whales and always avoid physical contact.

Acknowledgments: Baker 1998, Dean Bernal, CTO 1997.

4. Dominican Republic

Population: 7,400,000.
Land area: 48,442 sq km.
Tourist arrivals by air: 2,211,394 (+14.8% on prev. yr.)
Tourist arrivals by cruise ship: 270,830 (+144.1% on prev. yr.)
Total Tourist Expenditures: \$2,079.9 million USD.
Tourism Budget: Not reported.
GDP at factor cost: \$14,870.2 million USD.
1994 figures on whale watching: 15,200 people and \$3 million USD in total revenues.
1998 figures on whale watching: 22,284 people and \$5.2 million USD in total revenues.
Whale-watching ports (current or potential): Samaná, Las Galeras, Cayo Levantado, Caleton, and Plaza Simi Baez; Puerto Plata; Luperón.
Land-based viewing sites: January to March, but especially February for whales at Cabo Samaná, Cueva de Agua, Punta Balandra, Cabo Francés Viejo and Cape Engano; year-round for dolphins in SE DR from Parque Nacional del Esté.
Whale-watching potential: Outstanding.
(Figures above are latest figures for 1997, except as noted.)

Whale watching in the Dominican Republic started with fanfare and great potential in 1985. In 1986, president Joaquin Balaguer designated the Silver Bank Humpback Whale Sanctuary. This gave the country an international lustre and appeal as the location of the first humpback marine protected area — a place where many of the 10,000+ humpbacks from all over the North Atlantic come to sing, mate, calve and raise their young. As millions of Americans in New England ventured out of the Boston and Cape Cod area to meet the humpbacks as they fed in northern waters, they were intrigued to learn about where they went in winter: the warm waters of the DR. Even more enticing, the whales could be seen from shore and within a half hour boat trip from Samaná Bay. It had the potential to be the perfect tourism campaign for visiting the DR in winter.

Since the late 1980s, the DR has been one of the fastest growing tourism destinations in the Caribbean. With good beaches and a hotel capacity of 38,000 hotel rooms (1997), the highest in the Caribbean and climbing, the DR has become one of the key package holiday destinations for Germans, Italians, and many others. But for the most part, they are not coming for the whale watching. In fact, whale watching occupies a minor role in attracting people to the DR. For most of the mid- to late-1990s, whale watchers have numbered around 15,000-20,000 people a year. It is true that this is larger than anywhere else in the Caribbean, but for a place that has such overwhelming promise, it might also be considered disappointing. The expectation of the operators themselves in the mid-1990s was for at least 30,000 people a year. The level is estimated to have reached 30,000 whale watchers in 1996 before falling back to around 20,000. It could have gone even higher — perhaps to 50-75,000 by 1998 — and still be supported by the existing infrastructure. These are still modest numbers compared to the 200,000+ that go whale watching around Maui, Hawaii, or the 80,000 who go to Hervey Bay, Australia, during similar limited seasons for humpbacks.

What has happened to constrain whale watching in the DR? First I will outline the problems, make some comments, and then talk about the various initiatives already underway. Finally I will make some additional recommendations.

The problems fall in several areas: (1) the overall structure of the DR tourism industry, (2) safety, boat-size, and whale watch practices, (3) naturalists and educational components, and (4) image and marketing.

1. The overall structure of the DR tourism industry is based on package holidays with tourists buying 'all inclusive' fixed itineraries with minimal flexibility. This means as a practical matter that the tourist will only be able to take a whale watch trip if it is included in the holiday or if they book it from a tour company or

through the local representative of the international tour operator at the hotel where they are staying. In this way, the foreign tour operator or large tour agency take the lead in the marketing and sales (and both do very little at all in the case of whale watching) and then take a big cut. In early 1999, the rates tourists paid for a whale watch tour at their hotel were about \$60 USD but the whale watch company received as little as \$30 USD. The other \$30 USD leaks out of the local whale watch communities. Whilst some of it probably stays in the country, most goes to the international guides (an estimated 20-30% of the total) and that ends up back in the international companies' home country.

2. Safety, boat-size and whale-watch practices: Worldwide, whale watching has a very good safety record. Considering that more than 5 million people a year have been going whale watching in recent years, the accidents have been few and far between. Every few years, however, there has been a serious accident and even some fatalities. One of these occurred in Samana Bay on March 2, 1995, when an overloaded boat's upper deck collapsed as the boat rolled after being hit by a wave. Twenty four passengers fell into the water, some receiving light injuries, and one Italian tourist was killed. This event contributed to the largest German tour operator, TUI, among others, refusing to include whale watching in their itineraries. Indeed, TUI was already concerned about the small size of many of the whale watch boats, the lack of safety equipment, and the lack of effective regulations for whale watching; the accident confirmed their fears.
3. The almost complete absence of naturalists and educational components have exacerbated the problem with safety and regulations, and have diminished the success of marketing through word of mouth. While at least one operator in Samaná regularly offers narrated whale watch tours of a high educational standard and several others offer tours with a modest educational standard, many boats offer none at all. At a recent international whale watch workshop on education, it was determined that the single most important element to ensure a high quality enjoyable tour was the presence of a qualified naturalist (see IFAW, WWF, and WDCS 1997). Further, an educational programme gets the tourists and the community involved and provides an experience that can be talked about, setting up a word-of-mouth situation that helps build the success of a whale watch community.
4. Image and marketing: The image of a whale watch industry is wrapped up partly in its reputation for safety and the charisma of the operator and naturalist guides. Perhaps the great image conferred on the DR from the start with the Silver Bank Sanctuary spoiled the local whale watching and tourism industry. They did not have to bother with international marketing as it seemed to have been done for them. In any case, it is now necessary for operators, the local community, tourism officials and NGOs to take a pro-active role in creating a unique, high quality whale watch 'product' complete with a supporting community and overseas marketing programme. Kaikoura, New Zealand, created such a product and community, with 40 new businesses, in a small depressed town over a 5-6 year period, attracting 100,000+ tourists to go whale watching. Of course, the DR has only a seasonal business whereas Kaikoura's is almost year round and includes dolphins as well as humpback whales. But the humpback whale season is in the main tourist high season, and enterprising operators could also expand to dolphin watching and other ecotourism involving nearby Los Haitises National Park with its mangrove forests and cave paintings of whales. The season could be extended considerably.

Through attention to items 2-4, the first item, the existing overall structure for selling the tours, can, I believe, be modified and in many cases overcome. If a high quality, special product can be developed and provided consistently to customers, a product which includes strong educational components and has the right image and marketing, then people will start to come to the Dominican Republic specifically to go whale watching. There will still be the package tourists who sometimes take the trips, but the point is that

the high value that dedicated whale watchers would put on seeing whales would create a much more valuable industry, with local companies able to charge more and earn more — even if visitor numbers stay largely the same or do not increase by much.

In terms of marketing and image, there is much that can be done within the country. In July 1996, law no. 233-96 made Samaná Bay part of a new 'Marine Mammal Sanctuary of the Dominican Republic' which included Silver Bank, Navidad Bank and the waters connecting the three areas. Conservationists were jubilant. But a year later, the law was revoked which reduced the protected area to the original Silver Bank alone. There is a great deal to be said for protected areas and wildlife. At minimum, protected areas are a statement of intention to protect wildlife and its habitat. At best, real protection is afforded, with habitat set aside where needed and multiple use including tourism and light industry and fishing encouraged where possible. But most important of all to tourism and marketing is that a protected area provides an instant 'brand name' with a lustrous appeal. It immediately becomes a reason for visiting a country, a place to go and enjoy, or even a place just to know about. The number of tourists who take cruises to Alaska largely or at least in part because of the promise of protected wilderness and national parks with grizzly bears, eagles, humpback whales and orcas is very high; the number who actually see all or even some of the above is much smaller. Yet by visiting the waters and forests of Alaska, the average tourist feels part of the mystique of the place.

It is interesting to note that while the Turks & Caicos Islands continue to designate more and more marine reserves, the pioneer in marine reserves in the Caribbean, the DR, appears to have moved backwards by reversing proposed designations. The prospective ecotourist, diver, nature lover, and/or whale watcher sees a message here, although the result is difficult to measure in year-by-year tourism figures. However, over time, the erosion of a country's image can alter those figures and the change may well be difficult to reverse. One thing is certain: as the world's green and blue areas are increasingly paved and destroyed, the value of land- and marine-based parks and wilderness becomes greater and greater. The increasing urbanisation of the world and the laws of supply and demand make pristine areas more valuable every year.

Idelisa Bonnelly de Calventi and other members of the Intergovernmental Management Committee for the Silver Bank Marine Sanctuary (Comisión Rectora) have fulfilled a key role in terms of encouraging marine conservation in all its aspects including whale watching and not only at Silver Bank, their original remit, but also in Samaná Bay. The Comisión Rectora was originally set up to administer the Silver Bank Sanctuary but their positive influence has extended to marine mammals all over the Dominican Republic.

In 1997, responding to the whale watching accident and other criticisms from foreign tourist operators, the Comisión Rectora stepped in to take the lead in establishing an organised system for the whale watching at Samaná. They established a permit system, a boat-size payment system, and gave the boat captains lectures and training. Special training was also developed for three whale watching 'inspectors' for the area. A page was established on the Internet to give information on whale watching, the sanctuary and marine mammals. The Comisión set up a dialogue with TUI, the largest German tour operator, to try to convince them to return to the DR for whale watching, based on the comisión's efforts to redirect it. At the same time, they began to encourage more of an interest in the local people to visit the whales through TV and radio interviews. A Festival de las Ballenas was planned for 1998 and a seminar with the University of Valencia in Spain to feature scientific trips. All of this was accomplished with essentially volunteer help.

Another NGO called CEBSE, which has been working in the Samaná Bay area since the early 1990s, has recently begun to play a greater role with whale watching. Initially working in close partnership with the Center for Marine Conservation (CMC), CEBSE (whose Spanish name roughly translates as the Centre for the Conservation and Ecodevelopment of the Bay of Samaná and its Environment) took over the job of co-ordinating the co-management of whale watching in the 1998 whale watch season. Their work is being done in coordination with the Association of Boat Owners, the director of National Parks, and the Secretary of Tourism. The Dominican Navy is the supporting institution charged with implementing regulations. In 1992 whale watching guidelines were introduced to Samaná Bay, but the compliance and enforcement were unsatisfactory. In 1997, after the Comisión Rectora's organisational work, it was agreed that in 1998 CEBSE would take over the co-ordination of whale watching.

So far, CEBSE has promoted a code of conduct with a revision of the previous guidelines based on those used in other areas of the world. It has helped organise regular meetings (8 in 1998) with all the boat owners and other stakeholders to discuss various matters and to help implement the regulations and an educational programme. At the same time, National Parks have co-ordinated the issuing of permits. CEBSE appears to have made a start toward successful management, but there are many more challenges ahead, especially if whale watching starts to expand.

With a permit licensing system for the boats, the boat owners are now responsible for working toward fulfilling the guidelines which stipulate certain minimum distances and maximum number of boats to be near the whales and the amount of time each boat may spend with the whales. All of these are sensible traffic management rules which, if consistently followed, will improve the situation. The procedure for enforcement is to give a first violation warning for an observed violation, followed by a one day prohibition or a fine of 200 pesos (less than \$15 USD) for a second offense. A third violation would result in losing the permit, depending on the kind of violation. In 1998 the most common violations noted were excess speed and too many boats in the observation area at the same time (three is maximum). For repeat violations, the boat owners were sanctioned with minor penalties, losing a day on the water. There were only two serious violations observed. Unfortunately, however, CEBSE has no boat to monitor the situation, and is reliant on going to sea as observers who are of course known to all. However, some volunteers have assisted in the monitoring from the Centre for Marine Conservation (CMC) and the German Service of Social Technical Cooperation (DED) who have worked in the area the past few years. There has also been some monitoring from land at Punta Balandra where it is possible to see almost the entire area where the whale watching occurs using binoculars. In future, with the addition of theodolites from land, it may be possible to do studies of whales and whale watching as well as more effective monitoring for management.

The whale watching at Samaná takes place from six different ports: Samaná, Las Galeras, Cayo Levantado, Caletón, and Plaza Simi Baez. There are 21 companies involved and the total number of boats used is 39. The boats range in capacity from 7 passengers to 125 passengers. 20 of the boats (51%) carry 12 passengers or less, while 9 boats carry between 13 and 25 passengers (23%). Only 10 boats (26%) are of the optimum size for whale watching, carrying 26 passengers or more.

CEBSE is currently trying to regulate the boat size as there are recurring accidents with the small boats, and whale watching from a small boat can be unpleasant in a slightly rough sea. CEBSE plans to improve the licensing system to ensure that the boats are larger and safer. For this, they are working closely with the Association of Boat Owners. At present, 24 (62%) of the 39 boats that have permits are registered as members of the association. The cost of the boat permits varies by size: 1-12 passengers = 1,500 RD (\$100 USD); 13-25 passengers = 3,000 RD (\$200 USD); and 26 passengers or more = 5,000 RD (\$350 USD). The funds are used to pay for whale watch monitors and the operational expenses for the management scheme. The 1998 budget spent 93,875 RD (\$6,600 USD) and this came from boat income of 107,000 RD (\$7,500 USD), 11,650 (\$800) of which had yet to be paid by boat owners at the end of the year.

The total capacity for all the boats from the six departure ports on Samaná Bay is 1,081 passengers. The biggest port and centre of the whale watching is the town of Samaná itself, with 17 boats from 9 companies, with a capacity of 766 passengers (see Table 3). Here, the changes due to whale watching are especially noticeable: new restaurants, gift shops, plus the increase in the numbers of boats, boat companies, and tourism guides.

One of the biggest continuing challenges will be education. A naturalist training programme, coupled with mandatory provisions for naturalists on every boat, would help considerably. Because of the various languages of tourists to the DR, more diverse than in many whale watch locales in the world, it will be necessary for guides to be bilingual or even trilingual. Key languages required are Spanish, English, German and Italian, though French and even Japanese are also useful. To experience a multi-lingual naturalist education programme in action, DR operators could visit Hvalsafari, the whale watch company in Andenes, Norway (see IFAW, WWF & WDCS 1997).

Another need to be addressed is to educate the international tour guides who effectively 'sell' the tours or arrange the tours for tourists. Much could be done to improve

the communication and general knowledge of the tour guides regarding whale watching. If they are to be the main (or one of the) representatives of whale watching to the public, they must at least be better informed and interested in whale watching. Currently, little communication exists between the international tour companies and their guides and the local community operators who run the tours.

Finally, education needs to be promoted even more in the community and there should be a budget to encourage these activities. The Comisión Rectora has done an excellent job in this regard throughout the country on essentially no money. It has helped to develop children's materials and to put them into the school curriculum, as well as the other things mentioned above. The hope is that there could be a regular programme to take school children in the Dominican Republic whale watching.

The other big challenge is to include science in the trips. In the late 1980s and early 1990s, the Center for Coastal Studies helped to train various DR students into photo-ID researchers with exchange programmes that operated in New England and DR waters, at both ends of the humpbacks' range. But currently there is only one student working on the humpback songs and no one is going out on the boats regularly to do research. There is so much more that could be achieved and this too would help draw the interest of tourists as well as put whale watching on a sounder ecological footing.

Little has been said about infrastructure. For the most part, the DR has the support base of hotel rooms, restaurants, roads and docks necessary for further whale watch development. The Samaná area is not developed like the capital at Santo Domingo or other large cities in the country. There have been substantial efforts to develop the Samaná area for tourism in recent years and a new airport is now half complete. However, as in other areas of the Caribbean, maintaining the balance between necessary development and sustaining a quality environment is always a challenge.

The work of the Comisión Rectora, CEBSE, the National Parks, the Ministry of Tourism and its partners, over the next few years, will be the major task in the Dominican Republic with regard to whale watching. At the same time, there are several exciting possibilities which might lead to more diversification and further development of the industry. These could be developed and promoted by private industry or NGOs:

1. Land-based whale watching. This is an important way to educate visitors about whales as well as provide a way for visitors to see whales without increasing any pressure on them. In some parts of the world (South Australia, South Africa, California, Québec), land-based whale watching makes a significant economic contribution by charging for land-based tours with naturalists and providing special lookout facilities.

Currently there is one recently established facility for terrestrial whale observations. Located at Cabo Samaná, it is called Moby Dick and is operated by the company Go Caribic. A one-day excursion which includes lunch, jacuzzi and use of the facilities is approximately \$35 USD. Nearby, at Cueva de Agua, a new project has been started with the assistance of an Italian organisation of volunteers called Panteras Grises (Grey Panthers) to set up terrestrial observation of the humpback whales.

The third area is at Punta Balandra, and this is perhaps the most central point for a panoramic view of the area including where the majority of the whales are concentrated. In the past, this point was used for scientific monitoring as part of the YONAH project. CEBSE has considered developing land-based whale watching from this point but further development would require trying to buy or lease the land which may be costly. CEBSE has said it will look at the economic contribution from land-based whale watching at the other two sites to see whether further development might be feasible at Punta Balandra.

There are additional prime lookout areas at Cabo Francés Viejo and Cape Engano, either of which could also be developed for land-based whale watching. Cabo Francés Viejo is near Cabrera, east along the coast from Puerto Plata; Cape Engano is located at Barbaro resort. At minimum, attractive all-weather information plaques situated in prime locales could help advertise one of the DR's prime whale watching attractions. If land-based tours with good naturalist guides (following the South African, Irish and South Australian models) can be provided, then the economic contribution could be substantial, even if there is no

infrastructure or other building. A land-based component would also serve to promote whale watching by boat, as many tourists who see whales from land then want a closer look.

2. Dolphin watching is virtually unexplored in the Dominican Republic. Dolphins are sometimes seen on the whale watch trips in Samaná Bay. The species sighted are mainly spotted dolphins with occasional pilot whales.

At Parque Nacional del Este, in the southeastern part of the DR, there is a group of dolphins resident year-round. These dolphins could be considered for ecotour possibilities. As they live inshore, there may also be a potential land-based component. There are also bottlenose dolphins found to the northwest of Puerto Plata, but they have not been studied. Dolphins are no doubt found in other areas, but surveys would need to be conducted — perhaps by the national parks as part of biodiversity inventories.

3. The third suggestion is to expand the whale-watching boat tours to include dolphins, land-based whale watching and ecotourist explorations of nearby places such as Los Haitises National Park, on the south shore of Samaná Bay, where there are ancient whale paintings on the cave walls. This would create a more well-rounded cultural and ecological whale watch tour and provide a bigger reason for tourists to go whale watching.

At the sanctuary on Silver Bank, whale watching has grown slowly since the sanctuary was established due to its offshore location which requires much longer trips than at Samaná. It is 50 miles (80 km) from the north coast of the Dominican Republic. Most boats leave from Puerto Plata but others have left from the Turks & Caicos or even from Florida ports. Besides a few thousand humpbacks which spend the winter there, whale watchers can sometimes see bottlenose, spotted and spinner dolphins, pilot whales and even Bryde's whales and various beaked whales. The season for humpbacks is January to March. In 1993 about 200 people were going whale watching on Silver Bank, and this has climbed slowly and was approaching 500 in 1998.

In recent years, there have been persistent reports from Silver Bank of aggressive approaches by boats dropping off swimmers to encounter the whales. In the early 1990s, it had been recommended by Silver Bank's scientific advisors that no swimming be allowed with the whales because of the safety concerns of too many people in the water with whales on their mating grounds. The surface active groups of humpback whales often behave without apparent concern for other whales, tail lashing and charging at each other, and there was concern for the humans who might get caught in the water and not have enough time to return to their boats. Dominican conservationists and marine researchers have repeatedly voiced their fears about this happening due to the difficulty of policing this offshore area. The remote location of Silver Bank means that it is difficult to monitor, but the remoteness has at least served as a cap on the number of people watching or swimming with whales there. Still, some action clearly needs to be taken before whale watching and swimming with whales results in a serious accident, which could result in loss of human life, tarnishing the reputation of whale watching as well as possibly having an impact on the conservation of the whales.

Most whale watch locales of any size develop growing pains, though the Dominican Republic has certainly had a little more than its share. But these struggles have produced positive change and new ideas. The Dominican Republic has the potential to become a world class humpback whale watching centre, putting its unique brand on whale watching and promoting the local cultural experience. Within a few years, with a focusing of effort and continued improvement, the potential for doubling the existing numbers and economy based on whale watching is definitely there.

As this report was being completed in early May, the announcement came that the DR government, after considerable national and international pressure, has decided to restore the 1996 marine mammal sanctuary (subsequently revoked in 1997) that had included not only Silver Bank, but Navidad Bank and the Samaná area. The new presidential decree designating the 'Marine Mammal Sanctuary of the Dominican Republic' is No. 136-99. On May 5, 1999, the first meeting of the new Comisión para la

Protección de los Mamíferos Marinos took place — a great and optimistic day for whale watching and whale conservation in the Caribbean.

Table 2. Numbers of excursions and whale watch visitors at Samaná (all 6 ports) by month for the year 1998

	Jan.	Feb.	Mar.	Total 1998
Number of boat excursions	249	662	372	1,283
Total w/w visitors	3,657	11,682	6,445	21,784

Courtesy: CEBSE statistics

Table 3. Number of boats, companies and capacity by port for Samaná Bay

Port:	No. of boats	Companies	Capacity
Samaná	17 boats	9 companies	766 people
Plaza Simi Baez	8 boats	1 company	122
Las Galeras	3 boats	2 companies	32
Cayo Levantado	2 boats	2 companies	20
Carenero	3 boats	3 companies	29
Caleton	6 boats	5 companies	112

Adapted from CEBSE statistics for 1998.

Table 4. Estimates for numbers of whale watchers at Samaná Bay, 1991-1998

1991	900+
1994	15,300
1996	30,000
1997	20,000
1998	21,784

Whale Watching Guidelines for Samaná Bay, Dominican Republic

Whale watching guidelines in the Dominican Republic grew out of a Whale Tourism Workshop in 1992 organised by CEBSE, the Samaná-based NGO, and Centro de Investigaciones de Biología Marina (CIBIMA), a scientific group working on humpback whales. In 1994, the guidelines were adopted by the boat owners conducting the whale watch tours, with the agreement of various sectors of the community involved with whale watching. However, partly due to lack of compliance, these original guidelines have recently been modified and expanded, and new provisions for monitoring have been put in place. As of 1998, CEBSE has been placed in charge of monitoring and coordinating the management of whale watching at Samaná, according to a co-management agreement signed by CEBSE, the Association of Boat Owners, the Natural Park Directorate, and the Tourism Ministry (CEBSE, Bonnelly de Calventi, Entrup, pers. comm.). Following are the 1999 whale watching guidelines:

1. No more than one large boat (greater than 30 ft/9 m) and 2 small boats (less than 30ft/9m and larger than 23 ft/7 m) are allowed to observe a whale or group of whales at the same time. Each whale watch vessel must have a permit from the National Parks Directorate (DNP).

2. Vessels must stay at least 270 feet (80 m) from a group of whales that includes a calf and 165 feet (50 m) from adult whales.
3. Vessels waiting to observe a whale or group of whales must maintain a distance of 1500 ft (500 m).
4. When a vessel reaches the regulated distance, the engine must be put in neutral, and it must wait. The engine must be left running at all times.
5. A vessel may not stay with a whale or group of whales for more than thirty minutes.
6. After passing Cayo Levantado, the velocity of the whale watching vessels should not exceed 5 knots (9 km/h). If a vessel encounters whales further into the Bay (before Cayo Levantado) its speed should be immediately lowered to 5 knots.
7. It is prohibited to swim or dive with the whales.

As part of the enforcement procedure, there is a licensing system regarding the vessels which are allowed to offer whale watching trips. The owners are responsible to work toward the guidelines mentioned above. Observed violations will be treated as follows:

- first violation — warning (noted by CEBSE)
- second violation — a possible one day prohibition to whale watch or fees of about 200 Pesos (less than \$20 USD)
- third violation — losing the permit; but this depends on the kind of violation.

Whale Watching Regulations for Silver Bank Whale Sanctuary, Dominican Republic

The Intergovernmental Management Committee for the Silver Bank Marine Sanctuary (Comisión Rectora) is the institution responsible for the administration of the Silver Bank Sanctuary and for the protection of the humpback whales and other marine mammals (Decree No. 319, 1986) (Carlson 1998).

1.0 Visits to the Silver Bank Sanctuary

1.1. In order to visit the sanctuary for research, education, recreation (whale watching), sport fishing, or other purposes, all vessels must have a permit from the Sanctuary Committee. This permit must be authorized by the Executive Director and the Secretary of the Sanctuary Committee (see Internal Regulations of the Governing Committee).

1.2 The persons responsible for the vessel must fill in an application that includes information on the purpose of the visit, the time that will be spent in the Sanctuary, the number of passengers on the vessel, dates, as well as any specific activities included in the trip.

1.3 The application form can be obtained in the headquarters of the Sanctuary Committee as well as in the premises of the different Delegations of the Committee.

1.4 The vessels must display, in a visible place, a copy of their permit and the regulations of the Sanctuary Committee of the Silver Bank Humpback Whale sanctuary.

1.5 Given the case that the purpose of the visit is a research and/or study project, the visitor(s) must deliver a report of the activities and the results to the Sanctuary Committee, as well as a copy of any publication, video, etc. elaborated during the study.

1.6 The Sanctuary Committee will establish a visitation fee dictated by the Internal Regulations of the Committee.

1.7 The Sanctuary Committee may limit the number of vessels present simultaneously in the area.

1.8 The vessel that visits the Sanctuary for whale watching must, when possible, take on a representative of the Committee with the purpose of collaborating in whale research and conservation.

1.9 The use of the *Polyxeni* as lodging for people is not permitted.

1.10 The Port Authority will not dispatch any vessel to visit the Silver Bank Sanctuary if it lacks the permits of the Sanctuary Committee.

1.11 All vessels must attain to marine safety and navigational regulations predisposed by Dominican law.

2.0 Protective Measures for Whales and Other Marine Mammals in the Sanctuary

2.1 The capture, hurting, killing, persecution or harassment of any mammal is prohibited.

Note: It is understood that by harassment is meant any activity that affects the normal behavior of the whales. This infers that the animal is being harassed when any sudden change occurs in its behavior, such as:

- a) radical changes in swimming direction
- b) changes in breathing intervals
- c) abandonment of area where first observed
- d) evasive conduct

2.2 The discharge or deposition of any contaminants, explosives, or electrical equipment, as well as their use for fishing is prohibited.

2.3 The dredging, perforation, or any type of activity that disturbs the ocean floor, as well as the construction of any structure different to those used for auxiliary navigation, is prohibited without the corresponding permit from the Sanctuary Committee.

2.4 Flights of any nature cannot be made at heights under 300 m (1000 feet) when at a maximum horizontal distance of 300 m away from the whale.

2.5 Hydroplane landing is not permitted in any area where a whale is present.

2.6 Fishing activities by national vessels is permitted. Nets may not be used from November to May in the Sanctuary area as well as in the adjacent zones occupying a diameter of 10 nautical miles away from the limits of the Sanctuary.

3.0 Whale Watching Regulations

The Silver Bank is an important reproduction and weaning area for the North Atlantic humpback (*Megaptera novaeangliae*). The Sanctuary Committee has established a set of rules or regulations designed to protect this endangered species and to guarantee the security of the people interested in observing them.

3.1 Whale season. The humpback whale season extends every winter from December to April.

3.2 The vessels visiting the Sanctuary must obey the following regulations.

3.2.1 The vessel and/or their occupants must not come any closer than 50 m from where the whales are found, and less than 80 m when in the presence of mothers with their calves.

3.2.2 In the whale watching area, only one vessel may be observing the whales. The presence of various vessels together, be they small or large, confuse the whales.

3.2.3 Each vessel must not stay longer than thirty minutes with any given group of whales.

3.2.4 Each vessel must not make any sudden changes in direction and/or speed when near the whales.

3.2.5 No objects may be thrown into the water, and no unnecessary noise may be made when near the whales.

3.2.6 If the whales come closer than 100 m from the vessel, the motor must be put in neutral until the whales are seen receding from the vessel.

3.2.7 The vessel cannot interfere with the swimming direction or the natural behavior of the whales. (Whales can leave their natural habitat if harassed).

3.2.8 If any vessel violates the regulations in any way, the Sanctuary Committee will ask the Fisheries Department of the Ministry of Agriculture and the Navy Secretariat Headquarters to retain their permit for fishing or access to the Sanctuary for a determined time period, and in the case the felony is repeated, to cancel the vessel's permit.

Note: The protection of the humpback whales will always be in effect while they are in Dominican waters.

Acknowledgments: Idelisa Bonnelly de Calventi (FUNDEMAR, Comisión Rectora), Niki Entrup, Carole Carlson, Kim Beddall, CEBSE, IFAW, WWF and WDCA 1997, special thanks to Kim, Monica and Patricia Lamelas for sending CEBSE's comprehensive report on whale watching for 1998, CTO 1997.

5. Haiti

Population: 7,492,000.
Land area: 27,750 sq km.
Tourist arrivals by air: 148,735 (-0.9% on prev. yr.)
Tourist arrivals by cruise ship: None.
Total Tourist Expenditures: \$57 million USD.
Tourism Budget: Not reported.
GDP at factor cost: \$266.8 million USD.
1994 figures on whale watching: Nil.
1998 figures on whale watching: Nil.
Whale-watching ports (current or potential): Cap-Haïtien.
Land-based viewing sites: Limited information.
Whale-watching potential: Minimal to moderate.
(Figures above are latest figures for 1997, except as noted.)

The poorest country in the Caribbean, Haiti is sometimes overlooked in Caribbean tourism plans and recommendations. The infrastructure for mass tourism is minimal — especially compared to that of its neighbor and fellow occupier of the island of Hispaniola, the Dominican Republic.

There is no whale and dolphin watching to date, but the humpback whale areas north of the Dominican Republic are also accessible from Cap-Haitien on the north coast of Haiti. Windward Pass to the northwest of the island — separating Haiti from Cuba — provides a passage for some whale species, including some sperm whales. Haiti has 1,500 kms of coastline.

At present there are few diving and marine nature cruises or even charters taking place in Haitian waters, so there is little available even to start an industry. As well, the inshore waters are suffering from pollution and overfishing, and while there are some general laws applying to fishing, navigation and marine pollution, they are mostly not enforced.

Since 1995, Jean Wiener, a US-trained marine biologist from Haiti, has worked to bring Haiti's nearshore waters and beaches back to life. Setting up the Foundation for the Protection of Marine Biodiversity (FOPROBiM), he has raised money from UNESCO's platform for Environment and Development in Coastal Regions to create a remarkable outreach education programme that works hand-in-hand with fishermen and local people. The hope is that this may lead to appreciation of the local marine waters.

The Centre de Recherches et de Sciences Océanographiques (IRSO) conducts studies of coastal resources and has spent parts of the last four years evaluating the future potential for marine ecotourism around Haiti. In the course of their research, they have frequently encountered bottlenose and other dolphin species, sometimes in large schools, as well as manatees and occasionally whales. According to IRSO director Ernst Wilson, at present there is no conviction or political view in Haiti that marine ecotourism is worth supporting or developing. Therefore, whale watching potential at present is minimal, but it could certainly be developed in future. Marine ecotourism could be a valuable way to foster marine conservation and bring income to local communities.

Acknowledgments: Ernst Wilson, Directeur IRSO, Port-au-Prince, Haiti; L'Homme 1999, CTO 1997.

6. Jamaica

Population: 2,553,400.
Land area: 11,424 sq km.
Tourist arrivals by air: 1,192,194 (+2.6% on prev. yr.)
Tourist arrivals by cruise ship: 711,699 (+8.2% on prev. yr.)
Total Tourist Expenditures: \$1,131.0 million USD.
Tourism Budget: \$33.9 million USD.
GDP at factor cost: \$6,221.0 million USD.
1994 figures on whale watching: Nil.
1998 figures on whale watching: Nil.
Whale-watching ports (current or potential): Negril, Port Antonio, Black River, Montego Bay Marine Park.
Land-based viewing sites: Limited information.
Whale-watching potential: Moderate.
(Figures above are latest figures for 1997, except as noted.)

Jamaica is the third largest island in the Caribbean, after Cuba and Hispaniola. It measures approximately 150 miles from east to west and is 20-50 miles wide. An independent country with a distinctive character and flavour all its own, Jamaica has made major contributions to world music (reggae), food (Blue Mountain coffee), and many other aspects of culture. It also has many endemic animal and plant species including 27 unique birds, 20 lizards, and more than 784 flowering plants, but it has been slow to declare protected areas and address environmental problems (World Resources Institute 1993). The tourism industry, the largest industry and main source of foreign exchange, is well established and extremely large — the Caribbean's fifth largest in total expenditures, with the fourth largest number of tourist arrivals and the sixth highest number of visiting cruise passengers. Most of the tourism development has been aimed at the upper end of the market, but there is growing support and recognition of the importance of ecotourism, particularly through lodges and facilities for hikers and backpackers such as in the Blue Mountains.

In June 1992, the Natural Resources Conservation Authority Act established a regulatory body for practical environmental management in Jamaica. The regulatory body's mandate is to promote public awareness of Jamaica's ecological systems; to manage the national parks, marine parks and protected areas; and to promote public awareness of Jamaica's natural wonders and its ecological systems.

The establishment of the 10-square-mile (26 sq km) Montego Bay Marine Park in 1990 has been a significant first step for marine ecotourism. The park supports outstanding mangroves, seagrass beds and coral reefs. In this marine protected area located adjacent to the most popular area of Jamaica (40% of visitors stay in Montego Bay), diving is encouraged but fishing, boating and other watersports are restricted to certain areas. Bottlenose dolphins and pilot whales are sometimes seen within the park and also in the surrounding areas, especially late in the year when seawater temperatures drop a little. There are marine nature cruises in the park, but cetaceans are not thought to be predictable enough for dedicated dolphin-watch tours.

In the early 1990s, Hal Whitehead found sperm whales and various dolphins in waters close to the western end of the island in May. He had suggested the possibility of whale watch day tours out of Negril, but stressed that more research needed to be done to determine the regularity of sightings.

In February 1995, Jenny Lonsdale heard reports of whale and dolphin sightings off the west coast from Negril. At the Paradise Beach Hotel, where she was staying, the hotel owner said that he saw sperm whales when taking people out sportfishing. Other fishermen and marine tour boat owners also commonly saw the whales. On a pilot trip, she and a group of family and friends found sperm whales just beyond the main reef west of Negril, less than a mile (a half hour) from port and still within sight of the shore. The whales were mothers and calves. In an hour and a half of whale watching, nine sperm whales were seen.

There are certainly other potential areas around Jamaica that could be investigated for whale and dolphin watching possibilities. In the southwest, from Black River, South Coast Safaris Ltd. operates Black River cruises and boat tours along the coast which include guided flora and fauna trips. Better scuba diving in Jamaica is generally found off the north coast from Negril east to Ocho Rios; the operators range from those associated with the luxury all-inclusive hotels to small local diving operations.

In the northeast, Port Antonio offers a good diving and sailing base as well as probably the best place for deep sea fishing off Jamaica, according to guidebook author Steve Cohen. Only a half mile from shore (1 km), the sea drops off more than 600 feet (183 m). The tourism infrastructure is much less developed here than in the rest of the island, so there are fewer people on the water, and facilities are reasonable. However, there are few reports of cetaceans — it would be necessary to do a year-round cetacean survey to see what is available and feasible in terms of distance, weather and water conditions.

Negril, with its long emphasis on boating and its fortunate proximity to the sperm whales, is probably best suited to future whale and dolphin watching consideration. As Negril has developed, it has metamorphosed from rows of dugout canoes along the coast to runabouts, trolling canoes and, more recently, the larger sports fishing vessels more suitable to whale watching. The smaller boats are still around, however, and any whale watch proposal would need to consider the implications of allowing too many boats on the water out with the whales — both from the human safety point of view as well as the potential for harassing the whales.

To develop whale or dolphin watching in Jamaica, it will be absolutely necessary to put in place a restricted permit system for operators and regulations, perhaps modelled after New Zealand, where the government has been able to keep the growing industry from harming whale or dolphin populations (see Constantine 1999). Without advance thought of some of the potential problems, serious difficulties or even disasters could result.

The long-term tourism prospects for Jamaica are almost aggressively rosy, as predicted by the government. As of January 1999, a 3-4 percent a year increase in visitor arrivals is being predicted up to the year 2002 which would produce industry earnings of \$1.5 billion USD. Building projects during that period should produce another 2,750 hotel rooms. The US is Jamaica's main tourism market. In a press conference, Francis Tulloch, Jamaica's Tourism Minister, said that the growth could be even greater 'if we are able to fix the problems now facing us.' Problems include harassment of visitors, product development and improved marketing. It will also be crucial to get more visitors staying overnight or for several days. As of 1997, 37% arrived on cruise ships, not staying over night. Those that stay over night spend much more — on hotel rooms, restaurants, entertainment, souvenirs, and other activities. Whether whale and dolphin watching will be even a small part of this rosy future remains to be seen.

Acknowledgments: Hal Whitehead (Dalhousie University), Leslie Walling (Montego Bay Marine Park), Jennifer Lonsdale, Kate O'Connell, World Resources Institute 1993, Cohen 1997, CTO 1997. Francis Tulloch comments were reported in the *Observer*, Jan. 18, 1999. Economic data partly from Omri Evans article 'The economic significance of tourism in Jamaica.'

7. Cayman Islands (UK)

Population: 35,900.
Land area: 260 sq km.
Tourist arrivals by air: 381,188 (+2.1% on prev. yr.)
Tourist arrivals by cruise ship: 865,383 (+12.2% on prev. yr.)
Total Tourist Expenditures: \$493.0 million USD.
Tourism Budget: \$21.6 million USD.
GDP at factor cost: \$710.5 million USD.
1994 figures on whale watching: Nil.
1998 figures on whale watching: Nil.
Whale-watching ports (current or potential): Limited information.
Land-based viewing sites: Limited information.
Whale-watching potential: Minimal.

(Figures above are latest figures for 1997, except as noted.)

The Cayman Islands, located due south of Cuba, is a dependent territory of the UK.

The three islands of Grand Cayman, Little Cayman and Cayman Brac cover a total area of 100 square miles (260 sq km).

Tourism, the main industry in the islands, has been growing steadily in recent years, with mainly American tourists. Cruise ship passenger arrivals reached 866,600 in 1997, 12% up on the previous year and a figure that was the fifth highest in the entire Greater Caribbean. Tourist arrivals by air were 381,200 and total expenditures were \$493 million USD. All the 1998 figures are not in yet but it may be a record year for the islands.

In recent years, whales (probably sperm whales) and various dolphins are being reported more often around the Cayman Islands, but it is not considered regular enough to warrant offering whale watch tours. It is possible that survey work could turn up some accessible populations, but no such work has been done in Cayman Islands waters to date. There are considerable diving and yachting opportunities, and a well developed tourism infrastructure to support the further development of marine tourism.

Acknowledgments: L. Angela Martins (Director Tourism, Cayman Islands); Government House (through MAFF, UK), CTO 1997.

8. Puerto Rico (USA)

Population: 3,806,000.

Land area: 9,065 sq km.

Tourist arrivals by air: 3,378,514 (+8.0% on prev. yr.)

Tourist arrivals by cruise ship: 1,236,367 (+20.6% on prev. yr.)

Total Tourist Expenditures: \$2,125.0 million USD.

Tourism Budget: Not reported.

GDP at factor cost: \$48,102.1 million USD.

1994 figures on whale watching: Minimal.

1998 figures on whale watching: 5,000 people and total revenues of \$150,000 USD; unknown number of land-based whale watchers (thousands?) (prov.)

Whale-watching ports (current or potential): Rincón, Aguadilla, Mayagüez, Puerto Real (Cabo Rojo).

Land-based viewing sites: Punta Higuera Lighthouse at Parque el Faro (Lighthouse Park), hills or high points around Aguadilla and Rincón.

Whale-watching potential: Moderate to considerable.

(Figures above are latest figures for 1997, except as noted.)

Puerto Rico is a commonwealth territory of the United States with a strong Spanish history. It is located about 1,000 miles (1600 km) southeast of Miami between the Dominican Republic to the west and the US Virgin Islands to the east. Slightly smaller than Jamaica, it is 110 miles (153 km) from east to west and 35 miles (58 km) wide. With its old volcanic mountains long given over to agriculture, Puerto Rico has a small array of nature reserves. Less than 1 percent of the island today is virgin tropical rain forest, though it is possible to see some examples of protected forest, including the 28,000-acre (11,000-hectare) El Yunque rain forest near San Juan, the capital. San Juan alone has a metropolitan area that covers 300 square miles (115 sq km).

For many visitors, particularly from the United States, Puerto Rico provides their introduction to the Caribbean. It is easily accessible to North American and European visitors on non-stop flights. It has a vast and varied tourism infrastructure with every kind of accommodation and tourist facility. As of 1997, the Puerto Rican tourism industry was exceptionally buoyant and it led the Caribbean in number of tourist arrivals (3.4 million — up 8% on the previous year) and total expenditures (\$2.1 billion USD). It was third in cruise passenger arrivals, with 1.2 million passengers, up 21% on the previous year. Some 22% of all tourist arrivals to the Caribbean go to Puerto Rico. With such a huge percentage of the Caribbean tourism market, tourism is a big part of the Puerto Rican economy, but manufacturing for export (textiles, clothing, electrical and electronic equipment, chemicals and pharmaceuticals) dominates the economy, followed by agriculture. The Puerto Rican

GDP, at \$48 billion USD, is more than three times that of the Dominican Republic, which has the second highest GDP in the Caribbean.

Only a few years ago, commercial whale watching was not thought to be possible or at least practical from Puerto Rico. Although it was known that some humpback whales were wintering off the west coast of Puerto Rico, it was a comparatively small portion of the numbers found north of the Dominican Republic. Moreover, it was felt that the typical Puerto Rican tourist would be too busy shopping, going to the beach, or doing other things, and certainly would not want to venture out in a boat in possibly rough seas to try to find whales. On top of that, Rincón, the main town, has a poor harbour for launching boats larger than 20 feet long (6 m).

But in the mid 1990s, whale watching suddenly started to take off from the west coast of Puerto Rico. Diving and other small boats were used out of the ports of Mayagüez and Aguadilla, as well as Rincón. Unfortunately, the whale watching was *ad hoc*, sometimes without adequate safety provisions and completely unregulated. Reports of whales would lead to tours being instantly offered and boats would steam out to find some whales. By 1996, it was felt that the whale watching was a little too opportunistic, and in order to regulate the fee-charging boats as well as private charters and other boats, there should be regulations. A local NGO, the Puerto Rican Ecological League of Rincón (Liga Ecológica Puertorriqueña de Rincón) played a primary role in working for the protection of the humpback whales and for the improvement of the educational provisions. Enacted on 27 June 1997, these regulations (see below) have placed whale watching on a sounder basis, recognising that the humpbacks on their mating and calving grounds need to be protected too. Since the guidelines were passed, however, only one boat operator has officially applied for a whale-watch permit — the *Viking Starship* (see below). Instead, the local captains offer diving, fishing, and sightseeing tours — which might include whales. There are six or seven dive operations in Rincón and Aguadilla that are among those boats which in the winters of 1998 and 1999 have continued to do this 'incidental whale watching'. This may in effect help to regulate the intensity of whale watching in this area, but it would be best if there were a more forthright approach to whale watching. However, it must be taken into account that the permits, particularly for smaller boats/operations, can be difficult and time-consuming to obtain, with various certifications and inspections needed, as well as comprehensive insurance. The effect of the regulations, in Puerto Rico, may be to restrict whale watching to operations with substantial backing, using mainly larger ships.

At the same time as the boat-based watching has expanded, land-based whale watching also started to grow in popularity. The prime site for this is near Rincón on the westernmost point of the island. The Punta Higuera Lighthouse, built on a cliff and surrounded by Parque el Faro (Lighthouse Park), was restored in 1993, and offers stunning panoramic views over the Atlantic and the Caribbean (Mona Passage). Originally, tourists came to watch the surfers in what is known as one of the prime surfing areas from October to April (site of the world surfing competition in the 1970s). But when the whales are in season (especially January to April), many more tourists are coming to watch humpback whales, with 3-4 times as many people arriving on weekends. Special viewing scopes are available for a small rental but sometimes the whales are even seen in the surf or just beyond it. At times, the bottlenose dolphins can be seen as well. Visitors to Parque el Faro, according to the mayor of the city of Rincón, total half a million people a year. During the 10-14 week prime humpback whale period in winter, therefore, there may be 125,000 visitors to the park. The best rough estimate is that 'thousands' of these visitors watch the whales from the lighthouse during the winter when the whales can be seen not always but on most days. In 1996, special excursions to watch whales and visit the park on day trips brought busloads of visitors from other parts of Puerto Rico. An estimated minimum of 400 people per weekend did land-based whale watching, amounting to 4,000-5,000 total whale watchers in a season. However, this number had tapered off by 1998 and in 1999. Efforts are currently being made to provide more precise ways of counting the whale watchers and evaluating their monetary contribution, but at present (for the 1998 and 1999 seasons) such estimates are difficult to make and are thus not included in the total whale watch figures for Puerto Rico.

Besides those watching from the lighthouse, others watch from coastal villas, hotels, and from the hills above the ocean outside of Rincón along the northwest of the island. Divers and other visitors to Mona Island (Isla Mona) and Desecheo Island (Isla

Desecheo), located in the Mona Passage which separates Puerto Rico from the Dominican Republic, also regularly see the whales and sometimes dolphins from land. On their website, a number of west coast Puerto Rican hotels advertise humpbacks as one of the pleasures of staying on the coast near Rincón. More than anywhere else in the Caribbean, the idea of land-based whale watching has taken off. It is an excellent way for large numbers of people to meet the whales without disturbing them; with careful planning it can also make a solid economic contribution.

From 1994 to 1998, the *Viking Starship*, a large diesel whale watch ship (capacity 300 people) from Long Island, New York, made six trips a week during the winter humpback season of 10-14 weeks (depending on weather and whales). Departing from Puerto Real in the Cabo Rojo area of southwest Puerto Rico, the ship brought people to watch whales off Rincón, as well as visiting Desecheo Island. Approximately 90% of the trips encountered cetaceans. Besides humpback whales, they encountered bottlenose and long-snouted spinner dolphins. They also reported some sperm whales and false killer whales. The tours brought many Puerto Rican school children out to see the whales, charging mainly \$10 USD per student and \$25 USD per adult, plus various concession rates for teachers, seniors, military, etc. Some 14 people plus marine biologist/naturalists were employed on the trips. In 1996 and 1997, approximately 10,000 people per year were going whale watching, slightly more adults than children and concessions. This number declined in 1998 to about 5,000 who spent an estimated \$150,000 USD on the trips including expenses. The venture lost substantial money in 1998 due to poor weather, decreasing tourists to western Puerto Rico, and other business problems. The *Viking Starship* proved to be too large and expensive to run at much less than full capacity, and not enough adult tickets were sold to help pay for the trips. In any case, the tours were discontinued for the 1999 season. It is hoped that a smaller 65-75 foot (20-23 m) boat can be found to continue the trips.

Puerto Rico: Whale watching regulations

These regulations come from the Government of Puerto Rico, Department of Natural Resources and Environment, San Juan, Puerto Rico. Translated into English by Rebecca Tozer (Liga Ecológica Puertorriqueña de Rincón) (Carlson 1998).

Appendix 3 Special Rules for the Observation of Humpback Whales Amendments

Under article 11, clause i of law number 70 enacted on May 10, 1976, the regulations that re in force to regulate the management of vulnerable and endangered species in the Commonwealth of Puerto Rico are amended and added as Appendix 3 of the law. Rules for the protection of the humpback whale (*Megaptera novaeangliae*) and other cetaceans that are vulnerable and in danger of extinction and to regulate the operations of passenger boats for the observation of these marine mammals.

I. Purpose

This rule is adopted with the purpose of protecting the humpback whale (*Megaptera novaeangliae*) and other cetaceans that are vulnerable and in danger of extinction in the territorial waters of Puerto Rico. It is publicly known that the activity of humpback whale watching in the northwest area of Puerto Rico has developed and peaked in the last few years, which could threaten the presence of this marine mammal and other marine mammals in our waters. In addition it can interfere with the behaviour and natural life cycles of these marine mammals.

II. Application and Management

These rules are applicable in the territorial waters of Puerto Rico and its adjacent islands during the entire year.

III. Prohibitions

In addition to the provisions in section 12 of this ruling, it will be illegal for any person to engage in the following activities:

- a. To provoke the whales to change their natural direction, or to provoke the separation of the whales from their group, that might cause them to get lost, or to separate a mother from its calf as a result from interference.
- b. To feed the whales.
- c. To enclose or trap the whales in between boats or crafts impeding their path.
- d. Observing the whales from jet skis.
- e. Observing whales from airplanes at less than 1,000 feet from sea level.
- f. It is prohibited to approach a mother and calf.
- g. It is prohibited to swim or dive near the whales.

IV. Minimum distances for the observation of whales from boats

- a. The minimum distance for observing the whales will not be less than 1000 meters. The motor of the craft will remain in neutral as long as the minimum distance is maintained.
- b. The approach will always be done from the posterior (rear) or by the side of the whales, in parallel position to the last whale and/or slower whale of the group allowing for an area of 180 degrees in front of the whale(s).
- c. Swimmers and divers can get within a minimum distance of fifty (50) meters.
- d. Scientific investigators, with federal and state permits in non-commercial vessels will be able to approach the whales at a distance less than the one stipulated as long as they comply with the established rules in their permits.

V. Measures for Management

- a. One boat is permitted to remain a distance of 100 meters (not less than 100 meters), and not more than two boats at a distance of no less than 400 meters at the same time.
- b. The time limit is no more than 30 minutes per boat.

VI. Permits

- a. Every owner or operator of commercial boat(s) that is dedicated to transporting passengers in the territorial waters of Puerto Rico with the purpose to observe the humpback whales and other cetaceans that are vulnerable or in danger of extinction must solicit a permit from the Department of Natural Resources and the Environment. The owners or operators of private boats that observe the whales as a pastime are exempt from this requisite, but must obey the rules of the law. The applicants for this permit must provide the following information:
 - b. A copy of their license or permit issued by the Public Service Commission Service to transport passengers (or for the transportation of passengers).
 - c. A copy of the license issued by the Coast Guard of the United States of America certifying the vessel fit to transport passengers.
 - d. Fill out the application for the permit to observe humpback whales. This permit is good for one year only.

VII. Penalties

Any person that violates any of these rules according and included in this appendix will be penalized under section 18.00 of the Regulations to Manage the Species that are Vulnerable and Endangered in the Commonwealth of Puerto Rico.

This regulation will be enacted immediately, conforming to the section 2.8 a) (1) Law number 170, 12 August 1988, as amended.

Approved in San Juan, Puerto Rico, today, the 27 of June 1997.

Acknowledgments: Carole Carlson, Hector Colón and Rebecca Tozer (Liga Ecológica Puertorriqueña de Rincón), Antonio Mignucci, Mignucci 1989, Mignucci-Giannoni 1998, Erdman 1970, Taruski and Winn 1976, Harry Ruiz, Joan Pavesi, CTO 1997.

9. US Virgin Islands (USA), including the islands of St. Thomas, St. John, and St. Croix.

Population: 116,820.
Land area: 342 sq km.
Tourist arrivals by air: 411,400 (-10.4% on prev. yr.)
Tourist arrivals by cruise ship: 1,618,956 (+23.0% on prev. yr.)
Total Tourist Expenditures: \$601.2 million USD.
Tourism Budget: \$11.9 million USD.
GDP at factor cost: Not reported.
1994 figures on whale watching: 500 people and total revenues of \$80,000 USD.
1998 figures on whale watching: 75 people and total revenues of \$7,500 USD (prov.)
Whale-watching ports (current or potential): Coki Bay and Red Hook on St. Thomas; Cruz Bay, Trunk Bay, and Cinnamon Bay on St. John.
Land-based viewing sites: Along high ridge on north side of St. Thomas.
Whale-watching potential: Moderate.
(Figures above are latest figures for 1997, except as noted.)

The U.S. Virgin Islands, a territory of the USA, consists of three main islands: St. Thomas, St. Croix and St. John. Each operates its own brand of very successful Caribbean tourism: St. Thomas, the urban, shopping, and Carnival experience; St. Croix, the modest, laid back historical and authentically Caribbean experience; St. John, for the nature lover with everything from camping to exclusive resorts. All have great beaches and diving and yachting opportunities, although St. Croix has the diving edge with its superb underwater marine park around Buck Island.

The U.S. Virgin Islands, mainly St. Thomas, are awash with cruise ship passengers, some 1.6 million of them a year, the second highest number in the Caribbean. This is four times the number of tourist arrivals, some 411,400 in 1997 — still a substantial number.

Spinner, bottlenose and other dolphins are seen at times by diving operations and yachtsmen, including fairly often from the trip between St. Thomas and St. Croix. There are some reports that bottlenose dolphins are more common in summer and are seen inshore. Nevertheless, the main potential attraction here to date has been the wintering humpback whales from January to March.

For nearly 10 years, whale watching tours have been offered by the Environmental Association of St. Thomas and St. John (EAST), based in St. Thomas. This nonprofit organisation coordinates whale watching between January and March, offering several trips a year aboard a catamaran to see humpback whales north of St. Thomas, especially in the areas of the North Drop, Congo and Lovango Cays where most of the sightings have occurred.

In the early 1990s, a local yacht based out of the Frenchman's Reef Hotel, regularly took people whale watching, but the trips are no longer offered. Several other St. Thomas companies also offered infrequent tours which have been discontinued.

St. Thomas is one island in the Caribbean that has been well surveyed for cetacean sightings at least during the winter when the humpbacks are around. Rafe Boulon, Chief of Environmental Education for the Division of Fish and Wildlife, has managed this as a volunteer effort and has detailed records from 1981 to 1996. In 1997 and 98, he was unable to do the surveys, but the whale activity has continued fairly steadily. Besides humpback whales, Boulon reports occasional pilot whales (especially in October-November) and, once in a while, sperm whales.

Some of Boulon's work has taken place from land, and the vistas from the ridge along the high cliffs on the north side of St. Thomas remain a good place to spot humpbacks on a clear day.

On St. Croix, which is 37 miles (60 km) south of St. Thomas and St. Vincent, there have been boat tours including dolphins offered by Big Beard Charters and others. These are marine nature tours set up mainly around the Buck Island marine sanctuary but which also visit other areas around the island, seeing sharks and other marine fauna. The best season for these trips appears to be early spring to late summer.

Expansion based on marine ecotourism which includes cetaceans but does not entirely rely on them may well be possible. The tourism infrastructure is large and well developed on all three islands, and there are numerous boats of all sizes available for charter. If more cetaceans can be seen in future, this would be one of the best places to advertise tours. However, at present, whale watching is too seasonal and sightings may be a little bit too sporadic to support a full-time operation.

Acknowledgments: Rafe Boulon (Division of Fish & Wildlife, St. Thomas), A. Levy (Coral World), Gloria Gumbs (USVI Dept. of Tourism), Grethelyne Piper (Executive Director, EAST), Erdman 1970, CTO 1997.

10. British Virgin Islands (UK), including the islands of Tortola, Virgin Gorda, Great Tobago Island, and Jost Van Dyke.

Population: 19,030.
Land area: 150 sq km.
Tourist arrivals by air: 244,318 (+0.3% on prev. yr.)
Tourist arrivals by cruise ship: 104,864 (-34.3% on prev. yr.)
Total Tourist Expenditures: \$210.2 million USD.
Tourism Budget: \$5.3 million USD.
GDP at factor cost: \$274.9 million USD (1995).
1994 figures on whale watching: 300+ and total revenues of \$35,000 USD.
1998 figures on whale watching: 200 and total revenues of \$14,000 USD.
Whale-watching ports (current or potential): Brewer's Bay and Beef Island Airport on Tortola; Little Harbour on Jost Van Dyke; and the north and west side of Virgin Gorda.
Land-based viewing sites: Limited information.
Whale-watching potential: Moderate.
(Figures above are latest figures for 1997, except as noted.)

The British Virgin Islands, a largely self-governing British dependent territory, include about 60 islands, islets and cays, 16 of which are inhabited. They are situated at the eastern end of the Greater Antilles, a few miles west of the northern end of the Lesser Antilles, or Eastern Caribbean. The main islands of Tortola, Anegada, Virgin Gorda and Jost Van Dyke are covered in steep, thickly wooded hills, surrounded by coves and beaches.

Compared to the US Virgin Islands, the BVIs are a little off the beaten track for international visitors, with less direct transport and one quarter the number of hotel rooms and only 15% the number of total visitors found on the American islands. BVI numbers are more in line with those in the eastern Caribbean. Nevertheless, tourism represents about 75% of the gross domestic product of the BVIs. Financial services, fishing and rum distilling are secondary industries.

Humpback mothers and calves, as well as singing males and potential mating groups, come to Virgin Bank which is located within a long barrier reef that surrounds the British Virgin Islands and part of the American Virgin Islands. The season is late December to March. The main area where the whales are found is 3 to 12 miles (5 to 19 km) north of Tortola and Virgin Gorda. According to David Mattila and Steven Katona, who studied and mapped the area for humpback whales in the mid-1980s, about 60 to 100 humpbacks come to the waters of the British Virgin Islands.

In the past, a limited amount of whale watching, aboard charter boats from Tortola and by air charter out of Beef Island Airport has occurred most winters. Close to 100 people a year, about 15 of them per year by air, had been going whale watching from the BVIs in the early 1990s, but this had mostly dried up by the late 1990s.

Still, every year for the past 15 years, Paul Knapp Jr. has been taking whale watchers out to *listen* to humpback whales from late December through March. Using a 13-foot inflatable as well as a 30-foot fiberglass sloop, he invites people to venture out a few miles in the bay from Brewer's Bay on the north side of Tortola. Once offshore, he drops a hydrophone overboard, not even bothering to look for whales. His superb sound

system allows him to hear and record the singing of male humpback whales up to 10 miles away (16 km). For the past eight years, he has taken about 200 people a winter. He doesn't charge, but accepts donations for fuel and sells superb cassettes and CDs of the whales singing. This form of 'whale watching' expands the possibilities as it is much easier to find a whale using hydrophones and to appreciate it sonically, than it is to get close enough to see them. Also, this way, whales can be enjoyed for hours without encroaching on them at all — and even on days when rough seas or wind make whale watching difficult. This idea has yet to be copied in other parts of the world, but might well expand the possibilities in other corners of the Caribbean. With their detailed, changing songs, humpbacks offer the best opportunity for whale listening tours, though orcas, sperm whales and a number of other whale species also have intriguing sounds. As word of Paul Knapp's 'listening tours' has spread, he has found that a few people every year travel to the BVIs specifically to go 'whale listening'. With demand for the tours starting to increase in 1999, he may start charging for the trips.

Despite the smaller numbers of tourists and facilities available, the BVIs offer a world class destination with numerous boats and charters and sizeable diving and fishing charter companies that could expand into whale or dolphin watching. For humpbacks, these might have to be full day trips to the wintering grounds north of Tortola. At present, there is no perception that the market for such tours exist. Such a market might well have to be tested and even created. First of all, more work would need to be done to determine if the humpback whale sightings are regular enough in winter, or if dolphins or other marine nature features might serve to help build the tours. One problem may be simply that the open waters around the islands are a little too exposed for mass tourism; it may still be of interest to keen whale watchers. The fact that listening tours were created in the BVIs, even though these are only modestly commercial, shows that there are possibilities.

Potential ports for getting to the humpbacks include Brewer's Bay, from the north side of Tortola, and from the north and west side of Virgin Gorda, as well as Little Harbour on Jost Van Dyke. The capital and business centre of the territory, Road Town, located on the south side of Tortola, has the largest harbour and number of boats, although the sailing/ motoring time would be considerably longer since most of the humpbacks are off the north side of the islands. However, dolphins may be able to be seen enroute. Whale watching might also be combined with diving or sightseeing trips to Horseshoe Reef, a massive reef system on the south side of Anegada Island.

Meantime, since 1992, the BVI Conservation and Fisheries Department has asked residents and visitors to report all humpback and other whale sightings as part of a proposal to set up a marine conservation area north of the islands. The department has also set up a network to help stranded cetaceans and offered a training course in rescue. The National Parks Trust, based in Road Town, Tortola, has collected documentation on humpback whales. It has contributed background information, including the printing of valuable educational materials, to help boaters watch whales more responsibly. And then there is Paul Knapp, the 'whale listening guru', who has become a superb naturalist on his own kind of tours, and is even now, as I write this, planning his 16th whale listening season in Tortola.

British Virgin Islands: Whale watching guidelines

The National Parks Trust in the BVIs distributes a brochure which explains that 'special rules exist for anyone seeing whales in the BVI because this is a breeding ground and the young calves and mothers are particularly sensitive to disturbance. The rules are designed to protect this endangered species and to ensure that people watch whales in safety.' Vessels should observe the following restrictions (Anon. 1990, Carlson 1998):

1. Boats should not approach nearer than 100 yards of a whale. This also applies to swimmers and divers who should not get into the water with whales (being so close can disturb whales and may be dangerous).
2. If whales approach within 100 yards of your vessel, put engine in neutral until whales are observed at the surface, clear of the vessel. (This avoids the risk of injury to the whale or of damage to the vessel by a frightened whale.)

3. Avoid speeds over 10 knots or sudden changes in speed or direction within 1500 feet of a whale; do not travel faster than the slowest whale when paralleling or following them. (Whales are easily startled by unfamiliar objects, many have come from areas where contact with boats is rare and some may even have been hunted.)
4. Do not allow your vessel to cause the whale to change direction. (Disturbance has driven whales away from critical habitats.)
5. Do not call other boats to a whale and if more than one boat is present ensure that the whale is free to move in any direction. (Too many boats confuse whales; an arc of 180 degrees should always remain open in front of the whales.)
6. Never allow a boat or person to come between a mother and a calf. (Disruption of parental care may reduce a calf's chance of survival and mothers may be aggressive).
7. In all cases, do not change the normal behavior or movement of whales and always avoid physical contact.

Acknowledgments: Robert L. Norton (National Parks Trust), Bertrand Lettsome (Chief Conservation & Fisheries Officer, BVIs), Overing 1992, Overing and Lettsome 1993, Paul Knapp, Jr., David Mattila, CTO 1997.

11. Anguilla (UK)

Population: 10,900.
Land area: 91 sq km.
Tourist arrivals by air: 43,181 (+15.2% on prev. yr.)
Tourist arrivals by cruise ship: None.
Total Tourist Expenditures: \$57.2 million USD.
Tourism Budget: \$697,000 USD.
GDP at factor cost: \$71.1 million USD.
1994 figures on whale watching: Nil.
1998 figures on whale watching: Nil.
Whale-watching ports (current or potential): Limited information.
Land-based viewing sites: Limited information.
Whale-watching potential: Minimal.
(Figures above are latest figures for 1997, except as noted.)

Anguilla is only 35 square miles (91 sq km) and is relatively flat and low-lying (highest point, Crocus Hill, is only 213 feet high (65 m). A British dependent territory, Anguilla is the most northerly of the Leeward Islands in the eastern Caribbean. Although located only 5 miles (8 kms) north of St.-Martin, Anguilla could not be much more different from St.-Martin's bustling shopping centres. Anguilla's beautiful beaches and new hotels are popular with the well-to-do travellers who like things quiet and more laid back.

In the early 1980s, Anguilla had almost no visitor facilities but a decision was made to develop tourism especially luxury hotels and villas. There are also some small and locally owned guest houses. Diving dates from the late 1980s and is oriented toward diving on wrecks, seven of which have been sunk as artificial reefs in the past decade. Recently, a marine parks system has been established in part to help manage the diving tourism and keep the marine waters relatively pristine.

Between February and April, but especially in March, some humpback whales navigate the narrow strait between Windward Point, just past the fishing village of Island Harbour, and the uninhabited Scrub Island. Humpbacks are also reported off the northwest coast on the other side of the reef beyond Sandy Island.

At present whale watching is not considered a potential industry due to the sporadic nature of the sightings. No dolphin or other cetacean surveys have been done. In any case, the tourism base exists to support whale watch tourism perhaps most sensibly to be considered as part of marine nature tourism.

The coat of arms of Anguilla is worth noting as cetaceans feature prominently: three orange dolphins on a white background arranged in a circular design with blue wavy

water below it. The coat of arms is also on the blue flag of Anguilla, along with a representation of the British flag.

Acknowledgments: Anguilla Department of Tourism, Alyson Jones (Government House, Anguilla), Ministry of Agriculture, Fisheries and Food (MAFF, UK), CTO 1997.

12. Netherlands Antilles, including St. Maarten, Saba, St. Eustatius, as well as Aruba, Bonaire, and Curaçao

The 'Dutch Antilles' comprise six islands: three of them east of the British Virgin Islands in the northern part of the Eastern Caribbean, part of the Windward Islands. The other three are far away to the south, in the Leeward Islands off the coast of northwestern Venezuela in South America. The three northern islands are Saba, St. Eustatius, and St. Maarten (shared with the French territory of St.-Martin). The southern islands are Aruba, Bonaire, and Curaçao, the so-called ABC islands. All are classified as an autonomous region of the Netherlands except Aruba which separated in 1986 and is in the process of becoming an independent state. The seat of the Dutch Antilles government for the other five islands is in Willemstad, Curaçao.

Summarising the whale and dolphin watching possibilities in the Dutch Antilles, the northern islands seem to offer less potential than the ABC islands. Humpback whales are not seen often enough to support whale tourism in the northern islands and dolphin sightings are definitely more common in the ABCs. Basic surveys and feasibility studies would need to be undertaken before whale or dolphin watching could be considered, but there is a good infrastructure and apparently a potential market for such tourism, based on the excellent marine protected areas, the diving and yachting interest in these islands.

St. Maarten

<p><i>Population:</i> 38,100. <i>Land area:</i> 34 sq km. <i>Tourist arrivals by air:</i> 439,234 (+20.4% on prev. yr.) <i>Tourist arrivals by cruise ship:</i> 885,956 (+34.8% on prev. yr.) <i>Total Tourist Expenditures:</i> \$378.5 million USD (includes Saba and St. Eustatius). <i>Tourism Budget:</i> Not reported. <i>GDP at factor cost:</i> Not reported. <i>1994 figures on whale watching:</i> Nil. <i>1998 figures on whale watching:</i> Nil. <i>Whale-watching ports (current or potential):</i> Limited information. <i>Land-based viewing sites:</i> Limited information. <i>Whale-watching potential:</i> Minimal. <i>(Figures above are latest figures for 1997, except as noted.)</i></p>

Most of the tourists to the northern Dutch Antilles (95%) go through the gateway of St. Maarten. Partly this is because of the huge cruise ship port (the fourth largest number of cruise ship arrivals in the Caribbean) and a major international airport. Most of the tourism figures for St. Maarten include figures for Saba and St. Eustatius. Taken together, in 1997 there were 439,200 tourist arrivals, 886,000 cruise ship visits, and total expenditures of \$378.5 million USD.

St. Maarten occupies the bottom half of the island it shares with St.-Martin, a French overseas territory. St. Maarten has the Caribbean side which is more sheltered for offshore excursions. However, the focus in St. Maarten, as in St.-Martin, is on the beach and shopping experience. There are at least two companies offering regular 90-minute day cruises to St.-Barthélemy departing from Philipsburg, which in winter pass through some humpback whale areas enroute. But any possibility for whale and dolphin tourism from St. Maarten would have to be researched with offshore surveys. Certainly, the large tourism base and solid infrastructure are well established.

Saba

Population: 1,500.
Land area: 13 sq km.
Tourist arrivals by air: 10,556 (-7.9% on prev. yr.)
Tourist arrivals by cruise ship: None.
Total Tourist Expenditures: See St. Maarten.
Tourism Budget: Not reported.
GDP at factor cost: Not reported.
1994 figures on whale watching: Nil.
1998 figures on whale watching: Nil.
Whale-watching ports (current or potential): Limited information.
Land-based viewing sites: Limited information.
Whale-watching potential: Minimal to moderate.
(Figures above are latest figures for 1997, except as noted.)

The smallest of all the Dutch Antilles at 5 square miles (13 sq km), Saba has low key tourism on a rocky volcanic island and is one of the world's top scuba diving destinations. In 1997, Saba received 10,600 visitors, up 7.9% on the previous year. Saba's waters have been protected in a model marine reserve since 1987 and are largely unspoilt and treasured by divers. According to Tom Van't Hof, who has worked to help set up and manage the marine reserve, the diving boats report occasional sightings of various tropical dolphins and sometimes humpbacks in late winter. There are some marine nature and sightseeing cruises offered out of Fort Hill on Fort Bay, from the southwestern shore of Saba. These tours could include dolphins, although dedicated tours based on dolphin or whale tourism from Saba do not seem possible at present.

St. Eustatius

Population: 1,960.
Land area: 27 sq km.
Tourist arrivals by air: 8,533 (-3.7% on prev. yr.)
Tourist arrivals by cruise ship: None.
Total Tourist Expenditures: See St. Maarten.
Tourism Budget: Not reported.
GDP at factor cost: Not reported.
1994 figures on whale watching: Nil.
1998 figures on whale watching: Nil.
Whale-watching ports (current or potential): Limited information.
Land-based viewing sites: Limited information.
Whale-watching potential: Minimal.
(Figures above are latest figures for 1997, except as noted.)

Popularly called Statia, Sint Eustatius is a tiny 8-square-mile (21 sq km) volcanic island located SE of Saba, between Saba and St. Kitts and Nevis. The usual gateway is through St. Maarten, 38 miles (61 km) to the north. Statia is even more tranquil and off the beaten track than Saba, and with a less developed tourism infrastructure. In 1997, Statia received 8,500 tourists, up 3.7% on the previous year. Like Saba, Statia also has excellent diving though it is focused toward the offshore wrecks. As of 1998, the local government began setting up mooring buoys to establish a national marine park, following Saba's example. As with St. Maarten and Saba, cetacean surveys would be needed first before such tourism could be considered.

Aruba

Population: 89,000.
Land area: 188 sq km.
Tourist arrivals by air: 649,893 (+1.4% on prev. yr.)
Tourist arrivals by cruise ship: 297,480 (-6.0% on prev. yr.)
Total Tourist Expenditures: \$666.1 million USD.
Tourism Budget: \$212,700 USD.
GDP at factor cost: \$1,556.4 million USD.
1994 figures on whale watching: Nil.
1998 figures on whale watching: Nil.
Whale-watching ports (current or potential): Limited information.
Land-based viewing sites: Limited information.
Whale-watching potential: Minimal.
(Figures above are latest figures for 1997, except as noted.)

Aruba is one of the powerhouses of Caribbean tourism, especially considering its modest size of 73 square miles (188 sq km), half the size of either Grenada, or St. Vincent & the Grenadines. Aruba has the seventh highest tourism expenditures in the Caribbean at \$666 million USD. It received 649,900 tourist arrivals in 1997, along with 297,700 cruise ship passengers. The tourists come largely from North America and nearby Venezuela, and with its relatively high standard of living, it would be hard to find a place where tourism is embraced with such enthusiasm.

Aruba is only 15 miles (24 km) north of the Venezuelan coast and is the farthest west of the Lesser Antilles group. It's a largely flat and dry island, and is located outside of the main 'hurricane belt', with few tropical storms in summer and early autumn.

Aruba has good diving opportunities mixed in with all the superb beaches, the shopping, casinos, and developed resorts.

In terms of cetaceans, Aruba's location off the Venezuelan coast would suggest Bryde's whales, bottlenose and various tropical dolphins such as Atlantic spotted dolphins. However, there is very little cetacean information on Aruba. Strandings have included Cuvier's beaked whales, but not to the extent as on Curaçao. There may well be cetacean opportunities within range of Aruba, but boat surveys would need to be done.

Bonaire

Population: 15,000.
Land area: 288 sq km.
Tourist arrivals by air: 62,776 (-3.5% on prev. yr.)
Tourist arrivals by cruise ship: 22,028 (+47.5% on prev. yr.)
Total Tourist Expenditures: \$42.2 million USD.
Tourism Budget: \$1.7 million USD.
GDP at factor cost: Not reported.
1994 figures on whale watching: Nil.
1998 figures on whale watching: 200 (not dedicated) and minimal total revenues.
Whale-watching ports (current or potential): Kralendijk area.
Land-based viewing sites: Limited information.
Whale-watching potential: Moderate.
(Figures above are latest figures for 1997, except as noted.)

Bonaire, by contrast to Aruba, receives roughly 10% the number of visitors. It is one of the least tourist-developed islands in the Caribbean. With its fringing reefs located very close to shore and its exceptionally clear, clean water, full of marine life, Bonaire is consistently in the top 5 or 10 diving locations in the world. The Bonaire Marine Park effectively protects all the surrounding waters of Bonaire up to a depth of 200 feet (60 m), as well as an offshore cay called Klein Bonaire, with some 86 marked dive sites. Total size

is 6,400 acres (2,600 hectares). Half of all visitors to Bonaire come for the diving, and they account for more than US\$30 million to the local economy.

Bonaire dive companies report that dolphins sometimes follow the dive boats, but there are no dedicated whale and dolphin tours. One operator reports common and spinner dolphins, but at times there may be bottlenose dolphins (frequently reported on the islands north of Venezuela) or other tropical dolphins (such as spotted or striped). Less commonly seen are pilot whales, pygmy killer whales, and melon-headed whales. Strandings have included beaked whales, but not to the extent as on Curaçao. Best months for sightings have been February through April, but dolphins can show up any time.

At the Black Durgon Inn, located on a cliff above the beach three miles north of Kralendijk in an area called Hato, dolphins are occasionally seen passing close to shore throughout the year, often in groups of 30-50. The dolphins appear typically in the mornings and will return every day for 3-7 days at a time. The divers sometimes swim out from shore to see the dolphins, as shore diving is popular here in any case. When dolphins are sighted by boat enroute to a diving spot, the divers are offered the option of travelling slowly to watch the dolphins play around the boat or trying to enter the water from a distance away to see if the dolphins will approach. At least 200 people a year see or swim with dolphins, but they contribute little to the economy specifically attributable to whale watching since they have come essentially for the diving. However, most who see dolphins say that it was the highlight of their trip.

Bonaire's offshore waters would certainly be worth exploring, particularly for dolphin watching, with cetacean boat surveys. The island's low-key pace and lack of crowds could appeal to the higher value end of the whale and dolphin watching industry.

Curaçao

Population: 153,000.

Land area: 444 sq km.

Tourist arrivals by air: 205,045 (-4.3% on prev. yr.)

Tourist arrivals by cruise ship: 214,685 (+24.1% on prev. yr.)

Total Tourist Expenditures: \$200.5 million USD.

Tourism Budget: \$9.9 million USD.

GDP at factor cost: \$1,534.1 million USD.

1994 figures on whale watching: Nil.

1998 figures on whale watching: Nil.

Whale-watching ports (current or potential): Limited information.

Land-based viewing sites: Limited information.

Whale-watching potential: Moderate.

(Figures above are latest figures for 1997, except as noted.)

Curaçao is situated between its fellow 'ABC Islands' Aruba (to the west) and Bonaire (to the east) and is a 20-minute flight to either. Curaçao's economy depends on oil refining and offshore banking, but tourism is a welcome third industry which continues to grow both in the cruise ship sector as well as air arrivals. Curaçao currently receives about a third or more the number of tourists as Aruba.

Curaçao has excellent beaches, scuba diving, large national parks and is well equipped for a wide range of tourism. The Curaçao Underwater Park, set up in 1983, protects coral reefs on the south side of the island. There are a number of diving, sailing, and other marine tour companies.

Curaçao appears to have the best chance of future whale and dolphin watching activities in the Dutch Antilles, based on recent sightings and strandings. Sightings have included humpback whales (off the coast at Piscaderabaai and St. Michielsbaai), sperm whales (said to frequent the waters between Curaçao and Bonaire), striped dolphins (seas between Curaçao and Bonaire), and spinner dolphins (off SW Curaçao at Santa Cruz). In addition, strandings of whales on Curaçao have included dwarf sperm whales, Gervais' beaked whales, and pantropical spotted dolphins. The diving companies specifically report bottlenose and spinner dolphins along the south coast especially during the months of

February through April, and occasional sightings of pilot whales in November and December.

Acknowledgments: Tom Van't Hof (Saba), Tourism Corporation Bonaire, Debrot and Barros 1994, Kristensen 1979, Jack Chalk (Operations Manager, Habitat Dive Resorts, Bonaire), Al Catalfumo (Black Durgon Scuba Centre, Bonaire), BonBini Divers (Bonaire), CTO 1997.

13. St. Kitts-Nevis (St. Christopher and Nevis) (UK)

Population: 42,600.
Land area: 269 sq km.
Tourist arrivals by air: 88,297 (+4.9% on prev. yr.)
Tourist arrivals by cruise ship: 102,738 (-19.8% on prev. yr.)
Total Tourist Expenditures: \$67.3 million USD.
Tourism Budget: \$257,000 USD.
GDP at factor cost: \$222.1 million USD.
1994 figures on whale watching: Nothing.
1998 figures on whale watching: 50+ (not dedicated) and minimal total revenues.
Whale-watching ports (current or potential): St. Kitts: Basseterre; Nevis: Charlestown and Qualie Beach.
Land-based viewing sites: None.

Whale-watching potential: Moderate.

(Figures above are latest figures for 1997, except as noted.)

St. Kitts-Nevis is a constitutional monarchy within the British Commonwealth, having achieved full independence in 1983. The federation includes the two neighboring islands of St. Kitts (St. Christopher) and Nevis, as well as Sombbrero Island. However, although travel and commerce between the two islands flows easily, most Nevisians would like to be independent from the larger, more populous St. Kitts. Nevis' original participation in the federation was contingent on being able to secede and in 1997, Nevis gave notice that it would be withdrawing.

Located near the north end of the Lesser Antilles, both islands are volcanic and dominated by central, dormant volcanoes with some fertile plains planted in sugar cane on the larger St. Kitts and considerable dry scrublands along the coast.

Some 80% of the people live on St. Kitts where the capital and main port of Basseterre is found. With the ferry link and the chance to visit either island on a day trip, the islands of St. Kitts and Nevis are usually visited as part of the same holiday. Both islands have international airports. Tourism, however, has never attained the glossy high profile achieved in other Caribbean countries. Lightly developed for tourism, these relaxed islands are ideal for a quiet holiday, and retain a character closer to what the Eastern Caribbean was like decades ago. Most of the accommodation is in guesthouses and old plantation greathouses. Tourism is the main industry on Nevis, but on St. Kitts, more people work in agriculture and light manufacturing, especially surrounding the locally grown sugar cane. It is worth nothing that fishermen in St. Kitts consider the whales to be harbingers of good fishing. The tuna, mackerel and other fish seem to be plentiful when whales and dolphins are around.

Although there are no dedicated whale or dolphin watch tours on either St. Kitts or Nevis, whales and dolphins have become a small but growing part of diving or boat trips.

On St. Kitts, Kenneth's Dive Shop reports occasional whale and dolphin sightings, including humpback whales close to the port at Basseterre, and bottlenose and other dolphins inshore. A mile (2 km) west of the islands (on the Caribbean or lee side) near the reefs, yachts, diving and sightseeing boats periodically report bottlenose, spinner, and other dolphins, as well as pilot whales. Access is via companies on the west sides of St. Kitts and Nevis such as from the capitals of Basseterre and Charlestown. Farther offshore, various whales including sperm whales, and humpback whales (January-April) are sometimes seen.

On Nevis, Scuba Safaris at Qualie Beach reports that bottlenose dolphins have been seen often over the past 8 years. One pair, which returns every year, comes close to the dive boats, allowing the divers to swim with them. Recently, the event was captured on video. In mid-April 1999 several pilot whales beached themselves on Nevis.

From St. Kitts, the uninhabited peninsula in the SE of the island has good bird watching especially around the accessible salt ponds which provide feeding grounds for various shorebirds including plovers, oystercatchers, stilts, as well as frigatebirds and pelicans. There are also some rare birds including the recent sighting of the St. Kitts bullfinch, thought to be extinct for decades. Perhaps in future, sea bird and whale/dolphin trips could be developed together. Also, amongst fishermen, there has been some interest in exploring the possibility of dedicated whale or dolphin watch tours.

Acknowledgments: Kenneth's Dive Shop (St. Kitts), Ellis Chaderton (Scuba Safaris Ltd, Nevis), Larry Armony (Brimstone Hill Fortress National Park, St. Kitts), Nathan Gricks, Lesley Suttly, CTO 1997.

14. Montserrat (UK)

Population: 3,000.

Land area: 102 sq km.

Tourist arrivals by air: 5,076 (-41.6% on prev. yr.)

Tourist arrivals (day): 840 (no cruise ship arrivals).

Total Tourist Expenditures: \$5.4 million USD.

Tourism Budget: \$96,000 USD.

GDP at factor cost: \$35.07 million USD.

1994 figures on whale watching: Nil.

1998 figures on whale watching: Nil.

Whale-watching ports (current or potential): No information.

Land-based viewing sites: No information.

Whale-watching potential: Minimal.

(Figures above are latest figures for 1997, except as noted.)

Since Hurricane Hugo's devastations in 1989, Montserrat has suffered major volcanic eruptions dating to July 1995. The south and central part of the island have been devastated including the capital of Plymouth and other small towns. A large percentage of the population of 12,000 in 1991 have left the island and currently there are 3,000 residents.

As of 1997, despite and partly because of the continuing volcanic activity, 5,076 visitors came to the island, a 76.2% decline in arrivals since 1994 when 21,285 came — the last stable year for Montserrat (CTO 1997). The tourists were mainly scientists, journalists and curious on-lookers. Tourist facilities are limited to bed and breakfast. The airport is still closed, so access is only by ferry and helicopter, both with daily service from nearby Antigua.

In the early 1990s there was one tour boat that regularly made runs along the west coast of the island where, in March and April, humpback whales were sometimes seen in passing. Various dolphin species have also been seen around the island. However, at present there is no prospect for developing cetacean tourism here.

Acknowledgments: Jane Atkinson, CTO 1997.

15. Antigua and Barbuda (UK)

Population: 70,000.
Land area: 440 sq km.
Tourist arrivals by air: 240,402 (+5.4% on prev. yr.)
Tourist arrivals by cruise ship: 285,502 (+5.6% on prev. yr.)
Total Tourist Expenditures: \$269.4 million USD.
Tourism Budget: Not reported.
GDP at factor cost: \$489.3 million USD.
1994 figures on whale watching: Nil.
1998 figures on whale watching: Nil.
Whale-watching ports (current or potential): St. John's and English Harbour on Antigua.
Land-based viewing sites: Shirley Heights and Indian Creek on Antigua; north of Spanish Point and west coast, Barbuda.
Whale-watching potential: Minimal to moderate.
(Figures above are latest figures for 1997, except as noted.)

The State of Antigua and Barbuda, independent since 1981, is a constitutional monarchy within the British Commonwealth. The country includes the main island and well positioned Caribbean air hub of Antigua, the largest of the Leeward Islands, with some of the Caribbean's best direct jet connections to the US east coast, Canada, the UK and Europe. Thirty miles (48 km) north of Antigua is Barbuda, and the country also includes numerous small islands just off the north and east side of Antigua as well as the uninhabited island of Redonda, 25 miles (40 km) southwest of Antigua.

Since the late 1960s when it became clear that sugar production would not support the islands, Antigua has built a solid tourism industry for mid-range and especially upmarket travellers. In 1997, nearly half a million visitors in total arrived, with slightly more cruise ship passengers than air arrivals, and mainly from North America and Britain.

As well as its excellent air connections, Antigua is a yachting centre with a profusion of bays, coves and inlets all around the scalloped coast which provide superb sailing anchorages. Every year during 'Sailing Week' in late April, some 200 boats from 25 countries sail into Antigua's English Harbour — the main nautical event in the Caribbean.

In September 1995, Hurricane Luis damaged 75% of all homes, with total damage of \$375 million US. Some of the damage lingers, yet most hotels and guest houses had reopened within two years.

Antigua is mostly deforested and the vegetation today is largely dryland scrub. There are no rivers on the island. Still, the island's marshes and salt ponds boast numerous egrets, ducks, and pelicans. Southwestern Antigua is volcanic in origin and rises to 1,319 feet (402 m) at Boggy Peak, the island's high point. Most of the rest of the island has open plains and scrubland. More interesting natural wonders are off the main island of Antigua, including some of the islands off the northeast coast. Great Bird Island has the fourth largest mangrove system in the Lesser Antilles and the extremely rare Antiguan racer snake. Guiana Island has the largest remaining forests and provides habitat for large colonies of seabirds, including roseate terns, brown noddies, and endangered whistling ducks. In 1997, however, it was announced by Prime Minister Lester Bird that these islands which had been proposed for national park status, were going to be developed as part of a luxury resort, including a 1000-room hotel, casino and golf course. To date, there has been considerable debate about the merits of this plan.

Antigua has no dedicated commercial whale or dolphin watching, yet sailing charters, diving and nature tours sometimes encounter cetaceans. There is also some possible land-based cetacean watching. On the south coast, from hilltop venues on Shirley Heights east of English Harbour, humpback whales can sometimes be viewed in winter, as well as, at the mouth of nearby Indian Creek, bottlenose dolphins year-round. Most of the south coast is within 2 miles (3 km) of the 100 fathom (200 m) contour.

Offshore, yachts and other boats have spotted short-finned pilot whales, especially east of Antigua, as well as minke whales. Atlantic spotted dolphins are seen year-round and sometimes accompany the boats.

Besides its yachting base, Antigua offers first class diving in its coral canyons and sea caves, with a wide range of marine creatures. There is no doubt that Antigua's greatest natural attractions are in its waters. The giant coral reef surrounding Antigua and Barbuda is estimated to be as large as 1,000 square miles (2600 sq km), and the expansiveness of this reef means that there are many little explored areas with sharks, barracuda and numerous reef fish species. Some sites require long boat trips but are definitely worth investigating. The best and most accessible dive sites are off the south and west coasts. However, these may be notoriously spare of marine life; at least one international travel guide (Fielding) has complained that the government doesn't actively enforce the fishing ban within national marine parks, which has affected some of the more popular sites.

Compared to Antigua, Barbuda is a quiet, undeveloped island with less than 2% of the country's population. Visitors to this low-lying coral island tend to be bird watchers, divers or those visiting on yachts from Antigua who want a beach to themselves. Barbuda is also accessible by ferry or by a short flight from Antigua.

Barbuda's Codrington Lagoon has the largest frigatebird colony in the Lesser Antilles — this as well as the generally undeveloped nature of Barbuda attract the more outdoors or ecologically-minded tourist. The best time for bird watchers to visit is mating season from October to February.

Along the west coast of Barbuda, from February to April, humpback whales are sometimes seen passing. Year round, from the southeast coast, north of Spanish Point, Atlantic spotted and bottlenose dolphins can sometimes be seen inshore in Pelican Bay. This land point is the closest to deep water on the island — approximately 4 miles (6.4 kms) to the 100 fathom (200 m) contour.

With the number of sightings from land on both Antigua and Barbuda, land-based nature tours that include cetaceans may well be possible in future, although land-based whale watching does not usually have a substantial economic element unless the cetaceans are very close or if boat-based whale watching is also part of the industry. It's worth keeping in mind that with the large number of ocean-going sailboats, the effective range for whale and dolphin watching might well be extended further offshore than in many other areas of the Caribbean. It could be worthwhile for cetacean surveys to be commissioned farther afield around the islands throughout the year, to determine if there are predictable locations and times. If there are, Antigua and Barbuda would provide an ideal opportunity to develop several kinds of whale/dolphin watching: Antigua, the yacht-based upper end of the market, and Barbuda, the ecotouristic side.

Acknowledgments: Nathan Gricks, Bendure and Friary 1998, Swanson and Garrett 1998, CTO 1997.

16. Guadeloupe & islands (France) (including St.-Martin and St.-Barthélemy)

Population: 450,000.

Land area: 1,373 sq km.

Tourist arrivals by air: 660,000 (+5.6% on prev. yr.)

Tourist arrivals by cruise ship: 470,054 (-20.3% on prev. yr.)

Total Tourist Expenditures: \$371.5 million USD.

Tourism Budget: \$4.5 million USD.

GDP at factor cost: Not reported.

1994 figures on whale watching: Minimal.

1998 figures on whale watching: 400 people and total revenues of at least \$22,000 USD.

Whale-watching ports (current or potential): Bouillante, Guadeloupe; Gustavia, St Barths.

Land-based viewing sites: west coast of Basse-Terre, Guadeloupe.

Whale-watching potential: Moderate (St.-Barths) to considerable (Guadeloupe); minimal (St.-Martin).

(Figures above are latest figures for 1997, except as noted.)

Guadeloupe, a French overseas department, consists of seven main islands: Grande-Terre and Basse-Terre form the main part of Guadeloupe. Nearby, to the south and east, are Marie-Galante, Les Saintes, and La Désirade. Some distance to the northwest are St.-Barthélemy, 125 miles (200 km) away, and St.-Martin, 145 miles (233 km) away, both of which are considered dependencies of Guadeloupe. Martinique, also part of the French West Indies, is dealt with in a separate section.

Guadeloupe

From Guadeloupe, a fisherman's cooperative in the fishing town of Le Moule on the Atlantic coast of Grande-Terre began a pilot project on whale watching in 1994. The plan was to offer trips from November to April, using 22- to 25-foot (7-8 m) 'yoles' with twin outboards, the local fishing boats. The day trips offered the near certainty of dolphins within the offshore barrier reef which forms a protected lagoon. As well, possible sightings included sperm whales, pygmy sperm whales, humpback whales and pilot whales. Despite support from the town, the trips have not really taken off.

In April 1998, whale watching on a 38-passenger catamaran began from Basse-Terre, the western wing of the Guadeloupe butterfly. The whale watching has included sperm whales, pilot whales and spotted dolphins, although common and probably spinner dolphins may also sometimes be seen. The whale watch runs from a highly regarded dive centre popular with English speakers called 'Les Heures Saines'. It's located in Malendure which is 2.5 miles (4 km) north of Bouillante; this is in the Réserve Cousteau area, located at Pigeon Island a half mile (1 km) off the west coast of Basse-Terre. This is the top diving spot in Guadeloupe, so the whale watching has received a lot of publicity. The whale watch guides (who are also working on turtle conservation) are Caroline and Renato Rinaldi and their group is called Evasion Tropicale. The trips cost 200 FF for adults, with discounts for families. In 1998, approximately 400 persons went on the 10 tours that were offered, and the prospects for 1999 seem very good indeed. In 1999, the operator Les Heures Saines began offering one trip a week itself, with Evasion Tropicale providing the naturalists.

If these tours are successful, there are other Basse-Terre towns which might support further development of whale watching including Bouillante itself, Pointe-à-Pitre, and Trois Rivières, among other ports on the leeward (west) coast. Land-based whale watching may also be possible from the many excellent high vantages along the west coast of Basse-Terre.

Saint-Martin

Saint-Martin is the French 60% of a tiny 37 square mile (96 sq km) island jointly owned with the Dutch Sint Maarten (see Netherlands Antilles). The island was devastated by Hurricane Luis in September 1995 and has only slowly returned as the luxury holiday duty-free shopping destination that it was. There have been no whale or dolphin surveys in the waters around the French (northern) side of Saint-Martin. The type of tourism (time-share apartments, shopping, beaches) is less conducive to attracting those who might be interested in seeing cetaceans.

Saint-Barthélemy

From St.-Barthélemy (St. Barth's), in 1997, Arnaud Apremont set up a small research group, Saint-Barths Cétacés, and began taking photo-ID shots of humpback whales as they passed St. Barths between January and June. In 1997 he counted 111 whales during the season, and in 1998 he found 103 whales. 1999 records have yet to be processed but as of March 25th, he had logged 53 humpback whales off St. Barths.

In 1999, with the assistance of Mr. Apremont's records, Patrick Laplace from St. Barth Sea Cursion became the first operator to offer whale watching here, taking people to see humpback whales. It may also be possible to see sperm whales in May and other

months off the northwest of the island. As well, the reefs on the west side of St. Barths, accessible via diving charters out of Gustavia, are often visited by various dolphin species.

A 1200-hectare marine protected area protects and draws attention to the richness of the marine ecological systems around St-Barths. Although this does not cover all the possible whale and dolphin areas offshore, it does provide a good starting point and atmosphere for developing sustainable, high quality, respectful whale watch tourism.

Guadeloupe: Whale watching guidelines

There are no guidelines or regulations regarding whale watching at the national level in France. However, in Guadeloupe, draft codes of conduct have been proposed and are currently under review by Parc National de la Guadeloupe (Rinaldi and Rinaldi, and Carlson, pers. comm.)

Principes techniques pour l'approche des cétacés

'C'est un privilège de pouvoir observer les cétacés dans leur environnement naturel. Les meilleures rencontres ont lieu quand les cétacés ne sont pas dérangés. Les principes suivants sont destinés à minimiser à la fois le stress de chaque animal et les effets néfastes sur les groupes et le comportement social.'

- 1) Pendant toute l'excursion, maintenir une vitesse de progression lente et régulière (vitesse inférieure à 6 noeuds), afin de
 - réduire au minimum les nuisances sonores;
 - garder une bonne manoeuvrabilité et éviter les risques de collision avec les cétacés.
- 2) A 500 mètres des animaux, ne pas s'approcher directement mais les contourner largement afin d'évaluer l'étendue de la zone de présence et d'analyser leur comportement.
 - a) Les animaux ne se déplacent pas et sont regroupés en surface, actifs ou non: il est essentiel de respecter les activités sociales (parade amoureuse, pêche collective, mère allaitant un petit, repas collectif...)
 - réduire le bruit (au minimum)
 - approcher lentement, en angle oblique
 - ne pas approcher à moins de 100 mètres

En période de reproduction, vérifier la distance qui sépare les animaux particulièrement actifs (males notamment) de l'embarcation

- b) Les animaux se déplacent en groupe ou solitaires
 - s'ils se déplacent lentement, rester derrière les animaux, légèrement de côté, puis suivre une route parallèle
 - ne pas dépasser les animaux
 - ne pas s'approcher à moins de 50 mètres
 - ne pas changer de direction ou de vitesse
 - si les animaux choisissent de se diriger vers le bateau, réduire, mettre au point mort et attendre le passage de tous les animaux (une grande attention doit être observée, particulièrement dans le cas de grands cétacés qui se déplacent lentement)
 - éviter d'utiliser la marche arrière en présence de plusieurs animaux (sauf urgence)
 - ne pas s'approcher des petits non accompagnés
 - si un jeune s'approche du bateau, stopper et mettre au point mort: les jeunes cétacés, curieux et non expérimentés, sont souvent blessés par les hélices
 - veiller à laisser les groupes d'animaux intacts en suivant une route lente et régulière

- 3) Si les animaux présentent des signes de dérangement tels que:
 - changement brutal de direction
 - périodes d'immersion saccadées, anormales
 - battements de queue plusieurs fois de suite en surface (cachalots)
 - quitter les lieux lentement

- 4) Ne pas passer plus de 30 minutes avec les groupes familiaux
- 5) On peut éteindre les moteurs uniquement par mer très calme, et en présence de cétacés immobiles. Sinon, il y a un risque de dérive et de collision
- 6) Quand on quitte la zone ou que les animaux ont sondé, attendre 5 minutes avant de railumer ou d'embrayer les moteurs, puis avancer doucement, avec précaution, pendant 400 mètres
- 7) Dans le cas de présence de plusieurs bateaux sur la zone, il faut une coordination parfaite entre les skippers (par VHF, par exemple), pour approcher dans la même direction
 - veiller à ne pas cerner les animaux et leur laisser toujours une échappatoire à la surface
 - ne pas rester plus de 20 minutes sur la zone
 - autant que possible, planifier les sorties, la route et les horaires entre les opérateurs pour éviter plus de 2 bateaux dans la zone d'observation
- 8) S'assurer du bon entretien des bateaux, du bon fonctionnement des moteurs et hélices, afin de réduire les nuisances sonores et les pollutions
- 9) Ne jamais poursuivre les animaux
- 10) Prévenir les pollutions marines en évitant les rejets en mer (déchets, eaux noires)
- 11) Ne pas nourrir les animaux, au risque de leur donner des infections et de modifier leur comportement alimentaire normal
- 12) Ne pas nager avec les animaux car cela comporte des risques pour les animaux et les baigneurs (parasitoses et risques liés à la baignade en pleine mer)
- 13) Les pilotes de bateaux doivent être responsabilisés dans leur mission et respectueux du milieu marin
- 14) Un intervenant extérieur, mandaté par les autorités locales et ayant une bonne connaissance des cétacés, de leur protection et des différents aspects de la conservation du milieu marin, doit être présent sur le bateau. Une éducation faite pendant les sorties aura le double bénéfice de valoriser l'excursion et d'émettre un discours pédagogique sur l'environnement.
- 15) Les bateaux à voile doivent, à l'approche des cétacés, mettre le moteur en route, même au point mort, afin de prévenir les animaux de leur présence et éviter de les surprendre.
- 16) Tous les articles de cette charte sont susceptibles de subir des modifications suivant l'évolution de l'activité.

Acknowledgments: Arnaud Apremont, Caroline & Renato Rinaldi (Evasion Tropicale), Louis Redaud (Parc Nacional de la Guadeloupe), Carole Carlson and Anna Moscrop (IFAW), Elise Magras (Director of Tourism, Saint Barthélemy), Lesley Sully (AADN), CTO 1997.

17. Dominica

Population: 76,000.
Land area: 750 sq km.
Tourist arrivals by air: 65,446 (+3.5% on prev. yr.)
Tourist arrivals by cruise ship: 229,914 (+18.8% on prev. yr.)
Total Tourist Expenditures: \$39.5 million USD.
Tourism Budget: \$773,000 USD.
GDP at factor cost: \$206.3 million USD.
1994 figures on whale watching: 1,100 whale watchers with total revenues of \$383,000 USD.
1998 figures on whale watching: 5,000 whale watchers with total revenues of \$970,000 USD.
Whale-watching ports (current or potential): Roseau and area; Portsmouth.
Land-based viewing sites: Scotts Head on the SW tip of Dominica; Pointe Michel; higher ground along the coast from Scotts Head to Cape Capucin all along the west coast, including Pte. Ronde, Colihaut and Salisbury.
Whale-watching potential: Outstanding.
(Figures above are latest figures for 1997, except as noted.)

Dominica is centrally located at the northern end of the Windward Islands of the Eastern Caribbean, surrounded by the French overseas islands of Guadeloupe to the north and Martinique to the south. Historically, France and Britain fought over the island but Britain retained control. Since 1978, Dominica has been an independent republic within the British Commonwealth. The official language is English, but many inhabitants speak a French patois.

Dominica is a verdant, fertile island containing a mountainous central ridge with tropical rain forest. For the past decade, Dominica has successfully marketed itself as the 'nature island' of the Caribbean with 'much more than just beaches, blue sky and the blue sea'. This niche marketing has succeeded in attracting tourists who are not deterred by the slightly less direct air connections. (Dominica has two airports with direct connections to the Caribbean 'gateways' of Antigua, Puerto Rico, Martinique, Barbados, Guadeloupe, St. Lucia and St. Martin.) Still, the number of air arrivals was the second lowest in the Eastern Caribbean. However, visitors to Dominica spend more per capita and many are obviously choosing a different kind of holiday, wanting to avoid the huge numbers of tourists found on some of the other islands. Dominica has also received substantial increases in the numbers of cruise ship arrivals to the island's deepwater port at Roseau, the capital. In 1997, the number of cruise passengers was 229,914 (up 18.8 % on the previous year). In Dominica, cruise ship passengers find something different from the high power shopping ports and an increasing number stay long enough to visit the accessible rain forest or go diving.

With Dominica's nature emphasis, whale watching effectively adds another jewel to the crown. The whale watching has developed hand in hand with the diving industry. The two main operators both have dive companies and hotels. According to Fielding's Caribbean guide, Dominica has emerged as one of the four or five best dive locales in the Eastern Caribbean. It has also, in less than a decade, become the undisputed centre for whale watching in the Eastern Caribbean.

Whale watching first got started in 1988 when Fitzroy Armour, a native Dominican running dive charters for the Anchorage Hotel, began to get interested in the sperm whales he saw regularly on the trips. Soon he was offering whale watch tours. His skills as a naturalist, diver and photographer, and his ability to find the whales and to be sensitive about their behaviour, made these early trips successful. Word spread and international US groups began offering tours through the Anchorage Hotel. In 1993, Derek Perryman from the nearby Castle Comfort Lodge, using two catamarans and a fibreglass diesel boat, began steering some of his diving clients toward whale watching, including it in some of the diving packages. Both operators soon began using hydrophones to help find the sperm whales and to allow their customers to listen to them.

The sperm whales are found all along the lee (western) shore of Dominica from just beyond the 50 fathom (100 m) depth contour up to 15 miles (24 km) offshore. In

1998, Jonathan Gordon and his colleagues found some evidence that more sperm whales are actually in northern offshore waters. Still, the promontory at Scotts Head, which juts out into the Caribbean and overlooks both Soufrière Bay and Martinique Passage is often mentioned as a good land-base for watching sperm whales and dolphins, as well as whale watching boats, from November through April. Another good spot, half way between Roseau and Scotts Head, is Pointe Michel. Additional potential lookouts include Pte. Ronde, near Barbers Block, Colihaut, and Salisbury. These and other land-based whale watch sites might be adapted for studying whales and whale watching using theodolites, binoculars and hydrophones mounted just off the coast.

Besides sperm whales, the following cetacean species may be seen, roughly in order of how often. Most common are spinner and pantropical spotted dolphins which are seen on almost all the trips. Other species seen are short-finned pilot whales, false killer whales, pygmy sperm whales, bottlenose dolphins, Risso's dolphins, Fraser's dolphins, orcas, dwarf sperm whales and melon-headed whales. Other species less often encountered include Bryde's whales, humpback whales, and Cuvier's beaked whales.

By the end of 1998, whale watching in Dominica became a million dollar a year business. There are now four operators offering whale watch tours from Dominica. One of them has started offering whale watching through the visiting cruise ships. For the year 1998, there were at least 5,000 whale and dolphin watchers from all four companies spending from \$40 to \$50 USD on the tickets, and an estimated \$75 USD per day for other expenses related to whale watching, plus an additional \$75 for a mid-range hotel room. Totals for Dominica for 1998 were therefore 5,000 whale watchers spending an estimated \$220,000 USD for the trips and \$750,000 USD in indirect revenues, for total revenues of \$970,000 USD.

Whale and dolphin watching has attained a new high profile on the islands with three full pages devoted to it in the 1999 edition of the official visitor magazine from the Dominica Hotel & Tourism Association: *Destination Dominica*. This compares to one page devoted to fishing and half a page to boating and cruising. Seven pages are devoted to diving. The local sperm whales feature as one of the mentioned attractions in the introductory message from the Hon. Norris Prevost, the Minister of Tourism, Ports and Employment.

Three key turning points in the growth and development of whale watching in Dominica have occurred due to associations between international NGOs, local operators, and Dominica's ministries of Tourism, Ports and Employment; Agriculture and Environment; and Education:

(1) a workshop on how to conduct good whale watch tours, with background on cetaceans, conservation, education, and preparing guidelines and regulations. Funded by the Whale and Dolphin Conservation Society, this pioneer workshop was presented by Mark Carwardine in November 1994. Prospective whale watch operators from Dominica were invited to come to the three-day workshop and funding was provided for travel and accommodation in some cases.

(2) an international workshop on sperm whale watching. In January 1996, Dominica hosted a scientific workshop to review sperm whale biology and its relevance to the conduct and management of whale watching. During this workshop, suggested codes of conduct for operators, as well as associated management and scientific concerns, were discussed and agreed upon. This workshop was held at the invitation of the Minister of Tourism in Dominica and the observers to the meeting included various existing and prospective operators. This workshop effectively helped launch regulations for watching sperm whales not only internationally, but in Dominica.

(3) a detailed study of the sperm whales. Although Dominica's sperm whales had been noted in the surveys of Turuski and Winn (1976), Watkins and his research team from Woods Hole Oceanographic Institute were the first to spend considerable time with sperm whales in the lee of the islands from Guadeloupe to the southern Grenadines. They estimated the population to be around 200 sperm whales which included large and small adults and calves of different sizes. In 1995, Jonathan Gordon began a two-year detailed winter study off Dominica aboard *RV Song of the Whale* for the International Fund for Animal Welfare. Results were followed up with sightings from another boat in 1997. This study, published in 1998, found that the composition and structure of the sperm whale population off Dominica, and the usage patterns within the area, make the population vulnerable to disturbance. Appropriate management, regulations and monitoring are

necessary to ensure that critical activities such as breeding and social organisation, are not disrupted.

From these and other data, the sperm whales appear to be most accessible during the prime whale watching season of November to April. Due to poor weather (hurricane season) and lack of effort, there is not much information on the distribution and abundance of sperm whales and dolphins outside these months. However, it may well be possible to expand the whale watch business in the 'shoulder' seasons. Another expansion could be to the northwestern part of the island. Although more remote from the main port of Roseau, there appear to be just as many whales and dolphins. There is also ample room for expanding whale watching through land-based visitor centres which could charge admission. Québec, South Africa and South Australia provide some examples of the possibilities. These land-based centres can serve as 'advertising' for the boat tours, as well as help educate and entertain visitors regarding the amazing diversity of cetaceans found in Dominican waters. It is possible for such centres to be developed into mini-museums and gift shops which can provide more employment as well as encourage local interest in the cetacean behavior happening all the time just offshore.

The emphasis in Dominica on studying and getting to know 'the resource' is itself a valuable model to copy in other Caribbean islands. The impetus in Dominica was provided largely by scientists and NGOs, but it could equally be provided by government, as it is in New Zealand, or by the whale watch operators themselves, as it has been in parts of the US and Canada.

The regulations for whale watching in Dominica are some of the most carefully considered and scientifically supported, since they grew out of workshops in Dominica in the mid 1990s. To date they are not incorporated into law. However, the two main operators are very familiar with them and have attempted to be self-regulating. With two additional operators now working, it may become necessary for more formal adoption of the regulations and monitoring and enforcement.

In 1997, Prime Minister Edison James declared Dominica's support for Japan's pro-whaling position, surprising many who had followed the country's successful development as a prime ecotourism destination, with high quality whale watching. Only time will tell if this affects the willingness of visitors to come and spend money in Dominica. It may depend on how widely this information is known, how much Dominica's visitors value whales and dolphins in general, and many other factors.

For now, whale watching has arrived in Dominica as a key visitor attraction, as well as a powerful image-maker, and Dominican operators and hotels are reaping the benefits of almost ten years of steady learning curve. Best of all, in Dominica, whale watching has been put on a positive footing in terms of education and science, partly due to the international workshops. The challenge now will be to grow sensibly, to manage any boat traffic problems that develop, and to continue to invest more and more in education which will entertain the visitor and improve the business while benefiting the whales.

Dominica: Draft Codes of Conduct for Whale Watching in Dominica

The following codes of conduct are under review; though some points are already partly adhered to at present as guidelines (Carlson 1998).

The Marine Mammal Codes of Conduct are a compilation of existing international guidelines and regulations for watching whales that may be applicable to commercial operations in Dominica. These codes of conduct suggest permits for commercial operations and define the criteria for issuing permits, requirements to be satisfied before issuing permits for commercial vessels, land-based operations, commercial aircraft operations and behaviour around marine mammals. These include:

CRITERIA

Before issuing a permit, the governing authorities shall be satisfied that there is substantial compliance with the following criteria:

1. That the commercial operation should not have any significant adverse effect on the behavioural patterns of the marine mammals to which the application refers.

2. That it should be in the interests of the conservation, management, or protection of the marine mammals that a permit be issued.
3. That the proposed operator, and the operator's staff who may come in contact with marine mammals, should have sufficient experience with marine mammals.
4. That the proposed operator, and the operator's staff who may come into contact with marine mammals, should have sufficient knowledge of the local area and of the sea and weather conditions.
5. That the commercial operation should have sufficient educational value to participants or to the public. Education can be enhanced by a talk on whales, natural history, geology or a comprehensive leaflet.
6. That the commercial vessel meet appropriate safety standards (for example, US Coast Guard or British Department of Commerce).
7. That the appropriate vessel be insured for the passengers that it carries.
8. That the vessel be judged appropriate for whale watching.

PERMITS

Permits for commercial operations should be issued by area, with no more than three commercial vessels operating in any given area on a given day.

SUGGESTED CONDITIONS GOVERNING ALL COMMERCIAL OPERATIONS AND BEHAVIOUR OF ALL INDIVIDUALS AROUND WHALES AND DOLPHINS

We suggest that every commercial operation and every person coming into contact with any class of marine mammals comply with the following conditions:

1. Persons shall use their best endeavours to operate vessels, and aircraft, so as not to disrupt the normal movement or behaviour of any marine mammal.
2. Contact with any marine mammal shall be abandoned at any stage if it becomes disturbed or alarmed.
3. No person shall cause any marine mammal to be separated from a group of marine mammals or cause any members of such a group to be scattered.
4. No rubbish or food shall be thrown in the water near marine mammals.
5. No sudden or repeated change in the speed or direction of any vessel or aircraft shall be made except in the case of an emergency.
6. Where a vessel stops to enable the passengers to watch any marine mammal, the engines shall either be placed in neutral or allow engines to idle for one minute before turning off.
7. When operating at an altitude of less than 600 meters, no aircraft shall be closer than 500 m horizontally from a point above any marine mammal unless in the process of taking off or landing.
8. No person or vessel shall approach within 50 m of any marine mammal or group of marine mammals.
9. No person or vessel shall cut off the path of a marine mammal or prevent a marine mammal from leaving the vicinity of any person or vessel.
10. The master of any vessel less than 400 m from any marine mammal shall use their best endeavours to move the vessel at a constant, slow speed, no faster than the slowest marine mammal in the vicinity, or at an idle, no wake speed.
11. Vessel departing from the vicinity of any marine mammal shall proceed slowly at idle or no wake speed until at least 400 m from the nearest marine mammal.
12. No aircraft shall be used to watch whales.
13. No swimmer or diver shall enter the water in the vicinity of marine mammals.
14. Do not approach animals that appear to be resting or continually avoiding the vessel.
15. A log of daily activities including cases of infractions should be recorded. Any infractions should be reported immediately to the Department of Fisheries.

SUGGESTED CONDITIONS APPLYING TO SPERM WHALES

1. No swimmer or diver shall enter the water in the vicinity of sperm whales.
2. No vessel shall approach within 50 m of a sperm whale or a group of sperm whales.
3. If a whale or group of whales approaches a vessel, the master of the vessel shall put the vessel in neutral and turn off the engine.
4. No vessel shall approach within 300 m of any whale or group of whales for the purpose of enabling passengers to watch the whale, if two vessels are already positioned to watch the whale or group of whales.
5. Where 2 vessels approach an unaccompanied whale, the masters concerned shall co-ordinate their approach and manoeuvres in compliance with existing regulations.
6. When within 100 m of a whale, slowly approach at idle or no wake speed.
7. When within 100 m of sperm whales, approach the whales very slowly and cautiously from behind or from an angle. Do not approach sperm whales from the front or closely parallel whales; they will invariably take avoiding action.
8. Where a sperm whale abruptly changes its orientation or starts to make short dives of about 1 to 5 minute duration without showing its tail flukes, all vessels shall abandon contact with the whale.
9. Do not suddenly accelerate, go into reverse or use outboard motors near whales as they are extremely sensitive to sudden noises and sights.
10. Do not approach calves when alone on the surface.
11. Do not stay with a whale or group of whales for more than 3 of the whales' dive sequences.
12. Vessels should behave so that no whale or group of whales are visited for more than 3 of the whales' dive sequences per day.
13. Do not stay with a social group of sperm whales for more than 15 minutes.
14. Do not go upwind of the whales and drift down on them.
15. Do not use helicopters to watch the whales.
16. When departing from the vicinity of the whales, proceed slowly or at no wake speed until at least 400 m from the nearest whale.

SUGGESTED CONDITIONS APPLYING TO DOLPHINS

1. No swimmer or diver shall enter the water in the vicinity of dolphins.
2. No vessel shall proceed through a pod of dolphins.
3. Do not chase dolphins; whenever possible, let them approach you.
4. No vessel shall approach within 50 m of a pod of dolphins.
5. No vessel shall approach within 300 m of a pod of dolphins, for the purpose of enabling passengers to watch the dolphins, if two vessels are already positioned to enable the passengers to watch the dolphins.
6. Where 2 vessels approach an unaccompanied pod of dolphins, the masters concerned shall co-ordinate their approach and manoeuvres in compliance with existing regulations.
7. Vessels shall approach dolphins from a direction that is parallel to the dolphin and slightly to the rear of the dolphin.
8. Do not separate dolphins in a pod from one another.
9. Do not stay with a pod of dolphins for more than 20 minutes.

SPECIAL PERMITS

On occasion, activities such as research or media coverage may require individuals or vessels to approach whales or dolphins at a distance closer than 50 m. In such cases, we suggest that special permits, issued by the Department of Fisheries, be required. Criteria for the evaluation of such permits should be drafted by a special 'task force'. Members of the task force should include representatives from the Department of Fisheries, Department of Tourism, Dominica Conservation Association, National Development Corporation, Dominica Water Sports Association and marine mammal specialists.

Special recommendations for sperm whales

The following guidelines for whale watch operators were drawn up by a group of experts at an international workshop in Dominica in 1996 on the 'Special Aspects of Watching Sperm Whales' (IFAW 1996a). These guidelines were used as part of the source material for the suggested Dominica guidelines. They may also be useful for other Caribbean islands which are contemplating sperm whale watching.

- Swimming with sperm whales is not recommended. It disturbs whales and is dangerous for people.
- A good lookout should be maintained at all times when in the vicinity of whales.
- Boat speed should be reduced to 6 knots or less to minimise noise and assure manoeuvrability.
- When within 400 metres of a whale:
 - Whales should be approached with extreme caution
 - Noise should be reduced to a minimum
 - There should be no sudden changes in speed or direction
 - Reverse gear should not be employed except in an emergency
 - Boats should not move more than 2 knots faster than the whales
- When within 100 metres of whales:
 - Stay behind the whale
 - Do not exceed the speed of the whale
 - Vessels should never, under any circumstances, approach closer than 50 m
 - With foraging groups, generally maintain a minimum distance of 100 m
 - Never approach closer than 100 m to a socialising group
- Do not approach unaccompanied calves
- No more than two vessels should be within 400 m of whales
- Boat skippers should coordinate approaches from the same direction to ensure that the whales are not trapped by approaching boats and can swim away at the surface
- If whales approach the boat, the vessel should stop, with the engine in neutral
- If the whales show any sign of disturbance, move away slowly
- When departing the area/ whales or after the whale dives:
 - If engine is idling or switched off, wait 5 minutes before restarting the engine or engaging gear
 - Proceed slowly and cautiously for 400 m
 - If underway, continue cautiously for 400 m

Also:

- Never approach a whale under sail
- Do not drift towards whales with engine switched off
- Keep engine running at idle

GUIDELINES FOR YACHTS

- Never approach whale watching vessels
- If you encounter whales at sea:
 - put your engine at low revs so that the whales know you are there and to provide manoeuvrability. NEVER sail up to whales
 - move slowly away from whales, or stop, and let them move away from you
 - never approach closer than 100 m
 - avoid making sudden changes in engine revs or going into reverse
 - if whales approach you, either maintain a speed and heading parallel to their direction of movement, or turn away

DON'T PANIC! Unprovoked, whales do not harm yachts!

Acknowledgments: Stanton Carter (Director of Tourism, NDC, Dominica), Derek Perryman (Dive Dominica), Andrew Armour (Anchorage Dive Centre); Gordon *et al.*

1998; Jeanillia Rose Valerie De Smet (Dominica Association of Industry & Commerce), Carole Carlson (IFAW), Swanson and Garrett 1998, CTO 1997.

18. Martinique (France)

Population: 391,000.

Land area: 1,060 sq km.

Tourist arrivals by air: 513,230 (+7.6% on prev. yr.)

Tourist arrivals by cruise ship: 386,835 (-10.2% on prev. yr.)

Total Tourist Expenditures: \$397.0 million USD.

Tourism Budget: \$7.5 million USD.

GDP at factor cost: \$4,875.7 million USD.

1994 figures on whale watching: 100+ and minimal total revenues.

1998 figures on whale watching: Minimal.

Whale-watching ports (current or potential): Carbet, St.-Pierre, Fort-de-France, Le Prêcheur.

Land-based viewing sites: West coast, high vantage points.

Whale-watching potential: Outstanding.

(Figures above are latest figures for 1997, except as noted.)

Martinique, with its stylish croissant and café culture, is probably the most cosmopolitan society in the Eastern Caribbean. It has a much larger population than Dominica or any of its island neighbors to the south. In the Eastern Caribbean, only Guadeloupe (which includes the islands of St.-Martin and St.-Barths) slightly exceeds Martinique's numbers with a much larger land base. Still, despite its 391,000 people living in high density especially in and around Fort-de-France (with 100,000+ residents), Martinique offers considerable non-urban wonders including a sizeable rain forest, quiet fishing villages, farms full of tropical produce, clear waters, and wonderful treks around the volcanoes.

Martinique is an overseas department of France, with elected representation in the French Parliament. The local economy depends on the French government which is responsible for more than half of the island's GNP. Agriculture, including sugar cane for rum, is the main industry but tourism is a huge contributor and has been the main growth sector for the past decade. The tourists, 80% of which are from France, spend considerably more per person in Martinique than they do in Guadeloupe, St.-Martin and St.-Barths. Although Guadeloupe and islands collectively receive 25% more tourists, they spend less money in total than for Martinique alone.

Twenty-two miles wide and 50 miles long, Martinique is volcanic in origin and has a rugged mountainous feel to it. The indented coastline is dotted with numerous coves and bays, and even the rugged open Atlantic east coast has some sheltered spots around the towns of La Trinité and Le Robert. The known whale watching opportunities, however, are on the Caribbean lee side of the island.

The diving opportunities off Martinique are varied all along the west coast. There is some criticism (e.g. Swanson and Garrett 1998) that some reefs are overfished and the coral is damaged, but the more than 12 diving companies on Martinique have no trouble finding good spots. The challenge now is to protect them all carefully, and awareness of the need to do this is high in Martinique.

One diving centre is Saint-Pierre in the north, where the extraordinary volcanic eruption of Mt. Pelée in 1902 buried not only the entire town of 30,000 (there was only 1 survivor, a prisoner in solitary confinement in the local jail), but sunk and destroyed numerous sail boats that had been in the harbour that day. Of course, divers come for the wrecks here, but it also provides good access to see the sperm whales and spinner and pantropical spotted dolphins often within a mile or two of shore.

Since the mid-1990s, from the north end of the island, from the coastal village of Le Prêcheur, fishermen sometimes take tourists to see the big herds of spinner and other dolphins that are there year-round and visit almost daily. Sometimes, sperm, pilot and humpback whales are seen as well. The best months are November to May with a peak in

February to April when the waters tend to be calmer. As well, the same species are seen on diving trips which include cetaceans and were offered in the past by the Carib Scuba Club out of Carbet, south of St.-Pierre. However, recent enquiries to this diving company and others along the west coast of Martinique in April 1999 indicate that little whale or dolphin watching is currently taking place. One operator even said that the whales 'had left the area', and some residents insisted that there were no whales around.

Researcher Michael Dougherty, working from a sailboat in the lee of Martinique for part of the winter of 1998-99 was similarly told that there were no whales to be found. Yet the sperm whales were there every day in relatively calm water about 4 miles off Fort-de-France and easily accessible. Of course the trade winds do blow from time to time, but with a hydrophone to help find and listen to the whales and a reasonable-size whale watch boat, it would be easy to set up a good whale-watch business. Besides off Fort-de-France, Dougherty also found the whales in some concentration off St.-Pierre, though the trade winds tended to be stronger there.

To be sure, whale watching has not developed into an industry as it has on Dominica. But from consistent reports from scientists, yachters and offshore fishermen, there is no doubt that the whales and dolphins are there. The same or similar opportunities for whale watch tourism exist on Martinique as on Dominica, particularly in the north of the country. Several other researchers including Watkins *et al.* (1982, 1985) and Notarbartolo di Sciara have turned up essentially the same diverse group of cetacean species as for Dominica. And Jefferson and Lynn's 1991 cetacean survey mentioned Martinique as one of three sites of cetacean concentration in the Caribbean and Gulf of Mexico. It may be that because some of the best diving areas are close to shore, the diving companies encounter whales and dolphins less often. In any case, a scientific survey is planned for summer 1999 which will examine and report on the lee shore abundance and presence of cetaceans.

There are certainly other ports that could be developed for whale or dolphin watching tours. The 100 fathom (200 meter) contour is within 2 miles (3 km) of the coast from Cap St.-Martin in the north almost to Fort-de-France, the capital, and the 900-fathom (1800 meter) line is as close as 6 miles (10 kms). In addition, in the southwest, Cap Salomon, and, in the far south, Pointe d'Enfer, offer the possibility of good lookouts, with departure ports nearby. The infrastructure for tourists is more than substantial, and could easily accommodate quite high numbers of whale watchers. A certain amount of whale and dolphin watching through the existing diving clubs would help spread the focus on marine resources. All that is required is the entrepreneur who has the will and the understanding of how to set up whale watching with a good international standard. A quick visit to Dominica would cut the learning curve considerably.

Acknowledgments: Giuseppe Notarbartolo di Sciara (Tethys), Michael Dougherty, Lesley Suttly (AADN), Huges Hayot (Botanical Gardens, Anse Latouche), Michael Meteret (UCPA, St.-Pierre), Watkins and Moore 1982, Watkins *et al* 1985, Cathy Williamson (WDCS), Jefferson and Lynn 1994, CTO 1997.

19. St. Lucia

Population: 150,630.
Land area: 616 sq km.
Tourist arrivals by air: 248,406 (+5.4% on prev. yr.)
Tourist arrivals by cruise ship: 310,263 (+71.9% on prev. yr.)
Total Tourist Expenditures: \$283.7 million USD.
Tourism Budget: \$5.5 million USD.
GDP at factor cost: \$488.2 million USD.
1994 figures on whale watching: Nil.
1998 figures on whale watching: <100 people and \$7,500 USD in total revenues.
Whale-watching ports (current or potential): Soufrière, Castries, Vieux Fort.

Land-based viewing sites: elevated locations between Castries and Gros Ilet, including Pigeon Pointe; Anse Chastanet (near Soufrière); promontories around Vieux Fort and from the Maria Islands.

Whale-watching potential: Outstanding.
(*Figures above are latest figures for 1997, except as noted.*)

St. Lucia achieved its independence within the British Commonwealth in 1979. Even more than most other former Caribbean colonies, St. Lucia has a somewhat schizophrenic cultural history, having changed hands 14 times between the French and British. Most of the people are of African descent; the official language and government traditions are English; but the culture is French creole.

St. Lucia is a mountainous, verdant island with volcanic peaks and lush, fertile valleys. The magnificent centrepiece is some 19,000 acres (7,700 ha) of tropical rain forest maintained in forest and nature reserves. To date, more than most other Eastern Caribbean countries, St. Lucia has relied on agriculture as an economic mainstay. Unfortunately, that agriculture was bananas which alone provided 70% of export earnings and employed 40% of St. Lucia's people. With the World Trade Organisation demanding that EU quotas on bananas must be lifted, St. Lucia's farmers will no longer be able to compete with the big growers in Latin America. The writing has been on the wall for a few years and meantime St. Lucia has worked hard to expand its tourism industry to fill the anticipated void.

Compared to many neighboring countries in the Caribbean, St. Lucia was slower to promote itself and to try to attract more tourists. It has only been seriously involved with tourism for fewer than 20 years, but now it is coming on strong, with numbers climbing every year. The greatest asset of the country is its largely unspoilt nature setting: the substantial tropical rain forest, the coral reefs and clear, clean Caribbean sea, and the wildlife both on land and marine — all of which are proving more and more valuable as they rapidly disappear in the rest of the world.

In terms of tourism infrastructure, St. Lucia offers numerous rustic, friendly lodgings as well as low-key luxury hotels. The island has considerable cultural appeal, with colonial French architecture, Native Indian artifacts, an excellent jazz festival, and the Creole culture which makes for good restaurants and Carnival celebrations.

However, the negative side of the recent turn to tourism development is already starting to show itself. The newer 'all-inclusive' resorts — holiday compounds — totalled ten as of late 1998. These often British, American or Jamaican-owned operations bar non residents and encourage visitors to use only their facilities, alienating islanders and contributing little to the local economy. With the promotion of these sorts of resorts, and other investments, tourism has been criticised for not bringing enough benefits to rural residents.

Some have suggested that it is just growing pains, and that fine-tuning of tourism industry directives will solve these and other problems. One part of the solution, begun in 1998, is the defining of a new tourism sector 'Nature Heritage Tourism'. Funded by the European Union and the Government of St. Lucia, a three-year programme, called the St. Lucia Heritage Tourism Programme, has been designed to offer various kinds of economic, development and marketing assistance in order to promote nature/heritage tourism in local communities. The expressed rationale is to ensure that the benefits from

tourism are distributed more evenly throughout the island, especially to rural communities while ensuring minimal impact on natural resources. The overall aim is to make St. Lucia 'the most diversified and sustainable tourism destination in the Caribbean'.

The recognition of the importance of maintaining nature as the backbone of this new directive is vital. This recognition of the importance of maintaining marine resources has contributed to the recent designation of some 23 modest-sized marine protected areas all around the island, mostly centering on coral reefs and mangroves. The Soufrière Marine Management Area, for example, which contains four different marine reserves, has a balanced, comprehensive programme modelled on the biosphere reserve concept which includes protection, management, and local education while allowing for some tourism and fishing development.

Some of the reserves have populations of cetaceans as regular visitors, though official recognition of cetaceans has been slow to come. There is no listing for whale watching in the 98-page A4 colour glossy *Visions St. Lucia 1998/99* Tourist Guide. In the comprehensive 36-page *St. Lucia Marine Guide 1998/99*, there is not even a single mention of a dolphin or whale, much less of 'whale watching'.

The most common cetaceans seen by boat year-round in St. Lucian waters are various dolphins, especially spinner and pantropical spotted, sighted from inshore to 2-3 miles offshore (3-5 km) and short-finned pilot whales some 3-20 miles (5-32 km) from shore. Sperm whales are also regularly seen off the northwest, west and southwest of the island, as well as false killer whales. Occasionally, Bryde's whales, as well as humpback whales (several 1999 sightings off the NE tip of the island), are seen in the period from January to April. The regular hunting of pilot whales has occurred mainly (though not entirely) on the southwestern and eastern coasts of St. Lucia (away from the main tourism areas in the northwest); pilot whales and various dolphins have been landed regularly at the following ports: Soufrière, Choiseul, Laborie, Vieux Fort, Micoud, Dennery, as well as Castries, but most have been reported at Vieux Fort, at the southern tip of St. Lucia, in the latter part of the year. Pilot whales can also be seen (and are sometimes caught) out of the northwest and the peak period for sightings is November-December, though they have been seen in every month, often travelling in pods of 20 to 100 animals. There are other regular sightings and landings from hunts of rarer cetaceans, including dwarf and/or pygmy sperm whales, and possibly goosebeaked and Antillean beaked whales. The reported sightings have been off the Pitons on the west side of St. Lucia out of the port of Soufrière, sometimes as close as a mile (1.6 km) from shore, especially during the months of April through July.

According to St. Lucia's Chief Fisheries Officer, the best sites where cetaceans occur commonly and in fairly large numbers are in Soufrière Bay, on the southwest coast which has deep waters close to shore, and off northwest St. Lucia, from in the lee of the island to the waters between St. Lucia and Martinique. The second locale is closest to the main tourist area, although both are easily accessible on half-day boat trips. A third location at Vieux Fort was not recommended, perhaps in part because it is a centre for dolphin hunting and is away from the main tourist areas, although the Maria Islands, off Vieux Fort, are a special attraction for nature lovers.

Land-based sighting opportunities largely take advantage of the above three areas of cetacean concentration. Recommended are various spots along the west coast, in the lee of the island, especially from slightly elevated locations in the northwest from Castries to Gros Islet, including Pigeon Pointe. Also, at Anse Chastanet (near Soufrière), a number of dolphin and large whale sightings were recorded by Randall Reeves. Headlands and promontories around Vieux Fort and from the Maria Islands should also be investigated for possible land-based whale and dolphin watching.

With tourists already coming for the diving and other marine activities, as well as for the nature offerings on land, a substantial whale and dolphin watching industry would seem to be a natural for St. Lucia. However, several problems have prevented the tours from becoming popular to the extent that they have in, e.g., Dominica. One is that fishermen still take cetaceans in some numbers around St. Lucia. There may be a slight uneasiness with the ascendancy of whale watching in other parts of the world and whether this might threaten the fishermen's cetacean-hunting income. It might be useful to measure the potential benefits in a socioeconomic study, weighing the potential of whale and dolphin tourism, and the value of nature to St. Lucia's image, vs. the value from hunting to these families. There may also be some conservation implications to these hunts. Although

scientists are aware of them (eg., Reeves 1988 and pers. comm.), the hunts are not monitored and the IUCN status of the species hunted is insufficiently known.

In 1997, the St. Lucia Whale & Dolphin Watching Association (SLWDWA) was formed to promote the development of high quality whale watching around St. Lucia. Two 'founder operators' signed up with founder-association secretary Jane Tipson, who set up an office next door to her own tour company Toucan Travel, at Rodney Bay Marina in Castries. SLWDWA set up a website, an environmental reference library at a local cafe, and began working with international scientists and whale watch authorities to come up with acceptable regulations for whale watching in St. Lucia.

Whale watching was soon listed as a regular offering in at least two of the major Caribbean-wide guidebooks. In truth, whale watching has been poised to take off now for 2-3 years, with operators advertising whale watching and taking a few people out, but regular popular tours only started in December 1998. Sunlink Tours, which offers a wide variety of adventure tours on various boats, now lists whale and dolphin watching as one of its featured tours, and after 3 months operation had 269 bookings at \$70 US per person. The trips include hydrophones to listen to the whales. As of March 1999, a second company had begun offering the tours, taking about 30 visitors a week over the first two months.

These numbers show that demand is there and that local operators are willing to invest to meet that demand. It would not be surprising if several thousand people were going whale watching from St. Lucia by the year 2000. Still, if whale watching is to become successful and of enduring value in St. Lucia, there will need to be enforced regulations, naturalist guides on the boats, and an education programme that helps ensure the conservation of marine fauna.

SLWDWA has already taken the lead in promoting high quality whale watching and in providing information and technical assistance. But much more clearly needs to be done if whale watching is to develop into a valuable, enduring industry that will bring economic, social and environmental benefits to the country.

With St. Lucia's endangered leatherback turtles (landing on the beaches from May to August to lay their eggs when there are all-night 'turtle watches'), rare parrots (which can be seen on a day hike through the rain forest), a frigate bird sanctuary and numerous other birding opportunities, there is already a reason for nature tourists to visit. The St. Lucia Heritage Tourism Programme could well help provide more focus toward the sea, integrating whales and dolphins with existing marine protected areas and the diving/yachting tourism sector. One community-based idea would be to establish environmentally-friendly interpretation and visitor centres, signs and murals focusing on whales and dolphins, situated at good lookouts or possible whale watch ports especially in the northwest of the country. This would help put whales and whale watching on the map for locals and tourists and it could help greatly enhance the nature tourism sector.

St. Lucia: Whale watching regulations

These regulations are being made into law, though they have yet to be actively enforced or practised (Carlson 1998).

Preamble

The sighting of whales has always aroused human curiosity and scientific interest. Over the past decade whale watching has been developing into a world-wide industry and has gained significant importance from the scientific and educational perspective as well as that from commerce and the recreational areas. 1996 saw the initiation of whale watching in many countries including St. Lucia, an activity expected to attract more visitors to our shores and bring economic benefits to many local communities.

The popularity of whale watching and the world wide growth of the industry raised questions about the extent to which whale watching affects whales. This has led to the establishment of rules, regulations, and codes of conduct governing whale watching activities in some countries. However, whale watching in itself must be regulated in a manner consistent with the International Whaling Commission regulations in order to

avoid any negative impacts on the populations inhabiting our waters. The Commission recommends the whale watching activities are carried out in such a manner, so as not to increase the risk or the ecological functioning of local populations, by changing population dynamics or impeding normal patterns of habitat use or activity. Whale watching should be conducted in such a way that it fosters positive, respectful interactions between whales and whale watchers and does not result in an increase in irritability or over stress to whales. To date, there is almost no evidence of significant long-term impacts on cetaceans, but while studies continue it is prudent to adopt a precautionary approach.

These regulations are also based on the provisions contained in international treaties established for the protection of flora and fauna, such as the Biodiversity Convention, and as such States party to these treaties must honor their national obligations as required by these, it is thus incumbent on St. Lucia to put in place the necessary guidelines for environmentally sound whale watching to ensure in the process that the rights of fishers and priority users are respected.

These guidelines are established to regulate all activities related to the observation of cetaceans, particularly in the area of science and recreation, and are developed in good faith respecting also the rights of the public to conduct such activities for pleasure. The Department of Fisheries intends to work closely with the St. Lucia Whale and Dolphin Watching Association. It expects that Association to provide the forum for the training and operational co-ordination of cetacean watching activities. As such membership of the Association will be a pre-requisite for licensing.

In order then to ensure the sustainable utilization of these resources, the following guidelines are provided:

1) Boat:

Boats used for marine mammal watching should have proper functioning engines and rapid response steering. In addition, engines should be installed so as to provide minimal noise and vibration.

2) Swimming:

No swimming with marine mammals is permitted.

3) Feeding:

Do not attempt to feed marine mammals, or throw food or garbage in the water near marine mammals.

4) Approach Strategy:

i) Do not approach any fishing activity. However, if approached by a group of fishermen while whale watching, the watching party gets priority.

ii) No filming or photo shooting of any fishing activity is permitted.

iii) Always maintain a good lookout at all times when in the vicinity of marine mammals.

iv) Use extreme caution when approaching marine mammals.

v) Within four hundred metres (400 m) of the nearest mammal:

a) reduce noise to a minimum;

b) make no sudden changes in speed or direction (except in an emergency);

c) do not reverse (except in an emergency);

d) travel at no more than two (2) knots faster than the slowest mammal at an idle no wake speed.

vi) Do not approach a resting animal; keep a minimum distance of four hundred metres (400 m).

vii) No more than two (2) vessels should attempt to watch a marine mammal or group of marine mammals. Only one vessel is permitted to be in contact with mammals, the other vessel has to maintain a distance of four hundred metres (400 m) from any animal or group of animals, until the permitted watching time has elapsed. Radio contact between the two vessels has to be maintained at all times. Approach and departure must be carefully co-ordinated. Total watching time shall not exceed thirty (30) minutes.

- viii) Do not approach an animal head-on. Approach parallel to the animal or slightly to the rear of the animal. Do not cause the animal to change direction.
- ix) Keep a minimal distance of one hundred metres (100 m) from the closest animal.
- x) Do not box an animal or group of animals in, or cut off their path or prevent them from leaving.
- xi) Keep a minimum distance of two hundred metres (200 m) from a mother with a calf.
- xii) Do not separate or scatter a group of animals or come between a mother and calf.
- xiii) If an animal shows signs of disturbance, abandon contact immediately.
- xiv) Do not approach a marine mammal or a group of mammals under sail.

5) Stopping:

- i) When stopping to watch a marine mammal, place the engine in neutral or allow motor to idle for a short period (approx. 1 minute) before stopping.
- ii) If an animal approaches closer than one hundred metres (100 m), the vessel should be stopped with the engine in neutral
- iii) Do not chase an approaching animal.
- iv) Be wary of any animal that appears tame.
- v) Keep clear of flukes.

6) Departure:

- i) Move off slowly at an idle no wake speed. Wait until boat is at least four hundred metres (400 m) from nearest animal before increasing speed.
- ii) If an animal dives, wait at least five (5) minutes before starting or engaging engine.

7) Other:

- i) No aircraft is to be used for marine mammal watching.
- ii) The Department of Fisheries reserves the right to send a Fisheries Officer on any marine mammal watching trip as an observer for research purposes.
- iii) Commercial fishing and scientific research requires special permission from the Chief Fisheries Officer.
- iv) Copies of all data collected on whale watching trips must be submitted to the Department of Fisheries.

Acknowledgments: Jane Tipson (SLWDWA, Toucan Travel), Randall Reeves, Reeves 1988, Luntta 1998, Mark Carwardine, Samantha Barnard (Sunlink Tours), Keith E. Nichols and Jeannine Compton (Ministry of Agriculture, Lands, Fisheries and Forestry), Brian Louisy (Exec. Director, The St. Lucia Chamber of Commerce Industry and Agriculture), Ingrid Millar (St. Lucia Tourist Board), McNeill 1997, Allsop and Charles 1998, McDaniel 1999, Klinowska 1991, CTO 1997.

20. St. Vincent and the Grenadines

Population: 111,000.
Land area: 389 sq km.
Tourist arrivals by air: 65,143 (-12.5% on prev. yr.)
Tourist arrivals by cruise ship: 31,405 (-50.3% on prev. yr.)
Total Tourist Expenditures: \$70.6 million USD.
Tourism Budget: \$3.5 million USD.
GDP at factor cost: \$240.2 million USD.
1994 figures on whale watching: 800 people and total revenues of \$153,000 USD.
1998 figures on whale watching: 600 people and total revenues of \$100,000 USD.
Whale-watching ports (current or potential): Indian Beach, Kingstown, Bequia.
Land-based viewing sites: Limited information.
Whale-watching potential: Considerable to outstanding.
(Figures above are latest figures for 1997, except as noted.)

St. Vincent and the Grenadines has been fully independent as a member of the British Commonwealth since 1979. At 18 miles (30 km) long by 11 miles (18 km) wide, St. Vincent, the main island, is nearly 10 times the size of all the 32 Grenadines put together. The country is located in the southern part of the Windward Islands between St. Lucia to the north and Grenada to the south. The Grenadines extend in a long trail from St. Vincent south to Grenada.

St. Vincent is steep and thickly forested, the massive La Soufrière Volcano (seriously active as recently as 1979) surrounded by lush rainforest valleys and lower reaches with fields of bananas, breadfruit and coconut palms, and mainly black sand beaches. Most of its more than 100,000 population lives along the coast, especially in and around the capital in the southeast, Kingstown. The Grenadines tend to be drier, with the classic white sand beaches, easily qualifying for some of the more idyllic islands in the Caribbean.

The main industry on St. Vincent is agriculture, and it dominates to a greater extent than on most other eastern Caribbean islands, providing more than half of all employment. In the Grenadines, however, the two main industries are tourism and fishing.

The Grenadines first fueled the upscale tourism industry here when it was discovered some decades ago by yachters, followed by divers. Both pastimes remain popular, with the diving still pristine, but in a setting undergoing seemingly subtle yet profound changes with the steady development of resorts that started on Mustique in the 1960s and most recently extends to Canouan. Some of the islands have been entirely taken over by private resorts, such as Petit St. Vincent and Palm Island. The largest of the Grenadines, Bequia, with a resident population of a little more than 5,000, is only an hour ferry or 15 minute flight from St. Vincent and attracts a more diverse group of visitors.

The biggest tourism change underway in the country is from the construction of a cruise ship pier on the main island of St. Vincent. In 1997, before the pier, cruise ship arrivals were some of the lowest in the Caribbean (only 10% of St. Lucia's; 12.5% of Grenada's) at 31,400 arrivals, down more than 50% from 1996. The next few years should show marked increases in cruise ship arrivals. This will affect the main island, particularly the capital, but will leave the Grenadines largely to their own more relaxed, often exclusive brand of tourism. Tourist arrivals to St. Vincent by air in 1997 were 65,100, up 12.5% from the previous year, with total expenditures of \$70.6 million USD. Although the expenditures are higher than those for Dominica or Grenada, the tourist and cruise ship numbers are the lowest of any country in the Eastern Caribbean. With no direct flights to St. Vincent from outside the Caribbean, partly because of the size of the airport, St. Vincent and the Grenadines continues to appeal to the more dedicated, exclusive tourist.

Since the late 1980s, Sea Breeze Nature Tours has been the pioneer in offering dolphin watch trips from St. Vincent, as part of regular tours to go snorkeling and swimming and to visit the Falls of Baleine, on the leeward coast of St. Vincent. A 36-foot (11 m) sailing sloop or a 21-foot (6.4 m) power boat is available for the tours which depart from Indian Bay, 5 minutes south of Kingstown. The trips advertise the 'friendly dolphins' of St. Vincent which are most often spinner and spotted dolphins as well as sometimes pilot whales and Fraser's dolphins. The trips often encounter a school of resident spinners,

one adult of which has a lopped off dorsal fin. Occasionally seen are sperm whales (October to May is best, though some year-round) or, more rarely, humpback whales (January-April). The trips have an excellent 80% sighting success rate for dolphins from April to September. The tours are year-round, but taper off from November to early January when the winds are stiffer.

Recently, a second operator called Grenadine Tours has begun offering boat excursions with dolphin watching out of Kingstown, also on the leeward coast of St. Vincent. They advertise bilingual (French and English) tours.

On Bequia, the main yachting haven in the Grenadines, Heidi and Martin Pritchard offer sailing tours aboard a catamaran called *Passion* which includes searching for whales and dolphins through the Grenadines and along the coast of St. Vincent. The trips do not promise to deliver cetaceans but, according to Heidi Pritchard, 'we often see them....it is definitely the highlight of the day when whales and dolphins are sighted on our tours.' In addition to their scheduled sailing cruises, they also accept charters specifically interested in finding whales and dolphins. In the total whale-watch numbers for St. Vincent, I have included a modest allowance of 25% of the *Passion's* passengers and revenues.

For some years researcher Nathalie Ward has worked to encourage the educational and scientific potential of whale watching, producing posters, books and other useful materials and distributing them widely through the Eastern Caribbean. She currently divides her time between Bequia off St. Vincent, and Woods Hole, Massachusetts. In 1989, she formed a volunteer network, called ECCN (Eastern Caribbean Cetacean Network), originally based in Antigua, but it has recently become affiliated with the Smithsonian Institute's Marine Mammal Laboratory (Washington, DC), to record sightings and strandings of marine mammals in the Eastern Caribbean. Endorsed by the United Nations Environment Programme (UNEP), ECCN offers special survey forms for fishermen, whale watch operators, yachters, and coastal residents to encourage them to report all sightings and strandings. According to Ward, ECCN's overall objective is to encourage more research and education, through better coordination and expansion of existing resources, and thereby to gain community support for the protection of resident and migratory whales and dolphins and their marine habitat. ECCN offers in-school programmes for children and workshops for adults as well as training sessions for field identification and stranding protocols.

The magical lure and romantic ambience of the Grenadines are widely reported and lauded in hundreds of tourism articles and guidebooks every year. To those living or travelling aboard yachts and private boats, the Grenadines offer easy sailing and island hopping through clean, sparkling turquoise waters. The more than 30 islands and cays of the Grenadines, partly because they are so close to each other, act like stepping stones for yachters, and there are numerous accessible small coves and bays to stop and drink in the ambience. It is not all for the very rich; there is an attractive ferry service between the islands, and the availability of rustic accommodations as well as those on the private, luxurious resort islands. For many tourists, the sighting of a whale and the frequent accompaniment of dolphins while sailing are part of this magical allure. Others meet their first dolphins while diving on their favourite reef.

For some tourists, however, the magical allure was broken in March 1999 when a calf and mother humpback whale pair were killed. It was the second time this had happened in two years, and it sent shockwaves through the local tourist trade. This time the kill had taken place in front of Mustique Island, and the quotes from tourists in the international press were not praiseworthy toward St. Vincent or its whale hunters. Of course, any whale hunt conducted in view of most tourists would be a risky venture. But this was a calf killed to get to its mother; it was an endangered species; it was the favorite whale worldwide of many whale watchers for its singing, its frequent breaching behavior and its eagerness to approach boats full of tourists. The humpback whale is the foundation of the large whale watching industries of New England, Nova Scotia, Newfoundland, the Dominican Republic, Hawaii, Alaska, and Australia, among other places. To marine nature and whale watch operators and tourism officials in these places, killing one would be like killing the goose that laid the golden egg. But to many tourists, including many of the sort of tourists who come to the Grenadines, killing a humpback whale is destroying a work of beauty.

The hunt was undertaken as part of a small quota of humpback whales allowed to a traditional whaler on Bequia. The whalers involved were relatives of the Bequia whaler.

However, taking mothers and calves was specifically forbidden under the IWC ruling. In addition, the 1999 kill in Mustique waters contravenes the spirit and the letter of the by-laws of the Mustique Conservation Area (in effect since 1989 as Act. No. 62 which declared Mustique and its beaches, foreshore and surrounding waters for 1,000 yards to be a conservation area.) Prohibitions include spear guns and disturbing 'fish or other sea creatures....Let other people enjoy them too. Look but do not touch.'

With the site fidelity that humpbacks are known for on the breeding grounds, these two rash and illegal acts in 1998 and 1999, have eliminated two breeding females and their youngsters, and have reduced the chance that tourists on their romantic trip of a lifetime will be able to watch and listen to humpback whales here in future.

Further discussion of the legality and rationale behind the hunt are not for this report, except to say that the prime minister and people of St. Vincent and the Grenadines need to make an urgent choice. Otherwise prospective visitors, in future, after the magical spell is thoroughly broken, will make their own sort of choice.

Acknowledgments: Ministry of Foreign Affairs, Tourism and Information (Permanent Secretary, St. Vincent and the Grenadines), Nathalie Ward (Eastern Caribbean Cetacean Network-ECCN), Sue Fisher (WDCS), Heidi Pritchard (Sail With Passion), CTO 1997.

21. Grenada

Population: 99,500.
Land area: 344 sq km.
Tourist arrivals by air: 110,748 (+2.3% on prev. yr.)
Tourist arrivals by cruise ship: 246,612 (-7.6% on prev. yr.)
Total Tourist Expenditures: \$59.4 million USD.
Tourism Budget: \$1.7 million USD.
GDP at factor cost: \$258.9 million USD.
1994 figures on whale watching: Minimal.
1998 figures on whale watching: 1,800 people and total revenues of \$270,000 USD (prov.)
Whale-watching ports (current or potential): St. George's, Grand Anse Beach, Carriacou (Grenadines).
Land-based viewing sites: Limited information.
Whale-watching potential: Considerable to outstanding.
(Figures above are latest figures for 1997, except as noted.)

Grenada is a member of the British Commonwealth. Called 'the Spice Island' for its high production of nutmeg, mace and other spices, agriculture (including cocoa and bananas) is the main industry. Since the 1980s, however, tourism has risen steadily and is now the second leading source of the country's GDP. In 1997, there were 110,748 tourist arrivals (up 2.3% on the previous year) and 246,612 cruise passenger arrivals (down 7.6%) for total expenditures of \$59.4 million USD. These figures have more than doubled over the past decade.

Southernmost of the Windward Islands, Grenada is volcanic in origin with a wet, forested, mountainous interior. There is a limestone base at the northern end of the island and the southern side has a deeply indented coastline with long peninsulas, numerous islets and deep bays which make it popular with sailors. Grenada consists of the main island of Grenada, as well as the southern Grenadine islands of Carriacou and Petit Martinique.

In 1993, whale watching began in Grenada on a modest level, mainly directed toward dolphins, as an extension of marine sailing tours out of St. George's. For some years the offshore waters of Grenada have been known to have various dolphin populations as well as whales, but only marine scientists and a few yachters knew the possibilities. The following species can be seen through much of the year but are generally best November to May: spinner and spotted dolphins mainly, followed by common and bottlenose dolphins, short-finned pilot whales, and sperm whales. The prime area is 2-15 miles (3-24 kms) off the west coast of the island where it is also protected from the wind. Grenada Bank in particular is a good site for finding cetaceans. Humpback whales can

sometimes be seen from January to March off the south coast of Grenada, on Grenada Bank and near Carriacou. Mosden Cumberbatch, the operator offering dolphin and whale tours, offers 5-hour tours from Grand Anse Beach and has recently traded in his motor sailer sloop for a new catamaran designed for cetacean watching with a level platform for watching and taking photographs.

In addition to the whale watching from the main island of Grenada, there is some whale watching as part of a unique ecological-educational project on Carriacou. The island of Carriacou, 23 miles (37 km) north of Grenada, is the largest of all the Grenadine islands located between Grenada and St. Vincent. Carriacou is a little less than 5 square miles (13 sq km) with a population of 6,000 people. For the past few years, the Kido Project, a special project of the nonprofit YWF (Yachting Without Frontiers) Kido Foundation, set up by Carriacou residents Dario Sandrini and Marina Fastigi, has been developing an imaginative educational programme which includes whale and dolphin watching as part of a broad spectrum of ecological education from plants and insects to geology and cultural investigations. In 1998, after operating trips on their 28 x 55 foot (8.5 x 17 m) catamaran for several years, the Kido Project enlarged its research station and refitted and refurbished the catamaran. All enquiries for whale watching in 1998 were passed to another Carriacou yachter or to Mosden Cumberbatch in Grenada. As of 1999, the Kido Project's *Hokule'a* is now set up for carrying 10 people on overnight trips or 40 persons on day tours. These unusual land and marine nature tours are a credit to the fascinating diversity of Grenada — another reason to visit the country.

The potential for expanding whale and dolphin watch tours off Grenada and in the Grenadines is considerable. Grenada has a solid tourism infrastructure and direct flights from the UK, Europe, and several US and Canadian cities. According to Nathalie Ward (ECCN), there is a market for more operators to get involved, especially if they take a 'habitat approach' for their ecotours as Project Kido does, including birds, geology, oceanography, fishing, and folklore, as well as cetaceans. As noted in a 1996 IFAW cetacean field research report, the protected sea area to the west of Grenada, the lee area, is smaller than Dominica's and some of the other eastern Caribbean islands, which restricts the area available for calm water whale watching. However, the presence of some unusual cetaceans such as false killer whales, melon-headed whales and Fraser's dolphins, in addition to sperm whales, 'may be quite attractive to whale watchers.'

Recently, the Grenada Board of Tourism has helped boost interest by producing a dramatic full colour ecotourism brochure highlighting Grenada, Carriacou and Petite Martinique as the 'Eco Islands of the Caribbean'. The 4-page brochure highlights the system of national parks and protected areas in Grenada which now cover 17% of the country. The brochure also features whale watching and gives contact details for going whale watching, devoting more lines (15) to whale watching than to diving or hiking, and giving equal importance to it next to bird watching.

Whale watching and marine ecological tours fit in perfectly with Grenada's interest in furthering its nature and ecotourism appeal. While whale and dolphin watching are not currently a primary reason why people come to Grenada, it is becoming an activity which more and more people take up during their visit. With more promotion such as the ecotourism brochure and further enhancement of the tours to create a competitive product on the world market, as well as a sensible permit and regulatory scheme, such tours could be expanded considerably to become valuable contributors to GDP.

Acknowledgments: Celine J. Bullen (Director, Grenada Board of Tourism-UK), Dario Sandrini and Marina Fastigi (Kido Project Ltd.), Nathalie Ward (Eastern Caribbean Cetacean Network-ECCN), Mosden Cumberbatch (Starwind Enterprises), David Blockstein (Committee for the National Institute for the Environment, USA), IFAW 1996b, CTO 1997.

22. Barbados

Population: 265,350.
Land area: 431 sq km.
Tourist arrivals by air: 472,290 (+5.6% on prev. yr.)
Tourist arrivals by cruise ship: 517,888 (+1.6% on prev. yr.)
Total Tourist Expenditures: \$717 million USD.
Tourism Budget: \$16.4 million USD.
GDP at factor cost: \$1,785.7 million USD.
1994 figures on whale watching: Nil.
1998 figures on whale watching: Nil.
Whale-watching ports (current or potential): Limited information.
Land-based viewing sites: Limited information.
Whale-watching potential: Minimal.
(Figures above are latest figures for 1997, except as noted.)

Barbados is a constitutional monarchy within the British Commonwealth, fully independent since 1966. With a high standard of living and very high literacy rate (98%), Barbados has long offered a reliable high standard of tourism comfort and enjoyment. Tourism is the largest industry, though sugar production (including the byproducts of molasses and syrup-rum) is a mainstay along with light manufacturing. At 166 square miles (430 sq km), Barbados is a relatively small island — 21 miles (34 km) long from north to south and 14 miles (23 km) wide — and it is densely populated. Although there are extensive sugar cane fields, Barbados is the second most populous island in the Eastern Caribbean and the island capital at Bridgetown is a major commercial center and Caribbean port, part of the reason the island is called 'Gateway to the West Indies'. The other reason is its unique location.

The most easterly island in the West Indies, Barbados lies nearly 100 miles (160 km) outside the main string of the Windward Islands. Unlike the other Windwards which are mostly volcanic, Barbados is a low-lying island made up entirely out of coral reefs, the limestone base having built up over thousands of years. As well, the island is surrounded by barrier coral reefs.

Until the last few decades, Barbados tourism has rarely looked beyond the beautiful beaches. According to *Fielding's Caribbean*, the preoccupation with maintaining its commercial needs (new hotel building, pollution from light industry, dynamite fishing, allowing boats to anchor anywhere) have ruined parts of the inner reefs. However, in 1994, a local association of dive shops started a 'Rescue the Reefs' programme, and to date they have achieved a better system of permanent moorings and the creation of a marine protected area in Carlisle Bay. The outer parts of the reefs are still intact, so with continued conservation, the resource should improve. Most of the diving is wreck diving, based off the protected south and west coast (the north and east are exposed to the open North Atlantic). In the autumn there is some Atlantic diving, depending on weather and water conditions. In most parts of the Caribbean, diving operations encounter dolphins and whales commonly or at least with some regularity. But Barbados' diving operations rarely find sharks and don't even mention dolphins and whales. The manager of one of the larger operations, Willie Hewitt of Hightide Watersports in St. James, Barbados, reports seeing humpback whales in late March, but says that such sightings occur only once a year or less; dolphins too are seen infrequently. There are a number of marine cruises, including small sailboat cruises and even submarine tours of the coral reefs. These mainly stay within the reefs, although sailboat trips do encounter dolphins more often outside the reefs. It may be that offshore survey work would produce more sightings, but at present diving and small boat cruise operations find little or nothing to recommend the possibility of future whale or dolphin watch tours.

It would be possible to develop whale and dolphin watching as part of various day tours already offered from Barbados to Grenada, St. Lucia, Martinique and Dominica, which start with a short early morning flight and could include existing whale watching tours from any of the above islands (see country descriptions in this report for more information). There is an inter-island ferry service, the 180-foot (55 meter) *M.V. Windward*, operated by the privately owned Windward Lines Limited. The ferry travels

regularly between Barbados and Venezuela via St. Vincent and Trinidad, with special weekend trips to St. Lucia and Bequia.

Acknowledgments: Swanson and Garrett 1998, Barbados Tourism Authority, Willie Hewitt (Hightide Watersports), Calvin Howell (CCA), CTO 1997.

23. Trinidad and Tobago

Population: 1,270,000.
Land area: 5,066 sq km.
Tourist arrivals by air: 324,293 (+22.0% on prev. yr.)
Tourist arrivals by cruise ship: 31,880 (-31.3% on prev. yr.)
Total Tourist Expenditures: \$192.6 million USD.
Tourism Budget: \$2.5 million USD.
GDP at factor cost: \$5,423.9 million USD.
1994 figures on whale watching: Nil.
1998 figures on whale watching: Nil.
Whale-watching ports (current or potential): Chaguaramas, Trinidad; Speyside, Charlotteville, Tobago.
Land-based viewing sites: Limited information.
Whale-watching potential: Minimal to moderate.
(Figures above are latest figures for 1997, except as noted.)

The two island Republic of Trinidad and Tobago has the biggest economy in the Eastern Caribbean and the fifth largest in the entire West Indies. Located at the extreme southern end of the Eastern Caribbean, just off the South American mainland, Trinidad and Tobago have until the past decade or so ignored tourism, relying instead on the considerable oil revenues from the 1970s. However, in the mid 1980s, oil revenues collapsed, and the country is now trying to include tourism as an important part of its future. For Tobago, which already functioned as a holiday locale for Trinidadians, the transition has been smooth but the island of Trinidad itself has less attraction to international tourists, beyond the great Carnival and calypso music. Trinidad's hotels are largely set up for businessmen, and its huge commercial port, the largest in the East Caribbean, is an industrial port.

Despite this history, Trinidad is a big island, and does see the advantages of developing its guesthouses and smaller facilities particularly in the mountainous northern part of the island, and working to attract the nature or ecotourist, who generally spend more than the average tourist. When Trinidad was awash with oil revenues, it poured some of its money into land-based nature conservation and it retains an extensive system of nature reserves and wildlife sanctuaries, with numerous bird, bat and butterfly species. Because Trinidad was part of the South American mainland as recently as 6,000 years ago, it has many mainland species such as ocelots, peccaries, several poisonous snakes and other species that have more recently started down the evolutionary path of isolation.

With its southwest coast located just seven miles (11 km) from Venezuela, Trinidad lies squarely in the outflow of the massive Orinoco River. With the huge silt loads and fresh water, this has affected the distribution of marine species and the ability to see them, particularly important for diving. Thus Tobago receives most of the diving trade, though there is some diving off the northeast coast of Trinidad.

The Trinidad coast is surrounded by many mangrove forests. On the northeast tip, endangered leatherback turtles come ashore to lay their eggs, and on the east, there are manatees in the Nariva Swamp, the largest and most varied wetland on the island.

There is no whale or dolphin watching at present from the island of Trinidad but there have been few surveys. Tobago naturalist David Rooks thinks that the low number of large whales may go back to World War II when whales mistaken for V boats were routinely bombed off the South American coast. The Gulf of Paria, between Trinidad and Venezuela, is considered the southernmost reach of the humpback winter migration, though this area has been little studied. One operator surveyed for this report announced a humpback mother and calf sighting in late March 1999 but said it was uncommon. The

frequency of Bryde's whale sightings off eastern Venezuela and in the Grenadines almost certainly extends to the north coast of Trinidad. Offshore fishing trawlers also report numerous small whales and dolphins including pilot whales, orcas and others. Dolphins, possibly bottlenose and/or one or more of the tropical dolphins (spotted, striped, spinner) are seen year round inshore and offshore along Trinidad's north coast as well as pilot whales (sometimes seen from the ferry between Trinidad and Tobago, some 21 miles (34 km) away to the northeast. Off the south side of the island, tucuxi dolphins can sometimes be seen.

In comparison to Trinidad, Tobago, 1/15th the size, looks like a more typical Caribbean paradise island: tourist resorts, sleepy fishing villages, beaches and clear sparkling turquoise water. The lion's share of the investment in new resorts and hotels has gone into Tobago. Although tourism has climbed considerably in recent years, Tobago still has the untrampled feel to it, including its marine diving opportunities. The best diving is around Little Tobago Island, located 2 miles (3 km) off the fishing village of Speyside in the northeast. Batteaux Bay between Little Tobago and the main island is known for huge manta rays.

The eastern three quarters of Tobago is hilly, providing good views out to sea, though there are few roads or even trails to access the higher elevations. One of the best land-based views is from Flagstaff Hill. The northeast tip of Tobago has the steepest mountains with jungle slopes filled with parrots and other birds. Some of the best dive sites are just offshore in this area. The fishing village of Charlotteville, on Man O' War Bay, has one of the finest natural harbours in the Caribbean.

The possibility of whale and dolphin watching would need to be explored through cetacean surveys. As there are established nature- and bird-watching tours on both Trinidad and Tobago, it might be possible to combine bird and/or turtle and whale/dolphin watching tours. The infrastructure for marine tourism, with boat charters, yacht associations, dive charter and deep sea sport fishing, provides boats that could be adapted for part-time whale watching. On Trinidad, the yachting centre of Chaguaramas Bay has the mooring and marina facilities for boats, although there are various other ports that could also be used. On Tobago, the spate of hotel building is currently ahead of the more limited air capacity, but there are plans to expand the connections which are difficult through Port of Spain to make more nonstop connections (currently available through San Juan, Puerto Rico; Grenada; and Barbados).

Acknowledgments: David Rooks (Ornithologist and Nature Guide, Tobago), Richard Laydoo (Institute of Marine Affairs, Trinidad), Ward *et al.* in prep., Giuseppe Notarbartolo di Sciara (Tethys, ICRAM), CTO 1997.

CONCLUSION

Whale watching in the islands of the Greater Caribbean is a culturally and economically diverse enterprise which is becoming increasingly important in certain countries and territories. Commercial whale watching occurs in 14 of 23 countries and territories located in the Caribbean. In 1998, an estimated 39,000 people went whale watching in the Greater Caribbean, producing total revenues of nearly \$10 million USD (£6.2 million UK). This represents an average increase of 20.2% per year between 1994 and 1998. This rate is almost certainly higher than the current world growth rate. The world whale watching growth rate from 1991-1994 was 10.3% per year.

However, whale watching in the Caribbean can still be said to be in its infancy, and thus a 20.2 % average annual growth rate represents a slow down from the rapid growth seen in the earlier period of 1991-1994 in the Caribbean — 113.8% per year.

Thus, the overall potential for whale watching in the Caribbean is largely yet to be realised. The potential in individual countries and islands has been rated at considerable to outstanding in 11 out of 23. Only in 4 countries can the potential be said to be only minimal.

In each of the country sections of this report, various recommendations are given for improving and expanding whale watching to achieve its potential. Please consult the individual countries for the suggestions relating to that country. Many of these suggestions, however, can be said to fall generally under the following areas:

1. Education. The educational content of whale watch tours varies considerably throughout the region from almost nothing to a high standard. Education can mean having guidebooks available on board every boat and inviting school children to see and learn about whales. The most important aspect is having a good, trained naturalist on every trip. A naturalist guide not only helps people learn about whales and dolphins and teaches them to protect the resource, but it is a good business decision. The most successful whale watch tours in the world depend on their naturalists. The naturalist, like any good tour guide, takes the responsibility for engaging visitors and showing them a good time. Naturalists show people how to appreciate and learn from nature. The whale watch naturalist is the go-between the visitors and the whales, and thus has that crucial educational and conservation role. A good naturalist also keeps customers coming back and telling their friends. The best naturalists attract customers by reputation, and such tours require less investment in advertising and marketing. These ideas were explored in depth at the 1997 Workshop on the Educational Aspects of Whale Watching (Provincetown, Mass.) and at the 1998 International Forum on Dolphins and Whales (Muroan, Japan).
2. Survey effort. Various cetacean surveys have been made throughout the region over the past two decades, such as the intensive humpback whale YONAH project, the spotted dolphin research in the Bahamas, and various sperm whale studies in the Eastern Caribbean. These studies have helped to identify new areas where these and other cetaceans may be found. In the past few years, more fine-detail surveys have been made by the Bahamas Marine Mammal Survey and IFAW, for example. Additional studies throughout the region are needed to expand knowledge of cetacean abundance and distribution, particularly small cetaceans, and would contribute to the effort to identify and manage some of these populations of which relatively little is known.
3. Regulations and guidelines. Eight countries or overseas territories have come up with draft or final regulations or guidelines for whale watching. This represents more than half of all the countries or territories that have some commercial whale watching. Of the eight places with guidelines or regulations, however, only two (25%) have the force of law. Even those areas with laws in place find enforcement a constant problem. Enforcement of whale watch regulations in the

Caribbean, as in most other parts of the world, is almost nonexistent. It is important for areas with whale watching to work with stakeholders to come up with guidelines and to work towards making those guidelines into enforceable regulations. Considerable background information is available on this topic, starting with the 1995 Report of the Workshop on the Scientific Aspects of Managing Whale Watching.

4. Socioeconomic studies. It would be useful in those countries where cetaceans are ignored, captured, or killed to measure the social and economic benefits and costs of whale watching against hunting and various other uses of whales as part of a comprehensive economic welfare and economic impact assessment, using a technique such as cost-benefit analysis. These ideas and this recommendation comes from the 1997 Workshop on the Socioeconomic Aspects of Whale Watching (Kaikoura, New Zealand).

Tourism is the main industry throughout most of the Greater Caribbean region. For the 23 island nations and territories, in 1997, there were 15 million visitors arriving by air. In addition, 10.6 million cruise ship passengers stopped in one or more ports. Total tourist expenditures were \$13.5 billion USD (CTO 1997). Whale watching is a comparatively small though growing part of this, but it is arguably a crucial aspect of image making. For those countries that have successful whale watching tours, the presence of whales and dolphins and the possibility of seeing them can lend a natural, romantic allure which can feed into existing national images or help create new ones. If tourism is largely about selling an image, whales and dolphins offer considerable possibilities. But for this to be successful, attention must be paid to the educational, scientific, and conservation, as well as to the commercial aspects.

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