

# A

## **Aboriginal and Indigenous Coastal Management**

Aboriginal and indigenous peoples of the world have used coastal areas, including off-shore islands, for millennia. Their connectivity with land and sea is based on their respective cultural heritages. Strongly associated with such connectivity are spiritual/cultural values, roles, responsibilities, practices, use and rights.

Colonization practices of varying peoples and some concomitant assumptions of terra nullius – that is, that at the time of colonization that lands (and seas) did not belong to anybody – abrogated aboriginal and indigenous peoples' traditional sovereignty and rights over such areas.

Resultantly, over time, aboriginal and indigenous peoples have contested their traditional rights. The 20th century evidenced more strategized, politicized and publicized actions by various aboriginal and indigenous peoples regarding assumed sovereignty rights by contemporary governments, multinationals and non-indigenous peoples. For example, following Malaysian independence from colonial rule in 1957, the rights of the indigenous Malays were specifically addressed in the Malaysian Federal Constitution. In 1965, the term bumiputra (sons of the earth) – that is, Indigenous Malays – was used in parliament and, since then, various laws have been introduced that have benefited the bumiputras.

In 1975, the first World Council of Indigenous Peoples provided an international platform for concerted dialogue related to traditional land and sea rights and other issues. Two years later, the first Inuit Circumpolar Conference was formed to represent the interests of the Inuit nation, its peoples, traditional rights, resources and homelands across Arctic and Sub-Arctic geopolitical divisions. Towards the end of the 20th century, within Australia, as a response by the Commonwealth of Australia to the High Court of Australia's decision regarding Mabo V

Queensland (No 2) 1992, the Native Title Act 1993 was enacted. This Act recognized the laws and customs of indigenous peoples and their traditional connectivity with land and sea.

Contemporaneously, while aboriginal and indigenous peoples were contesting their traditional rights, a number of national and international agencies and organizations were variously recognizing, promoting and using traditional knowledges and practices with regard to resource management. For example, during the 1970s, the **United Nations Educational, Scientific and Cultural Organization (UNESCO)** Man and the Biosphere Program drew on traditional knowledge-generating processes to connect with aboriginal and indigenous peoples around the world. In New Zealand, for instance, UNESCO tapped into Maori Hui – customary community meetings – as a mechanism to discuss coastal and marine area planning. In 1983, the International Association for Biological Oceanography in association with UNESCO's Division of Marine Sciences conducted a study on 'Traditional knowledge and management of marine coastal systems', and UNESCO also hosted an International Workshop on Traditional Knowledge. In 1985, UNESCO's Asia Pacific Regional Office printed a collection of seminar papers on traditional marine resource knowledge and management in the Asian and Pacific coastal systems. At the 1999 UNESCO and International Council for Science (ICSU) World Conference on Science, in Budapest, a specific session focused on 'Science and Other Systems of Knowledge'. In the following decade, in Johannesburg during the World Summit on Sustainable Development in 2002, stronger emphasis and recognition was afforded to traditional knowledges.

With respect to use of aboriginal and indigenous traditional knowledge-based coastal management, a variety of strategies exist around the world. These are variously reported as ranging through self-management, partner-

ship management, cooperative or collaborative management and integrated management. The Australian Government, through the **Great Barrier Reef Marine Park** Authority, exemplifies the use of all of these management approaches. Other management strategies include community- and village-based management, as emphasized by UNESCO. Specific management examples of these approaches include: (i) self-management through customary marine tenure and village-based management, as supported by the Vanuatu Department of Fisheries with regard to turtle management; and (ii) co-management of traditional marine estates adjacent to Nhulunbuy between Yolngu people in north-east Arnhem Land (Australia) and relevant government agencies.

Some international protocols, such as World Heritage Listing, incorporate and emphasize the valuing of indigenous heritage and involvement of aboriginal and indigenous peoples' participation in management processes. However, despite recognition of traditional resource management, practices and involvement of aboriginal and indigenous peoples, at various national levels, other political and economic forces prevail and not all aboriginal and indigenous traditional rights and connections with land and sea are recognized. This was particularly evident during the 1980s, when tourism and recreation development in a number of island nations, developing nations and developed nations saw the coastal estates of aboriginal and indigenous peoples heavily sourced for tourism and recreation value. Such development has been described as neocolonialism.

More contemporaneously, where aboriginal and indigenous coastal management practices have been implemented, not all users of the same environment are fully supportive of the practice. The basis of non-support is associated with conflict of user interests, between for example tourism, recreation and commercial interests, as well as between aboriginal and indigenous interests. That being said it must be recognized that, while there may be conflict in **values** and use, aboriginal and indigenous values in coastal regions can also serve to value-add to a number of associated tourism and recreation experiences undertaken by individual independent tourists and recreationalists as well as commercial facilitators, mediators and operators.

In overview, aboriginal and indigenous coastal management enables aboriginal and indigenous peoples to maintain their traditional spiritual and cultural connections with land and sea and, relatedly, their values and use within coastal environments where use value may overlap and compete with recreational, tourism and commercial use values. Subsequently, aboriginal and indigenous coastal management practices have the potential to:

- Protect and conserve traditional use and values.
- Enable cultural knowledge transfer to younger generations without impediment and impact by recreation, tourism and commercial activities.
- Maintain and control the sacred without becoming profane.
- Sustain traditional food chains.
- Protect traditional subsistence and semi-subsistence coastal marine resources and their economic values and associated practices.
- Protect and preserve cultural sites, artefacts, stories, rituals and rites.
- Provide a vehicle for capacity building for aboriginal and indigenous peoples to use their traditional coastal land and sea countries for commercial recreation and tourism value.
- Enhance cross-cultural understanding by introducing recreationalists and tourists to aboriginal and indigenous peoples' presentations of land and sea countries.
- Enable sustainable customary and traditional hunting and gathering of traditional marine foods and resources.
- Perpetuate sustainable management of fisheries, megafauna and other coastal stocks.
- Empower aboriginal and indigenous people by involvement in development and management processes of their traditional coastal estates.

Aboriginal and indigenous coastal management is becoming an established practice in developed world nations. Such management recognizes the traditional connections between aboriginal and indigenous peoples with coastal zones and regions and their management, and has strong links to sustainability principles as well as to marine ecotourism.

**Related internet sources**

Inuit Circumpolar Conference: <http://www.inuit.org/index.asp?lang=eng&num=209>

International Association for Biological Oceanography (1983) study on 'Traditional knowledge and management of marine coastal systems in Asia and the Pacific': [http://portal0.unesco.org/es/ev.phpURL\\_ID=13812&URL\\_DO=DO\\_TOPIC&URL\\_SECTION=201.html](http://portal0.unesco.org/es/ev.phpURL_ID=13812&URL_DO=DO_TOPIC&URL_SECTION=201.html)

Australian Government, Great Barrier Reef Marine Park Authority: [http://www.gbrmpa.gov.au/corp\\_site/managment/indigenous\\_issues](http://www.gbrmpa.gov.au/corp_site/managment/indigenous_issues)

United Nations Educational, Scientific and Cultural Organization (UNESCO): <http://www.un.org>

Traditional knowledge and management practices: [http://www.un.org/esa/socdev/unpfii/documents/TK\\_Paper\\_UNESCO\\_English.pdf](http://www.un.org/esa/socdev/unpfii/documents/TK_Paper_UNESCO_English.pdf)

UNESCO World Heritage Listing: <http://whc.unesco.org/>

Gayle R. Jennings

**Aboriginal Marine Resources**

Aboriginal and indigenous marine resources are determined by traditional spiritual and cultural connections with marine environments. Such connections are usually associated with land, sea and air and are holistically framed, as well as integrated, into aboriginal and indigenous peoples' living and being in marinescapes. Marine **resources** may have spiritual, sacred, cultural, **heritage**, educational, lore, storyline, song line, dance line, rite and ritual, artefact, medicinal, food chain, subsistence, semi-subsistence, trade, economic, recreational, preservation, conservation and/or sustainability significance. Significance **values** may also overlap rather than being singular in nature. A resource may be imbued with spiritual, educational, food chain, semi-subsistence, medicinal and preservation significance. Access, knowledge and use of the marine resources may be differently known within specific aboriginal and indigenous communities depending on lore and standing, community roles and responsibilities as well as gender and age.

Examples of aboriginal and indigenous marine resources include cultural sites associated with sacred rites and rituals, burial sites, initiation sites and educational sites. Resources may include heritage and archaeological sites that exhibit prior patterns of habitation and use – for example, middens, artefacts, fish traps.

Marine estates are also used for the hunting of a variety of marine stock, such as fish, **turtle**, **whales** and **dugong**.

Being located in marine environments, aboriginal and indigenous marine resources may have multiple use values across a variety of stakeholder groups. For example, with regard to fisheries management, aboriginal and indigenous peoples, tourists, recreationalists, scientific communities, marine management agencies and coastal urban communities may all hold differing and/or similar use values and expectations regarding access to fishery resources. **Integrated management** is one tool used to balance the competing interests and values to maintain, protect, preserve and sustain the resources. Generally, a variety of management styles are utilized, including **aboriginal and indigenous coastal management**. To minimize conflict between users, a number of **resource management** strategies are applied. The protection and preservation of some aboriginal and indigenous marine resources may require exclusion of other use values of the same resource. Permits for access may allow entry of only traditional custodians, thereby providing exclusive use and access to the resources.

Given that aboriginal and indigenous marine resources may have complementary use value by other stakeholders, there are a number of tourism and recreation implications associated with aboriginal and indigenous marine resources. Aboriginal and indigenous marine resources have the potential to increase and enhance tourist and recreationalist experiences by value adding to the marine experience. Educational and interpretative components related to aboriginal and indigenous heritage and knowledge can be added to existing experiences either by way of aboriginal and indigenous community mediators, guides and rangers or by commercial tourism and recreation providers having received cross-cultural training. Sharing of story- and song lines that tell of aboriginal and indigenous peoples' connections with land may increase cultural awareness of tourists and recreationalists of the traditional owners of the resources.

Gayle R. Jennings

**Aboriginal Marine Tourism** Aboriginal marine and coastal tourism focuses on **fishing**, traditional use of marine **resources** and viewing

of marine life. On the Dampier Peninsula of Western Australia, Aboriginal groups operate coastal campsites and collect fees from fishing groups. Bardi Aboriginal people conduct tours gathering mud crabs and oysters, visiting **mangrove** areas or stone tidal fishing traps and explaining traditional fishing methods. Aboriginal **boat charter** tours include fishing and **whale watching**. In the Northern Territory, Aboriginal people own 87% of the coastline. Tiwi Aboriginal people collect mangrove worms and gather **turtle** eggs and fish with tourist groups. In Arnhem Land, Aboriginal men work as fishing guides while clans lease tidal river areas to sport fishing companies. The Dhimurru Aboriginal Corporation manages coastal tourism, recreation and sea turtles in the area near Nhulunbuy. In northern Queensland, the Mapoon Aboriginal community on the Cape York Peninsula conducts turtle tours for volunteers to assist with tagging turtles, monitoring beach nesting areas and removing fishing nets. Other Aboriginal and islander groups provide fishing services on Cape York. North of Cairns, Kuku Yalanji men take tourists spear fishing along beaches.

In South America, conservation efforts since the 1990s have involved Indian people protecting turtle nests and guiding tourists in coastal areas of Suriname, French Guiana and Guyana. Carib Indians work as reserve staff and tour guides, providing boat transport to the turtle nesting beaches in the Galibi and Amana Nature Reserves (Olsder, 2004; Zeppel, 2006). In Fiji, local chiefs have declared marine protected areas on the Great Sea Reef and Astrolabe Reef; island resorts and dive tour operators pay fees for using these marine reserves (see Fig. A1). In 2003, Fiji granted control of coral lagoons and reefs to indigenous people, with lease rentals paid to customary owners (Johnston, 2006). There is also swimming with **dugongs** in Vanuatu and humpback whales in Tonga and Niue. The **Great Barrier Reef Marine Park** of Australia has allocated some indigenous-specific marine tourism permits, with aboriginal marine rangers and guides also working in their traditional sea country.

In British Columbia, western Canada, Kwakwak'awakw First Nations operate marine wildlife and cultural marine tours. These trips, with Aboriginal Journeys and Village Island Tours, focus on viewing marine wildlife (whales,



**Fig. A1.** Native Fijian performing a traditional dance for tourists (photograph courtesy of M. Lück).

seals, eagles, bears) and coastal scenery, along with a traditional salmon barbeque. Other marine activities include pulling up prawn and shrimp traps, collecting clams, catch-and-release fishing (ling cod) or salmon fishing charters. Old village sites, petroglyphs and First Nations culture are also attractions. Other First Nations groups on Vancouver Island offer paddling trips on cedar dugout canoes or boat tours to hot springs and islands. On Flores Island, the Ahousaht people guide tourists along a coastal walking trail. First Nation groups own Tin Wis Resort at Tofino and Tsa Kwa Lutén Lodge on Quadra Island, while others own **water taxis**, boat charter or fishing tour businesses. In the **Arctic** region of **Nunavut**, Canada, the Inuit people lead guided **sea kayaking** trips around Kugaarak (Pelly Bay). The kayak tours include spotting whales and **polar bears**, fishing for Arctic char, bird watching and also kayak-building workshops.

#### **Related internet sources**

WA Indigenous Tour Operators Committee: <http://www.waitoc.com/kullarri.asp>



Dhimurru Aboriginal Corporation: <http://www.dhimurru.com.au/recareas.html>

Great Barrier Reef Marine Park Authority: [http://www.gbrmpa.gov.au/corp\\_site/management/indigenous\\_issues](http://www.gbrmpa.gov.au/corp_site/management/indigenous_issues)

Kugaaruk, Nunavut (Canada):  
<http://www.inukshukinn.com/kugaaruk-nunavut.htm>

WWF-Guianas:  
[http://www.wwfguianas.org/expeditions\\_guianas.htm](http://www.wwfguianas.org/expeditions_guianas.htm)

Heather Zeppel

### **Aboriginal Peoples: see Indigenous Peoples**

**Aboriginal Whale Watching** There are several aboriginal-owned whale-watching ventures in Canada, Australia and New Zealand. These include viewing orca (killer whale) with Village Island Tours (Telegraph Cove, BC), operated since 1989 by Tom Sewid, a Kwakwak'awakw First Nations man. His boat, painted with a First Nations Orca design, is named *Gla-Lis* (finning whale). The Kwakwak'awakw people believe that chiefs are reborn as killer whales. On the west coast of Vancouver Island, other First Nation groups operate boat tours viewing orca and grey whales. In Quebec, eastern Canada, the Essipit-Montagnais First Nation have run whale-watching boat tours on the St Lawrence River estuary since 1994; they use zodiac boats to view common and blue finback whales. The company employs six full-time staff and purchased a new whale watch vessel in 1999 with funds from Aboriginal Business Canada. Whale watching provides 60% of their income. In Nunavut, an Inuit territory in Arctic Canada, some Inuit people run kayak trips at Kugaarak (Pelly Bay) and Pond Inlet to watch narwhals, beluga whales and bowhead whales (all still hunted by the Inuit).

In South Australia, southern right whales are viewed from the Nullarbor Cliffs on Yalata Aboriginal land. Managed by the Yalata Aboriginal Corporation, the site includes whale-viewing platforms, a whale interpretive centre, walking trails and camping sites. Aboriginal rangers collect the Aus\$12 entrance fee and lead cultural walks. About 100 southern right whales and over 20,000 visitors annually visit this spot at the Head of the Bight. The area is spiritually significant to Mirning Aboriginal

people, with whale-shaped stone arrangements linked to a whale-dreaming site at the cliffs. Some guides call in the whales by singing or playing the didgeridoo (Bulbeck, 2005). In the Kimberley region of Western Australia, Aboriginal groups at Cape Leveque and Lombadina operate charter boat tours to view humpback whales from June to September.

In New Zealand, Whale Watch Kaikoura operates boat tours viewing resident sperm whales, humpback whales (June/July) and orca, along with hectors and dusky dolphins. It is 100% owned, operated and controlled by the Ngai Tahu Maori tribe as a community trust in partnership with the local Ngati Kuri Maori people of Kaikoura. The Maori believe their ancestor, Paieka, arrived in New Zealand on the back of a sperm whale, Tohora. This whale mythology and Maori whale designs on the boats comprise a distinct feature of this venture that Maori people began in 1987, after raising NZ\$35,000 as equity for a loan and mortgaging four houses. In 1988, they bought out a local competitor for NZ\$600,000. In 1994, the Ngai Tahu Maori challenged government plans to issue other permits for whale watching at Kaikoura. A court case reaffirmed that the 1840 Treaty of Waitangi gave Maori rights over natural resources, including whales, ensuring a Maori monopoly on sperm whale watching. Whale Watch Kaikoura operates four boats, employs 50–80 mainly Maori people and has a turnover of NZ\$3 million per year (Orams, 2002a; Curtin, 2003). These Aboriginal whale tours comprise only a small portion of global whale watching.

See also: Aboriginal Whaling, Cetacean, Whale, Whale Ecotourism, Whale Watching, Whaling.

### **Related internet sources**

Aboriginal Journeys (BC, Canada): <http://www.aboriginaljourneys.com/index.htm>

Village Island Tours (BC, Canada): <http://www.villageisland.com>

Essipit (Quebec, Canada): <http://www.essipit.com/eng/excursions/index.asp>

Whale Watch Kaikoura (New Zealand): <http://www.whalewatch.co.nz/static.html>

Yalata Aboriginal Community (Australia): <http://www.yalata.com/yalata/whale.htm>

Heather Zeppel

**Aboriginal Whaling** The **International Whaling Commission** defines **aboriginal whaling** as whaling conducted by groups of aboriginal, indigenous or native peoples with a proven nutritional and cultural need for whale meat and products. Currently, subsistence quotas are allocated for Bering Sea bowhead whales, eastern Pacific grey whales (both used by American and Russian natives), Atlantic humpback whales (used by St Vincent and the Grenadines) and north Atlantic fin and minke whales (used by **Greenland** natives).

Certain aspects of aboriginal whaling are controversial. The bowhead whale, which is listed under the US Endangered Species Act, has a relatively large quota (~ 65/year). Humane killing is also a concern – when traditional (often inefficient) methods are used, the whale dies a slow, painful death. When modern methods are used, death may be more humane, but the ‘traditional’ nature of the hunt changes. And, despite the requirement for local consumption of whale products, whale meat has been distributed beyond local communities. For example, it has been exported from Greenland to Denmark for commercial sale.

The humpback hunt in St Vincent and the Grenadines is also controversial. Although the quota is small (< 5/year), calves and non-target species (Bryde’s whale) have been illegally hunted. One humpback killed was an animal observed by **whale-watching** vessels on the northern feeding grounds, which sparked concerns about the hunt’s impacts on whale-watching tourism.

There have been suggestions that whale hunts could be culturally sustained, and made profitable as tourist attractions, by making them non-lethal. All the culturally significant rituals are performed, but there is only a ‘symbolic’ kill (i.e. the whale is touched with a blunt **harpoon** or marked with dye, but not injured). Currently, no hunts are conducted in this manner.

See also: Aboriginal Whale Watching.

#### **Related internet sources**

International Whaling Commission: <http://www.iwcoffice.org>

E.C.M. Parsons  
Naomi A. Rose

**Abyss** The **continental shelf** is a flat shallow area of ocean floor separating the land

from the deep ocean. The **continental slope**, with an average global slope gradient of about 4°, begins at the edge of the shelf and slopes down to the depths of the abyssal plains, a flat region of ocean floor seaward of the continental slope. Open **trenches** are deeper and are located 6–10 km below sea level (Batson, 2003).

The depths of oceans are divided into five main zones: epipelagic (0–200 m), mesopelagic (200–1000 m), bathypelagic (1000–3000 m), abyssopelagic or abyssal (3000–6000 m) and hadal (> 6000 m). From the bathypelagic zone down to the ocean floor the outside temperature levels off at 2°C. At these depths, there are no further visible changes in the surroundings except for bioluminescence, which is light generated by many deep-sea **plankton**, numerous gelatinous animals and small **crustaceans**. Beneath the sea off the Pacific Northwest coast, a volcanic ridge has formed black smoker chimneys, which are homes to life forms that thrive beyond the reaches of the sun’s light. Blind shrimp, giant white crabs and tubeworms are some of the 300 animal species located here. With no sunlight, no plants exist. The abyssal plains are thus pitch black: sunlight can penetrate only the very uppermost layers of the epipelagic and mesopelagic zones (Batson, 2003; PBS, 2005).

In 1960, the manned underwater vessel *Trieste* reached the bottom of the **Mariana Trench** in Guam. This manned descent of the hadal zone depths remains unbeaten even to this day (Batson, 2003).

Michael Spisto

**Accessibility** Accessibility is a variable quality of any location, but basically refers to the ease of getting to a **destination** or specific activity location and is closely related to the concept of movement minimization, especially when this is measured by the costs involved in overcoming distance. The first three ‘laws of tourism’ refer to the relationship between distance and accessibility. The first law is that the distribution of travel behaviour in space and time reflects an ordered adjustment to the factor of distance. The second, that travel and locational decisions are generally taken in order to minimize the frictional effects of distance. The third, that destinations and locations are variably accessible,

with some destinations more accessible than others. In a technical sense, accessibility is therefore a relative quality accruing to a location by virtue of its relationship to a system of transport. In an operational sense, it is the variable quality of centrality or nearness to other functions and locations. Accessibility is different from mobility. The latter refers to travel capacities and patterns, while the former refers to the issue of where you live or are located and what you need to have access to in order to meet the demands of the individual. Accessibility is a vital though often forgotten aspect of **tourism** since, without access, you cannot have a tourism destination. Accessibility is therefore critical in tourism business planning and is a key determinant of the location of tourism firms.

C. Michael Hall

**ACCOBAMS:** *see* **Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and contiguous Atlantic Area**

**Achille Lauro** The *Achille Lauro*, operated by an Italian company, was on a **Mediterranean** cruise when it was hijacked off the Egyptian coast by four armed men on 7 October 1985. The group, connected to the Palestine Liberation Front, ordered the captain to head for Tartus in Syria and called for the release of 50 Palestinian prisoners in Israeli jails. The ship was denied entry to Tartus and headed back to Port Said. Many of the passengers had left the ship before the hijacking for an extended excursion, but an elderly Jewish American passenger was killed and thrown overboard, along with his wheelchair.

It was uncertain what was happening on the ship and there was conflict amongst officials about how to respond. The events caused a serious dispute between the governments of Italy and the USA, also raising legal questions about responsibilities for the prosecution of terrorist acts committed in international waters. After negotiations, the perpetrators left the ship on 10 October and were eventually given lengthy jail sentences by an Italian court. The suspected mastermind, however, evaded justice.

The incident is a rare example of a marine hijacking and led to the **International Maritime Organization (IMO)** adopting a

set of guidelines to prevent unlawful acts against passengers and crews on board ships. The *Achille Lauro* continued in service, being reflagged in 1987 when Lauro Line became Star Lauro, but it sank in the Indian Ocean in 1994 after a fire. Two people died and eight were injured in the accident.

#### **Related internet sources**

BBC (2005) On this day: 7 October: <http://news.bbc.co.uk/onthisday>

H2G2 (2002) A hijack on the high seas: <http://www.bbc.co.uk/dna/h2g2/A730900>

IMO (2004) IMO 2004: Focus on maritime security: <http://www.imo.org/index.htm>

SS Maritime (2005) *Achille Lauro*: <http://www.ssmaritime.com/achillelauro.htm>

Joan C. Henderson

**ACS:** *see* **American Cetacean Society**

**Adriatic Sea** The Adriatic Sea is an arm of the **Mediterranean Sea** between Italy (west) and the Balkan Peninsula (east). The Adriatic extends northwest from 40° to 45° 45'N, with a total length of about 770 km (415 nautical miles, 480 miles) from the Gulf of Venice at its head, south-east to the Strait of Otranto, which leads to the **Ionian Sea**. It has an average breadth of about 160 km (85 nm, 100 miles), although the Strait of Otranto is only 85–100 km wide (45–55 nms). Its total surface area is about 160,000 km<sup>2</sup> (60,000 square miles). The main rivers flowing into the Adriatic Sea are the Po and the Adige in Italy.

The northern part of the sea is very shallow and its depth rarely exceeds 46 m (25 **fathoms**). Between Šibenik and Ortona a well-marked depression occurs, a considerable area which is greater than 180 m (100 fathoms) in depth. The deepest part of the sea falls below 1460 m (800 fathoms), and the average sea depth is some 240 m (133 fathoms).

The western coast is Italian, while the eastern coast runs along the countries of Slovenia, Croatia, Bosnia and Herzegovina, Montenegro and Albania. The Italian side of the Adriatic has some popular tourist sun and sea **destinations** such as Rimini and many **marinas**. Built on **islands** within one of the **lagoons** in the Gulf of Venice, **Venice** is in a unique situation. This city on water, with no cars and only float-

ing transport, attracts visitors from all over the world with its unique cultural attractions.

In the north-east corner of the Adriatic Sea, Slovenia has only 42 km of coastline, on which the popular destination of Portorož is located. But the Adriatic islands, which offer enormous potential for marine **recreation** and **tourism**, belong to Croatia. They are long and narrow, rising abruptly to elevations of a few hundred metres, with the exception of a few larger islands like Brač (Vidova Gora, 778 m) or the Pelješac peninsula (St Ilija, 961 m). Of the 1000 islands, many are not inhabited and offer virgin nature, while others have developed a marina, beach and accommodation infrastructure, altogether making a popular area for **sailing**, **windsurfing**, motorboating, swimming, sport **fishing**, **scuba-diving** and cruising. Along the Croatian coast the best-known tourism destinations are Poreč, Rovinj, Trogir, Split and Dubrovnik, which are small Mediterranean tourism cities whose natural and cultural features attract visitors, mainly during the summer months.

Fishing is an important activity in the Adriatic Sea: lobsters, sardines and tuna comprise the chief catch.

On the mainland, notably in the magnificent inlet of the Gulf of Kotor in Montenegro, the mountains often rise directly out of the sea. This small country has a fast-developing tourism sector and visitor numbers are rapidly growing, although the neighbouring Albania – which is known to be rich in sandy beaches – has not opened to high numbers of visitors, mainly due to its lack of tourism and general **infrastructure**.

Major cities on the north-eastern coast include Trieste in Italy; Izola, Koper, Piran and Portorož in Slovenia; Pula, Rovinj, Poreč, Rijeka, Zadar, Šibenik, Trogir, Split and Dubrovnik in Croatia; Herceg Novi, Bar and Ulcinj in Montenegro; and Durrës in Albania. Main **ports** are in Trieste, Ancona and Bari in Italy, Koper in Slovenia and Rijeka and Split in Croatia.

The bora or bura (north-east wind) creates **navigation** dangers in winter. Also notable are the sirocco or jugo (southern wind), which brings rain in the winter, and the maestral (western wind), which brings nice weather in the summer. Tidal movement is slight. The amphidromic point lies just off the north-western shore, near Ancona.

Tanja Mihalič

**Advanced Wastewater Purification:** see **Advanced Wastewater Treatment Systems**

#### **Advanced Wastewater Treatment Systems (AWTS)**

Advanced Wastewater Treatment Systems (also known as advanced wastewater purification) were first installed on cruise ships at about the same time the State of Alaska undertook its **Alaska Cruise Ship Initiative**. The 2001 legislation produced by the initiative prohibits discharges containing suspended solids > 150 mg/l or a faecal coliform count > 200 colonies/100 ml. The Alaska standards have helped stimulate installation of advanced wastewater treatment systems on new ships and retrofitting of existing ships.

Generally speaking, AWTS is any treatment of sewage that goes beyond the secondary or biological water treatment stage and includes the removal of nutrients such as phosphorus and nitrogen and a high percentage of suspended solids. The effluent is often referred to as near-drinking-water quality by cruise lines; however, as recently as 2003, sampling of the effluent from the systems designed for use on cruise ships revealed levels of ammonia, chlorine, copper, nickel and zinc in excess of California and Alaska water quality standards, as well as excessive nutrient loading. In most cases the water may be recycled for use in the laundry or purposes other than for direct human consumption.

In the case of cruise ships, there are several types of AWTS technology in current use. Each produces sewage sludge, which is either dumped at sea or is de-watered and incinerated. The systems include: (i) the Activated Oxidation Process, which uses filtration for solids and pollutants and oxidation for disinfection; (ii) Reverse Osmosis Filtration, which removes solids and pollutants and uses ultraviolet disinfection; and (iii) Bioreactor/filtration, which employs an integrated system of enhanced aerobic digestion and low-pressure membrane filtration and ultraviolet for disinfection. Manufacturers of systems used on cruise ships include: Hydroxyl, Zenon, Rochem, Scanship and Hamworthy (among others).

Ross A. Klein

**Adventure Tourism** The sea offers many opportunities for **recreation** and tourism



purposes and, in practical terms, it is a source of food and transport. Marine being defined as the sea, seashores, islands and related physical resources, marine tourism is a temporary, short-term movement of people to destinations outside their normal environment and activities within a marine setting. The sector thus includes activities such as ocean and coastal water transport, hotels and restaurants, **islands** and **beach resorts**, sea sports and recreation. In the past, most of the marine environment was 'protected' from tourist use by its inaccessibility, safety concerns and the relatively high cost of recreating in the sea. Marine tourism has developed over the centuries from 'getaway' islands for the Roman elite to the discovery of seaside tourism in Western Europe (1750–1840) to the **mass** and **special interest tourism** of the late 20th century (Corbin, 1994).

Significant advances in the growth of improved transportation (particularly cruise vessels and pleasure crafts) and technology have enabled greater access to information about marine tourist **destinations** and activities. This has been coupled with the increase in international travel, making marine environments more accessible in real and economic terms. Presently, most marine adventure tourists are day-trippers coming for picnicking and basic recreational activities such as swimming. Others include those interested in marine-based recreation activities or water sports, including **scuba-diving**, **yachting**, **angling**, boating and **sailing**. Of increasing popularity has been the advent of **marine wildlife tourism**, which provides tourists with unique opportunities to view animals in their natural habitat and engage in such interactive experiences as **cetacean** watching, **dolphin** feeding and swimming and **seal** diving.

However, despite its potential, the growth of marine tourism is also not without pitfalls. Infrastructure needed to support the substantial growth of the sector is still lacking in many places. Often, the existence of quality and pristine marine environments has declined from the unrestricted growth of marine tourism activities and overdevelopment-related problems. Increasing competition with other economic sectors over the use of water resources, tourism and agricultural activities is also paramount. The development of marine wildlife tourism ventures as a major commercial industry has also

inevitably created adverse impacts on the wildlife. Thus, development of the marine tourism industry should not be at the expense of the very resources on which it is dependent. The growth potential should be examined carefully to avoid overcapitalization or overcapacity and to correlate growth with the capacity of the environment to support the industry. Towards this end, pragmatic environmental protection and **conservation** policies need to be adopted to promote responsible or **sustainable marine tourism** by taking into account the relationship between the industry and the marine environment.

*See also:* Beach Resort, Coastal Resorts, Harbour.

Ilika Chakravarty

**Advocacy** Advocacy is any form of support given by individuals or organized groups (e.g. interest group or resident action group) to a belief, idea, instrument, action or (social) cause. Advocacy groups support all manner of things – conservation programmes for flora and fauna and broader ecosystems, recreational activities such as **fishing** and off-road driving, opposition to resort development in a local community and **infrastructure** construction (e.g. **marinas**, highways and toll roads).

The concepts of issue and advocacy coalition networks are important ones in aiding understandings of, and approaches to studying, how, why and when individuals and groups or actors and agencies coalesce around particular issues, and why relationships among related advocates may be lengthy or short, tight or loose, well or poorly organized, complementary or contradictory.

Sabatier (1988), for example, critiqued advocacy coalition frameworks, arguing that actors and agencies develop allegiances and partnerships, but that unequal power arises across individual policy matters. These coalitions of interest work to try to influence policy formulation and implementation, and on one issue they may agree with each other; on another matter they may be strongly opposed. Whatever the case, advocacy is a very important mechanism for the ways in which power relations in society are manifested, for promoting a cause and for enhancing people's access

to policy and decision-making processes – and hence their quality of life. There are also important instances where right to life (and, in effect, quality of life) is advocated for marine animals such as whales, sharks and dolphins.

John M. Jenkins

**Aegean Sea:** *see* **Greek Islands**

**Aft** Aft is the direction towards the **stern** of a **vessel**. When someone is going towards the stern, they are said to be going aft. The stern area is sometimes referred to as the aft end of a vessel.

Fredrick M. Collison

**Agreement on the Conservation of Small Cetaceans of the Baltic and North Seas (ASCOBANS)**

The acronym ASCOBANS refers to the Agreement on the Conservation of Small Cetaceans of the Baltic and North Seas, made between ten countries bordering these areas in 1991: Belgium, Denmark, Finland, France, Germany, Lithuania, the Netherlands, Poland, Sweden and the UK. When the agreement came into force in 1994, these and other countries considering accession shared the common concern that small, toothed **cetaceans** in the **Baltic Sea** and **North Sea** were probably affected by fishery by-catch, habitat deterioration from marine pollution and underwater acoustic disturbances, and that the numbers of Baltic Sea harbour **porpoises** had drastically decreased. ASCOBANS member countries recognized through the agreement that more knowledge on the population status of these **marine mammals**, listed as protected species, was urgently needed in order to ensure they remain an integral part of the marine ecosystems. With small cetaceans migrating across maritime borders, the agreement is a commitment of cross-country coordination of research efforts. It also promotes collaborations between the governmental sectors and **non-governmental organizations** in order to create a basis for efficient management and **conservation**, while still allowing for continued maritime activities.

**Related internet sources**

Official ASCOBANS secretariat website: <http://www.ascobans.org>

United Nations Environment Programme, CMS – Convention of Migratory Species: [http://www.cms.int/species/ascobans/asc\\_bkrd.htm](http://www.cms.int/species/ascobans/asc_bkrd.htm)

Cecilia Vanman

**Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and contiguous Atlantic Area (ACCOBAMS)**

The acronym ACCOBAMS refers to the Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and contiguous Atlantic Area. The agreement entered into force on 1 June 2001 and is the first binding agreement between countries in these regions, stating that **cetaceans** and their associated **environments** need to be preserved for present and future generations. Member countries recognize that cetaceans are an important part of the **marine ecosystem**. They are under threat from ship strikes, by-catch from **fishing** activities and habitat degradation in the forms of, for example, pollution or underwater noise from human sources. The ACCOBAMS member countries have therefore committed themselves to contributing to the **conservation** of cetaceans and their habitats through cross-collaborations between governmental sectors and **non-governmental organizations**. These collaborations are intended to ensure and improve efficiency of management plans through coordinated research efforts and mutual reporting of results. With cetaceans migrating and human activities operating across international maritime borders, these plans are aimed at integrating conservation actions with socio-economic interests such as fishing, sailing and shipping traffic between countries.

**Related internet sources**

ACCOBAMS official web site: <http://www.accobams.org>

United Nations Environment Programme, CMS – Convention on Migratory Species: [http://www.cms.int/species/accobams/acc\\_bkrd.htm](http://www.cms.int/species/accobams/acc_bkrd.htm)

Cecilia Vanman

**Air-Sea Programme:** *see* **Fly and Cruise**

**Åland Islands** The Åland Islands are an autonomous group of **islands** in Finland,

constituting the most southern part of the border with Sweden and are on the axis between Helsinki and Stockholm. They consist of an **archipelago** with about 6500 islands of various sizes, an area of 1525 km<sup>2</sup> and 26,530 inhabitants (2004). The group enjoys an extended independence in relation to Finland and has a neutral, non-military status. The official language is Swedish. **Tourism** is an essential part of the economy on the islands.

Ole Rud Nielsen

#### **Alaska Cruise Ship Initiative (ACSI)**

In response to the illegal dumping of wastes in Alaskan waters, the Alaska Department of Environmental Conservation (ADEC) initiated a public forum in 1999. This ADEC forum brought together various stakeholders, including the US Coastguard, the US Environmental Protection Agency, concerned citizens and industry representatives. The purpose of the forum was to examine the cruise ship industry's waste management and disposal practices while in Alaskan waters. The work of the ADEC forum became known as the Alaska Cruise Ship Initiative (ACSI). Specifically, the ACSI set forth four working groups to undertake research in the areas of cruise ship waste disposal, waste water discharges, air emissions, oil spill prevention and environmental leadership.

The fact-finding mission culminated in the production of two reports. The ACSI Part 1, Final Report set forth the steps to be taken to develop sampling and monitoring programmes of the cruise ship industry, while Part 2 set forth the results of the sampling and monitoring programmes, concluding with recommendations. In 2000, as a result of the ACSI research, the Alaskan legislature passed cruise ship legislation that prohibited the discharge of untreated sewage in Alaskan waters. The legislation does permit the discharge of treated sewage (**black-water**) that does not exceed an effluent level of 200 faecal coliform/100 ml, with total suspended solids of 150 mg/l. However, all treated sewage discharges must be made at least 1 mile from land, while the ship is moving at a speed of at least 6 knots. Ship compliance with the legislation is financed through a US\$1 per passenger levy on all ships travelling to Alaska or passing through its waters. In 2001, further legislation was passed entitled

'Commercial Passenger Vessel Environmental Compliance Program', which mandated the monitoring and testing of wastewater and air opacity readings of cruise ships in Alaskan waters. The Alaska Cruise Ship Initiative represented the first time a region had passed laws controlling cruise ship waste disposal practices and cruise ship air emissions.

#### **Related internet source**

Alaska Cruise Ship Initiative, Alaska Department of Environmental Conservation:  
[http://www.dec.state.ak.us/water/cruise\\_ships/pdfs/acsireport2.pdf](http://www.dec.state.ak.us/water/cruise_ships/pdfs/acsireport2.pdf)

Valerie Sheppard

**Albatross** The 22 species of Albatross are the world's largest flighted birds. They are true ocean wanderers, with many species spending over 90% of their lives (over 60 years) at sea. They can travel thousands of kilometres every month, soaring from one side of the world to the other.

#### **Related internet sources**

Save the Albatross: <http://www.savethealbatross.net>  
Royal Society for Protection of Birds: [http://www.rspb.org.uk/international/albatross\\_appeal/index.asp](http://www.rspb.org.uk/international/albatross_appeal/index.asp)

Mark Orams

#### **Alcatraz: see Prison Island**

#### **Aldabra Atoll, Republic of Seychelles**

One of the largest raised **coral atolls** in the world, Aldabra measures 34 km east-west and 14.5 km north-south, comprising 155 km<sup>2</sup> of land. Its 200 km<sup>2</sup> **lagoon** is connected to the western **Indian Ocean** by passes that perforate the land rim in the north-east, north-west and west. Composed of uplifted marine limestone rarely over 8 m above sea level, Aldabra sits atop a sea mount that rises more than 4000 m from the sea floor. It was uninhabited until the late 1800s, when labourers were stationed there to exploit green hawksbill **sea turtles**, **mangrove**, giant **tortoises** and fish. The tortoises provided live food for European ships during the Age of Sail.

In 1982, 6 years after **Seychelles'** independence, Aldabra was declared a **World Heritage Site**. The Royal Society of London built a research station on Picard, the westernmost island, and since 1979 this has been run

by the Seychelles Island Foundation. Aldabra became one of the best-studied coral atolls in the world, with the equivalent of 50 men-years work. Isle Malabar, along the north, has two endemic birds, the flightless rail and the Aldabra brush warbler. Most of the 100,000 tortoises live on Grand Terre, which forms the eastern and southern sides of the atoll. The flora consists of 274 species, 176 of which are native terrestrial species; there are 15 indigenous land birds and 11 species of breeding seabirds.

The **coral reefs** host nearly 180 fish species, nearly 50 species of scleractinian corals and a wide diversity of other **invertebrates**. The *Lindblad Explorer* visited the Atoll in the 1970s, and cruise ships that have visited Aldabra during the last decade include *Island Sky*, *Le Ponan* and *World Discoverer*; three Seychelles-based boats also visit: *Indian Ocean Explorer*, *Lady Anja* and *Seastar*, the first-named a live-aboard dive boat. Companies like Society Expeditions and Zeagrams Expeditions occasionally feature Aldabra in their brochures, spending on average 8 h at the Atoll, and passengers are allowed to disembark only on Picard. Between 300 and 500 tourists visit Aldabra each year; the landing fee is €100 per person per day.

#### Related internet source

Seychelles Islands Foundation: <http://www.sif.org/aldabra>

Jack Frazier  
Lindsay Chong Seng

**Algae** These are photosynthetic organisms that are capable of harvesting sunlight and producing oxygen simultaneously as part of their normal metabolic activity. The algae are a diverse group of organisms that are unicellular (one-celled) or multicellular in form. Multicellular green, red or brown algae are often referred to as **seaweed**, usually found in the shallow areas in the **marine** environment. The brown algae, **kelp**, can grow up to 70 m in length. Taxonomically, algae can be classified into either eukaryotes or prokaryotes based on their cellular structure and components within their cells. Eukaryotic algae possess cellular structures that are similar to higher plants. Prokaryotic algae, called blue greens or cyanobacteria, are different

and possess a more primitive cellular composition. Cyanobacteria are recognized for producing and increasing the earth's oxygen levels over time, thus changing the original composition of the ancient atmosphere. Some filamentous cyanobacteria have specialized cells called heterocysts, which have the unique ability to fix nitrogen.

Phytoplanktons (see also **plankton**) are algae that live suspended in the water column. In addition to producing oxygen and removing carbon dioxide, they also play an important part in the marine food chain as an abundant natural food source for other marine creatures. Algal blooms comprise high densities of algal cells that form a mass that becomes visible to the naked eye. Blooms appear in various shades of green, brown, yellow or red, depending on the colour of the predominant organism in the bloom.

The dumping of sewage, agricultural run-offs and the rise in sea temperature has contributed to the regular recurrence of algae blooms (see **red tide**, **eutrophication**). The large mass of algal cells in a bloom physically blocks off the sunlight, thus restricting any photosynthetic activity from occurring within the bloom. The increase in respiration rates in turn causes a decrease in dissolved oxygen levels. Fish and other marine life die when dissolved oxygen concentration falls below the critical level that can support life. This problem is further compounded by the decomposition of dead organisms, hence reducing oxygen levels further. Some species of algae produce toxins (see **red tide**). These algae are ingested by marine life, which may or may not survive the toxin. Toxins are released directly into the environment when the algae die and decompose. Usually, the larger creatures at the top of the food chain are most severely affected by the toxins as the concentrations increase at each level of the food chain.

The cyanobacterium, *Spirulina* (*Arthrospira plantensis*), is cultivated and harvested as a nutritional health supplement. Macroscopic forms of algae or seaweed, such as agar, are consumed by humans. Seaweed can also be harvested and used as fertilizer. Some algae form symbiotic relationships with other organisms (see **coral**) by providing organic material for the host organism. Natural pigments that are produced by algae can



be used as colouring agents or natural dyes in the food and textile industries. Algae can also be used to remove polluting organic matter in the aquatic environment.

Christine Lee

**All-inclusive Cruise** Ocean cruises have become available to a wider range of people today than ever before. Part of the reason for this is that more options are currently available to consumers. In the past, there were four or five **cruise lines**, each of which offered similar products. Today there are upwards of 20 different lines offering a variety of products. One more recently developed option is the all-inclusive cruise.

Many first-time cruisers are surprised when they take their first cruise. Novices often believe that they have paid for all the services they will get on their cruise vacation. However, this is not typically so. The basic cruise fee covers only accommodations for the length of the cruise, meals, most on-board entertainment and the use of the ship's facilities. Usually not covered are the costs of alcoholic drinks, taxes and fees for the **ports** where the ship stops (**ports of call**), some special on-ship activities and tips. These can amount to several hundred US dollars for a cruise of 1 week or longer.

In an effort to offer a different product and lessen the negative impressions due to these extra fees, some cruise lines are offering all-inclusive cruises. One cruise line advertises that, for an all-inclusive cruise, customers can 'leave their wallet at home'. Vacationers must be careful, however. Some all-inclusive cruises are more all inclusive than others and very few, if any, are really all-inclusive. Silversea Cruises are as close to being really all-inclusive as any other cruise line. Radisson Seven Seas and Seaborn Cruise Lines also offer all-inclusive packages, but their products may still require some extra payments. As might be expected, there is a trade-off with such a product. Passengers must obviously pay for the services they receive. The initial cost of an all-inclusive cruise is commonly higher than the cost for other cruises for which the passenger pays for services over the course of the cruise. While this is the case, the convenience of not having to pay several times and the removal of the not knowing how much to pay for certain services

appears to be worth the extra front-end cost for many travellers.

#### **Related internet sources**

The All Inclusive Concept: [http://www.roadlesstaken.com/The\\_All\\_Inclusive\\_Concept.htm](http://www.roadlesstaken.com/The_All_Inclusive_Concept.htm)

Understanding Cruise Prices: <http://www.cruisemates.com/articles/before/cost.cfm>

Montgomery County news: <http://www.montgomerycountynews.net/travel05-21-03.htm>

Cruise Vacation Source: <http://www.all-inclusives.com/cruises.htm>

Daniel G. Yoder

**All-inclusive Resort** The concept of all-inclusive is basically self-explanatory: everything is included in one price. Unfortunately, it is not always quite so simple. The term all-inclusive can mean different things at different resorts, and it may not include every single amenity. For example, some all-inclusive resorts include only drinks and food, while others may also cover activities and clubs. Still others reflect the true spirit of all-inclusive and include everything for a one-time fee. In these resorts all drinks, sports, taxes, transfers from and to the airport are included, with tipping not being allowed. Money is eliminated from the holiday experience, except for personal expenses such as phone calls, laundry and activities outside the resort, such as shopping, car hire and dining off-property.

While each all-inclusive resort will vary in some of its amenities and special offerings, for the most part an all-inclusive vacation 'basic' typically includes:

- Return airport transfers to and from the resort.
- Accommodation.
- All hotel taxes.
- Tipping is prohibited as tips are included in the price.
- All meals, often with a wide choice of on-property gourmet and speciality restaurants, and snacks – snack bars are usually open 24 h/day.
- Unlimited beverages – including mixed drinks, wine, beer, champagne and non-alcoholic beverages.
- Water and land sports, generally with instructors when needed.
- **Scuba-diving**, with free resort certification included.

- **Snorkelling**, with equipment.
- **Waterskiing**.
- **Windsurfing**.
- **Sailing**.
- Water trikes or paddle boats.
- Tennis courts, usually with a number of lit courts for evening play.
- **Beach** and/or water **volleyball**.

The all-inclusive holiday concept has been around for a long time. Some authors attribute its beginning to British holiday camps like Butlins and Pontins during the 1930s. Sir Billy Butlin had nurtured the idea of a holiday camp when observing the way landladies would, sometimes literally, push families out of their lodgings between meals, regardless of the weather conditions. Butlin toyed with the idea of providing holiday accommodation that encouraged holidaymakers to stay in the premises and even provided entertainment for them between meals. However, they were not totally all-inclusive because they were not cashless. Drinks, tips and other services were paid for in some form of currency.

The concept of an all-inclusive resort, a boundary that includes accommodation, entertainment and other facilities, was spread around the world by Club Méditerranée in the 1950s. Basically, each resort provides an extensive list of services and activities in one single package. This comprises lodging, food, use of facilities, sports activities, games and shows. However, again, most Club Meds cannot be considered as all-inclusive by today's definition, as alcoholic beverages and other services require the use of plastic beads or tickets as a form of payment. The concept offered by the **cruise industry** is a very similar package, with extras such as shore excursions, drinks, tips and premium food and activities adding considerable cost to the final price (**all-inclusive cruises**).

Nowadays, the 'true' all-inclusive concept mentioned earlier can be characterized by the service provided by two resort brands: SuperClubs and Sandals. In fact, the credit of introducing a luxury version of the all-inclusive concept goes to John Issa, the Jamaican owner of the SuperClubs, who developed the totally all-inclusive resort in 1976. He developed and registered the brand 'Super-Inclusive' to designate the vision of his business for the all-inclusive concept

(Issa and Jayawardena, 2003). Just to give an example of how far this concept goes, when in 2006 the US State Department proposed new passport requirements for 2007 and beyond, SuperClubs vacations were advertised as 'Passport Inclusive'. The cost for new and renewal US passports (\$US 97 per person) has been credited towards all SuperClubs Super-Inclusive vacations.

Five years after the introduction by John Issa, Gordon 'Butch' Steward, chairman of Sandals Resort International, opened his first all-inclusive hotel at Montego Bay, Jamaica. Today, Sandals Resorts is the largest operator of luxury all-inclusive resorts in the Caribbean. Sandals has a total of 14 couples-only properties, including seven in Jamaica, three in St Lucia, one in Antigua and one in Nassau, **Bahamas**. Sandals also has two resorts in Cuba, which can be used only by citizens of countries other than the USA. A few years ago, advertisements for the company were banned from the London Underground after gay rights protests, accusing the advertisements of being exclusively for mixed-sex couples.

Nearly half of the 100 best all-inclusive resorts in the world are located in the **Caribbean**. In fact, some people believe that part of the success attributed to this type of holiday is due to the 'Caribbean charm'. Jamaica, in particular, is the Mecca of all-inclusive resorts, with 17 of the top 100 being located there. Other countries that hold this selected group of resorts include Bahamas (6 resorts), Antigua and Barbuda (4), British **Virgin Islands** (4), St Lucia (4), Barbados (3) and Dominican Republic (3).

Apart from the single and family segments, two other groups are particularly targeted by all-inclusive resorts: the markets for wedding and honeymoon packages. Some all-inclusive resorts offer free room upgrades, a free bottle of champagne and sometimes an extra free night for guests marrying in the resort or staying there for their honeymoon. Many resorts also provide free weddings, as long as couples stay at least seven nights. At SuperClubs, weddings include:

- Marriage licence, minister fees, preparation of documents and affidavits.
- Wedding planner.
- Recorded music upon request.

- Witnesses, if needed.
- Champagne or sparkling cider.
- Decorated wedding area, wedding cake and bouquet and boutonniere.
- Complimentary off-property wedding guest passes.
- Candlelit dinner for bride and groom.
- Continental breakfast in bed, morning after wedding.

Apart from these free items, couples can add in several paid amenities, such as: floral arrangements, private wedding reception, massage, in-room beautician (hair, nails and make-up), photography and video services, among others.

Finally, it is worth mentioning that a frequent critique of all-inclusive resorts is that they do not contribute to the local economy and that they damage the local **environment**. The fact that most resorts are located in relatively remote areas, away from major local population centres, makes it hard for people staying there to see any local sights or support local businesses. The other argument against all-inclusive resorts is that most properties are owned and run by large multinational corporations, such as Club Med, Sandals or SuperClubs, thus diverting money away from local companies. Another negative aspect is that the resort popularity can increase property values to such a degree that the resort workforce cannot afford to live near their workplace, causing the creation of nearby 'bedroom communities'. For example, in Costa de Saúpe, in Brazil, the working population has to commute every day from apartment blocks located far away from the resorts. Proponents of all-inclusive resorts point to the fact that these resorts usually bring large numbers of visitors to the country, who must travel through local airports and towns to arrive at the resort. In addition, they also state that the resorts provide jobs in areas that are economically impoverished and away from the major centres.

Guilherme Lohmann

**Allocentric:** *see* **Continuum of Vacation and Leisure Travellers**

**Alternative Dining** Alternative dining on cruise ships offers a choice from diverse menu selections and provides flexible food

options, often combined with various types of cuisine at usually 'extra-tariff'. These can range from informal restaurants that serve tapas and drinks to steakhouses and more formal dining options for the passengers.

#### **Related internet sources**

Cruise mates: Your first cruise – what to expect: <http://www.cruisemates.com/articles/before/Kuki-Basics1.cfm>

Cruise Reviews: <http://www.cruisereviews.com/FACQ.htm>

Manoj Sharma

**Alternative Tourism:** *see* **Marine Eco-tourism**

**American Cetacean Society** The American Cetacean Society (ACS) was founded in 1967 to promote the conservation of **whales**. This non-profit organization now works to educate people on all **cetaceans**, including human impacts on the marine environment. Members of ACS participate in education, conservation and communication with the intent of helping others, including governmental agencies, to appreciate the delicate balance needed to sustain a healthy marine ecosystem.

One of ACS's most popular means of educating the public on the realities of ecosystem management is to lead **whale-watching** trips. Such trips provide people with up-close-and-personal experiences with whales and **dolphins**. A free cetacean curriculum is available through the ACS web site, as is information on conferences, species fact sheets, policy information and academic references.

There are six regional chapters of ACS: five are in California and the sixth is in the Puget Sound area of Washington. Members can reside in any state or country and are welcome to expand chapters to new regions.

*See also:* Marine Mammal Protection Act; Swim-with-Dolphins Tour/Programme; Swim-with-Whales Tour/Programme; Whale Eco-tourism; Whale-watching Codes of Conduct.

#### **Related internet sources**

American Cetacean Society: <http://www.acsonline.org>

ACS; Los Angeles Chapter: <http://www.acs-la.org>

Teresa O'Bannon

**American Virgin Islands:** *see* **Virgin Islands**

**Amphibious Vehicle** The term amphibious is Greek and means 'living on land and water'. The first amphibious vehicle was invented by the American, Oliver Evans in 1805. Apart from military applications, there has been a number of developments of civilized amphibious vehicles. The only mass-produced model was the German *Amphicar*. More recently, a variety of amphibious buses have been developed for tourism purposes. Such vehicles are popular in cities located at a river (for example, Ottawa in Canada) or on the coast (for example, Singapore, *see* Fig. A2). Most of these swimming buses are custom-made, and can carry up to 50 passengers. Another type of amphibious vehicle is the **hovercraft**, which, when on land, does not travel on wheels but on an air cushion, generated by large propellers.

**Related internet sources**

Amphibious Vehicles Pty Ltd: <http://www.amphibiousvehicles.com.au/index.html>

Gibbs Technologies: <http://www.aquada.co.uk>

Lady Dive Tours Ottawa: <http://www.amphibus.com>

Ducktours Singapore: <http://www.ducktours.com.sg>

Michael Lück

**Andaman and Nicobar Islands (ANI), India** More than 300 **islands** and 200 emergent rocks lie between 6° 45' × 13° 41' N and 92° 12' × 93° 57' E, with a total land area



**Fig. A2.** Amphibious bus, 'Singapore Ducktours', Singapore (photograph courtesy of M. Lück).

of nearly 8250 km<sup>2</sup> and the highest peak at 732 m above sea level. Administered as a Union Territory, this gives India claim to an additional 600,000 km<sup>2</sup> of **Exclusive Economic Zone**. Endemic tribal groups on the Andamans include negroid Jarawas, Onges, Andamanese and Sentinelese; on the Nicobars are mongoloid Nicobarese and Shompens. Colonists include convicts, refugees from Bangladesh and mainland India, military and other government personnel. The ANI are an internationally recognized 'hot spot' for species diversity: more than 3500 flowering plants; 2800 terrestrial animals and 4500 marine animals, with high rates of **endemic species** (e.g. nearly 400 species of **corals**).

Since the late 19th century the main economic activity has been commercial forestry, which has become a major threat to biological diversity and indigenous groups. This stopped with a High Court Order in 2003. Significant threats include sand mining of coastal **beaches**, introductions of exotic species, poaching marine **resources** and illegal logging and encroachment of forested areas, as well as increased highway construction, rural development and extensive agriculture on flatlands and hill slopes. Since 1978, non-Indian citizens have been allowed to travel to Port Blair and certain areas in the Andamans, but the Nicobar Islands are off-limits even to Indians not holding a tribal area pass.

**Tourism** was officially declared an industry in 1987, but although expenditures on this sector increased after 1993, income has been stagnant, due especially to heavy government subsidies to facilitate the resident population. A 1997 joint UNDP/UNWTO (United Nations **World Tourism Organization**) plan to develop tourism has been criticized as insensitive to environmental and social risks. National tourism to Port Blair began to grow in 1993, and uncontrolled tourism is now a major concern, for there are neither insufficient infrastructure nor basic resources. Potable **water** is a major problem, and the ANI cannot sustain **mass tourism**.

Jack Frazier

Harry V. Andrews

**Angling:** *see* **Fishing**

**Antarctic Heritage Trust:** *see* **Antarctica**



### Antarctic Peninsula: see *Antarctica*

**Antarctic Tourism** Despite its extremes of latitude, altitude, physical geography and climate, **Antarctica** is a popular and iconic tourism destination that has received steadily increasing numbers of commercial visitors in recent decades (Waterhouse, 2001). Given the relatively pristine nature of the Antarctic environment, concerns are commonly expressed about increases in the volume of tourist activities, given that these may lead to an increased threat of environmental damage and disturbance to wildlife. Most operators carrying tourists to Antarctica are members of the **International Association of Antarctica Tour Operators (IAATO)**, which comprises 78 members from 14 countries. Membership of IAATO requires operators to report directly to IAATO and the US National Science Foundation (NSF). Reporting details include tour specifications, landing sites, numbers of passengers and responses to potential environmental impacts. IAATO reports annual Antarctic tourism activities each year to Antarctic Treaty Consultative Meetings (ATCMs).

Figure A3 presents IAATO data on projected and actual visitor numbers to the Antarctic across the 15-year period from 1992 to 2006.

Antarctic tourism takes place in two primary forms: seaborne and airborne tourism.

#### *Seaborne tourism*

Although Thomas Cook unsuccessfully sought to arrange seaborne tourist expeditions to Antarctica in the early part of the 20th century, dedicated tourism cruises by ship essentially date to the visits of the *Lindblad Explorer* in the late 1960s (Maher, 2006). Although the first ship to visit Antarctica carrying tourists dates to 1958/1959, the visits of the *Lindblad Explorer* are generally viewed as the beginning of the modern period of Antarctic tourism. This ship accommodated up to 140 passengers. Expeditions were guided with onboard lectures, briefings and shore landings. Seaborne Antarctic tourism has increased over recent decades by average growth rates of 2.2% (1960s), 12.3% (1970s), 13.0% (1980s) and 72.0% (1990s). However, these figures mask

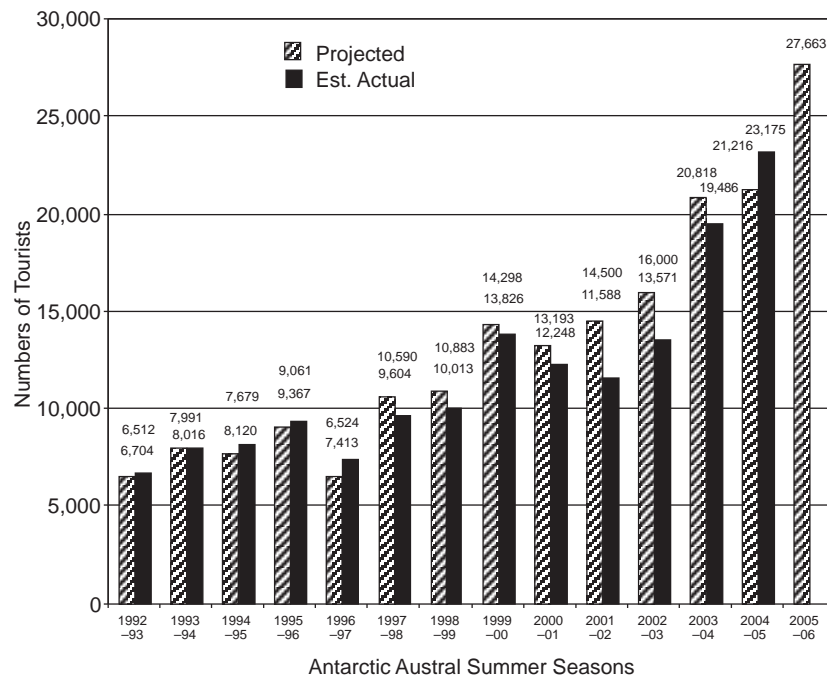


Fig. A3. Antarctic tourism trends, 1992–2006 (from IAATO, 2006).

important annual variations in Antarctic tourism. During the 1980s, for instance, a 185% increase in commercial tourist visitation in 1986–1987 was offset by decreases in total visitor numbers of 50%, 35% and 22% in the 1982–1983, 1984–1985 and 1989–1990 seasons, respectively. IAATO also reports that decreases in the number of tourists visiting Antarctica occurred in 2000–2001 and 2001–2002, most likely as a consequence of events such as millennium celebrations, 9/11 and SARS. Ship-borne tourism is the dominant mode of Antarctic tourism, representing over 95% of the all tourists visiting the continent.

The other noteworthy form of Antarctic tourism is individual visits generally conducted in small private yachts. IAATO estimates that approximately 1000 people visited Antarctica in private yachts in 2004–2005, although this form of tourism is unreported and, therefore, completely unregulated.

#### *Airborne tourism*

The first Antarctic overflight took place in December 1956, when a Chilean passenger

aircraft overflew the Antarctic Peninsula with 66 passengers on board (Maher, 2006). The following year tourists were landed at McMurdo Station by a Pan American Airways Stratocruiser aircraft flown from Christchurch, New Zealand. Pan American Airways returned to Antarctica in 1977, when a Boeing 707 aircraft flew from the USA to London, Cape Town and Auckland, over the North and South Poles to commemorate the 50th anniversary of the airline.

Following this flight in 1977, overflights were commenced from Australia and New Zealand by commercial airliners operated by Qantas and Air New Zealand. Around 40 flights carrying over 11,000 passengers were conducted between 1977 and 1979. Commercial overflights were discontinued when an Air New Zealand DC-10 crashed into Mount Erebus (Ross Island) in November 1979, killing all 279 passengers and crew. Commercial overflights recommenced in 1994 in the form of a partnership between Croyden Travel of Melbourne (Australia) and Qantas (see Table A1). Aside from commercial overflights, the landing of tourists by aircraft in Antarctica has centred on

**Table A1.** Commercial aircraft flights and airborne tourism numbers overflying the Ross Sea region (1977–2001) (from Headland, 1989, 2002).

Austral season	Flights	Passengers
1977	1 Pan American Airways <sup>a</sup>	168
1977–1978	9 Qantas, 6 Air New Zealand	
1978–1979	13 Qantas, 4 Air New Zealand	
1979–1980	5 Qantas, 4 Air New Zealand	
	Services discontinued <sup>b</sup>	
Subtotal	42	Approximately 10,000
1994–1995	6 Qantas	2134
1995–1996	9 Qantas	2958
1996–1997	10 Qantas	3449
1997–1998	9 Qantas	3127
1998–1999	9 Qantas	3127 <sup>c</sup>
1999–2000	9 Qantas	
2000–2001	6 Qantas (ongoing)	2041
Subtotal	58	Approximately 20,000
Total	100	Approximately 30,000

<sup>a</sup> Pan American Airways Boeing 707 aircraft flew from the USA to London, Cape Town and Auckland, over the North and South Poles to commemorate the 50th anniversary of the airline.

<sup>b</sup> 28 November 1979. Air New Zealand DC-10 crashed into Mount Erebus (Ross Island), killing all 257 passengers.

<sup>c</sup> In 1998–1999, Avant Airlines began a series of annual Antarctic flights over the Antarctic Peninsula. They completed 22 flights from Punta Arenas, carrying approximately 1100 passengers.

the commercial activities of Adventure Network International (ANI), which carries tourists to Patriot Hills in the Antarctic Peninsula area. The ANI operation in and out of Patriot Hills is served by Hercules and Twin Otter aircraft. This operation serves private climbing expeditions and visits to the South Pole. IAATO reports that ANI conducted the visits of 190 passengers to Antarctica during the 2004–2005 season.

*Regional variation: the unique case of the Ross Sea region*

While it is apparent that levels of visitation to Antarctica have increased significantly over the last 15 years (see Table A.1), these figures obscure the emergence of significant regional diversity in Antarctic tourism. Antarctic tourism is typified by extreme spatial and temporal variation. So, while overall growth in Antarctic tourism has generally been robust, significant variations and fluctuations exist within the overall pattern of growth. Tourism is a recent, and relatively modest, phenomenon in the Ross Sea region of Antarctica. Between 1980 and 1989, the numbers of tourists visiting the Ross Sea region increased from 0 to 280 per annum, and from 560–800 per annum over the period 1990–1995. Thus, while commercial tourism development in the Antarctic Peninsula dates to 1958, Ross Sea tourism has taken place most notably since 1990.

Tourism in the Ross Sea region primarily takes the form of commercial airborne overflights. Secondary forms of commercial tourism in the region include seaborne tourism, which generally includes shore excursions, and adventure tourism, including private yacht visits (IAATO, 2002). The manifestations of tourism in these forms are quite different from tourism in other parts of the Antarctic continent. Commercial overflights are particularly relevant to tourism in this part of Antarctica. Tourists who overfly the Ross Sea outnumber ship-based visitors each year by the order of three or four to one (see Tables A1 and A2). A similar service provided by Avant Airlines operating over the Antarctic Peninsula is negligible in comparative scale. No tourists are able to land routinely in the Ross Sea region by fixed-wing aircraft.

Commercial ship-based tourism in the Ross Sea region is well established, but, once again,

follows a formula that is different to other parts of Antarctica. Cruise ships that visit the Ross Sea region tend to be smaller vessels and fewer in numbers. More so than in the Peninsula region, the effectiveness of tourism operations in the Ross Sea is determined by sea ice conditions, and the capacity for ships to operate in variable sea ice conditions. The high latitude and seasonal sea ice conditions of the Ross Sea restrict seaborne tourism voyages to the few weeks from late December to early March each year. This has effectively limited seaborne operations to small, ice-strengthened vessels, including the *MV Akademik Shokalskiy* (46 passengers), *MV Kapitan Khlebnikov* (120 passengers) and *MV Bremen* (125 passengers). The only large cruise ship to visit the Ross Sea in recent years has been the *Marco Polo* (capacity 800 passengers). Visits to the Ross Sea by the *Marco Polo* were discontinued in 1999–2000.

The management of tourism in the Ross Sea region currently centres on ship-based visitors. While this is the principal means by which tourists actually access (rather than overfly) the Ross Sea region, the scale of ship-based tourism is relatively modest (see Table A2). Thus, while 131 Antarctic ship voyages took place during the 2000–2001 Austral summer season, of those only five visited the Ross Sea region.

James Higham

**Antarctica** Antarctica is the southernmost and fifth largest of the continents, and the dominant feature of the higher latitudes (60–90°S latitude) of the southern hemisphere. Antarctica is surrounded by the southern ocean and plays a critical role in the functioning of the global ecosystem. Indeed, many of the physical and biological processes that take place in Antarctica have a global influence on atmospheric and oceanic systems around the globe. Antarctica is a place of science and research. Science programmes are generally conducted through a number of national science programmes. Antarctic science programmes have been critical in developing insights into the earth's atmospheric and oceanic systems, and the consequences of human activities for those systems. In 1998, for example, NASA satellite data showed that the Antarctic ozone hole was the largest on record, covering 27 million km<sup>2</sup>

**Table A2.** Ship-borne tourism numbers in Antarctica and the Ross Sea region (1995–2001) (from IAATO, 2001).

Austral summer	Antarctica	Increase (%)	Ross Sea region	Increase (%)	Ross Sea tourism as proportion of total (%)
1995–1996	9,367		800		8.5
1996–1997	7,413	–20.9	529	–33.9	7.1
1997–1998	9,604	22.8	672	27.0	6.9
1998–1999	10,026	4.4	686	2.1	6.8
1999–2000	14,730	46.9	776	13.1	5.3
2000–2001	12,248	–16.8	510	–34.3	4.2
Total	63,588	36.4	3,973	–25.1	6.2

(NSF, 2006). So, although Antarctica is widely viewed as the last great wilderness on earth, various human activities have impacted significantly on the pristine nature of the continent. Human impacts include pollution and the effects of global warming, ozone depletion and the exploitation of living resources in the southern ocean.

Antarctica covers a land area of 14 million km<sup>2</sup> (280,000 km<sup>2</sup> ice-free, 13.72 million km<sup>2</sup> ice-covered). It has no indigenous inhabitants, but there are both permanent (year-round) and summer research stations. The climate is severe. Low temperatures vary with latitude, elevation and distance from the ocean. East Antarctica is colder than West Antarctica because of its higher elevation. The Antarctic Peninsula has the most moderate climate. Higher temperatures occur in January along the coast and average slightly below freezing. The terrain comprises approximately 98% thick continental ice sheet and 2% barren rock. Average elevations range between 2000 and 4000 m. The Trans-Antarctic mountain range reaches an elevation of nearly 5000 m. Glaciers that originate on the high plateau feed ice shelves along about half of the coastline. Floating ice shelves constitute 11% of the area of the continent. The high plateau also generates **katabatic** (gravity-driven) **winds** that blow from the high elevations of the interior. Frequent blizzards form near the foot of the plateau, while cyclonic storms form over the ocean and move from west to east along the Antarctic coast.

The existence of a great southern continent was not confirmed until the early 1820s, when British and Russian national expeditions began exploring the Antarctic Peninsula region and

other areas south of the Antarctic Circle. The fact that Antarctica was indeed a continent (rather than a group of islands) was not established until 1840. The systematic exploration of Antarctica began in earnest in the late 19th and early 20th centuries. During the Heroic Age of Antarctic exploration (1895–1917), a series of expeditions were conducted largely from bases established in the Ross Sea region of Antarctica. Polar expeditions led by Scott (1901 and 1911) and Shackleton (1908) sought primarily to reach the South Pole. Despite their courageous efforts, a Norwegian expedition led by Roald Amundsen was the first to reach the South Pole, in December 1912. On the western side of Ross Island, McMurdo Sound, there remain three wooden huts that are generally well preserved, located at (from south to north) Hut Point (1901), Cape Evans (1911) and Cape Royds (1908). Amundsen's base on the Bay of Whales (Ross Ice Shelf) was subsequently destroyed by calving of the ice barrier.

In the early years of the 20th century, seven countries made territorial claims in Antarctica. These claims often included disputed territories. During the Cold War, political unease surrounding Antarctica increased and widespread concerns were expressed for the possibility that Antarctica could be used for military purposes. Without an agreed legal system, disputes of this nature were impossible to resolve. Following World War II, there was an upsurge in scientific research on the continent. A number of countries established year-round research stations on Antarctica. The International Geophysical Year (IGY) was 1957–1958, during which wide-ranging and successful international collaborations in Antarctic science took place. The



success of IGY had far-reaching implications. In order to perpetuate the cooperative spirit and peaceful use of Antarctica as a scientific laboratory that had been established in 1957–1958, a legal framework for the activities of nations on the continent was negotiated. The 12 countries that participated in the IGY signed the Antarctic Treaty in 1959, and it was ratified in 1961. The treaty is a unique international agreement that fosters the use of Antarctica for peaceful and scientific purposes. The original signatories of the Antarctic Treaty System (ATS) 1959 were the UK, South Africa, New Zealand, Australia, Chile, Argentina, the USA, Japan, Russia, Norway, Belgium and France.

#### **Related internet sources**

CIA World Factbook: <https://www.cia.gov/cia/publications/factbook/index.html>

Antarctica New Zealand: <http://www.antarcticanz.govt.nz>

National Science Foundation (2006). Science on the Edge. Arctic and Antarctic Discoveries. <http://www.nsf.gov/about/history/nsf0050/arctic/ozonhole.htm> (accessed 17 February 2006)

James Higham

#### **Anti-fouling Convention: see International Convention on the Control of Harmful Anti-fouling Systems on Ships**

**Anti-fouling Systems** The **International Convention on the Control of Harmful Anti-fouling Systems on Ships** (the AFS Convention 2001), which was adopted on 5 October 2001 by the **International Maritime Organization**, defines anti-fouling systems as 'a coating, paint, surface treatment, surface or device that is used on a ship to control or prevent attachment of unwanted organisms'. Biological fouling on ships reduces their speed and manoeuvrability, increases fuel consumption and maintenance costs. Lime, arsenic, lead, mercurial compounds, DDT and copper had been used in coating ships' hulls to act as anti-fouling systems before the chemical industry developed effective anti-fouling paints using metallic compounds, in particular the organotin compound tributyltin (TBT), in the 1960s. By the 1970s, TBT-based paints had become extremely popular. Studies have shown that these compounds, after being slowly

released, persist in the water, kill sea life, harm the environment and possibly enter the food chain. The TBT-base paints have been proved to cause deformations in oysters and sex changes in whelks.

The AFS Convention 2001, after coming into force, will prohibit the use of harmful organotins in anti-fouling paints on ships with a complete prohibition on all ships by 1 January 2008, and will establish a mechanism to prevent the potential future use of other harmful substances in anti-fouling systems. Anti-fouling systems to be prohibited or controlled are listed in an Annex 1 to the AFS Convention 2001, which will be updated as and when necessary. The convention will come into force 12 months after 25 states, representing 25% of the world's merchant shipping tonnage, have ratified it. As of January 2006, this condition has not yet been satisfied. The shipping industry is in the process of looking for alternatives to anti-fouling systems that should be cost-effective to the industry and environmentally friendly.

Chengfeng Wang

#### **A-PASS (Passenger Screening)**

A-PASS (Automated Personnel Assisted Security Screening) is an electronic **vessel** access security system that provides high-speed, interactive photo identification and access control screening of passengers and crew as they enter and exit a ship. Prior to entering a ship, passengers stop at a kiosk and insert their combination room key, shipboard credit card and identification card. A camera within the kiosk will take their photograph and will store the photo in the ship's computer. Each time a passenger exits or enters the ship, they insert the card into a kiosk located near the ship's **gangway** and their time of entry or exit is recorded. In addition, the safety officer stationed at the gangway confirms that the card belongs to the person using it by matching the photograph on the computer with the person as they enter or exit the ship. The system also allows the ship's company to know, at any point in time, who is on board the ship and who is off. In concert with the automated locks on cabins that record each entry to and exit from a cabin, and the increasing use of surveillance cameras throughout the

ship, a cruise line is able to maintain current knowledge of the comings and goings of most passengers.

#### **Related internet source**

SISCO (Security Identification Systems Corporation):  
[http://www.siscocorp.com/apass/?sm=c\\_a](http://www.siscocorp.com/apass/?sm=c_a)

Ross A. Klein

**Approach Distances** When viewing protected species in the wild, recommended viewing distances, or minimum approach distances, often exist to minimize the impact of an approach to an individual or group of the target species. These distances have been designed to allow people to view wildlife from a safe proximity, where neither the tourist nor the target animal should feel threatened. It is also meant to be the closest approach distance that will not interfere with the target animals' behaviour.

Many **marine mammals** are viewed while carrying out important behaviours, for example feeding, mating, nursing young and resting. It is therefore important that wildlife viewing does not interfere with these behaviours as it can result in disruption of mating/group dynamics, reduced body condition or immune response, the separation of mother/young pairs and, in extreme cases, injury or death.

Minimum approach distances exist for both commercial tour operators and private tourists alike. Recommended approach distances and viewing guidelines are made available in a number of ways, including: (i) on-site signs; (ii) brochures; (iii) tour briefings; and (iv) government, tour-operator and tour destination web sites. They can also be found in local travel guides or by contacting the local conservation agency for the region, for example the Department of Conservation or the National Parks Service.

The minimum approach distance to a **whale** or **dolphin** will vary depending upon the country/state. However, there is almost always a rule regarding the number of vessels present. For example, in New Zealand, one may not approach within 100 m of a marine mammal at sea, and one should not approach the head of the animal. However, there should be no more than three vessels within 300 m of a marine mammal at any one point in time (New Zealand Marine Mammal Protection Act 1978).

In the USA, the approach distance is 91 m (100 yards). New Zealand is one of the few countries that still allows relatively close viewing of wild marine mammals. When viewing **seals** by land in New Zealand it is recommended not to enter a breeding colony, and at a **haul-out** not to approach within 20 m of the animals. If viewing by **kayak** or by boat, recommended minimum approach distances are also 20 m.

It is important to realize that these are recommended viewing distances, and different situations may require discretion. For example, sick, injured, young or breeding individuals should always be given a wider berth. There may also be circumstances where one cannot remain 20 m away from a seal on land due to terrain and the tide. In situations such as this it is recommended to follow a **code of conduct** for viewing marine wildlife. Some such guidelines involve not moving between a seal and the sea, and not approaching a group of dolphins that are travelling fast, or foraging, for example. Following these guidelines, minimum approach distances will enable a positive viewing experience for the tourist while not diminishing the attractiveness of the area for the marine wildlife utilizing it.

#### **Related internet sources**

Forest and Bird: <http://www.forestandbird.org.nz/Marine/furseals.asp>

Project Jonah, New Zealand Pinniped Viewing Guidelines: [http://www.whalerescue.co.nz/text/resources\\_see\\_pin.html](http://www.whalerescue.co.nz/text/resources_see_pin.html)

NOAA Fisheries National Marine Fisheries Service Marine Mammal Viewing Guidelines: <http://www.fakr.noaa.gov/protectedresources/mmv/guide.htm>

NOAA Fisheries Office of Protected Resources Responsible Marine Viewing: <http://www.nmfs.noaa.gov/pr/education/viewing.htm>

Laura Boren

**Aquaculture** Aquaculture involves the raising of aquatic flora and fauna by monitoring the environmental conditions in which they are raised by the resource owners. The main purpose is to increase the species biomass and harvestable numbers. Aquaculture is a means of producing animal feed, human food and ornamental plants and animals for **aquaria**.

Aquaculture has been developed by sedentary cultures in different locations and times throughout history. The processes within aqua-

culture have either evolved as common knowledge within a region or are acquired from a neighbouring region. It is assumed that humans started aquaculture practices by keeping caught fish alive as a source of fresh food. Evidence of aquacultural practices are found in China, where the common carp was raised as a food source. The Egyptians practised aquaculture by raising tilapia in ponds owned by wealthy individuals, and in irrigation systems. Similarly, wealthy individuals in the Roman Empire had ponds next to their homes and aquaculture was developed to feed the Empire as well. Within Europe, aquaculture began with the raising of carp in ponds. In North America, the native Hawaiians were raising fish in ponds and pools of **brackish water** created by manmade seawalls along the islands' **shorelines**. Native Americans on the Pacific coastline transplanted fish eggs to improve **fishing**. In post-settlement times throughout the continental USA, aquaculture was developed to raise many different freshwater fish species; currently, the most common are the catfish and trout.

The process of aquaculture has been developed to raise many different aquatic species, including aquatic plants, shellfish, **crustaceans** and fresh and **marine** water fish. Other species that are raised throughout the world include alligators, crocodiles, bullfrogs, sea squires, sea urchins, shrimp, sponges and **turtles**.

The different species raised within aquaculture require different rearing and cultivation methods; some species are caught in the wild through capture fishing and then raised within the aquaculture systems to increase their biomass, while others are raised entirely within an aquaculture system. Currently, the most common method of aquaculture uses ponds that are dug into the ground or surrounded by dikes or levees. Within marine aquaculture (also called mariculture), cages are commonly used to raise marine species for a partial or entire duration of their life within a marine environment. Cages float in the water and are surrounded on three sides by netting. Cages allow the natural currents within the **bays** and **fjords** to flow through the netting, providing a fresh supply of water and nutrients for the aquatic species. Atlantic salmon are raised in cages in the final two years of their life cycle.

Oysters and other shellfish are typically raised on fixed structures suspended within the water; these racks provide the shellfish with a solid attachment surface. **Seaweeds** are also raised through mariculture for animal feed, fertilizer, human food and medicine.

Aquacultural practices have been criticized because of their negative impacts. These negative impacts include destruction of natural habitats, the release of pollutants into natural ecosystems, potential for the release of exotic species and transfer of diseases to native species. Aquaculture is also criticized for disrupting the scenic ocean views that attract tourists. Aquacultural facilities are becoming increasingly popular tourist attractions.

The benefits of aquaculture include job creation, stimulation of economies and the production of food for humans and livestock. Within the recreational and commercial fisheries, fish hatcheries raise fry and mature fish for the restocking of fisheries that are depleted and over-fished. Many fresh- and marine-water species have been raised for release because of the economic benefits that are created through **recreational** and **sport fishing**.

#### **Related internet sources**

Aquaculture (an international journal): [http://www.elsevier.com/wps/find/journaldescription.cws\\_home/503302/description](http://www.elsevier.com/wps/find/journaldescription.cws_home/503302/description)

Aquaculture Research: <http://www.blackwellpublishing.com/journal.asp?ref=1355-557X>

International Center for Aquaculture and Aquatic Environments: <http://www.ag.auburn.edu/dept/faa/icaae1.html>

Network of Aquaculture Centres in Asia-Pacific: <http://www.enaca.org>

World Aquaculture Society: <http://www.was.org>

Cory Kulczycki

**Aquaria** The keeping of fish has a history that dates back to the ancient civilizations of Rome, Sumeria, Greece and China, when fish were kept in household ponds not only for food but also for aesthetic purposes. Carp and goldfish were selectively bred for their colours in China and Japan at least 2000 years before the present (Dembeck, 1965; Brunner, 2005). Goldfish and some other species of fish were also kept indoors in ceramic pots and urns. However, it was not until the

mid-to-late 19th century that aquaria as we know them today began to be a common feature in middle-class family homes in Europe and North America (Brunner, 2005). This period coincides with the tremendous upsurge of interest in the natural world, and in particular the collection, display and observation of animals and plants, as well as with advances in the technology in the construction of glass tanks with cast iron frames. Glass itself had been a very expensive commodity in the 17th and 18th centuries. It was difficult and somewhat dangerous to produce and, in addition, a tax had been placed on it in the USA, the UK and other European nations, increasing its expense even further. With the removal of the tax, and better techniques for manufacturing plate glass, private aquarium keeping became affordable. Today, aquarium keeping is a major world-wide **leisure** pastime supporting a multi-million dollar industry, and involves both freshwater and marine animals.

Although the successful keeping of marine animals is more complex and difficult than maintaining a freshwater system, efforts were made quite early on to develop the knowledge and understanding to keep marine animals in the home. The first home marine aquarium that was maintained for relatively long lengths of time is credited to Anna Thynne, the wife of the sub-dean of Westminster Abbey, in 1847 (Stott, 2003). Thynne was interested in keeping madrepores, a relative of the sea anemone, and eventually developed the necessary knowledge and expertise to maintain saltwater tanks in her home. By the early 1860s, dealers in 'Living Marine Animals, Sea-weeds, Artificial Sea-Water and Marine Fresh-Water Aquaria' were selling the necessary equipment and animals to eager fish-keepers in London and other European cities (Stott, 2003, p. 126).

Home aquaria became fashionable in Britain at about the same time as the first public aquarium opened, and indeed this aquarium no doubt did much to popularize the keeping of aquaria. This aquarium was opened in 1853 at Regent's Park Zoological Gardens (London Zoo), with two others opening later in the same year in Surrey, UK and Dublin, Ireland (Brunner, 2005). The first public, or more correctly, commercial, aquarium display in the USA was opened by P.T. Barnum, who

exhibited various forms of marine life at his American Museum in New York from 1856 using, in part, aquaria he had bought from the Royal Zoological Society (Betts, 1959). Apart from various fish, **turtles**, alligators and **sharks**, the exhibits included, in 1861, two beluga whales which survived for a week until, not surprisingly, they died. These unfortunate **whales** were replaced by others that also succumbed, even though these were housed in a larger tank constructed especially for them. When he realized that he did not have the necessary conditions or expertise to maintain beluga whales, Barnum displayed instead the first hippopotamus in America, which proved a highly popular exhibit (Betts, 1959). By 1928, at least 45 public or commercial aquaria had been established worldwide (Stiassny, 2004). Today, more than 200 public or commercial aquaria (including 'sea worlds' and 'sea life centres') are listed on aquae.com's inventory of aquaria (Aqua.com, 2006).

The lasting popularity of public aquaria reflects our fascination with marine life. A public aquarium fascinates and intrigues because it provides windows into a sublime world that is mostly remote and inaccessible to the majority of its visitors. Indeed, prior to the introduction of television and the development of **scuba** and **snorkelling** technologies, public aquaria provided the only real glimpses into a world that most people could not access. As Davis (1997, p. 100) suggests, aquaria succeed in 'making the invisible visible. They give new ways to see nature, since they not only bring marine life to eye level (and more or less hold it there) but aquarium technology clarifies the environment by settling, scrubbing, filtering, stabilizing and chemically purifying it'.

The design of the earliest aquaria reflected society's obsession with classification and systematic comparison, exhibiting series of fish and other aquatic and marine organisms in galleries of relatively small tanks. Initially, these aquaria were typically part of a zoo or museum complex, but soon others were constructed as free-standing attractions in entertainment precincts, often on waterfronts with other amusements. The waterfront location facilitates access to salt water, which is pumped in and filtered before being used in the tanks. In many portside redevelopment projects, an aquarium has been a key element in helping



to transform and reinvigorate areas that have become derelict. The Monterey Aquarium in Fisherman's Wharf, Monterey, USA, Two Oceans Aquarium in the Victoria and Alfred Waterfront, Cape Town, South Africa and Sydney Aquarium, Darling Harbour, Sydney, Australia are examples where commercial aquaria have been used as major anchor attractions to generate a continuous stream of visitors to these entertainment precincts.

Aquarium architecture and design has transformed dramatically over the past few decades. The buildings are now usually architecturally distinctive, echoing elements of the marine environment or setting in their design. The visitors themselves no longer gaze passively at row upon row of small aquaria but, instead, are immersed within a marine experience through the innovative use of curved viewing surfaces and other techniques that break down the previously well-delineated boundaries between the visitor and the visited. In some aquaria, sophisticated sound systems further help to create the feeling of being underwater. These changes to the way the exhibits are designed resemble the more naturalistic approaches to exhibit design in zoos, with both institutions now seeking to create a more sophisticated understanding of animals and their habitats among their visitors.

As the technology has become available, much larger tanks and exhibits have become more common, culminating in the now familiar 'walk-under' or 'walk-through' tanks, which are large enough to house large sharks, rays and turtles and which give visitors the feeling of almost being underwater. The first of these using a transparent acrylic 'tunnel' was constructed in Auckland, New Zealand. These exhibits radically change the conventional notions of an aquarium as something to be gazed at from one side, instead surrounding visitors from above and on both sides and enabling them to view animals such as sharks, rays and turtles as they swim above and over the visitor who is positioned within the 'tunnel'.

State of the art filtration systems are used to treat the millions of litres of sea water on a continual basis in order to ensure maximum clarity and purity of the water, and improved husbandry techniques permit the display of an array of **invertebrate** and vertebrate marine species. In the larger aquaria, apart from a wide

range of fish species, other exhibits include **pinnipeds** (seals and their allies), **cetaceans** (whales and dolphins), **penguins**, **otters** and, in some cases, crocodilians and **polar bears**. Most also exhibit an array of invertebrates such as **jellyfish**, anemones, octopus and crayfish. Public or commercial aquaria have to compete with other entertainment facilities in an increasingly competitive market, and are thus required to exhibit species that are spectacular or which are exhibited in spectacular and innovative ways. Some aquaria offer 'backstage' tours and even sleepovers, where people can stay overnight and observe what goes on outside normal operating hours. However, large, potentially 'man-eating' sharks and crocodiles, as well as whales and dolphins, are guaranteed crowd pullers, but they also pose ethical and moral dilemmas associated with the captive display of these large animals.

While commercial considerations are no doubt important, much of the justification for displaying large marine fauna such as whales and dolphins in captivity is to encourage the development of a better public understanding of, and empathy for, these animals and their marine habitats. However, there has been much public debate about the **ethics** of keeping these animals in captivity, and many nations have very strict regulations concerning the capture and display of cetaceans in particular. Critics argue that these animals cannot be satisfactorily maintained in the relatively small size of the pools available to them, which inevitably lead to stress brought about by an inability to adapt to life in captivity. Another criticism is that, in many oceanaria, whales and dolphins perform for the amusement of spectators, in effect becoming what critics would consider to be simply a type of marine circus. Instead of providing visitors with a high-quality educational experience, these critics argue that they instead entertain the crowds using dolphins and killer whales jumping through flaming hoops and balancing balls on their snouts. Countering this criticism, it is argued that such performances help to enrich the daily lives of these animals and so prevent boredom, while simultaneously teaching visitors about aspects of their behaviour.

Criticisms are also made that very few exhibited marine animals are actually bred in

captivity, with the greater majority being wild caught. In the case of cetaceans, critics argue that capture from the wild is a highly stressful activity that might have longer-reaching social impacts on local populations of these animals. Concern is also expressed for unsustainable collecting practices used for capturing fish and invertebrates from **coral reefs**. In some areas, inappropriate, illegal and highly damaging collecting practices such as the use of dynamite to blast and stun fish and other sea life, and the use of cyanide to temporarily paralyse marine animals, are still used to collect these animals for both public and home marine aquaria. However, many species are able to be harvested on a sustainable basis provided that the collection practices create minimal impact on marine habitats, and the number of individuals taken is kept well below population recruitment levels.

While the earliest public aquaria could concentrate on simply being places of entertainment and amusement, most contemporary aquaria must be seen to have a genuine concern for educating visitors about aspects of **marine ecosystems**. Such a concern goes beyond simply providing identification labels and, in the more exemplary aquaria, well-developed education and **interpretation** programmes engage visitors in activities that help to promote a better understanding of marine systems and a greater level of commitment to their protection. Many aquaria make use of docents or trained volunteers as interpretive guides, who can enhance the learning outcomes for visitors. Touch pools, in which more resilient (and harmless) species of marine animals are available for visitors to gently handle under the supervision of staff, also offer an opportunity to examine these animals more closely and, importantly, to have a tangible sense of connection with them. Rather than exhibiting animals separately, most aquaria today display many of their animals in habitat exhibits that demonstrate ecological relationships between different species and the environments that support them.

However, some research studies that have been carried out on the educational outcomes of visiting public aquaria suggest that **conservation** messages are often confused, too complex or not incorporated within the inter-

pretive opportunities made available to visitors, and that little knowledge acquisition actually takes place (Evans, 1997; Shumway, 2001). In order to improve conservation education outcomes, the World Association of Zoos and Aquaria recently released a document titled *Building a Future for Wildlife: The World Zoo and Aquarium Conservation Strategy* (2005), which builds on an earlier document developed in 1993. The Strategy aims to ensure that zoos and aquaria maximize their role in biodiversity conservation and education through the development of effective and culturally appropriate education programmes and strategies. Apart from educational activities, a number of larger aquaria also contribute to marine conservation through their own research programmes and by assisting with the rescue and rehabilitation of marine animals.

See also: Welfare of Captive Marine Life.

#### Related internet sources

Aqualink: <http://www.aqualink.com/community/public-aquariums.html>

Steinhart Aquarium: <http://www.calacademy.org/aquarium>

Sydney Aquarium: <http://www.sydneyaquarium.com.au>

Vancouver Aquarium: <http://www.vanaqua.org/home>

Kevin Markwell

**Aquatic Biomes** On Earth, there are numerous types of aquatic environments, varying in temperature, salinity, light, nutrients and other factors. Each of these aquatic habitats has distinct life forms living in it, forming complex communities of interdependent organisms. A complex community of aquatic plants and animals inhabiting a similar environment is called an aquatic biome. Aquatic biomes can be broken down into two general categories, freshwater biomes and **marine** biomes. Within the broader category of freshwater biomes we find ponds, lakes and rivers, while the marine biomes include oceans and **estuaries**. **Wetland** ecosystems are also categorized as aquatic biomes, however, due to their variable levels of salinity, and do not fit completely into either freshwater or marine biomes.

The plants and animals living in freshwater biomes are adapted to the low salt concentra-

tions characteristic of these environments. Freshwater biomes vary in spatial scale from just a few square metres to thousands of square kilometres. They are found on every continent, have varied origins and have diverse combinations of biotic and abiotic factors. Freshwater ecosystems can vary seasonally and regionally in community composition. These biomes play an essential role in the overall water cycle on Earth.

Marine regions make up approximately three-quarters of the Earth's surface. They include oceans, **coral reefs** and estuaries. A dominant plant species of the oceans, marine **algae**, supply much of the world's oxygen supply and take in a huge amount of atmospheric carbon dioxide. Oceans also play a major role in the earth's water cycle, as evaporation over seawater provides much of the water for precipitation over land.

Jessica Bolson

**Archipelago** The term used to refer to a group or cluster of islands and was originally applied to the islands of the Aegean Sea in the eastern Mediterranean Sea between Greece and Turkey. The term is now generally applied to all island groups. Specifically named groups include the Stockholm (Sweden) and Turku (Finland) Archipelagos in the Baltic Sea, both of which constitute a significant tourism resource in terms of recreation and second homes, and the Bismarck Archipelago of Papua New Guinea. The world's largest archipelago is the Malay Archipelago of South-east Asia, which includes the islands between mainland South-east Asia (Malay Peninsula and Indo-China) and mainland Australia. Countries that occupy this archipelago include Brunei, Indonesia, Papua New Guinea, Philippines, Singapore and Timor-Leste (East Timor), as well as the Malaysian states of Sabah and Sarawak. Archipelagos have geopolitical significance under the Law of the Sea because of the rights it gives states to the economic use of resources. This has therefore meant that some archipelagos, such as the Spratley Islands in the Indo-China Sea and the Canadian Arctic Islands, have become contested areas for national sovereignty in which tourism may be used as an example of economic use and therefore exercise of sovereignty.

C. Michael Hall

**Arctic** The Arctic is an ocean basin surrounded by land. The lands that encircle the Arctic waters are comprised of continental masses (North America and Eurasia) and islands (Greenland and Iceland). These lands are broken only in two areas, where the cold Arctic waters mix with the warmer waters of the Pacific or the Atlantic oceans (see Fig. A4). The overriding physical features of the region are those associated with sea and land ice, snow, coastlines and cold temperatures. Polar night (24 h of darkness) and polar day (24 h of sunlight) are the extremes of seasonality that are experienced to varying degrees throughout the region. These physical characteristics of the Arctic are the foundation for ecology and human activity and, for many scientists, they help define the boundaries of the region.

The Arctic Circle, a line of latitude, might at first glance seem to indicate a suitable boundary for this geographic region; however, this line bears little relevance for the physical and ecological features and processes that are commonly used to identify the region: there is simply too much variation in physical and ecological attributes from one location to another along this line of latitude. Indeed, lines of latitude ignore on-the-ground features that make regions delineable. Physical and ecological features pull together similar areas on the basis of a measurable attribute. For example, at least one organization defines the Arctic as 'on or north of the sporadic-discontinuous permafrost line and including the Queen Charlotte Islands' (ACUNS, 2006). Permafrost, a key Arctic feature, is the term used to describe permanently frozen ground. The permafrost boundaries are general substitutes for climate, as they primarily relate to temperature. The zone of continuous permafrost is delineated by annual temperatures of  $-8^{\circ}\text{C}$ ; here, permafrost underlies the surface everywhere. In the discontinuous zone, some surface areas are underlain by permafrost and some are not (French and Slaymaker, 1993).

An approximate boundary dividing the two zones is an ecological one: the treeline. This 'line' is really a broad zone of transition that links the treeless tundra of the Arctic with the northern limits of the boreal forest in the sub-Arctic. This ecological distinction between the two regions is reflected in vegetation, wildlife



Fig. A4. The Arctic Ocean (from C. Chapman, Dept of Geography, Lakehead University).

population and behaviour patterns, and in human interaction with the environment. The treeline roughly coincides with the July 10°C isotherm, the line connecting all those locations with a mean July temperature of 10°C, and reinforcing the interrelationship of climate and vegetation. The influence of this physical boundary is also reflected in the type and extent of wildlife populations and, to a degree, in the nature-based cultural activities of people.

Within the Arctic there is considerable variability from subregion to subregion, and this is a result of the particularity of the geography of land and water. For example, the North American Arctic is more landlocked than the European Arctic and generally has colder temperatures and greater sea ice cover. The European Arctic is warmer, benefiting from the

incursion of the **Gulf Stream** and the maritime influences of greater expanses of ocean; consequently, this part of the Arctic is able to support higher levels of human activity, including shipping, **fishing** and agricultural endeavours, at higher latitudes and over a longer time frame on an annual basis.

Superimposed upon the geography and ecology of the Arctic is a set of political boundaries and cultural distinctions that influences the environment and the people of the Arctic. The physical and ecological features are a key to defining the Arctic boundary, but it is equally important to recognize the role of people at a variety of scales that adds the political, social and cultural elements to an understanding of the region. This requires a less precise definition than one based solely on the physical and

ecological attributes, but it is more inclusive. For the purposes of this entry we follow the definition of Nutall and Callaghan (2000, p. xxxi), who state that most social scientists 'consider the Arctic, as an area of study, to be: Alaska: northern Canada, Yukon, Inuvialuit (Western Arctic), Northwest Territories, **Nunavut**, Nunavik (Quebec) and Labrador; **Greenland**; **Iceland**; northern Fennoscandia (Norway, Sweden and Finland); and northern Russia'.

There are eight signatory nations – Canada, Denmark, Finland, Iceland, Norway, Russia, Sweden and the USA – forming the Arctic Council. 'The Arctic Council is a high-level intergovernmental forum that provides a mechanism to address the common concerns and challenges faced by the Arctic governments and the people of the Arctic' (Arctic Council, 2005). At the Arctic Council, a number of **indigenous peoples'** organizations have status as Permanent Participants. They are: the Aleut International Association, the Arctic Athabaskan Council, the Gwich'in Council International, the Saami Council and the Russian Association of Indigenous Peoples of the North.

The Arctic is culturally, politically, demographically and economically diverse, with settlements ranging from small traditional villages, to rural communities, to modern industrial cities. In some regions of the Arctic, the 1.5 million indigenous peoples are the majority, while in other areas they are a minority (Arctic Council, 2002). The most pressing issues for Arctic peoples are **climate change**, toxic substances, the erosion of traditional skills and traditional knowledge, emerging intergenerational segregation, increasing dependence on technology and reliance on outside financial support (Ford, 2005). Self-government processes and resource development issues continue to be present for many groups. National governmental cooperation is evident with the Arctic Monitoring and Assessment Programme; however, issues of security, sovereignty and environmental protection remained contested (AMAP, 2006). Cooperative activities, and especially the hosting of Arctic programme secretariats, depend on voluntary contributions of the participating countries (AMAP, 2006).

The Arctic is often depicted as the globe's barometer measuring the scale and speed of

climate change. Therefore, environmental changes threatening the Arctic environment are actively monitored through various national and international networks (Fenge, 2005). Research by the Arctic Climate Impact Assessment network and other international bodies has indicated that the Arctic as a whole has undergone the greatest warming on Earth in recent decades, with annual temperatures now averaging 2–3°C higher than in the 1950s (Ford, 2005). The polar amplification of global warming is well known and relates to changes in albedo (reflection of sunlight) that form a positive feedback component of the warming process. Snow and ice are highly reflective so, as more snow and ice melts, more of the land or water surface can absorb sunlight, causing more melting of snow and ice. Sea ice, **glaciers**, permafrost, snow cover and peatlands are all sensitive indicators of change, susceptible to subtle climatic variations and ocean temperatures. These factors play a key role in many global processes such as global atmosphere and ocean circulation and involve potentially important sources and sinks of trace gases. It is in this marine environment that climate change 'is most visibly altering ecological relationships and the cultures and economies of the region' (Fenge, 2005, p. 25).

Changes in sea ice are seen by scientists as a key indicator of the rapid warming of the Arctic (ACIA, 2004). A significant decline in the annual extent and thickness of sea ice is evident over the past 50 years, with an acceleration of this decline in recent decades. The decline of sea ice in summer has been disproportionately greater compared with the annual average decrease. The average loss of sea ice in the climate models used by ACIA projected a greater than 50% decline by the end of the century, and some models have predicted a complete disappearance of summer sea ice. By the end of this century, average annual temperatures over land in the Arctic are projected to be 3–5°C higher than now, with even higher increases over water, and precipitation is expected to be 20% higher across the region (ACIA, 2004). The extent of snow cover has already decreased by 10% and it is projected to decrease by another 10–20% by the end of the century, with greatest declines being in spring snow cover.



Within-region differences are evident and must be considered. For example, the western Canadian Arctic has warmed by about 1.5°C over the past 40 years, while the central Canadian Arctic has warmed by 0.5°C over that period (Government of Canada, 2001). In the Nordic Arctic, there have been substantial variations in parts of the region over the last century based on data analysis of 20 climate stations in Greenland, Iceland, the **Faroe Islands** and Arctic Norway (Førland *et al.*, 2002). Increasing temperatures in recent decades might suggest general warming; however, these more recent temperatures are still not as high as those experienced in the 1930s and 1950s in parts of the Nordic Arctic. The situation in this part of the Arctic is complicated further by the possibility of a permanent change in the strength of the Gulf Stream, a shift that would see average temperatures decline in Europe. Recent evidence suggests that this might be happening now, with major reductions in the amount of warm water moving north and cold water moving south out of the Arctic (Mittelstaedt, 2005). The European Arctic could be cooling while the North American and Siberian Arctic are warming.

Other changes include the following: (i) increased ice instability; (ii) increased thawing of the permafrost; (iii) shifts in vegetation zones; (iv) changes in animal species' diversity, ranges and distribution; (v) increasing storm exposure for communities and shoreline erosion; and (vi) increased levels of ultraviolet radiation reaching people, plants and animals (ACIA, 2004). All of these changes indicate not only that the boundary of the Arctic will change with global warming, but also that we need to rethink which physical and ecological attributes are important in our delineation of the Arctic and how these relate to human activities in and our understanding of the region.

As environmental change in the Arctic appears to be increasingly evident, with major implications for wildlife, **resources** and even sovereignty, greater international attention will be focused on this region of the world. It is timely that there will be a structured and focused scientific examination of the region, as well. In 2007–2008, the international polar research community will celebrate the 125th anniversary of the First **International Polar**

**Year** (IPY), the 75th anniversary of the Second IPY and the 50th anniversary of the International Geophysical Year (IGY). The IPY and IGY were major initiatives that brought significant new insights into global processes and laid the foundation for decades of invaluable polar research. International partnerships, drawing upon the expertise and resources from more than 30 other participating countries, will take place over a 24-month period and will include research activities in both the Arctic and Antarctic regions (International Polar Year, Canada, 2006).

See also: Aboriginal and Indigenous Coastal Management, Aboriginal Marine Resources, Aboriginal Marine Tourism.

#### **Related internet sources**

Arctic Council: <http://www.arctic-council.org>

Arctic Council Indigenous Peoples' Secretariat: <http://www.arcticpeoples.org>

Arctic Institute of North America: <http://www.arctic.ualgary.ca>

International Polar Year: <http://www.ipy.org>

Inuit Circumpolar Conference: <http://www.inuitcircumpolar.com>

Margaret Johnston  
Raynald Harvey Lemelin

**Arctic Ocean** The Arctic Ocean is the smallest and shallowest of the world's five oceans; it covers an area of approximately 13,986,000 km<sup>2</sup> within the Arctic Circle around the **North Pole**. It is bordered by Norway, Russia, Alaska, Canada and **Greenland** and has a coastline of 45,389 km. The ocean is nearly landlocked: it has connections with the **Pacific Ocean** via the Bering Strait and with the **Atlantic Ocean** through the Greenland Sea, the principal exchange of water being through the Atlantic Ocean because the Bering Strait is relatively narrow and shallow. The major inflow is through the Norwegian current; the rivers Lena, Ob and Yenisei in Siberia and the Mackenzie in Canada are also major sources. The main outflow of water occurs via the cold East Greenland current. This gives the north-east coast of North America a much colder climate than the north-west coast of Europe, which is warmed by the North Atlantic Drift. The Arctic Ocean was once called the Frozen Ocean because of its 4–6 m covering of ice throughout

the year in its central and western parts. Ice is the dominant feature of its fragile marine ecosystem; the ice pack extends to the encircling land in winter but is surrounded by open water during the summer, which provides opportunities for cruising. The spectacular seascapes, interesting coastal relief and wildlife of Arctic Norway, Alaska, Canada and Greenland, together with the cultural heritage of their **indigenous peoples**, have underpinned the development of **cruise tourism** in this ocean.

*See also:* Arctic, Arctic Tourism, Current.

#### **Related internet sources**

Polar Cruises, Expedition, Inc.: <http://www.polarcruises.com>

Lighthouse Foundation:

<http://www.lighthouse-foundation.org>

Peter Schofield

**Arctic Tourism** Arctic tourism includes any and all tourism activity that occurs in the region defined as the **Arctic**. A wide variety of tourism activities take place across this broad region. Though some cultural attractions are visited, much tourism involves wildlife and **landscape**. Arctic wildlife attractions include numerous bird species, ungulates and charismatic megafauna (e.g. **whales, polar bears**); landscape attractions include **glaciers, icebergs, fjords**, mountains, coasts, **islands** and sea ice. Arctic tourism has its longest history in the European Arctic, with northern Norway and Svalbard featured in early Arctic pleasure travel in the 1890s. The largest numbers of Arctic travellers continue to be recorded in the European Arctic, where accessibility is an advantage. In addition to ship travel, there is considerable air travel, rail and road travel, the latter being more prevalent in the European Arctic where road access leads to destinations such as the North Cape in Norway. In the North American and eastern Russian Arctic, roads are sparse and air travel is limited.

Actual numbers of tourists are hard to provide with accuracy for the Arctic, though estimates are available through several sources. For example, in Canada, it is estimated that in recent years between 33,000 and 40,000 leisure travellers visited the Northwest Territories, yearly (Government of Northwest Territories, 2006), the Yukon Territory received about 32,000

tourists in 2002 and the **Nunavut** Territory reported 12,000 visitors. **Iceland** reported 277,800 visitors and **Greenland** hosted 32,000 visitors in 2002 (Pagnan, 2003). Svalbard, the Arctic archipelago north of mainland Norway, reported about 40,000 ship-based visitors and 10,000 airborne tourists (Pagnan, 2003).

Finland, Sweden and mainland Norway maintain tourism numbers that are substantially higher, as does Alaska, but for these jurisdictions there is no attempt to separate the Arctic tourists from the sub-Arctic tourists. Very little Russian data exist, although ship tourism to Murmansk, the White Sea, Arkangel, the Wrangel Island **World Heritage Site** and **North Pole** are offered. The Kamchatka Peninsula in eastern Russia is another developing destination region.

Arctic tourism opportunities can be divided into two basic categories, the first being consumptive activities such as trophy hunting (i.e. polar bears in Nunavut) and **fishing** outings; the second are non-consumptive activities such as expedition-style and destination cruising, photographic safaris, wildlife viewing (e.g. viewing polar bears in Churchill, Manitoba), Northern Lights tourism (Yellowknife, NWT), skiing and snow-machine riding, dogsledding and cultural and **aboriginal tourism**.

Certain sites have attained international recognition for tourism and these draw large numbers of visitors. North Cape, Norway is one of these, where road access has enabled hundreds of thousands of tourists to access 'the end of the world'. In Canada, the 'polar bear capital of the world', Churchill, Manitoba, hosts 2100–3000 visitors yearly in a 6-week period. Churchill is also renowned for its Northern Lights, beluga whales and birding opportunities. In addition to the well-known destinations, tourism has been developing gradually at numerous other sites in the Arctic and, indeed, is often sought as a new form of income in the mixed economy, where communities looking for incoming cash flow, and in regions where other forms of industry have declined. A number of studies suggest there is local support for tourism growth, provided it meets particular requirements related to community interests. Other researchers have also indicated that traditional activities can be conducted in conjunction with tourism activities.

Concern with growing tourism numbers in the Arctic and the potential for negative impacts led to the development of an Arctic tourism project by the **WWF** (World Wildlife Fund for Nature). This initiative, called 'Linking Tourism and Conservation in the Arctic', has resulted in ten principles for Arctic tourism that are the foundation for **codes of conduct** for **tour operators** and for visitors, and for a grant programme to support the development of new initiatives to link **conservation** and tourism, and an information-sharing and networking project.

In addition to the ongoing challenges that have faced Arctic tourism development (e.g. distance to market, economic leakage, industry structure), additional threats such as environmental change (e.g. toxin biomagnifications in polar bears) could, at some stage, compromise the ecological integrity of specific tourism attractions. In certain areas, tourism operations may not have the capacity to respond to rapid and dramatic change. None the less, opportunities exist for new activities, replacement activities and economic diversification should communities, government agencies and tourism operators implement adaptive tourism strategies.

#### **Related internet sources**

World Wide Fund for Nature Arctic Tourism Programme: [http://www.panda.org/about\\_wwf/where\\_we\\_work/arctic/what\\_we\\_do/tourism/index.cfm](http://www.panda.org/about_wwf/where_we_work/arctic/what_we_do/tourism/index.cfm)

Government of Northwest Territories Tourism Research: [http://www.itn.gov.nt.ca/parks/tourism/research\\_and\\_statistics.html](http://www.itn.gov.nt.ca/parks/tourism/research_and_statistics.html)

Raynald Harvey Lemelin  
Margaret Johnston

**Arison, Ted and Micky** Ted Arison entered the cruise business, partnering with Knut Kloster in the Norwegian Caribbean Line (NCL). This cruise line, established in December 1966, was a marriage of convenience – Arison had reservations for cruises and no ships after those he had chartered were repossessed by the Israeli Government when the ships' owner went bankrupt; Kloster had a ship but no passengers after plans for his brand new ship, *Sunward*, were cancelled. By 1971 NCL had four ships with more than 3000 berths.

The partnership ended less than amicably when Kloster terminated their 10-year contract in summer 1971. Arison responded by seizing

all advance moneys for future NCL cruises, believing Kloster's cancellation of the contract was not valid; at the very least he was entitled to his commission of 18% of the gross revenue. A lawsuit ensued and was settled out of court. Arison agreed to return half of the money he had seized. He retained the other half, which amounted to US\$1 million. He then partnered with Meshulam Riklis (a successful entrepreneur who was a master at corporate takeovers) and started Carnival Cruise Lines in 1972. Riklis pulled out of the partnership after 2 years of red ink.

Ted Arison went alone and built Carnival Cruise Lines and **Carnival Corporation**. His son, Micky, became Chief Executive Officer of Carnival Corporation in 1979 at the age of 30. In 1990 Micky took over from his father as Chairman of the Board of Carnival Corporation. From a shoestring start, Ted Arison amassed a fortune estimated to exceed US\$10 billion when he died in October 1999. In 2005, with a net worth of US\$6.5 billion, Micky Arison was placed 67 on Forbes' list of the World's Richest People.

Despite his success in **cruise tourism**, Ted Arison never did particularly well outside the cruise and hospitality industry. He started an auto-loan underwriting firm in the late 1970s that went out of business after just a few years. He spent US\$12 million to form Hamilton Corporation, a real estate firm, which a decade later was worth less than his initial investment; he sold out in the early 1990s. His involvement in the maritime cargo business in the 1980s lost him US\$43 million by the time he sold out in 1987. But his biggest fiasco was Ensign Bank, which he created by merging two smaller savings and loan institutions in 1983. The Bank made some questionable loans and lost more than US\$19 million in the first quarter of 1990. By year's end, it was seized by the US Government.

#### **Related internet source**

Arison Group: <http://www.arison.co.il>

Ross A. Klein

**Around the World Yacht Races** The formal racing of yachts as a fleet race around the world began with the Whitbread Round the World Yacht Race in 1973. Organized by the British Naval Sailing Association, the first

Whitbread race attracted 17 yachts and 167 crew members – the great majority of whom were amateur sailors in it for the adventure. Over subsequent years the Whitbread was to become the best known and prestigious ocean yacht-racing event, attracting major commercial sponsorship, also helping to create a new generation of professional yachtsmen and women and driving significant tourism to **ports** that hosted race ‘stop-overs’.

Held every 4 years from its inception, the Whitbread sponsorship of the race passed to Swedish car maker Volvo in 2001–2002 and the race was rebranded as the ‘Volvo Ocean Race’. It currently continues under this title.

Over the years, a wide variety of alternate around the world yacht races have come about as alternatives to the well-established Whitbread/Volvo event. These include: (i) the ‘Around Alone’ yacht race for single-handed **sailing** (formerly the BOC Challenge); (ii) the Vendee Globe for non-stop solo around the world sailing; (iii) the Jules Verne Trophy for non-stop around the world records; (iv) the Clipper Around the World Yacht Race; (v) the Global Challenge; and (vi) the recently announced Barcelona two-handed non-stop around the world race. Thus, around the world yacht racing has significantly diversified with multiple events, each of which has variations in terms of its format.

The most significant development in this diversification has been the offering of crew positions to paying customers (on both the Global Challenge and the Clipper races). These races offer positions on yachts (with a professional skipper) to participants who wish to participate in an offshore yacht racing challenge and are prepared to pay for the experience. These events have therefore become commercial marine tourism attractions of some consequence.

#### **Related internet sources**

Volvo Ocean Race: <http://www.volvooceanrace.org>

Vendee Globe: <http://www.vendeeglobe.org/uk>

Clipper around the world yacht race: <http://www.clipper-ventures.co.uk>

Global Challenge: <http://www.globalchallenge2004.com/en>

Barcelona World Race: <http://www.barcelonaworldrace.com/en>

Mark Orams

**Artificial Reef** An artificial reef is a man-made structure located underwater that replicates certain characteristics of a natural **reef**. Artificial reefs can be designed, created and sunk for a specific purpose, but can also form unintentionally around objects like wrecked ships and **jetty** piles. An artificial reef introduces additional material into the **marine environment** and, as a result, alters the pre-existing habitat. Therefore, an artificial reef can act as new habitat and either augment or rehabilitate an existing habitat, but also has the potential to produce less desirable **impacts** on the balance of nearby ecosystems and water flows.

The main applications of artificial reefs include: (i) the enhancement of fishery production and harvest; (ii) the practice of **aquaculture**; (iii) opportunities for recreational **fishing** by line and spear; (iv) opportunities for recreational **scuba-diving** (diving) and **snorkelling**; (v) opportunities for underwater viewing by **submarine** or observatory; (vi) surfboard riding (**surfing**); (vii) habitat protection; (viii) biodiversity **conservation**; and (ix) research (see Figs A5, A6 and A7).



**Fig. A5.** A tour group views marine growth through an observatory window, Busselton jetty, Western Australia (photograph courtesy of P. Stolk).





**Fig. A6.** Port Hughes jetty in South Australia is an artificial reef that supports various forms of recreational use (photograph courtesy of P. Stolk).



**Fig. A7.** A single jetty pile can host a wide range of fixed marine life; Port Hughes jetty, South Australia (photograph courtesy of P. Stolk).

Despite encompassing structures that differ in size, composition, complexity and location, all artificial reefs share two common attributes: (i) some form of permanent contact with the sea floor; and (ii) a stable physical configuration. The various objects and materials used to construct artificial reefs provide space suitable for colonization by encrusting marine creatures (such as barnacles, mussels, sponges and **corals**), as well as food and shelter opportunities for fish communities and other marine **invertebrates**. If allowed time to develop, artificial reefs are capable of supporting populations of marine life just as dense and diverse as natural reefs.

A wide range of materials have been used for the deliberate construction of artificial reefs, including rubber tyres, concrete blocks, rocks, **vessels**, vehicles, aircraft, oil rigs, purpose-built fabricated modules and miscellaneous waste materials. Many early artificial reef projects were built with 'materials of opportunity', and little was understood about how the reef structures assimilated into the marine environment. A great deal of contemporary knowledge about the construction and design



of artificial reefs was accumulated through a logical process of trial and error. Modern reef building, however, tends to be a more considered endeavour incorporating scientific experimentation and industrial research. For example, scientists are testing mineral accretion technology to produce a limestone substrate that will allow artificial reefs to appear more natural, while in the USA several organizations are fabricating artificial reef modules on a commercial scale. Many artificial reef sites have also developed around structures that exist in the marine environment for other purposes or have arrived underwater by accident.

Examples of unintentional artificial reefs include those that have formed around shipwrecks, bridge pylons, jetties and **piers**, breakwaters, groynes and indeed any man-made structure that is either partially or completely submerged in water. The ability of an artificial reef to attract marine life around it is a major component of its appeal to leisure users. A carefully sited artificial reef is also capable of generating a breaking wave, and this quality is attractive to surf-based leisure activities. The main forms of **tourism** and **recreation** that occur on and around artificial reefs can thus be divided into two types: consumptive (fishing) and non-consumptive (scuba-diving, snorkelling, submarine/observatory tours and surfing).

Using artificial reefs to aggregate fish and marine invertebrates for capture or harvest is a strategy employed by aquaculture and fishing industries in many countries around the world. By concentrating species in a small area, an artificial reef theoretically reduces the amount of effort necessary to catch a particular volume of fish or marine invertebrate. An intentionally created artificial reef can also be positioned advantageously for cost-effective access by fishing users and to some extent designed so as to attract target species. Many anglers also use Fish Aggregation Devices (FADs) with similar effect; however, these objects are classified separately from artificial reefs because they are positioned in mid-water rather than on the sea-floor.

Japan is recognized as the global leader in artificial reef development, and most of their reefs have been created in support of commercial fishing and/or aquaculture interests. In Europe, particularly Italy, artificial reefs are also

engaged in aquaculture for the production of bivalves such as mussels and oysters. By contrast, the USA has been the most active country in terms of establishing artificial reefs for recreational purposes. In 1991 over 650 artificial reef sites were recorded in US coastal waters. South-eastern US states such as Florida, Texas and Louisiana have demonstrated a long-term investment in artificial reef creation and are particularly advanced in terms of the number of structures deployed, enacted legislation and related regulatory arrangements, management practices and research efforts.

The enhancement of recreational fishing opportunities through artificial reef creation has the potential for economic **benefits** to the sport fishing industry, as well as social and economic benefits to host communities. But there are concerns about the sustainability of promoting artificial reefs as resources for line and **spearfishing**. Specifically, these concerns relate to research investigating whether an artificial reef actually produces more fish or simply concentrates existing fish stocks. Findings from a number of studies show there is little direct evidence that artificial reefs benefit fish populations when unrestricted extractive use (fishing) is permitted. Artificial reefs may therefore present a considerable risk to the overfishing of target species, as these creatures are just being redistributed to an area where it is easier for them to be caught.

Scuba divers and snorkellers visit artificial reefs in order to explore and observe marine creatures, and these forms of recreation also offer economic and social benefits to host communities. Shipwrecks and deliberately scuttled vessels are particularly popular artificial reef sites for these diver groups, with some allowing divers the chance to move inside the structure itself. Recreational scuba-diving use of artificial reefs is dependent on certain factors that can restrict safe access, such as the depth of the reef, prevalence of **currents**, structural integrity of the reef and ocean surface conditions (such as swell size). These factors have an even greater influence over the safe conduct of snorkelling. In countries such as Canada, the USA, Australia and New Zealand, artificial reefs have been created specifically for the benefit of scuba-diving and snorkelling participants, with most sites introducing regulations to restrict or completely prohibit

fishing activity to avoid user group conflict. The Australian states of Western Australia, South Australia and Queensland have sunk carefully prepared ex-navy vessels to become artificial reefs and attract scuba-diving tourists. These ships are interesting case studies of how artificial reefs can become commercial tourism attractions, with the ex-HMAS *Perth* and ex-HMAS *Hobart* hosting their own World-wide Web pages and internet cameras. Western Australia has developed a 'shipwreck trail' for scuba-divers along its south-western coastline, principally by scuttling vessels to create artificial reefs.

The submarine tours of the Atlantis artificial reef in Hawaii and the underwater observatory at Busselton Jetty in Western Australia are examples of more passive artificial reef-based leisure experiences where users can view an artificial reef and its inhabitants through a porthole or glass window (see Fig. A5). An advantage of this type of experience is that participants are able to witness the dynamics of an artificial reef habitat without needing the skills or equipment of scuba-divers and snorkellers. With participants in a captive environment, operators are afforded the chance to deliver interpretative information throughout the encounter. In the case of Busselton Jetty, construction of an underwater observatory has brought in valuable tourist revenue that is redirected back into the maintenance of a structure 1.8 km long and over 140 years old.

The other major non-consumptive recreational use of artificial reefs is for surf-based activities, predominantly surfing. Artificial reefs used for surfing are carefully designed and sited so as to allow an appropriate wave to form and break. The high energy displaced by breaking waves makes access to these reefs by recreational forms other than surfing and body-boarding challenging and quite dangerous. Australia and the USA have constructed artificial reefs for surfing, while New Zealand and the UK are nations considering them. There tends to be more community resistance for these surfing reef projects than for deep water offshore reefs because of concerns associated with the environmental impact of modifying coastlines and coastal **wave** patterns.

The effective management of artificial reefs used for tourism and recreation is a complex process that warrants an interdisciplinary focus, drawing on knowledge from the fields of engi-

neering, biology, ecology, economics and social science. For an artificial reef to be considered successful objectives for the reef must be clearly defined, and this relates both to reefs that are intentionally created and those unintentionally created but requiring some form of management for sustainable use. Objectives must be achievable, measurable and relevant to the form(s) of tourism and recreation supported. Many artificial reefs have been created without specific objectives, and measuring the effectiveness of these reefs is problematic. Some of the ongoing management and **policy** responsibilities associated with artificial reefs include: (i) licensing (issuing use permits), planning and **zoning** use; (ii) structural maintenance (including moorings and structural repairs); (iii) legislative and regulatory issues; and (iv) policing and user compliance, monitoring and reporting.

Artificial reefs have the potential to relieve some of the human-related pressure on natural reefs by hosting various forms of marine tourism and recreation use. Their employment in this role warrants serious consideration by managers of marine resources, particularly given global concerns over the future health of the natural marine environment in the face of threats like **climate change**, sedimentation and pollution. Deploying artificial reefs to act as substitute sites for anglers, divers, snorkellers, surfers and those wishing to observe marine wildlife would broaden the resource base for participants in these activities and possibly act as a buffer for nearby natural reefs. If artificial reefs are to be successfully used in such a manner, greater focus needs to be placed on social science-based research. Investigating the attitudes, perceptions and opinions of marine recreational user groups will inform the creation and management of artificial reef resources that are accessible, affordable, safe and capable of delivering satisfying leisure encounters.

#### **Related internet sources**

Reefball Foundation: <http://www.reefball.org>

HMAS Perth: <http://www.hmasperth.com.au>

Artificial Reef Association of British Columbia: <http://www.artificialreef.bc.ca>

Amalgamates Solutions and Research Ltd: <http://www.asrltd.co.nz>

Busselton Jetty: <http://www.busseltonjetty.com.au>

Paul Stolk

**Artificial Surfing Simulators:** *see* **Simulated Marine Recreation and Tourism**

**ASCOBANS:** *see* **Agreement on the Conservation of Small Cetaceans of the Baltic and North Seas**

**Atlantic Ocean** The Atlantic Ocean is the second largest of the world's oceans and constitutes the body of water between Africa, Europe, the **Southern Ocean** and the Western hemisphere. The Atlantic covers an area of 76.762 million km<sup>2</sup> including its tributary waterways (the **Baltic Sea**, Black Sea, Caribbean Sea, Davis Strait, Denmark Strait, the eastern section of the Drake Passage, Gulf of Mexico, Labrador Sea, **Mediterranean Sea**, **North Sea**, Norwegian Sea and almost all of the Scotia Sea). The Atlantic's deepest point is the Milwaukee Deep in the Puerto Rico Trench at -8065 m, although the average depth is -3310 m. The Atlantic has 111,866 km of coastline bordering the continents of Africa, Europe and North and South America. The Atlantic is also the warmest and most saline of the world's oceans.

Because of its location between the developed countries of Europe and North America, the Atlantic is one of the world's most trafficked waterways. **Ocean liner** tourism linking Europe and the USA peaked during the period between the two World Wars. Today, most of the transatlantic shipping traffic is freighter traffic. The Atlantic also has economic significance because of its fisheries **resources**, although fish stocks have declined substantially in recent years because of overexploitation and the production of crude and natural gas (**Caribbean**, Canadian continental shelf, Gulf of Mexico and the North Sea). **Tourism** is of significance in most of the coastal areas of the Atlantic, with **mass tourism destinations** in the Caribbean, Mediterranean and the coastal USA. **Ecotourism** is increasingly important in peripheral Atlantic areas including **Greenland**, **Iceland**, Labrador and Newfoundland, northern Norway, Nova Scotia and Scotland. Significant threats to the Atlantic environment include **drift-net fishing**, municipal and industrial pollution along the Argentinean, Brazilian, North American and European coastlines and oil pollution. A number of significant species for

ecotourism such as **manatees**, **turtles**, **seals** and **whales** are also endangered in the Atlantic.

**Related internet source**

CIA Factbook: <http://www.cia.gov/cia/publications/factbook/geos/zh.html>

C. Michael Hall

**Atlantic Rally for Cruisers** The Atlantic Rally for Cruisers is a transatlantic race of approximately 150 sail and motor yachts, originally intended as a friendly race for cruising yachtsmen. Cruising small boat sailors gather towards the end of November each year in Las Palmas de Gran Canaria (**Canary Islands**, Spain) awaiting the end of the hurricane season, when it is safer to cross the **Atlantic Ocean**. The official end of the race is at Rodney Bay in St Lucia in the Caribbean. The rally's purpose is to make the crossing safer, as both seasoned and novice sailors participate. Boats are required to carry safety equipment and keep in touch daily via radio.

**Related internet source**

ARC web site: <http://www.worldcruising.com/arc/english/htm>

Nancy Chesworth

**Atlantis** As legend has it, over 11,000 years ago, **Poseidon**, god of the sea, reigned over a great and prosperous land, a land known as Atlantis. The island of Atlantis was endowed with limitless natural **resources** and protected by the hand of Poseidon. Almost all knowledge of this godly land stems from two of Plato's dialogues, *Timaeus* and *Critias*. From these dialogues Plato tells of how Poseidon fell in love with a mortal woman named Cleito, who became impregnated with five sets of twin boys – the eventual rulers of Atlantis.

In time, the once content Atlanteans became power hungry and mounted a plan to conquer Greece, the home of the gods. This treacherous act eventually led Zeus, supreme ruler of both gods and men, to send earthquakes and floods to destroy the **island** nation. In one night, the island of Atlantis and its memory is said to have slipped into the sea, where it was lost forever.

Controversy remains as to both the existence and the location of Atlantis. Some believe Atlantis resides around the **Azores** islands (a

group of islands belonging to Portugal), and that the current mountain tops of the Azores are the sunken continent of Atlantis. The other theory is that Atlantis once existed in the **Aegean Sea** and was a port of the Minoan civilization. This theory claims that Atlantis is an exaggerated version of the historical destruction of the island Thera, and the fall of the Minoan empire. Others believe Atlantis never existed and was merely a figment of Plato's imagination. Regardless of whether or not Atlantis existed, the idea of its existence has captivated and inspired multiple generations of adventure seekers.

Today, individuals can experience modern societies' rendition of Atlantis in multiple forms and locations. Atlantis – Paradise Island in the **Bahamas**, the Historic Hotel Atlantis in Barbados, Atlantis Resort Hotel in Belek and Atlantis – casino, resort, and spa – in Reno, Nevada, USA are all high-class resorts that bring Atlantis to the 21st century. Travellers can also venture underwater in **submarine** tours with Atlantis Adventures in an attempt to uncover the famous lost continent. Atlantis Adventures operates submarine tours in Guam, the **Caribbean** and **Hawaii**. For the more adventurous traveller, the Atlantis Dive Resort in the Philippines and the Atlantis Diving Centre in Gozo, **Malta** offer individuals the chance to explore the ocean's mysteries independently or with a group. Both offer dive lessons, **PADI** certification as well as group excursions. For more land-based adventurers, Atlantis Marine World **Aquarium** in Long Island, USA strives to bring the mysteries of the sea to the surface. While these are only a few of the examples of modern replications of Atlantis, for the eager traveller there is no shortage of opportunities to immerse oneself in the mythology and luxury of Atlantis.

#### **Related internet sources**

MMV Encyclopedia Mythics: <http://www.pantheon.org/articles/z/zeus.html>

Lost Civilizations: <http://www.lost-civilizations.net/theories-about-atlantis.html>

Journal of Religion and Popular Culture: <http://www.usask.ca/relst/jrpc/art-atlantis-print.html>

Atlantis – Paradise Island, Bahamas: <http://www.atlantis.com/flash.aspx>

Historic Hotel Atlantis, Barbados: <http://www.atlantisbarbados.com>

Atlantis Resort Hotel, Belek: <http://www.atlantishotel.info/english/index.html>

Atlantis – Casino, Resort, and Spa, Reno, Nevada: <http://www.atlantiscasino.com/reno/index.asp>

Atlantis Adventures: <http://www.atlantisadventures.com>

Atlantis Dive Resort, Philippines: <http://www.atlantis-hotel.com>

Atlantis Diving Centre, Gozo: <http://www.atlantisgozo.com>

Atlantis Marine World Aquarium, Long Island, US: <http://www.atlantismarineworld.com/index.html>

Melissa Stults

#### **Atlantis Submarines: see Submersibles**

**Atoll** Atolls are unique, low-lying tropical **islands** that are defined by the presence of an organic **reef**. They have the appearance of a ring-shaped ribbon reef enclosing a **lagoon**. Atolls have beaches formed of **coral** sand, and often have palm trees growing on small bars of coral rubble. At the centre of the atoll is a lagoon. On the seaward side the atoll is ringed by coral reefs. Birds often nest on the island.

Atolls generally rise up out of very deep water and are formed in a similar way to **barrier reefs**: first, an island is formed by a volcano, then coral starts to grow as a fringing reef around the island. Over the years the island subsides, whilst the corals grow upward to form a barrier reef around the island. The growth of corals must keep pace with the volcanic subsidence in order for the atoll to form.

The distribution of atolls around the globe is instructive: most of the world's atolls are in the **Pacific Ocean** (with concentrations in the Tuamotu Islands, Caroline Islands, Marshall Islands, Coral Sea Islands and the island groups of Kiribati and Tuvalu) and Indian Ocean (the **Maldives**, the Laccadive Islands, the Chagos Archipelago and the Outer Islands of the **Seychelles**). The **Atlantic Ocean** has no large groups of atolls, other than eight atolls east of Nicaragua that belong to the Colombian department of San Andres and Providencia.

Alexandra Coghlan

**At-sea Day** An at-sea day represents a full day in which a cruise ship does not call at

any **port** on its itinerary. At-sea days may occur due to the distances involved between two consecutive **ports of call**. During an at-sea day, all passenger activities must be provided on board the cruise ship by the ship's staff.

Fredrick M. Collison

**Attractivity** Attractivity is the power to attract an object. To attract means to draw to or toward; to get the admiration, attention, etc. of; to invite or allure, to engage (Webster, 1979). Attractivity is a major requirement of any tourist destination, since visitors willing to continue to spend money after they have arrived, for as long as possible, must converge there in the largest numbers. Destinations must have 'the power to arouse interest' or 'draw favourable attention'. For coastal destinations, specific advantages make up their attractivity, in particular the quality of the **environment** (sun, sand and sea) and of the **landscape**. Many people seek natural areas to rediscover authenticity and real experiences, believing them untouched by modernity: 'Visit the Catlins, a corner of New Zealand untainted by the modern world – a place where time has stood still and a visitor may enjoy forest, wildlife and the lifestyle of a bygone era' (Catlins-NZ, 2006). Scholars speak of the social construction of tourism to facilitate its consumption.

Not all places on earth are tourist destinations, but we believe we can transform many into destinations. Sand cannons are used to rebuild beaches and bulldozers to clear them of storm debris. Marketing or advertising captures the attention of future visitors only if it presents 'attractive' products that can 'draw like a magnet'. It creates images that reveal much about our society's prevailing views and beliefs (Morgan and Pritchard, 1998), even as they target specific markets. However, the power to attract is not limited to natural endowments, because pleasing, alluring, inviting features are what all tourist destinations seek to develop. Charm and fascination can be cultivated or constructed to satisfy infinitely expandable human desires to consume wide varieties of products and ideas. Our attitudes towards **landscapes** have changed through time. Wilderness used to be considered sterile and useless, even frightening.

Today, wilderness parks have become popular (Boyd, 2005). Natural environments are produced as places of aesthetic and scenic **value**, as staged experiences, often in stereotypical ways. The sea was dangerous and the **beach** reserved for **fishing** folk until swimming and sunbathing captured the imagination of vacationers. The Sunshine Coast in Queensland, Australia, boasts a pristine coastline and lush hinterland, beautiful beaches, expansive coastal views and several **national parks**, but also several purpose-built attractions. Natural landscapes are constructed as '**leisure-oriented**' spaces to meet the needs (desires) of visitors rather than those of the landscape or of its occupants. The unique appeal of the marine environment and its wildlife has encouraged the demand for interactive marine tourism experiences such as **whale watching**, **dolphin feeding**, **swimming with dolphins** and **seal** diving programmes. The development of such ventures has created **impacts** on the animals solicited, because they are often not understood by visitors and operators. When human inhabitants are ignored, it sometimes leads to struggles and contestations which can suddenly reduce the attractivity of the destination. In a world of global competition, loss of attractivity can be fatal to the economic survival of the destination.

#### **Related internet sources**

Catlins-NZ (2006). <http://www.catlins-nz.com>

Defining attractivity: <http://www.thefreedictionary.com/Attractivity>

Examples of 'constructed images and destinations': <http://www.sunshinecoast.org>; <http://www.catlins-nz.com>

Coastal attractivity in the northern hemisphere: <http://www.visit-lowestoft.co.uk>

Preserving the attractivity of oceans: <http://nztri.aut.ac.nz/cmt2007/pages>; [http://www.framework.org/ev.php?ID=6797\\_201&ID2=DO\\_TOPIC](http://www.framework.org/ev.php?ID=6797_201&ID2=DO_TOPIC)

Anne-Marie d'Hauteserre

**Authenticity** The original usage of the term 'authenticity' comes from the museum sector, where objects were tested to ensure that they were genuine; this meaning has since been extended to tourism. As Sharpley (1999, p. 189) notes: 'Works of art, festivals, rituals, cuisine, dress, housing are usually described as



“authentic” or “inauthentic” in terms of the criterion of whether they are made or enacted by local people according to custom or tradition’. The notion of ‘authenticity’ is often used to market marine tourism destinations and holidays – with a focus on ‘pristine’ environments and tours and activities that reflect traditional cultures or ‘real’ ways of life.

MacCannell (1999, p. 13) maintains that, living in today’s modern, alienating society, many tourists are driven to ‘experience’ authenticity, which may involve the reconstruction, or staged authenticity, of a ‘cultural heritage or a social identity’. Meethan (2001) argues that ‘authenticity’ needs to be seen as a category that is created and recreated in contingent circumstances, sometimes serving to uphold political or ideological positions as much as catering for the tourist market. Sharpley (1999, pp. 192, 201) also argues that authenticity needs to be considered from an individual and personal point of view, based on past experiences, home life and expectations, and the interaction with the tourist attraction. He identifies two meanings of authenticity:

- ‘It is a description of the tangible quality of something (for example, traditional fishing practices) which is associated with production methods or cultural foundations that are perceived to be pre-modern or traditional’.
- ‘It is a socially constructed, intangible perception of destination societies and cultures, of forms of travel, or of overall tourism experiences that appear to be pre-modern or traditional’.

Wang (1999) differentiates between ‘objective authenticity’ and ‘constructive authenticity’ as well as a third dimension – ‘existential authenticity’. Objective authenticity refers to the authenticity of the originals and constructive authenticity refers to the symbolic authenticity conferred onto toured objects through imagery, expectations and beliefs. Existential authenticity in tourism is defined as ‘activity-related authenticity’ that relates to individual experiences of the ‘self’ when the tourist actually ‘joins in’. This can be in response to feelings of a ‘loss of self’ and the ‘disintegration of sincerity’ (Berger, 1973, p. 82). Wang links these feelings with nostalgia for a way of life that supposedly existed in the past, or romanticism represented

by a more ‘natural’ and free and easy time. Thus, marine tourism adventures such as **snorkelling** on a **coral reef**, swimming and **whale watching**, which transcend daily lives, can be about the search for the authentic self as much as the search for authentic objects.

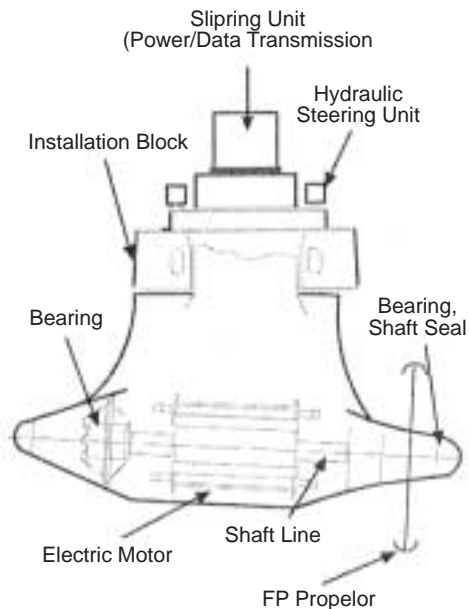
According to Cohen (1995), the postmodern tourist has a greater respect for the **impact** of tourism upon a host community, and thus staged authenticity like **aquaria** are acceptable because they act as a substitute for the original, which in turn helps to protect and sustain the initial attraction. Therefore, there is justification for ‘contrived’ attractions in tourism. What matters most is the vested sincerity and effort in making the most of the experience for all involved. Ultimately, it must be said that authenticity, in any form, can be viewed as a commodity and, as such, an integral part of the tourism product. Authenticity is, therefore, also inextricably linked to the ‘commodification of culture’ (Cohen, 1995).

Rose Wood  
Simon Milne

**AWARE:** see **Project AWARE**

**AWTS:** see **Advanced Wastewater Treatment Systems**

**Azimuthing Propulsion/Azimuthing Podded Drive** Azimuthing propulsion was developed by ABB Marine in order to give ships a much greater manoeuvrability. The so-called Azipod is mounted as a separate entity, and consists of an AC motor and a fixed-pitch propeller (see Figs A8 and A9). Replacing the standard propeller and rudder, the complete submerged pod is 360° steerable. In addition to the largely increased manoeuvrability, Azipod propulsion is easy to handle and has a low noise and vibration output, lower emissions and higher fuel efficiency than standard propeller propulsion systems. Modern cruise ships equipped with this unique propulsion and steering system include **Royal Caribbean’s Voyager of the Seas**, **Hapag Lloyd’s Europa** and **Carnival’s Elation**. More recently, ABB have developed the CRP Azipod as a further development of the Azipod, for high-speed, high-performance vessels. This is a steerable Azipod unit with a contra-rotating



**Fig. A8.** The Azimuthing propulsion system (from ABB).

propeller (generally with a 100° turning angle), which is directly mounted behind a standard propeller. This combination of standard propeller and Azipod unit results in about a

10% improvement in energy efficiency. The first two commercial vessels equipped with this new system are the ShinNihonkai's 35,000 GRT high-speed RoPax ferries, *Akashia* and *Hamanasu*. They are the largest ferries ever built in Japan, measure 224.5 m, and can carry up to 820 passengers, 158 trucks and 66 passenger cars. This propulsion system is also built by Rolls-Royce/Alstom under the term Mermaid Propulsion.

#### **Related internet sources**

ABB: <http://www.abb.com/marine>

Rolls Royce: <http://www.rolls-royce.com/marine/product/propulsion/electrical/default.jsp>

Michael Lück

#### **Azipod: see Azimuthing Propulsion/ Azimuthing Podded Drive**

**Azores** The Azores, an **archipelago** in the middle of the **Atlantic Ocean** 1600 km west of Lisbon and 3900 km east of North America, are an autonomous region of Portugal. Located between 36° 56' and 39° 43' N **latitude** and 24° 46' and 31° 16' W **longitude**, they extend for more than 600 km in a north-



**Fig. A9.** The Azipod (Azimuthing Podded Drive) was conceived to give ships more manoeuvrability, with a motor inside a submerged pod that is 360 degrees' steerable (photograph courtesy of ABB).

west-south-east direction and comprise an area of 2355 km<sup>2</sup>. The Azores possess an immense **Exclusive Economic Zone** of 1.1 million km<sup>2</sup>. The nine islands consist of three groups: Angra, Horta and Ponta Delgada, with the capital at Ponta Delgada. The climate is subtropical, with high humidity. The Azores form a unique biome among the world's temperate broadleaf and mixed forests, with many endemic species of plants. The Azores are the peaks of mountains as measured from their base at the bottom of the ocean. All of the islands are of volcanic origin, as revealed by volcanic cones, craters, hot springs and fumaroles. The coastline is made of lava and there is lack of long, sandy **beaches**.

The three airports in Ponta Delgada, Lajes and Horta are linked to Lisbon by frequent flights and to the USA and Canada by charter flights. The USA has maintained a NATO airbase on the Azores, and Horta is the hub of transatlantic submarine cables. The Azores are internationally renowned for **sports fishing**, **whale** and **dolphin** watching and unspoilt nature.

***Related internet sources***

Beautiful Azores: <http://www.azores.dk>

Website of the Azores Tourism Board: <http://www.drtacores.pt/index.php>

Prabha Shastri Ranad