

World Heritage Sites

Protected
Areas and
World
Heritage



HA LONG BAY VIETNAM

The wide shallow bay of Ha Long in the Gulf of Tonkin is studded with 2,000-3,000 islets and islands, which form a spectacular karst seascape of limestone pillars and forested pyramidal islands. Because of their sheer sides, many islands are uninhabited, unexamined and unnamed. The site has outstanding scenic beauty and is of great geological interest. Its biodiversity ranges from tropical limestone forest, through coastal ecosystems and coral reefs to sheltered open seas.

COUNTRY

Vietnam

NAME

Ha Long Bay

NATURAL WORLD HERITAGE SITE

1994: Inscribed on the World Heritage List under Natural Criterion vii;
2000: Inscription extended under Natural Criterion viii.

STATEMENT OF OUTSTANDING UNIVERSAL VALUE [pending]

IUCN MANAGEMENT CATEGORY

Unassigned

BIOGEOGRAPHICAL PROVINCE

Thailandian Monsoon Forest (4.10.4)

GEOGRAPHICAL LOCATION

A group of 775 offshore islands in the northern Gulf of Tonkin, northeast Vietnam, about 165 km east of Hanoi between 106°58' to 107°22'E and 20°45' to 20°56'N.

DATES AND HISTORY OF ESTABLISHMENT

1962: Established a Historical & Cultural Relict and National Scenic Spot under Decision No.313/VH
1994: Designated a World Heritage site of 43,400 ha;
2002: Ha Long Bay Heritage Area established by Prime Ministerial Decision 142 TTg (155,300 ha);
2004 Part of adjacent Cat Ba Island designated an MAB Biosphere Reserve (core: 8,500 ha);
2005: Designated an ASEAN Heritage Park.

LAND TENURE

Government of Vietnam. Managed by the Ha Long Bay Management Department of Ha Long City for the Quang Ninh Provincial People's Committee.

AREA

150,000 ha. Adjoined on the west by Cat Ba Island National Park and Biosphere Reserve (26,241 ha).

ALTITUDE

Sea-level to >200m.

PHYSICAL FEATURES

Ha Long Bay is a large bay near the mouth of the Bach Dang river studded with a multitude of rocky pillars and steep forested islets. It is a mature karst landscape of limestone pinnacles, sparsely tree-covered, rising from the sea, with, in the southeast, islands of schist and a few formed of decayed lateritic hills. The surrounding sea is only 6-10m deep except along old river channels, the result of a marine transgression caused by the sinking of the underlying limestone plateau. In all, there are '1,969' (in fact some 3,000) islands and islets, of which 989 are named, and 775 contained within the site. Larger islands, rising to 100-200m, are found in the south, interspersed with smaller islets only 5-10m high. On the east of the bay the middle-sized islands have almost vertical sides. The pinnacles are separate 50-100m towers with a height to width ratio of 6:1 of a classic *fenglin* landscape form where the plain from which they rise has been flooded by the sea. There are also rows of cone-shaped islands characteristic of a *fengcong* landscape. There are two larger islands and the laterite islands are inhabited. Adjacent are the similar Cat Ba archipelago on the west, and the less disturbed islands of Bai Tu Long Bay to the east.

The oldest rocks are Ordovician, drowned undersea then raised as mountains and eroded. A 1000m-thick bed of cherty-carbonate sediments was laid down in a shallow sea in two major depositions during the late Carboniferous and Permian periods. They contain abundant graptolites, brachiopods, and the fossil remains of fishes, corals, foraminiferae, radiolarians, bivalves and flora in ten separate layers. Extensive coal seams were also laid down. These were then uplifted in the Cretaceous and eroded into blocks and towers. In the Quaternary the rocks underwent five marine and continental intercalations. The present Ha Long Bay appeared after the maximum transgression in the Middle Holocene, leaving deeply undercut limestone cliffs 2,280 to 40,000 years old. There are many remnants of old phreatic caves, old karst foot caves, marine notch caves and several very large caverns: Hang Đầu Gỗ Wooden Stakes Cave or *Grotte des Merveilles* is the largest, and its three large chambers contain many stalactites and stalagmites. There are numerous lakes which occupy drowned dolines within the *fengcong* islands, and springs on the shores of the bay. Geological resources are abundant: anthracite, lignite, oil shale, petroleum, phosphate, limestone and cement additives, kaolin, silica sand, dolomite, quartzite, antimony and mercury of hydrothermal origin (Tran *et al.*, 2000).

CLIMATE

This is an equable warm climate with four distinct seasons, subject to typhoons and tropical storms from the southeast in autumn. The average annual temperature ranges between 19°C and 25°C. The average annual rainfall is between 1,600mm and 1,800mm, falling from May to September, most heavily during July and August. Only 150-400mm falls the rest of the year, often as drizzle, but winter can be cool and very misty. The average relative humidity is 84%. The many islands buffer the waves so that the seas are usually calm.

VEGETATION

The area contains a wide variety of ecosystems: tropical forests, cliff, summit, cave-mouth and littoral communities, mangrove forests (31 species), seaweeds (140 species), seagrass beds (5 species) and productive coral reefs. Primary tropical forest is found mostly on the larger islands like Ba Mun, sparsely on the steep limestone islands and thicker on the less steep schist and laterite islands. A study by the Institute of Ecology and Biological Resources of Hanoi (IEBR) of the tropical forest ecosystem in Ha Long and the neighboring Bai Tu Long Bay recorded 499 limestone-adapted plants including 12 species of ferns and seven plants endemic to the bay area: Ha Long cycad *Cycas tropophylla*, Ha Long fan palm *Livistona halongensis*, Ha Long ginger *Alpinia calcicola*, Ha Long balsam *Impatiens halongensis*, violet chirita *Chirita halongensis*, woolly chirita *C. hiepii* and *Paraboea halongensis*; also two sub-species *Schefflera heptaphylla halongensis* and yellow slipper orchid *Paphiopedilum* sp. The IEBR study of the wetlands of the Bay and its surroundings distinguished six sub-ecosystems: tidal and mangrove, tidal flats, caves and closed lagoons, hard bottom / coral reefs, soft bottom, and aquatic. Cat Ba National Park to the east is on a large well forested island with 800 vascular plant species, 265 of which are timber trees (sjvietnam 2008). Its primary tropical limestone forest features *Spondias lakonensis*, *Milium flipes*, *Indospermum* sp., and the mangroves *Rhizophora mucronata*, *Bruguiera gymnorhiza*, *Kandelia candel* and *Aegiceras mafus* (UNESCO, 2008).

FAUNA

According to data from the National Conference on the Biodiversity of Ha Long Bay held in late 2003 at Ha Long City the area has 1,847 species of animals and 30 cave/grotto species groups. An IEBR

study of the tropical forest ecosystem listed 14 mammals, 40 birds, 4 amphibians and 8 reptiles. The 14 mammal species include rhesus monkey *Rhesus mulatta* and crab-eating macaque *Macaca fascicularis*, also squirrels, weasels, antelopes and iguanas. 60 endemic snails have been discovered, especially abundant in the caves (Anon., 2004). The coral reefs (184 species) average 30% cover but are much denser on eastern and southern coasts. Adjacent Cat Ba National Park has 32 mammal, 79 bird, 30 reptile and amphibian, 500 mollusc and 400 arthropod species (UNESCO, 2008).

According to the IEBR study, the six aquatic sub-ecosystems of the Bay yield the following species totals. The tidal and mangrove ecosystem, important as a nursery and shelter, has 91 species of blue green algae, 169 species of sandworm (polychaetes), 400 species of fish, 200 species of bird and 10 species of reptile. Tidal flats without mangroves typically hold molluscs and sandworms, almost all overexploited. Caves, reservoirs and closed lakes contain 18 seaweeds, 65 species of coral, and 40 bottom-dwelling species. The hard bottom ecosystem and coral reefs are mostly fringe lagoons, reef flats, internal and external, crest, slope and platform reefs. It is estimated that there are 184 species of coral, 81 species of snail, 130 molluscs, 57 crabs, 55 sand worms and around 19 newly identified species of sponge. The soft bottom is a sea-grass ecosystem with 5 species but also includes 17 seaweed, 29 mollusc, 3 sand worm and 9 crustacean species. The aquatic ecosystem contains 355 species of plankton, 500 bottom-dwellers and free-swimming species including 300 molluscs, 200 sand worms and 13 echinoderms (Anon., 2008).

CONSERVATION VALUE

The Bay is a spectacular seascape of pristine limestone pillars and islands. The site also has much geological, archaeological and biological interest, especially for marine species. The Park lies within a Conservation International-designated Conservation Hotspot and a WWF Global 200 Eco-region.

CULTURAL HERITAGE

Many archaeological sites have been found dating from 25,000 to 3,000 ago. At Giap Khau (Hon Gai) the evidence suggests occupation by the Hoa Binh Culture 10,000 years ago. Archaeological sites on Tuan Chau, Ngoc Vung, Cai Dam, Dong Naim and Cat Ba islands have yielded so many artifacts that they have been grouped as the Ha Long Culture, typical of the northeastern coast of Neolithic Viet Nam. Ha Long was a significant port, located on the trade routes between China, Japan, and other southeast Asian countries, and the Bay was the site of three famous battles against Chinese and Mongol invaders. Many island names derive from their unusual shapes: Voi (elephant), Ga Choi (fighting cock) and Mai Nha (roof).

LOCAL HUMAN POPULATION

In 2008 2,214 people lived within the property in three floating villages of houseboats and bamboo rafts. On first designation as a World Heritage Site in 1994, local fishermen were urged to leave their villages for dry land, but they chose to stay on in their ancestral waters fishing for the 200 species of fish and 450 species of mollusks (sjvietnam, 2008). They are now beginning to become more commerce- and tourism-oriented. The larger islands in the bay such as Cat Ba have permanent inhabitants. Major shipping routes run straight through the archipelago. The bay is a major centre for fishing, agriculture and maritime transport and an increasing population makes its living on and around its coasts which are lined with polluting industrial cities and coal mines which produce most of the country's coal. A long-term economic development program proposes new ports, factories and housing along its shores.

VISITORS AND VISITOR FACILITIES

Ha Long is extremely popular with both Vietnamese and international tourists. During 1998, 300,200 people visited the Bay, 38% being foreigners (Anon, 2004). By 2002 there were 1.7 million annual visitors (HLBMD, 2003) and by 2008, 449 tourist boats, 77 providing bed and breakfast (IUCN, 2008). The numbers are now being controlled. Junk boat tours and cave tours led by multilingual guides, kayaking, camping and swimming are all very popular. There is an information Centre at the Ha Long city wharf and an eco-museum and new tourist centres are being built. Tuan Chau and Cat Ba also have tourist facilities, including hotels and beaches (HLBMD, 2004). Some of the smaller islands have beautiful beaches.

SCIENTIFIC RESEARCH AND FACILITIES

In 1998 the area's geomorphology was studied, resource use has been mapped by a Belgian team, a guide to the plant species completed by a team from the Netherlands in 2000, the extent of pollution measured by the Japanese International Cooperative Agency, and the area's ecosystem and

biodiversity studied by the Korean Institute of Ecology and Biological Resources. The IEBR have catalogued the ecosystems and species of the area. The Free University of Brussels and the Vietnam University of Natural Sciences developed a GIS database for the province. The Park Authority monitors coral reefs, the use and management of mangroves and surrounding land uses (Anon., 2004). Monitoring of water quality and quantity and of biodiversity is done by the Quang Ninh

MANAGEMENT

The Ministry of Culture, Information & Sports is responsible for the overall management of the Bay, under the People's Committee of Quang Ninh Province which is responsible for the administration and management of territory within its jurisdiction. Despite the intensive development in the region, Ha Long Bay itself is being protected as a major tourist and cultural centre and the impacts of cave-tourism and urban waste are being brought under control. From 2005-8 a successful community education program was run by Fauna and Flora International (HLBMD, 2004). The People's Committee has approved capacity building, scientific surveys and the restoration of coral reefs. Other projects include dredging of boating channels, improvements to tourist sites, waste treatment, enhanced environmental protection, investment in monitoring equipment, awareness raising campaigns and strengthened enforcement (UNESCO, 2009). The Bay is one of the 23 parks in the ASEAN Heritage Parks Program.

MANAGEMENT CONSTRAINTS

Ha Long Bay needs much protection, from the authorities as much as from local people and burgeoning tourism, but the property lacks comprehensive legal and management tools, and management capacity. The delicate limestone cave ecosystems are being degraded as tourists break off stalagmites and stalactites and drop litter into cave streams. The mouths of some caves have been widened to allow tourist access and the increase in light and disturbance has unbalanced the delicate links between the flora and fauna, decreasing the humidity inside the caves and increasing carbon dioxide which accelerates the growth of algae. With a booming tourist trade, mangroves and sea grass beds have been dredged and ports, jetties and wharves built for tourist boats. Heavy metals, fuel and coal spillage, along with tourist garbage, have polluted the islands and their waters which have become turbid. Human waste from portable toilets for tourists seeps and from the mainland into the soil and waters around the islands, altering the ecosystems through nutrient enrichment. The bay is also at risk from oil spills. Game fishing, often near coral reefs, threatens many endangered species which are often not eaten locally but exported to other markets around the region (sjvietnam, 2008). Coral is sold as trinkets by the locals but despoiling it expels the fish that they depend upon for their survival and the trade has been forbidden.

Efforts to protect this fragile ecosystem have now been made and a Sea Rescue Centre has been set up to address the dangers. But potential threats remain: the regulation of diesel boat traffic remains a key issue, the pressure on natural resources from the growing urban population leading to landfilling and a coastal highway along the Bay shore, pollution from the surrounding industries such as the cement plant at Cam Pha and coal mines, the expanding aquaculture farms and materials transported through the Bay; and a proposed new port at Cai Lan that would draw larger transport ships through the islands, increasing the risk of spills (HLBMD, 2004). However, the effects of the cement plant are to be mitigated, coal is no longer to be loaded and carried in the bay after 2006, and to minimise food and liquid waste pollution from the floating villages the number of houses is to be limited. Jet-skiing within the property, a tourism resort on Lam Bo Island and major infrastructure in the Cua Van floating village have all been banned or halted (UNESCO, 2009).

STAFF

In 2003 there were 226 staff in inspection, accounting and tourism. Even this number was not considered adequate and funding for more professionally trained staff was needed (HLBMD, 2003).

BUDGET

The national government provides a budget to the provincial People's Committee. The income from entry fees in 2001 was US\$1,520,000 but together these were still inadequate to support the Park. Between 1997 and 2000, WHF provided US\$37,235 in project grants. Project assistance has also come from China, Australia and Thailand. UNDP and BP (via Fauna and Flora International) granted US\$400,000 towards the community awareness program (HLBMD, 2003). Between 2003 and 2006 UNF provided US\$100,000 for the Youth Volunteers for Cultural Heritage Preservation project and the Government of Norway provided US\$519,000 for the Cua Van Floating Cultural Centre, part of the Ha

Long Ecomuseum. In 2008 it was noted that US\$152,987 had been provided from international sources for management planning support, equipment and training (UNESCO, 2009).

LOCAL ADDRESSES

Ha Long Bay Management Dep't, 166 Le Tyhanh Tong Road, Ha Long City, Quang Ninh Province, Ministry of Culture, Information and Sport, 51-53 Ngo Quyen Street, Hanoi, Vietnam.

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DATE

February 1993. Updated 1-1996, 12-1998, 12-2009, May 2011.