OCEAN PARK CONSERVATION FOUNDATION

Action Plan

1998 - 2002

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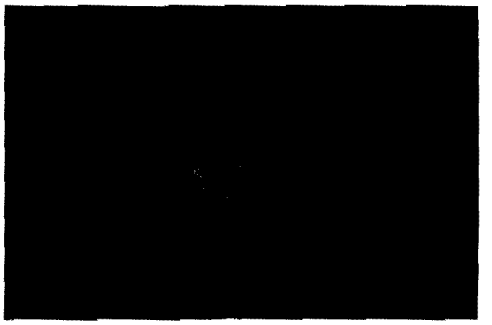
Executive Summary

The Ocean Park Conservation Foundation (OPCF) was established in 1993, and in 1995 it became a charitable trust. The current mission of the Foundation (revised in 1999) is to advocate and facilitate the conservation of marine mammals and their habitats in Asian rivers and coastal waters. It achieves this largely through education and awareness programs, and by providing financial support to research and conservation projects conducted by other institutes and individuals. However, OPCF also conducts its own research on local species of dolphins and porpoises in Hong Kong waters. In its first five years (1993-1997), OPCF focussed on river dolphins, in particular the baiji of the Yangtze River in China. Over the next five years (1998-2002), work will be spread among eight species of special interest: the baiji, susu, bhulan, Indo-Pacific hump-backed dolphin, Irrawaddy dolphin, aduncus*-type bottlenose dolphin, finless porpoise, and dugong. Each of these species is of particular conservation concern to the Foundation because one or more populations are threatened by human activities, and a significant portion of their range is in south or east Asia. The Foundation will pursue its objectives largely by supporting 11 projects (including two new ones) aimed at the most pressing conservation issues for small cetaceans and dugongs in south and east Asia. The 11 projects are described and ranked in order of priority (in relation to other OPCF projects) in this action plan.*

Introduction

In 1993, when founding director Stephen (Steve) Leatherwood[1] was drafting Ocean Park Conservation Foundation's (OPCF's) first five-year action plan (OPCF 1993), he had an ambitious vision for it. He was aware that many cetacean populations (cetaceans are the group of mammals otherwise known as whales, dolphins, and porpoises) in Asian rivers and coastal waters were rapidly declining, some of them already near extinction. He also knew that if any were to be saved, it would require immediate action on several fronts. First was research. Where were the animals, how large and productive were their populations, and why were they declining (if indeed they were)? Second was public education. People from school children to policy-makers needed to be informed. For example, at the time, most residents of Hong Kong were unaware that dolphins and porpoises existed on their doorstep. Government authorities had no idea that the animals were in trouble, or that the public cared. Finally was conservation action. For Steve and many other conservation biologists, science is not an end in itself. Once a problem is identified and understood, and it has been explained in terms that non-scientists can understand, the next crucial step is to effect change, to turn the problem around. This is the ultimate challenge.



The late Dr. Stephen Leatherwood, OPCF's founding director and the person most responsible for OPCF's current focus and momentum.

We sincerely wish that we could report: mission accomplished. Unfortunately, anyone familiar with the difficulties of conserving marine mammals knows that such a daunting task, or series of tasks, could not possibly be completed in half a decade. We can report, with great satisfaction, however, that Steve's vision remains very much alive. OPCF has become a recognized force in south and east Asia. In fact, its leadership role is exactly what Steve had in mind. The small, but dedi-

[1] Steve Leatherwood died of lymphatic cancer on 25 January 1997. He remained actively and enthusiastically involved in OPCF's activities until his final days. His contributions and impact on the success of the Foundation can not be overemphasized. Everyone at OPCF, and the dolphins and porpoises of Asia, will miss him.

cated, staff of OPCF can take great pride in what they have accomplished. With the generous support of Ocean Park Corporation and a host of private donors, research projects have been carried out in at least a dozen countries on more than 10 different cetacean species. The Foundation has sponsored, often jointly with local or international partners, meetings, workshops, training courses, museum exhibits, media events, and technical as well as popular publications. Most of the original 14 projects were derived from IUCN/SSC Cetacean Specialist Group (CSG) projects (Perrin 1989; Reeves and Leatherwood 1994a), and there has been a close working relationship between the CSG and OPCF from the beginning.

As the contents of this new OPCF Action Plan makes clear, few of our initiatives can be considered complete. There have been major disappointments - none greater than the failure to make significant progress in saving the baiji of the Yangtze River. River dolphins in Nepal (susu) are down from four small populations in the 1970's to a single isolated group of perhaps 20-25 in only one river segment now. That population is threatened by plans to construct a large hydroelectric dam in Chisapani Gorge (Reeves et al. 1996a, b). Chinese scientists report a dramatic decrease in sightings of finless porpoises in the Yangtze River, suggesting that these river porpoises will follow the baiji along the road to extinction (Reeves et al. in press). Illegal fishing with electricity, rolling-hook longlines, and explosives continues in the Yangtze, with little regard for the impacts on baiji and finless porpoises. Gillnets remain nearly ubiquitous in Asian coastal waters, taking a huge toll on cetaceans and other marine and aquatic organisms (Perrin et al. 1994).

But there have also been some unexpected surprises. The population of Indo-Pacific hump-backed dolphins (in China often called Chinese white dolphins) in Hong Kong is much larger than previously thought, so there is hope for its long-term survival (Jefferson and Leatherwood 1997; Jefferson in press). Hong Kong has embraced the dolphin as an emblem of environmental concern (as well as of its return to Chinese sovereignty in 1997). The decline of river dolphins in some parts of Pakistan, India, and Bangladesh may not be quite as severe as was feared (Reeves and Leatherwood 1995; Smith and Reeves in press a). Now, at least there is a growing cadre of people in those countries who are carrying forward initiatives begun with help from OPCF and its partners. Dolphins in Burma's Irrawaddy River (Burma is now officially called Myanmar) are still revered by fishermen, who have long depended on them for help in finding and herding fish into nets. Rather than being seen as threats to the encouraged to maintain their protective attitude and keep the animals out of harm's way (Smith et al. 1997a; Smith 1998).

In this, OPCF's second five-year action plan, we briefly describe the eight species of primary concern, summarize the threats that they face, and list projects designed to investigate and address those threats. This is intended as a working document, a blueprint for action. During the first five-year cycle, it often proved necessary to modify and add to projects in the action plan as new information became available or as unforeseen crises arose. Some research efforts that OPCF supported, such as marine mammal surveys in Vietnam (Smith 1996; Smith et al. 1995, 1997b) and Burma (Smith et al. 1997a), fell outside the scope of the formal projects in the first action plan. Similar changes are to be expected in the years ahead, but we hope that this document will serve as a suitable blueprint to guide OPCF's activities through its next phase.

Mission and Background

of the Ocean Park Conservation Foundation

Ocean Park Conservation Foundation was established in 1993 by Ocean Park Corporation. Its current stated mission (the wording has been revised since 1993) is:

To advocate, facilitate, and participate in the conservation of marine mammals and their habitats in Asian rivers and coastal waters, through research and education.

At OPCF's inception, Ocean Park's Board of Directors unanimously agreed that Ocean Park had the ability and resources to contribute to the welfare of cetaceans in Asia, and that sponsorship of the Foundation was an appropriate way for Ocean Park to assume a leadership role in marine and aquatic conservation in south and east Asia. The Foundation works closely with other conservation-minded organizations and individuals. Among our most active partners over the past few years have been the IUCN/SSC Cetacean Specialist Group, Whale and Dolphin Conservation Society (WDCS), Hong Kong Government (Agriculture and Fisheries Department -AFD), and World Wide Fund for Nature (WWF).

OPCF relies heavily on public events, such as the annual Conservation Day conducted in association with Ocean Park Corporation, to raise funds for its projects.

During its first five-year period, OPCF directed most of its resources toward riverine and nearshore marine dolphins and porpoises, with a major geographical focus in China. In this part of the world, very little conservation work had been done, and changes caused by rapid economic development were seen as serious threats to the survival of many populations of small cetaceans in the region (Perrin et al. 1995, 1996).

The Foundation was registered as a charitable trust in 1995, and is now relatively financially independent of Ocean Park Corporation. Although Ocean Park still provides administrative support and office facilities to the Foundation, funds to cover most operating expenses and to support projects are obtained through OPCF-sponsored fund-raising activities (Chan and Jefferson 1996). Increasingly, the Foundation must rely on outside financial assistance to continue developing and supporting its projects. The Foundation's activities are led by a Director (or Co-Directors) and administered under the supervision of a Board of Trustees and a 10-member Scientific Advisory Committee.

The staff of OPCF is very small, with only one or two full-time paid employees. Much of the Foundation's important work is accomplished through the assistance of part-time staff paid from other sources, or through volunteers. In this way, OPCF can keep its operating expenses low, and more of the Foundation's small annual budget is available to fund important research and conservation activities in the field.

In May 1999, OPCF held a strategic review meeting to assess the future direction of the organization. At that meeting, it was decided that the Foundation should seek to establish one or more long-term research projects, in addition to continuing to provide short-term funding as 'seed money' to get projects started. It was agreed that OPCF should be more aggressive in the pursuit of its goals, and the prospects of the Foundation becoming more involved in lobbying and influencing school curricula were discussed. Also, the mission statement was broadened to include the dugong in the Foundation's list of focal species.

Summary of Threats

Facing Small Cetaceans and Dugongs in South and East Asia

Gillnets and other types of fishing gear are used extensively along the coasts of southeast Asia. This may help to explain the low sighting rates of cetaceans in some otherwise productive areas, such as Vietnam.

The small cetaceans and dugongs of south and east Asia face a broad array of threats to their survival (see general review in Reeves and Leatherwood 1994a). These include: bycatch in fishing gear (especially gillnets); deliberate killing for their products such as meat and oil; habitat deterioration from the effects of coastal construction, pollution, and motor vessel traffic; declines in prey populations caused by overfishing, pollution, habitat destruction; and range fragmentation and loss consequent to dam construction and other water development projects. Additional problems exist, but their scale and seriousness are less certain. For example, dolphins and porpoises are at least occasionally killed outright by underwater explosions (whether associated with dynamite fishing or coastal development), collisions with vessels, poisoning from toxic chemical spills and discharges, and entrapment in barrage gates or other flood-control structures. The impacts of chemical contamination through the food chain are not well documented, but certainly of great concern.

Underwater noise probably affects the hearing abilities and behavior of small cetaceans, but the effects have been extremely difficult to document in the absence of controlled experimentation (see Richardson et al. 1995). The introduction of foreign diseases to the aquatic environment - via runoff from agriculture, sewage disposal, or airborne microbial transfer - is another possible threat.

In recent years, in south and east Asia, cetacean habitat has disappeared as land has been "reclaimed" and coastal areas have been appropriated for aquaculture operations. Military exercises, whether for training, readiness, or combat, bring a host of problems for wildlife, but invariably little heed is paid to the environmental impacts of what are usually seen as national imperatives.

In many areas of south and east Asia, it is likely that populations of small cetaceans and dugongs have already been severely depleted, or even extirpated (i.e., become locally extinct), with little documentation of the process. It is surprising that so much potential still exists for a diverse and geographically widespread marine mammal fauna. However, the prospects for recovery of depleted dugong and cetacean populations seem to worsen with each passing year, as decisions are made to promote economic development, while little more than lip service is paid to the environmental consequences. The large and growing human populations of the region have rapidly rising expectations for consumer goods and material comforts, yet little willingness to acknowledge, much less do much about, the accompanying losses of biotic richness. Indeed, it should be apparent that the problems listed above are really only symptoms of a much larger and more serious problem, that of human overpopulation and overconsumption.

Status of OPCF's

Focal Species and Populations

Currently the only baiji in captivity, a male named Qi Qi, has lived at the dolphin aquarium of the Wuhan Institute of Hydrobiology since 1980.

Baiji *(Lipotes vexillifer)*

Among the five species of true river dolphins, the baiji is considered to be the most primitive (or, more correctly, the least specialized). With a stocky body, long upturned beak, small eyes, and a low broad-based dorsal fin, the baiji looks perhaps most similar to an ancestral river dolphin. The body color tends to be light bluish gray, with light streaks around the head area. This is an average-sized river dolphin, growing to lengths of about 2.6 meters (Chen 1989).

The baiji is found only in the middle and lower reaches of the Yangtze River and associated lakes, in China. The distribution was previously more extensive, but the baiji's range has apparently shrunk as its numbers have declined over the last few decades (Leatherwood 1994; Liu and Wang 1996). This restricted distribution in a river of major importance to the most populous country in the world probably means that the baiji has been losing habitat and declining in numbers for at least a few decades.

The baiji is considered to be the rarest and most endangered cetacean in the world. It is close to extinction, and it may not even survive for another decade. There are no rigorous abundance estimates, but researchers who have worked with this species agree that there are probably no more than 100 baiji left in the Yangtze River. The lone individual in captivity is an adult male named Qi Qi (pronounced "Chi Chi"), who has lived at the dolphin aquarium of the Wuhan Institute of Hydrobiology since 1980.

Much of the recent work to save this species from extinction has consisted of trying to capture dolphins from the river and place them in a 'semi-natural reserve' where they would, theoretically, be better protected. Unfortunately, the Shishou Semi-Natural Reserve (which was established in an ox-bow off the main river channel) has been seriously compromised, and is not currently being managed with wildlife conservation as its highest priority. Fishing continues in the 'reserve,' including fishing with gillnets and other gear that is known to be dangerous to cetaceans. Continued fishing creates the potential for prey competition between people and dolphins. Against the advice of international experts, finless porpoises continue to be maintained in the 'reserve,' with no plans to remove them if baiji are introduced. Concerns remain about the method of separating the 'reserve' from the main river channel, and about levels of pollution, especially during the low water season, when the ox-bow is essentially cut off from the main Yangtze River flow. Ultimately, all these problems may be academic, however, as baiji have become so rare in the river that most recent capture expeditions have not been successful at finding, much less capturing, them. The last successful attempt was in December 1995, when a single female was captured and placed in the 'reserve.' Unfortunately, she was found dead several months later, apparently having drowned after being caught in the net that blocks the mouth of the ox-bow (Liu et al. 1998). She was very thin at the time of her death, and it appears that she may have had trouble feeding in the 'reserve.' Hopes of saving the baiji from extinction have grown ever dimmer since then.

Susu *(Platanista gangetica)*

The Indian name susu is applied to the dolphins that inhabit four great south Asian freshwater systems draining into the Bay of Bengal - the Ganges, Brahmaputra, Megna, and Karnaphuli. The range of these dolphins includes waters in Nepal, India, Bangladesh, and possibly Bhutan (Reeves and Brownell 1989). The susu is functionally blind. Most of its habitat is silt-laden and opaque anyway, so vision would be of little use. The susu (like the bhulan, see below) is evenly gray in color, with a long narrow beak, a low triangular dorsal fin, and a narrow tail stock. In young individuals, the sharp interlocking teeth are reminiscent of a crocodilian's - especially those of the gharial, or fish-eating crocodile that shares much of the susu's range.

Almost nothing is known about the movements of individual animals. For example, are they resident to particular river segments, making only local movements to find prey and refuge from strong currents? Or do they travel long distances in an annual migration attuned to flood cycles? It is assumed that the dolphins in the different river basins constitute discrete populations, but their dispersal abilities are completely unknown. Like many other dolphins, susus seem fairly unselective about what they eat. They take minnow-sized fishes, large carps, and almost anything in-between. Prawns are an important part of the diet as well.

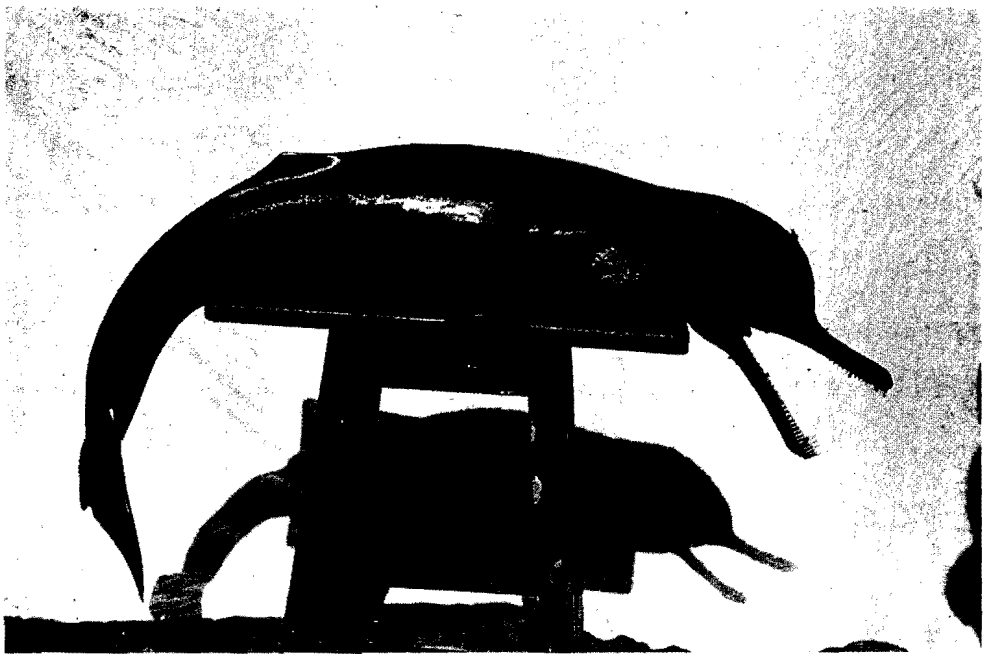
Abundance estimates are available only for certain portions of the susu's range, and those estimates are generally very crude (Smith et al. 1994; Sinha 1995; Sinha et al. in press). There are certainly at least hundreds of susus, and there might be several thousand altogether. However, the aggregate population was probably naturally subdivided into separate stocks, and nowadays dams and zones of severe habitat degradation

A Ganges susu leaps out of the water, providing a rare profile of its form. These animals are normally more cryptic. Photo by B. Smith.

have caused additional population fragmentation (Reeves and Leatherwood 1994b). The evidence of downward trends and low population sizes was convincing enough for the IUCN to classify the susu as Endangered on the current Red List of Threatened Animals. Directed hunting by tribal people, incidental mortality in fishing gear, and the high value placed on dolphin oil by some people in both Bangladesh and India (for medicines and for fish attractants) constitute major threats.

Bhulan *(Platanista minor)*

The bhulan, as the Indus River dolphin is known to people in Pakistan, lives only in the main channel of the middle and lower Indus (Reeves and Brownell 1989). This makes it endemic to Pakistan, a country that is utterly dependent on irrigation-based agriculture. The bhulan's external appearance is indistinguishable, at least superficially, from that of the susu. Also, the biology and behavior of the two species are almost identical, as far as anyone knows.



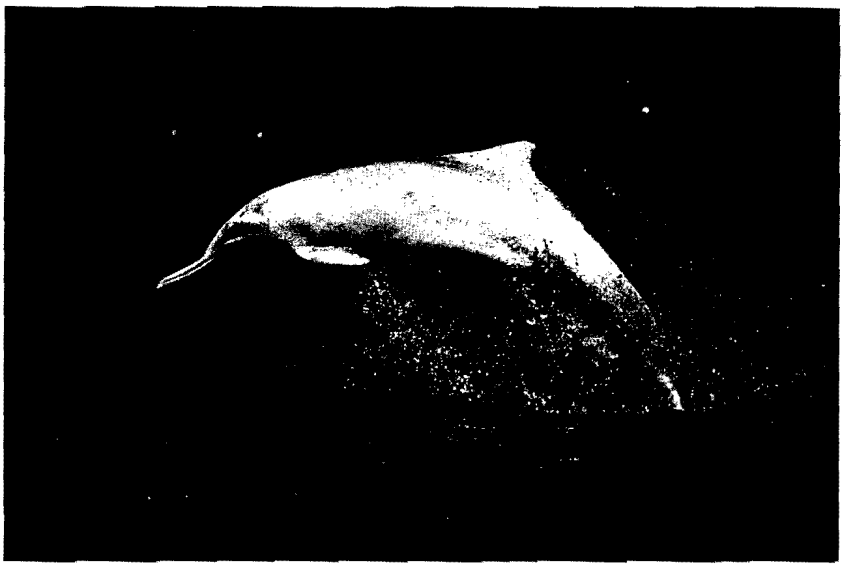
The bhulan of the Indus River system and the susu of the Ganges River system are essentially identical in external appearance. Photo by R. S. Lal Mohan.

The bhulan has been extirpated from much of its historic range, which extended all the way from the Himalayan foothills in the north to the Indus delta in the south, and included the four large tributary rivers flowing into the Indus from the east. Barrages built across the river courses to divert water into irrigation canals have effectively subdivided the remaining dolphin population into three separate sub-populations (Reeves and Chaudhry 1998). The largest of these, consisting of several hundred individuals, is nominally protected within the Sind provincial dolphin reserve. Although poaching seems to be rare, the dolphins face numerous ongoing threats - perhaps most notably the constantly increasing demand for water on the part of Pakistan's expanding human population.

The provincial governments of Sind and Punjab have major responsibilities for wildlife conservation, and they have taken important steps in the past to prohibit large-scale hunting of dolphins. Non-governmental organizations in Pakistan have begun to champion the bhulan as a flagship species for the preservation of aquatic biodiversity throughout the country. However, the dolphin's habitat, already compromised by water management, pollution, and sedimentation, continues to deteriorate. With an aggregate population of less than a thousand individuals (there are no rigorous abundance estimates), this species is clearly endangered. Measures to improve its survival prospects will need to involve more than mere protection from hunting. Ultimately, they will have to include water-management policies that recognize the value of maintaining natural freshwater systems within a cultivated arid landscape - no small challenge for a poor country with a corrupt political system, situated in a hostile and increasingly volatile geopolitical neighborhood.

Indo-Pacific hump-backed dolphin *(Sousa chinensis)*

One of the most striking marine mammals of southeast Asia is the Indo-Pacific hump-backed dolphin, with its ghostly white or 'bubble gum' pink coloration. Hump-backed dolphins have a body shape that shares some features with both river dolphins and oceanic dolphins. The beak is long, and the flippers and tail flukes are large and broad. In southeast Asian dolphins, there is a short dorsal fin that lacks the hump characteristic of the form throughout the western Indian Ocean and off West Africa. Hump-backed dolphins reach lengths of up to 2.7 meters (Ross et al. 1994). In southern China (and apparently most other parts of southeast Asia where they occur), hump-backed dolphins have a unique body color - adults are largely unpigmented, appearing white, but often with a distinctly pinkish hue. Young calves are very different in appearance - they are uniformly dark gray to nearly black in color.



An Indo-Pacific hump-backed dolphin (known locally as the Chinese white dolphin) leaps out of the water north of Lantau Island, near Hong Kong's new airport, while following a set of fishing pair trawlers.

The taxonomy of hump-backed dolphins is confused. In recent years, a team of researchers, partially funded by OPCF, have been examining the global taxonomy of this group. This has involved both traditional morphological, as well as newer molecular genetic, techniques. The preliminary results have been somewhat contradictory, but have clearly shown that hump-backed dolphins tend to occur as isolated populations in different parts of their range.

The distribution of this species extends throughout much of southeast Asia and includes coastal waters of northern and eastern Australia and South Africa. There are additional populations, currently classified as a second species (*Sousa teuszii*), in the Atlantic off West Africa. Humpbacked dolphins occur in shallow waters, and are most common around the mouths of large rivers. Throughout most of their range in southern Asia, very little has been learned about their biology or population status. Only populations in southern China (Hong Kong and Xiamen) have received any detailed scientific attention. In Hong Kong (and the adjacent Pearl River Estuary of China's Guangdong Province), the population appears to number at least 1,000 animals, and there is some evidence to suggest that there has been a recent decline in numbers in at least part of the range (Jefferson in press). This remains the only estimate of abundance based on systematic surveys for any population in southern Asia.

Despite the lack of quantitative data on trends for other populations, there is good reason to be concerned about their status, and the attendant effects of human overpopulation are almost definitely having adverse effects on the animals. The range of this species is undergoing extensive modification; fishing depletes prey, land reclamation and other forms of development eliminate habitat, and pollution of coastal waters may be causing serious health problems for the animals (Leatherwood and Jefferson 1997). Although the species is widespread and in no immediate danger of extinction, some local populations may have already been lost and others may face similar threats. The genetic and ecological diversity within the species are thus in danger of being seriously reduced.

Irrawaddy dolphin
(Orcaella brevirostris)

The Irrawaddy dolphin (known as the pesut in Indonesia) is a small, coastal dolphin that looks similar to the finless porpoise, except that it possesses a small curved dorsal fin on the rear half of the back. Color in different populations ranges from dark gray to steel blue to light tan (Marsh et al. 1989). There appears to be a great deal of geographic variation in this species, much of it inadequately documented, and it is likely that several subspecies will eventually be recognized.

Coastal waters throughout southeast Asia (west to the Bay of Bengal) and northern Australia are home to the Irrawaddy dolphin. This species is one of only a few 'facultative' river dolphins - predominantly marine species with one or more freshwater populations. Irrawaddy dolphins occur in some large rivers in the region (e.g., the Irrawaddy in Burma; the Mekong in Vietnam, Cambodia, and Laos; and the Mahakam in southern Borneo [Kalimantan, in Indonesia]). The exact areas where these animals occur elsewhere in southeast Asia have not been well documented. For instance, throughout the Indo/Malay Archipelago, information on distribution is very sketchy. Reliable abundance estimates have not been

Two Irrawaddy dolphins surface in the estuary of the Santubong Branch of the Sarawak River, near Kuching, Sarawak, Malaysia.

produced for any of the populations in southeast Asia, but the Mahakam River population is believed to number less than 100 individuals and is thought to have declined in recent years (Kreb 1999).

The conservation status of most populations of this species is completely unknown (see Stacey and Leatherwood 1997). Only a few populations in Australia, India, Thailand, Cambodia/Laos, Burma, Malaysia, and Indonesia have been studied at all (see Baird and Mounsouphom 1997; Smith et al. 1997a; Beasley and Jefferson 1997; Smith 1998; Kreb 1999), and there has not been a thorough assessment of any population. Because this species is endemic to southeast Asia and northern Australia, it is of high priority for OPCF. It seems particularly important to ensure that at least some populations in Asia remain viable, as otherwise the species will only survive along the northern coasts of Australia.

Bottlenose dolphin

*(Tursiops truncatus [*aduncus-*type])*

Bottlenose dolphins occur in all three major oceans and are among the most widespread of all marine mammals (Wells and Scott 1999). A distinct form of the bottlenose dolphin is found only in the Indo-Pacific. This form (originally described as a separate species, *Tursiops aduncus*, but now provisionally referred to as *Tursiops truncatus* [*aduncus*-type]) is smaller than most other bottlenose dolphins, reaching only about 2.5 meters in length (Ross 1977). It has a longer and thinner beak than other forms of bottlenose dolphins, and its color pattern is a bit different - the white belly is marked by small dark spots or flecks on adults and there is usually a prominent light gray streak below the dorsal fin. Recent studies indicate that the *aduncus*-type is a distinct species after all, but the exact systematic status is still being clarified (Curry 1997; Wang 1999).

A long slender beak and spotted belly are characteristic of the *aduncus*-type bottlenose dolphin, which is found throughout most coastal waters of the Indo-Pacific. These dolphins were killed in nets along the coast of Fujian Province, China. Photo courtesy of Z. Huang.

The *aduncus*-type of bottlenose dolphin is found in the Indo-Pacific, from southern Japan and the northern coasts of Australia in the east to South Africa in the west. This is a shallow water form that tends to be found relatively close to the coast (some other forms of bottlenose dolphins occur in far offshore waters). There is no estimate of the overall abundance of the *aduncus*-type bottlenose dolphin, but regional estimates have been made for specific portions of the range (e.g., parts of South Africa, Australia, and China).

As a species, the *aduncus*-type bottlenose dolphin is probably the least-threatened of those currently receiving attention from OPCF. For that reason, projects on this species have not been accorded the same high priority as those on, say, the baiji, finless porpoise, or bhulan. Nevertheless, some populations of these bottlenose dolphins are thought to be in trouble. Their coastal habitat and tendency to interact with fishermen in some parts of their range have resulted in alarmingly high kills (both direct and incidental), as well as habitat loss and degradation.

Finless porpoise

(Neophocaena phocaenoides)

The finless porpoise is a truly Asian species. Its entire range is limited to shallow coastal and shelf waters from Japan in the northeast, south and westward round the coast of Asia to the Arabian (Persian) Gulf in the west (Reeves et al. 1997; Kasuya 1999). This little porpoise's range includes the main Indo-Malay archipelago, and the Philippines, but it apparently does not extend to New Guinea or Australia in the east or Africa in the west. An interesting feature of the species' distribution is that a freshwater population inhabits the Yangtze River, from the mouth almost all the way upstream to the Three Gorges. This is the only known freshwater population of finless porpoises.

Color and body shape of finless porpoises vary significantly throughout the range. As the name indicates, there is no dorsal fin. The lack of a fin, together with the animal's small body size (rarely more than 2 meters long), even gray coloration, and generally low surfacing profile, make the finless porpoise difficult to detect

A finless porpoise, one of many live-captured from the Yangtze River of China, floats at the surface of its tank in Wuhan. Photo by L. Bejder.

in rough sea conditions. Also, at least around Hong Kong, the porpoises tend to travel in small groups of less than five individuals (Jefferson and Braulik 1999). This means that they create little surface disturbance and are easily overlooked, even by experienced marine mammal researchers.

Chinese scientists have conducted surveys and other investigations of finless porpoises in the Yangtze River, and Japanese scientists have studied the species fairly intensively in inshore waters bordering western Kyushu. Some recent work has also been done in the South China Sea, especially around Hong Kong, by a student at the University of Hong Kong and by investigators affiliated with OPCF (Parsons 1997; Jefferson and Braulik 1999). However, over most of its range, the finless porpoise has simply been ignored. There are strong suspicions that populations have been severely depleted, or even extirpated, due to bycatch in fishing

[illegible] Chinese researchers believe that 2000-3000 porpoises survive in the Yangtze River system, but they are convinced that the population is undergoing a rapid decline, for some of the same reasons as the baiji. The finless porpoise's extreme vulnerability to capture in gillnets and other fishing gear and its nearshore distribution place it at high risk and make it a high priority for conservation action.

Dugong *(Dugong dugon)*

The dugong is the sole member of its order (Sirenia - the sea cows) that occurs in the Indo-Pacific region. It is a truly tropical marine mammal, and is one of only a handful of species of marine mammalian herbivores. Dugongs range from the Ryukyu Islands of southern Japan, the western Pacific Island nations, and the northern coasts of Australia in the east, to eastern Africa in the west. They feed on seagrasses and marine algae, generally in warm, shallow

[illegible] waters (Nishiwaki and Marsh 1985)

The dugong is the only sirenian (Sirenia is the mammalian order that includes manatees and other 'sea cows') in the Indo-Pacific region. Populations throughout most of the range are in danger, due largely to hunting and habitat loss. Photo at Jaya Ancol Oceanarium, Djakarta, 1983, by Tas'an.

Although they look superficially like chunky porpoises, dugongs are not related to cetaceans; their closest living relatives on land are the elephants and hyraxes. There is no dorsal fin, the flippers are paddle-shaped, and the flukes look very much like those of dolphins and porpoises. The snout ends in a down-turned muzzle, and the eyes are very small. Adult dugongs reach just a bit over 3.0 meters in length (Nishiwaki

Even though the dugong is fairly abundant in some parts of its range, such as the tropical coastal waters of Australia, this species is extremely vulnerable. Its slow-moving habits, coastal distribution, and the desirability of its flesh (which is said to be delicious) make it an enticing target for hunters and fishermen. Little is known about its status in southeast Asia, but where studied in the region, dugong populations have generally been found to be either badly depleted, or already extirpated. The dugong and its seagrass habitat need protection if the species is to have any chance at survival in the region. As it is the only remaining sirenian in Asia (the Steller's sea cow was exterminated 27 years after it was discovered in 1741), it would be an enormous tragedy if the dugong were allowed to disappear from the planet. However, because it was only recently added to OPCF's list of focal species, projects focusing on the dugong have yet to be developed.

OPCF Project Descriptions

(1998-2002)

Below the projects that OPCF proposes to achieve its goals for the period 1998-2002 are described. For each project, we first present a brief review of progress to date, then discuss our plans for the next five-year period. In order to aid in decisions on funding priorities when there are multiple proposals competing for limited funds, we have developed a system for ranking projects in order of priority. Each project in this new action plan was given a ranking in terms of four criteria: 1) importance for conservation; 2) urgency; 3) chances of success; and 4) need for OPCF's funding (in terms of the potential for alternate sources). Then, we calculated the overall ranking as the average of the four discrete ratings. Those projects with the highest overall rankings were given high-priority status, those with middle rankings were deemed medium-priority, and so on.

However, it is important to keep in mind that these priority rankings are only intended to be used in judging OPCF projects relative to one another. There are many projects that OPCF could have decided to champion. But, because we have limited funds and resources, we have chosen what we consider to be the 11 most important ones. All current OPCF projects are considered to be critically important and we hope to fund any worthwhile proposal that fits into the Foundation's goals, even if it has been given a "low priority" ranking. Generally, project proposals do not end up competing against one another, and therefore these rankings do not often come into play.

A dead baiji lies on the banks of the Yangtze River. Fewer than 100 of these animals are thought to survive in China's most important river. Photo courtesy of K. Zhou.

Projects 1 and 2 - Conservation of the Baiji

High Priority

Because of its unenviable position as the world's most endangered cetacean, the baiji has received much of OPCF's attention in the past. Four of the original 14 OPCF projects were directed toward conservation of the baiji (OPCF 1993). These projects were largely based on projects that had been recommended by the IUCN/SSC Cetacean Specialist Group (Nos. 4-9) (Reeves and Leatherwood 1994a). The Foundation and Ocean Park have contributed funds, personnel, expertise, and medical supplies to various baiji conservation initiatives over the past five years - in fact, OPCF has probably been the major sponsor of such efforts from outside China (Leatherwood and Reeves 1994). In the first five-year period, OPCF was a major sponsor of live-capture expeditions to remove baiji from the dangers of life in the river and to stock a semi-natural reserve to aid the species' conservation (see Zhou and Gao 1995). Also, there was a great deal of interest in the prospect of captive breeding of the baiji, as a measure to eventually restock the river with dolphins. However, for the time-being these "ex-situ" approaches have been abandoned as funding priorities for OPCF. Recent information indicates that these are no longer promising approaches.

Our efforts are now being directed toward "in-situ" conservation efforts, consisting largely of assistance with abundance and habitat surveys, analysis and write-up of historical data on baiji distribution and abundance in the Yangtze River, and public awareness and education campaigns. There has been a sadden-

ing realization in recent years that efforts to save this species from extinction have probably been too little and come too late. The large-scale effort by the Chinese government to become a world economic and political force is simply not conducive to wildlife conservation efforts, and despite the best efforts of many people the baiji issue has not received the kind of legitimate government support that it needs to be successful.[2]

Although we consider the actual chances of saving the baiji from extinction to be very slim, Chinese authorities are not willing to give up. We also feel that it is important for OPCF to continue contributing to baiji conservation efforts. There are three main reasons for this:

(1) most of the supported conservation work also directly benefits finless porpoises and other aquatic wildlife that does have a chance for survival in the Yangtze River,

(2) what is learned in the process may be helpful in efforts to save other riverine cetacean populations from extinction, and

(3) there is a great deal of uncertainty in most of our information on baiji biology and conservation status - thus there is always a chance that we are being too pessimistic about the species' chances for survival.

[2] This is reminiscent of the situation with the giant panda, and there have been many fascinating parallels in the history of conservation efforts on these two large mammal species, both endemic to China (see Schaller 1993 for a summary of panda conservation efforts).

The second Asian River Dolphin Committee meeting, held in Rajendrapur, Bangladesh, in February 1997, was attended by river dolphin experts from many parts of Asia.

Project 3 - Asian River Dolphin Committee

Medium Priority

The need for a forum in which scientists and conservationists from the range states could share information on the endangered freshwater cetaceans of Asia was first noted at a 1986 international workshop in Wuhan, China (Perrin and Brownell 1989). A major step toward establishing such a forum was taken in 1992, when a symposium was held in Delhi, mainly involving scientists from India and Bangladesh (Reeves et al. 1993). Finally, in December 1994, the inaugural meeting of the Asian River Dolphin Committee (ARDC) was held at Ocean Park, sponsored jointly by OPCF, the CSG, and WDCS (Reeves and Leatherwood 1995). The objectives of the ARDC are to exchange information, develop standard scientific methods, coordinate research and conservation activities, and provide expert advice to management bodies. Besides the three platanistoid species in Asia (bhulan, susu, and baiji), the Committee's interest encompasses the Yangtze River population of finless porpoises and the freshwater or estuarine populations of Irrawaddy dolphins in Asia. The core membership consists of scientists from India, Bangladesh, Nepal, Pakistan, and China, with officers of the CSG serving as ex-officio members.

As the host and co-sponsor of the first meeting, OPCF has continued to take a special interest in promoting the work of the ARDC. This commitment included providing financial

support for inter-sessional work in 1995-97 by the Committee chairman, and the work of two contractors in organizing, conducting, and reporting on the second meeting in Bangladesh in February 1997 (Smith and Reeves in press a). A workshop to investigate the effects of dams and other river development projects on freshwater cetaceans was held in conjunction with the ARDC meeting in Bangladesh (Smith and Reeves in press b).

The intention has always been that the ARDC should become less and less reliant upon non-governmental organizations from outside the range states, and that the initiative, organization, and funding for the Committee's work should arise from the efforts of the core membership. As a result, we anticipate that the next five years will be a transitional period. A number of recent developments will need to be considered as OPCF re-evaluates its role as a major sponsor of the ARDC. Among these are the establishment of an Indian River Dolphin Committee whose mission is similar to that of the ARDC but with a national focus, the chronic and intensifying tensions between Pakistan and India, which will continue to hinder cooperative interaction, and the lack of progress in Chinese efforts to save the baiji. At least, the ARDC must adapt to changing circumstances and re-evaluate, and perhaps redefine, its role. For planning purposes, OPCF needs to reserve its options in regard to further support for the ARDC. It may best be able to assist the ARDC by acting as secretariat, and thereby providing administrative support.

Finless porpoises are particularly susceptible to being caught in gillnets, a fate that has spelled the end for this one in Taiwanese waters. Photo courtesy of E. Huang.

Project 4 - Conservation of the Finless Porpoise

Medium Priority

Outside of Japan and the Yangtze River of China, the finless porpoise has been very poorly studied (see Reeves et al. 1997; Kasuya 1999). The lack of reliable, detailed information has seriously hampered the ability of conservationists and managers to protect populations from the impacts of fisheries, coastal development, and habitat destruction. The original OPCF Action Plan called only for the compilation of a thorough literature review and the development of a conservation action plan, as was outlined in Project No. 22 of the CSG's action plan (Reeves and Leatherwood 1994a). This work has been completed by Reeves et al. (1997). Among other things, the authors recommended the following:

(1) Additional research on stock definition and taxonomy, abundance estimation, mortality levels, reproduction and life history, migration and dispersal, pollutants, and habitat requirements,

(2) Regulation of fishing practices that are found to be threatening to finless porpoise populations,

(3) Carefully designed and well-planned public awareness and education programs, and

(4) Acknowledgment that the designation of protected areas, by itself, has limited conservation value (because, in practice, such areas are often too small and too compromised by human activities).

In September 1997, a workshop to develop a management plan for the Yangtze River population of the finless porpoise was held at Ocean Park. This workshop was attended by biologists from China, Taiwan, Japan, the United States, and Canada, and was jointly organized by OPCF and the CSG. The current status of the population was reviewed, and a set of specific conservation and management actions was drawn up by the group (Reeves et al. in press). A major goal was to determine how the finless porpoise could be incorporated more effectively into research and conservation initiatives in the Yangtze River, originally intended to benefit the more endangered baiji.

Because of the continuing need for conservation work on the finless porpoise, especially in southern Asia, and in view of the fact that few other organizations are in a position to help, OPCF has decided to carry on and expand its commitment on this species. The next phase of the project will largely involve the implementation of several recommendations from the conservation plan, with a focus on Chinese populations (Reeves et al. 1997).

In July 1998, OPCF researchers began an intensive 2.5-year research project on the population that occurs in Hong Kong waters. This project is funded by the Agriculture and Fisheries Department (AFD) of the Hong Kong SAR (Special Administrative Region) Government, and its goal is to assist

Government, and its goal is to assist in developing a specific, government-sanctioned plan for the long-term management and protection of this finless porpoise population. It will probably represent the most detailed, intensive study of any finless por poise population to date.

There are apparently several populations of hump-backed dolphins along the coast of southern China, south of the Yangtze River mouth. These dolphins are swimming near Neilingding Island, in the Pearl River Estuary of Guangdong Province.

Project 5 - Survey Status of Small Cetaceans in Chinese Waters

Medium Priority

China has an extensive coastline, with a great deal of habitat for coastal cetaceans. Despite this, there has been very little research or conservation work directed toward small cetaceans along the Chinese coast - the very pressing conservation needs of the baiji in the Yangtze River have diverted attention away from the coast. As a result, we know next to nothing about the status of coastal small cetaceans in China (Huang et al. 1994; Zhou et al. 1995). The overall goal of this project is to make an up-to-date inventory of species occurring in China and to determine the extent to which small cetaceans are involved in fisheries and other human activities that can cause harm to cetacean populations. Two projects in the CSG action plan served as a basis for this OPCF project (Nos. 37 involving Taiwan and 41 involving mainland China - see Reeves and Leatherwood 1994a). Work over the last several years in Taiwan has been largely funded by the Taiwanese government (Council of Agriculture), but OPCF has contributed expertise and other resources. Therefore, this OPCF project is directed mostly toward the coast of mainland China.

Two initial steps have been completed to date:

(1) a literature review of available information on the distribution and status of small cetaceans in Chinese waters has been published (Zhou et al. 1995), and

(2) a Chinese-language field guide to identification of all species of marine mammals that are known, or thought to occur, in Chinese waters has been compiled. This guide is currently in production, and will be published in the FAO Species Identification Guide series (Zhou et al. in press).

The next, and most important, step will be to establish a network of well-trained and dedicated field biologists to begin collecting first-hand data on the interactions of small cetaceans with fisheries in southern China. This network will be coordinated within China, and it should lead to better information on where serious conservation problems occur. With such information in hand, OPCF and other agencies will be in a much better position to direct funding and other resources appropriately.

Project 6 - Conservation of Indo-Pacific Hump-backed Dolphins

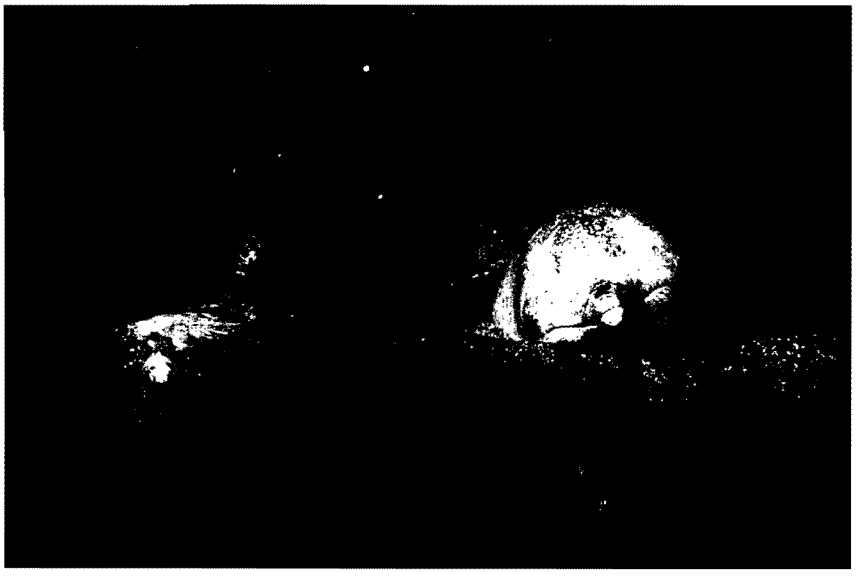
Medium Priority

The Foundation has made important contributions to studies of Indo-Pacific hump-backed dolphins in China in recent years. For example, funds have been provided to a team of researchers from South Africa, who are investigating the taxonomic status of hump-backed dolphins, using molecular genetic techniques. Closer to home, biologists based at OPCF have completed one of the most detailed studies of this species anywhere (Jefferson and Leatherwood 1997; Jefferson in press), and the animals in Hong Kong may now be the best-studied small cetacean population in southeast Asia. This work was funded by the Hong Kong

AFD and the Airport Authority; OPCF and Ocean Park Corporation provided crucial administrative support. While the results showed that the population is much larger than originally feared by some, they also indicated a decline in numbers in the main Hong Kong habitat in North Lantau during the study period (Jefferson in press). There are still a great many threats facing this population, and more work is needed to ensure its continued existence in Hong Kong and the Pearl River Estuary. Fortunately, the Hong Kong AFD and Airport Authority have assumed responsibility for funding further critical studies in Hong Kong. With wise use of the resulting information and conservation recommendations, these dolphins will have a better chance of surviving in Hong Kong's busy waters.

The only other population of this species in China that has been studied in any detail is the one around the mouth of the Jiulong River near Xiamen, about 500 km northeast of Hong Kong. With OPCF funding and the collaboration of researchers from the Third Institute of Oceanography in Xiamen, preliminary surveys of distribution and abundance have been conducted, and a stranding recovery program has been established (Huang et al. 1997). There is still not enough information for a rigorous population estimate in this area, but it is feared that the population may be quite small and may have declined in recent years.

The Indo-Pacific humpbacked dolphin is a poorly-known species, and this lack of knowledge is hampering efforts to conserve Chinese populations. Recent research in Hong Kong waters has greatly improved our knowledge.

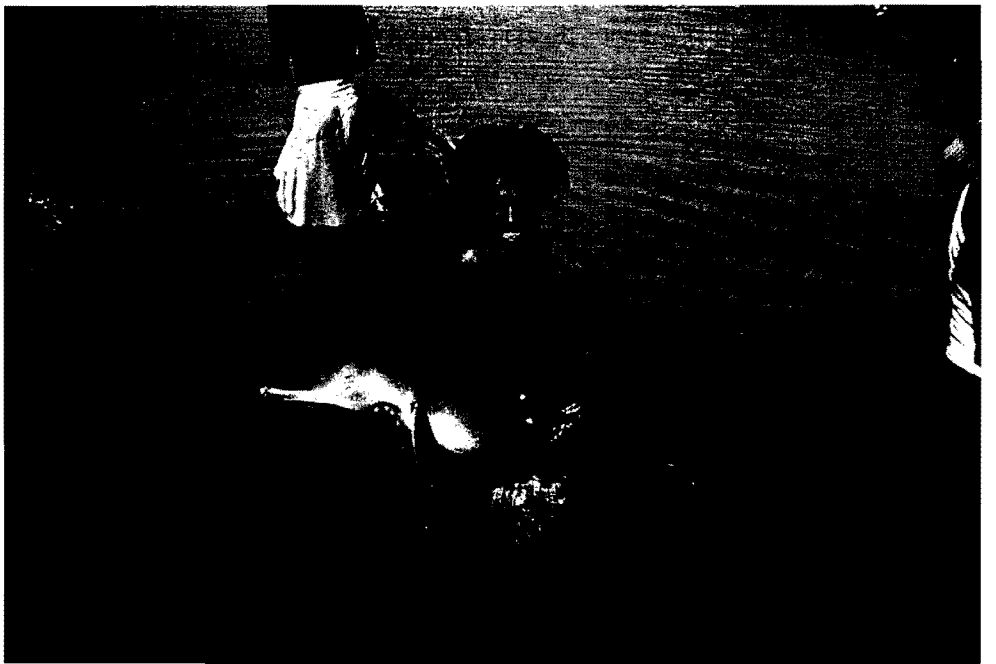


A major next step in the conservation of hump-backed dolphins in southern China will be to extend survey work to other areas of the range, and to document the existence of other viable populations. This is a necessary prerequisite for their effective conservation. China's growing human population and rapid economic development assure that coastal small cetaceans will come into frequent conflict with people. We hope that the work on the population in Hong Kong can be used as a model, and that work in other areas will involve similar, or at least compatible, methods and techniques. This way, direct comparisons will be possible between areas, and lessons learned in one area can be applied in others.

Project 7 - Bhulan Population and Habitat Surveys

Low Priority

Progress at improving the survival prospects of the endangered dolphin of Pakistan's Indus River has been slow. The ambitious objectives set out initially in the three OPCF projects targeted at the bhulan have

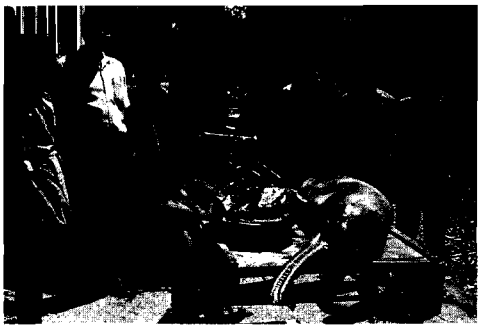


Because of major removals of water from the Indus River to support irrigation projects in Pakistan, river dolphins there (bhulans) are locked in competition with humans for this vital resource. Photo courtesy of G. Pilleri.

been partially met. An expedition co-funded by People's Trust for Endangered Species (a conservation NGO in the UK), WDCS, and OPCF, and planned for the spring of 1995, had to be canceled due to security problems in Karachi and elsewhere in Sind province. By the time it would have been possible to reschedule the expedition (taking into consideration flood cycles in the Indus and conflicting commitments by the co-investigators, Steve Leatherwood and Randall Reeves), Leatherwood's illness had intervened and the funding from People's Trust had been withdrawn because of changes in their priorities.

In November 1996, Reeves visited Pakistan on behalf of OPCF, WDCS, and the CSG to re-establish direct contact with scientists and government officials in Sind and Punjab. Among the objectives of this visit were to assist the Pakistanis in reviewing the bhulan's status, preparing presentations for the 1997 ARDC meeting, and identifying current research and conservation priorities. In addition to the ongoing need to monitor the three main sub-populations using improved survey methods, several specific areas of conservation concern were identified (Reeves and Chaudhry 1998; Reeves 1998). A rescue program is needed to detect, capture, and translocate dolphins that get trapped in irrigation canals or downstream of the dolphin reserve in Sind. A major natural gas development project on the floodplain of the Sind dolphin reserve may have significant impacts on dolphin habitat, and a critical independent assessment is badly needed. Occassional reports of dolphins being caught and their products used signal a need for improved enforcement of the laws protecting the animals, as well as more public awareness efforts. Finally, there is a need to improve understanding of how barrages, in particular, affect the movements and activities of the dolphins and the

Susus are sometimes killed to extract their oil, which is used as a fish attractant in parts of India and Bangladesh. Photo courtesy of R. K. Sinha.



quality of their habitat. Only with such information in-hand can progress be made at influencing decisions about water use in Pakistan and other countries where river cetaceans and humans are competing for this scarce resource.

In recent years, much attention has been drawn to the bhulan within and outside Pakistan, and government agencies and several NGOs have taken up the cause of conserving the species. This can be interpreted to mean that, at least for the present, OPCF no longer needs to play a prominent role in investigating or promoting the bhulan. Other small cetaceans that occur in the Indus River basin (e.g., finless porpoises, hump-backed dolphins, and bottlenose dolphins) may be more appropriate targets of OPCF's support in coming years.

Project 8 - Conservation of the Susu

Medium Priority

Unlike that of the bhulan, the susu's range encompasses several different river basins in at least three countries: India, Bangladesh, and Nepal (possibly also Bhutan). This means that its conservation requires a broad array of initiatives, some local and some regional. OPCF has invested in projects in all three of the confirmed range states. Surveys conducted in the rivers of Bangladesh in 1995-1997 were co-funded by OPCF, WDCS, and the Chicago Zoological Society. As a result of this work, Smith et al. (1998) were able to provide a much-needed evaluation of the potential effects on dolphins of the Bangladesh Flood Action Plan. They also documented a surprisingly large-scale market for dolphin products in certain human communities, supplied by fishery bycatch as well as by the directed hunting carried out by a small group of Hindu fishermen. In Nepal, OPCF

helped fund an expedition on the Karnali River in 1994 (Reeves et al. 1996a,b) and additional field research in support of a biodiversity project centered in the Karnali and Narayani River basins (Smith et al. 1996). An Indian scientist based at Patna University (R. K. Sinha) has been sponsored by OPCF to undertake surveys in parts of the Ganges River, including the area near Farakka Barrage and downstream toward Calcutta (Sinha in press). He has also been supported in his efforts to establish the Vikramshila Gangetic Dolphin Sanctuary in Bihar state.

During the next five-year cycle, OPCF will certainly have opportunities to provide essential funding for projects targeted at the susu in India, Bangladesh, and Nepal. As is true in Pakistan, national NGOs in India and Nepal, as well as branches of state and federal government, are increasingly aware of the river dolphin's plight and are taking action on their own. The situation is different in Bangladesh. Although susus are widespread and relatively abundant in Bangladeshi waters, no sustained effort is being made to identify critical areas and to protect the dolphins and their habitat. Large parts of the river dolphin's historic range in Bangladesh still have not been surveyed, and funding such work will be an appropriate avenue for OPCF to take with this project.

Irrawaddy dolphins are found in several large river systems in southeast Asia, and at least in the Mekong system are threatened by incidental captures in gillnets and other fishing gear. Photo by I. Baird.

Project 9 - Conservation of the Irrawaddy Dolphin

High Priority

As a first step toward the conservation of the Irrawaddy dolphin, the original OPCF action plan (OPCF 1993) called for the preparation of a thorough review of the literature on the biology of the species, including recommendations for conservation action. This was completed recently by Stacey and Leatherwood (1997), who recommended the following:

(1) Searching for ways to mitigate or reverse the effects of habitat degradation on the animals,

(2) Using community-based initiatives to reduce incidental catches in fisheries,

(3) Research on basic biology, including life history and ecology,

(4) Population monitoring in five "core" areas where Irrawaddy dolphins are thought to be relatively abundant,

(5) Additional research on population status in the remaining parts of the range,

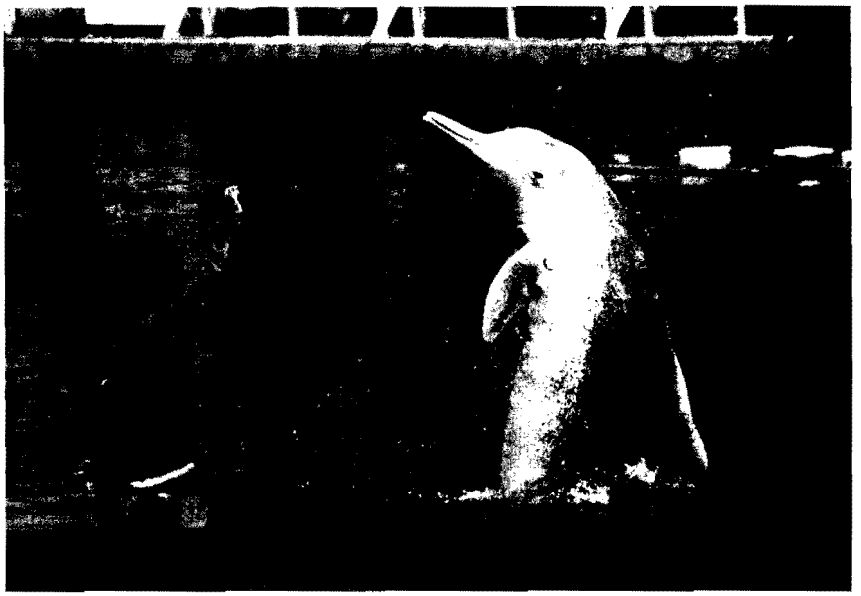
(6) Study of the relationship between riverine and freshwater groups of dolphins,

(7) Investigations of stock structure (using molecular and morphometric techniques),

(8) Establishment of protected areas in consultation with local people, and

(9) Exploring the potential of ecotourism as a way of adding monetary incentives for the protection of wild populations of Irrawaddy dolphins.

Now that the Irrawaddy dolphin review and conservation plan has been completed and published (Stacey and Leatherwood 1997), the next step is be to begin to implement as many as possible of the report's recommendations. In the CSG action plan, freshwater populations in Indonesia (Project No. 23) and Indo-China (No. 24) were singled-out as of high priority (Reeves and Leatherwood 1994a). Previously-studied populations in Borneo (the Indonesian state of Kalimantan and the Malaysian states of Sabah and Sarawak) and Burma have been the focus of recent OPCF-sponsored work (Beasley and Jefferson 1997; Smith et al. 1997a; Smith 1998; Kreb 1999). In the meantime, OPCF continues the search for pockets of abundance where there might be opportunities to give meaningful protection to viable popula-



Several coastal species of dolphins and porpoises have been subjected to extensive live-captures in Thai and Cambodian coastal waters, to stock a poorly-managed aquarium industry in Thailand. Photo by S. Leatherwood.

Project 10 - Monitor and Coordinate Southeast Asian Oceanaria (New Project)

Low Priority

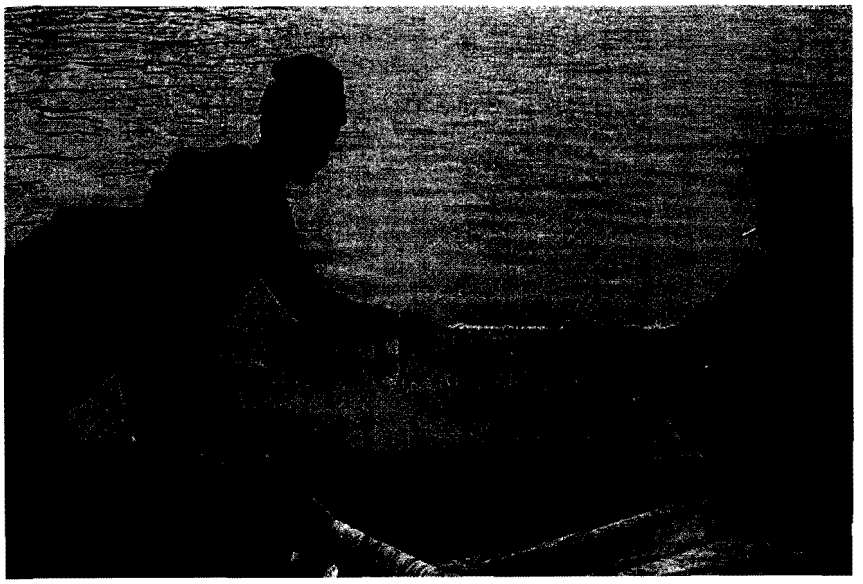
Reference was made in the first OPCF action plan to concern about apparently unsustainable takes of dolphins and porpoises in Thailand. We know that many small cetaceans have been captured from coastal waters of Thailand over the past decade to stock aquariums for the rapidly expanding oceanarium trade (e.g., Chantrapornsyl et al. 1996). In most cases, the catching operations have been conducted with no regard for their effects on the wild populations, and the result has been tragic. With more than a dozen new oceanaria either under construction or planned in China, there are concerns about the future effects of live captures here as well (see Zhou et al. 1995).

The primary goal of this project is to document, in as much detail as possible, the nature and magnitude of live captures that have taken place in Thailand, largely through literature searches, site visits, interviews, and correspondence with aquarium workers and researchers. Gaining access to key information will not be easy and may well require some creative approaches. The project's final report should include a review of past, present, and likely future trade in live cetaceans in China (and elsewhere in southeast Asia). The most important aspects will be a series of recommendations aimed at encouraging responsible and environmentally sound practices for stocking Chinese oceanaria. This project may be most effectively carried out through support to the South East Asian Zoos Association (SEAZA)

Project 11 - Increase Public Awareness of the Need for Aquatic Conservation in the Yangtze River Area (New Project)

High Priority

Considerable human and financial resources have been invested recently in efforts to live-capture and translocate finless porpoises and baiji into semi-natural reserves in the Yangtze River area (see Reeves et al. in press). However, if these species are to have any chance of surviving as viable, wild populations, there needs to be a major shift in the attitudes and activities of people who live along the Yangtze River. They must come to value the natural qualities of the river and to see that the rapid deterioration of the Yangtze aquatic ecosystem is harming, not only wildlife such as the baiji and finless porpoise, but also the people who depend on the river in so many ways. The survival of wildlife populations and habitat must become a sufficiently high priority to compete with economic aspirations and political agendas.



Rolling hooks are a commonly-used method of fishing in the Yangtze River of China. This fishing gear is intended to snag large, bottom-dwelling fish, but baijis are often killed as well. Photo courtesy of Zhou Kaiya.

Only when people see the importance to their own lives of maintaining the health of the river will they begin to work toward its preservation. This project will work largely through the newly established 'Wuhan Baiji Conservation Foundation.' It will focus on educating people about the plight of small cetaceans and other animals in the Yangtze, and the need to reverse their current trends toward extinction. This project has no research or management component, and its sole aim is education and public awareness.

Local Community Involvement and Fund Raising

In addition to the scientific projects described above, OPCF will continue its work on education and public awareness within the Hong Kong community. These efforts will include a number of fund-raising activities (such as the annual Conservation Day held at Ocean Park each January, several volunteer flag days, OPCF merchandise sales, and the Signature Brick and Corporate Sponsor programs). A book written for ages 14 or above on the local population of hump-backed dolphins, with attractive graphics and stunning photos, will be published later in 1999.

Public awareness and community involvement are important activities for OPCF.

In addition, a new scheme is developed to educate young students about marine conservation and to raise funds for OPCF projects. The 'Hand-in-Hand, Save the Whales and Dolphins' Award Scheme was launched on the 4th Ocean Park Conservation Day. All primary and secondary students are invited to join in the program. Each will be given a record card, and they will get dolphin stamp when they attend events organized under the scheme (such as Ocean Park Conservation Day, flag sale days, various seminars and exhibits, a photo-essay competition, local cetacean question-and-answer sessions, and an OPCF exhibition). A certificate and prizes will be given out at the end of the campaign, and outstanding participants will be invited to join a dolphin watching trip in Hong Kong, so they can learn first-hand information about local cetaceans. Through this scheme and other public participation events, we hope that OPCF can contribute to a greater understanding and appreciation of local dolphins and porpoises, and wildlife in general.

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Table 1. Status of OPCF projects from the first (1993-1997) and second (1998-2002) OPCF action plans

Project	Number in 1st AP	Number in 2nd AP	Current status
Baiji population and habitat surveys	1	1	Ongoing
Baiji natural reserves	2	2	Ongoing
Baiji semi-natural reserves	3	-	Discontinued
Baiji captive-breeding	4	-	Discontinued
Asian River Dolphin Committee	5	3	Ongoing
Conservation of finless porpoise	6	4	Partially completed, but ongoing and greatly expanded
Status of Chinese small cetaceans	7	5	Ongoing
Conservation of hump-backed dolphins	8	6	Ongoing
Bhulan population surveys	9	7	Ongoing and combined with other 2 bhulan projects
Bhulan protection	10	7	Ongoing and combined with other 2 bhulan projects
Bhulan habitat and translocation	11	7	Ongoing and combined with other 2 bhulan projects
Conservation of susus	12	8	Ongoing
Translocation and captive-breeding of susus	13	-	Discontinued
Conservation of Irrawaddy dolphins	14	9	Partially completed, but ongoing and expanded
Monitor and coordinate SE Asian oceanaria	-	10	New project
Public awareness in the Yangtze area	-	11	New project