

Dolphin-Watching Tourism in the Mekong River, Cambodia: A Case Study of Economic Interests Influencing Conservation

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ABSTRACT

The Irrawaddy dolphin (*Orcaella brevirostris*) population inhabiting the Mekong River is classified by the IUCN as Critically Endangered, with significant concerns about its future survival. Dolphin-watching tourism began in two areas along the dolphin's habitat in the early 1990s, however for both areas dolphin-watching activities were unmanaged and unregulated. The location of these dolphin-watching areas are two of the most important habitats for the remaining Irrawaddy dolphins population in the Mekong River, which now numbers less than 100 individuals. An Integrated Conservation Development Project was initiated in Kampi Village, Cambodia in 2004, where one of the components attempted manage the existing dolphin-watching tourism through: 1) promoting the sharing of revenue to the local community from the existing dolphin-watching tourism industry; 2) encouraging effective management of the industry to minimise threats to dolphins inhabiting this area; and 3) promoting visitor satisfaction and awareness raising of dolphin conservation and status. Although initial results were encouraging, government interference post-project has resulted in significant harassment to the remaining dolphin population; minimal benefit to local communities; and is providing virtually no awareness raising information to national or international tourists. Although significant conservation measures are currently being implemented by management agencies to reduce the threat of gillnet fishing by subsistence fishers in critical dolphin habitats, little (to no) efforts are being directed towards management of the dolphin-watching tourism industry. It is argued that for this Critically Endangered population, a 'no vessel-based dolphin tourism' policy is desirable, given that there are high sighting rates within deep pools which facilitate sustainable land-based tourism. A precautionary approach to management of the dolphin-watching industry in Cambodia, and other areas in developing countries, is recommended.

KEYWORDS: ASIA, WHALEWATCHING, CONSERVATION, MANAGEMENT PROCEDURE

BACKGROUND

While many nations now have well-developed whale- and dolphin watching [hereafter referred to as whale-watching] industries with varying levels of management, very little information is available on the numerous burgeoning whale-watching industries in developing nations that target some of the most endangered cetacean populations.

The International Whaling Commission (IWC) has recently stated that '[t]here is compelling evidence that the fitness of individual odontocetes repeatedly exposed to whale-watching vessel traffic can be compromised and that this can lead to population level effects' (IWC 2006, p. 47). Based on increasing concerns of the long-term effects of whale-watching on some cetacean populations, it has been recommended that an adaptive, precautionary approach is essential to managing tourism that targets small, closed, resident communities of cetaceans (Bejder *et al.* 2006). This precautionary approach is especially important for freshwater delphinids inhabiting riverine and estuarine habitats in developing countries, where a myriad of other threats (e.g., gillnet entanglement and habitat destruction) are already threatening the viability of populations. Management of whale-watching activities in these situations requires special care, as endangered populations leave little margin for recovery from incorrect management decisions (Taylor and Gerrodette 1993; Bejder *et al.* 2006).

Whale-watching is often referred to as a form of eco-tourism (Garrod and Wilson 2003); which is broadly defined as 'purposeful travel to natural areas...taking care not to alter the integrity of the ecosystem, while

producing economic opportunities that make the conservation of natural resources beneficial to local people' (Wood 1991; Goodwin 1996). However, while some emphasise the potential for eco-tourism to promote the well-being of both local peoples and the environment (e.g., Micronesia: Valentine 1993), others caution that ecotourism is often merely used as a marketing tool (Thomlinson and Getz 1996), with revenue and/or benefits rarely reaching local communities (Bookbinder *et al.* 1998).

Freshwater Irrawaddy dolphins (*Orcaella brevirostris*) are found in three major river systems (Mahakam; Ayeyarwady; and Mekong River), and two inland lakes (Songkhla and Chilka Lake) in Asia. All these populations, apart from Chilka Lake, have recently been listed as Critically Endangered by the World Conservation Union (IUCN) (Kreb & Smith 2000, Smith 2004, Smith and Beasley 2004a; b).

Recent studies on the Irrawaddy dolphin population inhabiting the Mekong River [hereafter referred to as the Mekong dolphin population] indicate that the population is now restricted to approximately 12 deep water pools (10-45 m in depth, ranging in size from 1-2km²) in a 190km section of river between Kratie and the Lao Peoples Democratic Republic [hereafter referred to as Laos]/Cambodian border (Figure 1). Photo-identification studies indicate that dolphins exhibit high site fidelity to particular deep pool areas during the dry season (January to June), with some dolphins being sighted on each occasion in the same deep water pool, while others travel between three to four neighbouring deep pool areas (Beasley 2007). During the wet season (July-December) water levels rise significantly (up to 30m), and dolphins are distributed more widely throughout the Kratie to Laos/Cambodian border river section (Beasley 2007). The total Mekong dolphin population, as of April 2007, numbered no more than 100 individuals (Dove *et al.* 2008; Beasley *et al.* in prep), with initial genetic analysis (nine samples) indicating very low genetic diversity within the population (Dove *et al.* 2009). The mortality rate is high; with 46 carcasses recovered from 2003-2005 (Gilbert and Beasley 2006). Fifty four percent of recovered carcasses were newborns. The cause of the high rate of newborn mortality remains unknown, and there are significant concerns for the future survival of this Critically Endangered population (Beasley 2007).

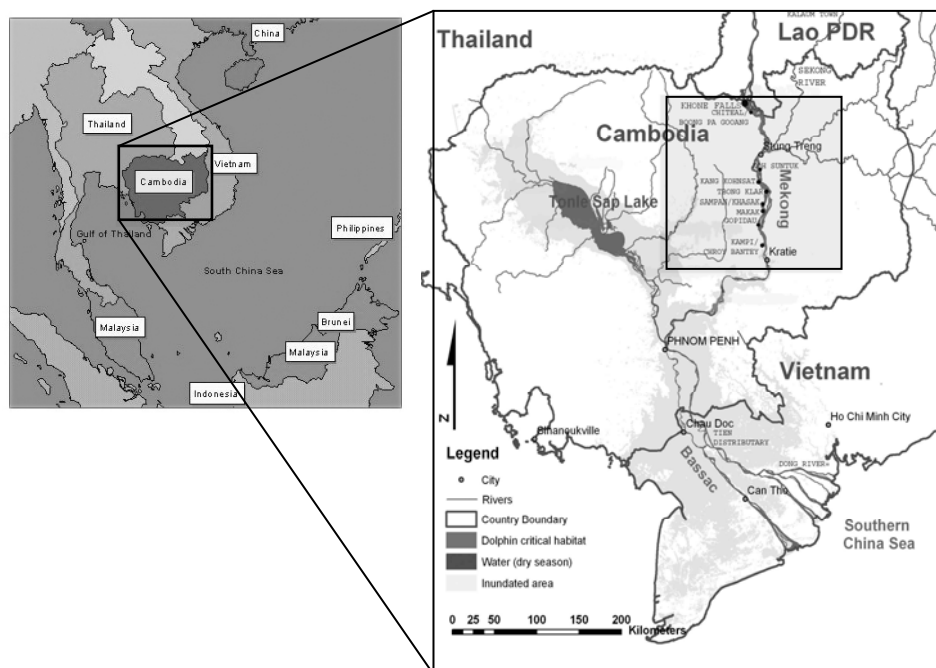


Figure 1. Location map of Cambodia (left image). Location map of the Kratie to Khone Falls river section (shown by the shaded box), and Kampi (near Kratie) and Chiteal (near Khone Falls) Pools where dolphin-watching tourism is currently being undertaken (right image). Irrawaddy dolphins inhabiting the Mekong River now primarily occur in this river section.

In the Mekong River, dolphin-watching tourism is facilitated by the reliable occurrence of Irrawaddy dolphins in small deep-water pools throughout the year. There are currently two locations where tourists can currently view Irrawaddy dolphins in the Mekong River: 1) Chiteal Pool on the Laos/Cambodian border; and 2) Kampi Pool in Kratie Province, Cambodia (Figure 1). Dolphin-watching tourism at both sites originally began through land-based tourism, where tourists (and the local community) could freely view dolphins from the river bank (30m above the river during low water), overlooking deep pools that dolphins consistently inhabit all year round.

Dolphin-watching tourism was initiated at Chiteal Pool (total area = 1km²) in the early 1990s by three Laotian villages that neighbour the pool (Beasley 2007). Tourists initially viewed dolphins from a rock in the middle of the pool (assumedly a few row boats would occasionally take tourists into the pool to view dolphins), with up to four

row-boats occasionally taking tourists into the pool to view dolphins from the mid 1990s onwards. In 2000, larger motorised boats began to offer dolphin tours in the pool, expanding to approximately 15 motorised boats by the early 2000s. Cambodian nationals initiated small-scale tourism to opportunistically observe the dolphins at Chiteal Pool in the early 2000s, using fast speedboats from Stung Treng Township (n=3 boats). As early as 1994, the increasing number of boats taking tourists to view dolphins from the land-based site was raising concern as to the potential impact on dolphins in the pool (Baird and Mounsouphom 1994).

Kampi Pool (total area = 2km²) is located approximately 200km north of Phnom Penh in Kratie Province, Cambodia. Tourism was initiated at Kampi Pool in 1997 by an international NGO (Community Aid Abroad) with a local committee of seven villagers from Kampi Village (approx 135 families lived in Kampi Village as of 2004). From 1997-2000, viewing of dolphins was conducted sporadically from land, with no formal management. Tourists were also able to view dolphins by small row-boats, opportunistically, for a small fee (US\$1). Only the seven families were allowed to offer dolphin-watching tourism. In 2001, the seven villagers changed the small row-boats to larger 'stand-up' paddle-boats with motors and sunshades over the boats for the tourists. These arrangements ensured tourist comfort and enabled dolphin viewing all year round (Beasley *et al.* 2009).

In 2002, the Kratie Tourism Department (a Cambodian government department) became formally responsible for dolphin-watching tourism at Kampi Pool, and cooperated with the seven families. No other families from Kampi Village were allowed to participate in the venture and the financial benefits (50% of revenue) were distributed only to the seven families; with Kratie Tourism Department receiving the remaining revenue. Most villagers were unable to participate in the tourism but had lost their rights to fish in the pool as a result of a Provincial Decree prohibiting fishing in Kampi Pool in the early 2000s. Conflict was rife in the village and the seven families became segregated from the other villagers. No management plan existed for tourism development and the boats were unregulated. Local people were unaware that the sound from the boat motors and the boats' activities had the potential to interfere with the dolphins' daily activities. Additionally, villagers were unable to communicate with foreign tourists and no information (verbal or printed) was provided to the tourists regarding the dolphins, or their conservation status in the river. Thus, the situation was unmanaged and unregulated, and unable to contribute to dolphin conservation or management (Beasley *et al.* 2009).

In January 2001, the first author (IB) initiated a research and conservation project on Irrawaddy dolphins inhabiting the lower Mekong River, as part of her PhD with James Cook University. Research on the dolphin's population biology (abundance; distribution; mortality rates and causes) was the primary focus of activities from 2001-2002, and dedicated conservation activities began in 2003 in parallel with continuing research. In 2003, as part of conservation activities, IB initiated an Integrated Conservation Development Project (ICDP) at Kampi Village named 'Dolphins for Development', which aimed to provide direct tangible benefits to the local community in return for their cooperation with conservation activities to conserve the remaining dolphin population. The Dolphins for Development project included four components: 1) rural development and diversification of livelihoods; 2) management of the existing community-based dolphin-watching ecotourism; 3) environmental education and awareness raising; and 4) strengthening stakeholder relationships. To implement this project, IB enlisted a newly initiated local rural development organisation, the Cambodian Rural Development Team, to conduct the rural development and livelihood diversification aspects of the project under her direction.

Although various problems associated with dolphin-watching tourism at Chiteal and Kampi Pools were evident in the early 2000s (such as operators chasing dolphins around the pools in motorised boats), the Cambodian government (through the Department of Tourism) expressed little interest in managing the industry as a result of minimal economic or political benefits. IB therefore conducted most activities with little government intervention; although the government was very supportive of research efforts. In the early 2000s, IBs research indicated that the two greatest challenges to dolphin conservation efforts were: 1) accidental catch in gillnets; and 2) the dolphin-watching tourism industry (e.g., daily harassment by tour boats, and inequitable distribution of revenue to the local community).

This working paper discusses the outcomes of initial attempts to manage the existing dolphin-watching tourism industry in Cambodia, and provides a case study from which to discuss concerns associated with the management of whale-watching tourism in developing countries.

MATERIALS AND METHODS

Study Area

The Kratie to Laos/Cambodia border river section (190 km) is an internationally important stretch of the Mekong River. Deep pools (depths = 10-90m) in this river section are important fish spawning sites and habitats for numerous flora and fauna during the dry season, many of which are endangered, or extinct, in other areas throughout their range (Poulsen and Valbo-Jorgensen 2001; Chan *et al.* 2003; Viravong *et al.* 2005). This river section is also critical habitat for the remaining population of Irrawaddy dolphins that inhabit the Mekong River (Baird and Beasley 2005).

Kampi Pool is located in the Mekong River 15 km north of Kratie Township, Kratie Province, Cambodia (Figure 1). Kampi Pool is the first major deep pool habitat north of the Mekong Delta. This pool is the most important area in the Mekong River for the remaining Irrawaddy dolphins. A total of 42 dolphins have been photo-identified in Kampi Pool (approximately 50% of the known total population size), most of which range solely in this pool (Beasley 2007).

“Dolphin for Development” Initiative

Component #2 of the Dolphins for Development project began in March 2004, and aimed to develop the management of the existing community-based dolphin-watching. The objectives were to: 1) promote the sharing of revenue to the local community from the existing dolphin-watching tourism industry; 2) encourage effective management of the industry to minimise threats to dolphins inhabiting this area; and 3) promote visitor satisfaction and awareness raising of dolphin conservation and status.

The main project activities conducted throughout the year were to: 1) conduct numerous community and government meetings to formulate an agreement on revenue sharing; 2) develop boat operating guidelines and conduct workshops with operators to discuss these guidelines; 3) provide logistical support to the Kratie Tourism Department to record tourist numbers; 4) develop and construct information signboards at the Kampi viewing site; 5) develop educational materials to raise national and international awareness of the dolphins and their habitat; 6) conduct a two-day guide training and information course for young students/local villagers interested to begin guiding international tourists in Kratie Province; and 7) develop infrastructure at the Kampi viewing site (eg. food stalls, handicraft stalls, parking areas, toilets) to facilitate community revenue generation and visitor comfort. The specific objectives and outputs for this component are listed in Table 1.

Table 1. Summary of the objectives and outputs for the community-based tourism project component of the ‘Dolphins for Development’ project, initiated at Kampi Village, Kratie Province.

Objective	Output
(1) Promoting community benefit from dolphin-watching tourism implemented prior to this projects inception	<ul style="list-style-type: none"> - selling of childrens’ colouring books and T-shirts at a restaurant in Kratie Township, where all the profits were directed to community development activities - development and training of a Village Development Committee (VDC), that were elected democratically in Kampi Village and responsible for facilitating the ICDP and management of funds obtained from tourism activities - a series of meetings with stakeholders involved, to secure an agreement for the community to benefit financially from the tourism through an entrance booth at the viewing site.
(2) Encourage effective management of this industry to ensure it did not threaten the dolphin group inhabiting this area	<ul style="list-style-type: none"> - various meetings with boat owners and other stakeholders to develop and finalise boat operating guidelines - construction of signboards at the Kampi viewing site clearly explaining regulations for boat use and tourist behaviour - initiation of a visitor recoding system at Kampi viewing site through provision of a computer to the department of Tourism
(3) Promoting visitor satisfaction and awareness raising of dolphin conservation and status	<ul style="list-style-type: none"> - development of educational materials to raise national and international awareness of the dolphins and their habitat - a two day guide training course to provide training for local guides from Kratie Township (including four individuals from Kampi village) - providing English lessons to two young individuals from Kampi Villages to facilitate communications with tourists (these two attended the two day guide training course) - infrastructure development at the Kampi viewing site (e.g. toilets, car park, souvenir stalls, food stalls), to ensure its attractiveness for international and national visitors

RESULTS

“Dolphin for Development” Results: 2004

In December 2004, a written agreement was signed between Kampi Village and the Kratie Department of Tourism to ensure that an entrance fee (US\$2/international tourist, US\$0.15/national tourist) would be introduced and shared between the Kampi community (40% for development activities), Department of Tourism (30% to ensure maintenance of the tourism site) and Department of Fisheries (30% for dolphin conservation activities). All revenue from hire of dolphin-watching boats (US\$2-4/hour for each boat) continued to go to the government and boat owners only.

Critical to the success of this agreement was that the community had the capacity to adequately manage the revenues raised through the dolphin-watch tourism industry, and that all activities were accountable and transparent to pre-empt corruption. In order to increase capacity of the village to manage funds appropriately, a Village Development Committee (VDC) was established, where VDC members were democratically elected by Kampi villagers. Furthermore, members were provided with training on accounting and finance, and a bank account was opened to facilitate financial transactions.

In addition to the revenue agreement, boat operator guidelines were developed and agreed upon which focused on minimising use of boat engines in Kampi Pool during the dry season. An attempt to negotiate temporal closures (eg. one day a week) where no tourist boats would enter Kampi Pool was not successful, however, it was formally agreed that a small pool (Chroy Banteay Pool = 500m²) adjacent to Kampi Pool would not be visited by any tourist boats. Although Chroy Banteay was a small area less frequently used by dolphins, this arrangement provided an area that dolphins could escape the tourist boats if required. The presence of ‘tourism police’ at the Kampi viewing area to protect tourists from any harm facilitated enforcement of these agreed guidelines.

“Dolphins for Development”: Post-2004

In mid-2005, the Cambodian Government developed the ‘Commission for Dolphin Conservation’, to direct future dolphin conservation efforts. From this time onwards (mid 2005), the Commission became responsible for both dolphin conservation and the promotion of tourism development; a potential conflict of interest when dolphins are a major target of tourism efforts (Beasley *et al.* 2009). A few months after the Commission was developed, the number of tourism boats operating at Kampi Pool increased from seven (2004) to twenty; with the revenue from all new boats going directly to the government (Figure 2).

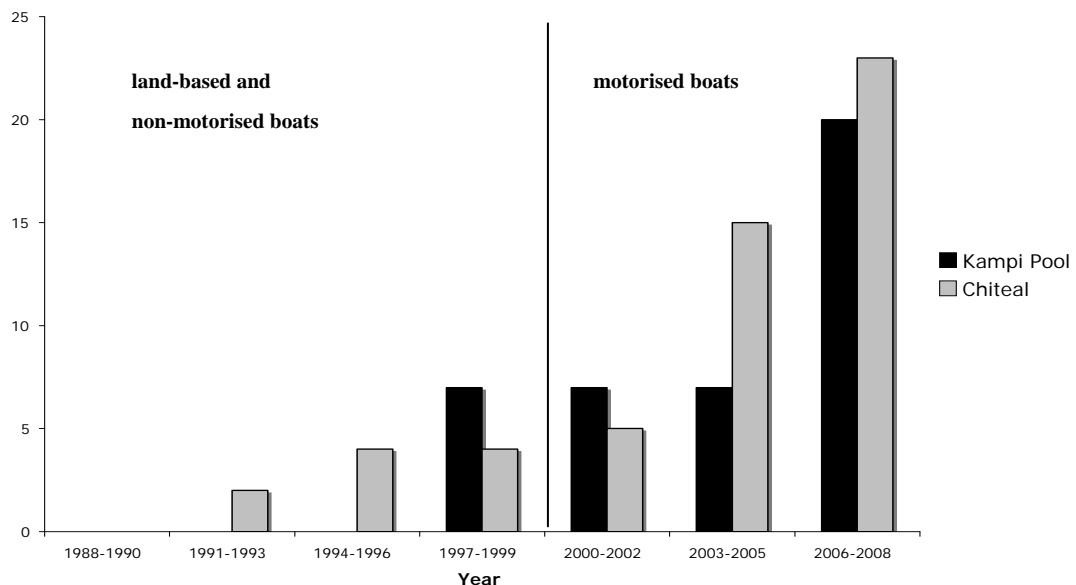


Figure 2. Bar graph showing the increase in number of operating dolphin-watching boats at Kampi (black bars) and Chiteal (grey bars) Pools. Prior to 2001, only non-motorized row-boats were used at Kampi, and at Chiteal most tourists would be dropped off at a rock in the middle of the pool to observe dolphins (only four row-boats were known to actually follow groups in Chiteal Pool as of 2000). All boats to the left of the vertical line are non-motorised while all boats to the right of the line are motorised.

In January 2007, the newly-formed Government Commission for Dolphin Conservation prohibited any NGO involvement in project activities at Kampi Village (including the continuing Dolphins for Development project), and cancelled the previously agreed community-based tourism agreement— despite a national policy on poverty alleviation. Instead, the Commission allowed the community to operate two of the 20 tourist boats (Figure 3), and distribute the revenue gained from these two boats among the remaining 128 families. A flat entrance fee of US\$7 per person was charged, as of April 2007; US\$1.50 was distributed to the 18 other boat owners (at least ten of these boats were government owned), and all other proceeds went to the government – no other revenue from the entrance fee went back to the community. Allowing more tour boats to operate in the pool has significantly reduced the benefits to each boat owner; exacerbated village hostilities; and significantly increased the risk of dolphins being harassed by boats.



Figure 3. Tourism is now expanding quickly at Kampi Pool, and the majority of the local community now receives virtually no benefit from the dolphin-watching tourism. During holiday periods there are many boats in the pool at one time (left image). As a result of the new Commission for Dolphin Conservation, the number of boats at the dolphin-watching site has now increased from seven in 2005, to twenty in 2007 (right image). The right image shows the small size of Kampi Pool, where almost all the pool is visible in the image (2km²)

In order to reduce visitor knowledge of the critical conservation status of the dolphins and potential harassment caused by the dolphin-watching boats, all previous awareness-raising materials developed at the Kampi viewing site by the project (eg. information boards, boat operator guideline signs, leaflets), were destroyed (Figure 3). No awareness information was provided to national or international tourists; and boat operators were encouraged to use their motors to approach dolphin groups. Tourists were also encouraged to swim in the pool with the dolphins, both at Kampi and Chiteal Pools.



Figure 4. As part of the Dolphins for Development project, infrastructure at the Kampi viewing site was constructed in late 2004 (eg. entrance booth, toilets, food stalls), and various tourist information signs developed and installed (left image). As of 2007, the new Commission for Dolphin Conservation ordered all information signs to be destroyed (right image); stopped the distribution of information leaflets to tourists; and prevented any further NGO involvement at Kampi Village and the viewing site.

DISCUSSION

Dolphin-watching tourism at Kampi and Chiteal sites originally began through land-based tourism, expanding to row-boats, and then in the early 2000s to numerous motorised boats. The dolphin-watching industry in Cambodia has grown quickly as increasing numbers of international tourists visited the country (resulting from

increased safety), and stakeholders began to realise the potential financial gains of tourism. This tourism growth is expected to continue at an exponential rate in the future (Leung *et al.* 1996), particularly with the development of the Mekong Discovery Trail. There would be significant potential conservation benefit from this tourism, if land-based dolphin-watching observations could be encouraged, as opposed to water-based tourism. Additionally, although there is potential for the local Kampi community to gain significant financial and social benefit from dolphin-watching tourism, the current situation results in minimal revenue being directed back into the local community, and minimal restrictions on the number of boats in order to maximise profits for the management agency. There is currently no information on what effects the 20+ tourist boats (as of April 2007) operating at Kampi Pool are having on the behavioural ecology of the resident dolphins. However, it is likely that the cumulative effects of current dolphin-watch activities may result in serious long-term conservation and social concerns for the dolphins and local community respectively.

Studies of other well-studied dolphin populations have shown that dolphin-watching tourism can have long-term detrimental impacts on targeted populations. For example, in Shark Bay, Western Australia, bottlenose dolphins moved out of their preferred habitat in response to increased dolphin-watching tourism (an industry that was licensed and seemingly well-managed), and the calving success of most exposed females appeared to have decreased (Bejder *et al.* 2006). Based on these results, Bejder *et al.* (2006) noted that while the dolphin decline may not jeopardize the large, genetically diverse dolphin population of Shark Bay, similar impacts would be dire for small, closed or isolated cetacean populations – as is the case for the Mekong dolphin population.

An additional concern to the Mekong dolphin population is a new tourism initiative called the Mekong Discovery Trail, initiated by the World Tourism Organisation (UNWTO), the Royal Government of Cambodia – Ministry of Tourism and SNV Netherlands Development Organisation. The walk/cycle-trail is designed for non-motorised traffic, and has been developed along the shores of the Kratie to Laos/Cambodian border river section. As a result of the remote nature of this river section, tourists were previously not able to access the additional ten important dolphin pools located between Kampi and Chiteal Pools. The proponents of the Mekong Discovery Trail are encouraging tourists to “see (the) critically endangered Mekong River Dolphins, while minimising your impact on them and the habitats they rely on” (www.mekongdiscoverytrail.com). However, the impact of unmanaged and unregulated subsistence fishers taking tourists out in motorized boats to view dolphins along the trail (a contradiction to the aim of the terrestrial trail being non-motorised), may have further detrimental impacts on the remaining dolphin population; and further hinder conservation efforts. When considering management options for new initiatives (such as the Mekong Discovery Trail), in the absence of adequate information on tourism impacts, management deliberations must draw strong inference from the best documented sites, such as Shark Bay, where long-term, individually specific information can be taken into account (Bejder *et al.* 2006).

The requirement for adequate planning and precautionary management (such as discussed in Higham *et al.* 2009) is especially important in developing countries where whale-watching exists within challenging social, political, economic, and environmental contexts. Most developing countries are evolving quickly in the face of burgeoning pressures from human over-population, excessive exploitation of resources, poverty, lack of basic services and wide scale corruption at all social levels (Beasley 2007). The positive and negative impacts of corruption on biodiversity conservation have recently been debated in the scientific literature (Kaufmann 1997, Laurance 2004, Ferraro 2005, Katzner 2005, Smith and Walpole 2005, Walpole and Smith 2005), where it was reported that corruption was most prevalent in developing countries with low government salaries, weak regulatory institutions, high political patronage and almost non-existent accountability (Kaufmann 1997, Laurance 2004). As a result of such realities, ineffective governance and corruption are major considerations accentuating the difficulty of effectively managing whale-watching tourism in developing countries.

Whale-watching Considerations in Developing Countries

The issues associated with the current cetacean watching tourism in developing countries may be generic. In many cases, the industry is developed by artisanal fishers who opportunistically take advantage of the availability of local wildlife using their fishing boats. Entry to the dolphin watching industry is flexible and the fishers can switch between fishing and tourism depending on demand. The dolphin watching industry is typically unregulated and by the time it comes to the attention of officials, it is impossible to stop or modify both on economic grounds and because of lack of capacity and political will. For example, at Lovina in north Bali, up to 160 artisanal fishing boats, and 140 tourist boats, operate dolphin watching focussed on spinner dolphins. A single school of dolphins may be surrounded by >60 boats (*pers. comm.*: Putu Liza Mustika; a Balinese PhD student studying dolphin tourism interactions at this location). At Chilika Lagoon in India, up to 250 fishing vessels participate in an industry based on a small (<150 animals), isolated and declining population of *Orcaella brevirostris*, that is also subjected to gill-netting impacts (*pers. comm.*: Dr Dipani Sutaria and PhD student Corlaie d’Lima; James Cook University).

When developing new tourism initiatives, or managing existing industries in developing countries, precautionary management initiatives need to consider the potential long-term effects of the whale-watching industry on cetacean population viability, regardless of the potential benefit of the industry to local communities. It is desirable that dolphin watching not be encouraged in developing countries without prior regulation and ongoing monitoring of compliance, conditions that may be impossible to achieve.

Dolphin-watching tourism in the Mekong River was originally touted as a way to ‘save’ the species from extinction. However, recent studies in other areas suggest that boat-based dolphin-watching tourism can cause biologically significant impacts. At both Kampi and Chiteal sites it is currently possible to guarantee dolphin sightings from land during the dry season, due to the dolphins reliance on small deep water pools (although the Chiteal population of dolphins now numbers less than ten individuals, and is facing local extinction in the near future). As a result of this sighting reliability, Cambodian may be one of the few places in the world where land-based dolphin-watching tourism could be a financially successful venture; result in no impact to individuals; and contribute significantly to dolphin conservation efforts through reduced boat harassment and increased public awareness of the dolphins dire situation. Both Corkeron (2004) and Bejder *et al.* (2006), advocate that there are likely locations and situation when boat-based cetacean-watching tourism should not occur at all. Is the Critically Endangered Irrawaddy dolphin population inhabiting the Mekong River not such a scenario?

RECOMMENDATIONS

As a result of the critical conservation status of the remaining Mekong dolphin population, appropriate management of the current dolphin-watching tourism situation needs to be viewed as a high priority by relevant agencies. Conservation awareness raising and promotion of best-practice boat operator guidelines should occur concurrently with the following recommendations, listed in order of implementation priority:

1. no additional boats should be allowed to operate at Kampi and Chiteal Pools, with permits being issued to each current boat owner to ensure compliance;
2. expansion of any form of boat-based dolphin-watching tourism into other critical deep water areas between Kampi and Chiteal Pools should be immediately prohibited;
3. in the current situation, daily time-area closures (where tourism boats are prohibited) of at least six daylight hours/day is recommended for Kampi and Chiteal Pools, to provide the dolphins some immediate reprieve from the constant daily boat harassment;
4. the proven ability to view dolphins consistently from land during the dry season facilitates the development of a sustainable land-based dolphin-watching industry. Therefore, a strategy towards shifting the boat-based dolphin-watching industry back to a land-based industry needs to be developed and implemented by the relevant management agencies.

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