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#### MEETING FLIPPER IN THE WILD: MANAGING SWIM WITH DOLPHIN TOURISM IN AUSTRALIA (Full Paper)

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#### ABSTRACT

Between 1998 and 2003 cetacean tourism in Australia expanded at a rate of 15 percent per annum (IFAW, 2004). Bottlenose dolphins are the primary target species for commercial dolphin tourism in Australia. This includes dolphin-watching boat trips, swim with wild dolphin tours and habituated wild dolphin-feeding programs. Specific groups of resident bottlenose dolphins in areas such as Shark Bay, Bunbury and Rockingham Bay (WA), Port Philip Bay (Vic), Port Stephens, Jervis Bay and Forster (NSW), Moreton Bay (Qld), Baird Bay and Adelaide (SA) have frequent encounters with boats or swimmers. The Australian National Guidelines for Whale and Dolphin Watching 2005 specify legal standards and best practice guidelines for cetacean interaction. However there are still variations between different government jurisdictions and also the practices of dolphin tour operators. This paper focuses on commercial swim with wild dolphin tours in Australia. These tours have varied modes of in-water encounters with wild dolphins, from free swimming, mermaid lines, boom nets, and the use of motorised water scooters. The impacts on wild dolphins of these different types of swim tours, has not been examined. Commercial practices that are contrary to national or state guidelines for dolphins include operators breaching approach distances and times, the direction of approach and swim time. This paper examines the guidelines and practices of swim with dolphin tours, and makes some key recommendations for management of wild dolphin tourism.

Keywords: Swim-with-dolphins, Australia, national guidelines, tourism impacts

#### INTRODUCTION

Bottlenose dolphins (*Tursiops spp.*) are the primary target species for commercial dolphin tourism in Australia. This includes dolphin-watching boat tours, swim-with-dolphins tours and habituated wild dolphin-feeding programs at Monkey Mia and Bunbury (WA) and at Tangalooma Resort (Qld). Specific groups of resident bottlenose dolphins in areas such as Monkey Mia, Shark Bay, Bunbury and Rockingham Bay (WA), Port Philip Bay

(Vic), Port Stephens, Jervis Bay and Forster (NSW), Moreton Bay (Qld) and Adelaide (SA) have frequent tourism encounters. This paper focuses on commercial swim with wild dolphin tours in Australia. These tours have varied modes of in-water encounters with wild dolphins, from free swimming, mermaid lines, boom nets, linked human chains and the use of motorised water scooters. The impacts on wild dolphins of these different types of swim tours, has not been examined. This paper reviews the guidelines and practices of swim-with-dolphin tour operators in Australia and makes some key recommendations for sustainable management of wild dolphin tourism. Information is derived from academic studies about the impacts of boats and/or swimmers on dolphins in Port Philip Bay and Port Stephens, media articles about dolphin tourism and the websites of dolphin tour operators, where there is no research on dolphins and other information is not available. Comparison is made with dolphin watching activities and the impacts of swim-with-dolphin tours in New Zealand.

#### DOLPHIN SPECIES IN AUSTRALIA

There are 45 species of whales, dolphins and porpoises (i.e. cetaceans) found in Australian waters and all are protected species under Federal and state legislation. There are 14 dolphin species with the most frequently encountered species in coastal waters around Australia including the Bottlenose dolphin (Tursiops spp.), Common dolphin (Delphinus spp.), Spinner dolphin (Stenella longirostris), Indo-Pacific humpback dolphin (Sousa chinensis), and the Australian snub-fin dolphin (Orcaella heinsohni) recently identified as a separate species from the Irrawaddy dolphin of Southeast Asia. Visitors at Tin Can Bay (Old) feed two habituated Indo-Pacific humpback dolphins, although government approval has not been granted to this site (Garbett & Garbett, 1997; Green, 2005; Mayes, 1999; Stone, 2006). These dolphin species are part of the Delphinidae family group of oceanic dolphins that includes 26 dolphins and 6 toothed whales (Dolphin Planet, nd). In addition, there are two recognised species of Bottlenose dolphins, the resident or inshore Bottlenose dolphin (Tursiops aduncus) and the coastal or offshore Bottlenose dolphin (Tursiops truncatus). Commercial operators of dolphin watch boat tours and swim with wild dolphin tours in Australia mainly interact with Bottlenose dolphins (Tursiops spp., both forms) and groups of Common dolphins (Delphinus spp.) further offshore. In New Zealand, commercial wild dolphin tours focus on Bottlenose dolphins in the Bay of Islands, Marlborough Sounds and Fjordland; Dusky dolphins at Kaikoura; Common dolphins; and endemic Hector's dolphins at Porpoise Bay and Akaroa (Orams, 2004).

#### DOLPHIN TOURISM IN AUSTRALIA

Between 1998 and 2003 cetacean tourism in Australia expanded at a rate of 15 percent per annum (IFAW, 2004). Most of this growth in whale watch and dolphin watch tours has occurred along the east coast and west coast of Australia (Orams, 1997). Dolphin watch and dolphin swim tours focus on specific groups of bottlenose dolphins in areas such as Shark Bay, Bunbury and Rockingham Bay (WA), Port Philip Bay (Vic), Port

Stephens, Jervis Bay and Forster (NSW), Moreton Bay (Qld), Adelaide and Baird Bay (SA). Port Stephens, three hours north of Sydney, is marketed as the 'Dolphin Watch Capital of Australia.' It claims to be the busiest dolphin-watching port in the southern hemisphere, with 10 to 15 cruise boats and 250,000 tourists annually generating \$20 million from dolphin-related tourism (Clarke, 2005). This area became part of the Port Stephens-Great Lakes Marine Park in March 2007, with a new management plan and sanctuary zones designated within Port Stephens Bay. At Port Philip Bay, near Melbourne, dolphin swims began in 1986 to raise funds for dolphin research and 15,000 tourists a year now go on dolphin tours (Ingleton, 2001; Jarvis, 2000; Weir, 2000). Three boat tours operate from Sorrento: Polperro Dolphin Swims (2005), Moonraker Dolphin Swims, and Nepean Cruises, and one from Queenscliff: Sea All Dolphin Swims. Permits were required since 1997 with five dolphin swim licenses and three for dolphin watching (Scarpaci, Dayanthi & Corkeron, 2003). In 2002, the wildlife act was amended to declare a specific area of Port Philip Bay as a 'whale swim tour area', with a maximum of four dolphin-watching/swimming permits, held for two years (Doolan, 2002; DSE, 2005a,b).

The feeding of wild dolphins is banned in South Australia, Victoria, New South Wales, and New Zealand. In Western Australia, supervised dolphin feeding sessions take place from the beach at Monkey Mia and at Bunbury. Swimming, boating and pets are banned at the Monkey Mia dolphin interaction area (Smith & Charles, 2006). The Dolphin Discovery Centre at Bunbury attracts about 60,000 visitors a year. The Centre has interpretive displays; supervised dolphin feeding and visitors can float with dolphins in the beach interaction zone (DDC, 2005; Kerr, 1998; O'Neill, Barnard & Lee, 2004a,b). Dolphin swim tours also operate at Bunbury, Rockingham Bay and in Mandurah (1999-2004), all south of Perth. In Queensland, regular dolphin feeding sessions have been held since 1992 at Tin Can Bay, three hours north of Brisbane, and at Tangalooma Resort on Moreton Island. From 1992-2000, visitors swam with the Indo-Pacific humpback dolphins at uncontrolled feeding sessions (Garbett & Garbett, 1997). At Tangalooma Wild Dolphin Resort (2006), visitors cannot touch or swim with the dolphins at the nightly feeding session supervised by rangers (Orams, 1994, 1995; Orams & Hill, 1998). Feeding or swimming with wild dolphins is not allowed in the Great Barrier Reef Marine Park and Moreton Bay Marine Park (DE, 1997) but a dolphin was fed from a Reef fishing boat in a TV news story. Boat tours of Moreton Bay focus on seeing dolphins, dugongs. whales, turtles and seabirds, along with snorkelling on Flinders Reef and at boat wrecks. There are no licensed dolphin watch boat tours on the Great Barrier Reef, with dolphins seen incidentally on reef trips (GBRMPA, 2000; Stokes, Dobbs & Recchia, 2002).

In South Australia, dolphin swim boat tours began in January 2002 out of Adelaide Another dolphin swim tour operator is located at Baird Bay on the western side of the Eyre Peninsula. Resident bottlenose dolphins also live in the Port River in Adelaide. This small group of urban dolphins has been affected by deaths from various illnesses, injuries from boat propellers and deliberate shooting. In 2005, the Adelaide Dolphin Sanctuary was declared on the Barker inlet of the Port River to protect these dolphins. In southern Tasmania, Bruny Island Charters view dolphins, fur seals, penguins and other seabirds. In New Zealand, dolphin watching and swimming tours developed at several locations since the late 1980s. By June 2001, there were 75 permits issued for commercial dolphin tours

with 14% of international visitors to New Zealand joining dolphin swimming or watching tours (Orams, 2004). Key locations for swim with dolphin tours include the Bay of Islands (Bottlenose dolphins), Bay of Plenty and Coromandel Peninsula (Common dolphins) in the North Island, and Kaikoura (Dusky dolphins) and Akaroa Harbour (Hector's dolphins) in the South Island (Constantine & Yin, 2003; Luck, 2003; Cloke & Perkins, 2005).

#### NATIONAL GUIDELINES FOR DOLPHIN SWIM TOURS

Australian national guidelines for cetacean observation were developed in 2000 with these guidelines for whale and dolphin watching revised in 2005. Only authorised tour operators are allowed to swim or dive with wild dolphins. The guidelines for swimming with dolphins set approach distances for boats (50m) and swimmers (30m), stipulate movements and boat speeds around dolphins, ban swimming with calves and also while dolphins are resting or feeding (see Table 1). The Australian National Guidelines for Cetacean Observation 2000 stated do not swim with a foetal fold calf and prohibited the use of SCUBA or HOOKAH equipment. The Australian National Guidelines for Whale and Dolphin Watching 2005 (DEH, 2005) do not allow swimming with a dolphin calf less than half the length of the mother but includes divers with SCUBA or hookah diving gear along with swimmers and snorkellers. All personal motorised watercraft (e.g. jet skis and underwater scooters) were also prohibited from use. Other areas have amended their regulations for cetacean interaction to follow the provisions set in the Australian national guidelines (2000 and 2005), most recently in 2006 for the Great Barrier Reef Marine Park (GBRMPA, 2006, 2007a,b; Minister for the Environment and Heritage, 2006) and in New South Wales (NP&WS, 2006). States have also developed their own specific legislation and guidelines for cetacean encounters. No wild dolphin swim tours are allowed in Queensland. In New South Wales, Bottlenose dolphins and Common dolphins were excluded from 2002 fauna protection laws but included in 2006 marine mammal regulations. Guidelines for dolphin operators in Port Stephens and Jervis Bay specify a 30m-approach distance. In Victoria, the Wildlife (Whales) (Amendment) Regulations 2004 specify approach distances of 30m for swimmers and surfboarders, 50m for boats and 100m for motorised swimming aids (e.g. underwater scooters). Dolphin swim tours in Port Philip can have a maximum of 10 swimmers and 20 minutes with one pod and up to four approaches. Boats must also stay 100m away from foetal-fold calves. In New Zealand, wild dolphin tourism is regulated by the Marine Mammals Protection Regulations 1992, with dolphin permits issued by the Department of Conservation.

Table 1: Australian national guidelines for swim-with-dolphin tours

Swimming and Diving# Tier 1: National Standards

Swimming, snorkelling or diving with dolphins is prohibited, except for an authorised swim program or for scientific or educational purposes.

- \*Swimmers, snorkellers and divers should not enter the water closer than 50m to a dolphin, and should not approach closer than 30m to any animal.
- \*If approached by a dolphin move slowly to avoid startling the animal and do not attempt to touch it or swim towards it.

Swimming and Diving# Tier 2: Additional Management Considerations

- \*Vessels should not actively tow swimmers, nor place swimmers directly in the path of dolphin(s), nor with dolphin calves or pods containing calves (a calf less than half the length of the mother)
- \*In the water do not disturb, chase or block the path of a dolphin.
- \*Attempts at swimming with dolphins should stop if the animals show signs of disturbance.
- \*Specific issues in developing or reviewing dolphin swimming operations:

Limits on the numbers of vessels and/or swimmers; Maximum watching time with a pod per day; Establish no approach times (e.g. dolphins feeding, resting); Temporal or spatial exclusion zones; Distance of swimmers to dolphins, & Use of mermaid lines or boom nets.

Notes: Tier 2 = Additional Management Considerations (State/Territory) (Regulations, permits, licenses & management plans) #Includes swimmers, snorkellers and divers with SCUBA or hookah diving gear.
Source: Australian Notional Guidelines for Whale and Dolphin Watching 2005

#### SWIM WITH WILD DOLPHIN TOURS

Swim with wild dolphin tours in Australia focus exclusively on in-water encounters with Bottlenose dolphins. Dolphin swimming boat tours operate at Rockingham, Bunbury and Mandurah (WA), Forster and Port Stephens (NSW), three in Port Philip Bay (Vic) and at Adelaide and Baird Bay (SA) (see Table3). These swim with dolphin tours began in 1986 at Port Philip Bay, the early 1990s at Port Stephens, Forster, Baird Bay and Rockingham Bay; in 1999 at Bunbury and Mandurah; and at Adelaide in 2002. The only approved shore-based in-water encounter with wild dolphins is floating in the beach interaction zone at the Dolphin Discovery Centre in Bunbury (WA). The habituated dolphin feeding sites of Monkey Mia, Tangalooma and Tin Can Bay either do not allow or discourage visitors from swimming with dolphins. Visitors stand in water up to their ankle, knee or thigh but do not swim with dolphins. Swim with wild dolphin tours are not allowed in Queensland. Permits are required for commercial dolphin tours from state government environmental agencies since the late 1990s, with specific national guidelines for cetacean interactions since 2000. Visitors from eight to 86 years old have swum with dolphins (Greenwood, 2004). The minimum age for swimmers varies from eight years (Adelaide, Bunbury) to 12 years (Baird Bay) up to 15 years (Forster). In Port Philip Bay there is a maximum of 10 swimmers in the water at one time and a maximum of 20 minutes interaction with one pod. The swim operator at Forster only allows one person at a time in the water. At Bunbury, the dolphin swim tour takes 10 swimmers with a maximum of 60 minutes in-water time (O'Neill, Barnard & Lee, 2004a,b; DDC, 2005). Some of the dolphin swim tours only operate for 8-9 months, excluding the colder winter period (e.g. Rockingham Bay, Bunbury & Baird Bay) but most operate year-round. Visitors can also swim with captive bottlenose dolphins at Sea World (Gold Coast, Qld) and the Pet Porpoise Pool (Coffs Harbour, NSW) but these are not included.

## TYPES OF IN-WATER ENCOUNTERS WITH DOLPHINS

There are varied modes of in-water encounters with wild dolphins on these boat tours from free swimming, mermaid lines, boom nets, linked human chains and the use of motorised water scooters (Table 2). The recommended boat approach is parallel or sideon rather than directly in front of a pod of dolphins. Free swimming is where groups of swimmers enter the ocean near dolphins. Swimmers usually wear a wetsuit, mask and snorkel. Free swimming is the method used at Mandurah, Bunbury and Baird Bay (no fins), before 1995 in Port Philip Bay and by one operator at Port Stephens. Mermaid lines or snorkel lines are ropes attached to the rear of a vessel, about 15 metres long with floats attached, which swimmers hold onto at all times while watching dolphins either above or below the water. Dolphin swim operators at Port Philip Bay (since 1995), Bunbury, Forster and Adelaide use mermaid lines. Usually several people hold onto one mermaid or flotation line, though the boat operator at Forster (NSW) has one person at a time holding onto this line. These mermaid lines are placed in the water near dolphins and removed before the boat moves on to another pod. In Bunbury swimmers hold onto the line and are towed slowly behind the boat. Snorkel lines made swimmers feel safer, required less swimming effort, were more fun and 'good for the dolphins' but others felt restricted by the lines (O'Neill, Barnard & Lee, 2004a). Mermaid lines are compulsory in Port Philip Bay to protect dolphins and also for swimmer safety. At least one operator in Port Philip would prefer free swimming with dolphins rather than using mermaid lines (DSE, 2004). At Port Stephens, tourists sit inside rope boom nets in the water and attached at the rear as the boat moves along. Boom netting is more of a recreational water-based activity than a method of interacting with dolphins. Some tourists also sit on rope bow nets at the front of a vessel to observe and be close to bow riding dolphins below. An interesting method of interacting with wild dolphins is used by Rockingham Dolphins. Staff use underwater scooters and tow swimmers along near the dolphins. The swimmers hold onto a waist belt while being towed along or float at the surface in chains. There is a maximum of three teams in the water at one time and six people in each chain (Waites, 2004). One person who worked on dolphin boats noted to the author that scooters were used by staff to 'herd' or move dolphins closer to the surface for tourists to observe and interact with. The 2005 national guidelines for cetacean interaction prohibit he use of personal motorised craft such as underwater scooters in dolphin watching. One lolphin swim operator in Port Philip Bay previously used scooters. In 2004, private water cooters were restricted to 100m while tour boats could approach dolphins to 50m.

Table 2: Dolphins habituated to 'swim with dolphins' boat tours

Location	Affected dolphins	Type of dolphin interaction	Guidelines
Rockingham, WA	120-150-180 resident dolphins, some known individuals	swimmers towed using underwater motor scooter & float in linked chains	SW operator since early 1990s c. 30 swimmers per day max. 3 teams in water at once
Mandurah, WA	(Logo, Boomerang) 80-100 resident dolphins, some	free swim	1 SW tour a day, Sept-May seasonal SW operator 1999-200 max. 8 tourists, 1 trip per day
Bunbury, WA	known individuals 50 resident dolphins 100/150 dolphins, 5-6 regular dolphins known individuals (Iruka, Sharkie)	mermaid line (boat) float with dolphins in Beach Zone	seasonal SW operator since 195 Nov. to April, 1 tour a day max. 10 swimmers, min. age of max. 60 mins. in-water time also SW provisioned dolphins
Port Stephens, NSW	100-160 coastal dolphins, c.50% resident, c.50% involved in DW tours	sit in boom nets, free swim (1)	since 1991, voluntary code max. 2 boats/30 mins. pod Marine Park zoning in 2007
Forster, NSW	resident & oceanic bottlenose dolphins, common dolphins	mermaid line	since 1990s, 1 person at a time take turns, min. age of 15
Port Philip Bay, VIC	80-100 resident dolphins, 50 dolphins interact with tour boats, 6 key dolphins	mermaid lines (since 1995) free swim (prior to 1995)	SW from 1986, operator code 1 state licensing since 1997 max. 10 swimmers, 20 minutes max. 4 approaches per SW tout c.50% compliance in 2001
Adelaide, SA	resident bottlenose & common dolphins, 100 coastal dolphins 2 known dolphins (Jade, Mohawk)	mermaid line	SW operator since Jan. 2002 max. 20 mins with 1 pod min. age of 8 (up to 86!) use electronic shark shields
Baird Bay, SA	resident dolphins	free swim	mask & snorkel only (no fins) min. age of 12 no sunscreen/chemicals

Notes: SW = Swim with, in-water encounters by tourists with wild dolphins, DW = Dolphin watching boat, All bottlenose dolphins. SW provisioned dolphins occasional & discouraged at Monkey Mia; SW provisioned dolphins prohibited at Tangalooma.

Other dolphin watching (DW) boat tours operate in Jervis Bay, NSW, Shark Bay WA, Moreton Bay QLD & Tasmania.

Moreton Bay Marine Park (Qld) & Great Barrier Reef Marine Park (QLD) prohibit feeding & swimming with dolphins.

Source: Based on Samuels, Bejder, Constantine and Heinrich, 2003 [SW dolphin operators in Forster & Baird Bay are new additions]

#### IMPACTS ON DOLPHINS

The Action Plan for Australian Cetaceans (Bannister, Kemper & Warneke, 1996) highlighted potential impacts on wild Bottlenose dolphins from the growth in dolphin tourism (i.e. dolphin watching, dolphin swim tours & dolphin feeding). Key research studies identify and evaluate the impacts of cetacean tourism (i.e. boats, swimmers) on wild dolphins (Allen, 2005, 2006; Bejder & Samuels, 2003; Higham & Lusseau, 2004; Lemon et al., 2006; Ross, 2006; Samuels et al., 2003; Scarpaci et al., 2003, 2004).

## IMPACTS OF DOLPHIN WATCH BOATS

In Australia, research on the biological impacts of tour boats on wild dolphin behaviours has mainly been conducted in Port Philip Bay, Victoria (Doolan, 2002; DRI, 2005; Hale 2002: Jarvis, 2000; Jarvis & Ingleton, 2001; Scarpaci et al., 2000, 2003, 2004) Port Stephens NSW (Allen, 2003, 2005, 2006; Allen in Clarke, 2005; Allen in Dasey, 2006; Griffiths in Clarke, 2005); Jervis Bay NSW (Lemon et al., 2006; SHIMS, 2006), and at Shark Bay WA (Bejder et al., 2006; Bejder in Dasey, 2006). This research found increased avoidance behaviour by dolphins around tour boats (e.g. deep dive, changing direction), increased whistling, dispersal from key habitats, decreased resting, increased milling or travelling, decrease in dolphin playing, mating and socialising, pods splitting into subgroups, displacement of mothers and calves and reduced dolphin births and survival (see Table 3). Other recreational boaters, jet skiers and canoeists also harassed dolphins by going too close or crossing through pods.

These impacts on wild dolphin behaviours were mainly observed in high-use areas with four or more dolphin watch operators such as Port Stephens and Port Philip Bay. The studies highlight the cumulative impacts of increased boat activity on dolphins (Allen, 2004, 205, 2006; Hale, 2002; Scarpaci et al, 2003, 2004). One dolphin cruise operator at Port Stephens left the industry in 2003, concerned about the negative impacts of commercial boats on dolphins. The main dolphin watching area in Port Stephens was an area where dolphin mothers would congregate in summer with 12 to 15 new calves but this was no longer the case (Clarke, 2005). Increased competition, especially in summer, also reduced operator's compliance with a voluntary code of conduct for dolphin watching in Port Stephens (Allen, 2003). Another study found 86% of commercial tour operators went closer than 50m to dolphins (Hawkins & Gartside, 2004). Research in areas with two dolphin watch boats such as Jervis Bay and Shark Bay also found dolphins avoiding boats, milling, dispersal into other areas and lower births. At Shark Bay these impacts on dolphins occurred within four years of a second dolphin cruise perator that started in 1998 (Bejder et al, 2006). Research studies in New Zealand have iso identified similar impacts on wild dolphins by tour boats or swimmers at Mercury 3ay (Neumann & Orams, 2006), Kaikoura, Doubtful Sound (Fiordland), Porpoise Bay nd Akaroa Harbour (Constantine et al., 2003, 2004; Nicols et al., 2001; Orams, 2004,

Table 3: Impacts of boats and swimmers on wild dolphins

Location	Affected dolphins & Biological impacts on dolphins	
Rockingham, WA	120-150 resident dolphins, some known individuals, 1 SW operator Underwater scooters 'herd' dolphins near surface; boat near swimmers (Waites,	
Bunbury, WA	50 resident dolphins, 100/150 dolphins in Koombana Bay, 1 SW operator Dolphins avoid floating mermaid lines in water (O'Neill, Barnard & Lee, 2004a)	
Shark Bay, WA	150-200 resident dolphins, 1 (1993) 2 (1998) 1 (2007) DW cruise operators 15% decrease, reduced dolphin births & survival rate (Bejder in Dasey, 2006) Loss of 1 in 7 dolphins, shift in habitat use to non-tour areas (Bejder et al, 2006)	
Port Stephens, NSV	W 100-160/200 coastal dolphins, c.50% resident, c.50% involved in DW tours 9 permanent & 6 occasional tour boat operators; 250,000 tourists a year Decrease in resting behaviour, splitting into subgroups (Allen, 2005; Clarke, 2005) Displaced mothers & calves from dolphin watching area, less interaction & decrease in dolphin playing, mating & socialising (Griffiths in Clarke, 2005) Changes to dolphin movement patterns, behaviour & social grouping, exclusion from preferred habitat etc (Allen, 2003, 2005; Allen in Dasey, 2006) Increase in travel and milling by dolphin pods affected by boats; decreased foraging, resting and socialising by dolphin schools (Allen, 2005, 2006)	
Jervis Bay, NSW	60-80 resident dolphins, 120 with transient dolphins, 2 DW tour operators  Dolphin behaviour changed from travelling to milling, & changed their direction away from an oncoming boat beyond 30m (Lemon et al., 2006; SHIMS, 2006)	
Port Philip Bay, Vitrying pod dolphin harder Ingleton, 2004) direction)	IC 80-100 resident dolphins, many known individuals, 3 SW/1 DW tour operators (pre-1995) Boats herding dolphins close to the shore, people grabbing dolphins & to ride or climb onto their backs, 1 dolphin approaches boat as a decoy while rest of swims away, chased by powerboats & jet skis, harassment by boats, dorsal fin of calf cut in half by boat propeller; dolphins avoiding boats, fewer dolphins around, to swim with dolphins, increased dolphin whistling near tour boats (Jarvis & 2001; Doolan, 2002; Hale 2002: Higginbottom, 2002; Scarpaci et al., 2000, 2003, Increased avoidance behaviour by dolphins around boats (deep dive, changing	
Adelaide, SA 2006)	resident dolphins, some known individuals, 1 SW operator (Temptation Sailing Electronic field from shark shield deterrent has no effect on dolphin interaction	

## IMPACTS OF DOLPHIN SWIM TOURS

Research about the impacts of wild dolphin swim tours on dolphins has been conducted for Bunbury (O'Neill, Barnard & Lee, 2004a) and Port Philip Bay (Scarpaci et al., 2000, 2003, 2004). At Bunbury, the use of mermaid lines such as their placement in the water, distributing swimmers, towing and retrieval increased avoidance behaviour by dolphins that the same of the water of the water of the surface for staff used motorised underwater scooters to 'herd' dolphins closer to the surface for rate with wild dolphins and swimmers are not allowed to use sunscreen or chemicals. In the protect swimmers from sharks. According to the boat operators, this electronic shark of the pods. The dolphins also swam underneath and within one metre of swimmers holding onto a flotation line (Greenwood, 2004; Temptation Sailing, 2007).

In Port Philip Bay, research about the impacts of boats and swimmers on wild dolphins began in 1996 (Weir, Dunn, Bell & Chatfield, 1996). Boats herded dolphins closer to the shore for tourist swims in shallower water, while some people grabbed dolphins and tried to ride or climb onto their backs (Jarvis & Ingleton, 2001). Whale regulations in 1998 prohibited tour boats from conducting dolphin swims within 200m of the shore (Jarvis & Ingleton, 2001). New regulations in 2004 though prohibit dolphin swimming only within 100m of the low tide mark (DSE, 2004). In 1996, 40% of 440 dolphin swims in Port Philip were unsuccessful; while in 2001 the average dolphin interaction time was 35 minutes. In the peak summer season boats interact with dolphins every 90 seconds with two to three dolphin trips per day by each operator (Weir, 2000; Samuels et al, 2003). Scarpaci et al (2003, 2004) recorded a decrease in average total swim time from 32 minutes to 26 minutes from 1998/00 to 2002/03, an average time of 4.15 minutes between approaches to dolphins and an average of three minutes for individual swims. Staff on two dolphin swim boats stated that it was getting harder to have a good swim our and fewer dolphins could be found to interact with (Jarvis & Ingleton, 2001). In New Zealand, bottlenose dolphins in the Bay of Islands also increasingly avoided boats and wimmers as tourism activity expanded (Constantine, 2001). Dusky dolphins at Kaikoura vhistled more when swimmers entered the ocean water nearby, while Common dolphins nteracted with swimmers only two minutes, stayed at a distance of more than three netres and mainly interacted in larger groups over 50 dolphins (Neumann & Orams, 006). Recreational swimmers at Porpoise Bay also displaced Hector's dolphins from a referred area with dolphins bunching in tighter groups (Bejder, Dawson & Harraway,

impliance with permits for dolphin swims

Port Philip Bay, dolphin swim tours can have a maximum of 10 swimmers in the ter, 20 minutes with one dolphin or pod (within 100m) and up to four approaches per r or eight per day. New regulations in 2004 allow operators to reposition their boats

with empty mermaid lines in the water and with no time limits on the lines left in the water, previously set at a maximum of 20 minutes at one time in 1998 (DSE, 2004). In 2001, there was an average of 50% compliance by operators with dolphin interaction guidelines (Samuels et al., 2003). According to Scarpaci et al (2003) the compliance level in 1998-2000 with four key permit conditions was: No swimming with foetal fold calves (69%); parallel or side-on approach type (64%); swim time (39%); and time spent in proximity to dolphins (38%). A review of dolphin swim tours in Port Philip Bay recommended further restrictions on proximity of boats to dolphins and a maximum of 10 people participating in a dolphin swim (Hale, 2002). A follow-up study of 16 dolphin swim trips in 2002/03 evaluated 149 boat approaches and 25 swims with dolphins. Results from 1998-2000 were also compared with 2002-2003 (Scarpaci et al., 2004). It found a decrease in compliance with dolphin swim permit conditions such as parallel boat approach (53%, n=79) and an increase in illegal boat approaches (i.e. direct or 'J' hook turns) from 36% to 47%. There was a slight increase in compliance with dolphin swim time from 39% to 42% but a decrease of 9% in compliance with proximity times within 100m of dolphins. However there was 100% compliance with the maximum of 10 swimmers at one time with an average of 6 people swimming with dolphins (Scarpaci et al, 2004). Compliance with dolphin swim permit conditions has not been evaluated at other sites in Australia. At the Bay of Islands in New Zealand, bottlenose dolphins mainly avoided swimmers that entered the water directly in the path of travelling pods or in the middle of a group of milling dolphins, rather than side-on (Constantine, 2001). In Doubtful Sound, only 34% of 373 dolphin-boat interactions complied with approach guidelines of the Marine Mammals Protection Act (Lusseau, 2003; Lusseau & Higham, 2004).

#### MANAGING DOLPHIN SWIM TOURISM

The Australian National Guidelines for Whale and Dolphin Watching 2005 identified specific issues in developing or reviewing dolphin swimming operations. These are:

- Limits on the numbers of vessels and/or swimmers
- Maximum watching time with a pod per day (individual and cumulative)
- Establishment of no approach times (e.g. dolphins feeding, resting)
- Need for temporal or spatial exclusion zones
- Distance of swimmers to animals
- Use of mermaid lines or boom nets (DEH, 2005).

Swim with wild dolphin tourism in Australia is managed with a range of regulatory, physical, economic and educational strategies (see Table 4). The Australian National Guidelines for Whale and Dolphin Watching 2005 set standards for approach distances (50m boats, 30m swimmers), vessel movements, time periods, placement of vessels and swimmers and guidelines for dolphin swim encounters. Exceptions include the use of motorised underwater scooters in dolphin swim tours at Rockingham Bay, not allowed in the national guidelines, and a 30m minimum boat approach distance in NSW. Swimming

Table 4: Management strategies for swim with wild dolphin tourism

Strategy

Management of dolphin swim tourism

#### SWIM WITH DOLPHIN TOURS

#### Regulatory#

Standards set in the Australian National Guidelines for Whale and Dolphin Watching 2005 Swimmers to not enter the water closer than 50m & not approach closer than 30m to a dolphin Vessels to not actively tow swimmers, nor place swimmers directly in the path of dolphin(s), nor with dolphin calves or pods containing calves (less than half the length of the mother) No approach while dolphins are resting or feeding, have calves or are disturbed by swimmers Sanctuary areas for dolphins e.g. Ticonderoga Bay (Port Philip Bay); 200m minimum approach,

#### Physical

Tourists hold onto floating mermaid lines, form linked human chains, or sit/lie in boom nets Personal motorised watercraft (e.g. jet skis and underwater scooters\*) are prohibited Mask & snorkel only, float in dolphin interaction zone (Bunbury, WA), shark shield pod (SA) Parallel or side on approach strategy to dolphins by boats and swimmers

Higher fees charged for swim with dolphin tours, portion of fee used for dolphin research^ Permit fees paid by commercial swim with dolphin tour operators

#### Educational

Dolphin interpretation to visitors on the boat, dolphin books, fact sheets, charts & brochures Seminars by dolphin researchers for swim with dolphin tour operators & local residents Voluntary codes of conduct by dolphin watch association (Port Stephens)/operators (Port Philip) Agency education about dolphin guidelines and permit conditions for commercial operators

Votes: #Includes swimmers, snorkellers & divers with SCUBA or hookah diving gear.

\*Underwater scooters used by guides on swim with dolphin tours in Rockingham Bay (WA)

^DREAM-Dolphin Research, Education & Management Fund (Port Stephens, NSW), DRI-Dolphin Research Institute (Port Philip, VIC), Adelaide Coastal Dolphin Research (SA)

SW provisioned dolphins prohibited at Tangalooma, Tin Can Bay (Qld), & Monkey Mia (WA) No wild dolphin swim tours allowed in Queensland; 3 in Victoria, 2 in WA, 2 in SA, 1 in NSW.

Sources: Australian National Guidelines for Whale and Dolphin Watching 2005; Samuels, Bejder, Constantine & Heinrich, 2003

with wild dolphins is prohibited in Queensland and at dolphin provisioning sites. State egislation is mainly based on national guidelines for whale and dolphin watching. In Victoria, specific regulations apply to dolphin swimming and dolphin watching in Port Philip Bay while in New South Wales there has been minimal regulation of commercial lolphin tourism at Port Stephens. There is limited or inconsistent enforcement of current egulations for wild dolphin tourism. Physical strategies include the use of floating nermaid lines by dolphin swim operators in Port Philip Bay, Adelaide and Forster. Two lolphin swim operators in Bunbury and Baird Bay use the free swim method, the latter not using fins. All states recommend the parallel or side-on approach strategy by boats to vild dolphins. Economic strategies include charging higher fees for a wild dolphin swim our, usually double the dolphin-watching fee, with a small portion of the tour fee funding lolphin research in Port Philip Bay, Port Stephens and Adelaide. Educational strategies nclude dolphin interpretation onboard boats or at visitor centres. Dolphin operators have romoted voluntary codes of conduct in Port Philip Bay and Port Stephens, though with imited success. Government agencies also educate commercial operators about dolphin vatching or swimming guidelines. In New Zealand, a similar range of regulatory,

economic and educational strategies are used to manage wild dolphin tourism (Orams, 2004). The side-on approach strategy to dolphins is adopted, however, mermaid lines and underwater scooters are not used on dolphin swim tours.

#### DISCUSSION AND RECOMMENDATIONS

The UN International Year of the Dolphin 2007 aims to raise awareness of wild dolphins and human impacts that threaten dolphins. Management of dolphin tourism in Australia ranges from voluntary operator codes to national guidelines and strict legislative regulation of dolphin watching, swimming and feeding programs. The Australian National Guidelines for Whale and Dolphin Watching 2005 specify legal standards and best practice guidelines for cetacean interaction (Lee & O'Neill, 2000). However there are still variations between different government jurisdictions and also the practices of dolphin tour operators (Harcourt, 2004; Kearnan, 2005). The national guidelines ban underwater scooters; but at Rockingham Dolphins (2007) staff tow swimmers along using these devices (Waites, 2004). National guidelines also specify a minimum boat approach distance of 50m from dolphins but at Port Stephens and Jervis Bay the minimum approach is 30 metres. Other commercial practices that are contrary to national cetacean guidelines and/or state regulations for dolphins include operators breaching approach distances and times, the direction of approach and swim time (Scarpaci et al., 2003, 2004). Dolphin operators have promoted voluntary codes of conduct in Port Philip Bay and Port Stephens since the mid-1990s, though with limited success in the peak summer season, entry of new operators and increased competition (Allen, 2003). Dolphin tourism has been regulated in Port Philip Bay since 1997 while Port Stephens is now part of the Great Lakes-Port Stephens Marine Park with new dolphin sanctuary zones effective from March 2007. In Port Philip Bay, despite revised dolphin interaction guidelines in 2002, compliance by operators with most dolphin swim permit conditions did not improve. The exception was full compliance with the maximum of 10 swimmers at one time in the water with dolphins. The other breaches in boat approaches, swim times and time spent in proximity to dolphins are mainly to satisfy visitor expectations of close encounters with wild dolphins (Scarpaci et al, 2004). At other sites in Australia with a sole dolphin tour operator (e.g. Adelaide, Baird Bay, Forster, Bunbury & Rockingham Bay), compliance with dolphin swim permit conditions has not been evaluated.

There are varied modes of in-water encounters with wild dolphins from flotation or mermaid lines that swimmers hold on to behind a boat; free swimming; and the use of motorised water scooters by one operator. Boom nets are also used in Port Stephens. The impacts on wild dolphins of these different types of swim encounter methods, has not been examined. Anecdotal accounts suggest that dolphins at Bunbury would not swim under floating mermaid lines; scooters are used to herd dolphins closer to the surface at Rockingham Bay; and an electronic shark shield device does not affect dolphin interactions off Adelaide. Both dolphin watch tour boats and dolphin swim tours had negative impacts on dolphins and increased dolphin avoidance behaviours. These cumulative impacts on dolphins were most evident in high-use areas such as Port Stephens and Port Philip Bay with four or more commercial dolphin operators. Two boat

operators at Shark Bay also increased the impacts on resident bottlenose dolphins, with only one permit to be offered by the West Australian government in 2007 (Bejder et al., 2006; *The Australian*, 2006). At Port Philip Bay, by 2003 there was a decrease in average total swim time from 32 to 26 minutes, four minutes between approaches to dolphins and three minutes for individual swims (Scarpaci et al., 2004). A survey at Bunbury found tourists watching dolphins from a boat saw more dolphins and were more satisfied than those swimming with dolphins. Swimmers (n=223) were unhappy with visibility underwater (37%, 3m at best), cold water and weather (30%) and lack of proximity to dolphins (17%) with half of those of came within 5 metres stating this was still too distant (O'Neill, Barnard & Lee, 2004a). The proximity, number of dolphins and length of time that tourists need to swim with wild dolphins to be satisfied has not been studied. Nor has tourist and operator preferences for the type of in-water dolphin encounter method such as mermaid lines, free swimming, underwater scooters and boom nets.

#### CONCLUSIONS

Bottlenose dolphins are the primary target species for commercial dolphin tourism in Australia. This includes dolphin-watching boat tours, swim-with wild dolphins and three habituated wild dolphin-feeding programs. Specific groups of resident bottlenose dolphins in areas such as Shark Bay, Bunbury and Rockingham Bay (WA), Port Philip Bay (Vic), Port Stephens, Jervis Bay and Forster (NSW), Moreton Bay (Qld), Adelaide and Baird Bay (SA) have frequent encounters with tour boats and/or swimmers. The sustainability of wild dolphin tourism in Australia depends on consistent application of national cetacean guidelines in all states such as the 50m minimum boat approach distance, no swimming with calves and a side-on approach. The impacts on wild dolphins of different types of swim tours, needs to be examined. The revision or rewriting of some dolphin interaction regulations (e.g. maximum of 10 swimmers in the water at one time) and government consultation along with education may also improve compliance by dolphin tour operators (Scarpaci et al, 2004). State regulations for dolphin swimming and dolphin watching activities need to be enforced, with penalties for breaches by commercial operators and by recreational visitors. Sanctuary zones, setting daily interaction times and reducing the number of operators/boats around pods would help to reduce impacts on dolphins. Promoting alternative marine activities such as snorkelling with fish (e.g. Moreton Bay) or seals (e.g. Philip Bay, Baird Bay), water sports (e.g. boom netting, Port Stephens) and seeing other marine life (e.g. seabirds, turtles) broadens the emphasis away from just swimming with wild dolphins, which is not allowed in Queensland. It may also reduce potential visitor dissatisfaction with the brevity, distance or method of swimming with wild dolphins and number of other boats in the vicinity. Ongoing research about the impacts of tourism on the behaviour of wild dolphins should also underpin relevant management strategies, regulations and guidelines. This is required for longer-term sustainability of resident dolphins and dolphin-based tourism in Australia.

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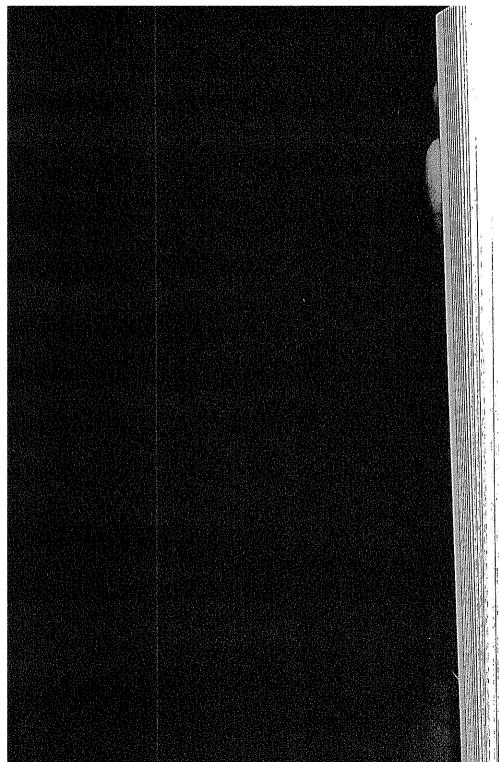
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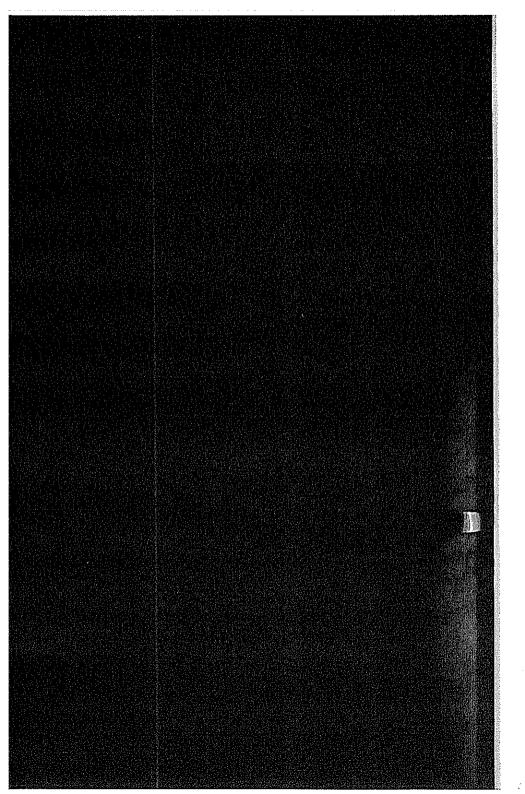
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Balancing Marine Tourism, Development and Sustainability

11-15 September 2007 Auckland, New Zealand



Edited by

Michael Lück Alice Grāupl Jan Auyong

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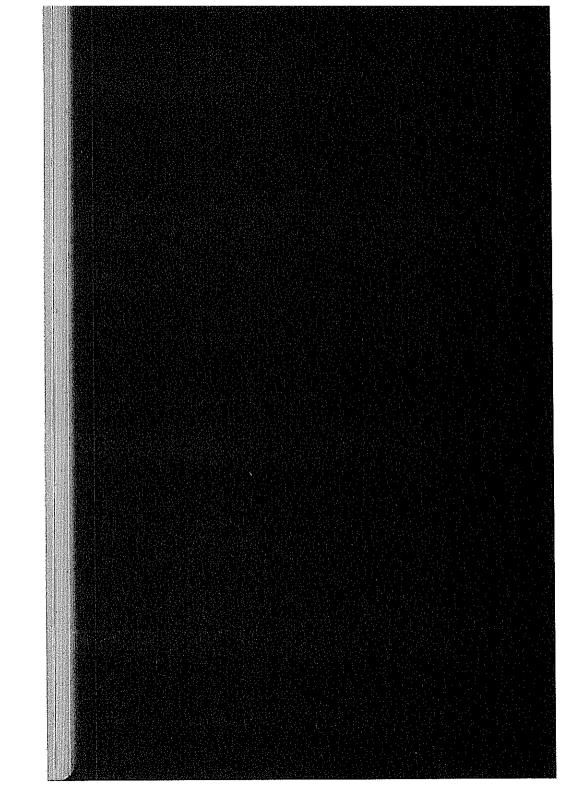
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Developing Lifeguard Services for Tourist Resorts: Legal, Training and Quality Service Considerations  Jeff Wilks
Extreme marines: the rise of high risk marine tourism  Mark B. Orams
Ludic challenges of coastal and marine tourism  Marc L. Miller

## **Conference Papers**

### Theme 1: Marine Wildlife Tourism

Origin and development of whalewatching in the state of Aragua, Venezuela: Laying the groundwork for sustainability  Jaime Bolaños-Jiménez, Auristela Villarroel-Marin, E.C.M. Parsons,  & Naomi A. Rose
Dusky Dolphin (Lagenorhynchus obscurus) occurrence patterns near Kaikoura, New Zealand: Observations from tour boats 1995-2006  Adrian Dahood, Bernd Würsig, Zach Vernon, Ian Bradshaw, Dennis Buurman & Lynette Buurman
'Jaws or Jawsome'? Exploring the shark-diving experience  John Dobson
Marine wildlife tourism opportunities in Baja California Sara M. Earhart, Maile C. Sullivan & Marc L. Miller
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Grunion Greeters in California: Beach Spawning Fish, Coastal Stewardship, Management and Ecotourism Karen Martin, Andrew Staines, Melissa Studer, Chris Stivers, Cassadie Moravek, Phillip Johnson & Jennifer Flannery!
Dolphin watch tourism: A cross-case comparison of two differing examples of sustainable practices and pro-environmental outcomes  Gayle Mayes & Harold Richins
Watching endangered orcas: The role of communication in balancing marine tourism and sustainability  Tema Milstein
Sustainable versus UnSustainable Dolphin tourism in the Caribbean: A case study in the Dominican Republic  E.C.M. Parsons & Naomi A. Rose
A wildlife tourism auditing frameworkcan we build it?  Kate Rodger, David Newsome & Amanda Smith

Adaptive Management for a Recovering Humpback Whale Population in the Great Barrier Reef Marine Park  Sarah Salmon & Kirstin Dobbs
Meeting Flipper in the wild: Managing swim with dolphin tourism in Australia  Heather Zeppel
Theme 2: Marine Protected Areas
Quantifying community perceptions of marine environments for Marine Protected Area planning: When is the Reef too crowded?  Barbara Bollard-Breen & Daniel Breen
Tourism as basis for sustainable development in protected coastal areas?  Svein Frisvoll & Katrina Rønningen
The law and policy regulating marine parks in the Asia Pacific – de legere ferenda Mary George
Quantifying community perceptions of marine environments for Marine Protected Area planning: When is the Reef too crowded?  Nina Hall & Jim Sillitoe
Impacts of the 2004 Tsunami Disaster on Thailand's Marine Park Tourism:  What Did We Learn?  Somrudee (Meprasert) Jitpraphail & James W. Good
Tourism in the marine national park of Gujarat  Prabha Ranade
Theme 3: The Cruise Ship Industry
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Protecting paradise: Minimizing the downside of cruise tourism  Ross A. Klein
The socio-economic impacts of cruise tourism: A case study of Croatian destinations  Zrinka Marusic, Sinisa Horak & Renata Tomljenovic
Development of a supply chain model for the cruise industry
Funda Yercan & Frank Bates