

Michael Dine

From: Brendan Evans s 9(2)(a) privacy
Sent: Wednesday, 26 January 2022 10:13 pm
To: Permissions Christchurch
Subject: Submission on Jet Junkies Limited permit applicatio

Follow Up Flag: Follow up
Flag Status: Completed

I don't support this application. I fear the dolphins and other marine life will suffer as well as the noise for beach goers. Unnecessary use if fossil fuels as well

Michael Dine

From: Uta Blazey s 9(2)(a) privacy
Sent: Wednesday, 26 January 2022 9:12 pm
To: Permissions Christchurch
Subject: Jet Ski Dolphin Tours

Follow Up Flag: Follow up
Flag Status: Completed

Dear DOC

I am writing to ask that DOC will not grant permission for a jet ski dolphin tour planned for Lyttelton harbour. In my opinion there is already enough disturbance for the wildlife in Lyttelton harbour without the need for more jet skis on the water.

Kind regards
Uta Blazey

Michael Dine

From: Ben Sampey s 9(2)(a) privacy
Sent: Wednesday, 26 January 2022 7:58 pm
To: Permissions Christchurch
Subject: Submission on Jet Junkies Limited permit application

Follow Up Flag: Follow up
Flag Status: Completed

I'm in favour of this proposal, I think if some reasonable limits around noise and speed are set with view to the dolphins safety and comfort, the use of jet skis is vastly better than larger vessels with propellers, whilst bringing another business and employment opportunity to Lyttelton.

Michael Dine

From: s 9(2)(a) privacy
Sent: Wednesday, 26 January 2022 5:34 pm
To: Permissions Christchurch
Subject: Submission on Jet Junkies Limited permit application

Follow Up Flag: Follow up
Flag Status: Completed

Kia ora,

I'd like to object to this proposed operation for 4 reasons:

- 1) Jet-skis are objectionable vessels and are invasive within a marine environment because of their noise and emissions
- 2) If education is the purpose this operation does not provide opportunities for many people to gain access to viewing the marine wildlife - very low impact in terms of educational reach; is not inclusive of larger groups, a range of ages, or abilities.
- 3) There is no evidence-based information provided about the impact on marine mammals; fisheries; marine ecosystem; other harbour users (including freight traffic), or potential protective measures provided - other than references to speed and safety
- 4) There is no recognition of their responsibility as Treaty partners other than box ticking - how will they uphold their obligations? what do they see as their responsibilities? where is the cultural inclusion and context within the 'education' experience they purport to be offering?

I don't mind these objections being shared with the applicant but would prefer my private details are withheld.

Ngā mihi,
s 9(2)(a) privacy

Michael Dine

From: Laura Bannister s 9(2)(a) privacy
Sent: Wednesday, 26 January 2022 2:57 pm
To: Permissions Christchurch
Subject: Submission on Jet Junkies Limited permit application

Follow Up Flag: Follow up
Flag Status: Completed

Please please do not allow this to go forward. It will ruin the sea life that there is. This isn't kaikoura, we don't have an abundance you can go out on blackcat cruises that's enough.

Kind regards

Dr Laura Bannister MBChB,
Bmed Sci, FACEM

Michael Dine

From: Juliet Neill s 9(2)(a) privacy
Sent: Wednesday, 26 January 2022 12:51 pm
To: Permissions Christchurch
Subject: Submission on Jet Junkies Limited permit application

Submission fom Juliet Neill

s 9(2)(a) privacy

26.1.2022

I am strongly opposed to the proposal that Jet Ski Junkies should be able to extend their activities to dolphin spotting and watching.

Lyttelton Harbour (Whakaraupo) and its surrounds used to team with wildlife, and was a huge source of sustenance for locla Maori. Marine life now suffers from water pollution, silting and noise pollution, and the wildlife continues to suffer and be diminished.

Our rare Hector's dolphins are struggling, and their hearing and navigation systems become heavily compromised as a result of port activities and recreational indulgences, such as jetskis and jet boating.

There is no way that Jet Junkies Limited can dolphin watch sustainably from their jet powered vehicles, but they will add to the stress these animals are already dealing with. Furthermore I can not believe that their motivation comes from a genuine desire to value these marine creatures, but rather it smacks of opportunism. Their activities would serve to harass the dolphins, even if carried out within the existing marine protection laws.

There is no need for an additional dolphin watch enterprise, especially as Black Cat already run dolphin spotting expeditions.

In fact, I believe that all jet powered vehicles should be banned from our harbour, as, not only do they affect the dolphins, but they also destroy the peace of human residents as well as swimmers and those seeking recreation

Please do not grant permission to Jet Junkies Limited to extend their activities to dolphin spotting and watching, and respect what little is left for our depleted marine environment.

Michael Dine

From: simon thomas s 9(2)(a) privacy
Sent: Tuesday, 25 January 2022 2:39 pm
To: Permissions Christchurch
Subject: Attention: Michael Dine, Permissions Advisor
Attachments: ASSESSING COMPLIANCE TO GUIDELINES BY DOLPHIN TOURS.pdf; neg effect boats t.t. in sc.pdf; Blunt Trauma Observed in a Common Dolphin.pdf

Dear Micheal,

I am writing with regard to the following permission application

Applicant: Jet Junkies Limited

Location of proposed activity: Lyttelton Harbour

Permission type: Marine mammal permit

Summary of proposal: The application is for commercial vessel based marine mammal viewing in Lyttelton Harbour and the surrounding heads.

I am a resident of Corsair Bay, the next bay around from the home of this business. I object in the strongest possible terms on two grounds:

1) Disturbance to the local community:

While Lyttelton Harbour is a commercial port and of course has many movements of large vessels, beyond the port itself is an area of great natural beauty which is enjoyed by families from across Christchurch. There are nature reserves and we all enjoy the wildlife such as dolphins and birdlife.

There is a big range of recreational activity that happens in the harbour including sailing, swimming, kayaking, paddle boarding etc. All of these activities are carried out in safety and harmony with one another.

However, jet skis are the one activity which set themselves apart both in terms of safety and the shocking noise that they produce.

While I am sure the operators of the business do their best to minimise the impact on others, the fact is that these craft are designed to be speedy and noisy. The fun part about them is to zoom around.

As long as that does not impact on the others, I have no objection but that is not the case. Even from our own veranda, we are disturbed by their noise. I often swim around the bay and am in constant fear of being run over by one of these craft. Open water swimmers are forced to drag large orange bubbles behind them for fear of being smashed in the head by a jet ski.

2) It could be catastrophic for the dolphins.

There is a lot of evidence to suggest that marine mammals are negatively impacted by motor craft, please see the scientific studies attached. Obviously if the business is able to promote itself as a dolphin tour, then there will be a vested interest for them to maximise their interaction with these rare and threatened species. There are other businesses right around the world which give people access to marine mammals with less impact such as kayak tours. You don't need a jet ski to be able to enjoy nature. In fact, the two activities are mutually exclusive in my opinion.

You can see from the study entitled **ASSESSING COMPLIANCE TO GUIDELINES BY DOLPHIN-WATCHING OPERATORS IN CLEARWATER, FLORIDA, USA**, even when guidelines are in place, compliance is often lax. This raises several problems in the case of Lyttelton Harbour. Firstly, there is nobody to ensure compliance so it will be left to the goodwill and common sense of people who think that zooming around the harbour on floating motorbikes is a great way to spend the day.

Secondly, given the rare and endangered situation that these little creatures find themselves in, there is a complete dearth of scientific information on which to base the guidelines in the first place. We just don't know enough about them to be certain that any regime we put in place will not disturb their activities.

ASSESSING COMPLIANCE TO GUIDELINES BY DOLPHIN-WATCHING OPERATORS IN CLEARWATER, FLORIDA, USA

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Numerous studies have quantified the impacts of tourism on marine mammals; however, few studies have investigated tour operators' procedures and their compliance with regulations and guidelines. This study quantifies operator compliance with NOAA guidelines, examines the structure of tour educational programs, and investigates dolphin behavior during encounters between tour vessels and bottlenose dolphins in Clearwater, Florida. During 45 encounters, operators adhered to the guidelines approximately 60% of the time. Operators complied with the viewing time limit but failed to end encounters when dolphins exhibited potential disturbance behaviors. Operators approached dolphins within the 50-yard distance limit and used inappropriate techniques to maneuver around dolphins. The educational programs were unstructured and lacked critical components of effective interpretation programs. Considering these findings, we make suggestions for ways to improve educational programs, increase compliance, and minimize the impacts of tour vessels on dolphins.

Key words: Dolphin watching; Tourism; Human impacts; Bottlenose dolphin; Education

Introduction

Tourism is one of the largest and fastest growing industries in the world. The worldwide demand for marine wildlife tourism has grown into a billion dollar industry (Hoyt, 2001). Marine mammal tourism, a nature-based form of tourism, contributes greatly to this growth (Hoyt, 2001). Over 80 countries currently offer opportunities to view marine mammals in their natural habitat (Hoyt, 2001). These viewing experiences not only support the economy

of coastal communities but also may provide unique opportunities to educate the public about wildlife conservation (International Fund for Animal Welfare [IFAW], 1995). However, there is a growing concern regarding the effects that tourism activities may have on marine mammals (Beach & Weinrich, 1989; IFAW, 1995; Lusseau, 2003; Orams, 2004).

Wild marine mammal tourism in the US consists of swim-with programs, land-based operations, and vessel-based operations (National Marine Fisheries Service [NMFS], 2002). In the recent

past, several swim-with-dolphin programs in the US, particularly in the Panhandle and Gulf Coast regions of Florida, used illegal food provisioning to facilitate interactions with bottlenose dolphins (*Tursiops truncatus*) (Samuels & Bejder 1998, 2004). This behavior is detrimental to wild animals and can even harm humans (Samuels, Bejder, & Heinrich, 2000). In Hawaii, swim-with programs target spinner dolphins (*Stenella longirostris*) resting from predators in shallow coves and bays during daytime (Forst, 2001; Würsig, 1996). In other areas, land-based operations allow tourists to approach pinnipeds (seals, sea lions, and walrus) at close range to observe and, in some cases, pose for pictures with, touch, pet, poke, and/or throw objects toward the animals to elicit reactions. These actions are known to cause behavioral changes such as increases in potential disturbance behaviors (Boren, Gemmell, & Barton, 2002; Cassini, 2001) and significant decreases in time spent resting and nursing (Kovacs & Innes, 1990).

Vessel-based operations include the use of motorized or nonmotorized vessels to observe marine mammals in the wild (NMFS, 2002). Such operations can elicit avoidance behaviors and may lead to disturbance or harassment (Janik & Thompson, 1996). Animals may respond to tour vessels by decreasing time spent at the surface (Richter, Dawson, & Slooten, 2006), increasing avoidance behaviors as vessels approach (Blane & Jackson, 1994), altering behavior (Cope, 2000; Lusseau, 2003), and moving into tighter groups (Bejder, Dawson, & Harraway, 1999).

In Clearwater, Florida, marine mammal tourism consists solely of vessel-based operations. Five tour companies currently target bottlenose dolphins year-round. Three of the companies conduct dolphin-watching tours in which the primary goal is to locate and follow dolphins. These operations guarantee dolphin sightings and conduct hourly tours from 11:00 a.m. to 8:00 p.m. daily in the summer. The other two companies locate and follow dolphins but also anchor at a nearby island to allow passengers to collect seashells and snorkel. Therefore, the time spent locating and following dolphins during these tours is limited to allow more time for recreation on the island. The length of these tours varies from 2 to 4 hours, and three to five trips are conducted daily during the summer.

In this area of Florida, dolphin-watching operations are believed to exhibit the potential for harassment based on past observations of their interactions with bottlenose dolphins (K. Wall, NOAA Office of Coastal and Resource Management, Silver Spring, MD, personal communication). The Marine Mammal Protection Act (MMPA) protects marine mammals from disturbance or harassment and prohibits feeding or attempting to feed marine mammals in the wild (50 CFR 216.3). In addition, the National Oceanic and Atmospheric Administration (NOAA) has created special regulations for endangered marine mammals with regards to vessel approach distances. According to the regulations, it is illegal for a vessel to approach within 100 yards (91.4 m) of humpback whales (*Megaptera novaeangliae*) in Hawaii and Alaska or within 500 yards (460 m) of North Atlantic right whales (*Eubalaena glacialis*) (50 CFR 224.103; NMFS, 2001). However, there are no distance regulations for other marine mammal species.

NOAA does not support, condone, or approve of any activities that involve closely approaching or interacting with wild marine mammals. This includes all swim-with programs and land/vessel-based operations that operate in close proximity to marine mammals and/or behave in a negligent manner (NMFS, 2002). To minimize potential harassment and promote responsible viewing, NOAA has developed guidelines for tour operators and the general public (these are recommended guidelines and not regulatory requirements). NOAA has constructed specific guidelines for various regions of the US. The Southeast Regional Guidelines, which include Florida, are as follows:

- remain a respectful distance from marine mammals—50 yards (yd)/46 meters (m) from dolphins, porpoises, and seals;
- time spent observing marine mammals should be limited to 0.5 hours;
- leave the vicinity of animals if you see signs of disturbance;
- marine mammals should not be encircled or trapped between watercraft, or watercraft and shore—avoid approaching an animal when another vessel is near;
- any vessel movement should be from the rear of the animal; and

- if approached by a marine mammal, put your watercraft's engine in neutral and allow the animal to pass (NOAA, 2005).

These guidelines rely on voluntary compliance of the general public and commercial tour operators.

Despite the existence of these guidelines since the late 1980s, harmful interactions between humans and marine mammals still occur (Colborn, 1999; Samuels & Bejder, 1998). Some of the current tour operations in Clearwater have been known to violate the guidelines to get a better view of the animals and/or entice wake jumping (K. Wall, NOAA Office of Coastal and Resource Management, Silver Spring, MD, personal communication).

Education is not explicitly addressed in the list of guidelines, but it is an important aspect of nature-based tourism. The Scientific Committee of the International Whaling Commission (IWC, 1997) has recognized the importance of educating tourists and recommends that all whale watching, including dolphin watching, should provide high-quality educational programs. Interpretation, a particular type of education, is often regarded as the key to effectively educating tour participants and managing the tourism industry (Orams, 1996). Tilden (1957) defined interpretation as "an educational activity which aims to reveal meanings and relationships through the use of original objects, by firsthand experiences, and by illustrative media, rather than simply to communicate factual information" (p. 9). In relation to marine mammal tourism, effective interpretation programs should not only provide basic biological information (i.e., name of species observed, what they eat, how long they live, etc.) but also include discussion of recent scientific research, current threats to marine mammals, and suggestions for activism (Russell, 2001). In addition to regulations and viewing guidelines, interpretation programs play an important role in tourism management (Orams, 1996). Effective interpretation programs can increase visitor satisfaction, reduce negative participant impacts by encouraging voluntary behavioral change (Orams, 1996), and promote environmental advocacy by instilling an appreciation of nature in tour participants (Ross & Wall, 1999).

Although numerous studies have focused on quantifying the impacts of tour operations, few have investigated tour operating procedures and educational

programs or tour operator compliance with existing regulations and guidelines (e.g., Berrow & Holmes, 1999; Constantine & Baker, 1997; Scarpaci, Nugegoda, & Corkeron, 2003, 2004). Establishing such baseline information is critical for assessing potential impacts of tourism on target species and for determining any necessary long-term changes required for tour operations. The present study quantifies operator compliance with the NOAA guidelines, examines the structure of tour educational programs, and assesses dolphin behavior during encounters with tour vessels in Clearwater.

Methods

During June 2003, data were collected onboard the five commercial dolphin-watching boats in the Clearwater, Florida area (Fig. 1). The vessels consisted of a 12-m tugboat, two 14-m pontoon boats, a 22-m speedboat (with two 900 HP Diesel engines), and a 125-passenger outboard motorboat. Two researchers conducted observations of tour operations when room was available onboard and weather permitted. To preserve the confidentiality of the five tour companies, they are referred to as Company A, B, C, D, and E in this study. All tour operators were aware that researchers were onboard to observe dolphin behavior and the interactions between tour vessels and dolphins.

During each trip the number of passengers and total time of the trip were recorded. The position of the vessel was also recorded every minute using a handheld GPS unit. These positions were later converted into shapefiles using ArcInfo (ESRI Version 8.0.1), and the tour routes for each company were mapped. To determine operator adherence to the NOAA viewing guidelines, the operators' behaviors were evaluated during encounters with dolphins. An encounter was initiated when an operator sighted a dolphin and purposefully moved the vessel toward the individual or group or when a dolphin approached the vessel. An encounter ended when the operator moved the vessel away from the individual/group or when the individual/group moved away and the vessel did not follow.

Field estimates of the total number of adults and calves and the predominant behavioral state (Table 1) were recorded during each encounter. Calves were defined as dolphins at least half the size of adults



Figure 1. Operator routes and dolphin encounters.

Table 1
Dolphin Behavior Categories Modeled on Shane et al. (1986) and Allen and Read (2000)

Behavior	Description
Forage	Dolphin seen with fish in mouth, diving deeply and rapidly, swirling rapidly near the surface, or seen directly pursuing a fish
Travel	Movement in a persistent manner without frequent changes in direction
Mill	Movement with frequent changes in heading in a given area
Social	Behaviors such as mating, rubbing, playing, and leaping
Rest	Also known as idling, refers to dolphins engaged in slow movements without including components of the other behaviors

and consistently associated with an adult (Constantine, 2001). Minimum estimates of group size were recorded when exact numbers could not be determined. To assess possible cumulative impacts of vessels, the number and type of all watercraft within 100 yards of the target individual/group were also recorded during each encounter. With respect to the guidelines, data were collected in terms of approach distance, viewing time, response to potential disturbance behaviors, approach maneuvers, and vessel maneuvers within 50 yards of dolphins.

Approach Distance

According to the guidelines, operators should not approach within 50 yards of marine mammals (NOAA, 2005). To assess the distance between tour vessels and dolphins, the distance (in yards) to the nearest dolphin was recorded at each surfacing. It is difficult for laser rangefinders to focus on fast-moving dolphins or their fluke prints in the water. A laser rangefinder (Bushnell Yardage Pro Compact 800) was used to determine distances on the water when possible. At each surfacing of the nearest dolphin, researchers agreed upon a distance estimate. If dolphins approached the vessel within 50 yards, as opposed to the vessel approaching dolphins, the tour operator was not considered in violation of the distance guideline.

Percent compliance with the approach distance guideline was calculated by comparing the proportion of vessel maneuvers greater than 50 yards from dolphins with those maneuvers taking place within 50 yards. Maneuvers in which operators stayed 50 yards on course (constant speed and heading) and dolphins approached the vessel to bowride or wake jump and those instances in which the vessel was in neutral were not included in the calculations. Only instances in which operators actively approached dolphins within 50 yards were included.

Viewing Time

Because prolonged exposure to vessels may increase the likelihood of disturbance, NOAA recommends a viewing time limit of 30 minutes (NOAA, 2005). Therefore, operators should limit their dolphin encounters to no more than 30 minutes. The total time of each dolphin encounter was recorded.

Response to Potential Disturbance Behaviors

In addition to shortening viewing time when multiple vessels are present, operators are advised to leave the vicinity if they see signs of potential disturbance (NOAA, 2005). According to the guidelines, signs of disturbance include, but are not limited to, the following dolphin behaviors: rapid changes in direction or swimming speed; erratic swimming patterns; escape tactics such as prolonged diving, underwater exhalation, underwater course changes, or rapid swimming at the surface; tail slapping or lateral tail swishing at the surface; or a female attempting to shield a calf with her body or by her movements (NOAA, 2005). Potential dolphin disturbance behaviors and the operator's subsequent response were recorded by continuous observations. The proportion of encounters that ended when dolphins exhibited potential disturbance behaviors was calculated.

Approach Maneuvers

To assess the boat handling techniques of operators during dolphin encounters, the operators' maneuvering methods (Table 2) were recorded after each surfacing of the nearest individual or group of dolphins. NOAA recommends approaching dolphins from behind, avoiding excessive speeds or sudden changes in speed or direction, and not encircling or trapping marine mammals between watercraft or watercraft and the shore (NOAA, 2005). According to NOAA enforcement, enticing dolphins to jump in the wake of the tour vessel is not considered harassment if the operator does not change speed or heading (i.e., remains on course) while passing parallel to dolphins from a minimum distance of 50 yards (G. Freselli, NOAA Fisheries Enforcement, Southeast Office, St. Petersburg, FL, personal communication). Therefore, these maneuvers were only considered in violation of the guidelines if operators passed within 50 yards of the dolphins and/or changed direction or speed while dolphins were wake jumping or bowriding. Therefore, appropriate approach maneuvers included behind, parallel, neutral, and on course methods (Table 2).

Maneuvers Within 50 Yards

According to the guidelines, an operator should shift the vessel into neutral if a dolphin approaches

Table 2
Operator Maneuver Methods

Maneuver	Description
<i>Behind</i>	<i>Movement directly behind or flanking dolphins</i>
<i>Parallel</i>	<i>Movement beside and in the same or opposite direction of dolphins</i>
<i>Neutral</i>	<i>No movement; engine is in neutral</i>
<i>On course</i>	<i>Maintaining constant speed and direction while dolphins bowride or wake jump</i>
Head-on	Movement towards dolphins with vessel positioned directly in front of the individual/group
Side-on toward	Movement towards dolphins with vessel positioned perpendicular to the individual/group
Side-on away	Movement away from dolphins with vessel positioned perpendicular to the individual/group
Circle	Movement in a circle around dolphins (also known as corralling)
Over	Movement directly over a dolphin or through a group of dolphins
Turn toward	Repositioning the vessel by turning towards dolphins
Turn away	Repositioning the vessel by turning away from dolphins
In front	Movement directly in front of and in same direction as dolphins
Reverse	Shifting engine into reverse

Maneuvers in compliance with the guidelines are in shown in italics.

within 50 yards of the vessel to allow the animal to pass (NOAA, 2005). From the distance estimations and operator maneuver data, the operator maneuvers within 50 yards were analyzed for compliance. Appropriate maneuvers within 50 yards included neutral or on course methods that allowed dolphins to pass by the vessel. All other maneuver methods were considered inappropriate within 50 yards of dolphins.

Analysis of Operator Compliance

Operator compliance with each guideline was assessed separately to compare compliance within and across tour companies. Each operator behavior during an encounter was classified as appropriate (in compliance with the guidelines) or inappropriate (not in compliance). From these binary response variables, the proportion of appropriate behaviors was calculated for each guideline and tour company. The proportions of appropriate behaviors were then totaled to determine overall operator compliance with the set of guidelines.

Photo Identification

When possible, the dorsal fin of each dolphin observed was photographed with an SLR camera, 300-mm lens, and color slide film. Researchers had no influence on vessel operations; photo identification was opportunistic and was attempted during each encounter. The location of dolphins during each

encounter was obtained by matching the time of each encounter with the times recorded from the GPS. Using ArcInfo (ESRI Version 8.0.1), these coordinates were converted into shapefiles, and the dolphin encounter positions were mapped for each tour company.

A grading scale was used to select fins for photo identification analysis, based on photographic quality of the image and the distinctiveness of the fin. Only those images of relatively good photographic quality and at least one distinctive feature were used for analysis. Each dolphin fin image was identified and assigned an identification number before being placed in a catalog. Each catalogued fin was then compared to all the others and matches were verified with another researcher before added to the catalog. These images were then matched with those taken by Duke University researchers during the summer of 1996 in Clearwater to determine possible long-term residence of bottlenose dolphins in the Clearwater area. Three researchers verified each match.

Analysis of Tour Education Programs

The tour companies' interpretation programs were evaluated by recording the educational information presented as part of each tour. Only information presented to all passengers onboard the vessel was considered part of the formal tour. Therefore, commentaries between captain and crew and/or conversations

between captain/crew and individual passengers were not recorded. A grading scale was used to determine the educational aspect of the tours. The scale ranged from 0 to 8 with 0 being the lowest level of education and 8 being the highest level. The educational information presented aboard each tour was reviewed, and one point was assigned for each of the following criterion:

1. Tour presented accurate information about basic dolphin biology (scientific name, size, diet, behavior, etc.).
2. Tour had a trained naturalist onboard to present the educational information.
3. Tour included information about the MMPA.
4. Operator/naturalist stated that swimming with dolphins in the wild is discouraged and could harm the animals and humans.
5. Operator/naturalist stated that it is illegal to feed dolphins in the wild.
6. Operator/naturalist discussed the recommended NOAA viewing guidelines.
7. Operator/naturalist presented information about activism and suggested specific ways in which tour participants can promote marine conservation in their daily lives.
8. Tour provided reference materials for participants (Protect Dolphins pamphlets, NOAA Fisheries Southeast Region Marine Mammal Viewing Guidelines pamphlets, etc.).

These criteria were based on suggestions from studies of marine mammal interpretation programs and surveys of tourists' expectations and needs on marine mammal tours (Orams, 2000; Russell, 2001). Educational programs that did not incorporate any of these components were given a rating of 0. An education score was calculated for each dolphin-watching trip and then averaged for each tour company.

Results

Data were collected for a total of 23 dolphin-watching trips. Because the surveys were opportunistic, the number of trips per tour company varied from three to six. The mean time per trip varied among tour companies and ranged from 64 minutes to 101 minutes. A total of 45 dolphin encounters

were documented. Approximately 10 of these encounters were recorded for each of the three primarily dolphin-watching companies (A, B, and C). Eight interactions were observed from Company D while five interactions were observed from Company E. The mean number of passengers per trip and tour company ranged from 17 to 40.

The operators had a 100% success rate of locating dolphins during this study period. Companies A, B, and C had similar tour routes; these companies operated mostly in Clearwater Pass and along the shores of Clearwater Beach and Sand Key (Fig. 1). Company E did not enter Clearwater Pass and remained north of Compass Island. Company D, on the other hand, operated mostly south of Compass Island and near the Indian Rocks Beach area. Dolphin encounters occurred throughout the Clearwater area, but most were west of Clearwater Pass along the shoreline of Clearwater Beach and Sand Key. The encounter points in Figure 1 represent the first position of dolphins recorded during each encounter with tour vessels.

The average group size per encounter was 4.5 dolphins ($SD = 2.96$); group size ranged from 1 to 12 animals. Approximately 27% of the encounters included a calf in the group. Frequently observed behaviors included milling (46%) and traveling (41%). Socializing and feeding behaviors were observed less frequently (2% and 10%, respectively), while none of the groups were seen resting during encounters with tour vessels. Thirty-three individual dolphins were photo identified during this study; 42% of these individuals were photographed during more than one encounter. Several dolphins were photographed on two different days during encounters with different tour vessels. One dolphin was photographed four separate times during the study period. Five of the 33 dolphins were matched to the Duke University Clearwater catalog, indicating long-term residence of at least 15% of the dolphins identified in this study.

The total number of watercraft within 100 yards of dolphin encounters was calculated to determine an estimate of the amount of boat traffic in the Clearwater area. Small recreational boats, including inboard/outboard motorboats and sailboats, accounted for 52% of the watercraft within 100 yards of dolphin encounters. The number of these vessels present during a single encounter ranged from 1 to

11. Twenty-two jet skis (33% of watercraft) passed within 100 yards of encounters; several of these jet skis approached within 50 yards of dolphins, while one jet ski, in particular, circled and moved directly over a group of dolphins with a calf. A maximum of four jet skis was documented during a single encounter. Other dolphin-watching boats comprised approximately 15% of the total watercraft within 100 yards of encounters.

Approach Distance

Clearwater operators adhered to the approach distance guideline approximately 57% of the time, with a range from 39% (Company A) to 78% (Company B). Company A operators frequently (61%) approached within 50 yards of dolphins. More than half of these approaches were between 10 and 40 yards when operators maneuvered parallel to dolphins to entice wake jumping. More than half of Company C's approaches were also within 50 yards, but these approaches were mostly from behind the individual/group.

Viewing Time

All operators complied with the viewing time guideline; no encounter exceeded the 30-minute limit. The mean viewing time of dolphin encounters was 10.20 minutes ($SD=6.45$ minutes, $N=45$ encounters). The mean viewing time for individual tour companies ranged from 7.38 minutes ($SD=5.04$ minutes) to 11.67 minutes ($SD=5.64$ minutes). The longest recorded encounter was 26 minutes, but most (73%) encounters were less than 15 minutes.

Response to Potential Disturbance Behaviors

None of the operators complied with the disturbance guideline. Dolphins displayed potential disturbance behaviors during approximately 25% of the monitored encounters, but none of the operators ended encounters or left the vicinity of the animals during these events. Potential disturbance behaviors were observed during dolphin encounters with all tour companies except Company D. Chuffing constituted 50% of potential disturbance behaviors, while tail slapping accounted for the other half. Operator maneuvers prior to the potential disturbance behaviors included neutral, head-on, parallel,

side-on, and behind methods. The distance from the dolphins ranged from 20 to 100 yards during these events. Fifty percent of the potential disturbance behaviors were observed when the vessel was within 50 yards of the dolphins. Calves were present during 80% of the tail slapping events and 60% of the chuffing events.

Approach Maneuver Method

Clearwater operators adhered to the approach maneuver guideline during 77% of encounters. Parallel (26%), neutral (26%), and behind (18%) methods were the most common approach types. On course maneuvers (8%) were also recorded. The other 22% of approach maneuvers were not in compliance with the guidelines and included head-on, side-on toward, turn toward, side-on/turn away, and reverse methods. No circle, over, or in front maneuvers were observed.

The percentage of appropriate maneuvers was fairly consistent across tour companies and ranged from 69% (Company C) to 88% (Company E). Although Company C operators typically approached dolphins from behind, they also maneuvered side-on toward the animals. In contrast, Company E operators often approached from behind or shifted into neutral to allow dolphins to approach or pass by the vessel. Companies A and B mostly approached parallel to dolphins while Company D frequently shifted into neutral during encounters.

Maneuvers Within 50 Yards

Compliance with maneuvers within 50 yards of dolphins varied the most among individual tour companies. Overall, approximately 60% of total maneuvers within 50 yards were in compliance. The proportion of appropriate maneuvers ranged from 25% (Company C) to 79% (Company A). The low percentage of compliance with Company C operators was due to frequent maneuvers behind or parallel to dolphins within 50 yards. Inappropriate maneuvers among the other companies also consisted of parallel approaches within 20 to 50 yards of dolphins.

Overall Operator Compliance

Among tour companies, the company with the highest proportion of compliance behaviors was

Company C, which adhered to the guidelines only 38% of the time. As previously noted, Company C had a low proportion of compliance with approach distance, approach maneuvers, and maneuvers within 50 yards of dolphins when compared to the other companies. Overall compliance of the other companies was much higher and ranged from 60% (Company D) to 73% (Company B).

Compliance among all operators varied across the different guidelines (Fig. 2). Operators maintained 100% compliance with the viewing time limit but failed to end encounters when dolphins exhibited potential disturbance behaviors. Approximately 60% of the operators' behaviors adhered to the guidelines for approach distance and maneuvers within 50 yards. Operators complied with the approach maneuver guideline 77% of the time. Clearwater operators adhered to all the guidelines approximately 60% of the time.

Education Programs

The average scores of the educational component of the tours ranged from 1.0 to 1.75 out of a possible 8. None of the tour companies had trained naturalists onboard the tours. Instead, captains and crew shared information with participants and answered questions. Although many of the operators presented information about basic dolphin biology, few discussed the MMPA regulations or the NOAA viewing guidelines. Tours also lacked activism components and reference materials for participants. In addition, none of the operators were consistent in the information presented during each tour.

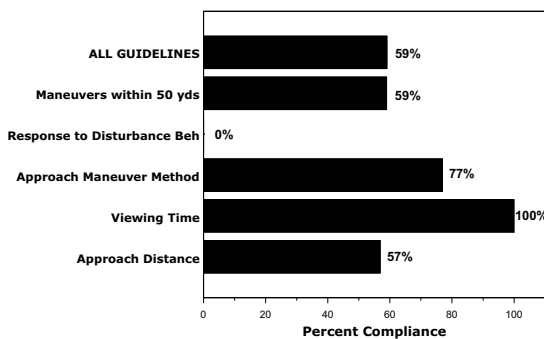


Figure 2. Guideline compliance among all tour companies.

Discussion

Dolphin-Watching Operations

Clearwater dolphin-watching operators did not fully adhere to the recommended viewing guidelines. The overall level of compliance was approximately 60%, but compliance with individual guidelines varied among tour companies. Operators maintained complete compliance with only the viewing time limit guideline. Unlike the other guidelines, the viewing guideline is simple to measure and does not require any special skills. Other studies have demonstrated that tour operators adhere to simple conditions with a single numerical value (Scarpaci et al., 2004).

Operators adhered least frequently to the only guideline that requires knowledge of dolphin behavior; all operators failed to end encounters when dolphins exhibited potential disturbance behaviors. Based on these results, it is evident that operators need to be trained to recognize dolphin behaviors so that they can identify the potential disturbance behaviors listed under the guidelines. Potential disturbance behaviors were observed during one quarter of all encounters, and most of these events were in the presence of a calf. Chuffing and tail slapping were the only potential disturbance behaviors observed during our study; however, other behaviors, such as a female attempting to shield a calf with her body or by her movements, are listed as disturbance behaviors in the recommended viewing guidelines. Operators need to be trained to identify all of the potential disturbance behaviors in the guidelines and should be conservative when estimating the distance between vessels and calves. Training should include descriptions of these behaviors, video examples, and on-the-water experience with scientific experts to verify behavioral observations.

Operators maintained a relatively high compliance with the approach maneuver guideline, and there was little variation among tour companies with respect to this guideline. Parallel and neutral were the most common maneuver methods used when operators approached dolphins. Operators also often used these maneuvers within 50 yards of dolphins. In these cases, the guidelines suggest shifting the tour vessel into neutral or remaining on course if dolphins approach while the vessel is en route. These appropriate maneuvers within 50 yards of dolphins were

observed frequently, but compliance was highly variable among tour companies. To improve compliance to the guidelines pertaining to approach maneuvers and maneuvers within 50 yards, operators would benefit from on-the-water training in which operators practice appropriate maneuver methods with government officials present to give immediate feedback.

Some maneuvers are appropriate when the vessel is greater than 50 yards from dolphins but not when the vessel is within 50 yards, so noncompliance to the guideline pertaining to maneuvers within 50 yards may result from the operators' difficulties in estimating distances on the water. Compliance to the approach distance guideline was highly variable, but overall most operators adhered to this guideline. According to Baird and Burkhart (2000), there is a high degree of variability associated with estimating distances between whale-watching boats and humpback whales in Hawaiian waters. In this region, distance estimation abilities appeared to improve with experience; vessel captains were more accurate than inexperienced naturalists or crew members (Baird & Burkhart, 2000). On-the-water training and practice with laser rangefinders were recommended to improve distance estimation between whale-watching boats and humpback whales (Baird & Burkhart, 2000).

Similar training would likely benefit Clearwater operators, particularly because it is often difficult to focus rangefinders on fast-moving dolphins or their fluke prints in the water. Unlike viewing times and maneuver techniques, the distance guideline requires skill and accuracy in estimating distances between moving vessels and dolphins and may result in unintentional violations. Although distances are often difficult to judge at sea, this guideline is particularly important in minimizing harassment because close proximity may provide the greatest risk of disturbance (Orams, 2000). The low level of compliance with the distance guideline may also be attributed to the desire of the operators to satisfy participant expectations. However, many participants value education and other aspects of marine mammal tours above proximity to marine mammals (Orams, 2000).

Operators need to discuss the viewing guidelines with tour participants before a dolphin encounter so that the participants have a clear understanding of what to expect on their tour and are not disappointed

when the operator abides by the guidelines. This sort of information can be included in a structured educational program for each tour. The Clearwater operators lacked any significant educational components to their tours; none of the tour companies offered structured interpretation programs. Most of the tours included information about basic dolphin biology (size, food, weight, etc.), but this information was not consistent among the tours or companies. Few operators mentioned the MMPA during the tours, and only one tour included information about the viewing guidelines. In addition, none of the companies had trained naturalists or interpreters onboard their vessels. The captain and/or crew members presented information during the tours but did not provide questionnaires to participants. Without feedback from participants, companies may not know how to improve their operations to provide greater participant satisfaction. The Clearwater tour companies are relatively small and may not be able to afford trained naturalists. Also, because most of the tour vessels in Clearwater are small (mean number passengers per vessel ranged from 17 to 40), operators may be unwilling to have a naturalist take the space of a potential paying customer or be willing to incur this additional cost. Nevertheless, captains/crew members could be trained to conduct interpretation programs on dolphin-watching tours.

Efforts to Improve Operator Compliance and Promote Education on Tours

Training Workshop. The results of our study indicate that operator compliance could be improved with the necessary training. Based on the low level of compliance and lack of structured interpretation programs, operators may lack incentive and/or understanding regarding the guidelines and consequences of irresponsible viewing practices on wild marine mammals. A training workshop is recommended to teach operators about the viewing guidelines, industry best practices, and effective interpretation program components. An effective workshop would consist of two components: a classroom discussion and a field training session. In the classroom, government officials can explain and facilitate discussions to address how feeding and harassing wild dolphins can harm animals and humans. Laws and regulations for protecting wild dolphins, as well as

the recommended marine mammal viewing guidelines, should be presented to operators along with an open-forum discussion on how to implement these best practices into existing tour operations. This classroom component would also include an educational session in which captains/crew members are trained to conduct interpretation programs on the tours.

The field session of the workshop would consist of on-the-water training in which government officials escort the operators and train them in appropriate viewing techniques. NOAA officials have previously met with tour operators to interpret the MMPA regulations and viewing guidelines but no formal training has been conducted. Particularly in regards to potential disturbance behaviors and vessels maneuvers, a field or vessel-based training would be a critical component of the workshop. During this portion of the workshop, tour operators can practice appropriate maneuvers near dolphins and learn to identify potential disturbance behaviors. Operators would also receive immediate feedback from workshop officials during dolphin encounters.

In addition to commercial operators, the training workshop could be open to local recreational boaters and jet ski rental operators. Recreational boats accounted for approximately half of the vessel traffic within 100 yards of dolphins; jet skis accounted for a third of this traffic and often approached dolphins. During several encounters when dolphins jumped in the wake of the tour vessels, jet ski operators joined in this activity and moved within 50 yards of the dolphins. Jet ski operators can be extremely quick and frequently change direction; therefore, their movements are less predictable than larger watercraft. The viewing guidelines apply to all watercraft operators, including jet skis, kayaks, and other recreational watercraft. Therefore, these operators would also greatly benefit from the training workshop. Jet ski companies, in particular, need a clear understanding of the guidelines so that they can relay this information to jet ski renters.

Monitoring Programs. The training workshop would provide an opportunity for government officials, researchers, and operators to work together to improve upon the existing set of guidelines. Site-specific guidelines could address conditions unique to

Clearwater and minimize the potential for harassment in this area. The potential for cumulative impacts of dolphin-watching operations should be considered in such site-specific guidelines.

The training workshop would also provide an avenue for government officials to promote compliance with the guidelines. Because the guidelines are not regulatory requirements, NOAA cannot enforce their compliance. However, government officials must ensure that marine mammals are protected from harassment. In many countries, government agencies regulate marine mammal tourism by issuing marine mammal tourism permits, which are required for commercial operators. There are variable conditions of permits. Some government agencies allocate certifications or permits only to operators who complete training courses or abide by certain regulations or guidelines. Permitting systems are often used to restrict the number of tour vessels and the frequency of operations (Constantine, Brunton, & Dennis, 2004; Scarpaci et al., 2003). Unless or until such programs are required in the US, volunteer certification programs offer a viable alternative. Operator training workshops are potential avenues for the development of certification programs. To ensure operator compliance with the guidelines, an annual certification renewal system could require operators to attend a training workshop annually and be subject to periodic inspections/assessments by government officials. This would allow new captains/crew members to receive the same training so that compliance does not falter when tour companies acquire new operators. In some cases, permits require operators to provide support for research either by financially contributing directly to research organizations or by providing their vessels as platforms for research activities (Orams, 2004).

Future Studies

Because the tour operators were apprised of the nature of this study, it is possible that the researchers' presence on the tour vessels may have influenced the tour operations. Therefore, the true level of compliance when no observer is present may actually be lower than what was found in this study. To avoid the potential bias of an observer being onboard the tour vessels, future studies could include observations from shore-based or alternate vessel platform.

Although shore-based observations would be preferable, this method would be logistically challenging in the Clearwater area because there are no ideal locations from which a researcher could observe most of the tour encounters with dolphins. Moreover, the alternate vessel platform could possibly interfere with dolphin behavior during tour encounters. A combination of these methods in addition to observations from tour vessels may provide the most accurate results in future studies.

For marine mammal tourism to be a sustainable economic industry with few adverse effects on the targeted animals, a long-term management regime is essential. Such a regime also requires an understanding of the ecology and conservation status of the target animals. To acquire this baseline information, a basic research program is required to investigate the abundance, population structure, distribution, movement, and habitat use patterns of dolphins in Clearwater. In addition, such a program could assess the potential short- and long-term impacts of tour operations. As shown by the results of our modest photo identification analysis, there appears to be a relatively small population of bottlenose dolphins that exhibits long-term residency in the Clearwater area. Information on the habitat preference of these dolphins, particularly their foraging and resting areas, is not known but is required to assess the long-term ecological impacts of dolphin-watching operations. Allen and Read (2000) found that bottlenose dolphins decreased their use of primary foraging habitats during periods of high vessel traffic in two areas near Clearwater. Dolphins in Clearwater may also shift habitat preferences in response to high vessel densities, especially during the summer. For instance, information on habitat use will be important for determining critical areas that may need to be no-go areas in which tour companies cannot operate. This and other baseline information is necessary to ensure that the existing guidelines effectively minimize harassment of bottlenose dolphins in Clearwater. Results of these studies may also identify new guidelines that are needed in this area.

Conclusion

Clearwater dolphin-watching operators did not fully adhere to the recommended viewing guidelines. Limited but not no

lines. Operators maintained complete compliance with the viewing time limit but failed to end encounters when dolphins exhibited potential disturbance behaviors. Operators approached dolphins within the 50-yard distance limit and used inappropriate techniques to maneuver around dolphins. The overall level of compliance was approximately 60%, but compliance with individual guidelines varied among tour companies. Tours lacked structured educational programs and provided minimal information to tour participants. Operator compliance could be improved through proper classroom and on-the-water training. Captain/crew members can also be trained to conduct education programs on the tours. Through the development of a Clearwater code of conduct, Clearwater operators could improve upon existing guidelines and address possible cumulative impacts of the industry. Establishment of a long-term monitoring program is needed to ensure continued operator compliance and to examine the long-term effects of tourism on the local dolphin population. Behavioral studies of dolphins before, during, and after encounters with tour vessels would provide much needed insight on the possible effects of tourism and would help to further define potential disturbance behaviors. This study provides baseline information on operator compliance in Clearwater. Additional compliance studies should be conducted after management practices, such as the training workshop, are in place. This will allow managers to evaluate changes or improvements with compliance and the effectiveness of these management tools.

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Blunt Trauma Observed in a Common Dolphin *Delphinus* sp. Likely Caused by a Vessel Collision in the Hauraki Gulf, New Zealand

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While coastal cetaceans can become habituated to watercraft, that may not prevent their injury or mortality as a consequence of vessel strike. Here we report a case of a likely collision between a Common Dolphin *Delphinus* sp. and a recreational vessel in the Hauraki Gulf, New Zealand. Injuries sustained by the immature male dolphin were fatal. Recovery and subsequent post-mortem of the carcass revealed a transection of the spinal cord, with the vertebral column sustaining fractures between L17 and Cd7 and between Cd3 and Cd8 of the neural and transverse processes, respectively. Cd4 likely received the brunt of the impact given the vertebral body and epiphyses were also fractured. Paralysis of the lower trunk and associated extensive internal injuries resulted in a live stranding and subsequent mortality. Injuries sustained were consistent of those of blunt force trauma, a consequence of an impact caused by a collision with a small watercraft, most likely a jet-ski. This incident reinforces the need for continued public education concerning safe water practices around marine mammals, which are protected under the New Zealand *Marine Mammals Protection Act 1978* and *Marine Mammals Protection Regulations 1992*.

Key words: mortality, collision, blunt trauma, management, New Zealand

INTRODUCTION

VESSEL collisions have been documented as a major source of human-related injuries and deaths in many marine taxa, notably reptiles (e.g., Hazel and Gyuris 2006; Grant and Lewis 2010), sirenians (e.g., Lightsey *et al.* 2006), and cetaceans (e.g., Wells and Scott 1997; Campbell-Malone *et al.* 2008). Collisions between vessels and cetaceans are a growing concern worldwide (e.g., Laist *et al.* 2001), with over 18 species affected by this issue (Van Waerebeek *et al.* 2007). Approximately 30% of worldwide collision reports include small cetaceans, challenging the assumption that only whales are affected (Van Waerebeek *et al.* 2007). Injuries resulting from direct contact between a boat and an animal's body range from minor physical disfigurements to extensive trauma and/or mortality (Andersen *et al.* 2008).

Within New Zealand, vessel collisions have been reported in several cetacean species including: Hector's Dolphins *Cephalorhynchus hectori*; (Stone and Yoshinaga 2000); Bottlenose Dolphins *Tursiops truncatus*; (Lusseau *et al.* 2002); Killer Whales *Orcinus orca*; (Visser 1999); several species of beaked whales *Mesoplodon* sp., *Ziphius cavirostris*, *Berardius arnuxii*; (Dalebout *et al.* 2004; Van Waerebeek *et al.*, 2007), Sperm Whales *Physeter macrocephalus*; (Van Waerebeek *et al.*, 2007), and several species of baleen whales *Balaenoptera* sp., (Van Waerebeek *et al.* 2007), particularly Bryde's Whales *B. brydei*; (Behrens and Constantine 2008; Stockin *et al.*, 2008a). Like most regions, marine mammals in New Zealand appear to be particularly susceptible in busy waterways (Stone *et al.* 2000; Behrens and Constantine 2008; Stockin *et al.* 2008a).

The Hauraki Gulf, on the east coast of the North Island, comprises one of the busiest ports and shipping lanes in New Zealand, as it is the primary sea access to Auckland, the country's largest city with over 1.4 million inhabitants. Movements of commercial and recreational vessels within the gulf transit through the habitat of several cetacean species, including Common Dolphins (referred to as *Delphinus* sp. given taxonomic ambiguity of the species within NZ waters, see Stockin *et al.* in press). *Delphinus* occur year-round within Hauraki Gulf waters (Stockin *et al.* 2008b), using these waters to feed (Stockin *et al.* 2009a), and nurse their young (Schaffar-Delaney 2004; Stockin *et al.* 2008b).

Here, we report on the extensive trauma present in a Common Dolphin examined ante and post-mortem following a likely collision with a small motorcraft in the Hauraki Gulf. Describing both ante- and post-mortem observations, we highlight the nature of injuries likely to be sustained by marine mammals involved in boat strike incidences.

MATERIALS AND METHODS

Live stranding

On 13 February 2011, members of the public reported a dolphin in danger of live stranding at Toroa Point, Torbay, Auckland, New Zealand (36° 41' 46.65" S, 174° 45' 38.58" E; Fig. 1). This animal had earlier been observed swimming off the bay with other conspecifics, where jet-skis were reportedly operating (Watts, pers. comm., Department of Conservation). Rangers from both the Department of

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Conservation (DOC) and the Auckland Regional Council (ARC) first attended the scene and identified the species as a Common Dolphin (Fig. 2a). Initially the animal was observed exhaling regularly while floating motionless in the shallows (50 m from beach, < 1 m water depth). However, shortly after rangers entered the water to assist, the dolphin began to roll clockwise beyond normal equilibrium. While attempting to maintain an upright body position for the dolphin in order to keep the blow hole above water, approximately another four to five exhalations were witnessed prior to death. The last exhalation was recorded *c.* 10 min after rangers first entered the water to assist.

The carcass was kept in the water until a recovery vehicle was available for collection. The dolphin was then transported *c.* 15 min to Massey University, Auckland, where the carcass was refrigerated (4°C) until a subsequent necropsy was undertaken.

Necropsy protocol

On 14 February 2011, a necropsy was performed on the dolphin (identified as KS11-08Dd and locally referred to as “*Toroa*”) using adapted standard necropsy protocols (Jefferson *et al.*, 1994). The procedure included recording external morphometric measurements (cm),

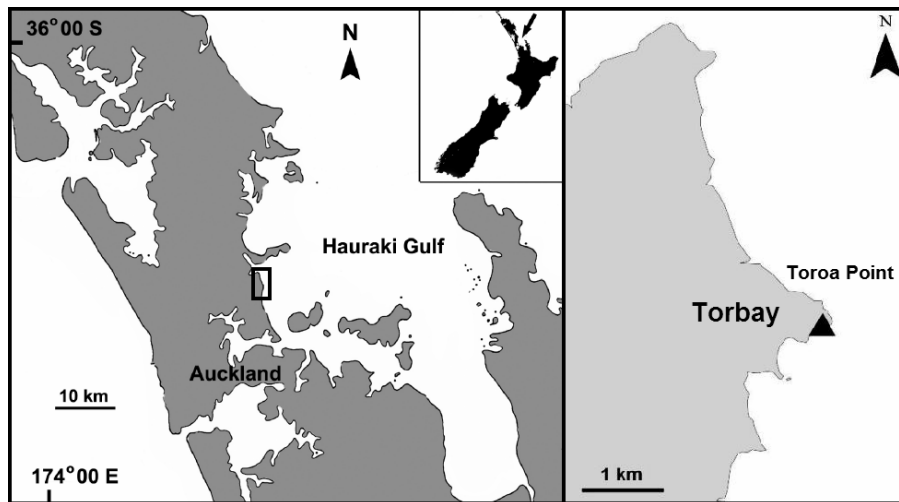


Fig. 1. Map showing the Hauraki Gulf, New Zealand and the location of the live stranding of a male Common Dolphin on 13/02/2011.

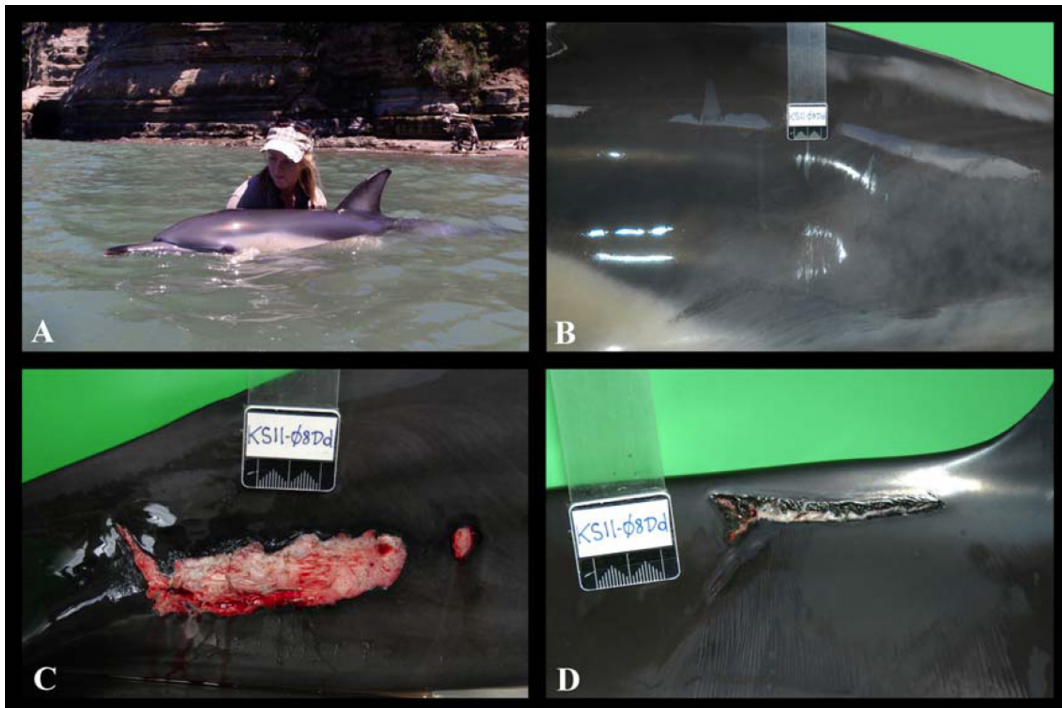


Fig. 2. A: DOC ranger Steph Watts attending fatally injured Common Dolphin KS11-08Dd ante-mortem. B: Concave indentation of the caudal left side of the body wall. C: Fresh linear wound along right side of the tail stock. D: Fresh linear wound on the right side caudal of the dorsal fin.

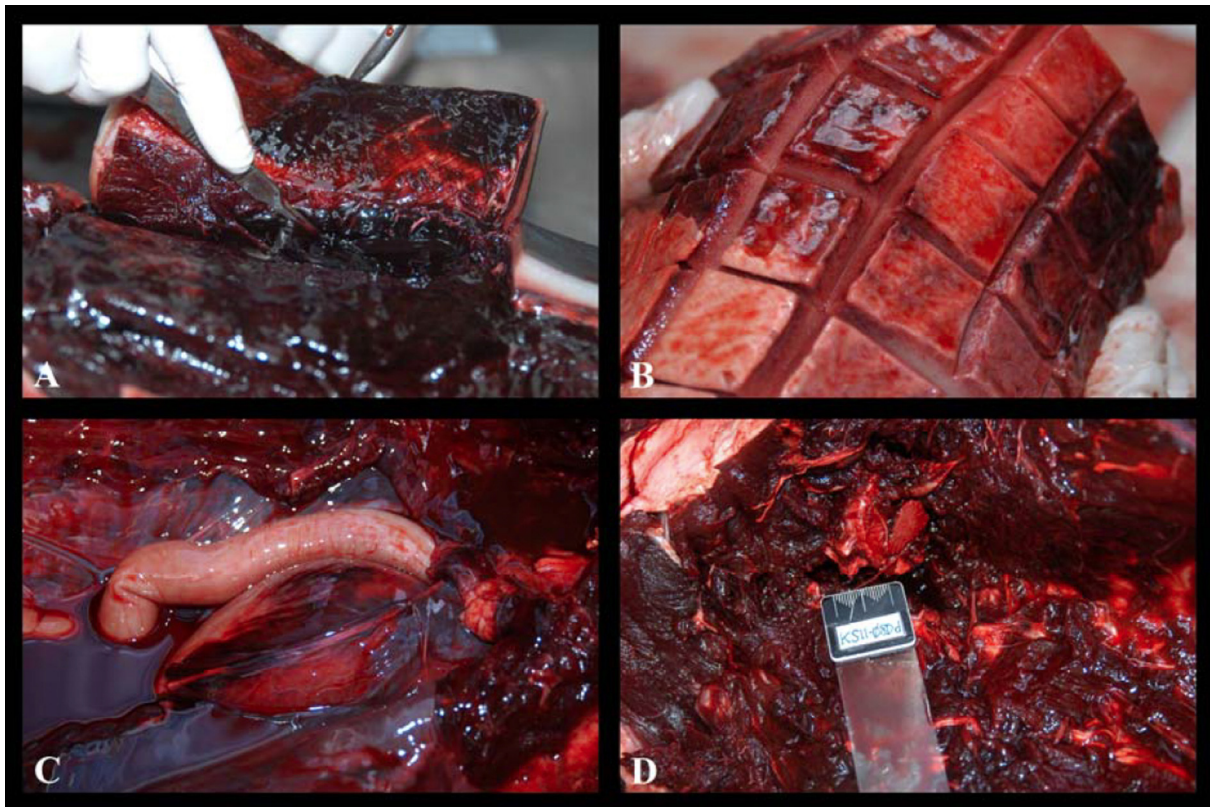


Fig. 3. A: Extensive trauma evident in the muscle and subcutaneous tissue of a male Common Dolphin KS11-08Dd. B: Extensive bruising of the blubber adjacent to indentation on the left flank. C: Severe bruising of the bladder wall. D: Fractured and dislodged caudal vertebra (Cd4) and associated epiphyses.

body weight (kg), and examination of the carcass for external lesions. Once the carcass was fully flensed, the subcutis was examined for evidence of trauma.

The internal organs were examined systematically and tissues sampled for histopathology, toxicology (blubber, muscle), and genetics (skin). The heart, liver, spleen and kidneys were weighed (g) and sampled. The testes and adrenals were carefully excized, measured (mm), weighed (g) and stored in 10% neutral buffered formalin for subsequent histopathology. The stomach was removed *in situ* and stored (frozen) until contents could later be examined. Gross lesions were photographed with a Nikon D70 camera with an 18–55 mm Nikkor lens. Teeth were counted and graded based on degree of wear and/or damage.

Finally, after the post-mortem the vertebral column, from the atlas bones to the caudal vertebrae, was retained and cleaned for subsequent analysis. Initially, excess flesh and soft tissues were hand removed using forceps and a knife prior to the remaining structures being submerged in horse *Equus caballus* manure. This process took approximately 12 weeks and

required regular aeration and hydration of the manure to facilitate decomposition. On disinterment, the bones were coded and labelled before drying and bleaching. The bones were then subsequently ordered, evaluated and photographed.

The definitions of cervical, thoracic, lumbar and caudal vertebrae are equivocal in cetaceans, in particular for the caudal region (Rommel 1990). The delimitation of the different regions of the vertebral column was based on De Smet (1977) criteria to facilitate comparisons with other Delphinids.

RESULTS

Ante-mortem observations

External injuries evident included a substantial concave indentation of the body wall on the left flank of the animal, a fresh superficial wound along the right side of the tail stock, and a further fresh injury just caudal of the dorsal fin, also on the right flank of the animal (Fig. 2b,c,d). The penis was extruded and had been from the first instant the animal was initially encountered.

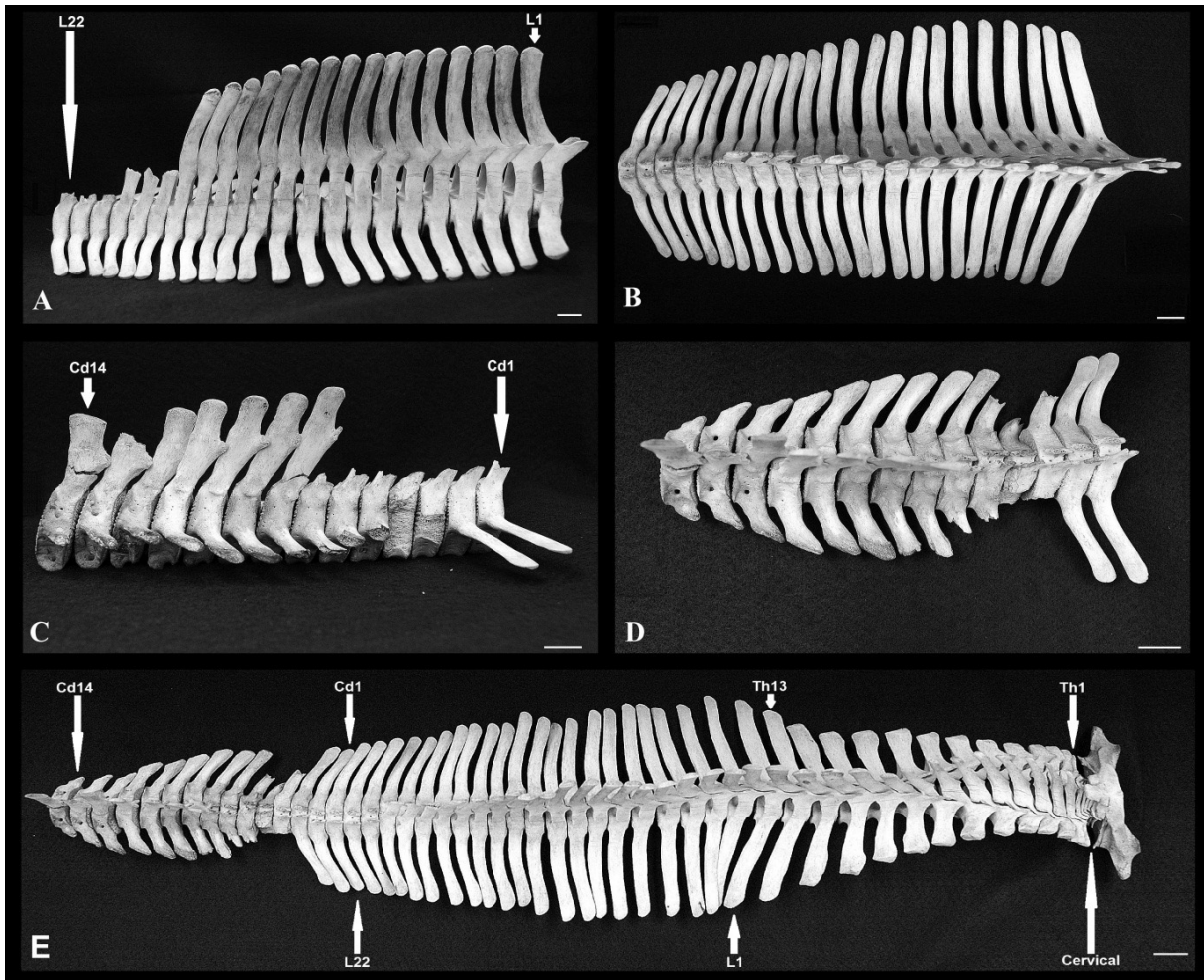


Fig. 4. A, B: Lumbar vertebrae (L1 to L22) of a male Common Dolphin KS11-08Dd. Note the fractures of the neural processes of L17 to L22. A: Right lateral view. B: Dorsal view. C, D: Caudal vertebrae (Cd1 to Cd14). Note the fractures of the neural processes from Cd1 to Cd7 and Cd13, fracture lines on Cd8 and Cd14. The transverse processes of Cd3 to Cd8 were also fractured. C: Right lateral view. D: Dorsal view. E: Dorsal view of the vertebral column from the cervical vertebrae to Cd14. All scale bars = 2 cm.

Post-mortem examination

Initial findings of the necropsy revealed that the male Common Dolphin weighed 71.0 kg and was 176.0 cm long, with an auxiliary girth measurement of 103.5 cm. The animal was in good body condition, with a recorded mean blubber thickness of 1.3 cm.

Body morphometrics and dentition fit the profile of a sub-adult, with all teeth fully erupted and little dentine wear evident. Examination of the reproductive tract indicated that this male was sexually immature, with no obvious testicular development. However, a vestigial post-anal hump or keel further suggested that this individual may have been at the onset of pubescence. Male Common Dolphins in New Zealand waters attain sexual maturity at an average length of 197.5 cm (Stockin *et al.* 2011).

Upon external examination, a substantial concave indentation of the body wall running perpendicular to the spine, just dorsum of the post-anal hump was clearly visible (Fig. 2b).

Furthermore, along the lower right flank, just cranial of the tail stock, a fresh superficial linear laceration (9.7×2.1 cm) was detected (Fig. 2c), with a further fresh (7.2×0.8 cm) injury evident just caudal of the dorsal fin (Fig. 2d). In addition to an extruded penis, extensor rigidity of the pectoral flippers was also noted. Upon flensing, extensive internal trauma extending over subcutaneous tissue and the muscle beneath the blubber was also evident along the left caudal section of the body (Fig. 3a), with prolific bruising evident throughout the adjoining blubber (Fig. 3b). These findings support a live impact injury, concurring with the visible external trauma and observations of the animal ante-mortem.

Stomach contents revealed the dolphin was weaned, with a digested fraction of hard parts (primarily otoliths, eye lenses and miscellaneous bones) present in all three chambers of the stomach. Faeces were also evident in the intestine and anus, further supporting recent feeding activity. At gross examination, all organs,

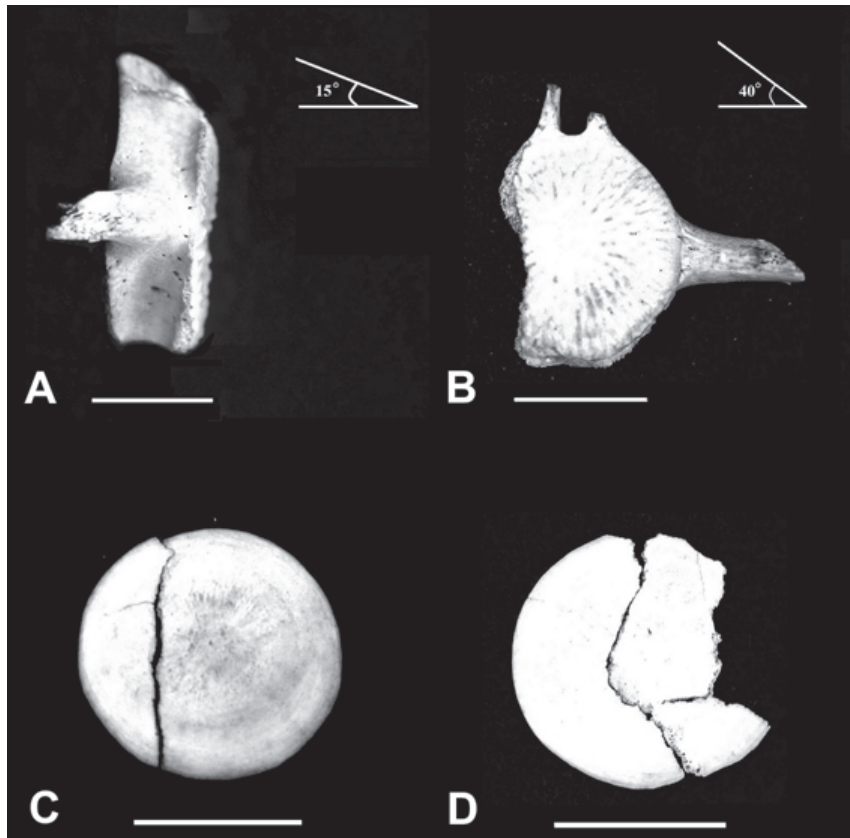


Fig. 5. Isolated caudal vertebra (Cd4) and associated epiphyses of a male Common Dolphin, KS11-08Dd. A: Ventral view showing fractures of the neural process, the left transversal process and vertebral body. B: Lateral view of Cd4. C and D: Cranial and caudal epiphyses with comminuted fractures, respectively. All scale bars = 2 cm.

glands and lymph nodes were unremarkable except for severe haemorrhage in the bladder wall (Fig. 3c), a likely consequence of acute blunt force. On dissection, additional bleeding was also evident within the bladder itself. Further evidence of extreme force was given by the complete fracture and displacement of the caudal vertebrae and epiphyses (Fig. 3d).

Subsequent examination of the vertebral column, post-flensing and cleaning, indicated oblique fractures of the neural processes on six lumbar (L17 to L22) and eight caudal (Cd1 to Cd7, Cd13; Fig. 4a,c) vertebrae. Fractures were primarily located at the level of the laminae or vertebral foramen (L18 to Cd8; Figs 4a,c,e), which protects the *medulla spinalis* (spinal cord). Simple fractures on the spinous processes of Cd8 and Cd14 were also apparent (Fig. 4c). In addition, the transverse processes of six caudal vertebrae (Cd3 to Cd8) sustained oblique fractures (Figs. 4d) both sides from Cd3 to Cd5 and on the right side only for the remaining three vertebrae. A closer inspection of the processes revealed that oblique fractures of the laminae on the left flank of the animal were closer to the vertebral body than those of the right flank and at 15° angle (Fig. 6a). Inversely, similar fractures on the transverse processes

were in closer proximity to the vertebral body on the right flank (Fig. 4d). Furthermore, on Cd3 to Cd5 there was a 40° alignment between the fractures of the laminae and the transverse process when observed on a ventral view (Fig. 5b). The extent of the damage in this region is likely associated with the concave indentation previously described (Fig. 2b), which is consistent with blunt force trauma. None of the seven cervical and 13 thoracic vertebrae were affected (Fig. 4e).

Cd4 exhibited the most damage as a result of the probable blunt force sustained by the animal, with a longitudinal and oblique fracture of the vertebral body and dorsal/transverse processes, respectively, as well as a comminuted (i.e., bone is splintered or crushed into multiple pieces) fracture of the intervertebral discs (Fig. 5c,d). Excessive blunt force also likely contributed to a fracture-dislocation of the caudal spine at the level of Cd4. As a consequence, the animal sustained a transection of the spinal cord (Fig. 3d), which led to damage to the dorsal and ventral branches of the spinal nerve and nerve roots. Extensor rigidity of the pectoral flippers and the protruding penis suggests that there was likely spinal damage in the cervical area and/or at the brachial plexus level.

DISCUSSION

In New Zealand, like in the rest of the world, motorcraft have been reported to affect delphinids physically (e.g., Visser 1999; Stone and Yoshinaga 2000; Lusseau *et al.* 2002) and behaviourally (e.g., Lusseau 2003; Constantine *et al.* 2004; Stockin *et al.* 2008c; Markowitz *et al.* 2009; Martinez *et al.* 2011). There is growing concern regarding vessel-collisions, with *c.* 30% of all reported cases globally involving small cetaceans (Van Waerebeek *et al.* 2007).

Collisions between cetaceans and boats can result in mortality from blunt trauma or severe propeller wounds (Andersen *et al.* 2008). Such incidents can be identified by prominent external parallel lacerations caused by propellers or blunt force impact. External characteristics of the latter can include massive bruising and deformities, which might not immediately be detected on physical examination (Laist *et al.* 2001). Internal blunt force trauma injuries, which are usually concealed, comprise but are not limited to, haemorrhaging, oedema, organ damage, and often, a concomitant ante-mortem fracture or displacement of skeletal elements (Lightsey *et al.* 2006; Andersen *et al.* 2008; Campbell-Malone *et al.* 2008). Andersen *et al.* (2008) developed an approach for differentiating between serious and non-serious injury in marine mammals and identified body trauma, in particular detectable fractures, as one of the serious injuries criteria.

Using the descriptions presented in Andersen *et al.* (2008), the Common Dolphin examined herein, suffered from acute serious injuries caused by blunt force trauma, including transection of the spinal cord and contusions. In Humans (*Homo sapiens sapiens*), pure dislocation is common in the cervical spine but rarely occurs in the lumbar spine given the amount of flexion necessary to disengage the large articular processes (Holdsworth 1963). Furthermore, as expected, human patients who sustained vertebral fractures and concurrent abdominal injury were more severely injured than those without abdominal injury (Rabinovici *et al.* 1999). This possibly reflects the increased force necessary to produce multiple injuries, given that the majority of such patients were involved in a motor vehicle collision.

In Common Dolphins, the lumbo-caudal region of the vertebral spine has a higher intervertebral joint stiffness compared with other parts of the column (Long *et al.*, 1997) and is subject only to minor shear and torsion (Boszczyk *et al.* 2001). This region appears to function as a rigid base of support for the muscles for propulsion through sagittal strokes of the fluke (Long *et al.* 1997; Buchholtz and Schur 2004). In cetaceans, rotational movement of the vertebral spine is minimal (Buchholtz and

Schur 2004). This indicates that an excessive amount of force must have, therefore, been applied to generate the extent of musculoskeletal and deep subdermal trauma observed in this particular Common Dolphin, including a completely severed caudal vertebra (Cd4) and fractures of spinous and/or transverse processes on 14 vertebrae.

Vessel size and speed are generally considered key determinants of the risk of collision and the severity of injuries sustained (see Laist *et al.* 2001; Vanderlaan and Taggart 2007; Andersen *et al.* 2008). Studies on whales have indicated that as speed increases, cetaceans are less likely to be detected (e.g., Best 1982) and consequently, the probability of a collision causing fatal or serious injury rises (e.g., Laist *et al.* 2001; Jensen and Silber 2003). At speeds exceeding 15 knots, chances of a lethal injury for whales increase asymptotically toward 100% (Vanderlaan and Taggart 2007). However, other variables such as cetacean species, age, size, mass, behaviour as well as vessel type, size, and angle of impact, are likely to affect those estimates. Nonetheless, vessel speed is regarded as a reasonable predictor of lethality (Laist *et al.* 2001; Vanderlaan and Taggart 2007). Given the extent of fatal internal injuries sustained and the absence of propeller marks on the carcass, it appears this individual was hit at a speed exceeding the recommended five knots (or no wake speed) under the *Marine Mammal Protection Regulations* (1992) and likely above 15 kts with the hull of the vessel.

Almost all types of vessel are known to be involved in collisions with cetaceans (e.g., Ritter 2009). This includes jet-skis (e.g., Chantrapornsy and Andersen 1995; Beck 2011), which, if not handled with caution, can present a threat to cetaceans. In the case reported herein, circumstantial evidence points toward one of the jet-skis present at the scene (Watts, pers. comm.). Jet-skis with their high manoeuvrability and speed in conjunction with quieter underwater acoustics, are a vessel type more difficult to detect and avoid for cetaceans.

In Florida, Wells and Scott (1997) reported a seasonal occurrence of vessel-collisions on Bottlenose Dolphins, which were also positively correlated with periods of higher-than normal boating activity. The authors suggested several possible reasons as to why some animals were more likely to be struck: a) the conditions and/or age of the dolphins; b) a seasonal shift in the distribution of the animals; and c) an increase in boat traffic during summer holidays. All three reasons proposed by Wells and Scott (1997) may be applicable here.

Data from vessel collisions suggest that most dolphins are either immature animals (calves to juveniles) or mothers with neonates (e.g., Wells

and Scott 1997; Stone and Yoshinaga 2000; Laist *et al.* 2001; Lusseau *et al.* 2002). Younger animals tend to be more vulnerable to collisions for several reasons: a) they are slower swimmers; b) they have limited diving capabilities; c) they spend more time at the surface and in shallower waters; and d) they are more inquisitive and less cautious of vessels (e.g., Constantine 2001; Laist *et al.* 2001). The latter reason is the most plausible in this case because the male Common Dolphin was considered immature. Play is important in many young developing mammals to help learn social and behavioural skills (Pagel and Harvey 1993). Play activity can involve a novel object such as a boat.

Within Hauraki Gulf waters, Common Dolphins are observed year-round (Stockin *et al.* 2008b). However, occurrence is affected by month, latitude and depth, with peak sightings reported around February (Stockin *et al.* 2008b). Furthermore, during the austral summer, between December and February, Common Dolphins are recorded more typically in shallower waters (Stockin *et al.* 2008b). This is consistent with other observations around New Zealand, where *Delphinus* move inshore during what appears to be the main reproductive season (Bräger and Schneider 1998; Neumann 2001).

Most collisions reported worldwide occur on the continental shelf or shelf slope, reflecting high usage by both vessels and cetaceans (Laist *et al.* 2001). This is particularly true for busy vessel routes or areas with a high concentration of vessels in a shallow and confined area. The Hauraki Gulf, which is adjacent to Auckland, the largest city in New Zealand (Statistics New Zealand 2012), has three major shipping channels. In addition to commercial ships, marine traffic in the region consists of a wide variety of vessels from both commercial and recreational fishing vessels to ferries, cruise liners, tour boats, motorboats, yachts and kayaks. Auckland is popularly known as the “City of Sails” with more vessels per capita than any other city in the world, with *ca.* one in three Auckland households owning a boat (NZ Herald 2010). During weekends and public holidays, there is a marked increase in vessel traffic, in particular sailing vessels, personal watercrafts (including jet-skis) and recreational fishing boats (Stockin *et al.* 2008c). It is not surprising, therefore, that vessel collisions with cetacean species using those waters occur. Free-ranging Common Dolphins (Massey University, unpublished data) and Bryde’s Whales (Wiseman 2008; Behrens and Constantine 2008) exhibit scars likely caused by propellers. Furthermore, the Hauraki Gulf has been identified as a high-risk collision area for Bryde’s whales (Behrens and Constantine 2008; Stockin *et al.* 2008a; Wiseman 2008).

The incident reported herein occurred in February, during the austral summer, when recreational boat activity in the Hauraki Gulf can be at its busiest. It is also plausible that ambient ocean noise could have masked the noise of the approaching vessel. Furthermore, given that the gulf is an area of high vessel traffic, this incident could have further been exacerbated by the possibility of tolerance or habituation to vessel traffic and/or noise, an issue highlighted in other species (Richardson *et al.* 1995; Nowacek *et al.* 2007, Bejder *et al.* 2009).

The frequency of vessel-collisions on this population is difficult to ascertain because the paucity of accurate vessel strike data. Incidents can go unrecorded as carcasses sink, wash out to sea, or wash up in remote locations (Behrens and Constantine 2008; Williams *et al.* 2011). Nonetheless, collisions between vessels and cetaceans can be expected to increase in the future, in line with Auckland’s growing population.

The incident reported herein highlights potential ignorance by the New Zealand public to current legislation and, therefore, the need to improve education for boaters on how to behave and handle their vessel in the vicinity of cetaceans. Marine mammals in New Zealand waters are legally protected under both the *Marine Mammal Protection Act* (1978) and the *Marine Mammal Protection Regulations* (1992). Although this statutory framework mainly applies for commercial whale- and dolphin-watching activities, they also apply to any incidental recreational interaction. Under the regulations, vessels must avoid rapid changes in both speed and direction (regulation 18e) and not exceed speeds faster than the slowest mammal within a vicinity of 300m (regulation 18m). Education of the boating public has been emphasized as a preventive measure for vessel-collisions (Visser 1999). This is particularly recommended for vessel speed, an important factor in vessel-collisions (e.g., Laist and Shaw 2006).

In summary, the risk of collision is inherent in this population. However, compliance with the current legislation appears to be the best approach to reducing incidents, particularly during austral summer months when boat traffic peaks. Finally, despite the laborious process, the extraction and preparation of vertebral columns has clear merit when examining for visible evidence of vessel collision. This is especially pertinent in cases where external injuries are less indicative of blunt force trauma.

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Effects of Boat Activity on the Behavior of Bottlenose Dolphins (*Tursiops truncatus*) in Waters Surrounding Hilton Head Island, South Carolina

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Abstract

During the summer of 1998, the effects of boat activity on the behavior of bottlenose dolphins (*Tursiops truncatus*) were investigated using 52 shore-based surveys along Hilton Head Island, South Carolina. Temporal autocorrelation indicated data collected on most variables should be analyzed in 6-min intervals. Responses to boats were categorized as “no response,” “behavioral response,” “change in direction of movement,” or “change in both behavior and direction.” Multiple boats had a greater influence on dolphin behavior and movement than the presence of a single boat. Dolphin-watching boats, motorboats, shrimp boats, and jet skis affected the group size and behavior of dolphin groups. Dolphin groups responded to dolphin-watching boats during 20% of observations, mainly with a change in both behavior and direction of movement. Motorboats caused a response in dolphins during 55% of observations, with a change in behavior or both behavior and direction. Jet skis had a more dramatic effect on dolphin groups, with 56% of groups changing their behavior and 11% changing both their behavior and direction. Shrimp boats always elicited a response. Dolphin groups changed both their behavior, and direction of movement to follow and feed behind these boats. In contrast, ships rarely caused a response, with groups changing their behavior but not their direction in 11% of observations. As the number of boats in the Hilton Head area increased, dolphin groups heightened responses—that is, changed both behavior and direction of movement. These boat-related effects on bottlenose dolphin behavior are considered “harassment” under the U.S. Marine Mammal Protection Act (1972) and should be scrutinized by agencies responsible for public education and enforcement of protective legislation.

Key Words: bottlenose dolphin, *Tursiops truncatus*, human impact, boat response, conservation, vessel traffic

Introduction

Bottlenose dolphins (*Tursiops truncatus*) inhabit bays, sounds, estuaries, and coastal waters of the Atlantic Ocean. They often are found in harbors and even ascend many miles into rivers (Leatherwood & Reeves, 1983). The human population is dense in these areas, and the water areas are heavily used for recreational and commercial boating. Research has focused primarily on the biology and ecology of these animals, so there is still a great deal to understand about the possible impacts of human activities, such as boating, on dolphin behavior.

Only a limited number of studies on the effects of boats on cetaceans are published (Au & Perryman, 1982; Baker et al., 1982; Bejder et al., 1999; Janik & Thompson, 1996; Kruse, 1991; Nowacek et al., 2001; Polacheck & Thorpe, 1990). Impacts of boat activity on marine mammals are of particular concern in coastal areas because of the large number of boats, their widespread use, high noise level, speed, and mobility (Richardson et al., 1995). Boats pose both direct and indirect threats to dolphins. Boats can cause dolphins to change movement patterns, alter behavior, or can even collide with dolphins (Gubbins, 2002). Powerboats emit high amplitude—that is, continuous underwater noise that could disrupt echolocation, mask communication, or cause temporary or permanent physical damage to a dolphin’s ears (Ketten, 1998). Indirect effects of boat traffic include influencing prey movement, degrading habitat quality, or causing avoidance of critical feeding or breeding areas (Richardson et al., 1995). Janik & Thompson (1996) reported that the dominant behavioral responses of cetaceans to boat traffic were an increase in swim velocity, spatial avoidance, and change in diving patterns.

Hilton Head Island, South Carolina (32° 10' W, 80° 45' N), with its creeks, marshes, and coves, and the adjacent Calibogue Sound, is a typical coastal estuary habitat. Boat traffic there is heavy, including commercial shrimp boats, commercial

dolphin-watching boats, motorboats, ships, ferries, jet skis, sailboats, kayaks, and wind surfers. Summer is the peak tourist season, resulting in high boat activity during the season when there is a peak number of bottlenose dolphins in the area (Gubbins, 2002). Herein, we report the results of research to study the effects of boat activities on the behavior and group structure of bottlenose dolphins in waters off Hilton Head Island.

Materials and Methods

Study Area

The study was conducted along the southern portion of Calibogue Sound, South Carolina (Figure 1). Bottlenose dolphin groups were observed from shore to eliminate any effect(s) of the observer/observation platform on the dolphins' behavior. Observations were made from South Beach, which is approximately 1610 m long, runs predominantly north to south, and provides a good location for observations of dolphin groups in an area of dense boat activity.

Data Collection

Data were collected from 1 June to 5 August 1998. Weather permitting, surveys were conducted for

approximately 4 h each day. Existing beach markers, 160 m apart, were used to record the observer's location on the shore. Each survey started at Marker 7 and MCM walked along the beach north or south (direction chosen at random) and searched for dolphin groups offshore using binoculars. Once at the north end of the beach (Marker 0) or the south end (Marker 10), she stopped for approximately 5 min, reversed heading, and continued the survey, walking in the opposite direction until the entire survey area was covered at least four times each day. Surveys were conducted between 0700 and 2000 h in a pre-determined order to provide equal sample sizes throughout daylight hours and at each tidal stage. Observations were made when the Beaufort Sea state was ≤ 4 .

Although dolphins that were far offshore were observed during the study, only bottlenose dolphins within approximately 100 m of shore were noted for this study. Data were collected using instantaneous/scan-sampling methods (Mann, 1999; Martin & Bateson, 1993), Canon 8 x 32 binoculars, and a stopwatch. A group was defined as all individuals in the same approximate area (≤ 10 m apart) engaged in the same behavior (Petricig, 1995; Smolker et al., 1992). Each group was observed from the initial sighting at 2-min

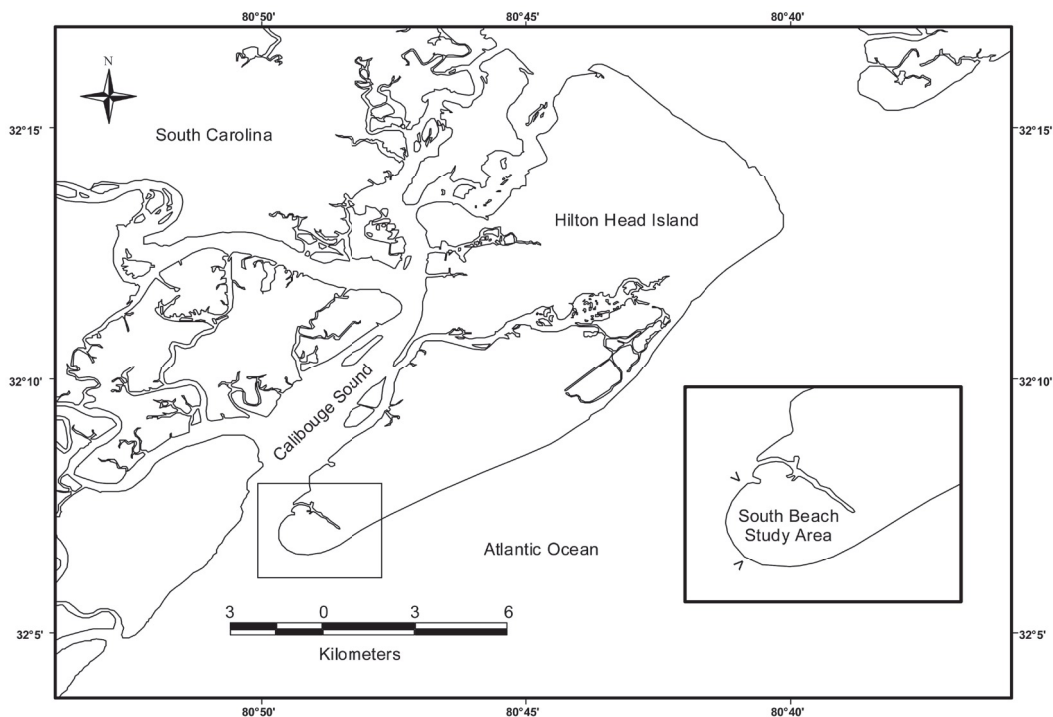


Figure 1. Map of Hilton Head Island, South Carolina; inset of South Beach Study Area; > < indicates the area of the walking survey.

intervals for a 12-min period. Once a group was observed for 12 min, or was no longer in view, the walking survey continued. If a second group appeared during the 12-min period, the presence of the new group was noted, but observations were continued on the first group.

Dolphin group behavior was categorized as “feed,” “travel,” “rest,” “social,” “sexual,” or “other activities” (such as begging and approaching a boat). Feed was defined as engaged in foraging and broken down into single feed, barrier feed, cooperative feed, or shrimp boat feed. Travel was defined as swimming in a single direction at a constant speed, while rest was defined as floating stationary at the surface. Social behavior was defined as interactions among individuals or between groups of dolphins. Sexual behavior was defined as ventrum to ventrum rubbing or tandem swim by two dolphins, erection, and/or intercourse.

Four categories—“movement with the tide,” “against the tide,” “across the tide,” or “no net movement”—defined direction of dolphin group movement. A change in movement direction was the altering from one movement category to another. Such changes in direction were important because they could indicate a response to a boat(s).

Inter-animal distance (IAD), or spacing of dolphins within a group, was categorized as “very tight” touching or < 1 m; “tight,” 1 to < 2 m; “moderate,” 2 to < 3 m; “loose,” 3 to < 4 m; or “very loose,” 4 to < 5 m (Gubbins, 2000). The same distance categories were used to estimate boat-animal distances (BAD) (e.g., a boat 2 to < 3 m from a dolphin was categorized as “moderate”).

Nine categories of boats were defined. “Dolphin-watching boats” were inflatable zodiac boats (6 or 7 m in length) used by tourist companies. “Motorboats” were any sports-craft with an inboard or outboard motor. “Ships” and “ferries” were large (up to 26 m), slow-moving vessels. “Shrimp boats” were approximately 15 m in length and dragging trawl nets behind to collect shrimp. “Jet skis” were small, motorized personal water sports-crafts. “Kayaks” and “windsurfers” were nonmotorized personal watercraft. “Sailboats” generally were nonmotorized, but could be motor-assisted.

Data Analysis

Data were analyzed using analysis of variance (ANOVA) or a Pearson’s chi-square contingency table (Zar, 1996), using *SYSTAT Version 11.0* software. Crockett (1996) cautioned that behavioral data collected in consecutive short intervals might result in observations that are not independent. We tested our data for temporal autocorrelation, using the autocorrelation function plot display (ACF) in *SYSTAT*. We found variables in our dataset were always autocorrelated at ≤ 2 min, rarely autocor-

related at 6 min, and never correlated at ≥ 12 min. Therefore, we subsampled our dataset into 6-min intervals ($n = 798$ observations).

We categorized responses by dolphin groups when boat(s) were present as (0) “no change in group behavior or movement,” (1) “change in group behavior,” (2) “change in group direction of movement,” or (3) “change in both behavior and direction of movement of the group.”

Although kayaks, sailboats, wind surfers, and ferries were observed, sample sizes were only large enough to examine the responses of dolphins to five boat types: (1) dolphin-watching boats, (2) motorboats, (3) jet skis, (4) shrimp boats, and (5) ships. The responses of a dolphin group to a single boat were compared to responses when multiple boats were present.

Results

Fifty-two surveys were completed, totaling 203 h of effort. Three surveys resulted in no sightings of dolphin groups. A total of 340 groups were documented, ranging in size from one to 14 dolphins, with 814 total individuals observed. The average number of groups per survey was 6.4 (SE = 0.49), with a mean of 2.9 (SE = 0.12) dolphins per group. Of the 215 boats observed with dolphin groups, 204 were motorized boats (108 dolphin-watching boats, 55 motorboats, 20 jet skis, 8 shrimp boats, and 13 ships); however, in the 6-min interval subset of our data, the number of boats observed with dolphin groups ($n = 147$) were 90 dolphin-watching boats, 28 motorboats, 9 jet skis, 11 shrimp boats, and 9 ships.

Temporal Autocorrelation

The data collected for the variables group size, inter-animal distance, and boat-animal distance were tested for temporal autocorrelation (Figure 2). Among variables, there was some inconsistency in the lag-time at which data were no longer autocorrelated. When no boats were present, IAD data were no longer autocorrelated at 10 min (five, 2-min intervals); with boats present, these data were no longer autocorrelated at 6 min (three, 2-min intervals). Group size data followed a similar trend, with no autocorrelation after 12 min (six, 2-min intervals) with no boats present, and at 8 min (four, 2-min intervals) with boats present. BAD data were no longer autocorrelated at 4 min (two, 2-min intervals). It was interesting that the lag-time of the autocorrelation analysis was shorter when boats were present, indicating dolphins changed their behavior more often compared to observations of undisturbed dolphins. We chose 6-min intervals to subsample our dataset to allow for detection of changes in behavior and movement

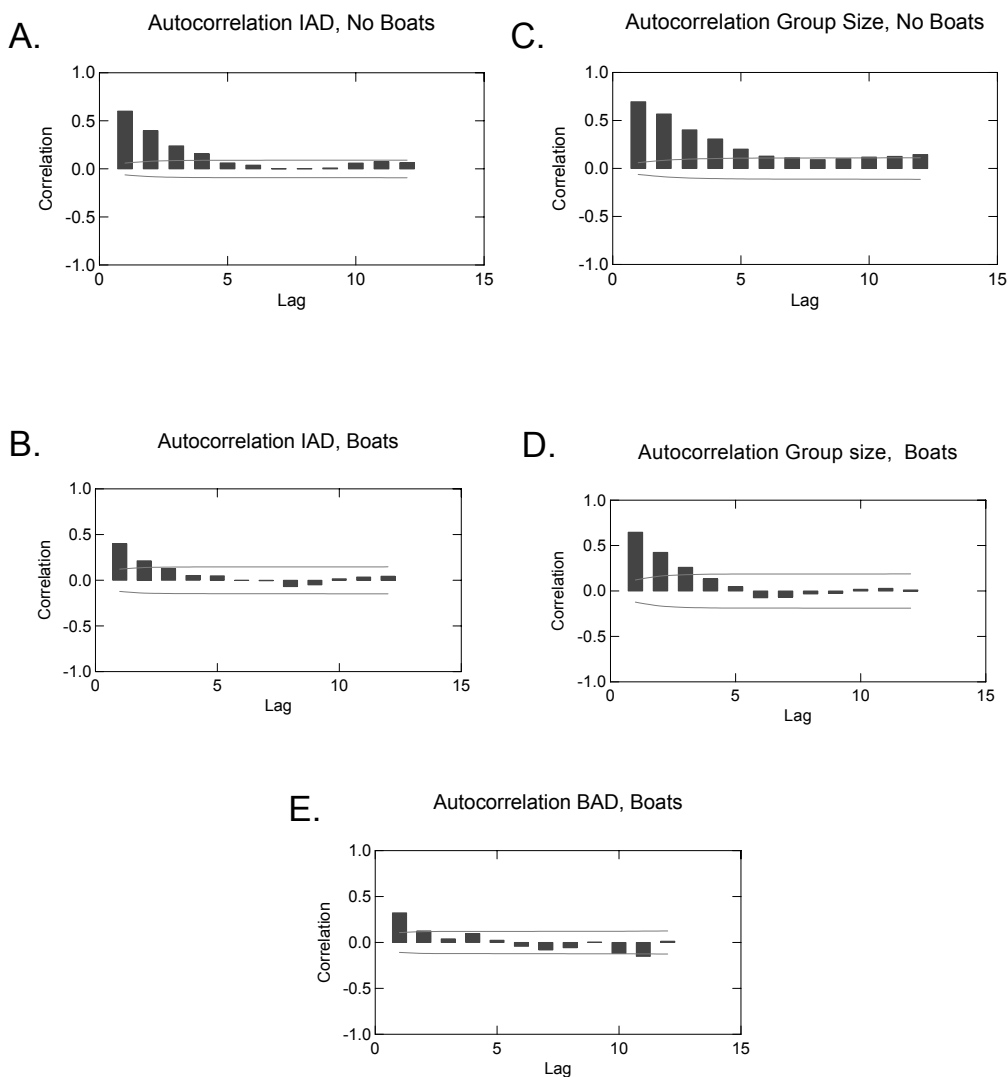


Figure 2. Temporal autocorrelation graphs of (A) inter-animal distance (IAD) with no boats present, (B) IAD with boats present, (C) group size with no boats present, (D) group size with boats present, and (E) boat-animal distance (BAD) over a 12-min period; each lag-time represents a 2-min interval; bars below the top horizontal line are no longer autocorrelated.

when boats were present, which reduced the dataset by almost one-third, but still provided adequate sample sizes.

Group Size

Group size was significantly larger ($F_{1,796} = 14.123$, $p = 0.000$) between observations with boats present and those without boats ($\bar{X} = 3.5$, $SD = 2.74$, range 1-14 individuals, and $\bar{X} = 2.8$, $SD = 1.93$, range 1-14 individuals, respectively).

Dolphin group size was not significantly different in the presence of any single type of boat;

however, group size was significantly larger ($F_{9,92} = 4.341$, $p = 0.000$) in the presence of multiple boats compared to near a single boat.

Inter-Animal Distance

Analysis using chi-square contingency tables showed that the IAD of a group was not significantly different when boats were present versus absent, nor when different types of boats were present, nor when a single boat versus multiple boats were nearby, and did not change among the four response types.

Boat-Animal Distance

Dolphin group size was significantly larger ($F_{4,91} = 3.079, p = 0.020$) with an increase in BAD. BAD significantly affected the type of dolphin response(s), both when only one boat was present ($F_{3,86} = 5.284, p = 0.002$) and when many boats were present ($F_{3,92} = 11.632, p = 0.000$). The closer the BAD, the more often dolphin groups responded by a change in behavior, change in direction of movement, or both.

Response of Dolphin Groups to Boats

Dolphin groups responded differently to boats (Figure 3), depending on the type of boat ($X^2 = 52.837, DF = 15, p = 0.000$) and whether a single boat or many boats were nearby ($X^2 = 69.647, DF = 18, p = 0.000$).

There was a response by a dolphin group during 20% of dolphin-watching boat interactions (Figure 3). Of these observations, 6% showed a change in behavior, 4% a change in direction of movement, and 10% changed both their behavior and direction (Figure 3). The responses most often exhibited to motorboats were a change in behavior (22%) and a change in both behavior and direction of movement (22%). Shrimp boats always elicited a response: change in behavior (25%), change in direction (50%), or a change in both behavior and direction (25%). Jet skis had a dramatic influence on dolphin group behavior, causing a change in behavior during 56% of interactions, and a change in both behavior and direction during 11% of the observations. In the presence of jet skis, the majority of dolphin groups submerged and did not resurface in

the area. In response to ships, the majority of dolphin groups showed no response (89%), while only 11% of dolphin groups changed their behavior.

The number of boats significantly affected ($F_{3,98} = 7.833, p = 0.000$) the type of response(s) by a dolphin group. When a high number of boats was present, dolphin groups were more likely to respond with a change in both group behavior and direction of movement.

Discussion

The bottlenose dolphins near Hilton Head Island, South Carolina, are exposed to high boat traffic. This study examined the effects of such boat activity on their behavior and group structure. The results suggest that the dolphins' behavior was disrupted by the frequent boat activity in the area, with certain boat types creating different responses, and two or more boats nearby being more problematic than a single boat.

Temporal Autocorrelation

Crockett (1996) cautioned that care should be taken with analysis of behavioral data collected at consecutive time intervals to ensure that the observations are not interdependent. Therefore, it is important to document that what an animal does is not influenced by what it was doing during the previous observation interval. Few studies have examined temporal autocorrelation of behavioral data. Janson (1984) found the behavior of wild brown capuchins (*Cebus paella*) was autocorrelated at 5-min intervals. Slatkin

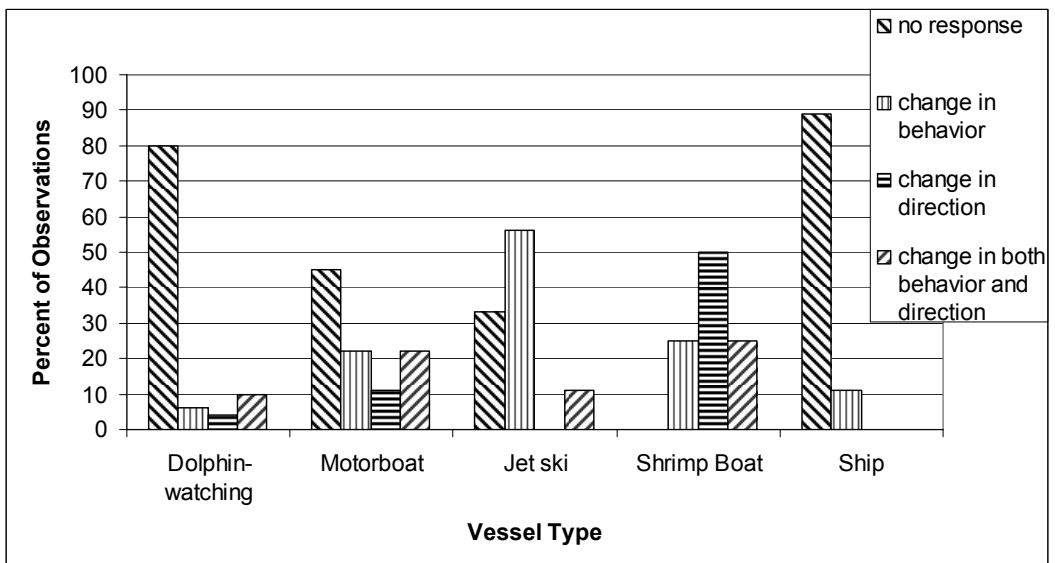


Figure 3. Effects of boat type on bottlenose dolphin group responses off of South Beach, Hilton Head Island, South Carolina

(1975) calculated that behavior of adult male geladas (*Theropithecus gelada*) was autocorrelated at 1-min intervals, but for yellow baboons, (*Papio cynocephalus*) behavior was autocorrelated at 4- to 5-min intervals. The behavioral data for the bottlenose dolphins in this study were autocorrelated over a longer lag-time when they were undisturbed and over a shorter lag-time when boats were present. The results reflect that dolphin group behavior was more changeable when boats were present. At 6-min intervals, dolphin behavior was no longer autocorrelated, so we subsampled our data at this interval, reducing the dataset by about one-third. Analysis of the full dataset produced different results and indicated that boats significantly affected some variables, such as IAD. We recommend that other investigators use temporal autocorrelation analysis to select the best time interval for collecting/analyzing or subsampling behavioral data.

Group Size

In Hilton Head, bottlenose dolphins had a larger mean group size when a boat was present. This may be due to boaters being more attracted to larger groups of dolphins or the dolphin-watching boats pursuing large groups of dolphins. Also, when more than one boat was present, dolphin group size was larger than when the group was near only a single boat. If one boater was attracted to a large dolphin group, other boaters might soon join them to view the dolphins.

Inter-Animal Distance

Many cetacean species travel in tight groups (Leatherwood & Reeves, 1983). Tight group formation was observed near boats in groups of Hector's dolphins (*Cephalorhynchus hectori*) in Porpoise Bay, New Zealand (Bejder et al., 1999), and *T. truncatus* in Sarasota Bay, Florida (Nowacek et al., 2001). Tight group formation often is observed in species of dolphins in response to approaching boats, and during situations of surprise, threat, or danger, possibly providing more protection for each individual in the group (Johnson & Norris, 1986); however, surprisingly in this study, the IAD among bottlenose dolphins did not change significantly in the presence of boats.

Boat-Animal Distance

Mean group size was larger when boats were farther away (i.e., BAD was longer—moderate to loose). With an increase in the distance between boat(s) and the dolphins, larger groups would have more space to maneuver, whereas small groups would be more cohesive and more maneuverable closer to boats. With a decrease in BAD, the response by dolphin groups escalated. Dolphin groups responded more often to close boats with

both a change in behavior and a change in their direction. Similarly, harbor porpoises (*Phocoena phocoena*) in the western Bay of Fundy expressed greater avoidance responses to vessels at closer distances (Polacheck & Thorpe, 1990).

“Harassment” or the “potential to harass” cetaceans under the Marine Mammal Protection Act (MMPA) (Anonymous, 1972) is prohibited. Boats are restricted from moving within 100 feet (30.5 m) of any cetacean. Despite these laws, boats in the Hilton Head area often moved close to dolphin groups.

Response of Dolphin Groups to Boats

Dolphin responses varied depending on the type of boat(s) present. Of all boat types, dolphin-watching boats were observed most often with dolphin groups. Cetacean-watching tours worldwide have grown tremendously over the past 40 years (Hoyt, 1995). In our study, the majority of interactions with these boats did not cause a response. We expected that dolphins in this area would respond more to these boats because dolphin-watching boats actively searched for and pursued dolphins, attempting to get as close as possible; however, these dolphins may be habituated to the presence of dolphin-watching boats and, thus, displayed less obvious responses.

Motorboats did influence dolphin group behavior. The reaction(s) displayed by dolphin groups increased with the number of motorboats. Often, dolphin groups responded to motorboats by a behavioral change or a change in both behavior and direction. Belugas (*Delphinapterus leucas*) are hunted in estuaries from small motorboats, yet return annually to these areas (Richardson et al., 1995); however, Richardson et al. reported that belugas fled in response to fast, erratically moving small powerboats. The underwater noise and fast movements of motorboats could disrupt feeding, socializing, and other dolphin behaviors.

Jet skis had a notable effect on dolphins, and they appeared to elicit strong and immediate reactions compared to other boat types. Jet skis often approached the dolphins at high speeds and with erratic movements. In response to jet skis, there was a dramatic increase in the change of group behavior; often, they submerged and did not resurface in the study area. Research on the effects of jet skis on marine mammals is scarce. Jet skis have become popular, especially in tourist areas. There has been concern about disturbance to humpback whales (*Megaptera novaeangliae*) in Hawaii due to jet skis, yet there are no data on whale responses (Richardson et al., 1995). Communication through sound and behavioral display is important to most cetaceans. With jet skis in the area, Hilton Head dolphins remained below the surface for longer

periods of time. This could have been an avoidance response to these watercrafts, or it could represent prolonged periods spent under water due to communication difficulty. Because of their high speeds, loud engine noise, unpredictable movements, and misuse, these crafts could pose serious threats to dolphins and other marine animals that spend a large amount of time at the surface.

Dolphins and porpoises in many areas feed behind shrimp boats (Fertl & Leatherwood, 1997). When a shrimp boat was present, Hilton Head dolphin groups always responded, most often with a change in both behavior and direction of movement. Dolphins fed on prey that surfaced due to the trawling and not the discarded by-catch.

Slow moving, large vessels, like ships or ferries, caused little to no obvious response in dolphin groups in this study. Ships in the Hilton Head area rarely got within 5 m of dolphin groups, and when they did approach a group, they moved slowly or idled.

The behavioral changes in dolphin groups increased as the number of boats increased. With numerous boats around, dolphins changed both their behavior and direction of movement. Similarly, disturbance in humpback whales also increased with increased vessel traffic, even causing a sudden abandonment of the Glacier Bay, Alaska, area in 1978 (Baker et al., 1982). Beluga whales in the St. Lawrence estuary also displayed increased disturbance with higher numbers of boats present (Richardson et al., 1995).

Although dolphins change their direction of movement to feed behind shrimp boats, in the presence of other boat types, changing their direction of movement in response to approaching boats could be a hindrance. Dolphins travel to locate food and conspecifics, and perhaps to avoid predation or for thermoregulation (Shane, 1990). Boat traffic could impede dolphin travel or feeding or could alter surface time and rest. The presence of boats also may be disruptive to social activity by posing risks to vulnerable animals at the surface. In some cases, humpback whales in southeastern Alaska displayed clear avoidance to vessels by changing direction and moving away (Baker et al., 1982). Au & Perryman (1982) determined dolphin schools in the eastern tropical Pacific Ocean, particularly spotted (*Stenella attenuata*) and spinner (*S. longirostris*) dolphins, frequently swam rapidly away from an approaching ship. In our study, dolphins responded to more than one boat in the area with a change in both behavior and direction of movement. Perhaps the cohesive movement of a large dolphin group is hindered when many boats are nearby.

Although many cetaceans show considerable tolerance to boat traffic, on many occasions they avoid

boats or change their normal behavior. In Hawaii and Alaska, for example, there is increasing concern that the recent changes in humpback whale distribution could be due to the increase in local human activities (Baker et al., 1982). Short-term effects on killer whales (*Orcinus orca*), bowhead whales (*Balaena mysticetus*), and bottlenose dolphins from approaching boats included an increase in their swim speed, decreased surfacing with fewer respirations, and a change in direction (Kruse, 1991; Nowacek et al., 2001; Richardson et al., 1995). Sperm whales (*Physeter macrocephalus*) displayed startle reactions to approaching vessels (Whitehead et al., 1990). Bejder et al. (1999) expressed concern that "dolphins that are forced to spend a great deal of time and energy avoiding boats may end up with reduced biological fitness as a consequence of the disruption of critical energy budgets" (p. 748).

Recommendations

Results from this study suggest that boats in the Hilton Head Island area affect the behavior of the dolphins. Short-term effects were noted, but long-term cumulative effects need to be addressed. These effects could include reduced reproductive success, reduced feeding and rest opportunities, and/or total abandonment of vital coastal habitats. Further studies are needed to determine the extent of short-term effects and long-term disruption caused by human activities. These studies should include an in-depth examination of the influences of boat activity on dolphin behavior by use of aerial surveys, controlled boat approaches, and determination of underwater noise effects. Habitat degradation due to human activities needs to be assessed in both surrounding waters and along the coastline. Stricter regulations and enforcement should be placed on human activities in coastal areas and on boating activities, particularly commercial dolphin-watching boats and jet skis. The public needs to be educated and reminded of the laws and regulations concerning dolphins and other wildlife in the area.

Acknowledgments

This paper is dedicated to Dr. David St. Aubin, who was a wonderful mentor and friend.

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The only reason that I can see why this application would be approved is because a very small number of people *might* make a few extra bucks.

I sincerely hope that our society has advanced beyond the stage that lining our own pockets takes precedence over the protection of one of the most threatened mammal species in the world.

Quite frankly, chasing tiny, critically endangered dolphins around on jet skis sounds like one of the worst ideas I have heard in a long time.

Yours Sincerely,
Simon Thomas

s 9(2)(a)
privacy

Michael Dine

From: Heather Rogers s 9(2)(a) privacy
Sent: Tuesday, 25 January 2022 11:24 am
To: Permissions Christchurch
Subject: Jet ski dolphin watch

I would like to make a submission on the application for JetSki dolphin watch.
I am totally opposed to this application. The noise of jetskis would not only interfere with the dolphin population, but Noise pollution would affect anyone trying to enjoy the peace and quiet.
As a member of Birds NZ I object to the disturbance caused to Penguins, and other birds in the area.
Heather Rogers

Sent from my iPhone

Michael Dine

From: Kathleen Reid **s 9(2)(a) privacy**
Sent: Tuesday, 25 January 2022 10:31 am
To: Permissions Christchurch
Subject: Submission on Jet Junkies Limited permit application

Dear Sir/Madam

I wish to make the following submission regarding Jet Junkies Limited application to operate a commercial jet ski marine mammal watching permit in Lyttelton Harbour.

I submit that:

- The impact on the Hector's dolphin is unknown and cannot be evaluated with certainty. Already the Hector's dolphins are subject to a number of noise impacts generated by cruise ships or other shipping activities, pile driving and recreational boating activities. A commercially operated jet ski will be an additional pressure on a protected species. This cumulative effect concerns me.
- There are more passive ways to view Hector's dolphins from slow moving existing tourism vessels. A jet ski operator will be tempted to increase the speed (up to 65km is possible) if on-board passengers are comfortable. It is not possible for the skipper to reliably always spot dolphins close by and avoid them and respect the correct distancing and travel speeds.
- While an additional marine mammal watching permit may offer a novel opportunity for tourists to appreciate the Hector's dolphins and learn about them, I believe the possibility of disruption to the dolphins behaviour and feeding patterns, and potential injury from the jet ski outweigh any benefits.

Yours sincerely

Kathleen Reid

**s 9(2)(a)
privacy**

Michael Dine

From: Mark Baker s 9(2)(a) privacy
Sent: Tuesday, 25 January 2022 6:55 am
To: Permissions Christchurch
Subject: Dolphins and Jetskis Don't Mix

Dear Christchurch,

Jetskis are an environmental disaster. Noise pollution is already at unacceptably high levels, both above water and below water. Natural sound levels must be restored. The DOC must prohibit the use of Jetskis and decline the permit request to use Jetskis for dolphin tours.

Sincerely,

Mark Baker
President
Soft Lights Foundation

Michael Dine

From: s 9(2)(a) privacy
Sent: Monday, 24 January 2022 11:24 pm
To: Permissions Christchurch
Subject: Submission response; regarding an application made to conduct jetski tours with dolphins in Canterbury seawaters.

Dear DOC,

If people want to view dolphins 'up close', my preference is that they do this on a single contained boat/vessel tour. As per the 'Dolphin Encounter' boat ride on offer in Akaroa.

This manner of encountering dolphins is presumably safer and less stressful for dolphins, as well as humans. Less chance of accidents or reckless behaviours from individuals, when the viewing vessel is controlled by one qualified and experienced person.

Although the company applying for the rights to conduct the jetski touring asks us to not view the way they would operate the tours, as similar to the speedy and noisy manner we generally associate with jetskis and their riders... the very functionality of these watercraft invites that sort of use.

My concerns are that the users of this tour would be riding craft that is capable of separating from 'the tour group' and causing dolphins distress and unease by their independent and unpredictable movements. Why would a tour employ the use of jetskis for this purpose?... isn't the single, slower, larger vessel more appropriate and properly appreciative of these beautiful animals.?

Keep the jetskis away from our precious wildlife, they need less challenges to their wellbeing, not more. And they deserve respectful viewing, I feel the jetski approach is a little too 'theme-park' and is not teaching support of animal empathy.

Thank you for your attention,
s 9(2)(a) privacy

Michael Dine

From: Kat McAra **s 9(2)(a) privacy**
Sent: Monday, 24 January 2022 8:43 pm
To: Permissions Christchurch
Subject: Submission on Application for a marine mammal permit by Jet Junkies Ltd

Kia ora,

We have read the Application for a marine mammal permit by Jet Junkies Limited.

We understand the positive intention and realise that the applicants think that they can mitigate the effect on the endangered Hector's dolphin, but there is no way that they can guarantee this. They cannot always tell where the dolphins are in relation to their jetskis. Also, the marine creatures in the harbour already have to contend with the noise of vessels in the port and this just adds more unnecessary noise.

The industrial harbour noises are unavoidable but more recreational vehicles just add to the cacophony. If a species is already endangered why would you think that more unnatural mechanical noises in their habitat is okay?

We don't feel that the benefits of educating people about the dolphins outweighs the negative effects on them from operations like this.

We absolutely oppose this application and request that DOC rejects it.

Ngā mihi,

--

Kat McAra and Richard Liggett

s 9(2)(a) privacy



Michael Dine

From: Steve Dawson [REDACTED] s 9(2)(a) privacy
Sent: Monday, 24 January 2022 6:00 pm
To: Permissions Christchurch
Subject: Submission on Jet Junkies Ltd permit application
Attachments: Dawson Jet Junkies submission.pdf

Please see attached pdf file.

Steve Dawson
Professor Emeritus

[REDACTED] s 9(2)(a) privacy

Department of Marine Science - UNIVERSITY OF OTAGO
Te Tari Pūtaiao Taimoana – TE WHARE WANANGA O OTAGO
P.O. Box 56 (310 Castle Street), Dunedin 9016, New Zealand

Re: Application by Jet Junkies Ltd for Marine Mammal viewing permit

Submission by Professor Stephen Dawson

Background and experience for submission

I have studied Hector's dolphins and other NZ marine mammals for over 35 years, and, with Professor Elisabeth Slooten, started New Zealand's longest running research programmes on Hector's dolphins, sperm whales and bottlenose dolphins. I have written or co-written over 160 peer-reviewed papers or chapters in books, two books on Hector's dolphin, and one on dolphins and whales. I was Head of Otago University's Marine Science Department until stepping down in 2020. I currently hold an Emeritus Professorship. I have internationally recognised expertise in cetacean ecology, behaviour, acoustics and conservation biology. I have also held commercial skipper's qualifications since 1986.

Recommendation

I recommend that the the application by Jet Junkies be declined, for the following key reasons.

1. Marine mammal viewing operations inevitably come at a cost of disturbance to the animals they seek. Therefore, they should maximise the number of people carried per source of disturbance (ie vessel). This application does the opposite. Jetskis typically carry 1 or 2 people. The jetski docked into the Sealver 626 docking pod can carry a maximum of perhaps 8 (although there is no mention of what Maritime NZ has certified this vessel to carry). So, with the requested three vessels, the applicants will have three sources of disturbance to carry a maximum of about 12 people, including the guide.
2. Any wildlife viewing proposal must credibly outline what's in it for the wildlife targeted. The "educational content" of the tours, as outlined in the proposal, is minimal. Their educational material is gleaned solely from DOC pamphlets, which cannot be described as adequate resources for professional delivery of the best information on Hector's dolphin. The applicants provide nothing on what information will be provided on the "talk on the tour". The operators appear to have made little attempt to get informed themselves.
3. There is no acknowledgement of the fact that this population is threatened, and already subject to a wide range of impacts. The most important of these is undoubtedly incidental catch in gillnetting and trawling (Dawson 1991, Slooten and Dawson 2021). Other well-documented impacts on Hector's dolphins include harbour development (Leunissen et al, 2019), impact of tourism (e.g. Bedjer et al., 1999; Fumagalli et al, 2021), pollution (e.g. Jones et al., 1996), and introduced disease (e.g. Roe et al., 2013). These impacts are not mitigated by adding a further impact. Considering the threatened status of this population, and the absence of clear evidence of population recovery, we should be removing threats, not adding them.

4. Behaviour of Jetskiers. I've watched hundreds of interactions between jetskiers and dolphins over many years, and have been part of a just-completed study of impacts of boats (including jetskis) on Hector's dolphin behaviour in Akaroa Harbour (Carome et al., in prep). Typically, jetskiers turn often, change speeds very rapidly, and almost always approach and leave dolphin groups at excessive speed. These actions are encouraged by the nature of jetskis, which are designed to be "thrill machines". While the application states that the guide will monitor and govern the behaviour of clients riding their hired jetskis, the idea of inexperienced riders being around marine mammals is concerning. In my view the Jet Junkies proposal makes little more sense than conducting terrestrial wildlife tours on motocross bikes.

Applications for commercial viewing of marine mammal viewing operations should be judged by evidence of their efforts to minimise impact, and their efforts to maximise the educational value of their tours. If this is not achieved, the dolphins are subjected to impacts in addition to those they already suffer, for no benefit to them. This proposal is inadequate in both these regards. That is unacceptable.

Additional points of interest

The jetskis proposed for use by the guides are among the very fastest craft of this type, capable of approximately 70 knots. In New Zealand, only a few racing powerboats are faster.

There is no evidence in application of the jetski skipper/guides holding formal nautical qualifications, as would be required for running any other vessel for commercial purposes.

The application claims that the operators have 10 years experience around marine mammals, but no supporting details are given.

The applicants appear to have not consulted with any stakeholders other than Māori.

I am happy to answer any questions raised by this submission.

s 9(2)(a) privacy

Professor Stephen Dawson
New Zealand Whale and Dolphin Trust, and Department of Marine Science
University of Otago, P.O. Box 56, Dunedin.

24 January 2022

References

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Michael Dine

From: John Clemens [s 9(2)(a) privacy]
Sent: Monday, 24 January 2022 4:12 pm
To: Permissions Christchurch
Subject: Hector's dolphins and jet ski tours Banks Peninsula - submission

I am a Christchurch resident and enjoy the wildlife and landscape amenities of Banks Peninsula. I understand that an adventure tourism business wishes to provide guided 'adventures' for people riding jet skis to see dolphins on Lyttelton and / or Akaroa Harbours, and that DOC is receiving submissions on this proposal until 15 February 2022.

I object to this proposal on the grounds that:

1. the wildlife (birds, mammals, maritime creatures), including Hector's dolphins, could be adversely affected by jet skis and their users, and if so, disastrously for these dolphins.
2. the dolphins can be viewed safely using existing craft other than jet skis, meaning the proposal to use jet skis is not satisfying a need or desire to see dolphins, and is superfluous as well as potentially very damaging.
3. jet skis are a noisy blight on the above- and below-waterline environments wastefully using up non-renewable fuel as well as manufacturing resources in ways inconsistent with a conservation ethic.

Thank you for this opportunity. I would like my strong disapproval of the proposal to be registered. I do not wish to make a submission in person..

Regards,
John Clemens
[s 9(2)(a)]

Michael Dine

From: David Currie s 9(2)(a) privacy
Sent: Monday, 24 January 2022 2:26 pm
To: Permissions Christchurch
Subject: Jet skis and Hectors Dolphins

I would like to register my objection to the **Jet skis and Hectors Dolphins proposal**.

The noise & speed will likely scare the dolphins & create unnecessary noise for harbour users.

Regards

David Currie

Michael Dine

From: Sarah Matthewson s 9(2)(a) privacy
Sent: Monday, 24 January 2022 1:14 pm
To: Permissions Christchurch
Subject: Jet Junkies dolphin-viewing application – objection

Dear DoC staff,

I was shocked by the TV1 news item yesterday (Sunday, 23rd January) about the jet ski company applying for consent to take Hector’s dolphin viewing tours. There are far less invasive options for viewing the dolphins – the vibrations, and under-water noise levels of jet skis are likely to be detected by the dolphins and potentially distress them. Given they are the world’s rarest marine dolphin species, all care should be taken to provide them with a safe, disturbance-free environment.

Yours sincerely,
Sarah Matthewson

Michael Dine

From: s 9(2)(a) privacy
Sent: Monday, 24 January 2022 11:34 am
To: Permissions Christchurch
Subject: Submission on Jet Junkies Limited permit application

Attention: Michael Dine, Permissions Advisor

I strongly oppose the application by Jet Junkies Limited for marine mammal viewing in Lyttelton Harbour.

Jet skis should not be allowed anywhere on any waters in New Zealand. Their horrendous irritating noise carries across the water and under water, and would be a public nuisance for all those living around Lyttelton Harbour and a disaster for sound-sensitive dolphins. Apart from the noise there is the safety factor, as long observation of jet skis in the bay where I live has shown that the “riders” can be so caught up in the adrenaline boost that they speed in to shore with no consideration for swimmers and complete disregard for speed restrictions.

I cannot believe that any dolphin-loving humans would even consider encroaching on the environment of endangered Hector Dolphins with such noisy aggressive craft. Even the name Jet Junkies is an indication of the company's lack of caring for the environment and for the dolphins they profess to admire. My abhorrence of jet skis makes me speculate that the type of person who loves to jet ski would have very little regard for the welfare of any marine mammals. Jet skis and dolphins are completely incompatible.

I cannot believe that DOC would even give one second of thought to their application which should have been dismissed immediately. I beg DOC not to grant permission to this disastrous application.

Michael Dine

From: Jeanie Murtagh s 9(2)(a) privacy
Sent: Monday, 24 January 2022 9:46 am
To: Permissions Christchurch
Subject: Submission on Jet Junkies Limited permit application

I wish to submit a personal submission strongly voicing my deep concern over the idea of jet skis being used in Lyttelton Harbour for tours of our very rare, very endangered dolphins. The whole idea is hideous. Not only will the dolphins be greatly disturbed by the actions of the jet skiers but the noise pollution in Lyttelton Harbour will make living, shopping, and visiting in the suburb extremely unpleasant.

Please see this as a very strong "NO" from a Christchurch resident who cares greatly for the well being of these precious mammals.

Regards

Jeannie Murtagh

Michael Dine

From: s 9(2)(a) privacy
Sent: Sunday, 23 January 2022 11:49 pm
To: Permissions Christchurch
Subject: Dolphin and marine mammals' environment is already impacted.

Please do not permit the insanely dangerous proposal of using Jetsons in and around Lyttelton Harbour and environs for the commercial purpose of purportedly 'watching' dolphins.

The numbers of these mammals are already imperiled by the workings of the port and drilling and construction impacts.

Respect for our ecological environs is sadly not reflected by many.

Existing tour vessels are careful of the marine environment, take account of the marine mammals' needs and slow when in their area.

Over decades many of us have observed, carefully recorded and documented in photos and logs what is happening. We have also presented to ECAN and local councils or supported the scientists doing so.

This proposal has no merit. It is only seeking commercial gain. Please do not allow a permission for jet ski use for further adversely impacting our marine mammals in their natural environment.

s 9(2)(a) privacy M.A. (Hons.), Dip. Tchg., Canterbury, former committee member of RSNZ Canterbury and a convenor of Science in the City lectures, also an educator at Tertiary institutes.

s 9(2)(a)
privacy

Michael Dine

From: Joseph Lewis s 9(2)(a) privacy
Sent: Sunday, 23 January 2022 8:58 pm
To: Permissions Christchurch
Subject: Application for a marine mammal permit by Jet Junkies Limited

I'm against this proposal.

Jet skis are not an appropriate vessel to be interacting with dolphins. Why does the operator not obtain a suitable larger vessel?

Thank you.

Michael Dine

From: Sue Rowe s 9(2)(a) privacy
Sent: Sunday, 23 January 2022 8:03 pm
To: Permissions Christchurch
Subject: Submission on Jet Junkies Limited permit application

To whom it may concern

I am very concerned about the application from Jet Junkies regarding their operation over in Akaroa.

The marine life there should be left free of any further commercial exploitation. Especially from jet skis which are predominantly used to buzz around in the environment

I thought the Hector Dolphins were an endangered species and as such DOC has a responsibility to ensure their numbers do not decline any further from annoying activities for personal / commercial gain .

NZ is a unique country in many ways and with many sea mammals, and animals, fish, plants, insects and wildlife where we are the only country in the world to have that species.

We need to be proactive in protecting this.

I would be extremely disappointed if this permit was granted.

There are plenty of other places he can operate. Please, please, please keep Akaroa Jet Junkies free.

Kind regards

Sue Rowe

Michael Dine

From: s 9(2)(a) privacy
Sent: Sunday, 23 January 2022 7:19 pm
To: Permissions Christchurch
Subject: Jet junkies

Hi.

I live in diamond harbour on the bay. Currently we hear the few jetskies incredibly loud and feel it is not a suitable craft.

Having studied wildlife biology in college and a constant interest in nature. Especially in the harbour. Jetskies is a unbelievably silly choice?? There's a reason they are the first. "Jet junkies" couldn't care less about conservation or the peace to the bay. The noise and the underwater disturbance of jets will not aid the natural paths of wildlife.

Do not offer them the license to operate with any "jets" propelled craft at all. Ever. They can be the first regular wildlife cruise, charter, day trip. Normal boats. Not speed boats.. just large boats. That are fit for purpose.

This is the first step of them operating a jet ski "adventure" speed related business, they have to get a license to get on the water.. once that's done. Far easier to get license to run jetskies and jet boats as an adrenaline business.

If they want to do it out past the Godley heads then instill say no. They will not help and biodiversity or wildlife migration or feeding.

There is PLENTY of options to view wildlife in many many other areas.

s 9(2)(a) privacy

Sent from my iPhone

Michael Dine

From: paul55c . s 9(2)(a) privacy
Sent: Sunday, 23 January 2022 6:54 pm
To: Permissions Christchurch
Subject: Dolphin tours.

I am aghast that someone saying that they follow the rules should appear on mainstream TV in a tee shirt promoting methamphetamine.

It screams this person disrespects the law and thinks others are ignorant.

I trust Doc will look very carefully at the character of this person before making any decisions.

Regards
Paul cuttance

Get [Outlook for Android](#)

Michael Dine

From: Annemarie Farrell s 9(2)(a) privacy
Sent: Sunday, 23 January 2022 6:53 pm
To: Permissions Christchurch
Subject: Jet junkies submission for dolphin watching in Akaroa harbour

I have just seen the TV one news snippet on above. I live in the north island but have visited Akaroa 3 times including in December 2021 .I did not have a chance to go dolphin watching due to the weather but noted the options available, which all seemed quiet and dolphin safety oriented.

The proposal to have jet skis permitted to "watch" dolphins in the Akaroa harbour is so contrary to what is recommended - quiet and unobtrusive - that any application should automatically be rejected.

I can't really believe there would be any serious consideration of this proposal !

Simply and briefly there is NO place for jet skis , and certainly not to have anything to do with dolphins , or any other sealife in the Akaroa , or any other harbour/sea area.

So please reject this submission .

Thank you for the chance to make this comment.

Yours sincerely
Annemarie Farrell

Michael Dine

From: s 9(2)(a) privacy
Sent: Sunday, 23 January 2022 6:44 pm
To: Permissions Christchurch
Subject: TWO votes AGAINST granting jet ski operators marine mammal permit for Dolphin Tours

Hello Department of Conservation,

My husband and I would like to be counted as two votes against granting jet ski operators marine mammal permits for Dolphin Tours. We do not see how this can be of any benefit to the nature that remains in our habitat whatsoever.

Thank you for counting our votes as you come to a decision on this.

Sincerely,
Janet and Trevor Marshall
s 9(2)(a)

Michael Dine

From: [REDACTED] s 9(2)(a) privacy
Sent: Sunday, 23 January 2022 5:36 am
To: Permissions Christchurch
Subject: Submission on Jet Junkies application for marine mammal tours using jet skis in Whakaraupo Lyttelton Harbour

Kia ora

We are writing to request that the application from Jet Junkies for a marine mammal permit so they can provide dolphin tours in Whakaraupo Lyttelton harbour be denied. Hector's dolphins are a threatened species and do not need any further disruption to their environment. We are very concerned that a jet ski operation will put dolphins and marine mammals at risk through the possibility of collisions; through noise pollution; through increased volume of powered boats and jet skis in the harbour and increased human presence. We are also concerned at the possibility of inexperienced jet ski users being involved in accidents on the harbour and rescue operations and hospital treatment being required.

People are often unaware of the rules which aim to protect marine mammals or selfish enough to flout the rules. We are not confident that Jet Junkies or their clients will follow the rules protecting marine mammals. We are also concerned that Jet Junkies clients may flout the rules intentionally to take photos. Jet Junkies clients may have never driven a jet ski before and could unintentionally harass or injure marine mammals through lack of skill. All of these possibilities are likely and harmful to marine mammals.

The application for a five-year permit from Jet Junkies must be denied. This application must not be approved as it will lead to applications from other jet ski operators around the entire country. This would be a disaster for marine mammals, particularly for threatened species. Hector's dolphins and seals should not be treated as a business opportunity. Wild species should have the right to live their lives as little affected by human activity as possible.

Yours sincerely

[REDACTED] s 9(2)(a) privacy

[REDACTED]

Michael Dine

From: Martin Wheldon **s 9(2)(a) privacy**
Sent: Saturday, 22 January 2022 5:29 pm
To: Permissions Christchurch
Subject: Submission on Jet Junkies Limited permit application

Applicant: Jet Junkies Limited

Location of proposed activity: Lyttelton Harbour

Permission type: Marine mammal permit

Summary of proposal: The application is for commercial vessel based marine mammal viewing in Lyttelton Harbour and the surrounding heads.

I wish to register my objection to this application on the grounds that the target species, Hector's Dolphin, is a marine protected mammal and is already under considerable population pressure and disturbance from existing commercial marine traffic, fishing activities, recreational marine traffic, noise, pollution, sediments etc., and warming seas which are likely to have further significant negative impacts on the species survival.

-

I fail to see any benefit whatsoever for the animals in this application and constantly being followed around by marine craft can only be described as harassment and increasing stress factors on the animals.

Regards,

Martin Wheldon.

s 9(2)(a)

Michael Dine

From: HERBIE Mues s 9(2)(a) privacy
Sent: Friday, 21 January 2022 9:39 pm
To: Permissions Christchurch
Subject: Subject: submission on Jet Junkies application Lyttelton Harbour

Dear Sir Madam,

I would like to submit my opposition to Jet Junkies' application for observing sea mammals, especially Hector's Dolphins, from their commercially run Jet skies.

What else could be more disruptive to the natural behaviour and the health of these unique and threatened species ? The noise and the erratic movements of these fossil fuel guzzling beasts will displace these beautiful sea creatures forever.

There has been no scientific evaluation for such operations. Nowhere else in Aotearoa has been such an undertaking allowed.

Such a commercial operation can't be permitted with DOC ' s conservation management plan in mind.

I therefore ask DOC to reject the Jet Junkies application for operating in Lyttelton Harbour.

Nga mihi

Herbie Mues

[Sent from Yahoo Mail on Android](#)

Michael Dine

From: antjeduda s 9(2)(a) privacy
Sent: Friday, 21 January 2022 5:03 pm
To: Permissions Christchurch
Subject: Submission on Jet Junkies Limited permit application

Dear Sir/Madam,

I would like to voice my deep concern over the planned jet junkies operation to view and swim with marine mammals in Lyttelton Harbour:

For safety reasons (interference with ferry, swimmers, boaters, kayakers, ships), environmental reasons (danger to dolphins). Has this actually been researched and proven, that these are definitely not a hazard to the dolphins? Our dolphins in this area are already endangered, why should they be more hazards endangering them even more?

Local reasons (This harbour is already noisy enough because of the port and the hobby jet skies. We do not need more jet skies making more noise, destroying the beautiful area we live in) Thank you for your attention Kind regards Antje Duda

Michael Dine

From: John McLister **s 9(2)(a) privacy**
Sent: Friday, 21 January 2022 12:03 pm
To: Permissions Christchurch
Subject: Submission on Jet Junkies Limited permit application

I am a long term resident of Whakaraupō/ Lyttelton Harbour.

I do not support the submission by Jet Junkies Limited for 7 reasons.

- A number of residents close to the shoreline are already disturbed by the noise of jet skis and we do not wish for this to increase
- Our natural view of the harbour is already disturbed by these vehicles plowing up and down the harbour and we do not wish to see this increase
- Hector's dolphins are an endangered species and without a full environmental impact report on jet ski activity near them, no licence should be issued
- While we may think animals have no rights, however, we should be sensitive to these mammals and leave them undisturbed by human intervention into their habitat.
- We should not be allowing one entity to financially benefit from public space
- Te Hapū o Ngāti Wheke have guardianship of Whakaraupō and their views need to be consulted in the spirit of treaty partnership
- When considering where submissions are made from, the views of us who live in the Whakaraupō/ Lyttelton Harbour should take precedence - the wider jet ski community could easily manipulate the submission process by 'ballot stuffing' (being encouraged by Jet Junkies through their social media contacts to submit in favour of the proposal). If the harbour community does not want this venture it shouldn't happen.

John McLister
s 9(2)(a) privacy

[Redacted text block]

Michael Dine

From: Paru Clarke - Shunyata Retreat s 9(2)(a) privacy
Sent: Friday, 21 January 2022 6:41 am
To: Permissions Christchurch
Subject: jetski dolphin tours

I run a retreat in diamond harbour and absolutely am against this disgusting practice.

These animals are precious in our waters and jet skis are ok,I see but don't hear them but not around dolphins - please stop this immediately.

Karen clarke
Owner Operator Shunyata

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Michael Dine

From: Devon Rutter s 9(2)(a) privacy
Sent: Thursday, 20 January 2022 8:24 pm
To: Permissions Christchurch
Subject: Submission on jetski dolphin tourism venture

Kia ora,

I am writing to express my concern with the jetski tour application in Akaroa Harbour.

I am currently conducting research on the impact of boats on dusky dolphins in Kaikoura, and the data I have seen so far, as well as research previously done on the subject, indicates dolphins will be disturbed by this venture. Studies published by DoC (<https://www.doc.govt.nz/Documents/science-and-technical/casn229.pdf>) have indicated that private vessels cause the most disturbance due to their unpredictable behaviour, compared to the more consistent behaviour of tour vessels. With individually controlled jetskis I can see this being worse as they can change speed and direction quickly. Having three unpredictable jetskis around a pod is very likely to cause disturbance.

Further, jetskis are also a direct-impact risk to baby and juvenile dolphins, who travel slowly and close to the surface. I believe that if this activity is granted permission, although most people may behave themselves, it is only a matter of time before some knob on a jetski causes harm to one of our most precious marine species.

Thanks for your consideration
Devon Rutter

Michael Dine

From: Libby Hamilton s 9(2)(a) privacy
Sent: Thursday, 20 January 2022 5:17 pm
To: Permissions Christchurch
Subject: Environmental concerns for jet ski dolphin tours

Hello

I would like to express my concerns regarding the application for the Department of Conservation (DOC) for a marine mammal permit to offer tours using jet skis in the Canterbury harbour. My reasons for objecting to the potential granting of this application are for the safety of the mammals and their ability to live in the environment that is theirs. Jet Junkies belief that they can run these guided tours safely and without disturbing the mammals is misinformed at best. The tours would turn into a stalking fest of the mammals as they are selling a guided tour of the Hector Dolphins. This is an obscene request. I hope the Department of Conversation are able to do their primary role of protecting the mammals as that is their duty as public servants paid by the taxpayers of New Zealand.

The use of Jet skis are to provide unskilled clientele to access the harbour with no knowledge of tides, winds and or swells. Granting guided tours on jet skis will elevate all harbour users' risks and have a negative impact for the mammals in the Canterbury Harbour.

The mammals have a right to be left in peace and not be used as a money making venture. Jet Junkies have no right to make money from these mammals.

Please please please give the wildlife the right to live without being harrassed by jet skis.

Regards

Libby Hamilton
s 9(2)(a)

Michael Dine

From: Permissions Christchurch
Sent: Thursday, 20 January 2022 1:59 pm
To: Michael Dine
Subject: FW: Submission on jet junkies ltd permit application

Harriet Kemp

Kaitūtohu | Permissions Advisor
Whare Ōtautahi | Christchurch Office
Te Papa Atawhai | Department of Conservation

www.doc.govt.nz

From: Ty Thwaites **s 9(2)(a) privacy**
Sent: Thursday, 20 January 2022 1:53 pm
To: Permissions Christchurch <permissionschristchurch@doc.govt.nz>
Subject: Submission on jet junkies ltd permit application

Attention of Michael Dine permission advisor.

I have recently seen the submission for jet junkies mammal viewing permit. As a past customer, i found jet junkies to be very professional, educational and strict when it comes to the use of jet skis in lyttleton harbour. During the safety briefing they spoke in length about accidental discovery of marine animals and made it clear that the experience was not a wildlife tour. During the trip, Kevin the guide spotted a dolphin in the distance, so stopped us all until the dolphin had moved on from the area and gave us instruction to continue slowly after this. For this reason i support the application of jet junkies, As i know they will do the right thing and think it will be a great experience.

Thanks

Michael Dine

From: Permissions Christchurch
Sent: Thursday, 20 January 2022 1:48 pm
To: Michael Dine
Subject: FW: Submission on Jet Junkies Limited Permit Application

Harriet Kemp
Kaitūtohu | Permissions Advisor
Whare Ōtautahi | Christchurch Office
Te Papa Atawhai | Department of Conservation

www.doc.govt.nz

From: BH and ND Parker **s 9(2)(a) privacy**
Sent: Thursday, 20 January 2022 1:43 pm
To: Permissions Christchurch <permissionschristchurch@doc.govt.nz>
Subject: FW: Submission on Jet Junkies Limited Permit Application

Attention Michael Dine Permission Advisor

From: [BH and ND Parker](#)
Sent: Saturday, 8 January 2022 12:00 PM
To: **s 9(2)(a) privacy**
Subject: FW: JET JUNKIES

To whom it may concern

My name is Brian Parker life Member Naval Point Club Lyttelton and Past patron life member of Te Waka Pomanau Kaumatua of Te Hapu of Ngati Wheke
I have known Kevin Scovell for the past two years and welcomed his Jet Ski operation to Naval Point with open arms as we feel Jet Ski operators need educating on and off the water and we as a club feel he is doing an outstanding job I fully support his wish to include marine life tours under the correct guidance and education this would be of importance and beneficial to marine life
Jet Ski have a reputation of being disruptive but with Kevin's guidance and tuition his operation could only be beneficial in many ways
I fully support his application
If you have and questions please feel free to contact me
Sincerely
Brian Hart Parker QSM

s 9(2)(a) privacy

Michael Dine

From: Permissions Christchurch
Sent: Thursday, 20 January 2022 1:10 pm
To: Michael Dine
Subject: FW: Submission: Application for a marine mammal permit by Jet Junkies Limited

Harriet Kemp

Kaitūtohu | Permissions Advisor
Whare Ōtautahi | Christchurch Office
Te Papa Atawhai | Department of Conservation

www.doc.govt.nz

From: Ben Reid s 9(2)(a) privacy
Sent: Thursday, 20 January 2022 12:12 pm
To: Permissions Christchurch <permissionschristchurch@doc.govt.nz>
Subject: Submission: Application for a marine mammal permit by Jet Junkies Limited

Kia ora,

I would like to make the following submission on Application for a marine mammal permit by Jet Junkies Limited (<https://www.doc.govt.nz/get-involved/have-your-say/all-consultations/2022-consultations/2022-notified-applications/jet-junkies-limited>):

Contact details:

Name: Ben Reid

s 9(2)(a) privacy

Submission:

I object to this application based on safety, noise, pollution and natural habitat impact concerns.

Safety concerns:

- I am a regular long distance open water swimmer often swimming out from Naval Point and around Lyttelton Harbour, sometimes out to Quail Island and across to Hays Bay / Diamond Harbour areas.
- Swimming in the harbour requires constant awareness and looking out for powered watercraft at all times - despite swimming with high visibility buoys / caps etc, there is a high safety risk from being run over by a motorised watercraft moving at speed. For many in the open water swimming community, the fear is that it is only a matter of time...
- Jetskis are often operated at very high speeds in the harbour, even inside the marked inshore areas. Enforcement of safety regulations already appears to be non-existent - so a jetski self-hire operation which encouraged more use of these craft, particularly by inexperienced users, would likely significantly increase the risk to swimmers and other non-motorised water users: a health and safety assessment should definitely be carried out.

Noise concerns:

- A single Jetski operating in Lyttelton Harbour can be heard from all around the coastline, disturbing what would otherwise be a naturally peaceful environment (at least away from the port area). The ability for a tiny number of people to spoil the natural peace for all other users needs to be more strongly regulated in this conservation area around Quail Island.

- In this case, there is a significant concern that while self-hire and guided jetski tours are being proposed for "dolphin watching", in practice this would become "hooning": what restrictions will be placed on users of these craft and how would these be practically enforced? (What would stop a flotilla of 10 "dolphin watching" novice jetski riders holding an informal race down the length of the harbour?)

Natural environment impact concerns:

- From a conservation perspective the last thing Lyttelton Harbour's natural marine habitat needs is more jetskis or motorcraft. The regular disturbance to the natural habitats of dolphins and other marine animals, seabirds and fish are very likely to have negative impacts on their population numbers immediately and over time. An assessment of these risks is needed.

Marine pollution concerns:

- Motorised watercraft leak petrol and other synthetic oils into the water (you can taste it when swimming!).
- Also the increased carbon dioxide emissions from the proposed operation should be taken into account.

Conclusion:

- Keep Lyttelton Harbour safe, peaceful and unpolluted - if people want to go dolphin watching close up, get in a kayak and paddle!

ngā mihi

Ben

Michael Dine

From: Permissions Christchurch
Sent: Thursday, 20 January 2022 10:15 am
To: Michael Dine
Subject: FW: Subject Line: Submission on Jet Junkies Limited permit application

Harriet Kemp

Kaitūtohu | Permissions Advisor
Whare Ōtautahi | Christchurch Office
Te Papa Atawhai | Department of Conservation

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From: Sam **s 9(2)(a) privacy**
Sent: Thursday, 20 January 2022 10:13 am
To: Permissions Christchurch <permissionschristchurch@doc.govt.nz>
Subject: Subject Line: Submission on Jet Junkies Limited permit application

To whom it may concern.

I would like to object to the above mentioned application.

The Dolphins are already being impacted significantly in their environment and definitely to not need to be harassed by jet skis following them closely.

Please reject this submission.

Regards Sam Farrar

Michael Dine

From: Permissions Christchurch
Sent: Thursday, 20 January 2022 10:15 am
To: Michael Dine
Subject: FW: Jet Ski Dolphin Tours

Harriet Kemp
Kaitūtohu | Permissions Advisor
Whare Ōtautahi | Christchurch Office
Te Papa Atawhai | Department of Conservation

www.doc.govt.nz

From: M A Smith **s 9(2)(a) privacy**
Sent: Thursday, 20 January 2022 9:51 am
To: Permissions Christchurch <permissionschristchurch@doc.govt.nz>
Subject: Jet Ski Dolphin Tours

Hi

I was really shocked and disturbed to read the article yesterday saying an application had been made to conduct jet ski tourist tours in the Lyttleton Harbour.

I live in Christchurch and I just simply wonder what is wrong with these people who think it's ok to make money in a venture like this. There are already enough opportunities for folk to view the very rare and precious dolphins in the harbour. Jet skis are not an appropriate method of doing this. I used to live overlooking the Otago harbour and can testify to the noise created in the atmosphere as jet skis go round and round, a sound which will permeate around the harbour. If you allow commercial operations of this nature it won't be long before every idiot with a jet ski thinks it is ok to do this.

We should be treasuring our wildlife and be doing everything we can to allow them to live in their natural environments. Let's be honest they will pursue dolphins to allow a sighting for their clients - it is just not acceptable.

I would urge you to decline this application.

Many thanks

Regards

Alison Smith

s 9(2)(a) privacy

Michael Dine

From: Permissions Christchurch
Sent: Thursday, 20 January 2022 9:48 am
To: Michael Dine
Subject: Submission for 97340-MAR FW: Submission on Jet Junkies Limited permit application

Harriet Kemp

Kaitūtohu | Permissions Advisor
Whare Ōtautahi | Christchurch Office
Te Papa Atawhai | Department of Conservation

www.doc.govt.nz

From: Anna Henderson s 9(2)(a) privacy
Sent: Thursday, 20 January 2022 9:46 am
To: Permissions Christchurch <permissionschristchurch@doc.govt.nz>
Subject: Submission on Jet Junkies Limited permit application

I oppose this application on the basis of concerns for the well-being of Hector's Dolphins and other marine wildlife present in the area.

It sounds as though the company has good intentions but the noise level and potential speed of jet-skis is concerning. Additionally, there is a lot of activity in the harbour already and these dolphins are already a threatened species. While I acknowledge that eco-tourism can benefit conservation by increasing awareness around these species, I feel that the disruption and potential danger presented by organised jet-ski tours may in this case, outweigh the benefits. The well-being of the dolphins has to come first.

Thanks.

Michael Dine

From: Permissions Christchurch
Sent: Thursday, 20 January 2022 9:48 am
To: Michael Dine
Subject: Submission for 97340-MAR FW:

Harriet Kemp

Kaitūtohu | Permissions Advisor
Whare Ōtautahi | Christchurch Office
Te Papa Atawhai | Department of Conservation

www.doc.govt.nz

From: Delyse Langhorn s 9(2)(a) privacy
Sent: Thursday, 20 January 2022 9:40 am
To: Permissions Christchurch <permissionschristchurch@doc.govt.nz>
Subject:

I object, strongly

Michael Dine

From: Permissions Christchurch
Sent: Thursday, 20 January 2022 9:39 am
To: Michael Dine
Subject: Submission for 97340-MAR FW: Objection

Harriet Kemp
Kaitūtohu | Permissions Advisor
Whare Ōtautahi | Christchurch Office
Te Papa Atawhai | Department of Conservation

www.doc.govt.nz

From: annieandkevin@xtra.co.nz **s 9(2)(a) privacy**
Sent: Thursday, 20 January 2022 9:20 am
To: Permissions Christchurch <permissionschristchurch@doc.govt.nz>
Subject: Objection

Hi
Re: Bid for Jet ski Dolphin tours

I would like to register my **objection** to Jet Ski Junkies application for a Marine Mammal Permit in the Lyttleton Harbour.

Regards Annie Overton

**s 9(2)(a)
privacy**

Michael Dine

From: Permissions Christchurch
Sent: Thursday, 20 January 2022 9:39 am
To: Michael Dine
Subject: Submission for 97340-MAR FW: Submission on Jet Junkies limited permit application

Harriet Kemp
Kaitūtohu | Permissions Advisor
Whare Ōtautahi | Christchurch Office
Te Papa Atawhai | Department of Conservation

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-----Original Message-----

From: Damiet Loor **s 9(2)(a) privacy**
Sent: Thursday, 20 January 2022 8:15 am
To: Permissions Christchurch <permissionschristchurch@doc.govt.nz>
Subject: Submission on Jet Junkies limited permit application

Kia ora,

It came to my concern that Jet Junkies have applied for a permission.

I am very much against this submission as it will be harmful for our sea wild life.

Please be protective of our sea mammals and don't grant their application.

Nga mihi,

Damiët Loor

s 9(2)(a)

Michael Dine

From: Permissions Christchurch
Sent: Thursday, 20 January 2022 9:39 am
To: Michael Dine
Subject: Submission for 97340-MAR FW: Submission on Jet Junkies Limited permit application

Harriet Kemp

Kaitūtohu | Permissions Advisor
Whare Ōtautahi | Christchurch Office
Te Papa Atawhai | Department of Conservation

www.doc.govt.nz

From: s 9(2)(a) privacy
Sent: Thursday, 20 January 2022 8:07 am
To: Permissions Christchurch <permissionschristchurch@doc.govt.nz>
Subject: Submission on Jet Junkies Limited permit application

Good morning,

I am opposed to jet skis/speed boats in the harbour as a lot of people swim in the water between rapaki, naval point and quail island. I swim frequently and am nervous if there are speed boats around even though I have a high vis tow float. Not everyone adheres to the speed restrictions close to the bays! And if you have public with little knowledge of the 'rules' I'm afraid they will hurtle through the 5knt zones.

They may also have adverse effects on the marine mammals. Hector dolphins are already shy!

I'm all in favour of kayaks or paddleboards.

Please keep my submission anonymous.

Thank you

Michael Dine

From: Permissions Christchurch
Sent: Thursday, 20 January 2022 9:38 am
To: Michael Dine
Subject: Submission for 97340-MAR FW: Submission on Jet Junkies Limited permit application

Harriet Kemp

Kaitūtohu | Permissions Advisor
Whare Ōtautahi | Christchurch Office
Te Papa Atawhai | Department of Conservation

www.doc.govt.nz

From: Josine Rolina **s 9(2)(a) privacy**
Sent: Thursday, 20 January 2022 7:57 am
To: Permissions Christchurch <permissionschristchurch@doc.govt.nz>
Subject: Submission on Jet Junkies Limited permit application

To whom it may concern,

When I read the title of this submission, jet junkies limited permit application for mammal viewing in the Lyttleton Harbour, I felt fear because jet skis are very loud and sound is Amplified underwater and allowing the proposal to go ahead will cause a large additional invasion /violation (far greater number of jet skis then there are already on the water) then there is already with the busy noise of the Lyttelton port.

Wildlife is already needing to deal with pollution humans create, allowing this proposal to go ahead will be detrimental to their natural environment that is needed for their existence.

I care about this planet and all its inhabitants (what we humans call wildlife) and I feel strongly about wanting to protect them as they are never asked if they are happy to accommodate more human noise and pollution, they can not speak up for themselves like humans can.

I urge you not to Grant this permit!

Furthermore I am choosing to live outside of the city because I love a more natural and peaceful environment myself. Having more jet skis on the water will make my natural environment a lot less enjoyable!

Kind regards

Josine Rolina

Michael Dine

From: Permissions Christchurch
Sent: Thursday, 20 January 2022 9:38 am
To: Michael Dine
Subject: Submission for 97340-MAR FW: Submission on Jet Junkies Permit Submission

Harriet Kemp

Kaitūtohu | Permissions Advisor
Whare Ōtautahi | Christchurch Office
Te Papa Atawhai | Department of Conservation

www.doc.govt.nz

From: s 9(2)(a) privacy
Sent: Thursday, 20 January 2022 6:26 am
To: Permissions Christchurch <permissionschristchurch@doc.govt.nz>
Subject: Submission on Jet Junkies Permit Submission

I want to say that this is a well run local company by a family who are safety and rule conscious. They act responsibly and I believe can totally be trusted to manage situations appropriately and keep the marine animals safe. In fact, smaller craft, such as Jet Ski's are less invasive and dominating than a large boat in terms of impact. I think it will be a gentler way for the Dolphins to choose to interact with - or not if that's what they want. They existing business is well run. I trust they will work with and listen to any recommendations by DOC. It's a request to have a regulated operation which should be granted. Private family or friendship groups are far harder to manage...and dangerous! And anyone who says nothing should be happening is totally out of touch with what happens every day in the Harbour area. Please don't let those people crush this plan and approve this application.

s 9(2)(a)
privacy

Michael Dine

From: Permissions Christchurch
Sent: Thursday, 20 January 2022 9:38 am
To: Michael Dine
Subject: Submission for 97340-MAR FW: Submission on jet junkies

Categories: Red Category

Harriet Kemp
Kaitūtohu | Permissions Advisor
Whare Ōtautahi | Christchurch Office
Te Papa Atawhai | Department of Conservation

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-----Original Message-----

From: [REDACTED] s 9(2)(a) privacy
Sent: Wednesday, 19 January 2022 11:23 pm
To: Permissions Christchurch <permissionschristchurch@doc.govt.nz>
Subject: Submission on jet junkies

Attn Michael Dine

I'm writing this to give my support for the jet junkies submission I have professional worked along side this amazing team they are very safe and respectful at what they do on and around the water the are not your everyday jet ski people they are true professionals and have helped a lot of people out on the water. I believe jet junkies will respect all mammals and have no doubt in saying they will get hold of you asap if they see something on the water that needs to be bought to your attention.
I ask that my submission be kept confidential.

Many Thanks [REDACTED] s 9(2)(a) privacy

Sent from my iPhone