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Commerson's Dolphins (*Cephalorhynchus commersonii*) off Ría Deseado, Patagonia, Argentina

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Abstract

Studies of the biology and ecology of Commerson's dolphins (*Cephalorhynchus commersonii*) in the Ría Deseado estuary (47º 46' S, 65º 58' W) were carried out during January-February 1986 to 1991 and 1994 to 1997, August 1987 and 1988, September 1995, and May 2003. Commerson's dolphins were consistently located along a 24-km stretch of the Ría Deseado. Twenty-six dolphins were identified using marks, scars, and differences in the black and white pigmentation of the head, back, and sides. Two adult dolphins with the typical grey colour pattern of the calves of this species have been observed since 1994. Behavioural observations were recorded and fell into four general categories: (1) traveling (51%), (2) resting (21%), (3) feeding (19%), or (4) socialising (9%). Feeding behaviours included dolphins feeding at the surface, near anchor lines, and around piers. Commerson's dolphins were directly observed feeding on silversides (*Odontesthes*). Calves were observed between mid-September and mid-March, which suggests that calves are born in the austral spring and early summer. Interactions between dolphins and seabirds/marine mammals were recorded. Killer whales (*Orcinus orca*) may prey on Commerson's dolphins in this area.

Key Words: Ría Deseado, Commerson's dolphin, *Cephalorhynchus commersonii*, anomalous colour pattern, behaviour, interactions with other species

Introduction

The genus *Cephalorhynchus* includes four species, which are widely distributed in the temperate coastal waters of the Southern Hemisphere (Harmer, 1922). *Cephalorhynchus commersonii* has been reported in coastal waters around Kerguelen Island (Indian Ocean) (Robineau & de Buffrenil, 1984); the Islas Malvinas (Falkland Islands); the coastal waters of southern South America between Rio Negro, Argentina, and Cabo de Hornos; and in the Drake Passage as far south as the South Shetland Islands (Goodall, 1978; Goodall & Cameron, 1980; Goodall et al., 1988; Rice, 1998). A skull also was reported from Quilmes Province of Buenos Aires (34º 48' S) (Brownell & Praderi, 1985). The northernmost stranding of *C. commersonii* was recorded at the entrance of Patos Lagoon Estuary (32º 01' S, 051º 57' W), Brazil (Pinedo et al., 2002). In Argentine waters, there have been many reports of incidental capture of Commerson's dolphins in gillnets, trammel nets, and midwater trawls (Goodall & Cameron, 1980; Goodall et al., 1988, 1994; Crespo et al., 1994; Iñíguez et al., 2003).

Brown (1988) and Goodall et al. (1988) described the biology and ecology of Commerson's dolphins. Mermoz (1980) and Leatherwood et al. (1988) studied the behaviour of this species in the Comodoro Rivadavia area and the Strait of Magellan, respectively. In January 1986, the authors began a study of a local population in the estuary of the Rio Deseado (the Ría Deseado) based on direct observation and photo-identification of individual animals (Iñíguez, 1988, 1989, 1991; Iñíguez & Tossenberger, 1995). This paper describes the progress made in our studies on photo-identification from 1986 through 2003, including group size, prey, distribution, behaviour, and reaction to vessels.

Materials and Methods

Study Area

The Ría Deseado (47º 46' S, 065º 58' W) extends 40 km between the Rio Deseado mouth and Paso Marsicano, with an east-west orientation (Figure 1). The bottom consists of gravel at Bahía Magallanes, sandy at Bahía Uruguay, and silt and clay at Bahía Concordia. The north shore contains solid rock cliffs, flooded canyons, and abrasion or wavecut platforms. The southern coast is more regular—gravelless, without canyons (Iantanos et al., 2002; Isla et al., in press). Between the estuary mouth and Bahía Concordia, nine islands and islets are found (Chaffers, de los Leones or Larga, Quinta, Quiroga, Burlotti, Pájaros, del Cañadón del

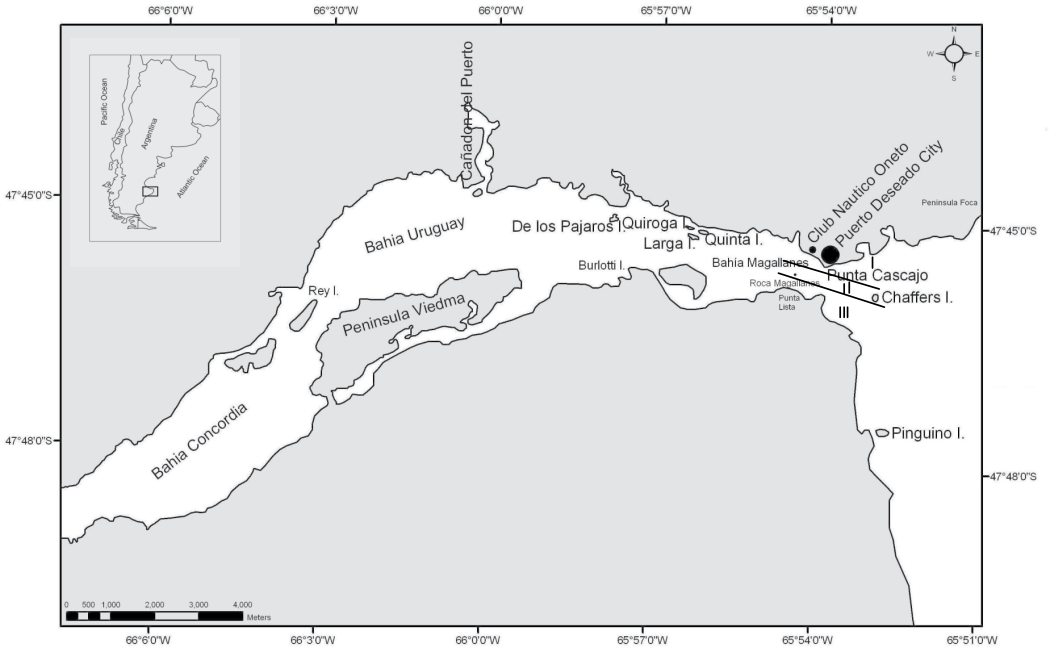

Figure 1. Study area in Ría Deseado, Patagonia, Argentina, showing Zones I to III

Puerto, del Rey or de los Conejos, and Rodríguez). The mean tide level is 3.20 m. The current speed at the estuary mouth at Roca Magallanes is about 6 kts. During an outgoing tide, Bahía Magallanes presents a maximum depth of 39 m, which decreases to the west: 22 m at Bahía Uruguay and 18.3 m at Isla del Rey. A current speed of 2 kts was recorded at Isla del Rey. Water temperature ranges from 8º C (winter) to 15º C (summer). Kelp forests (*Macrocystis pyrifera*) are found along the coast. The town of Puerto Deseado and its harbour are located at the mouth of the river on the northern coast.

Methods

Observations were conducted in calm weather (< 2 Beaufort) from Punta Cascajo (a land-based platform located on the northern shore of the Ría Deseado) and from vessels during January and February 1986 to 1991 and 1994 to 1997, August 1987 and 1988, and September 1995. In May 2003, a boat survey was conducted upriver. A Coast Guard vessel (18 m) was used to navigate in the open sea, and three inflatable boats (< 6 m), two kayaks (< 5 m), and a sailboat (4.3 m) were used to approach dolphins to photo-identify individuals and to record their behaviour within the estuary. When approaching dolphins, we used focal individual/group sampling methods (Altmann, 1974; Mann, 1999) to define group size, sex/age category, movement, and associations between individuals. The relative position of dolphins was estimated in terms of the length of an adult Commerson's dolphin, with one dolphin length (DL) equaling about 1.5 m. Groups were defined as individuals swimming in a coordinated manner within 10 DL of each other and performing the same behaviour. Behaviour was classified into four categories (feeding, traveling, resting, and socialising) following Würsig & Würsig (1979), Jefferson (1987), Iñíguez & Tossenberger (1995), and Bristow & Rees (2001) (Table 1). Sightings from land were made from Punta Cascajo; an expanse of 270º, including the mouth of the Ría Deseado and adjacent Magellan Bay, is visible from this site. The quadrants were divided into three zones (I, II & III), each approximately 100 m offshore, to observe the use of these three zones by dolphins.

Boat surveys were carried out from Isla Pingüino (20.46 km SE of Ría Deseado) to 24.5 km upriver. Two observers recorded presence, number of dolphins, and behaviours; and a third one used a GPS to record the position and take notes. Dolphin positions and zone (I to III) were recorded by sighting compass bearing. Dolphins were identified and observed with 10 × 50 binoculars. Data on time, compass bearing, zone, behaviour, and identity of individuals (only from boats) were recorded in tabular form. Encounters between boats and groups of dolphins were recorded for dolphins sighted within 100 m of a vessel.

Table 1. Definitions of behaviours shown by Commerson's dolphins at Ría Deseado

Behaviour	Definition
Traveling	Dolphins swim consistently in one direction at a moderate to fast speed, usually in a relatively tight formation.
Resting	Dolphins typically group tightly together abreast or alone, dive, and surface as a cohesive unit, normally heading opposite to the current. They slow down.
Socialising	Dolphins have developed a great variety of acrobatic and non-acrobatic displays among individuals and during physical interactions.
Feeding	Dolphins chase fish at the surface, dive deep, and circle around.

Adapted from Würsig & Würsig (1979), Jefferson (1987), Iñíguez & Tossenberger (1995), and Bristow & Rees (2001).

Photo-identification was used to identify individual dolphins using marks, scars, and pigmentation patterns on the dorsal fin, back, and sides. Photographs were taken on colour slide and black and white film (100, 200, or 400 ASA), with a 35-mm reflex camera, using 50- to 300-mm lenses.

To identify individuals, various markings were used (Figure 2), including notches on the dorsal fin; differences in the black and white colour pattern of the head, back, and sides; and cuts and scars along the back and sides (Iñíguez, 1988, 1991; Iñíguez & Tossenberger, 1995). A total of 1,188 photographs were taken, 400 (33%) of which were useful for individual identification of *C. commersonii*.

Results and Discussion

Group Size

Mean group size observed in the Ría Deseado was 1.88 (range 1 to 10 dolphins, SD = 1.084, n = 951). Of these groups, 93.7% were < 3 individuals, although occasional aggregations of > 7 dolphins/group occur periodically (n = 4). (Figure 3). Individual dolphins associate for various benefits, including social foraging, predator avoidance, defense against predators, and access to breeding opportunities and social relationships (Acevedo-Gutierrez, 2002). *C. commersonii* appear to travel most frequently in small groups

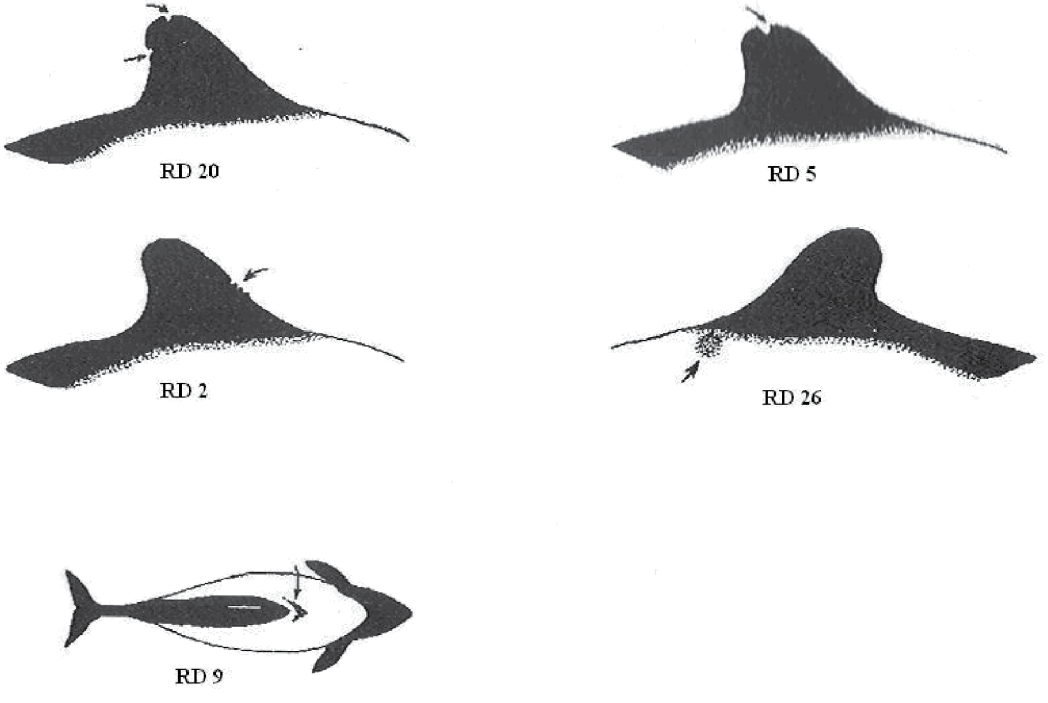

Figure 2. Examples of individually identified Commerson's dolphins at Ría Deseado (drawings by J. Claver and adapted from Iñiguez, 1997)

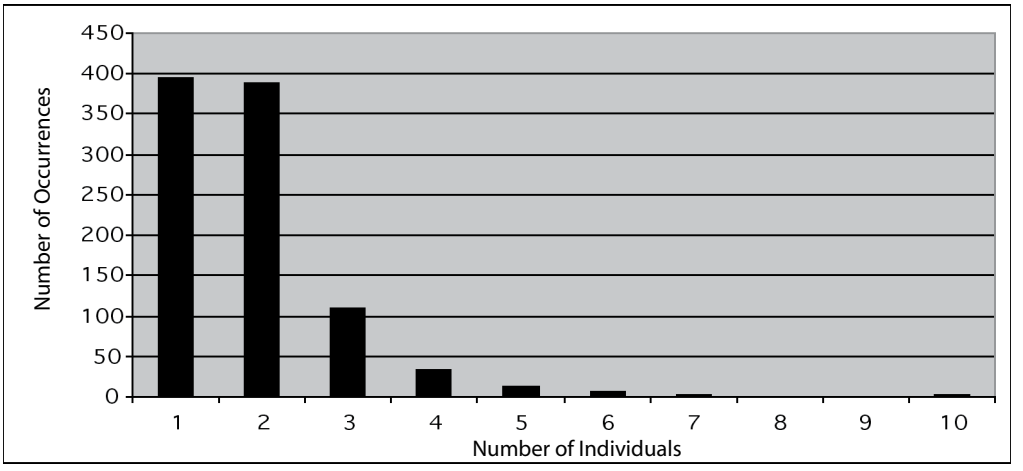

Figure 3. Group size of *C. commersonii* at Ría Deseado

containing fewer than ten animals (Goodall et al., 1988). A maximum of 25 Commerson's dolphins were seen together at Ría Deseado in October 1984 (O. Day, pers. comm.). The mean group size observed was similar to Commerson's dolphins in other locations. In the Strait of Magellan, the vast majority of groups had < 9 individuals ($\bar{x}$ = 4.22, SD = 9.14) (Leatherwood et al., 1988), while off Tierra del Fuego, the mean group size was 6.85 animals (Goodall et al., 1988). In San Julian Bay most of the groups observed consisted of < 4 individuals, and the mean group size was 2.25 (Iñíguez et al., 2001).

Photo-Identification

A total of 26 Commerson's dolphins were identified. Individuals less than 1 y old were observed and photographed during boat surveys, but such animals did not have the distinctive features which allow identification. All 26 dolphins were resighted in successive years, suggesting the presence of a resident population in Ría Deseado. Differences in the colour pattern along the borders between black and white zones, particularly behind the blowhole, in front of the dorsal fin on the back, and on each side were used to distinguish individuals. Goodall et al. (1988) described variation in some details of coloration along borders between dark and light zones. Details of the border behind the blowhole are sufficiently variable that they alone can often be used to identify individuals and perhaps distinguish among stocks. Goodall et al. also suggest that variation in pigmentation of the tail stock might be useful, but it was very difficult to obtain good photographic details of this area in this study.

All the individuals identified in Ría Deseado had at least one scar or mark. Distinguishing marks also were reported by Mermoz (1980), Robineau (1984), and Goodall et al. (1988), suggesting that most dolphins of this species may be identified by such variation.

Two adults (RD13 and RD14) have anomalous pigmentation, keeping the typical grey colour pattern of the calves. RD13 and RD14 were identified in 1994 and 1995, respectively, and have been seen in every successive year. Goodall et al. (1988) also reported two dolphins with anomalous pigmentation in Tierra del Fuego, but no all black or all white Commerson's dolphins have been recorded.

Calf Presence

Calves were present in the study area on 58 occasions (6.09% of total sightings) since the beginning of the project. Calves were observed during every summer's fieldwork between 1986 and 1991 and 1994 and 1997. A freshly dead fetus was found stranded 6 km up the Deseado River in September 1989. The westernmost record for a calf was at Bahía Concordia (14 km up the Ría Deseado).

Small calves were only seen between mid-September and mid-March at Ría Deseado, which suggests that calves are born in the austral spring and summer. Goodall et al. (1988) reported that the birth season appears to be austral summer even for animals living in a northern hemisphere oceanarium. Mermoz (1980) recorded newborn calves in January and February at Comodoro Rivadavia.

Distribution and Behaviour

C. commersonii were observed throughout all the study area (Figure 1). The dolphins used mainly Zone III (70%), followed by Zone II (20%) and Zone I (10%) between Isla Chaffers and Punta Lista. Zone I of our study is the location of Puerto

Deseado, so most of the anthropogenic influences are focused in this area. This may explain the predominate use of Zone III between Isla Chaffers and Punta Lista by Commerson's dolphins. Traveling was the most frequent behaviour recorded (51%) between Isla Chaffers and Punta Lista (Table 1). Resting was the second most frequently observed activity (21%), followed by feeding (19%) and socialising (9%). This may be related to the amount of vessel traffic in this area. An increase in the ship traffic within the estuary could thus motivate changes in the behavioural patterns of dolphins.

Zone I was used mainly by Commerson's dolphins for traveling (29%), feeding (28%), and resting (29%). Zones II and III were used for traveling (47% and 39%, respectively) (Table 2). Statistically significant differences between behaviour and zone used were found (χ^2 =88.62, df = 6, $p < 0.001$, contingency coeff. = 0.124).

Vertical, belly to belly copulation postures in Commerson's dolphins were observed only twice during the entire study period in February 1995. This behaviour was previously observed by Pascal (1981, cited in Goodall et al., 1988) in *C. commersonii* off Kerguelen Island and by Goodall et al. (1988) at Tierra del Fuego.

While dolphins were observed frequently along the southern coast of the Ría Deseado between Isla Chaffers and Punta Lista, they also were seen at Isla del Rey, at the mouth of Cañadon del Puerto, WSW of Península Viedma, Isla de los Pájaros, and Isla Burlotti.

On 16 January 1987, 14 dolphins (1 calf) were counted in a boat survey between Club Nautico "Capitan A. Oneto" and Isla del Rey. In May 2003, two Commerson's dolphins were recorded 24 km upriver. Goodall et al. (1988) describe reports of Commerson's dolphins 30 km up the Rio Negro, especially during August and September. We believe that this may be due to a misunderstanding, however, as the name for bottlenose dolphins in the area is *tonina*. The Spanish name for Commerson's dolphin is similar, *Tonina overa*.

Prey/Feeding

Commerson's dolphins were observed feeding on silverside fish or pejerrey (*Odontesthes nigricans* and *O. smitti*) (P. Cedrola, pers. comm.) on 16 occasions during the summertime. These fish spawn in spring and enter the Ría Deseado by September, staying until April/May. They are locally abundant and also are located in the same areas where Commerson's dolphins are commonly found at Ría Deseado (A. Pettovello, pers. comm.). Silversides were included in Commerson's dolphin prey items off Tierra del Fuego (Bastida et al., 1988) and Comodoro Rivadavia (Mermoz, 1980) and in San Julian Bay (Iñíguez et al., 2001). Commerson's dolphins seem to follow fish nearshore during summertime as observed by Goodall et al. (1988) for Tierra del Fuego.

Table 2. Percentage of time for type of behaviour in each zone

	Behaviours			
Zone	Traveling	Feeding	Resting	Socialising
I	29%	28%	29%	14%
II	47%	15%	23%	15%
III	39%	23%	21%	17%

To feed, the dolphins drive prey against anchored ships, near a pier, and close to *M. pyrifera*, thereby reducing the number of potential escape routes for the fish. This behaviour was performed by individuals and by groups. Similar behaviour was described for this species by Gewalt (1979), Mermoz (1980), and Goodall et al. (1988). Bottlenose dolphins (*Tursiops truncatus*) are known to poke their way among rocks to feed on schooling fish, at times trapping schools against a beach or cliff or on the bottom. Sometimes they encircle prey as a cooperating group in the open coast sea (Würsig, 2002a). *C. commersonii* off Tierra del Fuego are generalist coastal feeders (Bastida et al., 1988). Goodall & Cameron (1980) described the food habits of Commerson's dolphins, which appear to be similar to those of the Patagonian blenny *(Eleginops maclovinus*).

Interactions with other species included surface feeding aggregations of Commerson's dolphins together with the Magellanic penguin (*Spheniscus magellanicus*), South American tern (*Sterna hirundinacea*), Great grebe (*Podiceps major*), Neotropic cormorant (*Phalacrocorax brasilianus*), rock cormorant (*P. magellanicus*), Imperial cormorant (*P. atriceps*), kelp gull (*Larus dominicanus*), Brown skua (*Catharacta Antarctica*), and South American sea lion (*Otaria flavescens*). Association with sea birds and marine mammals has been reported by Goodall et al. (1988) and Leatherwood et al. (1988). The first authors observed a group of Commerson's dolphins milling in an area where southern sea lions were feeding. They also reported that birds of many species were often present in the vicinity of Commerson's dolphins in the Strait of Magellan. Surface-active aggregations with kelp gulls present were reported by Goodall et al. (1988) off Rio Cullen.

Reaction to Vessels

Encounters between boats and groups of dolphins were recorded in 147 occasions. Commerson's dolphins interacted with vessels in 40.13% of such encounters ($n = 59$). At Ría Deseado, vessels used the deepest channel (Zone II of our study area).

The most frequently involved interactions were swimming around moving boats (25.27%). Bow-riding individually or in groups also occurred frequently and was observed during 18.68% of the samples. A head-first reentry leap was recorded in 12.08% of the observations. Figure 4 summarises behavioural reaction to vessels. The attraction of Commerson's dolphins to boats and ships was previously described by several authors (Goodall et al., 1988; Leatherwood et al., 1988; Goodall, 1994; Coscarella et al., 2003).

We have reported bow-riding here and previously (Iñíguez & Tossenberger, 1995), and relatively common bow-riding by Commerson's dolphins off Tierra del Fuego was documented by Goodall et al. (1988). Although the function of bow-riding is difficult to assess, some authors (e.g., Würsig, 2002b) conclude that dolphins bow-ride for "enjoyment," in other words, play.

Head-first reentry leaps were the third most frequently observed behaviour when dolphins were in the presence of a boat at Ría Deseado. Baker (1978) reported that Hector's dolphins (*Cephalorhynchus hectori*) rarely jump except while interacting among themselves or approaching vessels. Mermoz (1980) associated aerial displays and an increase in speed with the feeding behaviour of Commerson's dolphins off Comodoro Rivadavia. Leaping occurs for a variety of reasons: locomotion, rapid breathing, perspective out of water, communication, possibly to scare prey, social-sexual display and facilitation, removal of ectoparasites, and for "fun" (Würsig, 2002c).

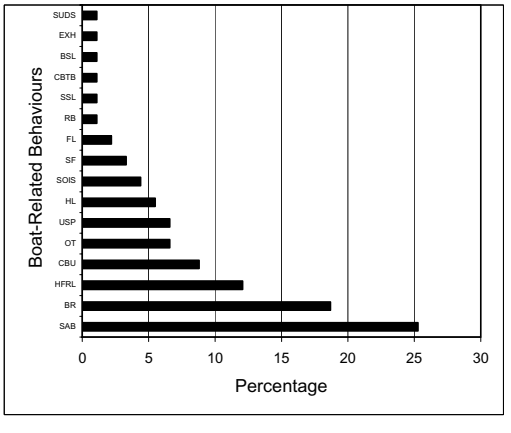

Figure 4. Percentage of boat-related behaviours of Commerson's dolphins

Key: Swimming upside down (suds), exposing head at 45° (exh), belly slap (bsl), crossing boat from bow/stern (cbtb), side slap (ssl), rubbing (rb), floating (fl), surfing (sf), swimming on its sides (sois), high leap (hl), underwater spinning (usp), on stern (ot), crossing boat underneath (cbu), head first re-entry leaps (hfrl), bow riding (br), and swimming around boat (sab)

We observed stationary "floating" by Commerson's dolphins off Ría Deseado—a similar behaviour termed "bobbing" was described for captive individuals at SeaWorld (Cornell et al., 1988).

Swimming in the stern wake was commonly observed at Ría Deseado. Goodall et al. (1988) described the same behaviour for Commerson's dolphins off Tierra del Fuego and concluded this behaviour was either for play or associated with purposeful travel in which the dolphins were playing and transporting themselves from one location to another.

Pascal (1981, cited in Goodall et al., 1988) reported Commerson's dolphins at Kerguelen spinning underwater on their longitudinal axis as they rode the pressure waves from accompanying vessels. We rarely observed an analogous behaviour at Ría Deseado (6.6% of boat-related behaviours of Commerson's dolphins).

Surfing also was observed at Ría Deseado. This behaviour also was described for individuals off Tierra del Fuego (Goodall et al., 1988) and in the Islas Malvinas/Falkland Islands (K. van Waerebeek, pers. comm.). It is performed frequently by all members of the genus *Cephalorhynchus* (Dawson, 2002).

Swimming upside-down was recorded and has also been observed in the Kerguelen Islands, Strait of Magellan, and in the captive colony at SeaWorld (Cornell et al., 1988; Goodall et al., 1988). These authors suggested this posture was associated with feeding. Kastelein et al. (1993) gave three possible explanations for this posture: (1) dolphins might have a better view of fish during the approach before capture; (2) it may be used to echolocate prey on the ocean floor; or (3) the rotation around the body axis directs the black genital patches in many directions, showing to conspecifics their sex and, in the case of females, their age. Even though the evidence described above is largely circumstantial, we believe swimming upside-down, underwater spinning, and swimming on its sides may be more associated to the third hypothesis of Kastelein. It also may be related to dominance patterns wherein dominant individuals of a group edge others to a less favourable position.

A presumed "mother" with accompanying calf approached vessels on 16 occasions and avoided vessels with a running engine on five occasions. While approaching, the "mother" kept the calf < 1 DL in echelon (alongside the mother) or in infant position (infant's head and dorsal side lightly touch the mother's abdomen). Presumed mother-calf pairs closely approached sailboats and kayaks on 11 occasions.

Avoiding reactions of cetacean mother-calf pairs to boat traffic were described for Dall's porpoise (*Phocoenoides dalli*) (Dolam et al., 2002) and humpback whales (*Megaptera novaeangliae*) (Clapham & Mattila, 1993). Adults interposing themselves between approaching vessels and calves in a protective fashion were described for Indian humpback dolphin (*Sousa plumbea*) (Karczmarski et al., 1997) and southern right whales (*Eubalaena australis*) (Ulmann & Richardson, 1995).

Van Parijs & Corkeron (2001, cited in Dolam et al., 2002) suggested that Pacific humpback dolphin (*S. chinensis*) mother-calf pairs were most disturbed by transiting boat traffic in Moreton Bay, Australia. Stewart et al. (1982) described stronger reactions for belugas (*Delphinapterus leucas*) to vessels with outboard motors than other vessels.

On 10 January 1991, an adult *C. commersonii* was observed interacting with an inflatable boat, using the right rear pontoon to rub its left side, while increasing/decreasing its speed simultaneously. To rub its right side, the dolphin used the left rear side of the pontoon.

On 24 January 1994, two adults and a calf were observed swimming out of a kelp bed at 11:35 h, traveling to the west with occasional bouts of apparent resting. At 13:34 h, the adults and calf were observed swimming slowly with < 1 DL between them within the deepest channel in Zone II. Usually an adult was slightly ahead of the others or the calf was situated between the adults. At 14:35 h, the group increased speed and headed to the east and south. Two minutes later, an approaching jet-ski was observed at fast speed. The dolphins then moved to Zone III, with the calf headed to the SW and the two adults to the SE. Distances between the calf and adults were 3 DL. At 14:46 h, the group headed to the E, approached by the jet-ski, which maintained high speed. One adult swam ahead < 1 DL from the other adult and calf. An adult always stayed between the approaching jet-ski and the calf. The dolphins then moved to the mouth of the Ría Deseado, avoiding the jet-ski and swimming within Zone III. They left the Ría Deseado at 16:04 h.

Approaching a feeding Commerson's dolphin with a kayak in shallow waters elicits movement to deeper waters and thus avoidance of the kayak. Nowacek et al. (2001) indicated that boats approaching bottlenose dolphins in shallow waters increased the probability of a change in behaviour. It also seems that jet-ski recreational craft may cause negative reactions by *C. commersonii*. Simmonds (2000) reported that jet-skis produce predominantly high-frequency noise, and these very fast moving vessels may create a rapid increase in noise and/or sudden appearance that can startle marine animals. This could explain the reaction of Commerson's dolphins to the jet-ski presence. For all cetacean species where comparable data exist, animals that were "resting" or "milling" showed the greatest susceptibility to disturbance (Würsig et al., 1998). Bristow & Rees (2001) found sleeping bottlenose dolphins that suddenly awoke to the close proximity of an approaching boat would make one or two huge leaps, suggesting a reflex action to avoid the vessel.

Night Observation

Three opportunistic night observations were made in January 1988 (n = 1) and January 1994 (n = 2), using the pier lights or the full moon. On 20 January 1988, a Commerson's dolphin was feeding on silversides for 19 min against the pier and the sides of the ships tied to the pier. The dolphin repeatedly chased fish to the surface and then made head-first reentry leaps. Even though we cannot conclude anything with only one observation, Commerson's dolphins seem to be actively feeding at night in the Ría Deseado. This may be a result of the attraction of fish to the lights of the pier and ships, which may simplify ease of catch.

On 29 January 1994, the authors used kayaks to make a close approach to a feeding dolphin while it chased and circled silversides against anchored sailboats. When approached by the kayaks, the dolphin moved to deeper water, apparently to avoid the kayaks. On 30 January 1994, an adult dolphin was recorded 20 km upriver in the very shallow waters of Bahía Concordia.

Interactions with Other Aquatic Mammals

On 19 January 1987, four killer whales (*Orcinus orca*) (1 adult male, 2 females or sub-adults, and 1 calf) entered the river and swam to Bahía Uruguay, remaining 5.5 h. The killer whales were observed feeding on unidentified fish at the surface. Four Commerson's dolphins rushed out to open waters, jumping clear of the surface and stayed away while the killer whales were in the mouth of the Ría Deseado estuary. An adult Commerson's dolphin remained in shallow waters < 1 m deep on the north of the Ría Deseado, moving very slowly and close to the kelp beds. Meanwhile, the killer whales moved in a tight group on the south seacoast of the Ría Deseado, 300 m from the Commerson's dolphin's location. Only one Commerson's dolphin was sighted by the seacoast anywhere in the vicinity of the estuary during the rest of that day.

Killer whales are likely the principal predator of Commerson's dolphins (Harmer, 1922). The clear avoidance responses by Commerson's dolphins to the presence of killer whales in Ría Deseado

indicated that killer whales are a potential predator in this area. Avoidance behaviour toward killer whales has been observed in other small cetacean species such as *Lagenorhynchus obscurus* (Würsig & Würsig, 1980; Constantine et al., 1998; Visser, 1999), *S. chinensis* (Saayman & Tayler, 1979), *P. dalli* (Jefferson 1987), *T. truncatus* (Constantine, 1995, cited in Constantine et al., 1998, and Visser, 1999), and *Delphinus delphis* (Visser, 1999).

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