Records of kogiid whales in Namibia, including the first record of the dwarf sperm whale (*Kogia sima*)

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*Dwarf (*Kogia sima*) and pygmy (*K. breviceps*) sperm whales occur in pelagic waters around southern Africa. Here we report the first record of* K. sima *from Namibia and provide information on the basic morphometrics and diet of that record and of* two recent strandings of K. breviceps. All known records (N ¼ 29) of K. breviceps from Namibia are also collated. Eight families of cephalopod were identified in the stomach contents of the K. sima but no fish remains and few crustacean parts were present. Nine and ten families of cephalopod were identified in the stomachs of the two K. breviceps specimens respectively. This report expands the known range of K. sima by more than 1000 km from previous published records in the region. The sparsely populated nature of the Namibian coast and bias of records towards centres of human habitation suggest Kogia strandings are under reported. The low number of stranded specimens of K. sima from Namibia and west South Africa, in comparison to K. breviceps suggests that K. sima occur rarely or at very low densities in the area influenced by the Benguela current ecosystem. Specimens from Namibia are valuable due to uncertainties about taxonomy of kogiids in the region.

Keywords: *Kogia breviceps*, *Kogia sima*, Namibia, dwarf sperm whale, pygmy sperm whale, new range state record, stomach contents, diet

INTRODUCTION

The genus *Kogia* currently contains two recognized species, the dwarf (*Kogia sima*) and pygmy (*K. breviceps*) sperm whales. Due to their small body size, cryptic behaviour and small school sizes, these whales are difficult to observe at sea, and morphological similarities make field identification to species level problematic. The majority of what is known about kogiid whales in southern Africa (i.e. Namibia, South Africa and Mozambique) results from studies of stranded specimens (e.g. Ross, 1979a; Findlay *et al.*, 1992; Plo¨n, 2004), including preliminary evidence that *K. sima* inhabiting the Indo-Pacific and Atlantic Oceans may be separate species (Chivers *et al.*, 2005). Documenting stranding events is valuable, as it is often the only access possible to rarely seen species. In addition, analysis of long term trends in stranding records may help to identify shifts in distribution such as those associated with environmental change (e.g. MacLeod *et al.*, 2005; Weir *et al.*, 2009; Salvadeo *et al.*, 2010).

Kogia spp. are globally distributed in tropical and temperate oceans (Caldwell & Caldwell, 1989), with *K. breviceps* usually extending into cooler waters than K. sima (see Baird et al., 1996; Willis & Baird, 1998; Best, 2007 for review of distribution patterns). Both species are predominantly pelagic in their distribution occurring in deep oceanic waters off the shelf in tropical and temperate waters (Caldwell & Caldwell,1989).

Around southern Africa, oceanic currents govern the temperature and productivity of the waters on the continental shelf and adjacent regions. These currents influence the species composition of these areas at all levels of the food chain, including marine mammals (Findlay *et al.*, 1992; Ansorge & Lutjeharms, 2007) and thus deserve some discussion within the context of new species records. The warm Agulhas Current flows south-westwards along the eastern seaboard of southern Africa from the Mozambique Channel to the southern most tip of the Agulhas Bank off South Africa, at which point the majority of the current retroflects back eastwards forming the Agulhas return current (Ansorge & Lutjeharms, 2007) (Figure 1). Eddies formed by meanders in the current sometimes break off forming 'Agulhas rings' which move north and west, bringing warmer waters and sometimes associated wildlife into the South Atlantic. The Benguela Current system is an eastern boundary upwelling system. Predominantly southerly winds move surface waters northwards and offshore, resulting in upwelling of cold waters and a northward flowing current. The Benguela ecosystem

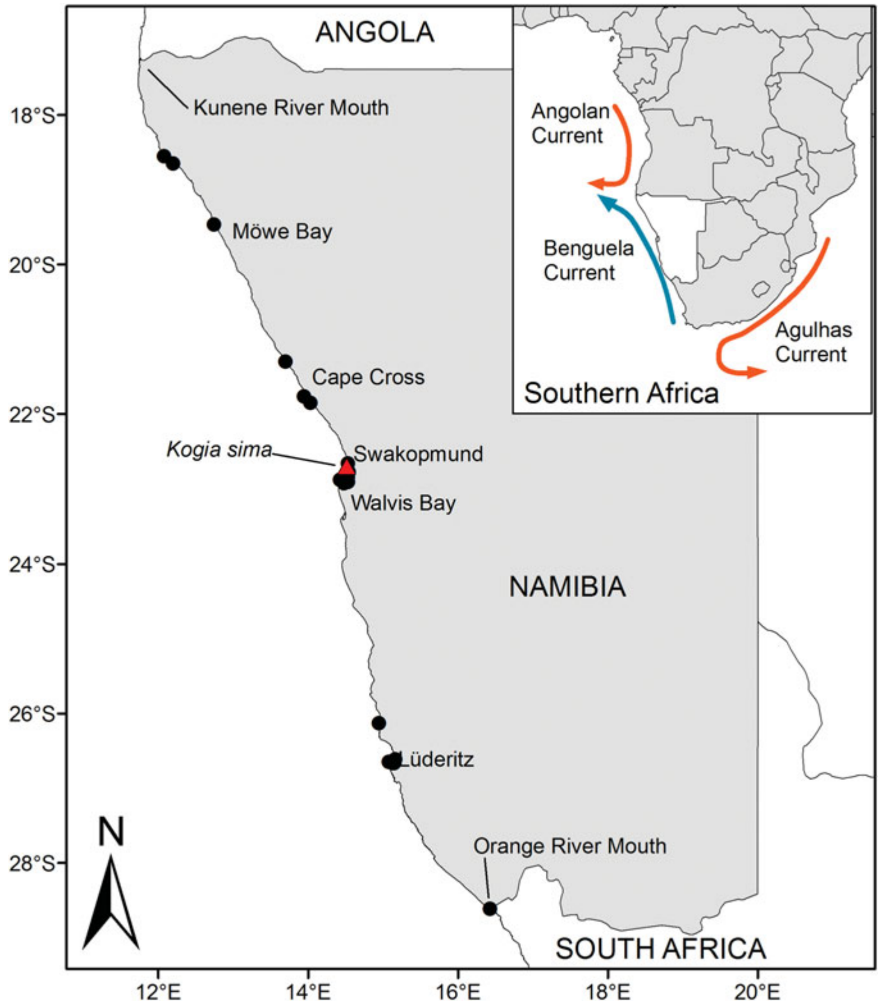

Fig. 1. Distribution of all known records of *Kogia breviceps* and *Kogia sima* in Namibia including places mentioned in text and main rivers at northern and southern borders. The Skeleton Coast National Park runs from the Kunene River to approximately 100 km north of Cape Cross.

is functionally split close to the South Africa–Namibia border due to an exceptionally strong upwelling cell in the Lu¨deritz region in southern Namibia. The northern and southern Benguela have distinct oceanographic and cli-matic properties with the northern showing much greater sea-sonality and variation (Veitch *et al.*, 2009). The northern boundary of the Benguela Current is formed by the Angola–Benguela frontal system, a dynamic boundary oscil-lating between 14° and 17°S (Ansorge & Lutjeharms, 2007). The western boundary of the Benguela Current system is more transient and ranges from roughly 200 km offshore in the south to 750 km offshore in the north, well off the continen-tal shelf (Wedepohl *et al.*, 2000; Ansorge & Lutjeharms, 2007). There are no published sightings records of live kogiids of either species in South Africa or Namibia. All that is known about their distribution patterns and habitat use within these countries is based on strandings records and extrapol-ations from at-sea sightings further afield in neighbouring countries (e.g. Best, 2007). *Kogia breviceps* have been recorded from strandings on both the east and west coasts of southern Africa (i.e. in both the Benguela and Agulhas Current systems), including Namibia and South Africa and from sight-ings in the tropical waters of the Indian Ocean (Ballance & Pitman, 1998; Kiszka *et al.,* 2010). No confirmed records (sightings or strandings) of *K. breviceps* are available in the Eastern Tropical Atlantic (Gulf of Guinea to Angola), north of Namibia (see Best, 2007; Van Waerebeek *et al.*, 2009; Weir, 2010, 2011). *Kogia sima* has to date only been recorded from strandings along the warmer eastern coast of southern Africa, predominantly east of Cape Point (under the influence of the Agulhas Current), as far as the Comoros Islands (Kiszka *et al.,* 2010) and into the Indian Ocean (de Boer *et al.,* 2002). In the Atlantic, there is a notable absence of *K. sima* strandings or sightings from the area influenced by the Benguela ecosys-tem, with the exception of a few strandings in the southern

~100 km, between St Helena Bay and Cape Point (Findlay *et al.*, 1992). The northernmost record of *K. sima* within the Benguela is from 32°36′S (Plo¨n, 2004; Best, 2007). Further north in the warmer waters of the Eastern Tropical Atlantic *K. sima* were seen exclusively in deep waters (>900 m) off Angola (while *K. breviceps* were never seen) during a series of predominantly deep water observations lasting >5900 hours of effort (Weir, 2011) as well as recorded from strand-ings in Ghana (Van Waerebeek *et al.*, 2009).

Stomach contents analyses show that both *Kogia* species are predominantly teuthivorous (although some fish and crus-tacean species are also consumed) and that they have one of the most species rich diets of any small odontocete in southern

Africa (Sekiguchi *et al.*, 1992). Using specimens stranded within South Africa, Plo¨n (2004) described the diet of *K. breviceps* to include 50 cephalopod, 12 fish and 5 crustacean species, while *K. sima* had a narrower diet range of 32 cephalopod, 3 fish and 3 crustacean species. Numerically, squid from the families Histioteuthidae and Lycoteuthidae were the most frequently taken by both *Kogia* species, while hake (*Merluccius* spp.) was the most frequently eaten fish genus (Plo¨n, 2004).

This paper reports the first record of *K. sima* from Namibia and provides information on the basic morphometrics and diet of that record and of two recent stranded specimens of *K. breviceps*. All previously known records of the genus from Namibia are also collated. These data are presented and discussed within the context of known distribution patterns and environmental conditions within the southern African subregion.

MATERIALS AND METHODS

Three *Kogia* spp. specimens, including one *K. sima* (KS01) and two *K. breviceps* (KB01 and KB02) stranded on the Namibian coastline between June and August 2010. A series of standard photographs and measurements (Geraci & Lounsbury, 1993) were collected from all three individuals and field necropsies were conducted to investigate health status and collect biological samples (skin, blubber, ovaries and gastro-intestinal tracts) and skeletal material. The gastro-intestinal (GI) tract was removed and frozen for subsequent analysis of tract contents. Skeletal material (skull of KB01, lower jaw of KB02, the skull having been damaging during euthanasia, and the entire skeleton including skull of KS01) were retained and are lodged in the Namibian National Museum, Windhoek (no accession numbers available as of submission).

Dietary analysis

The defrosted GI tract of each whale was opened and the contents of each stomach compartment passed through 425 μm and 100 μm mesh sieves. Nematode worms were separated from hard parts which included cephalopod beaks, eye lenses and crustacean carapaces. Hard parts and samples of nematode worms were stored in dilute ethanol prior to identification.

Beaks were counted, measured and identified by comparison with material in the Port Elizabeth Museum collections and using literature (Clarke, 1980, 1986; Smale *et al.*, 1993). Effort was focused on lower beaks for identification and measurement as these are most used for species identification and allow comparison between studies (Clarke, 1986). Upper beaks were counted but not identified to species level. Dorsal mantle length (DML) and masses of each prey item were calculated from the lower beaks using either the rostral length (RL) for squid or crest length for Octopodiae and Sepiidae (Clarke, 1980, 1986; Smale, 1983; Smale *et al.*, 1993). Only data from lower beaks are presented further.

Records of *Kogia* spp. in Namibia

All available records of *Kogia* from Namibia were compiled from multiple sources; all were stranded animals and no at sea sightings could be sourced. The majority of older records (prior to 1990) are held by the Whale Unit of the Mammal Research Institute, University of Pretoria (author: P.B.B.). Records made subsequent to this are held by the Namibian Ministry of Fisheries (author: J.P.R.) and more recently by the Namibian Dolphin Project (authors: S.E. and T.G.). Variable levels of detail are available for each record due to differences in the state of decay of each specimen and the manner by which it was recorded (attended for full necropsy, reported remotely, etc.). Much of the data resulting from records prior to 1990 has contributed to other studies including Ross (1979a, b), Findlay *et al.* (1992), Sekiguchi *et al.* (1992) and Plo¨n (2004).

Species identification was based on one or more of the following criteria: external—relative dorsal fin height (*K. sima*: >5% of total body length; *K. breviceps*: <5% body length); relative position of dorsal fin from snout (*K. sima*: anterior insertion of dorsal fin is >50% of body length from snout; *K. breviceps*: <50%), number and size of mandibular teeth (*K. sima*: 8–11 pairs, *K. breviceps*: 11–17 pairs); and cranial–dorsal cranial fossae cupped or uncupped, width of dorsal sagittal septum (Ross, 1979a; Best, 2007).

RESULTS

KS01 live stranded on the 16 June 2010, 5 km south of the town of Swakopmund (22.7158°S 14.5279°E), but died in transit to the refloatation site. This is the first known occurrence of this species for Namibia and the northern Benguela ecosystem as a whole. KS01 was a 216 cm long female, pregnant with a 6 cm long foetus. Dorsal height was 19.2 cm and girth at axilla of the flippers was 124 cm. No external parasites were found, and the animal appeared in good health externally. One fresh bite on the dorsal ridge was possibly from a cookie cutter shark (*Isistius* spp.).

KB01 was found freshly dead on the 24 August 2010 in the town of Lüderitz in the south of Namibia. KB01 was a sexually immature female 228 cm long with a dorsal fin height of 10 cm and a girth at axilla of 139 cm; ovaries were not collected due to failing light at the necropsy site. The animal had sustained multiple lacerations on the skin during stranding.

KB02 live stranded on the 26 August 2010 in Guano Bay, Lüderitz, was refloated but restranded and was then euthanized. KB02 was a 212 cm long, sexually immature female with a dorsal fin height of 9 cm and a girth at axilla of 132 cm. Although appearing healthy and unscarred externally, KB02 had a white lumpy swelling on the lung tissues and a large number of nematodes in the stomach (100s).

Dietary analysis

A summary of the prey identified in the stomachs of KS01, KB01 and KB02 is presented in Table 1. Eight families of cephalopod were identified from the stomach of KS01. The most numerous prey species taken by KS01 were Sepiidae (cuttlefish) most likely *Sepia australis*, which also made up the largest proportion of the diet by mass. Nine and ten families of cephalopod were identified from KB01 and KB02 respectively. The most numerous prey taxa taken by KB01 and KB02 were Ommastrephidae (*Ommastrephes bartrami*) and Lycoteuthidae (*Lycoteuthis lorigera*) respectively. These species, as well as Octopoteuthidae (*Octopoteuthis* spp.) and

Table 1. Cephalopod species identified from lower beaks in the stomachs of *Kogia sima* and *Kogia breviceps* stranded in Namibia, 2010. Beak rostral lengths shown are means for each species (± standard deviation (SD) where N >1) with an overall mean of all lower beaks. Dorsal mantle length (DML) and mass have been calculated from regression equations available in the literature and from existing collections held by the Port Elizabeth Museum. Regression values were obtained all from the literature (Clarke 1980, 1986), and Wolfe (1982) for *Ommastrephes bartramii*, and Cooper (1979) for *Todaropsis eblanae*. Regressions for *Lycoteuthis lorigera* were calculated from Port Elizabeth Museum material DML (mm) = 34.6 × LRL – 21.93: mass (g) = e^(0.241 + 1.0155*LRL(mm)). Prey specimens have been identified as accurately as possible. Where confirmation of exact species was not confident (but genus was), we have indicated this with a '?'.

Specimen	Stomach	Family	Genus/spp.	No	Beak length (mm)	DML (mm)	Mean mass (g) ±SD	Total mass (% contribution)
KS01								
	Stomach 1 and oesophagus							
		Histioteuthidae	*Histioteuthis macrohista*	1	2.8	49	53.1	53.1 (0.7)
		Sepiidae	*Sepia australis?*	5	4.7 (0.5)	–	25.4 (6.6)	127.2 (1.6)
	Stomach 2							
		Sepiidae	*Sepia australis?*	180	4.8 (0.6)	–	27.7 (8.7)	4993.4 (62.6)
		Chiroteuthidae	*Chiroteuthis cf veranii*	2	4.3 (0)	116.6	40.3 (0.0)	80.7 (1)
		Chiroteuthidae	*Chiroteuthis joubini?*	1	4.2	114.1	37.9	37.9 (0.5)
		Cranchidae	*Taonius juvs*	3	3.6 (0.3)	208.8	36.4 (5.7)	109.3 (1.4)
		Histioteuthidae	*Histioteuthis miranda?*	2	5.0 (0.1)	97.5	202.8 (13.2)	405.7 (5.1)
		Histioteuthidae	*Histioteuthis macrohista*	10	3.9 (0.5)	72.4	114.3 (32.0)	1143.1 (14.3)
		Lycoteuthidae	*Lycoteuthis lorigera*	2	4.2 (0.9)	121.7	105.5 (86.3)	211.1 (2.6)
		Ommastrephidae	*Todarodes angolensis?*	4	3.3 (1.3)	125.2	84.5 (98.7)	337.9 (4.2)
		Onychoteuthidae	*Moroteuthis*	1	5.7	221.4	473.3	473.3 (5.9)
	Stomach 3	Empty						
Totals				**211**	**4.7 (0.7)**	**114.3**	**37.7 (43.7)**	**7972.7**
KB01								
	Stomach 1 and oesophagus							
		Brachioteuthidae	*Brachioteuthis ?picta*	1	2.9	74.8	7.8	7.8 (0.1)
		Chiroteuthidae	*Chiroteuthis Teuthowenia*	2	4.9 (0.8)	130	57.5 (24.2)	114.9 (0.8)
		Cranchiidae	*Histioteuthis macrohista*	4	5 (1.4)	214.1	95.7 (51.2)	383.8 (2.7)
		Histioteuthidae	*Histioteuthis dofleini*	34	2.8 (0.5)	49.6	57.2 (18.6)	1944.5 (13.5)
		Histioteuthidae	*Histioteuthis atlantica*	6	2.4 (0.9)	39.7	44.2 (45.1)	265.1 (1.8)
		Histioteuthidae	*Lycoteuthis lorigera*	8	3.6 (0.4)	65.8	94.7 (21.8)	757.7 (5.3)
		Lycoteuthidae	*Octopoteuthis*	62	4.9 (0.7)	147,3	213,0 (83.3)	1516.0 (10.5)
		Octopoteuthidae	*Ommastrephes bartramii*	9	9.5 (1.8)	163.8	222.9 (91.7)	2006.4 (13.9)
		Ommastrephidae	*Todaropsis eblanae?*	88	5.8 (1.8)	212.3	260.6 (134.8)	4310.6 (29.9)
		Ommastrephidae	*Pholidoteuthis boschmai*	18	3.1 (0.7)	117.6	61.0 (35.5)	1097.8 (7.6)
		Pholidoteuthidae	*Sepiolid*	1	7.6	323.6	825.2	825.2 (5.7)
		Sepiolidae		1	2.5	0	5	5.0 (0.03)
	Stomach 2							
		Histioteuthidae	*Histioteuthis* juv?	1	1.6	21.9	14.6	14.6 (0.1)
		Lycoteuthidae	*Lycoteuthis lorigera*	2	4.7 (0.1)	139	143.2 (10.3)	286.4 (2.0)
		Ommastrephidae	*Ommastrephes bartramii*	1	5.1	193.5	182.5	182.5 (1.3)
	Stomach 3							
		Histioteuthidae	*Histiotuethis macrohista*	1	3	53	62.3	62.3 (0.4)
		Lycoteuthida	*Lycoteuthis lorigera*	3	4.1 (1.2)	121.1	123.6 (90.3)	370.7 (2.6)
		Ommastrephidae	*Ommastrephes bartramii*	1	6.1	221.1	264.3	264.3 (1.8)
Totals			**19**	**243**	**4.8 (1.9)**	**151.2**	**186.7 (139.6)**	**14414.7**
KB02								
	Stomach 1 and oesophagus							
		Brachiotuethidae	*Brachioteuthidae*	1	4.2	101.1	13.1	13.1 (0.1)
		Brachiotuethidae	*Brachioteuthis cf. picta*	4	1.7 (0.1)	50.6	3.7 (0.2)	14.7 (0.1)
		Chiroteuthidae	*Chiroteuthis veranyi*	1	4.5	121.5	45.6	45.6 (0.3)
		Cranchiidae	*Teuthowenia*	2	6.2	265.1	172.1 (159.3)	344.3 (2.3)
		Cranchiidae	*Taonius* spp.	2	3.3 (0.6)	190.4	30.6 (11.3)	61.1 (0.4)
		Cranchiidae	*Liocranchia* spp.	2	2.2 (0.1)	175.1	35.7 (2.6)	71.3 (0.5)
		Cycloteuthidae	*Cycloteuthis akimushkini*	1	9.1	282.1	490.8	490.8 (3.3)
		Histioteuthidae	*Histioteuthis macrohista*	4	3.5 (0.4)	63	87.3 (23.5)	349.1 (2.3)
		Lycoteuthidae	*Lycotuthis* lorigera	32	4.8 (0.7)	143.2	194.8 (87.8)	6233.4 (41.6)
		Octopoteuthidae	*Octopoteuthis cf. sicula*	4	8.4 (0.4)	145.6	162.7 (18.9)	650.9 (4.3)
		Ommastrephidae	*Ommastrephes bartrami*	15	6.7 (1.2)	238.1	332.8 (115.1)	4991.9 (33.4)
		Ommastrephidae	*Todaropsis eblanae*	4	4.6 (0.3)	179	165.8 (32.7)	663.3 (4.4)
		Onychoteurthidae	*Moroteuthis robsoni*	1	6.5	305.7	749.4	749.4 (5.0)
		Sepiidae	*Sepia* sp.	1	4.5	–	22.8	22.8 (0.2)
		Unidentified broken	Unidentified broken	4	2.6 (1.2)	210.5	66.2 (60.8)	265.0 (1.8)
	Stomach 2	Empty						
	Stomach 3	Empty						
Totals			**15**	**78**	**4.8**	**159.4**	**180.5 (146.9)**	**14966.7**

Histioteuthidae (*Histioteuthis atlantica*) made the largest contribution by mass. The estimated length and mass of prey taken by the KB01 and KB02 were considerably larger than those taken by KS01.

Nematode worms constituted a large proportion of the stomach contents (numbering thousands of individual worms and far outweighing the cephalopod beaks) in at least one of the three stomach cavities of all three animals examined—these samples will be analysed and discussed elsewhere. Other than parasites, the majority of food remains were cephalopod beaks, partly digested cephalopoda (tentacles, pens, eye lenses, etc) and some crustacean hard parts which were too degraded to be identified to species level. No fish otoliths were found in any of the stomachs. Differences in rate of digestion may play a role in the relative abundances of fish and cephalopod prey.

Records of *Kogia* spp. in Namibia

All previous records (N = 29) of *K. breviceps* strandings within Namibia are presented in Table 2 and Figure 1. The majority of records originate near the coastal towns of Lu¨deritz and Walvis Bay reflecting human habitation patterns along the Namibian coast (Figure 1). Three skulls found without any associated data in the Mo¨we Bay Museum in 2010 are not included as they might represent some of the specimens recorded in a visit to the same museum by P.B.B. in 1986 or reported subsequently to him from the same general locality (i.e. records numbers 17–19 in Table 2).

DISCUSSION

Due to their cryptic nature, studies of free ranging kogiid whales are difficult and rarely conducted. However, they are one of the most commonly stranded cetacean species globally (Cadona Maldonado & Mignucci Giannoni, 1999; Maldini *et al.*, 2005) and in southern Africa (Findlay *et al.*, 1992, Plo¨n, 2004). Consequently, much of what we know originates from strandings data. However, there are several biases associ-ated with using strandings data to infer distribution and natural history, which must be considered.

Survey effort and reporting of strandings may be spatially or temporally biased, related to the density of human habitation, meteorological or oceanographic influences (Brabyn & McLean, 1992; Wright, 2005; Hart *et al.*, 2006; Witt *et al.*, 2006). Stomach contents might not be truly representative of diet (Sekiguchi *et al.*, 1992). Strandings records may not accurately reflect the species composition at sea; for example, although *K. breviceps* was the more common of the two *Kogia* species stranding on the Hawaiian Island chains, sightings surveys at sea showed the opposite pattern with *K. sima* making up 13 of 14 groups seen (Baird, 2005). However, in the absence of other forms of data collection, records of stranded animals are highly valuable sources of data (Findlay *et al.*, 1992; McLellan *et al.*, 2002; Maldini *et al.*, 2005; Elwen *et al.*, 2011).

This is the first report of *K. sima* in Namibia and our record extends the known species range by more than 1000 km from previous published sightings or strandings records in southern Africa. The closest published sightings and strandings of the species are in deep water (922–2105 m) off northern Angola (6–8°46′S; Weir, 2011) and along the very southern Benguela coastline respectively (32–34°S; Findlay *et al.*, 1992; Best, 2007). However, there have been recent sightings of *K. sima* offshore of the town of Benguela in southern Angola (Caroline Weir, personal communication) at around 12°S. This is at the extreme northern limit of what could be considered the Benguela ecosystem. The nearest presumed *K. sima* habitat to the site where KS01 came ashore is the warmer oceanic waters off the continental shelf of Namibia (Best, 2007). The records to date suggest a hiatus in the distribution of *K. sima* between 12°S and 32°S, possibly associated with the cool Benguela ecosystem along the west coast of southern Africa which may extend up to 750 km offshore in the northern areas (Wedepohl *et al.*, 2000; Ansorge & Lutjeharms, 2007). However, until dedicated cetacean surveys are conducted in these pelagic waters, we cannot conclude that *K. sima* is absent from this area.

Several factors may explain this new record but interpretation is hampered by the lack of scientific survey effort in pelagic waters or published sightings from platforms of opportunity such as are available for Angola (e.g. Weir, 2007). In addition, Namibia has a poor record of strandings along the coast with no official strandings response group and very low human presence along much of the coastline. Only ~50 km of coast around Lu¨deritz and ~200 km of coast north of Walvis Bay are readily accessible to members of the public. Human presence in the remainder of the Namibian coastline (more than 1500 km total length) is severely constrained by physical conditions, including around 400 km of dune fields, or mining and conservation related restrictions. However, these same limitations apply to the reporting of all species and we have collated 29 records of *K. breviceps* from the Namibian coast (which clearly reflect a bias towards centres of human habitation: Table 1; Figure 1). By comparison, in neighbouring South Africa the two species strand with similar frequencies; Plo¨n (2004) listed a total of 106 specimens of *K. breviceps* and 85 specimens of *K. sima* (both coasts com-bined, although the vast majority of recorded strandings occurred south and east of St Helena Bay at 32°S). The most parsimonious explanation for this novel record is that *K. sima* occurs rarely or at very low densities off the coast of Namibia, possibly because of the cold water temperatures in the Benguela region. Due to the paucity and uneven distribution of data, assessing changes in distribution patterns or seasonality of kogiid strandings in Namibia is not currently possible.

With the exception of Brachioteuthidae, all families of cephalopod prey found in the stomach contents of KS01 had previously been recorded in the stomachs of *K. sima* stranded in southern Africa (Sekiguchi *et al.*, 1992; Plo¨n, 2004). *Kogia sima* is reported to have a less diverse diet than *K. breviceps* (Sekiguchi *et al.*, 1992) and to feed on smaller prey at shallower depths (Willis & Baird, 1998). These pat-terns were supported by the lower diversity and smaller size and of the prey in the stomach of KS01 in this study. The dominance of *Sepia ?australis* prey supports previous sugges-tions that *K. sima*, particularly juveniles, may be distributed closer inshore than *K. breviceps* (Ross, 1979b; Plo¨n, 2004) as this species is the most common cuttlefish found on the west coast of South Africa and Namibia (Roeleveld, 1998) and is important in the regional food web (Lipinksi, 1992; Lipinski *et al.*, 1992; de Bruyn *et al.*, 2005). Nevertheless, cephalopods associated with the continental shelf slope (e.g. Histioteuthidae, Lycoteuthidae and Ommastrephidae—see

Table 2. All known records of *Kogia breviceps* stranded in Namibia. Condition of specimens given as: L (live stranding); F (fresh dead); D (decomposing–dessicated); S (skeletal). Museum or Record Number refers to accessioned specimens at the Iziko South African Musem (ZM), Namibian National Museum (NNM), and those held in unaccessioned collections at the Lüderitz Museum (LM), or by co-authors (P.B.B. and J.P.R.). Source refers to person, group or paper where record was sourced (P.B.B.—Peter Best/Iziko South African Museum, Cape Town, South Africa), Ross—(Ross, 1979a), Sekiguchi—(Sekiguchi *et al.,* 1992), Plön—Plön (2004), J.P.R.—Jean-Paul Roux, NDP—Namibian Dolphin Project. Where described localities were not precise enough to calculate latitude and longitude, place names have been used.

No.	Museum or Record No.	Date	No.	Sex	Condition	Latitude	Longitude	Length (m)	Photographs	Material	Source
1	–	October 1966	1	–		26°40′	15°09′	Ca 3.66	Y	None	Ross
2	ZM 37126	1971	1	–	S	21°51′	14°02′	Ca 3.05	N	Skull no mandibles, some ribs, most vertebrae	Ross
3	–	<1972	1	–	S	21°46′	13°57′	U	N	Skull no mandibles	P.B.B.
4	ZM 37396	7 October 1975	1	M	L	22°55′	14°32′	2.41	Y	Mandibles	P.B.B./ Sekiguchi
5	ZM 39220	June 1978	1	–	S	22°53′	14°26′	U	N	Skull, no mandibles	P.B.B.
6	ZM 39215	June 1978	1	–	S	22°53′	14°26′	U	N	Skull, no mandibles	P.B.B.
7	ZM 39214	June 1978	1	–	S	22°53′	14°26′	U	N	Skull, no mandibles	P.B.B.
8	ZM 39947	25–31August 1978	1	F	F	22°47′	14°33′	U	N	Skull	P.B.B./Plön
9	ZM 39219	June 1978	1	–	S	22°53′	14°26′	U	N	Lower jaw only	P.B.B.
10	–	July 1979	1	–	S	Skeleton Coast Park		U	N	Skull*	P.B.B.
11	ZM 39941	1 August 1979	1	–	D	21°18′	13°42′	3.39	Y	Skull	P.B.B./Plön
12	ZM 39930	6 August 1979	1	–	D	22°46′	14°32′	2.46	Y	Skull	P.B.B./Plön
13	–	5 December 1980	1	–	D	Walvis Bay		3.05	N	Skull*	P.B.B.
14	ZM 39945	31 August 1982	1	F	L	22°40′	14°32′	3.0	Y	Skull	P.B.B./ Sekiguchi/ Plön
15	ZM 40472	4 September 1984	1	F	S	22°55′	14°32′	2.38	N	Skull	P.B.B./ Sekiguchi/ Plön
16	–	23 June 1982	1	F	L	22°56′	14°29′	2.1-2.4	Y	None	P.B.B.
17	–	1982	1	–	S	19°28′	12°45′	U	N	Skull	P.B.B.
18	–	16 May 1983	1	–	D	18°33′	12°05′	U	N	Skull	P.B.B.
19	–	19 September 1989	1	F	D	18°39′	12°12′	1.935	Y	None	P.B.B.
20	PBB9015/ JPR 01	23 February 1990	1	F	D	26°08′	14°57′	2.96	N	Skull, gastro-intestinal tract	P.B.B./ Sekiguchi/ Plön
21	LM	<1986	1	–	?	Lüderitz area		U	N	Skull, no mandibles	P.B.B.
22	JPR 02	1 November 1996	1	–	D	22°51′	14°32′	2.94	N	Skull	J.P.R./H. Plarre
23	JPR03	November 1996	1	F	?	28°37′	16°26′	2.36	U	Skull	J.P.R.
24	JPR04	15 January 1998	1	–	D	21°45′	13°58′	2.26	N	Skull	J.P.R./H. Plarre
25	JPR05	16 May 1998	1	–	S	21°47′	13°57′		N	Skull	J.P.R.
26	JPR06	15 February 2000	1	F (lact)	F	26°40′	15°09′	2.42	U	Skull	J.P.R./ J. Kemper
27	JPR07	10 April 2009	1	–	D	26°40′	15°09′	2.05	U	None	J.P.R./ R. Rossler
28	NNM	24 August 2010	1	F	F	26°37′	15°10′	2.28	Y	Skull, tissue etc.	N.D.P.
29	NNM	26 August 2010	1	F	L	26°39′	15°05′	2.12	Y	Mandibles, tissues	N.D.P.

below) were also found in the stomach of KS01 and suggest that this individual had also fed near the shelf edge. It is important to note that stomach contents might not be truly representative of diet (Sekiguchi *et al.*, 1992), however no other data on diet are available for kogiids in southern Africa. All families of cephalopod found in KB01 and KB02 had been previously reported in the diet of *K. breviceps* in southern Africa (Plön, 2004). The predominant taxa found such as Lycoteuthidae, Histioteuthidae and Ommastrephidae occur at the shelf break or in oceanic waters. Histioteuthidae are bathypelagic or meso-bathypelagic (Nesis, 1987) and are also prey of sperm whales (*Physeter macrocephalus*) (Clarke, 1980) and other odontocete and shark apex predators (Sekiguchi *et al.,* 1992; Smale & Cliff, 1998). Lycoteuthidae are important prey for a variety of predators (Lipinksi, 1992; Sekiguchi *et al.,* 1992; Smale, 1996; Smale & Cliff, 1998) and have been trawled at water depths between 300 and 900 m (Roeleveld *et al.,* 1992). The high importance of Histioteuthidae and Ommastrephidae in the stomach contents of individuals described here supports Clarke's (1996) contention that these families are important to oceanic cetacean predators.

Southern Africa is recognized as a global hotspot of cetacean diversity (Pompa *et al.,* 2011) and over 25 species of cetacean have been recorded in Namibian waters alone (Findlay *et al.,* 1992; Best, 2007). However, almost nothing is known about the abundance, stock structure or conservation status of most species within the region (Elwen *et al.,* 2011), which is particularly concerning in light of anthropogenic impacts on the marine environment, such as pollution, exploration and extraction of hydrocarbons and phosphate bearing sedi-ments, marine tourism and overfished resources. The docu-mentation of this first record of *K. sima* in Namibian waters highlights our lack of knowledge in this area. Dedicated surveys in offshore waters are necessary to determine distri-bution and relative abundance of this species.

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CORRIGENDA

MATERIALS AND METHODS:

Page 3, column 2, paragraph 2: Correct method to identify the two *Kogia* species from relative position of the dorsal fin from snout is: *K. sima*—anterior insertion of dorsal fin is <50% of body length from snout; in *K. breviceps* it is >50%.

Page 3, column 2, paragraph 4: Sexual maturity of specimen KB01 was additionally determined from body length after Best (2007).

Page 3, column 2, last paragraph: Sepiidae were the most numerous prey taxon (not species) taken by KS01. Additionally, correct spelling of species name in family Ommastrephidae is *Ommastrephes bartramii*.

In Table 1, multiple species names were spelled incorrectly.

veranyi should be: *veranii*
bartrami should be: *bartramii*
Hystioteuethis should be: *Histioteuthis* Brachiotuethidae
should be: Brachioteuthidae (Family) Onychoteurthidae
should be: Onychoteuthidae (Family) *Lycotuthis* should
be: *Lycoteuthis*
spp. should be: sp.
juv? and *juvs* should be: juvenile

In Table 2, the asterisk on records 10 and 12 is not explained and should have the following text below table: Skull supposed to have been collected but whereabouts unknown.

Page 5, column 2, last paragraph: extra 'and' in the sentence should be disregarded and sentence should read: 'These patterns were supported by the lower density and smaller size of the prey in the stomach of KS01 in this study'.

In the reference list, it must be noted that Best (2007) should be corrected to:
Best P.B. (2007) *Whales and dolphins of the southern African subregion*. Cape Town: Cambridge University Press.

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