Tursiops truncatus – Common Bottlenose Dolphin

Regional Red List status (2016)	**Least Concern**
National Red List status (2004)	Data Deficient
Reasons for change	Non-genuine change: New information
Global Red List status (2012)	Least Concern
TOPS listing (NEMBA) (2007)	None
CITES listing (2003)	Appendix II
Endemic	No

A recent study by Kriesell et al. (2014) conducted off the coast of Namibia was the first to document the signature whistles of wild Common Bottlenose Dolphins in African waters, affirming the assumption that signature whistles remain stable over both time and location.

Taxonomy

Tursiops truncatus (Montagu 1821)

ANIMALIA - CHORDATA - MAMMALIA - CETARTIODACTYLA – DELPHINIDAE - *Tursiops* - *truncatus*

Common names: Common Bottlenose Dolphin, Bottle-nosed Dolphin, Bottlenose Dolphin, Bottlenosed Dolphin (English), Stompneusdolfyn (Afrikaans)

Taxonomic status: Species

Taxonomic notes: The taxonomy of the genus *Tursiops* remains unresolved. Consequently, there is confusion in the literature between *Tursiops* species, not only in respect of taxonomy, but also natural history. In many regions across its distribution two forms of bottlenose dolphins have been described: an offshore form and a coastal form. Although many of their characteristics overlap, morphological and mitochondrial differences between these two regional forms have been recognised (Ross 1977; Hoelzel et al. 1998). In South African waters, Ross (1977) described two allopatric species based on morphological differences: the smaller, coastal form, *T. aduncus,* and the larger offshore form, *T. truncatus.* Hoelzel et al. (1998) compared mitochondrial and nuclear genetic markers between nearshore and offshore types of bottlenose dolphins in a range of geographic locations. Although, Hoelzel et al. (1998) described a clear distinction between the coastal and offshore forms of bottlenose dolphins in the western Pacific, no such distinction was identified between the larger offshore form (*T. truncatus*) and the smaller inshore form (sometimes referred to as *T. aduncus*) off southern Africa. Hoelzel et al. (1998) suggest that the separation between these forms off Africa may be comparatively recent, or some degree of gene flow between the populations may still exist. Additionally, Ross and Cockcroft (1990) suggest that the two forms should not be delineated as separate species. Generally, where they occur in the same geographic areas *T. truncatus* has a longer body, larger skull and less teeth than *T. aduncus* (Ross 1977; Gao et al. 1995). Both species show sexual dimporphism, with males larger than females (Cockcroft & Ross 1990; Hale et al. 2000). In this assessment, we consider only the offshore *T. truncatus*, while *T. aduncus* is assessed separately. There is likely to be further fine scale resolution of the genus in future, as research progresses.

Assessment Rationale

The Common Bottlenose Dolphin is widespread and abundant throughout its range and regular sightings and strandings within the assessment region suggest that there is no major population decline and no major threats are suspected. In contrast to *T. aduncus*, which is commonly accepted as the coastal resident population of bottlenose dolphins, *T. truncatus* is considered to be largely offshore. Anthropogenic disturbance in the form of boat traffic, fisheries and ecotourism, as well as pollution (including noise, plastic debris and persistent organic pollutants) are recognised as minor threats to this species. Common Bottlenose Dolphins are currently not considered a conservation priority and are therefore listed as Least Concern in line with the global listing.

Regional population effects: The Common Bottlenose Dolphin exhibits seasonal movements, often following the seasonal migrations of sardine off South Africa's south and east coasts. There are no barriers to dispersal, thus rescue effects are possible.

Distribution

Globally, bottlenose dolphins are widely distributed, found throughout tropical and temperate regions, only absent in the extreme high latitudes (Skinner & Chimimba 2005). Two forms are often described, where one is commonly restricted to coastal areas and estuaries, while the other is associated with open ocean areas, usually regions of upwelling and high productivity, such as shelf edges and sea mounts. Across the entire assessment region, the range of the Common Bottlenose Dolphins extends from the Orange River mouth to Kosi Bay, present both in

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Figure 1. Distribution range for Common Bottlenose Dolphin (*Tursiops truncatus*) within the assessment region (IUCN 2012)

continental shelf waters and inshore, in waters shallower than 50 m. Only very seldom found in shallow, inshore waters (< 50m).

A common assumption is that inshore records in the Indian Ocean belong to *T. aduncus*, while *T. truncatus* is only found further offshore (Best 2007). Findlay et al. (1992) describes the presence of *T. truncatus* offshore on the south and southeast coast, as well as inshore on the west coast of South Africa.

In the southwest Atlantic a coastal population of *T. truncatus* occurs off Namibia, usually found in waters less than 10 m deep. It has been reported from waters between Cape Cross and Walvis Bay, but the geographical limits of its range remain largely uncertain (Best 2007). Elsewhere off the South African coast this species is usually found in waters less than 100 m deep, as well as at depths of between 500 m and 1,000 m (Best 2007).

Population

Globally, there are estimated to be more than 600,000 Common Bottlenose Dolphins (Hammond et al. 2012). Groups of several tens of *T. truncatus* are frequently sighted, along with False Killer Whales (*Pseudorca crassidens*), in the Plettenberg Bay area. This species is sighted regularly in South African waters, and thus, despite frequent stranding events, no population decline is expected.

Current population trend: Stable

Continuing decline in mature individuals: No

Number of mature individuals in population: Unknown

Number of mature individuals in largest subpopulation: Unknown

Number of subpopulations: Unknown

Severely fragmented: No

Habitats and Ecology

Tursiops truncatus is commonly accepted as the open-water form of the bottlenose dolphin. However, there are many exceptions to this rule, and this species may also be frequently located within shallower waters, nearer to the coast. Presumably though, *T. truncatus* generally makes use of deeper reefs further offshore, whereas *T. aduncus* is restricted to shallower inshore areas (Hale et al. 2000). Studies off the coast of North America found that this species is generally associated with waters exhibiting surface temperatures between 10°C and 32°C (Wells & Scott 1999). Common Bottlenose Dolphins form schools of between 3–100 individuals, with a general average of approximately 22, and are often associated with other cetacean species, for example the Long-finned Pilot Whale (*Globicephala melas*) and the False Killer Whale (Skinner & Chimimba 2005).

The stomach contents of two *T. truncatus* individuals from the Eastern Cape revealed that the dominant prey species was squid (*Oregoniateuthis*), with hake (*Merluccius* spp.) and Buttersnoek (*Lepidpus caudatus*) making up lesser proportions (Ross 1977, 1984). The results from these studies indicate that *T. truncatus* feeds further offshore when compared to *T. aduncus*, at least off the Eastern

Table 1. Threats to the Common Bottlenose Dolphin (*Tursiops truncatus*) ranked in order of severity with corresponding evidence (based on IUCN threat categories, with regional context)

Rank	Threat description	Evidence in the scientific literature	Data quality	Scale of study	Current trend
1	*6.1 Recreational Activities*: anthropogenic disturbance in the form of ecotourism and increasing boat traffic. Current stress *2.2 Species disturbance*.	Constantine et al. 2004	Indirect	Local	Increasing
		Bejder et al. 2006b	Indirect	Local	As the number of tour operators increased, dolphin abundance declined.
2	*4.3 Shipping Lanes*: collision with boats. Current stress *2.1 Species Mortality* and *2.2: Species Disturbance*.	Bechdel et al. 2009	Empirical	Local	More than 50% of boat-injured females have lost calves under the age of 1 year.
		van Waerebeek et al. 2007	Empirical	Regional	Increasing
3	*5.4.4 Fishing & Harvesting Aquatic Resources*: entanglement in pelagic and coastal fisheries and competition with pelagic fisheries. Current stresses *2.1 Species Mortality*, *2.2 Species Disturbance* and *2.3.8 Indirect Species Effects*: reduction in food resources.	Reeves et al. 2013	Indirect	International	Increasing
4	*9.6.3 Noise Pollution*: marine noise pollution through seismic surveys and boat traffic.	Koper & Plön 2012	Indirect	Regional	Increasing
5	*9.1.3 Domestic & Urban Waste Water*: residential pollution from coastal settlements.	Yordy et al. 2010a,b	Empirical	Regional	Increasing
6	*9.2.3 Industrial & Military Effluents*: industrial pollution from coastal development.	Yordy et al. 2010a,b	Empirical	Regional	Increasing
7	*9.3.4 Agricultural & Forestry Effluents*: pesticide and fertiliser pollution from agro-industries.	Yordy et al. 2010a,b	Empirical	Regional	Increasing

Cape coast (Ross 1984). Off the Western Cape, Sekiguchi et al. (1992) recorded that the diet of *T. truncatus* comprised of cephalopods (mostly the Cape Hope Squid, *Loligo vulgaris reynaudii*), and a wide variety of fish (dominated by Southern Mullet, *Liza richardsonii,* and Cape Horse Mackerel, *Trachurus trachurus capensis*).

Leatherwood (1975) describes the high degree of plasticity associated with feeding behaviour of *Tursiops* spp. along the west coast of North America, including echolocation techniques, cooperative hunting, and the exploitation of anthropogenic fishing activities (such as depredation).

Mother and calf associations may last as long as 3 to 4 years (Bearzi et al. 1997), which may be a general reflection of the inter-birth interval exhibited by female Common Bottlenose Dolphins. Although, females usually only breed every 3–6 years, Connor et al. (2000) described intervals of 2 years off the coast of Florida. Model-based estimates of generation time are 21.1 years (Taylor et al. 2007).

Ecosystem and cultural services: This is the archetype of dolphins and, since most South Africans are unaware of the variety of delphinids, this is typically what they envisage when "dolphins" are mentioned.

Use and Trade

There is no trade of this species within South Africa, although there is one pure *T. truncatus* at uShaka Marine World, KwaZulu-Natal, but this has no effect on the wild populations of this species.

Threats

Around the world, Common Bottlenose Dolphins are vulnerable to both accidental and intentional catch, habitat degradation (Curry & Smith 1997), as well as disturbance and harassment (often due to ecotourism activities). Within the assessment region, this species is not expected to be at risk of any significant population decline; however, a number of minor threats have been identified, and the combination of these threats may become a cause for concern in the future.

1. **Anthropogenic disturbance:** Although no known tourism targets this species in South Africa, tourism, boat traffic and 'swim-with' programmes are known to influence the natural movements (Constantine et al. 2004; Lusseau 2005), social behaviours (Nowacek et al. 2001; Bejder et al. 2006b), energy budgets and geographic ranges (Bejder et al. 2006a) of bottlenose dolphins. For example, a long-term study in New Zealand found an increase in dolphin avoidance of swimmers, and a decrease in dolphin interaction with humans over time. Additionally, cetaceans have shown additional avoidance behaviours in response to other forms of anthropogenic disturbance (Finley et al. 1990; Kruse 1991; Janik & Thompson 1996; Bejder et al. 1999), which may in turn affect natural foraging, resting and socialising behaviour (Constantine 2001; Constantine et al. 2004). Continued disruption of feeding, resting and social activities of Common Bottlenose Dolphins could have detrimental impacts on reproduction rates (Stensland & Berggren 2007;

Table 2. Conservation interventions for the Common Bottlenose Dolphin (*Tursiops truncatus*) ranked in order of effectiveness with corresponding evidence (based on IUCN action categories, with regional context)

Rank	Intervention description	Evidence in the scientific literature	Data quality	Scale of evidence	Demonstrated impact	Current conservation projects
1	*5.4 Compliance & Enforcement*: increase penalties associated with illegal development and pollution.	-	Anecdotal	-	-	IUCN Cetacean Specialist Group
2	*5.2 Policies & Regulations*: encourage authorities to make good practice mitigation measures obligatory during any offshore exploration/exploitation and establish more stringent regulations.	-	Anecdotal	-	-	IUCN Cetacean Specialist Group

Dans et al. 2008) and calf survival (Bejder et al. 2006a; Stensland & Berggren 2007).

2. **Collision with boats:** Vessel-related physical injury of bottlenose dolphins have been documented across a number of regions (e.g. Nowacek et al. 2001; van Waerebeek et al. 2007; Bechdel et al. 2009), where collision with propellers and hulls may result in injuries ranging from minor lacerations and blunt force trauma to death. For example, photo-identification data captured off the coast of Florida showed that 6.0% of the distinctly marked population of bottlenose dolphins had injuries attributed to motorized vessels (Bechdel et al. 2009), and in the Gulf of Guayaquil, nearly 2% of bottlenose dolphins had propeller-related scars and injuries (van Waerebeek et al. 2007). Three fatally injured bottlenose dolphins off western Florida showed a range of injuries, including a completely severed tail and substantial bruising (Morgan & Patton 1990). In the Southern Hemisphere, van Waerebeek et al. (2007) found that habituation of dolphins to boats appears to be a contributing factor in dolphin-vessel collision events.
3. **Fisheries bycatch:** Accidental bycatch of Common Bottlenose Dolphins occurs throughout the species' range in both commercial and recreational fisheries, as well as shark nets, but incidental reports are poorly documented (Wells & Scott 1999). Depredation (or the act of stealing or damaging prey captured in fishing gear) can lead to serious physical injury or death of cetaceans through entanglement or ingestion. Additionally, continued and learned behaviour associated with depredation impacts natural activity patterns (Cox et al. 2003; Lauriano et al. 2004; Brotons et al. 2008; Sigler et al. 2008; Powell & Wells 2011). Furthermore, dolphins often cause substantial economic impacts for fishermen, including net damage and a reduction in overall fish catch (Buscaino et al. 2009), leading to negative responses towards dolphins.
4. **Competition:** Depredation behaviour is likely a direct response to increased competition for forage resources between cetaceans and humans. Loss of prey availability and biomass as a result of overfishing and environmental degradation is an increasing threat to this species in large parts of its range.
5. **Noise pollution:** Cetaceans depend on auditory stimuli for navigation, communication and hunting, thus are commonly considered sensitive to anthropogenic noise pollution (Finneran et al. 2000). Noise associated with ships, seismic exploitation, marine construction, demolition and sonars affect the movements and diving patterns of cetaceans, as well as their vocalisation and social behaviours (Buckstaff 2004), and may result in negative physiological responses, such as increased stress (Nowacek et al. 2007; Koper & Plön 2012).
6. **Environmental contaminants:** Xenobiotic chemicals and their toxic effects threaten the reproductive potential and immune system of this species. Bioaccumulation of persistent organic pollutants within the body tissues of top marine predators is common, and is documented for this species (Yordy et al. 2010a, 2010b).

Current habitat trend: Declining in quality due to ongoing coastal development and poor agricultural practices upstream of watersheds.

Conservation

The species is listed in Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and the Marine Living Resources Act (No. 18 of 1998). Mitigation measures designed to limit accidental cetacean bycatch in gillnet fisheries include spatiotemporal fishery closure regimes, marine protected areas, the use of acoustic alarms and other modifications of fishing equipment and techniques. Acoustic alarms often emit high frequency sounds, designed to deter cetaceans away from nets, or at least warn them of the barrier's presence (Dawson et al. 1998). The use of high frequency alarms on gillnets along the US east coast were found to have only a subtle deterring effect on bottlenose dolphins, and are unlikely to reduce dolphin bycatch to any significant degree (Cox et al. 2003). The use of pingers in artisanal fisheries around the Balearic Islands (western Mediterranean), reduced the level of interaction between bottlenose dolphins and bottom-set nets; however, the propensity for dolphin habituation calls for continued research into the long-term viability of acoustic deterrents, or the use of alternative mitigation efforts (Brotons et al. 2008). However, there is some evidence (UKZN unpubl. data) that pingers increase *T. aduncus* catch (no data for *T. truncatus*), but the potential for pingers to increase, rather than decrease catch is a concern.

This species is likely to be impacted by offshore resource exploration (seismic surveys) and exploitation (for example, drilling and blasting), which has increased substantially in South African waters over the last decade. Working with environmental impact agencies to mitigate any impacts, and applying pressure on governmental authorities to make accepted good practice mitigation measures obligatory during any exploration/exploitation, are important interventions.

Finally, in response to the increasing levels of negative impacts associated with the interaction between dolphins and the anthropogenic fishing industry, Buscaino et al. (2009) suggest a collaborative response towards sustainable exploitation of oceanic resources, a decrease in the intensity of marine extraction and the establishment of protected areas.

Recommendations for managers and practitioners:

- Further field surveys to delimit geographical boundaries and identify threats.

Research priorities:

- Continued research into the taxonomic relationships and the genetic variation between these southern African populations is necessary. Genetic analyses to assess potential differences in population structure of bottlenose dolphins between South Africa's west and east coasts, as well as those off Namibia.
- Continued investigation into the response of bottlenose dolphins to anthropogenic sound. Including offshore petroleum exploration and exploitation
- Physiological and behavioural effects of anthropogenic pollution, including bioaccumulation of toxins, noise pollution and plastic debris to Common Bottlenose Dolphins within the assessment region.

Encouraged citizen actions:

- Use information dispensed by the South African Sustainable Seafood Initiative to make good choices when buying fish in shops and restaurants, for example wwfsa.mobi, FishMS 0794998795.
- Buy fresh produce that has been grown in pesticide-free environments.
- Save electricity and fuel to mitigate CO_2 emissions and hence, the rate of climate change.
- Buy local products that have not been shipped.
- Report sightings on virtual museum platforms (for example, iSpot and MammalMAP) to help with mapping geographical distribution, and report any stranded dolphins to your nearest museum, the Centre for Dolphin Studies or to relevant local authorities.

Data Sources and Quality

Table 3. Information and interpretation qualifiers for the Common Bottlenose Dolphin (*Tursiops truncatus*) assessment

Data sources	Field survey (unpublished), indirect information (literature, expert knowledge)
Data quality (max)	Inferred
Data quality (min)	Suspected
Uncertainty resolution	Expert consensus
Risk tolerance	Evidentiary

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Details of the methods used to make this assessment can be found in *Mammal Red List 2016: Introduction and Methodology.*