First confirmed records of Clymene dolphin, *Stenella clymene* (Gray, 1850), from Angola and Congo, South-East Atlantic Ocean

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Clymene dolphins, *Stenella clymene*, are endemic to the tropical and subtropical Atlantic Ocean, where their occurrence is documented from fewer than 200 records. The species is particularly poorly known in the eastern Atlantic off the coast of Africa where only 12 verified records exist, predominantly comprising dead animals. Marine mammal survey work was carried out off central West Africa during 2004 and 2005, producing two new observations of free-ranging Clymene dolphins. Both sightings occurred in deep-water (466 and 684 m) over the shelf edge, off northern Angola and Congo respectively. A pod of 250 Clymene dolphins was observed off Congo, while the Angola sighting was of a mixed-species group of 12 Clymene dolphins with common dolphins, *Delphinus* sp. These records represent the first confirmed presence of Clymene dolphins off Angola and Congo, and extend the known southern limit of the confirmed distribution range of this species in the South-East Atlantic to 06°26′S.

Key words: Clymene dolphin, *Stenella clymene*, Angola, Congo, Africa.

The Clymene dolphin, *Stenella clymene* (Gray, 1850), is one of the poorest known cetaceans, and was only confirmed as a valid species in 1981 (Perrin *et al.* 1981). Its distribution is currently described from fewer than 200 stranding and sighting records, and it is apparently restricted to tropical and warm temperate regions of the Atlantic Ocean (Perrin & Mead 1994; Jefferson & Curry 2003) where it occurs particularly in association with warm water currents (Fertl *et al.* 2003). Most records of the Clymene dolphin relate to the well-studied western regions of the Atlantic, particularly within the Gulf of Mexico (Mullin *et al.* 1994; Davis *et al.* 1998) and off Brazil (Simões-Lopes *et al.* 1994; Moreno *et al.* 2005). By contrast, the distribution of Clymene dolphins throughout the eastern Atlantic Ocean off the coast of Africa is very poorly known, due to a paucity of at-sea survey effort, a lack of stranding reporting schemes and confusion regarding species identification (Robineau *et al.* 1994; Van Waerebeek *et al.* 2000). In a recent review of Clymene dolphin records, Fertl *et al.* (2003) were able to verify 195 records for this species, only 12 of which occurred in the eastern Atlantic Ocean. These comprise a single at-sea sighting in offshore waters south of Guinea (Perrin *et al.* 1981), eight stranding records from Ghana, Gambia, Senegal and Mauritania (Dupuy & Maigret 1979, 1980; Robineau *et al.* 1994; Van Waerebeek & Ofori-Danson 1999; Van Waerebeek *et al.* 2000), and one capture record from each of Ghana, Gambia and Senegal (Cadenat & Doutre 1958; Cadenat 1959; Robineau *et al.* 1994; Van Waerebeek *et al.* 2000). The known distribution of Clymene dolphins in the eastern Atlantic is therefore based on inferences from limited strandings and captures in northwest Africa and the western Gulf of Guinea (Jefferson *et al.* 1997). A single capture record from the mid-Atlantic to the northwest of Ascension Island (Lütken 1889; Perrin *et al.* 1981) is the closest documented record of Clymene dolphin to the South-East Atlantic.

This paper presents details of two observations of free-ranging Clymene dolphins in the South-East Atlantic Ocean, extending the known southeastern limit of the distribution range of this species.

Data on marine mammals were collected during 3678.5 hours of dedicated observation off Angola, the Democratic Republic of Congo, Congo and Gabon spanning 14 months between March 2004 and September 2005. Observations occurred from geophysical seismic survey vessels during operations (at a vessel speed of 4–5 knots) and transits between survey sites (at 7–10 knots vessel speed). During marine mammal 'search mode' a single observer scanned 360° around the vessel with the naked eye and with 10 × 42 binoculars. Effort logs (comprising position, water depth, vessel activity and environmental data, including Beaufort sea state) were completed for every marine mammal

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watch. The information recorded during marine mammal sightings included the species, number (and age where possible) of animals, behaviour, position, water depth and associated environmental data (sea state, swell height, visibility, wind force). Animals were photographed in the field using a Canon SLR camera and a 100–400 mm Canon zoom lens.

Fertl *et al.* (2003) emphasize the importance of verifying the identification features of Clymene dolphins due to confusion with other pelagic dolphins of similar size, shape and colouration. Since all seven species of *Stenella* and *Delphinus* occur within the general region (pers. obs.), positive identification of Clymene dolphins was restricted to close-range encounters when the presence of diagnostic identification features could be confirmed. These features included: small (<2 m) but robust body shape, a tripartite colour pattern comprising a dark grey dorsal cape, paler grey flank and white ventral surface; a rounded convex 'dip' in the dark dorsal cape margin below the dorsal fin; a relatively short beak with a dark beak tip and a dark dorso-mesial surface bordered by paler grey; and a distinctive 'moustache' marking situated one-third of the way down the dorsal surface of the beak (Perrin & Mead 1994; Jefferson 1996, Fertl *et al.* 2003).

Angola

On 18 March 2004 a large group of over 350 dolphins was observed over 466 m water depth at position 06°26.15′S 11°25.00′E, 55 nm off the coast of northern Angola. Environmental conditions during the sighting comprised good visibility, Beaufort sea state 1 and a low (<1 m) swell. The animals were distributed over several kilometres in feeding sub-groups, and positive species identification was possible only for two small groups observed at close range. The first of these groups comprised 12 Clymene dolphins, which broke off from feeding to slowly approach the vessel to bow-ride. The group appeared to consist solely of small adults of similar size. Key identification features including the dipped dorsal cape, thick black dorso-mesial beak marking, and the diagnostic moustache were clearly observed on bow-riding animals. Photography was unfortunately hindered by sun glare. After four minutes, the dolphins departed the bow and were immediately lost from sight astern of the vessel. Shortly afterwards, seven common dolphins (*Delphinus* sp.) approached the vessel to bow-ride, confirming the presence of at least two species in this dolphin aggregation.

Congo

On 26 September 2005, a pod of 250 dolphins was observed at position 04°23.77′S 10°32.41′E, 40 nm off the coast of Congo. Water depth at the sighting was 684 m. Prevailing environmental conditions were moderate, with poor dawn light, Beaufort sea state 3 and 1 m swell. The animals were monitored for over 45 min, during which time they porpoised actively in a long and narrow school, with occasional high leaps including some spins along their longitudinal axis. Initially the entire group was travelling purposefully directly towards the vessel. However, on approaching to 1.5 km distance from the ship, the majority of animals changed course to cross astern of the vessel before resuming their original heading. Three adult individuals broke away from the main group, and approached the ship to bow-ride. The diagnostic markings of Clymene dolphins comprising the dipped cape (Fig. 1) and black beak markings including the moustache (Fig. 2) were clearly seen and photographed on the bow-riding animals. As the dolphin group moved away from the ship, their porpoising activity decreased but spinning behaviour increased in both frequency and complexity, usually incorporating two or three full rotations along the longitudinal axis. Analysis of photographs of the main dolphin group revealed dipped capes on most animals, and it is probable that the entire group consisted of Clymene dolphins. Both juveniles and calves were observed within the main group, but the proportions of each could not be accurately assessed due to their distance from the vessel.

The distribution of Clymene dolphins in the South-East Atlantic is poorly described, with an absence of previous documented records from southern hemisphere African countries (Fertl *et al.* 2003). These two records represent the first confirmed presence of this species in the waters off Angola and Congo and provide a new eastern limit to their distribution in the South-East Atlantic. The sighting off northern Angola also represents a new southern limit to Clymene dolphin distribution in the South-East Atlantic, with the previous southernmost record occurring northwest of Ascension Island at latitude 03°40′S (Fertl *et al.* 2003).

These sightings correspond with data from

Fig. 1. Clymene dolphin off Congo on 26 September 2005, showing tripartite flank colouration and dipped dorsal cape.

other regions of the Atlantic Ocean that indicate Clymene dolphins to be a deep-water species inhabiting waters at depths of 250–5000 m over and seaward of the shelf edge (Perrin & Mead 1994; Davis *et al.* 1998; Fertl *et al.* 2003; Moreno *et al.* 2005). The data suggest that Clymene dolphins in the South-East Atlantic may typically occur in large schools, with both sightings involving total dolphin group sizes exceeding 250 animals. One of these sightings involved a mixed-species aggregation with common dolphins, an association that has been previously noted off Africa (Perrin & Mead 1994). Further work is required to assess the exact distributional limits and abundance of Clymene dolphins off the west coast of Africa and to determine potential threats such as the unknown levels of dolphin bycatch in the tuna purse seine fishery within the Gulf of Guinea (Maigret 1981).

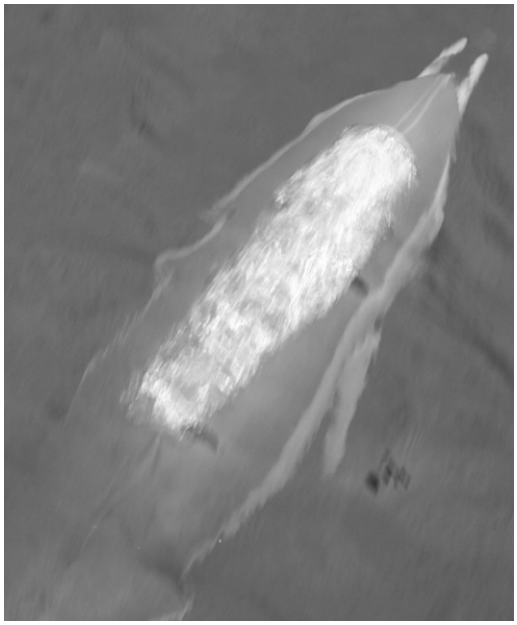

Fig. 2. Clymene dolphin off Congo on 26 September 2005, showing diagnostic beak colouration including the moustache marking.

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