The assessment of the status of the small cetaceans of the Caribbean Sea was set as a priority by the Scientific Committee of the International Whaling Commission (IWC) during its 57th Annual Meeting held in Ulsan, Korea, in 2005 (IWC, 2006). This effort was undertaken at the 58th Annual Meeting held in St. Kitts and Nevis (IWC, 2007). Additionally, the global status of killer whales (Orcinus orca) was assessed by the IWC during its 59th Annual Meeting held in Anchorage, Alaska, during 2007 (IWC 2008). The latter effort concluded that ‘very little information on any aspect of killer whale biology in many areas hinders any assessment of their status’ (IWC, 2008). This is particularly the case in tropical waters, including the Caribbean Sea, where almost no information is available (e.g. Caldwell and Caldwell, 1969; Katona et al., 1988; Dunn et al., 2007). According to Oviedo et al. (2008), the presence of killer whales in Venezuela has remained unclear. In 1978, a probable sighting of killer whales was recorded off northeastern Venezuela, but identification could not be confirmed. Systematic cetacean surveys in several locations throughout Venezuela have not yielded sightings of this species (e.g. Evans, 1979; Notarbartolo di Sciara, 1983; Naveira-Cortizas, 1996; Molero-Lizarra, 2005; Oviedo et al., 2005; Bolaños-Jiménez et al., 2007; Herrera-Trujillo, 2007; Silva-Hernández, 2007; Pirela et al., 2008). Recently, Acevedo-Galindo (2007) presented the potential distribution of seven cetacean species in Venezuelan waters made on the basis of contrasting topographic profiles vs. depth of sightings, but did not include the killer whale in her review because only a handful of records were available at the time. In the present note we contribute to the knowledge on the occurrence of killer whales in Venezuelan waters on the basis of opportunistic sightings.

A request for information (in particular, sightings accompanied by photographs or video footage) was sent out during early 2007 to an environmental Internet discussion list and colleagues working on marine mammals in Venezuela. Records not accompanied by photographic documentation were accepted only if they were: 1) confirmed by a marine biologist aboard the vessel, or 2) provided by an observer or source who demonstrated familiarity with diagnostic characteristics of the species, including specific mention of sexual dimorphism as indicated by shape and relative size of the dorsal fin. Whenever possible, efforts were made to interview the original observers.

Eighteen sighting records were collected, covering the time period April 1982 - January 2008 (Table 1, Figure 1). Observations form sport fishing club members, who fish year-round, accounted for 89% (n=16) of the reports. No observations of strandings or fisheries interactions were reported. Five of the 18 records were accompanied by still photographs or video (Figure 2). Bottom depth for the occurrences was 10-1500m (mean = 444m; SD = 405m; mode = 400m; n = 18). Group size ranged from 1 to 5 individuals (mean = 2.72; SD = 1.56; mode = 1; n = 18). Adult males were present during 72% of reported sightings; females/juveniles were present during 61% (n=13 and 11, respectively). Photographs of two male killer whales (Figure 2) were sent to researchers in Brazil and Bahamas and will be available for future comparison to compiled photographs for those areas.

According to ecological and geomorphological characteristics, the Venezuelan Caribbean Sea has been divided in 12 ecoregions (Miloslavich et al., 2003; Miloslavich and Klein, 2008). Sixty-one percent of the sightings were recorded over the ‘Oceanic’ ecoregion and 17% over the ‘Eastern Upwelling’ ecoregion.
The remaining 22% corresponded to the ‘Central Coast’ (11%), ‘Oceanic Islands’ (5.5%) and the ‘Cariaco Trench’ (5.5%) ecoregions. The Oceanic eco-region is defined as ‘The territorial and Exclusive Economic Zone (EEZ) waters, deeper than 200m; ecosystems are pelagic and deep’ (Miloslavich and Klein, 2008). The Eastern Upwelling ecoregion is characterized by ‘a shallow continental shelf with coarse sandy bottoms and rocky shores; high primary and secondary production due to seasonal upwelling fronts, including the islands of Margarita, Coche, Cubagua, Los Frailes, Los Hermanos and Los Testigos’ (Miloslavich and Klein, 2008).

Four sightings were recorded in the Oceanic ecoregion off Vargas State during two consecutive days of two consecutive weekends in late April 2007. Observers remarked that they may have corresponded to the same group, but this could not be confirmed due to a lack of photographic documentation. This group consisted of five individuals, determined to be three adult males and two females or juveniles of undetermined sex, on the basis of size and shape of the dorsal fin and body length11.

11. C. Mazquiarán, pers. comm., 2007, Universidad Católica Andrés Bello, UCAB, see Table 1.
A noteworthy incident was a videotaped attack by two killer whales on a leatherback turtle (Dermochelys coriacea) off northeastern Venezuela on 15 April 2007 (footage available online at: http://www.youtube.com/watch?v=qezONiWcFjU; see also Oviedo et al., 2008). The encounter ended when the adult female of the pair took the turtle in its mouth and dove to a depth of greater than 100 m (determined by echosounder; Raymarine E-120), but observers were not able to determine if the turtle was eaten. The videotaped individuals were an adult female and a subadult of undetermined sex (Oviedo et al., 2008). During the whole interaction, an adult male was observed surfacing at a distance of about 500 m from the boat and the two whales involved in the attack (Oviedo et al., 2008).

Eighty-three percent of the records were from December through May. Some observers remarked on the apparent co-occurrence of killer whales with cold water incursions that would coincide with the presence of known prey species, such as tunas and billfish, but this requires further investigation. Consumption of tunas and billfish by killer whales has been documented elsewhere in the Atlantic Ocean, including predation on longline fishery captures (e.g. Secchi and Vaske, 1998; Dalla Rosa and Secchi, 2007; Hernández-Milian et al., 2008). Links between tuna and billfish peak occurrence and killer whale sightings have been suggested for other areas of the Atlantic Ocean including the western North Atlantic and the Straits of Florida (Katona et al., 1988), the Bahamas.
(Dunn et al., 2007), the Strait of Gibraltar (Guinet et al., 2007; de Stephanis et al., 2008), Brazil (Secchi and Vaske, 1998; Dalla Rosa and Secchi, 2007) and Uruguay (Passadore et al., 2008). Also, as noted by Katona et al. (1988) and Passadore et al. (2007), since oceanic variables affect tuna prey distribution, the timing of tuna migration is somewhat variable, which in turn may affect occurrence of the killer whale in this area.

There is currently not enough information to speculate on any seasonality to the occurrence of the killer whale in Venezuelan waters. In Brazil, it has been hypothesized that killer whales could use shallow, coastal habitats in the State of Rio de Janeiro as feeding grounds on a seasonal basis (Siciliano et al., 1999). This is consistent with the results of the study of interactions of killer whales with the longline fishing fleet off Brazil, which reported that interactions occurred primarily from June to February (Secchi and Vaske, 1998). It is also unknown whether some of the sightings reported here represent the same individuals; only solid photo-documentation and biopsy efforts would be able to address such questions. Further collaborative efforts are needed to evaluate the presence of the killer whale (and other cetacean species) in coastal and offshore areas of the Venezuelan Exclusive Economic Zone, as well as elsewhere in the western Atlantic.

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References


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Killer whale occurrence in Venezuelan waters, 1982-2008


