

Notes on the presence of Risso's Dolphin, *Grampus griseus* Cuvier 1812 (Cetacea: Delphinidae), in Venezuelan waters

Notas sobre la presencia del delfín de Risso, *Grampus griseus* Cuvier 1812 (Cetacea: Delphinidae) en aguas de Venezuela

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ABSTRACT

Risso's dolphin, *Grampus griseus* (Cuvier, 1812), is distributed in tropical to temperate waters around the world. Nevertheless, there are few records of it for the Caribbean and it is not considered very common. For Venezuela, southern Caribbean, there were only three previous records for the species. To establish initial patterns of distribution for the species in the country and to contribute to the knowledge of it, several works on cetaceans from the Caribbean region and Venezuela were analyzed in detail, as well as field efforts and strandings developed by Cetaceans Research Center on the eastern basin of the country. Results of data collected and analysis restrict the distribution of the species to Venezuela's northeastern waters, where 20 species of cetaceans have been reported. Records of *G. griseus* represent only 0.35% of data. The species is distributed in an area covering from the south of La Blanquilla Island to the north of Margarita Island, where their presence might be related with the distribution of its primary prey, cephalopods. Classification is proposed as "Very Low Frequency" for Venezuela and although data are not abundant, they contribute greatly to the knowledge of Risso's dolphin in the region..

Key words: Risso's dolphin, *Grampus griseus* Cuvier 1812, distribution, northeastern basin, Venezuela.

RESUMEN

La especie Risso's dolphin *Grampus griseus* (Cuvier, 1812), se distribuye en aguas tropicales y templadas alrededor del mundo. No obstante, en el Caribe existen pocos registros de la misma considerándose como poco común. Particularmente, en Venezuela, Caribe sur, antes de este trabajo solo tres registros se admitían para la especie. Con la intención de establecer algunas pautas sobre la distribución de la especie en el país y aportes en torno al conocimiento de la misma, se analizaron detalladamente numerosos trabajos sobre cetáceos para la región caribeña y Venezuela, así como los esfuerzos de campo y atención de varamientos desarrollados por el CIC, en la toda la cuenca oriental del país. La data recopilada y analizada restringe la distribución de la especie a las aguas del noreste de Venezuela, donde han sido reportadas 20 especies de cetáceos, representando los registros de *G. griseus* solo del 0.35 % de la data. La especie se distribuye en una zona que abarca desde el sur de la isla de La Blanquilla hasta el norte de la isla de Margarita, donde la presencia pudiera estar relacionada con sus hábitos de consumo de cefalópodos. Se propone su clasificación como Muy Poco Frecuente para Venezuela, y aún siendo poca la data, se considera de gran aporte para los registros en el Caribe.

Palabras clave: Calderón gris, *Grampus griseus* Cuvier 1812, distribución, cuenca noreste, Venezuela.

INTRODUCTION

The Risso's dolphin, *Grampus griseus* (Cuvier 1812), is abundant in tropical and temperate waters around the world (Leaterwood and Reeves,

1983; Hoyt, 1984). Sighting records of the species indicate that it is distributed between the 60° N and 60° S, where the surface water is over 50° C (Kruse *et al.*, 1999). Nevertheless, for the Caribbean, there are few reports for the species so it is not considered very

common in the region (Romero *et al.*, 2001). The species has been reported in areas such as Puerto Rico and Virgin Islands (Mignucci-Giannoni, 1999), in St Vincent (Caldwell *et al.*, 1971), St. Croix (Erdman, 1970), Cuba (Varona, 1974), Aruba (Agudo and Ponson, 1996), and in waters of the Colombian Caribbean (Flores and Capella, 1995).

The Risso's dolphin can be easily recognized in the field, particularly when they are adults (Cawardine, 1995). It is a gregarious, pelagic dolphin that almost exclusively consumes cephalopods and has a distinctive groove along its forehead (Phillips *et al.*, 2000). These animals body's are from moderately robust to robust, especially in front of the dorsal fin, which tends to be high and sickle-shaped (up to 38 cm); the head presents a very characteristic shape, with no distinct snout and a marked crest in "V" shape, observed as a crack on the head (Leatherwood *et al.* 1988, Nachtigall *et al.* 2005). One obvious characteristic of the species is the number of marks resulting from scratches along the body, especially on the dorsal and lateral area (Kruse *et al.* 1999). Nevertheless, young specimens are a light gray or brown coloration and with very few marks (Jefferson *et al.* 1993), while older animals have almost white bodies due to accumulated scratches. According Nachtigall *et al.* (2005), Risso's dolphins constantly receive scratches or a wounds and the dark grey pigment cannot be recovered and the healed wound leaves a whitish mark. The species' teeth are unique in the Delphinidae family because it has 2 to 7 pairs of teeth in the lower jaws and generally no upper teeth (Jefferson *et al.*, 1993).

In Venezuela, the species was reported for the first time by Romero *et al.* (1991). In 1997 *G. griseus* appeared on the list of cetacean species for Venezuela (Bolaños and Boher, 1997), and only three valid reports on this species were accepted until the year 2001 (Acevedo 2001; Romero *et al.*, 2001). The same species is reaffirmed in the list of cetaceans of Venezuela reported by Bermúdez-Villapol and Boher (2003). Up to now, there are seven confirmed records of the species and all of them are near the coasts or proximities of Isla de La Blanquilla and Los Hermanos Archipelago, as well for the coasts of Isla de Margarita in Nueva Esparta State; all those reports include northeastern waters of Venezuela.

In this work, each of the reports on the species for the country, are analyzed and described

whether they were published or not, in order to establish a previous characterization for it in Venezuela and therefore for the southern Caribbean.

MATERIALS AND METHODS

In this study, information was collected from different works in which the species *G. griseus* is referenced whether it was published or not, for the Southern Caribbean and Venezuelan waters. In the same way, reports made by Cetaceans Research Center (CIC by initials in Spanish) personnel conducting different research projects in the field in the period 2000-2006, in the eastern basin of he Venezuela. This observation activity allows covering northeastern maritime region of the country from continental coastal strip, in Anzoátegui State, southeastern limits (10° 04'00''N, 065°0'00''W), to La Blanquilla Island as north limit (11°50'00''N, 064°36'00''W) and Los Testigos Archipelago as east limit (11°24'00''N, 063°06'00''W). Likewise, species data were collected from strandings assisted directly by CIC (with a Scientific License granted by the Administrative Office of Permissions of MINAMB N° 1271), as well as data from these events collected by the National Office of Biologic Diversity of the Environmental Ministry. A table of specific measures by CIC personnel from two animals stranded in Margarita Island was prepared in order to offer some basic characteristics of the species.

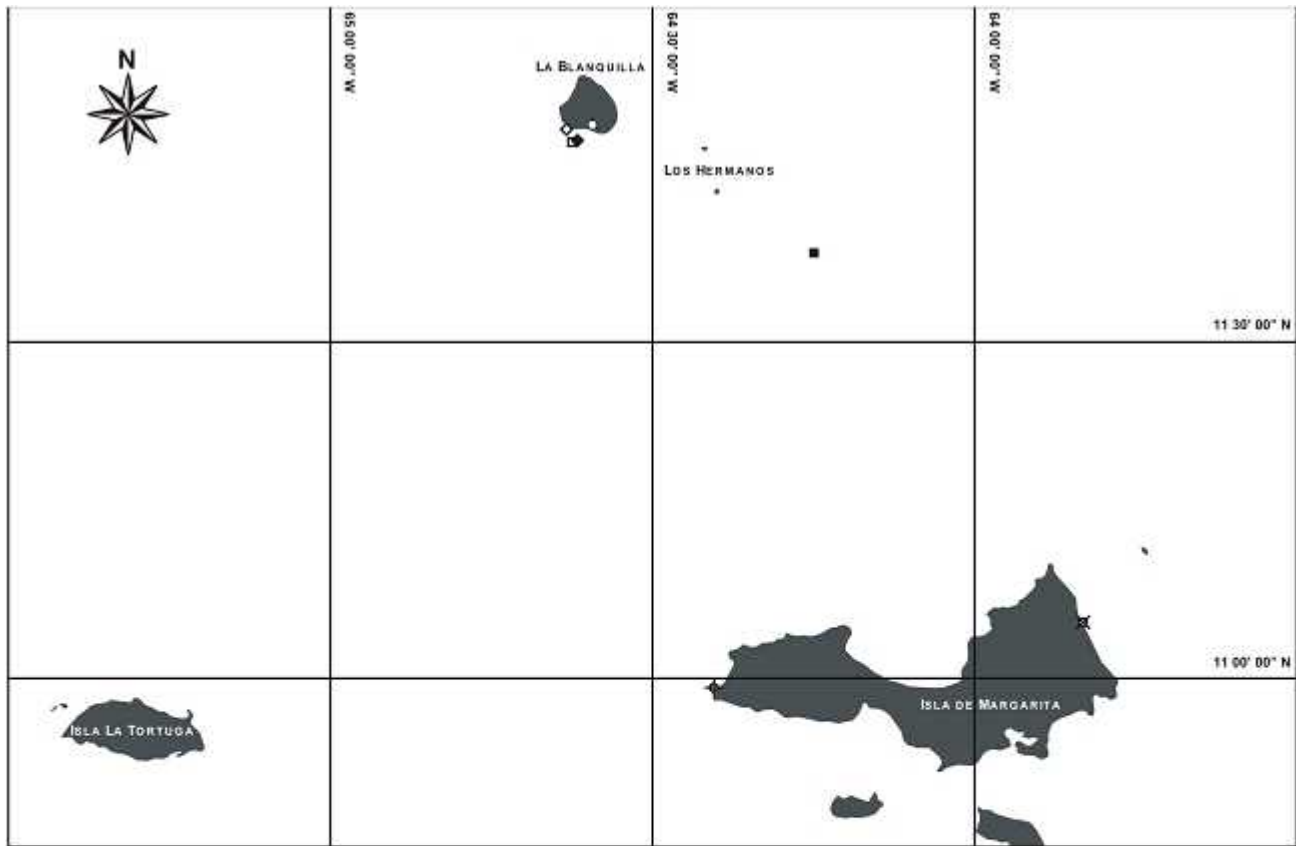
RESULTS AND DISCUSSIONS

Historical Review

Romero *et al.* (1991) indicates two records of *G. griseus* for the year 1988. The first record was allegedly resulted from an incidental catch from a commercial fishery to the south of Isla La Blanquilla (11°49'00" N, 064°38'00" W). This only report of an interaction of the species with commercial fishery around Venezuela, even though there are no data about the kind of fishery activity. Leatherwood and Reeves (1983) point out that the main food of *G. griseus* is constituted of cephalopods, and occasionally some fish species. In a study of the diet of *G. griseus* in the Mediterranean, the consumption of 25 species of cephalopods was confirmed, as well as occasional and incidental intake of tunicates, crustaceans, teleosteis and bryozoans (Blanco *et al.*, 2006).

The second record was based on a sighting of more than one specimen in El Falucho inlet (11° 48'00" N 064°37'00" W) also near the Isla de La Blanquilla but there are no specific data from the description of the event. These are considered the first valid reports of this species in the country (Romero *et al.*, 2001). Both events were recorded over an underwater relief of 348 and 150 m. respectively, located in a short basin of a sharp fall to the southwest of Isla de La Blanquilla descending rapidly up to 1000 m. and 2000 m. deep (Figure 1).

According to Klinowka (1991) and Kruse *et al.* (1999), the species generally is distributed over platforms with depths beyond 1000 m. This has also been recorded for Chilean waters, where there are more than 40 reports of the species (Olavarría *et al.*, 2001). Nevertheless, records of the species to the north in the U.S. Gulf have been in waters between 350-975 m, in areas where there is a great productivity and a high prey's concentration (Baumgartner, 1997). Blanco *et al.* (2006) proposed that *G. griseus* in the Mediterranean preferred to feed



- Location of Venezuelan Coast Guard Command, nearby El Falucho inlet at Isla de la Blanquilla
- ◇ Incidental catch- 1988. (11°49'00" N, 064°38'00" W)
- ◆ Sighting- 1988. (11°48'00" N, 064°37'00" W)
- ⊠ Stranding- 2002. (11°05'00" N, 063°50'30" W)
- Sighting- 2003. (11°47'51" N, 064°37'30" W)
- ⊕ Stranding- 2004. (10°59'06" N, 064°24'12" W)
- Sighting- 2005. (11°37'57" N, 064°14'58" W)

Figure 1. Geographic locations of Risso's Dolphin, *Grampus griseus* Cuvier 1812 (CETACEA:DELPHINIDAE) records for the Venezuelan North East Basin, during the period 1988-2005.

in waters between 600 and 800 m depth based on a study of the species' diet.

The third record of *G. griseus* was made by the Coast Guard Command Unit of the Venezuelan Army, in 1989, based on a stranding event, apparently of a dead female, in lactating phase. It also occurred on the coasts of Isla de La Blanquilla, although the exact coordinates for the stranding location are unknown. In this event, there is no information about possible causes, its circumstances, or body's disposition, etc. although its validity is accepted (Acevedo, 2001)

New reports

The fourth record for Venezuela, which is also the first record for Margarita Island, Nueva Esparta state, was a 274-cm male stranded alive on El Tirano Beach (11°05'00" N 063°50'30" W) on the 4th of October of 2002, attended by the CIC and the Environmental and Natural Resources Ministry State Division (DEA-MINAMB by initials in Spanish) (Figure 2).

After the evaluation of this specimen, it was diagnosed to be a very old individual with serious malnutrition and a gastric condition, as well as a respiratory failure. It also showed whale lice ectoparasites (Cyamidae) which have been previously recorded in other species of cetaceans in Venezuela (Bermúdez-Villapol *et al.*, 2006). These were collected from the eyes, the axilar area of the pectoral fins and the blow hole. Likewise, it also had an evident profile of stomatitis with consequent strong deformity of gums and strong worn teeth with detachment of some of them. Due to the profile presented, euthanasia procedures were applied. Subsequently, macroscopic necropsy was carried out, which revealed the certainty of the diagnosis, as well as the presence of three plastic bags in the first chamber of the stomach. Ingestion of bags and other plastic elements by different species of cetacean has been previously reported for young and adult animals (Secchi and Zarzur, 1999; Baird and Hooker, 2000). Causes of plastic ingestion by cetaceans is not clear, but it is speculated that it might be the result of loosing the ability to catch prey, in old and sick animals, as well as confusing it with prey or as the accidental consequence of curiosity for the environment (Kastelein and Lavaleije, 1992; Oliveira and Duarte, 2007). In this case the advanced age and



Figure 2. Individual of *Grampus griseus* stranded alive in El Tirano Beach, (11°05'00" N 063°50'30" W), Isla de Margarita, Venezuela; on the 4th of October of 2002.

condition of the animal may have been contributed to its inability to catch prey, due to the pathology described before.

Nematodes endoparasites, from the genus *Anisakis*, were also localized in the same stomach chamber. *Anisakis* parasites have been reported in other species of cetaceans in the Caribbean (Cardona-Maldonado and Mignucci-Giannoni, 1999; Mignucci-Giannoni *et al.*, 1999; Bermúdez-Villapol *et al.* 2006). The presence of a plane-segmented non-identified parasite in the intestinal tract of some 5 m length was observed (Bermúdez *et al.*, 2002). The specimen's skull is in the scientific collection of CIC under the number # CIGgri001, at headquarters in Margarita Island, Nueva Esparta State.

A new sighting was recorded on the 4th of July of 2003 in the proximity of Isla de La Blanquilla to the south (11°47'51"N – 064°37'30" W), over an underwater topography of 1000 m, by the staff of the CIC and interns from Jorge Tadeo Lozano University, Colombia (UJTL by initials in Spanish). The observation was carried out on board of the patrol vessel *Fumarel ARBV*. The specimens were sighted at a distance of approximately 30 m. Three animals were observed, possibly in feeding behavior, with a coloration pattern from gray to chest-nut brown, with countless white marks as stripes along the body, typical of this species, with a sickle-shaped and prominent dorsal fin, with white marks as well, although in smaller proportion than on the rest of the body. Observations were carried out from the ship's flying bridge; which offers an excellent visual field. The CIC personnel has reported the observation of other species of sub order Odontoceti order for this area, such as: sperm whale *Physeter macrocephalus*, short-finned pilot-whale *Globicephala macrorhynchus*, striped dolphin *Stenella coeruleoalba* and pantropical spotted dolphin *S. attenuata*. Nevertheless, no interaction whatsoever has ever been

observed of *G. griseus* with these species, although interspecific association of Risso's dolphin has been reported by several researchers (Shane, 1995; Kruse *et al.* 1999; Frantzis and Herzing, 2002).

A female newborn specimen of *G. griseus* was found dead on 14 April 2004, on El Guamachín beach (10°59'06"N, 064°24'12" W) at the western end of Isla de Margarita, this specimen stranded alive, according to information given by locals, but was found dead by the staff of Museo Marino de Margarita (Marine Museum of Margarita) and volunteers of Universidad de Oriente (UDO by initials in Spanish) (Bermúdez-Villapol y Sayegh 2005). The identification of the animal was responsibility of the CIC staff (Table 1). In this case, causes of the event are unknown, but it constitutes the second live stranding of the species for the region (Bermúdez-Villapol, *et al.* 2004). The animal showed the dorsal fin and the caudal fin still retracted which is characteristic of newborn cetaceans, It was also clearly observed the V-shaped melon crack, characteristic of the species and no teeth on the upper-jaw and dental bulges on the lower-jaw.

Table 1. Morphometry comparison of two strandings of *Grampus griseus* (adult and newborn) occurred in Margarita Island, Nueva Esparta State.

Morphometry (cm)	Specimen adult CICGGRI001 04/10/2002	% in relation to total length	Specimen newborn 14/04/2004	% in relation to total length
Total length	274	100	116	100
Snout to eye	31	11.31	17	14.65
Snout to blowhole	30	10.94	16	13.79
Snout to anterior dorsal fin	112	40.87	54	46.55
Snout to posterior dorsal fin	143	nc	68	nc
Dorsal fin height	27	9.85	11	9.48
Snout to genital slit	170	nc	72	nc
Caudal fin length	66	24.08	30	25.86
Fluke width	19	nc	10.2	nc
Snout to umbilicus	139.5	50.91	63.5	54.74
Snout to anterior flipper	49	nc	27	nc
Snout to posterior flipper	63	nc	35	nc
Flipper length, anterior	x	x	23	x
Flipper length posterior	x	x	17.2	x
Flipper width	x	x	7.2	x

The specimen was preserved complete in the Marine Museum of Margarita, under the authorization of the DEA-MINAMB, being the only one of *G. griseus* species collected and exhibited in such conditions in the country (Figure 3.).

Both stranding cases reported here for Margarita Island, represent only 1.8 % of stranding data recorded for Nueva Esparta State between the 2000-2004 (Bermúdez-Villapol and Sayegh, 2005). Nevertheless, they represent valuable data for geographic distribution, since both animals are the result of live strandings, that is, they were not bodies swept in by the current up to these points, but animals that might have potentially moved to those areas, localized in east and west margins of Margarita.

The most recent report of the species *G. griseus* up to now is referred to a record, non published, submitted by the Department of Environmental Protection of the Coast Guard Command Unit of the Venezuelan Army (DPA-CGCARBV by initials in Spanish), reported for 3 February 2005, a sighting of three specimens of *G. griseus*, traveling, over a topography of 300 m. deep, to the south of Los Hermanos Archipelago (11°37'57" N, 064°14'58" W) on the platform of Isla de La

Blanquilla. This data is considered important because it constitutes the linking point between records to the south of La Blanquilla Island and the records mentioned for Margarita Island, which might represent the most likely distribution range of the species.

According to the compilation data on sightings reports and cetacean strandings particularly for the eastern basin of Venezuela there were 1,974 events involving 20 species. which means that reports of the species *G. griseus* for the eastern basin represent only 0.35% of data. Therefore it is considered a "Very Low Frequency" species for the country.

CONCLUSION

1. According to data collected and validated up to now, the geographical distribution of *G. griseus* in Venezuela is limited to the northeastern basin, occupying a variable underwater relief, with deep slopes, going from La Blanquilla Island to the north of Margarita Island.
2. Distribution might be related to the distribution of its primary cephalopod prey.
3. Due to few existing reports of the species in the Caribbean and especially for the southern Caribbean, data collected is considered important and a contribution to the knowledge of the distribution of it in the region.

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Figure 3. The same newborn individual of *Grampus griseus* found dead in El Guamachín beach, preserved into a formalin pool for its exhibition at the "Museo Marino de Margarita"- Boca de Río, Isla de Margarita, Venezuela.

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