SHORT COMMUNICATION

Summer aggregations of the common eagle ray, *Myliobatis aquila*

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The aggregation of multiple individuals is a long known behaviour in a variety of elasmobranchs, including reef sharks (Speed et al. 2011), hammerhead sharks (Klimley & Nelson 1984), whale sharks (Hoffmayer et al. 2007), devilrays (Ward-Page et al. 2013; Sobral & Afonso 2014), stingrays (Semeniuk & Rotley 2008), eagle rays (Silliman & Gruber 1999) and cownose rays (Smith et al. 1987). Various functions have been hypothesised to explain these aggregations, including feeding (e.g. Wilson et al. 2001; Rohner et al. 2013), courtship or mating (Whitney et al. 2004; Dudgeon et al. 2008), and cleaning stations (Dewar et al. 2008). However, apart from the obvious cases whenever individuals directly engage in reproductive activities, the social functions that these aggregations might serve are not understood or even described.

During the summer of 2014, while conducting regular fish visual surveys, an aggregation of up to at least 30 common eagle rays was observed at Radares point, a site located on eastern point of the Monte da Guia marine protected area (MPA), in the Azorean island of Faial, mid-north Atlantic (Fig. 1 and 2). Individuals were identified based on morphological characteristics (Fisher et al. 1981) and previous citations for the region (Santos et al. 1997; Barreiros & Gadig 2011).

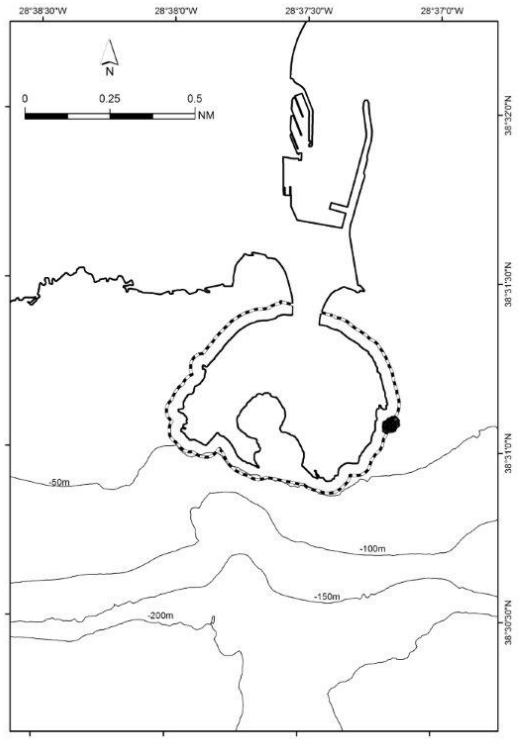

Fig. 1. Location of the aggregation site (dark cloud) on the perimeter of the Monte da Guia Marine Reserve, Faial Island, Azores (dashed line).

Fig. 2. Common eagle rays aggregating at Radares point, Faial Island.

The aggregation was observed in four consecutive dives spanning eight days (Table 1). Upon the first sighting, another six dedicated dives were made until November. Dives were conducted at various times of the day, from dawn to dusk. Individuals were observed almost daily during the week around the full moon of August (08, 10, 11 and 14-08-2014). The aggregation held 20 to 30 observable individuals at one given dive, which measured an estimated 30 to 90 cm disc width (DW) (Fig. 2). The rays were always encountered within a localized area (ca. 1 ha) of the reef (Fig. 1), in spite of the prospective transects done in the areas surrounding the aggregation site. The site lies at the transition from the rocky to the sandy bottom at 40 m depth just off the point, but the animals where swimming in mid-water (10-30 m depth). All individuals appeared to be females as no claspers were seen sticking out of the fins trailing edge, which would be expected in sub-adult and adult males (Capapé et al. 2007). There was no apparent close interaction between individuals, feeding, or cleaning activity. Right after this period, the aggregation disappeared.

Table 1. Details of observations on the aggregation site; * indicates full moon.

Date	Time	Nº indiv.	Size range (DW, cm)
08/08/2014	16:00	25	30-90
10/08/2014*	18:30	30	30-90
11/08/2014	07:30	20	30-90
14/08/2014	10:00	20	30-90
03/09/2014	14:00	0	-
08/09/2014*	08:00	0	-
25/11/2014	09:00	0	-

The common eagle ray is a relatively rare elasmobranch in coastal areas of the Azores, where it was only observed in 1.6% of over 500 transects for fish counts across the archipelago and over 15 years, and there was never an occasion when more than one individual had been observed (P. Afonso, personal observation). McEachran & Séret (1990) state in their review of the family that the species "is often found in groups" with no further data on locations, numbers or behaviour. Barreiros & Gadig (2011) also refer that "this species can be observed in reproductive aggregations in the summers, in one specific cave, in Ilhéu das Cabras, Terceira Island" but provide no information to ascertain the function of the aggregation. Similar aggregations were also observed in the summer at an offshore reef in Graciosa Island, apparently also constituted only by females of various sizes (Rolando Oliveira, pers. comm.). The fact that no particular behaviour was observed makes it impossible to even speculate about the nature of the aggregation, although it seems that there are no obvious feeding or parasite cleaning functions. As such, it remains possible that these aggregations serve social functions. It is particularly intriguing that only females were confirmedly observed, although it remains possible that immature males were in the group but went unnoticed. Thus, the aggregation might serve reproductive functions, namely related to egg deposition. Capapé et al. (2007) refer that this species breeds in August and September in the northwestern Mediterranean. Indeed, recruits of this species (ca. 10-15 cm DW) were observed from July to the end of summer in the neighbour nursery area of Porto Pim, just around the perimeter of Monte da Guia (Figure 1; P. Afonso unpublished data), so it appears that the reproductive schedule in the Azores matches that of the Mediterranean, as in most coastal fishes. This would explain why the aggregation is exclusively composed of mature females.

The nature of the aggregation and its potential significance for the conservation of this species should be investigated given its status as 'data deficient' and vulnerable population characteristics.

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