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Loggerhead Sea Turtle Mating in February: The Earliest Record in the Mediterranean?

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Loggerhead sea turtles *(Caretta caretta)* in the Mediterranean have been observed mating from early March to late June (Schofield *et al*. 2017), with the peak mating period occurring throughout April and May (Hays *et al.* 2010, cited by Casale *et al.* 2013). Sea turtle mating is largely influenced by environmental conditions, primarily temperature, meaning that sea turtles must wait for adequate climatic conditions before mating (Jourdan & Fuentes 2015). Through the analyses of sea turtles' clutches it was established that they implement a polyandrous mating system (Harry & Briscoe 1988). This polyandry was confirmed in loggerheads through genetic analyses (Bollmer *et al.* 1999) and in water observations (Papafitsoros *et al*. 2022).

The island of Kefalonia hosts many sea turtles every year throughout the mating season (Wildlife Sense, unpub. data). Throughout this period several mating events are observed. Mating is usually observed between April-June with the earliest within-year record occurring on the 12 March 2021. In 2023 mating was first observed in February on two separate occasions involving different individuals as confirmed by Photographic Identification (Photo ID) (Fig. 1). To our knowledge this is the earliest loggerhead mating event recorded in the Mediterranean. As two separate mating pairs were recorded, we can exclude the fact that this was a one-off event.

Studies focusing on leatherback sea turtles *(Dermochelys coriacea)* have shown that some males arrive at mating grounds earlier than females. It was suggested that this allows males to maximise their mating success (James *et al*. 2005). In addition to this, it has been suggested that males may employ a variety of tactics throughout the mating season to enhance their mating success. Arriving early at a mating ground that hosts year-round resident female individuals could allow males to successfully mate in the absence of other competing males (James *et al*. 2005; Casale *et al.* 2013). These males could then leave in the peak of the mating season to avoid the strong male-male competition and mate at a different breeding ground (Schofield *et* al*.* 2006; Casale *et al*. 2013). Mating at multiple breeding grounds within a season has previously been observed in green sea turtles *(Chelonia mydas)* (Wright *et al.* 2012) and hawksbill sea turtles *(Eretmochelys imbricata)* (van Dam *et al.* 2008).

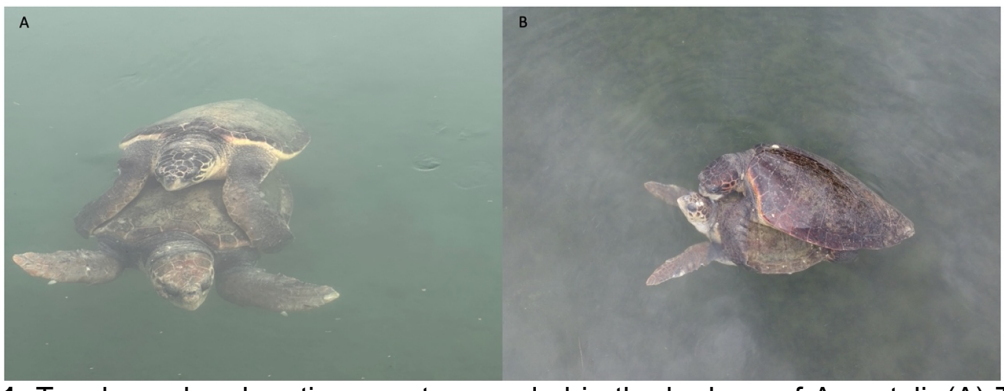

Figure 1. Two loggerhead mating events recorded in the harbour of Argostoli. (A) The first recorded mating event on 27 February 2023. (B) The second recorded mating event on 28 February 2023.

All individuals observed mating were identified via Photo ID. The female in Fig. 1A has been recorded yearly in our Photo ID program since 2012. If she is recorded nesting in 2023 this will likely be her third year in a row. It is thought to be a nesting year for her if she is absent from the Argostoli harbour from late May to mid-August which is the nesting season for Mediterranean loggerheads (Margaritoulis & Rees 2001). Since 2021 she has been absent from the Argostoli harbour throughout this period (2020 is excluded as regular Photo ID was not possible due to COVID-19 restrictions). The last time she was present for the entire summer duration was in 2019. It will be interesting to see if this early record of mating will influence the beginning of the nesting season.

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