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New Record of the Pelagic Octopods *Argonauta argo* (Linnaeus, 1758) off the Shore of the Northern Tip of the Gulf of Aqaba in Jordan

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Abstract
A few specimens of the pelagic octopod *Argonauta argo* (Linnaeus, 1758) were found after they were washed up by currents along the northern beach of the Gulf of Aqaba in Jordan. This article describes this record and provides a review of the species' sightings worldwide and their importance as prey in maintaining an ecological balance.
Keywords: *Argonauta argo*, Gulf of Aqaba, Jordan, Pelagic Octopods

Introduction

Jordan's Gulf of Aqaba extends for 27 km with a minimum width of 5 km and a maximum of 20 km (al Tawaha et al., 2019). Hulings (1979) stated the gulf to have minimal semi-diurnal tides ranging from 90–100 cm. Wind is considered the major force in water movement and transportation in the Gulf (Assaf & Anati, 1974), and the current has a clockwise direction (Hulings, 1979). The seawater temperature in the northern part of the Gulf of Aqaba ranges between 21-27º C (Al-Rousan et al., 2002; Manasrah et al., 2006), and has high salinity between 40.3-40.6 PSU (Manasrah et al., 2004).

The *Argonauta argo* is a species of pelagic octopod that inhabits the Mediterranean and other warm and temperate seas (Roper et al., 1984; Grove, 2014). Knowledge about their distribution is derived from Adam (1960), who described this species as being found between Cyprus and Turkey. Specimens have been reported from the Andaman Sea as a part of the Indian Ocean (Roper et al., 1984). Additionally, Ruby & Knudsen (1972) mentioned *Argonauta* but offered no additional records in their review of Cephalopoda from the Mediterranean 23° east

of the meridian. In addition, this species was reported in the Western Pacific from Southern Hokkaido in Japan to New Zealand (Okutani et al., 1987; Nesis, 1987) and from California to Peru (Nesis, 1987). Records of this species have also been confirmed from the Western Atlantic (Nesis, 1987; Hochberg et al., 1992). This paper deals with the first observation of *Argonauta argo* in the Jordanian side of the Gulf of Aqaba and reaffirms its presence in the Red Sea.

Method

A few specimens of *Argonauta argo* were found along the shore of the northern beach at Aqaba in Jordan, where they were collected and identified by observing their morphometric features. *Argonauta argo* consists of a narrow keel with two rows of sharp tubercles along its length. This laterally compressed and calcareous structure increases in thickness to form a horn.

Results and Discussion

The first record of *Argonauta argo* in Jordan was confirmed in March 2021 after finding a few specimens washed up on the northern beach of the Gulf of Aqaba (see Figures 1 & 2). Records of this species in the Red Sea are very rare (Adam, 1960) and date from long ago. Therefore, this record is important as it confirms the existence of this species in the semi-closed Gulf of Aqaba. Specimens were reported in the Gulf of Eilat near the Jordanian borders after a southern storm almost 32 years ago (Mienis, 1980; Popper et al., 1990). Additional records were obtained from Wulker (1920), who examined several shells from Kosseir in the Stuttgart Museum. An extensive study was performed earlier on Red Sea cephalopods, but no records had been provided for the *Argonauta argo* (Adam, 1942, 1960).

Figure 1. Argonauta argo from the northern tip of the Gulf of Aqaba (© Mr. Kais Asfour).

Figure 2. *Argonauta argo* shell (© Mrs. Karen Asfour)

Argonauta argo is a cephalopod that survives at depths ranging between 0-200 m. The maximum mantle length in females is able to reach 12 cm, with a maximum shell length of 30 cm. The male is a shell-less dwarf, with the third left arm being a hectocotylus and a maximum total body length of 2 cm and maximum mantle length of approximately 7 mm (Roper et al., 1984, Mangold & Boletzky, 1987). This species tends to gather at the sea surface where it achieves neutral buoyancy (Jereb et al., 2014), while a few shells have been found washed up on beaches (Oliver, 1914). This can explain why few specimens have been found along the beach of the northern tip of the Gulf of Aqaba. The diet of *A. argo* consists of pelagic mollusks, small fish, and crustaceans (Orga, 2006). This animal is additionally considered prey for tunas, swordfish (Peristeraki et al., 2005), loggerhead turtles (Frick et al., 2009), seabirds (Nesis, 1977), and dolphins (Blanco et al., 2005; 2006).

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