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Remarks concerning the description and status of *Murex forskoehlii mediterranea* Kovalis & Korkos, 2009

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Abstract: In 2009, Kovalis & Korkos described a new *Murex* subspecies from the east coast of the Mediterranean Sea: *Murex forskoehlii mediterranea*. Unfortunately the Holotype picture was not published with the article. This paper will correct this technical problem. Moreover, Mienis (2010) pointed out that the description is not according to the ICZN rules. This paper will clear this issue.

Discussion: The first record of the taxon *Murex forskoehlii* was in the selling catalogue of the Bolten collection made by Röding in 1798. Röding was asked to prepare a selling list of the huge collection of more than 7000 univalves and 1300 bivalves by the family of the late Dr. Bolten. Dr. Bolten's collection contained many shells from the newly discovered southern countries that had not been described yet. Röding used the data he found with the shells. Unfortunately in case of that *Murex*, he did not find any reference to any catalogue (it was probably a recently found undescribed specimen) and described it according to the Bolten system (German name, source and main characteristic feature).

Indeed, the description was " Forskoehlische Spinnenkopf", which is the best proof that the specimen had long and unproportional spines. In the German language

Spinnenkopf refers to the forskal's spine head. The use of the name "Forskoelische" means that the source was Forskal's expedition. The Forskal expedition arrived at Alexandria and moved on land to Suez city. From Suez City on it moved by Bouts along the Gulf of Suez to the Red Sea until they reached their expedition's goal, Yemen (the southernmost point of the Red Sea). This expedition did not explore the Gulf of Aqaba. The first European that led an expedition to Sinai and the Gulf of Aqaba was the German scientist Eduard Rueppell in 1821 (60 years after the Forsskal expedition).

The neotype used by Ponder & Vokes (1988): The neotype that Ponder & Vokes (1988) used for their work was a random choice. As they write in their work "*We have chosen this as type figure of the species. Location of illustrated specimen unknown.*" There is no correlation between the random choice and reality.

We did not study the *Murex forskoehlii* from the Red Sea but the specimens that migrated into the Mediterranean Sea through the Suez Canal. (The Suez Canal has been connecting the Red and the Mediterranean Sea for 140 years. This canal was excavated between 1859 and 1869.) Before that there are no records of this *Murex* from anywhere in the Mediterranean. The direction of the migration of that specimen (as for many others) is from the Red Sea into the Mediterranean Sea and not the other way. The earliest record of this *Murex* from the Mediterranean Sea is from 1937. Since we do not have a genetic map of *Murex forskoehlii* we have to rely on the morphological theory. Let's say that a genetic mutation occurs in this species once in a few hundreds or thousands of years. In the original Red Sea population, after several tens of thousands of years, the genetic spectrum will be much wider than the 100-200 years old population in the Mediterranean Sea. Since the mutation circle is very short, the genetic variability will be very narrow. Even though the Red Sea specimen population looks the same morphologically, genetically they are more variable. Morphological tolerance in an original population is almost not possible. If a black form of *Murex* emerged, it would be so prominent in its habitat that the original predators might prey on it before it reaches maturity, or it would have difficulties to find food. The natural selection finds the best morphological appearance connected to that particular habitat. Yet, in the new habitat, the morphological variability is not necessarily a disadvantage. The natural predators are not present in the new habitat, the food supply is different, and so the morphological variability (not genetic) spectrum is much wider. Many colour forms can develop in the new habitat because of the totally different conditions. The tens of thousands of years of natural selection are useless in the new habitat. This theory can be seen in other migrated species from the Red Sea to the Mediterranean Sea such as *Spondylus spinosus* Schreibers, 1793. In the Mediterranean, the morphological spectrum of that *Spondylus* is much wider than in the original population. Morphologically, it exploded in all directions and it is possible to find in all colorus, shapes and forms

In the absence of a genetic study we presume that the original population of *Murex forskoehli* is the Red Sea population, based on morphological studies.

An article concerning the colour forms of *Murex forskoehlii mediterranea* Kovalis & Korkos, 2009 will be published separately.

We did not feel the need for a neotype to be designated for the well-known Red Sea population. We had planned to do it in a following study and not in a race with the gentleman that is holding a senior position in the Israel Malacological society (I.M.S.). After our publication we discovered that Heiman & Mienis (2010) described a neotype from the Red Sea as *Murex forskoehlii sfinifer*.

There is no doubt that the geographical separation and the characteristic features confirm the ICZN criteria of *Murex forskoehlii mediterranea* as a subspecies. For a detailed description and discussion, see Kovalis & Korkos (2009).

References:

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mediterranea,
Ashkelon, Israel,
Holotype MT2252
Royal Belgian
Institute of
natural Sciences
(RBINS). Size; 77mm.
Paratype 1 MT2253, RBINS
Paratype 2 MT2254, RBINS