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Short Communication

The Lessepsian migrant *Pomatoleios kraussii* (Annelida, Polychaeta) - recent formation of dense aggregations in Lake Timsah and the Bitter Lakes (Suez Canal, Egypt)

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ABSTRACT

The serpulid polychaete *Pomatoleios kraussii* has been present as a Lessepsian migrant in the Suez Canal and Lake Timsah, and in the eastern Mediterranean on the Levant coast, for a number of years, but until recently was only reported as isolated individuals. This note reports well developed intertidal aggregations of *Pomatoleios kraussii* in Lake Timsah in April 1997, and subsequently, which were not present in previous years. Aggregations were also seen on the western shores of the Great Bitter Lake. It is suggested that *P. kraussii* is likely to become more widespread and abundant both intertidally and subtidally in the northern part of the Suez Canal and the eastern Mediterranean.

KEYWORDS: *Pomatoleios kraussii*, serpulid reefs, Lessepsian migrant, Suez Canal, eastern Mediterranean, Lake Timsah, Great Bitter Lake.

INTRODUCTION

Pomatoleios kraussii has formed substantial populations of intertidal aggregations in Lake Timsah and the Bitter Lakes (Suez Canal, Egypt) (Figure 1). *P. kraussii* was reported originally from South Africa (Baird 1865), is widespread in the Indo-pacific (Straughan 1967), and has also been reported as an intertidal species along the southern coast of the Arabian Gulf from Kuwait to Saudi Arabia, where it is thought to have been introduced by shipping (Crisp 1977). In 1986, Ghobashy *et al.* recorded *Pomatoleios*

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kraussii as a new record for Lake Timsah and for Egyptian waters, and noted that it was a Lessepsian migrant. In their extensive study of the fouling Serpulidae of Lake Timsah, *P. kraussii* was described as a rare species found on permanently submerged buoys and concrete structures, mainly in the southern part of the lake.

In a Scuba diving expedition along the Mediterranean coast of Israel, Ben-Eliahu & Ten Hove (1992) reported isolated individuals of *Pomatoleios kraussii* in subtidal crevice and overhanging concretionary habitats as a new record for Israel. Subsequent reinvestigations of polychaete samples from the Levant Coast, held at Tel Aviv University and the Hebrew University of Jerusalem, revealed a number of specimens of *Pomatoleios kraussii*, which had previously been misidentified as *Pomatoceros lamarckii*, dating back until at least 1964 (Ben-Eliahu pers. comm.). These were always isolated individuals.

RESULTS AND DISCUSSION

In April 1997, *Pomatoleios kraussii* was found by the authors in the north eastern part of Lake Timsah and the adjacent west bank of the Suez Canal (30°35′15" N, 32°18′25" E) forming very dense aggregations on the intertidal areas of a variety of concrete surfaces, and to a lesser extent metal surfaces and rubber tyres (Figure 1). On the opposite side of the Canal a few colonies were found intertidally on concrete piers. Two intertidal locations on the western shores of the Great Bitter Lake were also visited: at Abu-Sultan (around 30°25′N, 30°18′ E) there were only scattered individuals, although there was plenty of apparently suitable substrate; further south at Funara (around 30°21′N, 32°20′E) numerous dense aggregations occurred on boulders and rock surfaces, although slightly less well developed than at Lake Timsah.

In Lake Timsah, the aggregations extended vertically above the low spring tide level for around 30 - 50 cm (mean spring tidal range is small in the Canal, at around 20-30cm) and often extended horizontally for tens of metres. They had clearly been formed by the settlement of young worms on the top of older ones. In the previous study (Ghobashy *et al.* 1986), *Pomatoleios kraussii* was scarce; only 119 specimens were found during a 16 month intertidal and subtidal survey of fouling organisms. The northern and middle part of Lake Timsah has been visited at least annually since then, including April 1996, but there were no obvious changes in the intertidal fouling community until 1997.

In April 1999 Lake Timsah and the Bitter lakes sites were revisited. The distribution and density of the worms appeared to be unchanged from 1997. The more densely colonised areas had an average of around 9,600worms/m^2.

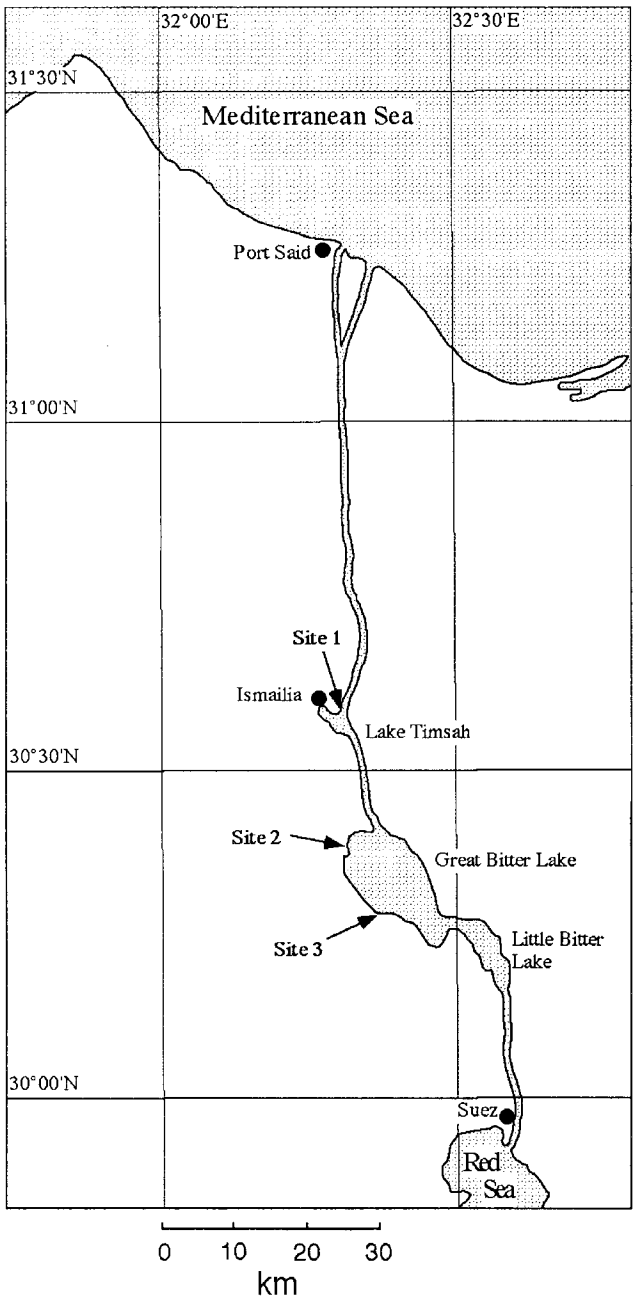
Straughan (1968) noted that *Pomatoleios kraussii* was amongst the subtidal foulers occupying the inside of a power station in Australia. However in Japan, Miura & Kajihara (1984) described it as non-fouler which forms a well defined zone in the intertidal. It is suggested that *P. kraussii* is a passive Lessepsian migrant, which succeeded in settling initially in low numbers as a fouling organism in the lakes, in spite of the somewhat harsh salinity conditions (see Perthuisot *et al.* 1990 and Por 1978 for details of hydrographic conditions in the lakes). The population has clearly since become sufficiently well established to form substantial intertidal reef-like aggregations.

It is suggested that, if it has not already done so, *Pomatoleios kraussii* is likely to become more widespread and abundant subtidally in the northern part of the Suez Canal

and the eastern Mediterranean (as also predicted by Ben-Eliahu & ten Hove 1992) and may subsequently form dense intertidal aggregations in areas of suitable habitat (see Straughan 1969 for a discussion of habitat selection in *P. kraussii*).

The associated fauna was not investigated in detail but abundant mussels, *Ostrea stentina*, and barnacles, *Balanus amphitrite*, were observed in the reefs. Other mussels *Brachiodontes variabilis* and *Modiolus* sp. formed a dense, permanently submerged band just below the reefs. An unidentified limpet, *Patella* sp., was the dominant organism above the reefs.

Figure 1 Sites on the Suez Canal / lake system where *Pomatoceros kraussii* was found. Site 1- north-eastern corner of Lake Timsah and the adjacent west and east banks of the Suez Canal; site 2- Abu-Sultan on the Great Bitter Lake; site 3- Funara on the Great Bitter Lake.



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الملخص العربى

تجمعات كثيفة وحديثة لحيوان ليسيبسى المهاجر "*بوماتوليوس كرايسسى*" (الحلقيات – عديدة الأشواك) فى بحيرة التمساح والبحيرات المرة (قناة السويس – مصر)

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لقد تم تسجيل حيوان من الديدان الأنبوبية (سربيوليد) "*بوماتوليوس كرايسسى*" كحيوان ليسيبسيان مهاجر فى قناة السويس وبحيرة التمساح وكذلك فى الجهة الشرقية لسواحل البحر الأبيض المتوسط وذلك منذ سنوات طويلة ولكن تمت هذه التسجيلات من خلال أفراد منعزلة وقليلة٠ من خلال هذه الدراسة وضح أن هذا الحيوان قد كون تجمعات فى بحيرة التمساح وذلك طبقاً للمشاهدة الحقلية خلال شهر أبريل ١٩٩٧ وهذه التجمعات لم تكن موجودة من قبل٠ أيضا تم رصد تجمعات أخرى لنفس الحيوان على الشاطئ الغربى للبحيرات المرة٠

أوضحت الدراسة أن حيوان "*بوماتوليوس كرايسسى*" ربما قد أصبح أكثر إنتشاراً وتواجداً وذلك فى المنطقة البين مد جزرية وكذلك التحت مد جزرية فى الجانب الشمالى من قناة السويس والساحل الشرقى للبحر الأبيض المتوسط