

ALIEN SPECIES IN THE NORTHERN ADRIATIC LAGOONS: *PARACERCEIS SCULPTA* (ISOPODA: SPHAEROMATIDAE)

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Abstract

Invasions by alien species is one of the most alarming threats that reduces biodiversity and leads to direct or indirect ecological effects on marine ecosystems. Northern Adriatic lagoons are affected by high anthropogenic impacts, which may facilitate the introduction and spreading of alien species. The sphaeromatid isopods *Paracerceis sculpta*, native to the northeast Pacific, has been found for the first time Pialassa Baiona, a brackish lagoon connected to Ravenna harbour, in 2012. Field data suggest that *P. sculpta* became a pest species, being more competitive compare to the two native sphaeromatid species inhabiting the lagoon.

Keywords: Lagoons, Alien species, Brackish water, Crustacea, North Adriatic Sea

Introduction Northern Adriatic coastal lagoons show a high rate of introduction of alien species compared with other coastal regions, becoming one of the major hot spot of invasion in the Mediterranean basin ([1], [2]). Human disturbance and the increase of vessel traffic countries is an important pathway of spreading of alien species in stressed environments ([2]). *Paracerceis sculpta* (Holmes, 1904) is one interesting examples of alien species introduced to costal lagoons. It is a sexually dimorphic sphaeromatid isopod native to the NE Pacific, from southern California to Mexico. This species has been introduced to many areas and has a world wide distribution. Maritime traffic has been assumed to be the most probable vector of spread for *P. sculpta*, which could be transported among fouling, in ballast water or associated to species of interest for aquaculture ([2]). **Material and methods** The abundance of sphaeromatid isopods was investigated in 4 areas of the Pialassa Baiona, a lagoon connected to the Ravenna harbour and located 60 nm south to Venice. Area 1 is landward and close to main human disturbance sources (sewage, thermal plants, etc.), area 2 seaward and also affected by disturbances, area 3 seaward but less subjected to disturbance and area 4 landward and far from disturbances ([3]). Specimens were collected both in the soft bottoms, by box corer in May 2012, and associated to recruitment panels, recovered every two weeks between March and October 2012. Data from previous soft bottoms surveys were also reported.

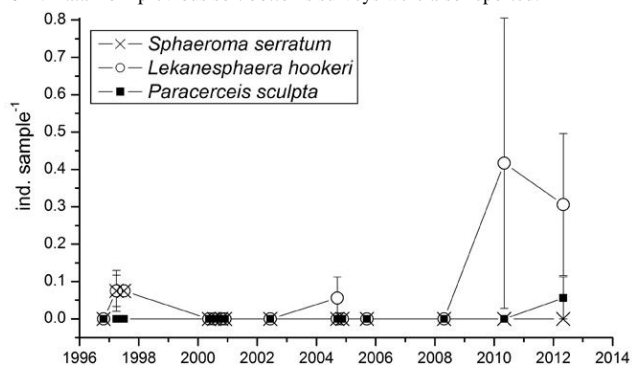


Fig. 1. Mean densities (\pm s.e.) of sphaeromatid isopods in benthic samples collected in the coastal lagoon Pialassa Baiona since 1996 to 2012.

Results The first record of *P. sculpta* in the northern Adriatic Sea dates back to April 1981, in the Venice lagoon ([4]), but it has never been observed in the soft bottoms of Pialassa Baiona lagoon, until May 2012 (Fig. 1). The native sphaeromatid species inhabiting the Pialassa Baiona are *Lekanisphaera hookeri* (Leach, 1814) and *Sphaeroma serratum* Fabricius, 1787. Few individuals of *P. sculpta* were found in area 2, in May, thereafter the species became more abundant, reaching $9.2 (\pm 2.67$ s.e.) ind. sample⁻¹ in September in area 2, and colonising the area 3 (Fig. 2). *L. hookeri* was the most abundant species in the lagoon, even if during the investigated period its populations seem to move progressively from area 1 to 2 and then 3. **Discussion** *P. sculpta* was found in area 2, and 3, both areas are close to the sea and to the harbour entrance. This distribution suggests a recent introduction of the species into the lagoon, facilitated by maritime traffic and local human disturbances. The gradual enlargement of the colonised area and the increase in population size of this alien species suggest that it may be threatening native species. Further studies are

needed to confirm that *P. sculpta* is more competitive than the native species and it has a true impact in term of loss of ecological functions.

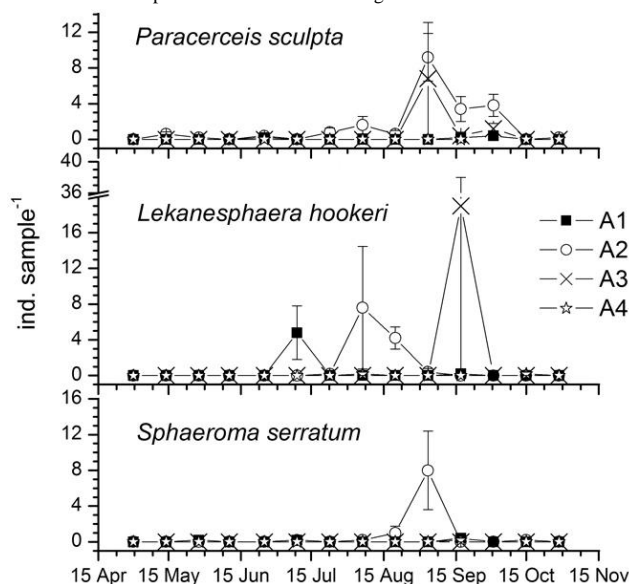


Fig. 2. Mean densities (\pm s.e.) of sphaeromatid isopods in recruitment panel samples in four inner areas in the Pialassa Baiona in 2012.

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