

First record of the successful invader *Palaemon macrodactylus* in Arcachon Bay and Charente estuary (SW France)

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Invasive Species



Name: Asian shrimp

Scientific name : *Palaemon macrodactylus*

Origin: Japan, Korea, China

Size: up to 40 mm

Date of arrival in Europe: 1992

Particular signs:

- whitish longitudinal dorsal stripe
- rostrum with 9 to 15 dorsal teeth, 3 of which behind the orbit
- ventral margin of the rostrum with a double row of setae

INVASION PATHWAY

Although for all previous reports of *P. macrodactylus*, the suspected vector of introduction was the accidental transport of larvae in ship ballast waters, we suppose that the presence of this shrimp in Arcachon Bay is independent of human activities. Indeed, sandbanks at the entrance of the lagoon prevent shipping traffic. With particular meteorological conditions, adults or larvae could have been transported from the Gironde estuary by oceanic currents within 4-7 days. The same pattern of dispersal may be applied to the Charente estuary located north to the Gironde, even if large vessels from worldwide destinations enter the estuary in route to the Rochefort harbour.

ECOLOGICAL IMPACTS

In the European waters where this species is present since a few years, neither ecological effects nor decline of native populations of shrimps have been reported. Although *P. macrodactylus* might represent a positive economic value for fishermen and a food source for many fishes in Arcachon Bay and in the Charente estuary, long-term monitoring of these populations is necessary. Indeed, *P. macrodactylus* is a newly reported species for these two ecosystems and, as for many exotic species, an adaptive period may occur prior to the species expansion.

INTRODUCTION

The oriental shrimp *Palaemon macrodactylus* Rathbun, 1902 is native to the coasts of the NW Pacific: Japan, Korea and northern China. Outside its native area, it was first recorded in San Francisco Bay in 1957 and is now considered as well-established along the west coast of North America. It was also collected in southern Australia in the 1970s and in Argentina in 2000. The occurrence of this species in European waters (Spain, France, England, The Netherlands, Belgium, Portugal, Romania) has been reported since 1992. In France, the Asian shrimp was found in the Gironde estuary in 1998, then in the Adour and Seine estuaries in 2006.

OCCURENCE IN ARCACHON BAY AND CHARENTE ESTUARY

The first specimens of *P. macrodactylus* were collected in the Charente estuary in September 2007. One adult and some zoe larvae were found in the subsurface layer inside the estuary (3-5 PSU) and some adults were collected at the mouth of the Charente (25 PSU). In Arcachon Bay, 9 specimens were collected in the oceanic part of the bay (26-31 PSU) in January 2010. *P. macrodactylus* is perfectly adapted to estuarine conditions and is considered as a strong osmoregulator known to tolerate salinities equal to 32 PSU.



Figure 1: Presence of *Palaemon macrodactylus* in (a) Charente estuary and (b) Arcachon Bay