J. Great Lakes Res. 31:367–370
Internat. Assoc. Great Lakes Res., 2005

NOTE

First Record of the Chinese Mitten Crab (*Eriocheir sinensis*) in the St. Lawrence River, Canada

Yves de Lafontaine*

St. Lawrence Centre, Environment Canada
105 McGill St., 7th floor
Montréal, Quebec H2Y 2E7

ABSTRACT. *In September 2004, one live and healthy female specimen of the Chinese mitten crab* (Eriocheir sinensis) *was captured in a fishing trap on the south shore of the St. Lawrence River, opposite Quebec City. This is the first report of this non-indigenous and invasive species in the St. Lawrence River or any river on the Eastern Seaboard of North America. As opposed to the Laurentian Great Lakes, where this catadromous species has previously been reported but never became established, the proximity of estuarine salt waters downstream of Quebec City might provide suitable habitats and favorable environmental conditions for the reproduction and establishment of populations in the lower St. Lawrence River.*

INDEX WORDS: *Chinese mitten crab, invasive species, non-indigenous, St. Lawrence River.*

INTRODUCTION

The Chinese mitten crab (*Eriocheir sinensis* Milne-Edwards, 1854; Crustacea, Decapoda, Brachyura), is listed among the 100 most invasive and undesirable species in the world (IUCN/SSG 2001). Native to China and North Korea, this catadromous species successfully invaded and established itself in Western Europe at the beginning of the 20th century (Panning 1939, Clark *et al.* 1998) and in San Francisco Bay in the Western United States in the early 1990s (Cohen and Carlton 1997). It was first reported in the Laurentian Great Lakes in 1965 (Nepszy and Leach 1973), with 9–10 additional sightings through 1994 (Cohen and Carlton 1997). The species, however, never became established because sightings were far-removed from saltwater habitats required for successful reproduction. I report here on the first identification of the Chinese mitten crab in the lower St. Lawrence River (SLR), in Eastern Canada.

COLLECTION AND IDENTIFICATION

During the night of 2 September 2004, one specimen of the Chinese mitten crab was captured alive in an eel fishing weir at Lévis (46° 46.3 N, 71°13.2 W), on the south shore of the SLR, opposite Quebec City (Canada) (Fig. 1). It was very active and healthy, with all its appendages intact and showing no signs of poor condition. The specimen (Fig. 2) was a female (as indicated by the wide rounded ventral plastron) with a carapace of 46 mm in width and weighing 39.6 g (wet weight), and was thus smaller than the specimens (65 to 74 mm carapace width) previously found in Lake Erie (Nepszy and Leach 1973). Because of its small size, the individual was probably immature and nonovigerous. The animal was given to the Parc Aquarium du Québec and maintained alive in a tank supplied with water from the SLR. The crab moulted on 15 September (13 days after capture). Referring to descriptions and pictures available on different web sites (e.g., the California Department of Fish and Game, http://www.delta.dfg.ca.gov/mittencrab/identification.asp), the animal was identified based on the following distinctive criteria: the white-tipped claws of equal size, the four spines with small teeth on the antero-lateral edges of the carapace, the presence of a deep frontal notch between the eyes and the presence of setae on the inner edges of the walking legs, which were nearly twice

*Corresponding author. E-mail: yves.delafontaine@ec.gc.ca

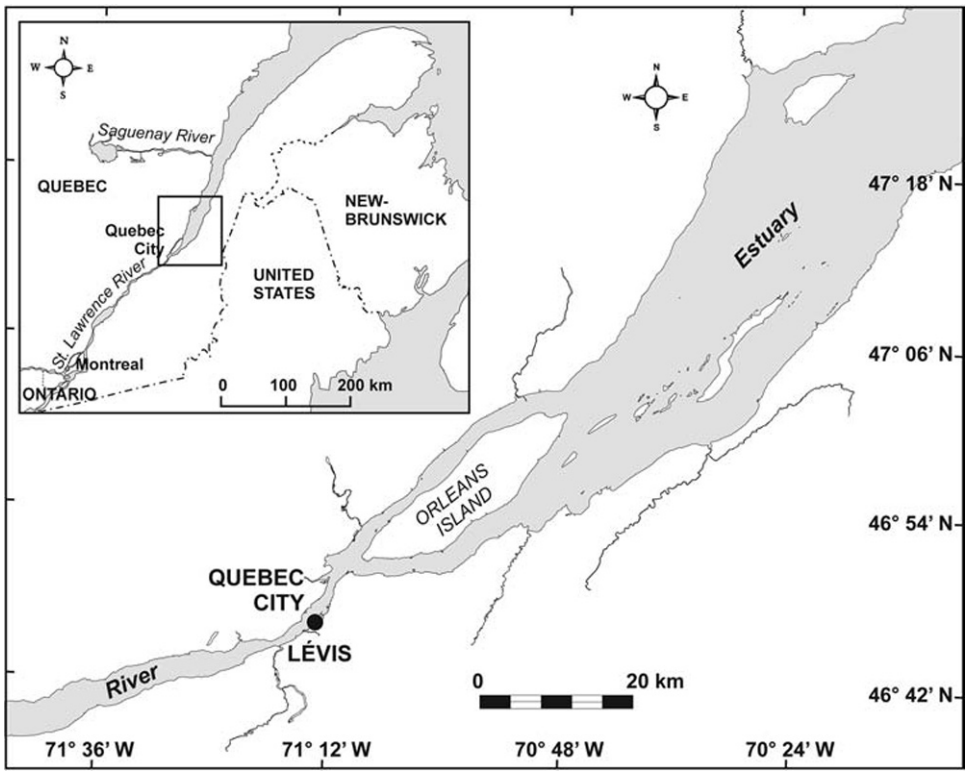

FIG. 1. Site of capture of the Chinese mitten crab in the St. Lawrence River.

as long as the width of the carapace. The distinctive dense patches of hair on the claws were not clearly visible at the time of capture, but thin hair started growing after moulting. Patches of hair on the claws are not present on juvenile crabs and immature females, and usually more prominent in mature males. Identification was confirmed by comparing the moult with preserved specimens of Chinese mitten crab at the Canadian Museum of Nature in Ottawa (Drs. Jean-Marc Gagnon and Ed Hendrycks, pers. comm.). The moult was deposited in the museum's collection (Catalogue number: CMNC 2004 6037).

POTENTIAL RISK

This is the first record of the Chinese mitten crab in the St. Lawrence River, and also the first record in a river on the Eastern Seaboard of North America. Cohen and Carlton (1997) compared different possible transport mechanisms and concluded that ballast water discharge was the most probable vector for the first introduction of this species to San Francisco Bay. Similarly, the absence of any other established population in Eastern North America strongly suggests that the occurrence of the crab in the SLR was also associated with transoceanic shipping. Because the species can migrate over very long distances (up to 500 km) (Cohen and Carlton 1997, Clark *et al*. 1998, Rudnick *et al.* 2003), the presence of the crab near Quebec City might have resulted either from local introduction or from its movement downstream following its introduction further upstream in the river. Foreign shipping activities on the SLR are extensive; between 1978 and 1996, the number of transoceanic ships bound for the three major freshwater ports on the SLR (i.e., Montreal, Quebec City, and Trois-Rivières) was four times the number entering the Great Lakes (Bourgeois *et al*. 2001). The estimated volume of ballast water discharged in these river ports was ten times the volume released to the Great Lakes (Harvey *et al*. 1999), a clear indication that the SLR is at risk to the introduction of non-indigenous species.

At the catch site, the river is approximately 1 km wide, with narrow tidal flats separated by a 60-m deep navigation channel. The site is at the downstream end of the fluvial estuary and is character-