THE RAPID COLONIZATION BY **CRANGON CRANGON** (LINNAEUS, 1758) (EUCARIDA, CARIDEA, CRANGONIDAE) OF ICELANDIC COASTAL WATERS

BY

BJÖRN GUNNARSSON1,3, ÞÓR H. ÁSGEIRSSON1,4 and AGNAR INGÓLFSSON2,5

1) Marine Research Institute, P.O. Box 1390, Skúlagata 4, IS-121 Reykjavík, Iceland
2) Institute of Biology, University of Iceland, Sturlugata 7, IS-101 Reykjavík, Iceland

ABSTRACT

The European brown shrimp, *Crangon crangon* (L., 1758) has colonized the intertidal zones of Iceland and spread rapidly to many coastal areas. The first confirmed record dates from 2003, and by 2006 the species had colonized the west and south coasts, while not being recorded on the north and east coasts. Densities as high as 6700 animals 100 m$^{-2}$ were measured. The absence of the brown shrimp from Iceland until recently is interesting in the light of its occurrence in Arctic waters, especially off northern Norway and Russia. It seems most likely that it was brought to Iceland by ballast water. The present records substantially extend the known geographical range of this species.

RÉSUMÉ

La crevette grise européenne *Crangon crangon* (L., 1758) a colonisé les zones intertidales d’Islande et s’est étendue rapidement à de nombreuses zones côtières. Les premières données fiables datent de 2003; Depuis 2006, l’espèce a colonisé les côtes ouest et sud alors qu’elle est encore absente sur les côtes nord et est. Des densités de 6700 animaux 100 m$^{-2}$ ont été mesurées. L’absence de la crevette grise en Irlande jusqu’en des temps récents est intéressante à la lumière de sa présence dans les eaux arctiques, en particulier au large des côtes nord de la Norvège et de la Russie. Il est probable qu’elle a été apportée en Islande par les eaux de ballast. Les données présentes étendent substantiellement la zone de distribution géographique connue de cette espèce.

INTRODUCTION

The European brown shrimp, *Crangon crangon* (L., 1758) (Eucarida, Caridea, Crangonidae) is commonly found in large numbers in the eulittoral and sublittoral

3) e-mail: bjogun@hafro.is
4) e-mail: thoras@hafro.is
5) e-mail: agnaring@hi.is

© Koninklijke Brill NV, Leiden, 2007

Also available online: www.brill.nl/cr

Crustaceana 80 (6): 747-753
soft-bottom habitats of temperate waters of the North-East Atlantic (Henderson & Holmes, 1987; Hostens, 2000). Its distribution extends from the White Sea and northern Norway, as well as the Baltic in the north, to the Atlantic coast of Morocco, including the Mediterranean and the Black Sea in the south (Tiews, 1970), but it has hitherto not been reported in Icelandic waters. It plays a trophic key role in the coastal marine food web, facilitating the transfer of energy between the benthic and the pelagic habitat (Pihl & Rosenberg, 1982, 1984; Evans, 1984). The brown shrimp is harvested commercially in northern European waters with 32,000 tonnes landed in 2003 (ICES, 2005). Most animals inhabiting the rocky shores of Norway are also found in Iceland (Ingólfsson, 2006), which makes the previous absence of *C. crangon* from Icelandic waters curious.

Here, we describe the recent colonization of *C. crangon* in Icelandic waters from its first record in 2003. We present its known distribution until 2006 and discuss the future of the species in Iceland.

**METHODS**

The coast of Iceland is about 6500 km long (excluding tidal flats), the greatest portion consisting of moderately steep rocky shores. Exposed, apparently barren, sandy shores are estimated to be about 560 km in length (Ingólfsson, 2006). Ingólfsson (2006) further estimates that about 40% (about 175 km²) of the intertidal in Iceland comprises relatively protected tidal flats, presumably suitable habitats for *Crangon crangon*.

Two distinct sampling methods have yielded brown shrimps in Icelandic waters. In 2003, 2005, and 2006 the shrimps were collected with a 1 m wide beam trawl, whereas tidal flats (Blikastadarleira) were sampled by sieving sediment samples. In the beam trawl studies, the target was juvenile plaice (*Pleuronectes platessa* L., 1758). The 5.5 m long trawl is equipped with a tickler-chain and 8 mm mesh size in the main body and 5.5 mm in the cod end. The towing speed was kept as constant as possible during sampling, at an average of 35 m min⁻¹. The gear was pulled parallel to the beach by two persons for approximately three minutes. A GPS equipment recorded the distance covered and the surface area sampled was approximately 100 m². The average depth at each station ranged from 0.5 to 1 m. On each occasion, two or three replicate hauls were made. Samples were stored in plastic buckets and sorted within a few hours in the laboratory. The brown shrimps were identified to species, counted, and the total length from the tip of the rostrum to the tip of the telson was measured to the nearest millimetre. The identification was confirmed by Marit E. Christiansen, Natural History Museum,