

Scientific name	<i>Eriocheir sinensis</i>
Common name	Chinese mitten crab
Broad group	Invertebrate
Number of and countries wherein the species is currently established	16: BE, CZ, DE, DK, EE, ES, FI, FR, IE, LV, LT, NL, PL, PT, SE, UK
Risk Assessment Method	GB NNRA
Links	http://www.nonnativespecies.org/downloadDocument.cfm?id=51
1. Description (Taxonomy, invasion history, distribution range (native and introduced), geographic scope, socio-economic benefits)	Adult <i>E. sinensis</i> which are taken as by-catch are sold to ethnic communities that have a tradition of consuming them (DAISIE 2013). Mitten crabs have been used as live fish bait, for fish meal production, as agricultural fertilizer, and for cosmetic products (Dittel & Epifanio, 2009) (DAISIE 2013).
6. Can broadly assess environmental impact with respect to ecosystem services	<i>Eriocheir sinensis</i> is a known ecosystem engineer, effecting river bank stability through its burrowing activity. It can damage commercial fishing gear and consume fish caught in nets (Clark <i>et al.</i> , 1998, Katsanevakis <i>et al.</i> , 2014).
8. Includes status (threatened or protected) of species or habitat under threat	Burrowing activity may cause habitat damage to sandbanks, tidal mudflats and sandflats, reefs, estuaries and rivers within SACs. No specific information on damage to species but mitten crab allegedly prey on a range of fish species eggs including <i>Salmo salar</i> but data is limited (Culver, 2005).
9. Includes possible effects of climate change in the foreseeable future	In the Far East <i>E. sinensis</i> is the second intermediate host of the oriental lung fluke, <i>Paragonimus westermanii</i> , and if the crab is eaten uncooked the parasite can infect humans, causing the disease paragonimiasis. However, establishment of this lung disease in the north of EU is thought unlikely because <i>P. westermanii</i> is specific to a primary intermediate host of aquatic snails assigned to the Thiaridae, and the climate is too cold for members of this gastropod family. A global increase in temperature of 2°C is likely to allow for the northerly expansion of <i>E. sinensis</i> range within Europe as the optimal water

	<p>temperature range for reproduction is between 15 – 18°C (Anger, 1991). A global predicted sea level rise of 2.7m, based on capping of temperatures at a 2°C rise (Schaeffer <i>et al.</i>, 2012) will lead to the gradual increase in new habitats to colonise, as saline waters push further inland.</p> <p>Projections of climatic suitability for <i>E. sinensis</i> show noticeable changes in future climates, especially in relation to the loss of suitable areas along the Southern Atlantic and Mediterranean coasts of the Iberian Peninsula (Capinha <i>et al.</i>, 2012). For <i>E. sinensis</i>, forecasts suggest that the majority of the north and northwest of the Peninsula will remain climatically suitable in the future, but an overall loss of suitability is expected to occur in southern areas.</p> <p>Larval development and survival is temperature and salinity dependent, with survival in a range of salinities from 15 to 32 ppt and temperatures from 12 to 25°C (Anger, 1991). Optimal survival occurs in salinities of 20–25 ppt and temperatures from 15 to 25°C (Anger, 1991, Kim & Hwang, 1995). Complete mortality in the first zoea stage occurs at 9°C (Anger, 1991).</p>
11. Documents information sources	<p>Anger K. 1991. Effects of temperature and salinity on the larval development of the Chinese mitten crab <i>Eriocheir sinensis</i> (Decapoda: Grapsidae). <i>Marine Ecology Progress Series</i> 72: 103-110.</p> <p>Capinha C, Anastácio P, Tenedório JA. 2012. Predicting the impact of climate change on the invasive decapods of the Iberian inland waters: an assessment of reliability. <i>Biological Invasions</i> 14: 1737-1751.</p> <p>Clark PF, Rainbow PS, Robbins RS, Smith B, Yeomans WE, Thomas M, Dobson G. 1998. The alien Chinese mitten crab, <i>Eriocheir sinensis</i> (Crustacea: Decapoda: Brachyura), in the Thames catchment. <i>Journal of the Marine Biological Association of the United Kingdom</i> 78: 1215-1221.</p> <p>Culver CS. 2005. Assessing the potential for Chinese mitten crab predation on eggs and larvae of salmonids. <i>Marine Science Institute, University of California, Santa Barbara</i>.</p> <p>Dittel AI, Epifanio CE. 2009. Invasion biology of the Chinese mitten crab <i>Eriocheir sinensis</i>: A brief review. <i>Journal of Experimental Marine Biology and Ecology</i> 374: 79-92.</p> <p>Katsanevakis S, Wallentinus I, Zenetos A, Leppäkoski E, Çınar ME, Oztürk B, Grabowski M, Golani D, Cardoso AC. 2014. Impacts of invasive alien marine species on ecosystem services and biodiversity: a pan-European review. <i>Aquatic Invasions</i> 9: 391-423.</p>

	<p>Kim CH, Hwang SG. 1995. The complete larval development of the mitten crab <i>Eriocheir sinensis</i> H. Milne Edwards, 1853 (Decapoda, Brachyura, Grapsidae) reared in the laboratory and a key to the known zoeae of the Varuninae. <i>Crustaceana</i>: 793-812.</p> <p>Schaeffer M, Hare W, Rahmstorf S, Vermeer M. 2012. Long-term sea-level rise implied by 1.5 °C and 2 °C warming levels. <i>Nature Climate Change</i> 2: 867-870.</p>
Main experts	<p>Melanie Josefsson</p> <p>Frances Lucy</p>
Other contributing experts	<p>Belinda Gallardo</p> <p>Rory Sheehan</p> <p>Argyro Zenetos</p>
Notes	<p>Additional information:</p> <p>In how many EU member states has this species been recorded? List them.</p> <p>Baltic Sea Estonia 1933 Casual</p> <p>Baltic Sea Lithuania 1926 Casual</p> <p>Celtic Seas United Kingdom 2010 Casual</p> <p>Celtic Seas Ireland 2006 Casual</p> <p>North Sea Sweden 1932 Casual</p> <p>North Sea Norway 1976 Casual</p> <p>FW only Ukraine 2002 Established</p> <p>Baltic Sea Latvia 1932 Established</p> <p>Baltic Sea Russia 1980 Established</p> <p>Baltic Sea Sweden 1932 Established</p> <p>Baltic Sea Finland 1933 Established</p> <p>Baltic Sea Germany 1932 Established</p> <p>Baltic Sea Poland 1928 Established</p> <p>Bay of Biscay & the Iberian coast Spain 1997 Established</p> <p>Bay of Biscay & the Iberian coast Portugal 1988 Established</p> <p>Black Sea Romania 1934,1997 Established</p> <p>Black Sea Ukraine 1998, 2005 Established</p> <p>Black Sea Bulgaria 2006 Unknown</p> <p>North Sea Germany 1915 Established</p> <p>North Sea Netherlands 1929 Established</p> <p>North Sea France 1930 Established</p> <p>North Sea Belgium 1933 Established</p>

	North Sea United Kingdom 1935 Established North Sea Denmark 1927 invasive
Outcome	Compliant