

Carcinus maenas [简体中文](#) [正體中文](#)

System: Marine_terrestrial

Kingdom	Phylum	Class	Order	Family
Animalia	Arthropoda	Malacostraca	Decapoda	Portunidae

Common name le crabe vert (French), European shore crab (English), green crab (English), shore crab (English), Strandkrabbe (German), European green crab (English, Germany), le crabe vert Européen (French), le crabe enragé (French)

Synonym *Carcinides maenas* , (Linnaeus, 1758)
Cancer marinus sulcatus , Rumph, 1705
Portunus maenas , Leach, 1814
Carcinus maenas , Leach, 1814
Cancer maenas , Linnaeus, 1758

Similar species

Summary *Carcinus maenas* is native to Europe and northern Africa and has been introduced to the North America, Australia, parts of South America and South Africa. It is a voracious food generalist and in some locations of its introduced range it has caused the decline of other crab and bivalve species. Its success with invasion has also caused numerous other problems that require management.



[view this species on IUCN Red List](#)

Species Description

The European green crab is one of the world's most successful aquatic invaders (Darling *et al* 2008). It is a voracious omnivore with a wide tolerance for salinity variation, water temperature and habitat types (Klassen & Locke, 2007). It has primarily been characterized as a molluscan predator (DeGraaf & Tyrrell, 2004). This species has a larval stage that typically includes four zoeal stages and a megalopa stage. It is a medium sized crab, being more broad than it is long. In its adult size it can get up to about 6 cm in length and 9 cm wide. It has a thorax granulate with five lateral spines about equal in size on either side of the rostrum. The sides of the thorax contain silky hair. The orbit subovate is an obtuse tooth beneath the anterior canthus. The rostrum protrudes with three very obtuse subequal teeth, with the middle tooth being the smallest. The body and feet are spotted with brown and covered with minute, crowded granules; those on the thorax are more conspicuous. The spots of the feet and abdomen are impressed and placed in more or less obvious lines. The chelae are large and slightly unequal with the second and third joint ciliate before. The carapace is acutely spined within having no spine on the opposite edge. The hand is convex on the back, with an elevated line above on the inner side. The fingers are striate with impressed lines, about four on the thumb, not falcate at tip. The second to fourth walking legs are about equal, and the fifth leg is more compressed with a dactyl that is wider but not spatulate as in other Portunidae. The abdomen of the male is triangular, and the somites 3-5 are fused (Klassen & Locke, 2007). This species is a poikilotherm, thus physiology and behavior are affected by daily and seasonal temperature variations. The green crab is capable of producing eggs at temperatures up to 26 degrees Celsius but larval development is limited to a narrower range. In addition, green crabs are considered reasonably tolerant of oxygen stresses (Klassen & Locke, 2007).

Notes

Salinity tolerance enables distribution in estuaries

Lifecycle Stages

Larval stages include Protozoa, Zoea (4 stages) and Megalopa. The lifespan of females is about 3 years, while it is about 5 years for males. Larvae are not as tolerant to temperature, salinity, or starvation as adults which may be the limiting factor in the ability to become established in new habitats. Suboptimal salinity can result in delays in larval development (Bravo, 2007). This species has been proven to grow faster and achieve larger maximum size on the Pacific coast of North America than they do on the Atlantic coast of North America and in their native range (Gillespie *et al* 2007). Molting, and consequently growth is affected by food availability and seasonal temperature fluctuation with 10 degrees Celsius indicated as an important thermal barrier (Klassen & Locke, 2007).

Uses

In native ranges of Europe, *Carcinus maenas* has been fished commercially for years (Klassen, 2007). In addition, this species has been recommended as an indicator species for the monitoring of heavy metal contamination because heavy metal pollution has been associated with respiratory failure in crabs (Klassen & Locke, 2007). While in its native range, this species is considered an important scavenger, especially of commercial fishery discards (Klassen & Locke, 2007).

Habitat Description

Adult *Carcinus maenas* can tolerate temperatures ranging from 0 to 33°C, salinities from 4 to 54, starvation for up to 3 months, and air exposure in damp burrows for up to 10 days (Bravo, Cameron & Metaxas, 2007). Larvae have narrower temperature tolerances and there is evidence that some have not been able to survive when cultured at 6 and 25 degrees Celsius (deRivera *et al* 2007). As this species increases in age, it begins to occupy more of a variety of substrates such as mud, sand, rock, and eelgrass. It can also occupy depths ranging from high tide to 6 meters, and there have even been records of up to 60 meters (Breen & Metaxas, 2008). The expansion and contraction of this species along the northern limit along the western Atlantic has coincided with short-term temperature changes, suggesting that cold water temperature determines the northernmost limit of the species (deRivera *et al* 2005).

Reproduction

In Europe, the green crab's entire reproductive cycle usually lasts about a year. However, gonadogenesis may occur twice a year in the case of large females. Individuals usually mate once a year during the midsummer to early-fall period. Reproductive strategies may differ among newly invaded coastlines (Audet *et al* 2008).

Nutrition

This species preys on large and small snails with a preference for the smaller snails (Eastwood *et al* 2007). In addition, soft-shell clams are a significant prey item for the European green crab (Floyd & Williams, 2004). The European green crab is also a major predator on clams, mussels, juvenile fishes and other species in natural settings and in aquaculture (Gillespie *et al* 2007).

General Impacts

Carcinus maenas is a voracious predator. It is able to crush mussels and shows a clear potential to negatively threaten mussel farms. In its native range, as well as in invaded regions, this species has been considered responsible for significant impacts on epibenthic and infaunal species, such as bivalves, other mollusks, and crustaceans, through predation, competition, and burrowing activities (Bravo, 2007). This species competes with other decapods for food or structure as well as resource competition, which may affect their geographic distribution (deRivera *et al.*, 2005). The collapse of the soft-shell clam industries, in both New England and Nova Scotia, have been attributed to this species, which is causing concern for other local fisheries and economies (Breen & Metaxas, 2008). In the United States alone, *C. maenas* causes approximately \$22 million dollars worth of damage each year (Williams, 2008). In areas in which the green crab has been introduced, it has the potential for significant impacts on fisheries, aquaculture, and the ecosystem. In fact, numerous studies have shown the potential for green crab to adversely affect many ecosystem components, directly and indirectly, by predation, competition and habitat modification (Klassen & Locke, 2007). This species has been documented as being a potential facilitator of *Styela*, which is an invasive club tunicate in some areas. They could facilitate the invasions by preying on tunicate predators. Green crabs are known to consume prey from at least 158 genera and have been widely documented to decrease the diversity and biomass of estuarine communities (Locke *et al.* 2007).

Management Info

Prevention: Block anthropogenic pathways. Vectors such as ballast water accelerate the transport of populations into areas, and slowed expansion times can provide significant economic benefits (Klassen & Locke, 2007).

Physical: constructing local physical barriers such as fences, rafts and nets may help to keep crabs in a controlled area. Also altering fishing practices may be helpful. For example, overwintering seed so that it is larger when planted and in closed areas. In addition, manual removal, commercial harvesting, trapping, and parasitic castrators are all possible options for control (Klassen & Locke, 2007).

Biological: A crab native to North America, *Callinectes sapidus* has been proven to have a significant effect on the abundance of this species, having increasing effects at the southern end of the range (deRivera, Ruiz, Hines & Jivoff, 2005). The Asian shore crab, *Hemigrapsus sanguineus*, has a negative influence on the mussel consumption of the European green crab and thus, its resulting growth rates. The Asian shore crab also affects this species by consuming settling post-larvae and displacing juveniles from their refuge habitat under rocks (Griffen, Guy & Buck, 2008). Another possibility is to utilize biological control by "guarding" bivalve seed using the toadfish, *Opanus tau*. (Klassen & Locke, 2007).

The parasitic barnacle, *Sacculina carcini* is a potential biocontrol agent for introduced *C. maenas* populations. However laboratory host specificity testing of native California crabs showed that *S. carcini* larvae settled on, infected and killed all four of the native crab species tested. However the infection process was different in native crabs and *S. carcini* was not able to fully mature and produce reproductive sacs in native crabs, in contrast to *C. maenas*. Goddard *et al.* emphasise the importance of weighing up the potential benefits of using *S. carcini* as a biological control agent, with the potential non-target impacts (Goddard *et al.* 2005).

Other biocontrol agents may have the potential to control green crabs, which include the parasitic isopod *Portunio maenadis*, the flatworm *Fecampia erythrocephala* and the egg predator *Carcinonemertes carcinophila*. However more information is needed on the host specificity and life history characteristics of these natural enemies (Goddard *et al.* 2005).

Pathway

The transport vectors implicated in the events of introduction of this species include natural dispersal, solid ballast, hull and equipment fouling, ballast water, and contaminated packing material shipped with commercial shellfish (Darling *et al.* 2008).

Principal source:

Compiler: Ingo Narberhaus & IUCN/SSC Invasive Species Specialist Group (ISSG)

Review: Dr. Stephan Gollasch, GoConsult, Grosse Brunnenstrasse 61, 22763 Hamburg, Germany

Publication date: 2009-04-25

ALIEN RANGE

[1] AUSTRALIA

[1] JAPAN

[1] SOUTH AFRICA

[4] CANADA

[1] PATAGONIA

[7] UNITED STATES

BIBLIOGRAPHY

68 references found for *Carcinus maenas*

Managment information

Ahyong, Shane T., 2005. Range extension of two invasive crab species in eastern Australia: *Carcinus maenas* (Linnaeus) and *Pyromaia tuberculata* (Lockington). Marine Pollution Bulletin 50 (2005) 460-462

Carlton, James T. and Andrew N. Cohen., 2003. Episodic global dispersal in shallow water marine organisms: the case history of the European shore crabs *Carcinus maenas* and *C. aestuarii*. Journal of Biogeography, 30, 1809-1820

[Centre for Environment, Fisheries & Aquaculture Science \(CEFAS\).](#), 2008. [Decision support tools-Identifying potentially invasive non-native marine and freshwater species: fish, invertebrates, amphibians.](#)

Summary: The electronic tool kits made available on the Cefas page for free download are Crown Copyright (2007-2008). As such, these are freeware and may be freely distributed provided this notice is retained. No warranty, expressed or implied, is made and users should satisfy themselves as to the applicability of the results in any given circumstance. Toolkits available include 1) FISK- Freshwater Fish Invasiveness Scoring Kit (English and Spanish language version); 2) MFISK- Marine Fish Invasiveness Scoring Kit; 3) MI-ISK- Marine invertebrate Invasiveness Scoring Kit; 4) FI-ISK- Freshwater Invertebrate Invasiveness Scoring Kit and AmphISK- Amphibian Invasiveness Scoring Kit. These tool kits were developed by Cefas, with new VisualBasic and computational programming by Lorenzo Vilizzi, David Cooper, Andy South and Gordon H. Copp, based on VisualBasic code in the original Weed Risk Assessment (WRA) tool kit of P.C. Pheloung, P.A. Williams & S.R. Halloy (1999).

The decision support tools are available from:

<http://cefas.defra.gov.uk/our-science/ecosystems-and-biodiversity/non-native-species/decision-support-tools.aspx> [Accessed 13 October 2011]

[The guidance document](#) is available from http://www.cefas.co.uk/media/118009/fisk_guide_v2.pdf [Accessed 13 January 2009].

Cohen, A. N. and Carlton, J. T. 1995. Nonindigenous aquatic species in a United States estuary: A case study of the biological invasions of the San Francisco Bay and Delta. United States Fish and Wildlife Service, Washington D. C. and the National Sea Grant College Program: 246.

[Cohen, Andrew N. 2005 Guide to the Exotic Species of San Francisco Bay. San Francisco Estuary Institute, Oakland, CA, Species Gallery](#)

[Carcinus maenas](#) (Yendo, 1907) Green crab, European green crab, European shore crab

Summary: *Carcinus maenas* available from: http://www.exoticsguide.org/species_pages/c_maenas.html [Accessed 27 June 2005 and 8 November 2005]

[Guide to the exotic species of San Francisco Bay](#) available from: <http://www.exoticsguide.org>

Cohen, A. N., J. T. Carlton and M. C. Fountain., 1995. Introduction, dispersal and potential impacts of the green crab *Carcinus maenas* in San Francisco Bay, California. Marine Biology Volume 122, Number 2 / April, 1995 225-237

Coutts, Ashley D. M., Kirrily M. Moore and Chad L. Hewitt., 2003. Ships' sea-chests: an overlooked transfer mechanism for non-indigenous marine species? Marine Pollution Bulletin. Volume 46, Issue 11, November 2003, Pages 1510-1513

Delaney, David G; Sperling, Corinne D; Adams, Christiaan S; Leung, Brian., 2008. Marine invasive species: validation of citizen science and implications for national monitoring networks. Biological Invasions. 10(1). JAN 2008. 117-128.

Gillespie, G. E; Phillips, A. C.; Paltzat, D. L.; Theriault, T. W., 2007. Canadian Technical Report of Fisheries and Aquatic Sciences 2700 - Status of the European Green Crab, *Carcinus maenas*, in British Columbia-2006. Canadian Technical Report of Fisheries & Aquatic Sciences. 2700 2007. 1-37,39,VI.

[Goddard, J.H.R., Torchin, M.E., Kuris, A.M. & Lafferty, K.D. 2005. Host specificity of *Sacculina carcini*, a potential biological control agent of the introduced European green crab *Carcinus maenas* in California. Biological Invasions 7: 895-912.](#)

Green, S. J. and E. D. Grosholz. 2021. Functional eradication as a framework for invasive species control. Frontiers in Ecology and the Environment 19: 98-107.

Grosholz, E. D., and G. M. Ruiz. 1996. Predicting the impact of introduced marine species: lessons from the multiple invasions of the European green crab. Biological Conservation 78: 59-66.

Grosholz, E. D., G. Ashton, M. Bradley, C. Brown, L. Ceballos-Osuna, A. Chang, C. de Rivera, J. Gonzalez, M. Heineke, M. Marraffini, L. McCann, E. Pollard, I. Pritchard, G. Ruiz, B. Turner and C. Tepolt. 2021. Stage-specific overcompensation, the hydra effect and the failure to eradicate an invasive predator. Proceedings of the National Academy of Sciences USA doi.org/10.1073/pnas.2003955118

[Hewitt, C.L, Campbell, M.L. and Gollasch, S. 2006. Alien Species in Aquaculture. Considerations for responsible use. IUCN, Gland, Switzerland and Cambridge, UK. viii + 32 pp.](#)

Summary: This publication aims to first provide decision makers and managers with information on the existing international and regional regulations that address the use of alien species in aquaculture, either directly or indirectly; and three examples of national responses to this issue (New Zealand, Australia and Chile).

Available from: <http://data.iucn.org/dbtw-wpd/edocs/2006-036.pdf> [Accessed 22 September 2008]

Klassen, G. and A. Locke. 2007. A biological synopsis of the European green crab, *Carcinus maenas*. Can. Manuscr. Rep. Fish. Aquat. Sci. no. 2818: vii+75pp.

Global Invasive Species Database (GISD) 2025. Species profile *Carcinus maenas*. Available from:

<https://iucngisd.org/gisd/species.php?sc=114> [Accessed 02 July 2025]

Lafferty, Kevin D.; Kuris, Armand D., Biological Control of Marine Pests. Ecological Society of America. Ecology. 77(7). Oct. 1996. 1989-2000

Locke, Andrea; Hanson, J. Mark; Ellis, Karla M.; Thompson, Jason; Rochette, Remy., 2007. Invasion of the southern Gulf of St. Lawrence by the clubbed tunicate (*Styela clava* Herdman): Potential mechanisms for invasions of Prince Edward Island estuaries. Journal of Experimental Marine Biology & Ecology. 342(1, Sp. Iss. SI). Mar 26 2007. 69-77.

Murphy, N. E. and C. L. Goggin., 2000. Genetic Discrimination of Sacculina Parasites (Cirripedia, Rhizocephala): Implication for Control of Introduced Green Crab (*Carcinus maenas*). Journal of Crustacean Biology, 20(1): 153-157, 2000

Paille, N.; Lambert, J.; Simard, N.; Pereira, S., 2006. The green crab (*Carcinus maenas*): literature review and current status in the Magdalen Islands. Canadian Industry Report of Fisheries & Aquatic Sciences. 276 2006. 1-36,VI.

Thresher, RE & Werner, M & Høeg, Jens & Svane, Ib & Glenner, Henrik & Murphy, NE & Wittwer, Cass. (2000). Developing the options for managing marine pests: Specificity trials on the parasitic castrator, *Sacculina carcini*, against the European crab, *Carcinus maenas*, and related species. Journal of experimental marine biology and ecology. 254. 37-51. 10.1016/S0022-0981(00)00260-4.

Williams, Susan L.; Grosholz, Edwin D., The invasive species challenge in estuarine and coastal environments: Marrying management and science. Estuaries & Coasts. 31(1). FEB 2008. 3-20.

Yamada, Sylvia Behrens and Laura Hauck., 2001. Field Identification of the European Green Crab Species *Carcinus maenas* and *Carcinus aestuarii*. Journal of Shellfish Research Vol 20 No 3. 905-912 2001.

Yamada, Sylvia Behrens; Gillespie, Graham E., 2008. Will the European green crab (*Carcinus maenas*) persist in the Pacific Northwest? ICES Journal of Marine Science. 65(5). JUL 2008. 725-729.

Grosholz, E. D. 2005. Recent biological invasion may hasten invasional meltdown by accelerating historical introductions. Proceedings of the National Academy of Sciences U.S.A. 102: 1088-1091.

Grosholz, E. D., G. M. Ruiz, C. A. Dean, K. A. Shirley, J. L. Maron, and P. G. Connors. 2000. The impacts of a nonindigenous marine predator in a California bay. Ecology 81: 1206-1224.

Grosholz, E. D., S. Lovell, E. Besedin and M. Katz. 2011. Modeling the impacts of the European Green Crab on commercial shellfisheries. Ecological Applications 21: 915-924.

General information

Audet, Dominique; Miron, Gilles; Moriyasu, Mikio, 2008. Biological characteristics of a newly established green crab (*Carcinus maenas*) population in the southern Gulf of St. Lawrence, Canada. Journal of Shellfish Research. 27(2). APR 2008. 427 - 441.

Behrens Yamada, S., and Gillespie, G. E. 2008. Will the European green crab (*Carcinus maenas*) persist in the Pacific Northwest? ICES Journal of Marine Science, 65.

Bravo, Monica A.; Cameron, Beth; Metaxas, Anna., 2007. Salinity tolerance in the early larval stages of *Carcinus maenas* (Decapoda, Brachyura), a recent invader of the Bras d Or Lakes, Nova Scotia, Canada. Crustaceana (Leiden). 80(4). APR 2007. 475 - 490.

Breen, Erin; Metaxas, Anna., 2008. A comparison of predation rates by non-indigenous and indigenous crabs (juvenile *Carcinus maenas*, juvenile *Cancer irroratus*, and adult *Dyspanopeus sayi*) in laboratory and field experiments. Estuaries & Coasts. 31(4). SEP 2008. 728-737.

Byers, James E.; Pringle, James M., 2008. Going against the flow: how marine invasions spread and persist in the face of advection. ICES Journal of Marine Science. 65(5). JUL 2008. 723-724

Cohen, A. N., Carlton, J. T. and Fountain, M. C. 1995. Introduction, dispersal and potential impacts of the Green Crab *Carcinus maenas* in San Francisco Bay, California. Mar. Biol. 122: 225-237.

CONABIO. 2008. Sistema de información sobre especies invasoras en México. Especies invasoras - Crustaceos. Comisión Nacional para el Conocimiento y Uso de la Biodiversidad. Fecha de acceso.

Summary: English:

The species list sheet for the Mexican information system on invasive species currently provides information related to Scientific names, family, group and common names, as well as habitat, status of invasion in Mexico, pathways of introduction and links to other specialised websites. Some of the higher risk species already have a direct link to the alert page. It is important to notice that these lists are constantly being updated, please refer to the main page (<http://www.conabio.gob.mx/invasoras/index.php/Portada>), under the section Novedades for information on updates.

Invasive species - crustaceans is available from: http://www.conabio.gob.mx/invasoras/index.php/Especies_invasoras_-_Crust%C3%A1ceos [Accessed 30 July 2008]

Darling, John A.; Bagley, Mark J.; Roman, Joe; Tepolt, Carolyn K.; Geller, Jonathan B., Genetic patterns across multiple introductions of the globally invasive crab genus *Carcinus*. Molecular Ecology. 17(23). DEC 2008. 4992-5007.

DeGraaf, J.D. & Tyrrell, M.C.. (2004). Comparison of the feeding rates of two introduced crab species, *Carcinus maenas* and *Hemigrapsus sanguineus*, on the blue mussel, *Mytilus edulis*. 11. 163-166.

deRivera, Catherine E; Hitchcock, Natasha Gray; Teck, Sarah J.; Steves, Brian P.; Hines, Anson H.; Ruiz, Gregory M., Larval development rate predicts range expansion of an introduced crab. Marine Biology (Berlin). 150(6). MAR 2007. 1275-1288.

deRivera, Catherine E.; Ruiz, Gregory M.; Hines, Anson H.; Jivoff, Paul., 2005. Biotic resistance to invasion: Native predator limits abundance and distribution of an introduced crab. Ecology (Washington D C). 86(12). DEC 2005. 3364-3376.

Dudas, Sarah E.; Iain J. McGaw and John F. Dower., 2005. Selective crab predation on native and introduced bivalves in British Columbia. Journal of Experimental Marine Biology and Ecology Volume 325, Issue 1, 22 November 2005, Pages 8-17

Eastwood, Meg M; Donahue, Megan J.; Fowler, Amy E., Reconstructing past biological invasions: niche shifts in response to invasive predators and competitors. Biological Invasions. 9(4). JUN 2007. 397-407.

Edgell, Timothy C.; Rochette, Remy., 2008. Differential snail predation by an exotic crab and the geography of shell-claw covariance in the northwest Atlantic. Evolution. 62(5). MAY 2008. 1216-1228.

Griffen, Blaine D.; Guy, Travis; Buck, Julia C., 2008. Inhibition between invasives: a newly introduced predator moderates the impacts of a previously established invasive predator. Journal of Animal Ecology. 77(1). JAN 2008. 32-40.

Grosholz, E. D. and Ruiz, G. M. 1995. Spread and potential impact of the recently introduced European green crab, *Carcinus maenas*, in central California. Marine Biology 122: 239-247.

Hampton, S. L; Griffiths, C. L., 2007. Why *Carcinus maenas* cannot get a grip on South Africa's wave-exposed coastline. African Journal of Marine Sciences. 29(1). May 2007. 123-126.

Hidalgo, Fernando J.; Pedro J. Barón & José María (Lobo) Orensanz., 2005. A prediction come true: the green crab invades the Patagonian coast. *Biological Invasions* Volume 7, Number 3 / May, 2005 547-552

Hidalgo, Fernando J.; Silliman, Brian R.; Bazterrica, Maria Cielo; Bertness, Mark D., 2007. Predation on the rocky shores of Patagonia, Argentina. *Estuaries & Coasts*. 30(5). OCT 2007. 886-894.

[ITIS \(Integrated Taxonomic Information System\)](#), 2004. [Online Database *Carcinus maenas*](#)

Summary: An online database that provides taxonomic information, common names, synonyms and geographical jurisdiction of a species. In addition links are provided to retrieve biological records and collection information from the Global Biodiversity Information Facility (GBIF) Data Portal and bioscience articles from BioOne journals.

Available from: http://www.itis.gov/servlet/SingleRpt/SingleRpt?search_topic=TSN&search_value=98734 [Accessed December 31 2004]

Jamieson, G. S., Grosholz, E. D., Armstrong, D. A. and Elner, R. W. 1998. Potential ecological implications from the introduction of the European green crab, *Carcinus maenas* (Linnaeus), to British Columbia, Canada, and Washington, USA. *Journal of Natural History*, Volume 32, Numbers 10-11, -11/October-November 1998 , pp. 1587-1598(12)

Jensen, Gregory C; McDonald, P. Sean; Armstrong, David A., 2007. Biotic resistance to green crab, *Carcinus maenas*, in California bays. *Marine Biology* (Berlin). 151(6). JUL 2007. 2231-2243.

Jensen, Gregory C., P. Sean McDonald, David A. Armstrong., 2002. East meets west: competitive interactions between green crab *Carcinus maenas*, and native and introduced shore crab *Hemigrapsus* spp. *Marine Ecology Progress Series*. Vol. 225: 251-262, 2002

Le Roux, P. J., Branch, G. M. and Joska, M. A. P. 1990. On the distribution, diet and possible impact of the invasive European shore crab *Carcinus maenas* (L.) along the South African coast. *South Afr. J. Mar. Sci.* 9: 85-93.

Le Roux, P.J.; Branch, G.M.; Joska, M.A.P., On the distribution, diet and possible impact of the invasive European shore crab *Carcinus maenas* (L.) along the South African coast. *South African Journal of Marine Science*, Volume 9, Number 1, June 1990 , pp. 85-93(9)

MacDonald, James A.; Roudez, Ross; Glover, Terry; Weis, Judith S., 2007. The invasive green crab and Japanese shore crab: behavioral interactions with a native crab species, the blue crab. *Biological Invasions*. 9(7). Oct 2007. 837-848.

Mark E. Torchin, Kevin D. Lafferty & Armand M. Kuris., 2001. Release from parasites as natural enemies: increased performance of a globally introduced marine crab. *Biological Invasions* 3: 333-345, 2001.

Miron, Gilles; Audet, Dominique; Landry, Thomas; Moriyasu, Mikio., 2005. Predation potential of the invasive green crab (*Carcinus maenas*) and other common predators on commercial bivalve species found on Prince Edward island. *Journal of Shellfish Research*. 24(2). AUG 2005. 579-586.

Roman, Joe., 2006. Diluting the founder effect: cryptic invasions expand a marine invader's range. *Proceedings of the Royal Society Biological Sciences Series B*. 273(1600). OCT 7 2006. 2453-2459.

Ross, D.J; C. R. Johnson, C. L. Hewitt and G. M. Ruiz., 2004. Interaction and impacts of two introduced species on a soft-sediment marine assemblage in SE Tasmania. *Marine Biology* Volume 144, Number 4 / April, 2004 747-756

Rossong, M. A.; Williams, P. J.; Comeau, M.; Mitchell, S. C.; Apaloo, J., 2006. Agonistic interactions between the invasive green crab, *Carcinus maenas* (Linnaeus) and juvenile American lobster, *Homarus americanus* (Milne Edwards). *Journal of Experimental Marine Biology & Ecology*. 329(2). FEB 21 2006. 281-288.

Roudez, Ross J.; Glover, Terry; Weis, Judith S., 2008. Learning in an invasive and a native predatory crab. *Biological Invasions*. 10(8). DEC 2008. 1191-1196.

Tanner, Jason E., 2007. The influence of introduced European green crabs (*Carcinus maenas*) on habitat selection by juvenile native blue crabs (*Portunus pelagicus*). *Estuaries & Coasts*. 30(4). AUG 2007. 601-606.

Thresher, R.; C. Proctor, G. Ruiz, R. Gurney, C. MacKinnon, W. Walton, L. Rodriguez N. Bax., 2003. Invasion dynamics of the European shore crab, *Carcinus maenas*, in Australia. *Marine Biology* (2003) 142: 867-876

Trevor, Floyd & Jim Williams., 2004. Impact of green crab (*Carcinus maenas* L.) predation on soft shell clams (*Mya arenaria* L.) in the southern Gulf of St. Lawrence. *Journal of Shellfish Research*. Vol 23 No 2. 457-462. 2004

Tyrrell, M. C & Harris, L. G., ????. Potential impact of the introduced Asian shore crab, *Hemigrapsus sanguineus*, in northern New England: Diet, feeding preferences, and overlap with the green crab, *Carcinus maenas*. *Marine Bioinvasions*. *Proceedings of the First National Conference*. pp. 208-210.

Tyrrell, Megan C.; Guarino, Patricia A.; Harris, Larry G., 2006. Predatory impacts of two introduced crab species: Inferences from microcosms. *Northeastern Naturalist*. 13(3). 2006. 375-390.

Vinuesa, Julio H., 2007. Molt and reproduction of the European green crab *Carcinus maenas* (Decapoda : Portunidae) in Patagonia, Argentina. *Revista de Biología Tropical*. 55(Suppl. 1). JUN 2007. 49-54.

Walton, William C.; Craig MacKinnon, Laura F. Rodriguez, Craig Proctor, Gregory M. Ruiz., 2002. Effect of an invasive crab upon a marine fishery: green crab, *Carcinus maenas*, predation upon a venerid clam, *Katelysia scalarina*, in Tasmania (Australia). *Journal of Experimental Marine Biology and Ecology* 272 (2002) 171-189

Williams, P. J.; Floyd, T. A.; Rossong, M. A., 2006. Agonistic interactions between invasive green crabs, *Carcinus maenas* (Linnaeus), and sub-adult American lobsters, *Homarus americanus* (Milne Edwards). *Journal of Experimental Marine Biology & Ecology*. 329(1). FEB 7 2006. 66-74

Yamada, Sylvia Behrens; Brett R. Dumbauld, Alex Kalin, Christopher E. Hunt, Ron Figlar-Barnes and Andrea Randall., 2004. Growth and persistence of a recent invader *Carcinus maenas* in estuaries of the northeastern Pacific. *Biological Invasions* Volume 7, Number 2 / March, 2005 309-321