

# The Threat of Introduced, Non-native Crayfishes to Maryland's Aquatic Ecosystems

Fourteen crayfish species are known to occur in Maryland. Five are introduced, non-native species; Rusty Crayfish (*Orconectes rusticus*), Virile Crayfish (*O. virilis*), Red Swamp Crawfish (*Procambarus clarkii*), Southern White River Crawfish (*P. zonangulus*), and Little Brown Mudbug (*Cambarus thomasi*).

Of the five introduced species, three (Rusty Crayfish, Virile Crayfish, and Red Swamp Crawfish) are invasive and have altered species composition, food webs, and habitat in aquatic ecosystems in other regions. These invasive species are the most important threat to Maryland's nine native crayfishes and will likely affect other aspects of Maryland's streams, rivers, and lakes.

## How did they get here?

The five non-native species found their way to Maryland through the live trade of crayfishes as bait, as pets, in classrooms, and in commercial aquaculture. The use and release of live crayfish as bait by anglers was responsible for the spread of several species, including the Virile Crayfish, the most widespread in Maryland.

## How big is the problem?

Virile Crayfish and Rusty Crayfish have become the most abundant crayfishes in Maryland. Virile Crayfish is now nine times more abundant than all native crayfish species combined, with an estimated 22 million Virile Crayfish (pictured below) inhabiting Maryland waters.

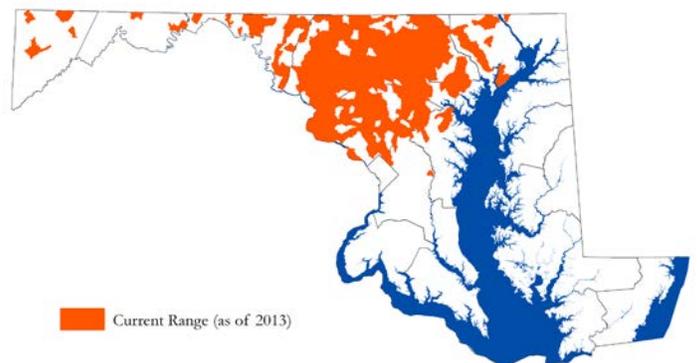


Red Swamp Crawfish is an invasive species native to the south central U.S. that was first imported into Maryland for use in commercial aquaculture in the 1980s. This species has also been introduced through its use as bait.



Live crayfishes are purchased or caught and transported in bait buckets by Maryland anglers. The release of live, unused crayfishes by anglers has resulted in species introductions in many watersheds.

Virile Crayfish (*Orconectes virilis*)



# How have invasive crayfishes affected Maryland's native species?

The most obvious impact of non-native, invasive crayfishes in Maryland has been concomitant declines in native crayfish species. Non-native, invasive crayfishes tend to quickly colonize a new area and become very abundant. These species are aggressive and efficient at competing with and displacing native crayfishes. The ranges of two natives, the Spinycheek Crayfish (*O. limosus*) and Allegheny Crayfish (*O. obscurus*), dramatically declined as the invasive Virile Crayfish spread over the past 50 years. The Spinycheek Crayfish is now extirpated from several watersheds in Central Maryland where it was once common.



Spinycheek Crayfish is a native species that has dramatically declined as the invasive Virile Crayfish has spread in Central Maryland.

## What other effects have invasive crayfishes had on Maryland ecosystems?

Due to their body size, ability to achieve high densities, and importance as both prey and predator, invasive crayfishes have the capacity to affect more than just native crayfish diversity. Invasive crayfishes are known to adversely affect stream insects, mussels, snails, amphibians, reptiles, fishes, and sport fisheries and alter community structure and the function of aquatic ecosystems. Unfortunately, not much is known about the effects of non-native crayfishes on Maryland's aquatic ecosystems – the research has not been conducted. However, given what's happened in other regions, their impact in Maryland could be extensive.

## What can be done to halt their spread?

Once an invasive crayfish is introduced into a stream or lake, it is impossible to eradicate it without harm to native crayfishes and other non-target species. Since eradication is impossible without harming other species, preventing introductions is the only effective way to halt the spread of invasive crayfishes.



MDNR banned the use and possession of live crayfishes in Lower Susquehanna, Middle Potomac, and Upper Potomac river basins to prevent the transport and introduction of this and other invasive species into other Maryland watersheds.

## How can you help prevent further introductions of invasive crayfishes?

- Never catch and move crayfish from one waterbody to another.
- Never release crayfishes purchased from pet stores, bait shops, or online suppliers into Maryland waters. Dispose of them humanely or save them for future use.
- Learn how to identify invasive crayfish species. Visit our website for info - <http://www.dnr.state.md.us/streams/pdfs/>
- Spread the Word! Teach others about the threat of invasive crayfishes and steps they can take to prevent their spread.



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