

Invasive Soft Corals

An Emerging Threat to Coral Reef Health



What is it?

Several species of invasive soft corals, sometimes referred to as invasive pulse corals, have recently been found in parts of Hawai'i and the Caribbean. These particular species are very popular in the marine aquarium trade given their attractive coloration and ability to tolerate a range of aquatic conditions (e.g. temperature, turbidity, nutrient levels). They are considered invasive because they do not naturally occur in Hawai'i and the Caribbean and because they have been shown to have a negative impact on these local environments. Soft corals are flexible and lack the hard-skeletal structure of the hard stony corals that build coral reefs. Common native soft corals in the U.S. are sea fans, sea whips, and sea pens.

Why is this a problem?

Invasive soft corals can invade a wide variety of habitat types including

coral reefs, seagrass meadows, and mangrove systems. These are highly diverse and economically beneficial ecosystems that are protected in the U.S. Invasive soft corals compete with and kill native coral reef-building stony corals, octocorals, and other organisms that live on the ocean bottom. This competition may cause widespread ecological and economic damage by decreasing biodiversity and disrupting native coral reef ecosystems, which are critical habitats or many marine species, potentially causing widespread ecological and economic damage. These soft corals could also have direct impacts on over 20 species of threatened or endangered coral found in waters off the U.S. and U.S. territories. Further, invasive soft corals also colonize seagrass meadows and mangrove systems, where more than 70% of commercially and recreationally fished species spend all or a portion of their life cycle. Mangroves, seagrass meadows, and coral reefs are all critical for shoreline protection and also help to protect upland properties from storms and erosion.

Since the early 2000s, there have been numerous outbreaks of invasive soft corals in both the Pacific and Caribbean. The suspected causes of these outbreaks include intentional releases by marine aquarists, illegal aquaculture activities (outplanting), unintentional transport (soft coral fragments attaching to boats and fishing gear), and incidental

transport (such as the potential spread via ship ballast water). As of 2024, invasive soft corals have been identified in Venezuela (first detected in the early 2000s), Pearl Harbor, HI (2020), Cuba (2022), and Puerto Rico (2023).



These invasive soft corals currently have no known predators or population control measures outside of their native range, which can result in large population growth and allows these soft corals to quickly overtake coral reefs and seagrass meadows. Due to their asexual reproduction, removal is difficult without fragmenting and accidentally spreading these soft corals to new areas to colonize. There is also evidence of rapid re-colonization of sites that have already been cleared. In Hawai'i, significant impacts can be expected to National Oceanic and Atmospheric Administration (NOAA)



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and Department of Defense (DOD) vessel operations (such as more frequent dry dock periods, regular in-water-cleanings/ inspections, etc.), in addition to the ecological impacts to the coral reefs of the State, Papahānaumokuākea Marine National Monument and the Pacific Remote Islands.

These invasive soft corals have been documented in Cuba and Puerto Rico, highlighting the widespread nature of this invasion and the real threat they pose to marine resources of all nations within the Caribbean. The introduction of new invasive species to other American reefs, such as those in Florida and the U.S. Virgin Islands, would have catastrophic impacts to coral reefs and hard bottom habitats, which are already suffering from decades of environmental degradation and climate change impacts.

What is being done about it?

At present, there are a number of activities happening to help address this issue. They include:

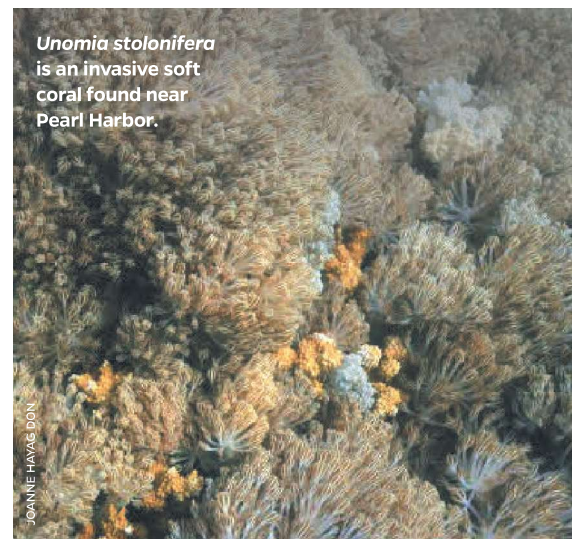
- Creating content for an underwater surveillance network using the Atlantic & Gulf Rapid Reef Assessment (AGRRA) and international participation in the AGRRA-hosted *Unomia* Learning Exchange.
- Coordination among federal and non-federal resource management agencies and academic partners for a unified response (partners include NOAA, U.S. Fish & Wildlife Service, DOD, Florida, Hawai'i, Hawai'i Invasive Octocoral Working Group, Florida Sea Grant, UF/IFAS Extension, Puerto Rico Department of Natural & Environmental Resources, the Aquatic Nuisance Species Task Force, and U.S. Coral Reef Task Force).

- Raising awareness via social media, public outreach events (Earth Day, Invasive Species Awareness Week), and printed bulletins at boat ramps, pet stores, and dive shops.
- Connecting with the Reef Environmental Education Foundation (REEF), which has a large network of divers and teaches underwater fish and invertebrate survey methods.
- Applying for external funding to address the ongoing outbreaks in Hawai'i and the Caribbean and the potential spread to adjacent areas for research and development of novel detection and eradication methods.

Next steps and future activities?

NOAA, other Federal and state agencies, and partners are continuing efforts to better understand how these soft corals are introduced and spread to new areas and how they can most effectively be eradicated from areas where they are present. These efforts include development of regional and habitat-specific early detection, rapid response and eradication plans, further investigation into mechanisms of dispersal (e.g. ship ballast water and other vessel-related vectors), and researching basic biology, colonization potential, and threats of the individual invasive soft coral species of interest.

We will use this information to begin to begin developing preemptive response plans to address future outbreaks of invasive soft corals in the U.S. Caribbean and Pacific. These response plans will likely require coordination between Federal, state, and non-government organizations given the multi-jurisdictional landscape of where these soft corals have been found.



Unomia stolonifera is an invasive soft coral found near Pearl Harbor.

There is a need to coordinate among partners to ensure there is a unified message regarding why these invasive soft corals pose such a severe threat and what can be done to mitigate the threat.

Public engagement is also necessary to address the issue of marine aquarium dumping and to raise awareness around the possibility of spreading these soft corals via fishing and boating activities (i.e. from coral fragments attaching to boats and gear and being moved around). To that end, there is ongoing work to launch an awareness campaign to help raise awareness with the commercial aquarium industry and consumers through community education. This will help prevent future occurrences of aquarium dumping.

To learn more or to submit a report, please visit AGRRA's *Unomia* Learning Exchange: <https://www.agrra.org/the-unomia-learning-exchange> with the "submit report" button.

For more information:

Joseph R. Krieger, Ph.D.
NOAA Invasive Species
Program Coordinator
joseph.krieger@noaa.gov