



Dispatches From The Wild, Weird World Of Humanity And Its Biosphere

December 22 2021

The Neopelagic Community

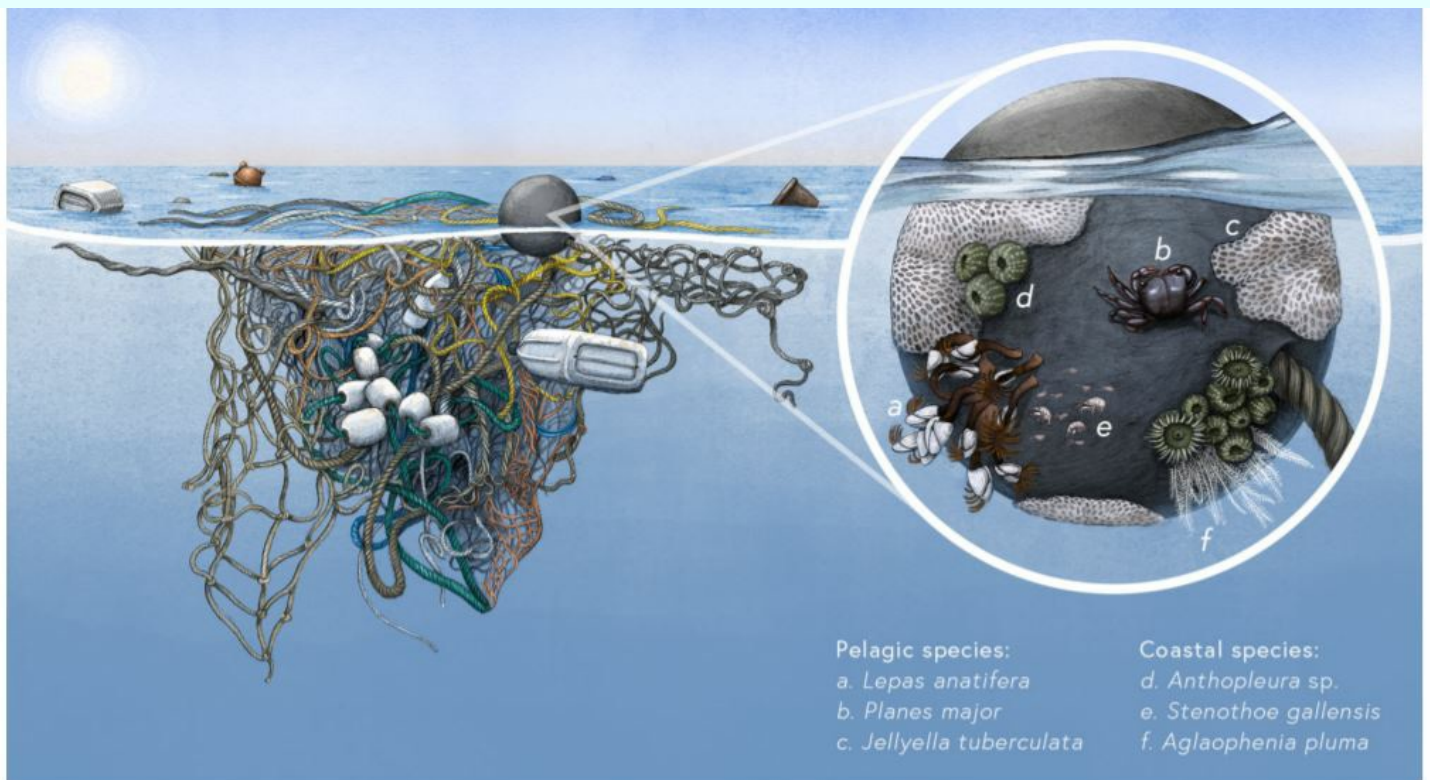


Fig. 1 Neopelagic community rafting on floating plastic debris in ocean surface waters. Neopelagic communities are composed of pelagic species, evolved to live on floating marine substrates and marine animals, and coastal species, once assumed incapable of surviving long periods of time on the high seas. The emergence of a persistent neopelagic community in the open ocean is due to the vast supply of durable and highly buoyant plastic pollution as suitable habitat for both pelagic and coastal rafting species. Examples of pelagic rafting species are: **a** gooseneck barnacle *Lepas anatifera*, **b** flotsam crab *Planes major*, and **c** bryozoan *Jellyella tuberculata*. Examples of coastal rafting species commonly found on floating plastic debris on the high seas include: **d** podded hydroid *Aglaophenia pluma*, **e** Asian anemones *Anthopleura* sp., and **f** amphipod *Stenothoe gallensis*. Illustrated by © 2021 Alex Boersma.

[A fascinating new paper](#) in *Nature* has found that rafts of floating plastic trash on the high seas have formed a new kind of habitat in the North Pacific Subtropical Gyre (better known these days as the [Great Pacific Garbage Patch](#)), with species normally confined to coastlines colonizing these floating plastic islands. This

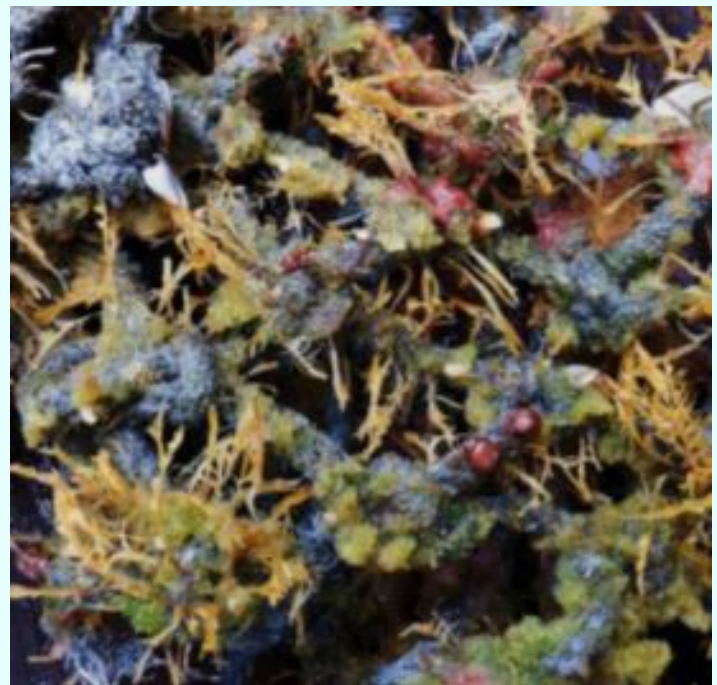
"neopelagic community" was discovered by a research team that picked up and analyzed 103 tons of floating plastic, consisting of everything from stray buoys to abandoned fishing nets to discarded plastic bottles. [Researchers with the Smithsonian](#) pored through the collection and found that they were absolutely packed with life, having been colonized by barnacles, shrimp, sea anemones, amphipods, sponges, mussels, bryozoans, isopods, crabs, hydroids, and more. Fascinatingly, some of these species were the sort normally found on mid-ocean debris, but many more had previously only been recorded from rocks and beaches on coastlines, with the scientists shocked to find them thousands of miles from land.



It's an entirely new ecosystem that's been formed here, with open-ocean species like gooseneck barnacles and flotsam crabs sharing space with coastal-specialist species like sea anemones and amphipods. It's hard to overstate just how ecologically *weird* this is-finding a bunch of coastal species in the middle of the Pacific is as anomalous as finding tundra vegetation and lemmings in the middle

of the Mojave Desert, sharing space with desert creatures. ([Pictured left](#): a gooseneck barnacle among coastal-species barnacles, on a piece of the recovered plastic debris). Furthermore, it's unclear exactly how all these animals are staying alive-scientists aren't yet sure what exactly is at the base of the food chain here, in a mid-ocean spot where plankton are relatively scarce and there's no regular flow of organic particles from a nearby land mass.

[Some scientists are concerned](#) that the presence of these species on plastic may have negative effects, perhaps by attracting bigger animals like fish, sea turtles, or whales who will then be at risk of eating and choking on plastic. Others have raised the concern of "invasive species"-although [many researchers](#), this writer included, feel that the [entire concept of invasive species is outdated and possibly harmful](#) in an age where climate change is forcing every species to move. Given that there's a lot of plastic trash in the ocean, it certainly seems better to find it teeming with life and providing a home to marine invertebrates than not. ([Pictured](#): an example of the neopelagic



community on a derelict fishing net recovered from the North Pacific, with sea anemones, hydroids, sponges, and gooseneck barnacles present).

It also raises some interesting questions as to what "nature" really is in the Anthropocene. A longstanding environmental dream has been to someday clean up the Great Pacific Garbage Patch. Indeed, the NGO [The Ocean Cleanup](#) has that as a long-term goal, while currently doing sterling work intercepting trash from rivers flowing into the ocean. Do we really want to do that, now? We'd be destroying a heck of a lot of marine invertebrates along with the plastic-and if we say we don't care about that, then why exactly are we cleaning up the ocean anyway, and who for? This discovery is fascinating, inspiring, and thought-provoking. Much more research into the neopelagic community is needed!



Clean Energy

The Biden Administration continues to advance decarbonization through executive action, with the EPA on December 20th finalizing [the most ambitious vehicle fuel efficiency standards](#) ever. They will apply to model years 2023 through 2026, and will require automakers to [improve fuel efficiency by 5-10% annually](#), with an estimated savings of hundreds of billions in fuel costs and over 3 billion tons of greenhouse gas emissions by 2050. Great news!

New York City has passed a new law to address a major source of carbon emissions and indoor air pollution: fuel-burning [devices within buildings, from gas stovetops to fuel oil heaters. The law bans gas heating and stoves in new buildings and renovations starting in 2024](#), mandating a switch to all-electric appliances and heating systems. This is much-needed and an example to the nation: heating and hot water systems account for 42% of NYC's greenhouse gas emissions, and a study calculated that indoor air pollution from fuel combustion in NYC buildings [caused 1,114 premature deaths in 2017](#). Great news!

2021 saw a wide range of technological advances, particularly in new methods of **decarbonizing previously fossil fuel-dependent sectors** from steelmaking to shipping to aviation. Much of this was discussed in this newsletter-[for a review, check out this article!](#)



Florida

Toxic algal blooms have devastated Florida's

population of endangered manatees (*Trichechus manatus*) in recent years by smothering and killing seagrass beds, their key food source. [Over 1,000 manatees](#) have been found dead in 2021 to date, compared to an average of 500 deaths per year in the last few years, just 325 dead manatees in 2001, and under 6,000 manatees in all of Florida. Furthermore, surviving manatees are increasingly being observed to be emaciated, with ribs visible, in contrast to their normal healthy plumpness. In response, the Florida Fish and Wildlife Commission has decided on a rare proactive conservation move: they [will be establishing a feeding station](#) in Indian River Lagoon, site of many of the deaths, where wildlife officials will feed the manatees with romaine lettuce. The program [was ready to start](#) on December 15th, and is part of a widespread Florida effort to help manatees deal with the threats of the Anthropocene, from climate-change-driven algal blooms to injuries from boat collisions. ([Pictured above](#): a manatee that received medical attention after a boat strike about to be released back into the wild). Another example of proactive conservation: human aid to help survive human threats!



The Weekly Anthropocene

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