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## Characterizing plastic debris accumulating in the North Pacific Garbage Patch

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Citizen science programs and tracking applications have been used in the collection of data on plastic debris in marine environments to determine its composition and sources. These programs, however, are mostly focused on debris collected from beach cleanups and coastal environments. Large plastic debris currently afloat at sea, which is a significant contributor to marine plastic pollution and a major source of beach litter, is less well-characterized.

Transported by currents, wind and waves, positively buoyant plastic objects eventually accumulate at the sea surface of subtropical oceanic gyres, forming the so-called ocean garbage patches. It is important to know where the debris that persists in the offshore gyres is entering the ocean, where it is produced and what practices (commercial, cultural, industrial) are contributing to the accumulation of these debris into the ocean garbage patches. This information coupled to data on how long and well the plastics persevere at the sea surface is necessary for creating effective and efficient mitigation strategies.

Here we provide a comprehensive assessment of plastic debris afloat in the North Pacific Garbage Patch (NPGP). Offshore debris collected by The Ocean Cleanup's System 001b from the NPGP in 2019 was analyzed using the Litter-ID method, which applies an adapted and expended version of the OSPAR guideline for monitoring beach litter. Our results reveal new insights into the composition, origin and age of plastic debris accumulating at the ocean surface in the NPGP. The standardized methodology applied here further enables a first thorough comparison of plastic debris accumulating in offshore waters and coastal environments.