

Questions 1-5 are based on the following passage.

This passage is excerpted from Marcus Eriksen's "Plastic Pollution in the world's Oceans: More Than 5 Trillion Plastic Pieces Weighing Over 250,000 Tons Afloat at Sea," 2014.

Line
5 Plastic pollution is globally distributed across all oceans due to its properties of buoyancy and durability, and the absorption of toxicants by plastics while traveling through the environment has led some researchers to claim that synthetic
10 polymers in the ocean should be regarded as hazardous waste. Through photodegradation and other weathering processes, plastics fragment and disperse in the ocean, converging in the subtropical gyres.* Accumulation of plastic pollution also occurs in closed bays, gulfs and seas surrounded by densely populated coastlines and watersheds.

15 Despite oceanographic model predictions of where debris might converge, estimates of regional and global abundance and weight of floating plastics have been limited to microplastics less than 5 mm. Using extensive published and new data, particularly from the Southern Hemisphere subtropical gyres and marine areas adjacent to populated regions corrected for wind-driven vertical mixing, we populated an oceanographic model of debris distribution to estimate global distribution and count and weight densities of
20 plastic pollution in all sampled size classes.

25 Plastics of all sizes were found in all ocean regions, converging in accumulation zones in the subtropical gyres, including southern hemisphere gyres where coastal population density is much lower than in the northern hemisphere. While this shows that plastic pollution has spread throughout all the world's oceans, the comparison of size classes and weight relationships suggests that during fragmentation plastics are lost from the sea surface.

30 The observations that there is much less microplastic at the sea surface than might be expected suggests that removal processes are at play. These include UV degradation, biodegradation, ingestion by organisms, decreased buoyancy due to fouling organisms, entrainment in settling detritus, and beaching. Fragmentation rates of already brittle microplastics
35 may be very high, rapidly breaking small microplastics further down into ever smaller particles, making them unavailable for our nets (0.33 mm mesh opening). Many recent studies also demonstrate that many more organisms ingest small plastic particles than previously thought, either
40 directly or indirectly, i.e. via their prey organisms.

* In oceanography, a "gyre" refers to a large system of rotating ocean currents.

1

According to the passage, ocean plastics are found in greatest quantities in

- A) subtropical regions.
- B) densely populated areas.
- C) areas that are not affected by UV radiation.
- D) coastal regions.

2

The main contrast that the author draws between this study and previous studies of plastic pollution is that this study

- A) used samples of plastic pollution from all over the world.
- B) explored the physical processes involved in plastic degradation.
- C) estimated the distribution of larger classes of plastics.
- D) focused on plastic accumulation in subtropical regions of the globe.

3

Which choice provides the best evidence for the answer to the previous question?

- A) lines 8-10 ("Accumulation . . . Watershed")
- B) lines 11-14 ("Despite . . . 5 mm")
- C) lines 29-31 ("The . . . Play")
- D) lines 37-40 ("Many . . . Organism")

4

In describing the distribution of ocean plastics, the author relies primarily on what type of evidence?

- A) Personal narratives
- B) Historical trends
- C) Data synthesis
- D) Expert opinions

5

Which of the following statements most weakens the author's conclusion that there are fewer microplastics than expected on the sea surface?

- A) Plastics of all sizes were found on the ocean's surface.
- B) Large plastics tend to fragment due to natural processes such as biodegradation.
- C) Some plastics were likely ingested by organisms.
- D) The nets used in the study were unable to capture plastics smaller than 0.33 mm.

Answers

1.A

2.C

3.B

4.C

5.D