

Answer Key

LOCATION DATA SHEET ANSWERS

Longitude/Latitude—Approximately 28°25'N latitude and 178°20'W longitude

Country/State—United States/Hawaii

Ocean Basin—Pacific Ocean Basin

Problem—Marine debris

Why here—Kure is at the center of the north Pacific gyre; counterclockwise-moving currents converge here, bringing animals, nutrients and debris

MARINE DEBRIS DATA SHEET ANSWERS

ITEMS	PURPOSE	MADE OUT OF (Note: answers will vary, data from game is listed below)	WHO DOES IT AFFECT?	WHAT CAN PEOPLE DO TO HELP?
Computer/ TV Monitor Tube	Entertainment	Cathode ray tube has toxic metals (lead, mercury, cadmium, chromium)	All types of marine animals	Dispose of responsibly
Butane lighter	Starting fires	Plastic and metal	Primarily birds, but small particles can accumulate in the food chain	Make sure to dispose of properly
Plastic bottle	Hold liquid	Plastic	Sea turtles and tiger sharks; tiny particles accumulate in the food chain as well	Reduce use (find alternatives) and recycle
Plastic toy/buoy	Entertainment/ marketing materials	Plastic	Birds, fish, sponges, other animals up the food chain	Reduce use (find alternatives), dispose of properly
Balloon/ plastic bag	Entertainment/ holding materials	Plastic	Turtles, fish, dolphins, seabirds, plankton, filter feeders, other animals up the food chain	Avoid releasing balloons into the air, use paper or cloth bags
Ghost net	Catching fish	Primarily plastic (note: data not provided in game)	Coral, fish, sharks, dolphins, turtles	Buy fish from companies that don't release nets into the ocean (note: answer not provided in game)
Fishing lines/hook	Catching fish	Primarily plastic (note: data not provided in game)	Seals, dolphins, turtles, sharks, birds	Dispose of fishing gear properly

Species Data Sheet Answers

SPECIES	HABITAT	WHAT IT EATS	WHAT EATS IT	NICHE (producer, consumer or decomposer)	EFFECTS OF MARINE DEBRIS ON THE SPECIES
Plankton: diatoms copepods	Live in ocean	Copepods eat diatoms	Jellies, clams, sardines, sand dollars, anemones, some sharks and even the largest whales	Diatoms: producers Copepods: consumers	Absorb tiny plastic particles that then get transferred to other consumers
Christmas tree worm	Live in ocean	Plankton	Information not in game	Consumer	Can filter marine debris microparticles that travel up the food chain
Green sea turtle	Live in ocean; lay eggs on beaches	Plankton, fish eggs, sea grass, algae, seaweed	Crabs, reef fish, birds, sharks, people	Consumer	Sometimes eats plastic by mistake
Laysan albatross	Islands in the Pacific Ocean	Squid, fish, fish eggs, crustaceans	Tiger sharks	Consumer	Can die of starvation and dehydration by eating marine debris, longline fishing kills as well
Hawaiian monk seal	Beaches and ocean	Spiny lobsters, eels, octopus, flatfish and other small reef fish	Sharks	Consumer	Nets and longlines can trap seals underwater; ingestion of marine debris is another danger
Mackerel Scad	Deep water; coral reefs; warm oceans	Plankton	Snappers and trevally jacks	Consumer	May ingest tiny plastic particles that resemble plankton; the plastic can accumulate in their bodies and be passed along to their predators
Tiger shark	Deep water; tropical and temperate oceans	Squid, sea turtles, other sharks, bony fish, birds and crustaceans	Other sharks	Consumer	May eat marine debris; get caught in lines and nets
Galapagos shark	Deep water; tropical and temperate oceans near island shores in clear waters around coral or rocks	Bottom-dwelling animals, like eels, triggerfish, squid, octopuses, rays, bony fish and even juvenile monk seals	N/A	Consumer	Fishing nets and lines can entangle and kill sharks
Spinner dolphin	Deep water	Fish, squid and shrimp, feeding mostly at night	Tiger and cookie-cutter sharks	Consumer	May drown when fishing lines and nets trap them underwater
Coral	Warm waters	Plankton	Parrotfish	Consumer	Damaged and killed by nets tangled on reefs; may consume pollutants, such as chemicals oozing from marine debris instead of nutrients; damaged by oils naturally found on human hands and in sunscreen lotion

Reporting Data Answers

1. Ocean currents, driven by wind and Earth's rotation, keep seawater in motion. Seawater moves in predictable patterns that resemble enormous, slow-moving whirlpools, called gyres. The north Pacific's gyre is 2,000 miles wide and moves counterclockwise. At the center of this gyre lies Kure Atoll, the most remote of the Northwestern Hawaiian Islands, where currents—and their passengers—converge. In the past, currents carried nutrients and natural materials—for example, driftwood—to Kure animals. But today, more and more plastic trash is traveling with ocean currents, swirling into what some people call a toilet that doesn't flush.
2. Answers will vary.
3. Answers will vary.
4. Answers will vary.
5. Animals higher up in the food chain/web will accumulate larger and larger amounts of plastic particles as they eat the animals that are consuming the plastic instead of plankton.
6. Percentages for pie charts:
Number of entangled animals found - Invertebrates (28%), fishes (33%), reptiles (4%), birds (25%), mammals (10%)
Number of animals found in different types of debris - Balloon ribbon/string (5%), rope (16%), fishing line (47%), fishing nets (11%), crab/lobster/fish traps (5%), other (16%)
7.
 - a. Fishes
 - b. Fishing line because it can tangle more than one animal at a time. This may not always be the case; in this example cleanup was done in coastal areas, where more people fish with fishing line.
8. Answers will vary and may include recycling, buying products with less packaging, making sure trash is deposited in proper receptacles and joining public cleanup efforts.
9. Answers will vary.