

Game Background

This is a dexterity game in which players take on the role of an *Ocean Adventures* team member volunteering with the U.S. Fish and Wildlife Service on a mission to collect as much unnatural marine debris as possible. Players start the actual game portion collecting debris at the beach and rocky terrestrial sites using an ATV and progress to offshore locations after the completion of the first level. Points are awarded based on speed of recovery and types of items recovered. As players progress to the second level, they collect near-shore at the surface using a wave-runner or Zodiac. The third level takes place underwater -- players, clad in scuba gear, are towed underwater to collect debris on the coral reef.

Assisting the players will be hint balloons from Jean-Michel Cousteau, offering additional information on the organisms encountered and the marine debris items collected. Players can pause game play to click on these hints (which they must do to gather data for their data sheets) and score additional points. This information is also available at level changes so as to not interrupt game play if desired.

LEVEL 1

Beaches: Coastal shorelines concentrate debris but fewer animals are directly affected by it, so fewer points per debris item collected are awarded. Very few animals ingest debris directly from the beach, but this debris either is scattered back into the sea by waves and wind or breaks down into microparticles under the sun's UV radiation and wave action. Although these processes are not visible, they are the biggest and most significant issues in the marine environment. These microparticles are believed to affect the entire food web because of high concentrations in filter-feeding organisms that inadvertently ingest them with their planktonic and detrital food. These filter feeding fish and invertebrates are fed upon by predators that concentrate the particles and associated toxins in their guts and tissues, reducing absorption of nutrients, often causing long-term illness and eventual death. This occurs all the way up the food web, including bony fish, sharks, seabirds, seals, dolphins and whales.

- **Creatures at risk:** Plankton, Christmas tree worm, green sea turtle
- **Collection vehicle:** ATV
- **Obstacles to collection:** Green sea turtle, Laysan albatross, Hawaiian monk seal, additional nesting birds
- **Debris items:** TV/computer tubes, butane lighters, plastic bottles, plastic toys/buoys

Game Background

LEVEL 2

Water surface: Debris lines, also called convergence zones (where two currents coincide, there is a temperature/salinity gradient or wind drives surface waters into each other), concentrate debris and therefore marine life that feeds on the debris is in a higher concentration here too. This area will carry a higher point value for each piece of debris collected since organisms can and will ingest or be trapped by the debris. Sea turtles will feed directly on plastic bags, balloons and bottles, mistaking them for near-surface jellyfish and salps that look like jellies. Seabirds have a tendency to eat natural debris (wood and so on) on which fish and invertebrates have laid their eggs; therefore, seabirds ingest large numbers of lighters and small plastic items. The birds are adapted to regurgitate indigestible debris, but with the large amount of plastic in the ocean, they ingest more than they can handle, much of it lacking the nutritious eggs they were looking for.

- **Creatures at risk:** Green sea turtle, Laysan albatross
- **Collection vehicle:** Wave-runner or inflatable Zodiac
- **Obstacles to collection:** Jellyfish, Hawaiian monk seal
- **Debris items:** Balloons/plastic bags, butane lighters, plastic bottles

LEVEL 3

Underwater: Underwater reefs snag nets, fishing line and hooks. These items will receive the highest point value because of their continuous trapping tendency. Fishing gear entangles a variety of species, often trapping and drowning them. The decomposing carcasses attract numerous other scavengers and predators, entangling them, thus continuing the trapping process. This debris is the hardest and most time-consuming to find and difficult to retrieve because of its underwater location and entanglement on the reef, but it is extremely important and rewarding to remove.

- **Creatures at risk:** Tiger shark, Galapagos shark, spinner dolphin, Hawaiian monk seal, coral
- **Collection vehicle:** Scuba tow
- **Obstacles to collection:** Time underwater, divers' entanglement, Tiger shark, Galapagos shark (often attracted to the nets)
- **Debris items:** Ghost nets, fishing lines/hooks