

Midway Atoll & Marine Debris: A Teacher's Guide

The Friends of Midway Atoll (FOMA) is a non-profit organization that supports the Midway Atoll National Wildlife Refuge in its efforts to preserve, protect and restore the biological diversity and historic resources of Midway Atoll while providing opportunity for wildlife-dependent recreation, education and scientific research. As part of its mission, FOMA has created the following educational materials centered on the problem of marine debris at Midway Atoll and how it impacts the Refuge and its inhabitants.

These materials are available to educators/parents and the general public and can be downloaded from the FOMA website—www.friendsofmidway.org.

The educational materials include:

MARINE WILDLIFE & BIRD SPECIES FACTSHEETS

(Informational fact sheets on various wildlife species at Midway Atoll which are impacted by marine debris.)

- 1.) Laysan_Albatross_Facts.pdf**
- 2.) Green_Sea_Turtle_Facts.pdf**
- 3.) Monk_Seal_Facts.pdf**

MIDWAY-SPECIFIC FACTSHEETS

4.) Albatross_on_Midway.pdf

(Factsheet detailing the history of Midway Atoll and the islands' special significance to one of its most abundant inhabitants—the Laysan Albatross.)

5.) Marine_Debris_at_Midway.pdf

(Factsheet identifying the various sources of marine debris, how it enters the environment and explains debris' effects on Midway's wildlife populations.)

6.) Ocean_Currents.pdf

(Factsheet explaining the role ocean currents play in transporting marine debris around the globe. Special attention is given to the currents and gyre in the North Pacific Ocean that surround Midway and carry debris to and from the Hawaiian Islands.)

MIDWAY RESOURCES

7.) Educational_Resources.pdf

A listing of additional educational resources covering several topics, including marine debris, marine wildlife, Midway Atoll and the Northwestern Hawaiian Islands/Papahānaumokuākea Marine National Monument.

RACE TO MIDWAY ATOLL

RACE TO MIDWAY ATOLL

8.) Electronic Game for the Classroom

(Visit: www.friendsofmidway.org)

Race to Midway Atoll is an interactive game that can be accessed via the FOMA website. The game takes approximately 10 minutes to play and involves two players or teams. The game is intended to educate players about the threat of marine debris on Midway Atoll and its inhabitants. Players will also learn HOW THEY CAN HELP prevent marine debris where they live.

The six Midway/Marine Debris factsheets listed on page one contain all of the information needed to answer the game questions. Therefore, it is suggested that these materials be reviewed before playing the game.

The game begins with a brief introduction and geography lesson on Midway Atoll, showing its exact location in the northern Pacific Ocean. The introduction automatically scrolls forward but players can use the **next** or **back** buttons to navigate through the introduction as necessary.

The geography lesson highlights the Papahānaumokuākea Marine National Monument (which includes Midway Atoll) and explains how the currents in the North Pacific Ocean and other oceanographic features play a role in transporting marine debris to this remote island. When the multiple choice questions begin, the game will automatically call players from each team to answer—giving them time to prepare. Questions are asked in random order. You should be able to play the game at least twice in your classroom before questions start to reappear.

Whether your team is answering a question or listening to the other team answer, team players are learning about Midway Atoll and marine debris. With the majority of questions being accompanied by color photos or graphics, this game becomes a dynamic, fact-filled marine debris challenge. ♦



RACE TO MIDWAY ATOLL

ANSWER KEY INSTRUCTOR REFERENCE

Studies show that Laysan albatross:
B. Consume larger volumes of debris than other seabirds

Due to their awkward movements during takeoffs and landings, albatross have been nicknamed:
A. Gooney birds

How many breeding pairs of Laysan albatross do scientists estimate use Midway Atoll for nesting?
A. More than 420,000

Laysan albatross swallow plastic debris because:
B. They accidentally ingest it while foraging for their real food.

Swallowing plastic debris can give albatross chicks a false sense of fullness, which:
A. Prevents them from eating enough food and can cause them to starve

What have scientists found inside the stomach of dead albatross chicks?
D. All of the above

Adult Laysan albatross ingest marine debris and then feed it to their chicks:
B. Accidentally

Which of the following is part of the Laysan albatross natural diet?
A. Flying fish eggs

Midway Atoll was:
A. The site of a crucial battle during WWII

In 2008, the U.S. Fish and Wildlife Service the National Oceanic and Atmospheric Administration and the U.S. Coast Guard removed how much marine debris from Midway Atoll?
A. Nearly 20,000 pounds

Adult green sea turtles are herbivores and eat:
A. Sea grass and algae

Scientists have observed that monk seals have been seriously injured and have died from becoming entangled in:
B. Discarded fishing gear, nets, rope

With only 1,100-1,200 Hawaiian monk seals remaining in the world, the species is:
B. In serious danger of extinction

The debris found on Midway Atoll is composed of:
C. All of the above

The debris found on Midway is:
B. Transported in from thousands of miles away

Marine debris is deposited onto the beaches, lagoons and reefs of Midway Atoll:
C. Both A and B

Midway Atoll is located:
A. 2,550 miles east of Tokyo, Japan

Land-based debris is created when:
B. People are careless in disposing their trash

Ocean-based marine debris may come from people who fail to correctly dispose of or stow their trash while on:
A. Recreational or fishing boats, and oil/gas platforms at sea

Marine debris:
A. Poses real dangers to our ocean and its inhabitants

Derelict fishing nets, rope and gear can damage sensitive marine habitats, such as:
A. Coral reefs

Hawaiian monk seals live:
B. Only in the Hawaiian Islands

Which of the following species can become entangled in marine debris?
C. Both A and B

You can help prevent marine debris by:
A. Using proper trash receptacles and recycling

Green sea turtles get their name from:
B. The color of their body fat

(Answer Key continues next page)

RACE TO MIDWAY ATOLL

ANSWER KEY INSTRUCTOR REFERENCE

Ninety percent of all Hawaiian green turtles breed and nest:

A. On French Frigate Shoals in the NWHI

Laysan albatross are named after:

A. Laysan Island, one of their Hawaiian breeding colonies

How many people live on Midway Atoll today?

A. Between 30-65

The Midway Atoll National Wildlife Refuge is part of the:

B. Papahānaumokuākea Marine National Monument

Laysan albatross are:

A. Black and white seabirds

The marine debris collected on Midway Atoll consists of:

A. Man-made items—mostly composed of synthetic materials

Most of the plastic products that become marine debris are:

B. Lightweight, durable and can float on ocean currents

Midway is located north of the equator and in the Pacific Ocean, which means:

A. Debris from Asia and N. America can wash up on its shores

One way you can help to prevent marine debris is to:

B. Keep storm drains and sewers trash-free

What causes marine debris?

A. People

Laysan albatross have evolved into what kind of eaters?

B. Indiscriminate

Which of the following is a way to stop marine debris while at sea?

A. Bring all of your trash back with you for proper disposal on land

How do researchers typically classify marine debris?

C. Both A and B

Which of the following is considered marine debris?

D. None of the above

In addition to wind and storms, what else can carry marine debris to Midway Atoll?

A. Powerful ocean currents

Which four major currents form the North Pacific Subtropical Gyre?

A. North Equatorial, Kuroshio, North Pacific and California

In the ocean, what generates currents?

B. Wind, gravity and density

43. Gyres are:

B. A large system of rotating ocean currents

How many subtropical gyres are there in the ocean?

C. 5

As the earth spins on its axis, trade winds are deflected, moving:

A. Clockwise in the Northern Hemisphere

Once it enters a gyre, debris can remain trapped in these current spirals for:

B. Long periods of time

In the ocean, currents:

B. Move water and transport marine debris

Debris that enters the North Pacific Subtropical Gyre:

A. Can reach Midway Atoll and the NWHI

Which president established the Papahānaumokuākea Marine National Monument?

C. George W. Bush

What can you do to help stop the threat of marine debris, wherever you live?

D. All of the above