

IDENTIFYING THE EFFECTS OF BLEACHING ON CORAL REEFS AROUND THE WORLD

Your mission: Congratulations! You have been selected to join a team of scientists who will be investigating the health of coral reefs around the world. Your current mission is to look for evidence of coral bleaching and mortality at four reefs in the Pacific Ocean. Put on your goggles and get ready to take the plunge.



Visit the reefs (above) using the map in Level 3.

Making Observations: Go to the [Coral Bleaching activity](#) on the website, click on Level 3, and scroll down to the activity titled 'Identifying the Effect of Bleaching on Coral Reefs.' Use the map tool to visit each of the four coral reefs in the western Pacific. Examine the photos and complete the table below. As an example, Reef #1 is partly completed for you.

Coral Reef #	Reef Name and Location	Date	Observations:
1	Phoenix islands, Republic of Kirabati	2004	<p><u>healthy</u> bleached dead</p> <p><i>Other observations: coral is bright green and yellow. Lots of colorful fish are present.</i></p>
1	Phoenix islands, Republic of Kirabati	2016	<p>healthy bleached dead</p> <p><i>Other observations:</i></p>

Coral Reef #	Reef Name and Location	Date	Observations:
2			<p>healthy bleached dead</p> <p><i>Other observations:</i></p>
2			<p>healthy bleached dead</p> <p><i>Other observations:</i></p>

Coral Reef #	Reef Name and Location	Date	Observations:
3			<p>healthy bleached dead</p> <p><i>Other observations:</i></p>
3			<p>healthy bleached dead</p> <p><i>Other observations:</i></p>

Coral Reef #	Reef Name and Location	Date	Observations:
4			<p>healthy bleached dead</p> <p><i>Other observations:</i></p>
4			<p>healthy bleached dead</p> <p><i>Other observations:</i></p>

Making Sense of Your Observations: Answer the questions below.

1. How many of the reefs you visited showed signs of bleaching? _____

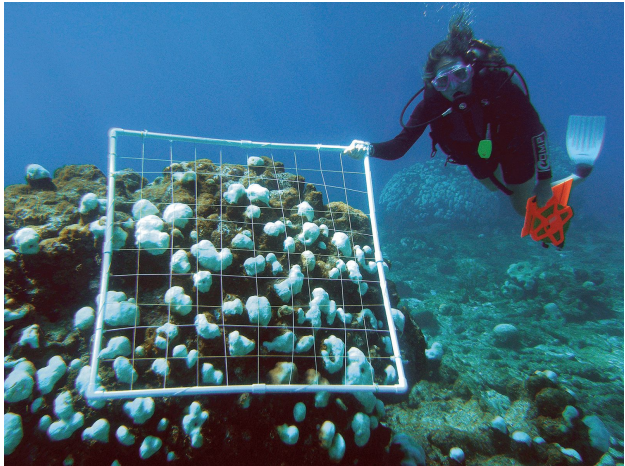
2. Has the health of these coral reefs changed over time? If yes, describe the changes you observed.

3. If you were a scientist, what more would you want to know to better understand coral bleaching?

4. What is one way that you could more accurately measure the amount of coral bleaching taking place at these locations?

MONITORING CORAL REEFS IN THE FIELD

Your mission: You and a team of scientists are setting out to monitor coral health at different locations in the Pacific Ocean. The data that you collect will be used by managers and government officials who protect these coral reefs. Put on your scuba gear and dive in with a clipboard, data sheet and a tool called a quadrat in order to collect data that will help to begin to track the health of corals at these locations.



Question: How much coral is dead? How much is bleached?

Monitoring Methods - follow these instructions: To answer the question above, go to the [Coral Bleaching module](#) on the website. Click on Level 3 and scroll down to the activity titled 'Monitoring Coral Health Using Quadrat Sampling.'

- Select (click) a reef to monitor.
- Follow the online instructions, and record your data in the table on the next page.
- When you are done collecting data, calculate the percent dead and bleached.

Example: Using the photo from Reef #1

Square #	Is Coral Dead? 0=coral is alive, 1=coral is dead	Is Coral Bleached? 0=unbleached, 10=completely bleached
4	1	
16	0	3

← Leave blank since coral inside this square is dead

Reef #: _____

Square # Is Coral Dead? 0=coral is alive, 1=coral is dead	Is Coral Bleached? 0=unbleached, 10=completely bleached
Total # squares dead =	Average =
% dead (total x 10) =	% bleached (total x 10) =

Results: answer the questions below.

1. In the area you monitored, approximately how much coral is **dead**? Approximately how much of the living coral is **bleached**?
2. In order to monitor the health of this reef over time, you need to collect more data. How often do you think you should return to collect data (weekly, monthly, yearly)? And during which seasons? Why?

ANSWER KEY

REEF #1

Square #	Dead	Bleached
4	1	n/a
16	0	3
20	1	2
22	0	1
32	0	2
44	0	3
45	0	3
74	0	1
93	0	1
94	0	3
	Total Sum = 2	Average = 2.1
	% dead = 20%	% bleached = 21%

REEF #2

Square #	Dead	Bleached
1	1	n/a
3	1	n/a
20	1	n/a
27	1	n/a
44	0	4
48	0	0
49	0	2
61	0	5
62	0	4
89	0	3
	Total Sum = 4	Average = 3
	% dead = 40%	% bleached = 30%

REEF #3

Square #	Dead	Bleached
4	1	n/a
5	1	n/a
8	n/a	n/a
12	1	n/a
37	0	1
42	1	n/a
49	1	n/a
55	0	3
78	1	n/a
95	0	8
	Total Sum = 6	Average = 4
	% dead = 60%	% bleached = 40%

REEF #4

Square #	Dead	Bleached
4	0	1
16	0	1
20	0	1
22	0	1
32	0	4
44	0	1
45	0	2
74	0	0
93	0	2
94	0	0
	Total Sum = 0	Average = 1.3
	% dead = 0%	% bleached = 13%