



TEACHER GUIDE

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STUDENT HANDOUTS

• Reading Comprehension	
1. <i>What Are Aquatic Ecosystems?</i>	
2. <i>Where Are Aquatic Ecosystems?</i>	
3. <i>How Climate Change Can Affect Aquatic Ecosystems</i>	
4. <i>Changes in Freshwater Aquatic Ecosystems Caused By Human Activity</i> ...	
5. <i>Changes in Saltwater Aquatic Ecosystems Caused By Human Activity</i>	
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EASY MARKING™ ANSWER KEY

22

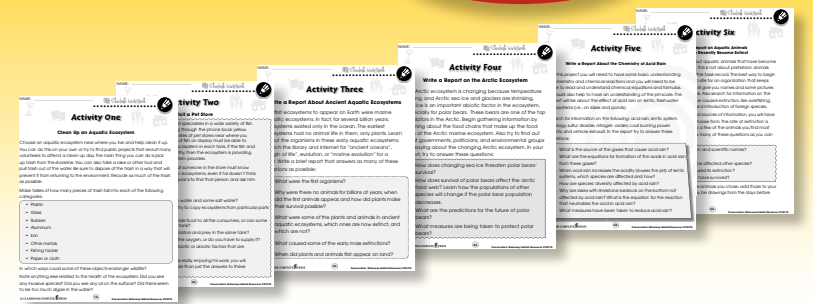
MINI POSTERS

24

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- Enter pass code CC5775D for Activity Pages





Predictions for Aquatic Ecosystems

1. Circle the word **TRUE** if the statement is TRUE or Circle the word **FALSE** if it is FALSE.

- a) Ocean temperature will soon level off.
TRUE **FALSE**
- b) Arctic ice will continue to melt.
TRUE **FALSE**
- c) Fish populations are decreasing.
TRUE **FALSE**
- d) Building dams changes freshwater ecosystems.
TRUE **FALSE**
- e) Extinct species of fish can return.
TRUE **FALSE**

2. Aquatic ecosystems are changing and will continue to change in the future. Show how each factor will change in the near future by writing "increase" or "decrease" after each factor below.

- a) Sea ice in the Arctic Ocean _____
- b) Fish populations _____
- c) Ocean temperature _____
- d) Level of inland salt lakes _____
- e) Sea level _____
- f) Human population _____



Predictions for Aquatic Ecosystems

Future changes in aquatic ecosystems are difficult to predict. It is not known if humans will change their activities that affect ecosystems, and it is not known exactly how the global climate will change.

What is known is that global temperatures will continue to rise for a long time. This is because oceans hold a lot of heat, and so ocean temperature changes very slowly. Oceans will not show the effect of the present global warming for hundreds of years, even if people stopped using fossil fuels tomorrow.

Arctic ice will continue to melt, changing the aquatic ecosystems at the North and South Poles.

Ocean wildlife will continue to move to new locations to find the temperature to which they are adapted. Some inland lakes will continue to shrink due to increased evaporation.

It can be predicted that more and more aquatic species will become extinct because of climate change, pollution, and overfishing. It is uncertain what the rate of extinction will be or which species will be lost.



STOP How could rising global temperature lead to a problem for people living on tropical atolls?

Human population will continue to increase until at least the year 2050. This will likely affect all aquatic ecosystems. More people will probably use more fossil fuels, which will increase the acidity of the ocean.

Predictions for Aquatic Ecosystems

1. Put a check mark (✓) next to the answer that is most correct.

- a) Which is true of Earth's oceans?
 - A Sea ice is increasing.
 - B Coral reefs are expanding.
 - C Temperature changes very slowly.
 - D Some oceans are isolated from the others.
- b) What is the main cause of the extinction of ocean fish species?
 - A predators
 - B overfishing
 - C invasive species
 - D rising temperature
- c) As ocean temperature rises, fish species are likely to move
 - A to the Atlantic Ocean
 - B to the Pacific Ocean
 - C away from the equator.
 - D toward the equator.

2. Circle the word **TRUE** if the statement is TRUE or Circle the word **FALSE** if it is FALSE.

- a) Polar bear population will continue to decrease.
TRUE **FALSE**
- b) Removing foreign species from the Great Lakes will be expensive.
TRUE **FALSE**
- c) Less developed countries are more likely to care for aquatic ecosystems.
TRUE **FALSE**
- d) Human population is related to fish populations.
TRUE **FALSE**
- e) Attempts have been made to reduce overfishing.
TRUE **FALSE**

Predictions for Aquatic Ecosystems

3. Answer the questions in complete sentences.

- a. State **one** reason why some inland salt lakes will continue to shrink.

- b. Because of their great volume, oceans hold a lot of heat. Explain how this affects the rate at which ocean temperature changes.

Extensions & Applications

How is the rate of extinction of marine species likely to change in the near future?

Describe **two** causes of extinction of aquatic species.

- 1. _____
- 2. _____



Activity Two

Visit an Aquarium

Learn about aquatic ecosystems at a public aquarium. The tanks filled with aquatic life in an aquarium are not the same as a wild aquatic ecosystem, but they have some similarities. The advantage an aquarium has over a wild ecosystem is that you will probably be able to find someone to answer your questions. Be sure to take a written list of questions with you. When you visit, you may want to walk around and enjoy the exhibits first.

You may be able to get a guide booklet at the entrance that will answer some of your questions. Most aquariums also have information posted next to each tank. Now look at your list and mark any of your questions that are still unanswered. Try to find someone on the aquarium staff, like a docent or a guide, who would like to give you more information.

Here are some suggested questions. Feel free to add your own questions to the list.

1. Which tanks have salt water and which have fresh water?
2. Which exhibits are most like a wild ecosystem?
3. Do all the consumers have to be given food, or do some tanks have their own producers?
4. Do any predators have their prey in the tank?
5. Is all the oxygen supplied by plants?
6. Are any of the animals extinct in the wild?

NAME: _____



Word Search

Find all of the words in the Word Search. Words are written horizontally, vertically, diagonally, and some are even written backwards.

- | | | | | |
|-----------|----------------|----------------|----------------|--------------|
| abiotic | biotic | fresh (water) | nurdles | salt (water) |
| acid rain | carbon dioxide | greenhouse gas | overfishing | spawn |
| adapt | debris | invertebrates | oxygen | system |
| algae | estuary | lotic | photosynthesis | vertebrates |
| aquatic | fish (ladder) | marine | runoff | |

A	V	E	R	T	E	B	R	A	T	E	S	A	B	C
I	Q	S	I	H	A	N	S	G	A	F	E	S	S	D
N	K	U	A	D	E	L	E	G	L	O	T	I	C	M
V	T	S	A	G	R	Q	L	F	P	O	S	R	N	O
E	U	P	Y	T	E	A	D	C	I	E	Y	B	N	V
R	T	X	V	W	L	S	R	I	H	S	X	E	I	E
T	O	D	C	B	A	C	U	T	W	Z	H	D	A	R
E	D	I	X	O	L	D	N	O	B	R	A	C	R	F
B	E	M	E	T	S	Y	S	I	H	F	O	G	D	I
R	M	L	O	K	S	P	M	B	J	N	I	H	I	S
A	N	O	O	A	A	P	A	S	Q	E	R	C	H	
T	B	W	T	W	R	V	L	H	U	T	S	E	A	I
E	X	O	N	I	Y	Z	M	T	W	X	Y	Z	R	N
S	H	D	N	C	B	E	S	T	U	A	R	Y	A	G
P	E	E	F	G	R	U	N	O	F	F	R	E	S	H

NAME: _____



Part C

Comprehension Quiz

Answer each question in complete sentences.

1. Explain why an ecosystem is a system. 3




2. Explain how oxygen (O₂) and carbon dioxide (CO₂) are exchanged between plants and animals in an ecosystem. 3

3. Explain how burning fossil fuels has caused ocean temperature to rise. 3

4. Why does an increase in the amount of dissolved carbon dioxide in the ocean endanger coral reefs? 3

5. Describe **one** thing individuals can do to help protect aquatic ecosystems. 3

Invasive Aquatic Species to North America

	Sea Lamprey		Round Goby
	Water Hyacinth		Purple Loosestrife
	Zebra Mussels		Asian Carp

NAME: _____

After You Read 



Predictions for Aquatic Ecosystems

3. Answer the questions in complete sentences.

a. State **one** reason why some inland salt lakes will continue to shrink.

b. Because of their great volume, oceans hold a lot of heat. Explain how this affects the rate at which ocean temperature changes.

Extensions & Applications

How is the rate of extinction of marine species likely to change in the near future?

EASY MARKING

Describe **two** causes of extinction of aquatic species.

1. _____

2. _____

3.

- a) (Answers will vary.) Any one of the following: Rate of evaporation will increase. More water will be drawn from incoming streams for irrigation and other human uses.
- b) Because oceans hold a lot of heat, ocean temperature changes very slowly.

Extensions & Applications

The rate of extinction is likely to increase.

And

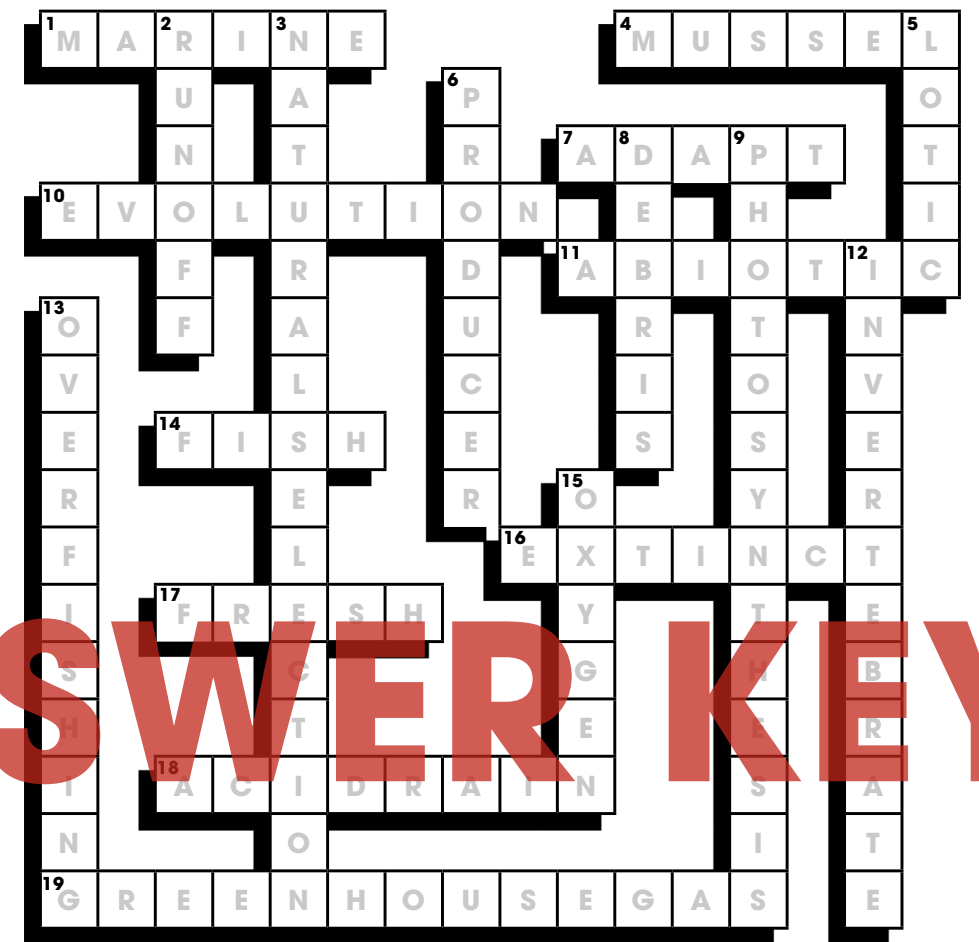
Answers will vary

Any two of the following:

- Overfishing
- Invasive species
- Pollution
- Loss of water because of increased irrigation
- Loss of water because of increased evaporation

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Crossword Puzzle!



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ANSWER KEY