
NatureGlo's eScience
Deep Sea Creature Communities Study Guide

Cover images – Bottom: Bubblegum sea coral photographed by NOAA/MBARI 2006. Middle - Squat lobster and (upper right) a Bathypelagic Ctenophore. Both images credit: NOAA.

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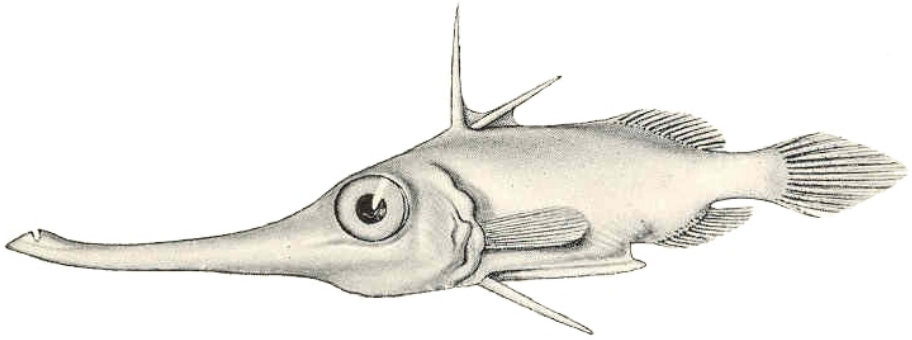
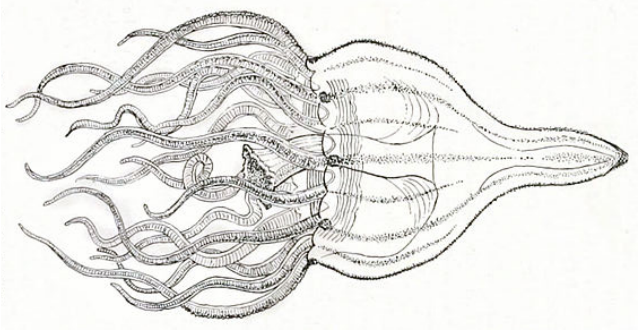
Table of Contents



A deep-sea Snipe fish *Halimochirugus centriscoides*, from off Cape Comorin, 143 fathoms. 1902. Image in the public domain.

The Deep See Communities

Deep sea communities are the least studied habitats on the planet, but, current studies and research are using the most cutting edge technologies and successfully getting amazing footage! The high costs of the technological equipment alone had deterred scientists, researchers and explorers until the recent decades. The harsh environments including crushing pressure of the water depths and near freezing temperatures are stark challenges that face adventurous researchers such as NOAA. Today, we are getting a glimpse of these unusual habitats and their inhabitants, many of which have never been seen by humankind before!



A deep-sea medusae. Image in the public domain.

PowerPoint Review – Deep Sea Communities

Directions: Please read through NatureGlo's eScience PowerPoint, Deep Sea Communities. Answer the questions and complete the activities below.

Slide #3 What are Deep Sea Communities? (multiple choice)

1. Deep sea communities are composed of organism groups associated by shared deep sea _____.

a. Habits b. habitats c. appearance

Slide #4 The Oceanic Zones (fill in the blank)

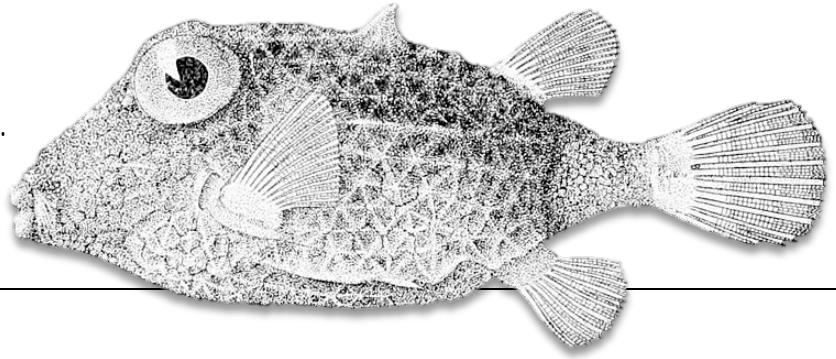
2. There are three oceanic zones which don't receive sunlight including the Bathypelagic, Abyssopelagic and the lowest zone the _____ or trench zone.

Slide #5 History of Deep Sea Community Discovery (fill in the blank)

3. The _____, southern Mariana Trench near Mariana Islands is the deepest surveyed point of all oceans with a reported depth of 4,475 fathoms (10.99 kilometers or 6.83 miles).

Slide #7 Deep Sea Creature Adaptations to Great Pressure

4. Write one deep sea creature body adaption from great water pressure. _____



A deep water boxfish. Image in the public domain.

PowerPoint Review – Deep Sea Communities

Slide #8 Deep Sea Temperatures

5. Deepest ocean water temperatures are mostly between 0-3 degrees Celsius or _____degrees Fahrenheit.

Slide #9 Deep Sea Community Food Source: Marine Snow

6. What is marine snow or POM?

   _____

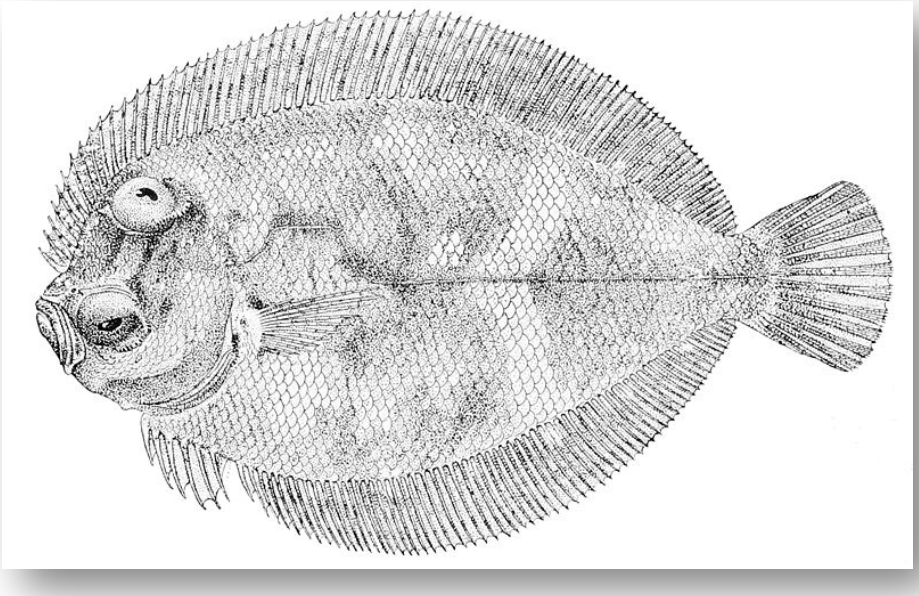
Slide #10 Deep Sea Community Food Source: Whale Falls

7. Why are whale falls so important to a deep sea community?

   _____

Slide #13 Chemosynthesis from Hydrothermal Vents Part II

8. Draw the ore funnel and black smoker from the diagram on slide #13 below. Color your drawing. Add 3 other details from the diagram to your drawing.



A deep water flounder from the *The deep-sea fishes of the Hawaiian Islands* by Gilbert, Charles Henry, 1859-1928,. Image in the public domain.

PowerPoint Review – Deep Sea Communities

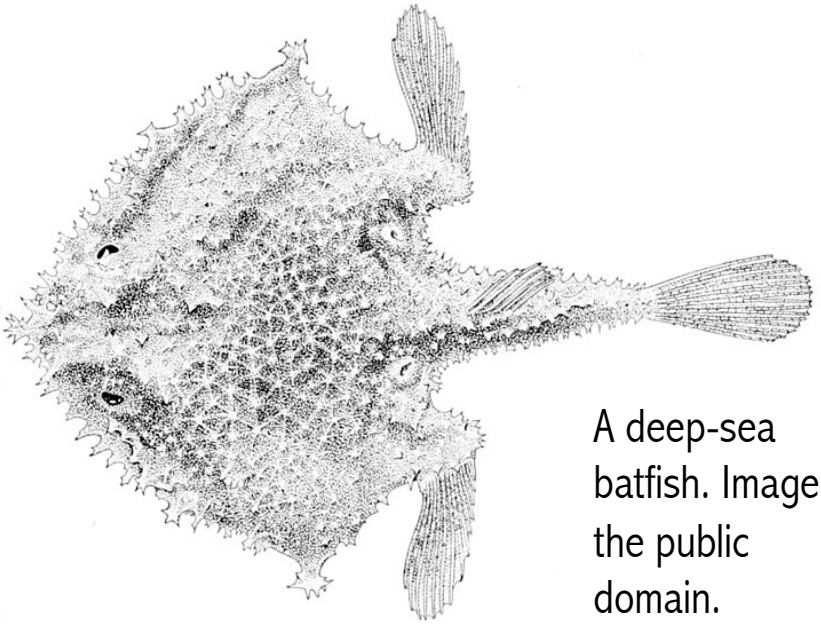
Slide #16 Cold Seeps

9. Cold seeps include the ocean floor area where hydrogen sulfide, methane and other hydrocarbon-rich fluid seepages occur, often in a _____ pool form.

Slide #17 Cold Seep Types

10. List two cold seep types below.

a. _____
b. _____



A deep-sea batfish. Image in the public domain.

Journal Entry: Deep Sea Community Habitat

Name:_____ Date: _____

Make a sketch in the box below of a deep sea habitat. Include at least three deep sea animals and plants. Hint: Look at images from NatureGlo's eScience PowerPoint, *Deep Sea Communitie*s or do a Google search of images to get ideas. Fill in the information on the right about your sketch.

Description – Describe what kind of deep sea habitat you drew (coral reef, hydrothermal vent, cold seep etc.)_____
_____
_____
_____

Geographic range – Where is your habitat located?
_____
_____
_____

Plants – List your three plant types.
_____
_____
_____
_____
_____

Animals – List your three animal types**.**
_____
_____
_____
_____
_____
_____

Deep Sea Communities Quiz

Directions: After completing the review questions, use them as a study guide for this quiz. When you're ready, take the quiz below.

Slide #3 What are Deep Sea Communities? (multiple choice)

1. Deep sea communities are composed of organism groups associated by shared deep sea _____.

a. Habits b. habitats c. appearance

Slide #4 The Oceanic Zones (fill in the blank)

2. There are three oceanic zones which don't receive sunlight including the Bathypelagic, Abyssopelagic and the lowest zone the _____ or trench zone.

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3. The _____, southern Mariana Trench near Mariana Islands is the deepest surveyed point of all oceans with a reported depth of 4,475 fathoms (10.99 kilometers or 6.83 miles).

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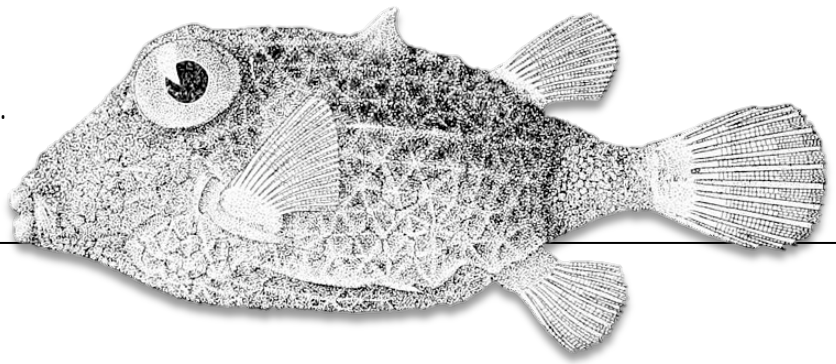
4. Write one deep sea creature body adaption from great water pressure. _____



A deep water boxfish. Image in the public domain.

Deep Sea Communities Quiz

Slide #8 Deep Sea Temperatures

5. Deepest ocean water temperatures are mostly between 0-3 degrees Celsius or _____degrees Fahrenheit.

Slide #9 Deep Sea Community Food Source: Marine Snow

6. What is marine snow or POM?

   _____

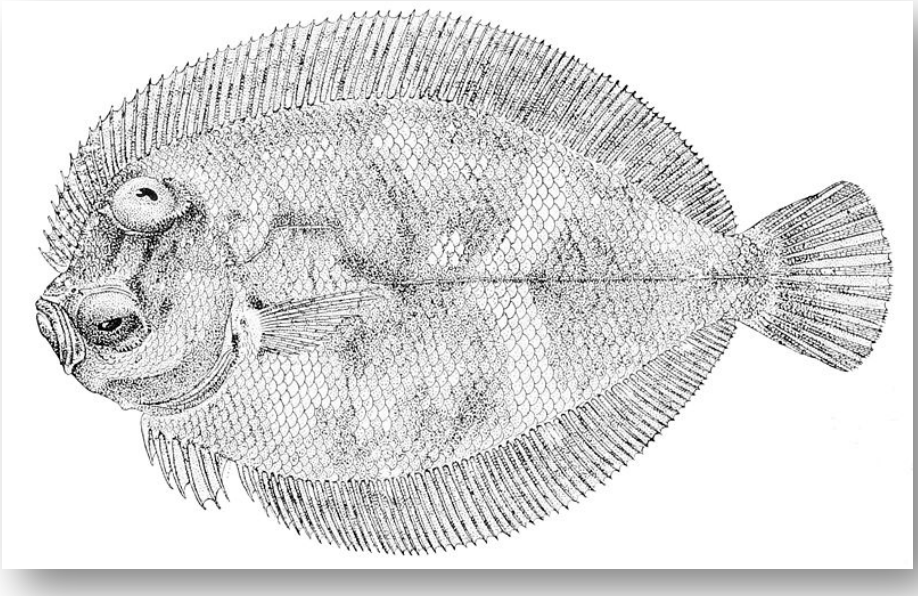
Slide #10 Deep Sea Community Food Source: Whale Falls

7. Why are whale falls so important to a deep sea community?

   _____

Slide #13 Chemosynthesis from Hydrothermal Vents Part II

8. Draw the ore funnel and black smoker from the diagram on slide #13 below. Color your drawing. Add 3 other details from the diagram to your drawing.



A deep water flounder from the *The deep-sea fishes of the Hawaiian Islands* by Gilbert, Charles Henry, 1859-1928,. Image in the public domain.

Deep Sea Communities Quiz

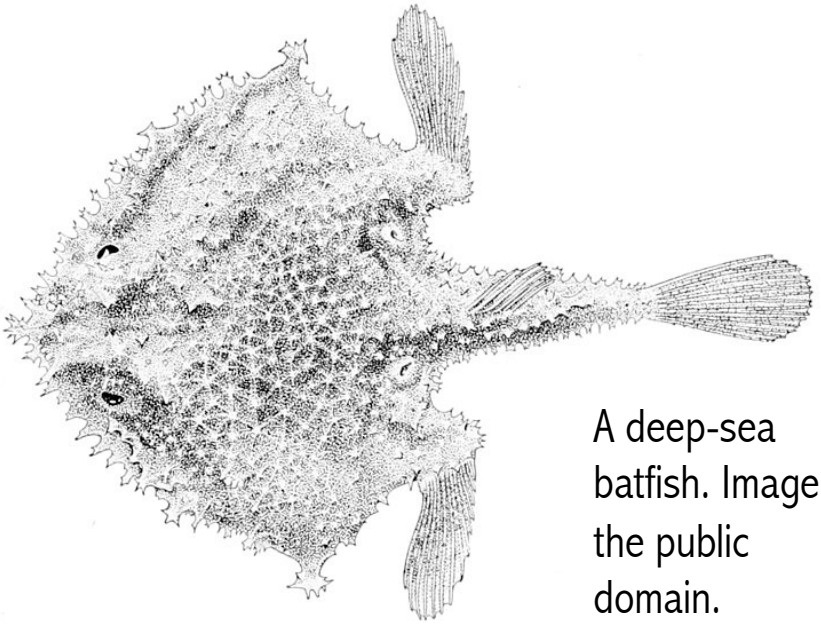
Slide #16 Cold Seeps

9. Cold seeps include the ocean floor area where hydrogen sulfide, methane and other hydrocarbon-rich fluid seepages occur, often in a _____ pool form.

Slide #17 Cold Seep Types

10. List two cold seep types below.

a. _____
b. _____



A deep-sea batfish. Image in the public domain.

PowerPoint Review – Deep Sea Communities Answer Key

Directions: Please read through NatureGlo's eScience PowerPoint, Deep Sea Communities. Answer the questions and complete the activities below.

Slide #3 What are Deep Sea Communities? (multiple choice)

1. Deep sea communities are composed of organism groups associated by shared deep sea _____.

a. Habits b. habitats c. appearance

Slide #4 The Oceanic Zones (fill in the blank)

2. There are three oceanic zones which don't receive sunlight including the Bathypelagic, Abyssopelagic and the lowest zone the **Hadopelagic** or trench zone.

Slide #5 History of Deep Sea Community Discovery (fill in the blank)

3. The **Challenger Deep**, southern Mariana Trench near Mariana Islands is the deepest surveyed point of all oceans with a reported depth of 4,475 fathoms (10.99 kilometers or 6.83 miles).

Slide #7 Deep Sea Creature Adaptations to Great Pressure

4. Write one deep sea creature body adaption from great water pressure. Answers will vary but should include any one of the following:

- **Gelatinous (jelly-like) flesh**
- **Minimal skeletal structure**
- **No collapsible cavities (holes or pockets)**

PowerPoint Review – Deep Sea Communities

Slide #8 Deep Sea Temperatures

5. Deepest ocean water temperatures are mostly between 0-3 degrees Celsius or **32-37.5** degrees Fahrenheit.

Slide #9 Deep Sea Community Food Source: Marine Snow

6. What is marine snow or POM? **particle organic matter**

Slide #10 Deep Sea Community Food Source: Whale Falls

7. Why are whale falls so important to a deep sea community?
   food source

Slide #13 Chemosynthesis from Hydrothermal Vents Part II

8. Draw the ore funnel and black smoker from the diagram on slide #13 below. Color your drawing. Add 3 other details from the diagram to your drawing.

Drawings will vary. See slide #13.

PowerPoint Review – Deep Sea Communities

Slide #16 Cold Seeps

9. Cold seeps include the ocean floor area where hydrogen sulfide, methane and other hydrocarbon-rich fluid seepages occur, often in a **brine** pool form.

Slide #17 Cold Seep Types

10. List two cold seep types below.

Answers will vary but should include any one of the following:

- **Oil/gas**
- **Gas: methane seeps**
- **Gas hydrate**
- **Brine - form brine pools**
- **Mud volcanoes**
- **Pockmarks**