



Squidology

By Kenneth and Kelly Riley

Focus

Squid, some of the ocean's strangest looking organisms, have been the topic of many horrid and mysterious tales of the sea. They are among the most intelligent invertebrates, and have adapted to a highly mobile, predatory life in marine habitats. Although they are of important commercial value as food and bait, they are also enjoyed as a gourmet treat by people all over

the world. The focus of this folio is to investigate the special adaptations of squid. The activities are designed around student observations of the anatomy of squid. Students will learn how squid have evolved for survival in the sea by observing, measuring, making hypotheses, and recording data.

Background

Cephalopods – Squid belong to the class *Cephalopoda* of the phylum *Mollusca*. There are approximately 650 recognized species of Cephalopods, which include octopus, squid, cuttlefish, and nautilus. Cephalopods are found in all of the world's oceans. They are believed to be the most intelligent of all invertebrates. Cephalopods have amazing defense mechanisms. They can change color, texture, and body shape when necessary. They are also able to make their own "smoke screens" by releasing an ink-like secretion into the water. This confuses the enemy and allows time for a clean getaway.

Squid – People are often puzzled to learn that squid are relatives of mollusks such as clams, oysters, and snails. They do not have exterior shells typical of other mollusks. Squid do have a vestigial shell that is found in the interior of the body. The shell is called a pen and provides the body with support. It extends along the back of its soft, muscular body, which is elongated in shape. Squid are unique among invertebrates in that they have extremely well-developed eyes. Their eyes rival those of vertebrates in seeing fine detail and can even locate objects directly behind the squid. The body of a squid consists primarily of a head and arms, hence the name Cephalopoda, meaning "head foot". Unlike the octopus which has eight long arms, squid have ten arms total with two very long arms used to capture food. These two are called tentacles. The ends of their tentacles are spoon-shaped with sucker discs. This enables the animal to grasp and capture prey. The remaining eight arms are much shorter. These also have

sucker discs that help to bring food toward the mouth. Rapid and graceful swimmers, squid are very aggressive predators. They have beak-like mouths that help to rip flesh and devour food. Some species can even introduce poison into their prey through their bite. Squid prey upon fish and other invertebrates, including smaller squid.

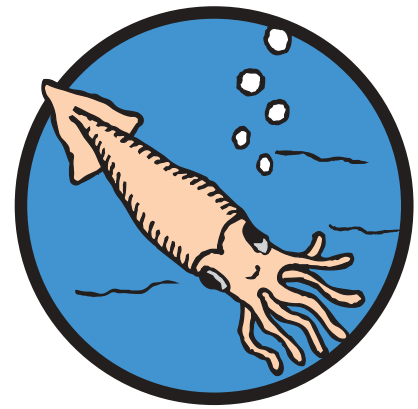
Protection – Squid have very unusual defense strategies upon which they rely to speedily escape from danger. They forcibly expel water from their bodies, thus moving by jet propulsion. Squid resemble torpedoes as they glide through the water at high speeds. Some squid can change colors to help hide from danger. Many organisms use this form of defense, camouflaging their bodies to blend in with their surrounding environment. Squid, however, do so by expanding or contracting the pigment cells in their skin called chromatophores. They are able to change both the overall color and patterns of color on their skin. This makes it very difficult for predators to locate them. Because squid do not have bones, their bodies are very flexible, allowing them to escape predators by hiding in very difficult-to-reach places. They can squeeze into cracks and crevices of rock and coral where other animals cannot follow. Squid have yet another defense mechanism – ink sacs located inside their bodies. When they are threatened, they can squirt the dark fluid into the water. This confuses predators and allows the squid to escape.

| Grade Level | Subject Areas | Process Skills | Vocabulary |
|---------------------|--|---|---|
| Middle School (6-8) | Biology Life Science Physical Science Language Arts Music Art Home Economics | Observe, Measure, Describe, Record, Chart, Hypothesize, Compare, Contrast, Report, Summarize | Invertebrate, Predator, Adaptation, Cephalopod, Mollusks, Defense Mechanisms, Vestigial |

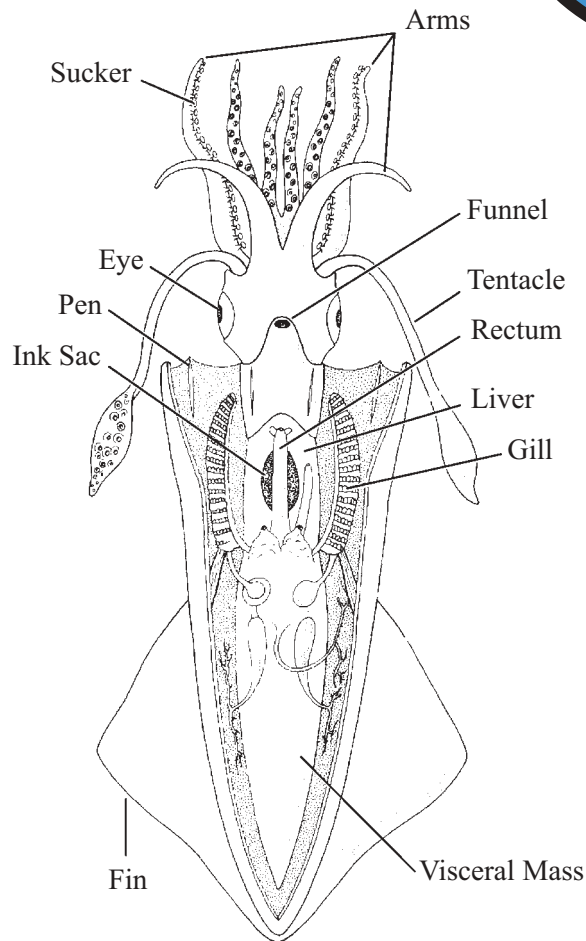
A cooperative project between the Undergraduate Biological Sciences Education Program Grant from the Howard Hughes Medical Institute to Louisiana State University and the Louisiana Sea Grant College Program. ©Louisiana Sea Grant, June 2003.

Squid – Built For Survival

All living things have evolved to survive in their particular environment. Squid have developed several unique adaptations for living in a marine habitat.



Squid Anatomy



Squid “Survival” Anatomy

Mantle – The mantle is a loose layer or pocket of skin that covers the body.

Arms – Squid have eight short arms. These are primarily used to help bring food to the mouth.

Tentacles – Squid have two long tentacles that work like arms. The ends are spoon-shaped and have sucker discs. Tentacles are used to capture prey.

Sucker Discs – These round discs are located on the underside of tentacles and arms. They allow the squid to grab and hold prey and pull food toward the mouth.

Gills – The gills are feathery organs attached to the inside of the mantle. These help squid get oxygen from the water.

Ink Sac – The ink sac is a dark, silvery organ located between the large liver and the thin, tube-like rectum. It contains the dark fluid that is released to confuse predators and aid in escape.

Funnel – This part of a squid’s body is very important to its movement. It is a tube-like organ through which water is forced. It aids in the squid’s jet propulsion and reproduction.

Beak – The mouth of a squid is a round, parrot-like beak. It is used to rip the flesh of prey. The beak is located underneath the squid and the tentacles and arms surround it.

Pen – The pen is the vestigial shell of the squid. It is used for support and is located inside the mantle along the dorsal side of the body.

Squidology Overview

Pre-lab Preparation

It is important to first determine a source for squid in your area. They can be purchased from a variety of places, such as seafood markets, grocery stores (particularly Asian or oriental markets), scientific supply catalogs, and bait shops. Please note that frozen squid will work as well as fresh; however, if you wish to prepare the squid as food, do not use preserved specimens. Also, if you are using frozen squid, make sure that the internal organs have not been removed. Students will need a variety of materials to complete the dissection and observations of the squid, and to complete the Jet Propulsion activity. See each section for a list of these materials. Be sure to plan in advance. Review lab safety rules with students prior to the activity.

Scope-On-A-Rope (SOAR) Setup

SOAR Setup #1, Touch and View using 30X lens.

SOAR Setup #3, Stand and View using 1X lens.

Student Preparation

1. Discuss with students the major characteristics of invertebrates.
2. Lead the class in a brainstorming session to name as many invertebrates as possible. Classify each as either terrestrial or aquatic. Discuss adaptations needed for survival in these different habitats (living on land versus living in the water).
3. Some invertebrates may appear to be “helpless” creatures. Discuss defense mechanisms. What are some defense strategies of invertebrates?
4. Introduce the class *Cephalopoda*. Name some specific organisms that belong to this class. Some examples include: clams, oysters, nautilus, snails, octopus, and squid. These organisms are all invertebrates and belong to the same class. How are these organisms similar? How are they different?
5. Explain to students that the activities in this lesson are designed to explore squid. They will investigate the special adaptations of squid through dissection, observing video clips and pictures, and completing a jet propulsion lab.

Dissection Activity

1. Decide how students will be participating in the dissection activity (cooperative groups, individual, or whole group demonstration). If only one SOAR is available, the teacher may choose to demonstrate the dissection to the entire class on the SOAR (Setup #3, Stand and View using 1X lens) while individual groups follow along.
2. Participants will need a lab sheet, wooden probe or dissecting needle, dissecting tray, latex gloves, pencil, a SOAR, forceps, scissors, plastic sandwich bags, and paper towels.
3. Review lab safety rules prior to the dissection. Also, review the lab sheet so that students understand the objectives and procedure of the lab.
4. Students will specifically investigate the following parts of the squid:

| | | |
|--------------|--------------------------|-----|
| Ink sac | Beak | Pen |
| Gills | Funnel | Eye |
| Tentacles | Arms | |
| Sucker discs | Mantle and mantle cavity | |
5. Discuss with students safety issues concerning the care of the Scope-On-A-Rope. Students should be careful when utilizing the *Touch and View* setup. Students must cover the lens of the SOAR with a plastic sandwich bag or plastic wrap. Be sure to pull the plastic tight around the lens so that the image is clear on the screen and secure it with a rubber band.

Wrap Up

Discuss with students their experiences during the dissection. Did they find anything unexpected? What was most surprising about their observations?

Assessment Strategies

Discuss with students the *Thinking Questions* on the lab sheet. Teachers may decide to create a rubric for this activity. The following criteria might be included:

- Preparedness
- Thinking questions completed
- Instructions followed
- Completion of lab sheet
- Participation
- Cooperation
- Anatomy of squid identified correctly

Grade Level:

Middle School

Group Size:

Small group, independent, or whole group

Summary:

Squid are quite unique marine invertebrates. An investigation into their means of survival is fun and educational. These activities are an exciting way for students to become involved across curriculum while practicing science and math process skills.

Objectives:

- To observe physical characteristics of squid.
- To investigate defense mechanisms of squid.
- To create a biomechanical model of jet propulsion.

Materials:

- Squid
- Dissecting materials (specified on lab sheet)
- The Scope
- Jet Propulsion Lab materials (specified on lab sheet)

Duration:

Three 40-minute class periods or more, depending upon the depth of observations.

Subject Areas:

Biology, Life Science, Physical Science, and Language Arts

Extensions:

Geography, Art, Home Economics, and Music

Process Skills:

Observe, describe, record, chart, hypothesize, compare, contrast, report, and summarize

Vocabulary:

Invertebrate, predator, adaptation, cephalopod, mollusks, defense mechanisms, vestigial

National Science Standards:

Students will develop an understanding of:

- Structure and function in living things
- Regulation and behavior
- Diversity and adaptations of organisms [Science, 5-8 Content Standards]

Jet Propulsion: Squid Jets

Objective

Students will learn how jet propulsion works by making a biomechanical model.

Student Preparation

Imagine for a moment that you are sitting on a chair that has wheels, and you are facing a wall. If you lift your feet and push against the wall, the wall exerts a force that pushes you backward. If you push softly, you will slowly roll back a short distance. If you push harder, you'll roll back faster and farther. This example illustrates Newton's Third Law of Motion: for every action there is an equal and opposite reaction. Squid and balloons both demonstrate Newton's Third Law of Motion. Air inside an inflated balloon pushes on the rubber wall of the balloon, and the rubber wall pushes back on the air. If you let the air out of the balloon, the rubber wall pushes on the air inside and the air rushes out. When this happens, the force of the escaping air pushes the balloon in the opposite direction. A squid's body is similar to a balloon. Its outer skin is like the rubber wall of the balloon. Between the outer skin (called the mantle) and its organs is a space called the mantle cavity. One end of the mantle opens and closes; and the other is like a funnel. A squid pumps water through the open end, closes it, then forces the water out through the funnel. Like the balloon, the escaping water propels the squid in the opposite direction.

Activity

This activity provides students with the opportunity to observe how a squid uses jet propulsion to swim.

Brainstorm

What parts of your body do you use when you walk, run, swim, or bike?
How do your movements change with each activity?

Procedure

1. Collect pictures and video clips from the Internet or library books that illustrate how squid swim through the water.
2. Give each student a balloon to make his or her own squid.
3. Allow students to draw eyes on the balloon using markers. Remember that a squid's eyes would be located near the opening of the balloon.
4. Ask students to inflate the balloon and close it securely with a twist tie. Tape a short section of drinking straw to the side.
5. While the balloon is fully inflated, have students tap streamers near the end of the balloon. These represent the squid's tentacles and arms. Use markers to draw on chromatophores (pigment cells in their skin). Observe how the chromatophores change as the squid propels itself. Students may want to add a paper "fin" for stabilization.
6. Tape lengths of string to one wall and have students thread the string through the straw sections taped to their "squids". Hold on to the other end of the string, pulling it taut the length of the room.
7. When everyone has finished, ask students to demonstrate their squid's jet propulsion by removing the twist tie and watching the squid shoot through the air.
8. As an extension, you may want to allow students to measure the circumference of the balloons and how far each travels. Create a class graph to investigate trends. You can also calculate speed.

Subjects:
Life science, physical science, and art

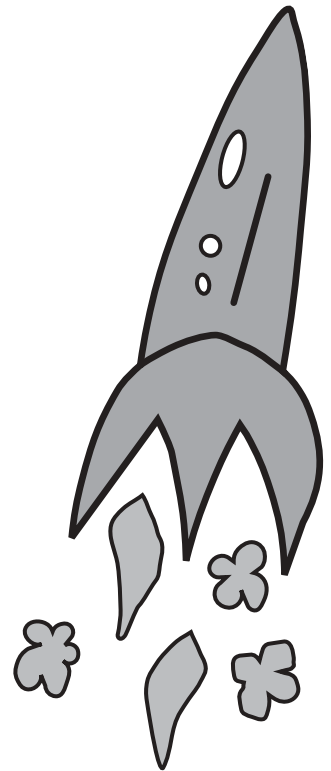
Grades:
Middle School

Concepts:
Adaptations

Duration:
One class period

Materials:

- Balloons
- Twist ties
- Tape
- Streamers
- Markers



Amazing but True!

The world's largest invertebrate is the giant squid. The heaviest was found in Thimble Tickle Bay, Canada, in 1878. It weighed 2 tons and was approximately 15m (50 ft) long. These creatures also have the largest eyes of any creature. The giant squid found at Thimble Tickle Bay had eyes that measured 40cm (15.5 in.) across. Its eyes were almost 17 times larger than a human's eye.

Thinking Questions

1. What do the models show us about the movement of squid?
2. How do other aquatic organisms move through water?

Quest for the Giant Squid

English: Horror Stories

Tales of giant, elusive sea monsters have been circulated for many centuries. Sailors have told amazing tales of being attacked by monsters with enormous tentacles and huge, dark eyes that seemed to hypnotize men. These stories probably originated from actual sightings of the largest marine invertebrate – the giant squid. These tremendous animals have the ability to jet propel their bodies through the water at 20 miles per hour, faster than the common sailing ships of the past. Some squid can launch themselves out of the water while traveling at such high speeds, making them appear to be flying monsters. Such a sight would prove to be unnerving to a superstitious sailor on a whaling ship.

These great predators live in the deepest oceans, rarely surfacing to be seen by human eyes. The giant squid is a voracious carnivore, devouring up to 500 pounds of fish, crab, shark, and other marine organisms per day. It captures prey with long tentacles, tearing it apart with a parrot-like beak. Although massive, the giant squid is not at the top of the food chain. It is preyed upon by the ocean's largest hunter, the sperm whale.

The giant squid was thought to be only a legend until the 1880s. In 1888, a giant squid washed ashore in New Zealand. It measured 57 feet long. It had tentacles 34 feet long and eyes as large as dinner plates. A sperm whale was captured once that regurgitated two 42-foot-long tentacles. This means that the giant squid must have been approximately 66 feet long, and weighed 85,000 pounds. There are a few stories about man-eating giant squid. In 1941, a British sailor was attacked and dragged off of a life raft in the Atlantic Ocean by huge tentacles while his shipmates looked on in horror.

A science expedition was launched in 1997 to search for the elusive giant squid. Deep water manned and unmanned submarines are being used to try to find out more about this fascinating invertebrate. The mysteries of these “sea monsters” may soon be solved!

On Your Own

Now that you know some history behind the giant squid, it's time to research further. Using the library, Internet, or other resources, answer the following questions.

1. How many feet long can a giant squid grow?
2. How many pounds can a giant squid weigh?
3. In which oceans or parts of the world are giant squid found?
4. What is the greatest depth at which giant squid can live?
5. How large are the eyes of a giant squid?
6. Write three new facts that you have learned about giant squid.

Spread the Word

Extra! Extra! Read all about it! Young scientists have captured a live giant squid. It is the first live capture of this monstrous invertebrate.

Imagine that you are a member of this group of scientists. You must present your findings to the entire world. Read the following list of directions very carefully. You will create your presentation based upon the following information.

You must complete the following activities:

- Detailed diagram of the giant squid
- Map of your voyage and location of capture
- Facts about your squid: length, weight, length of tentacles, color, etc.
- Entries from your journey log describing the trip and capture

Squidology Dissection

Objective

To investigate the survival of a squid based upon its internal and external anatomy.

Materials

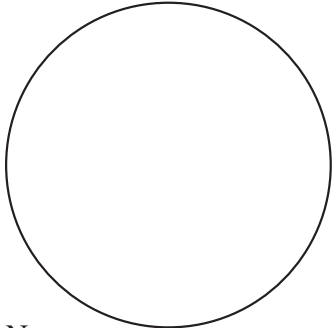
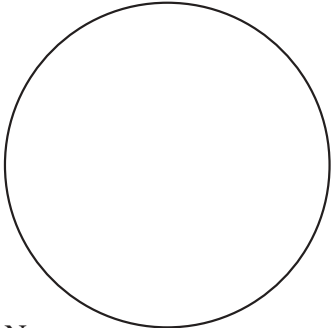
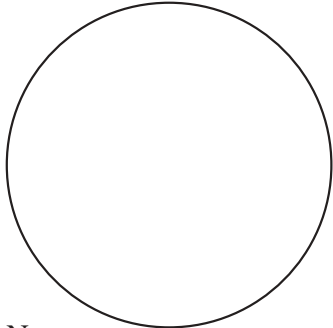
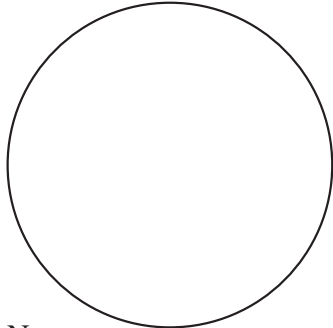
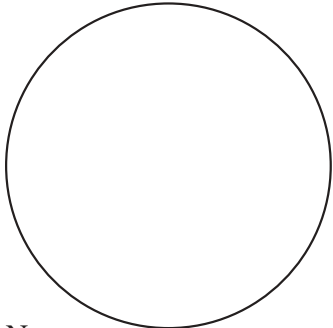
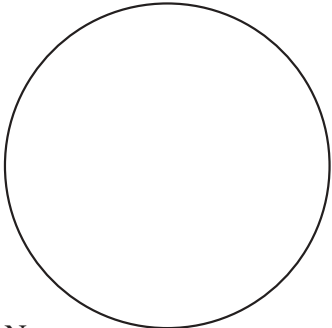
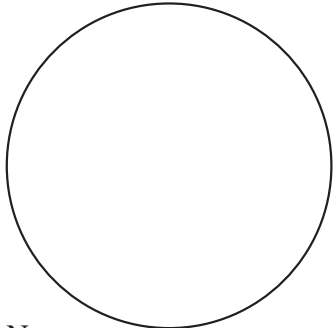
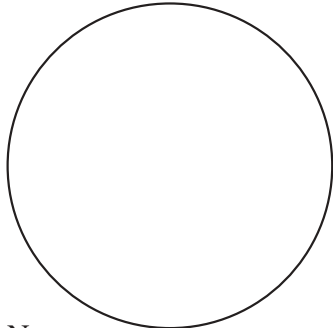
| | | |
|------------------------------|--|-------------|
| SOAR | tweezers | scissors |
| 1 squid | latex gloves | rubber band |
| paper towels | plastic sandwich bags (clear, not frosted) | |
| styrofoam meat tray (6"x12") | | |

Procedure

1. Review all lab safety rules before beginning the assignment.
2. Be sure that all materials have been retrieved.
3. Ensure that the Scope-On-A-Rope has been assembled correctly. You will use the 30X lens to complete this activity. Use the polarizing feature of this lens to view the squid anatomy more clearly. You must use a plastic bag to protect your SOAR. Cover the lens tightly with the plastic bag and secure it with a rubber band. Make sure to keep the plastic pulled tightly over the lens and dry the plastic often using the paper towels.
4. Be sure to rinse the squid thoroughly in running water before beginning the dissection. Place the squid on the styrofoam tray fin side up. Write down some of your observations below.

5. Use the SOAR to look at the following external parts of the squid. After you observe each part, complete a sketch and write down some observations made in the spaces provided on the *External and Internal Anatomy Sheet*.
 - Mantle (with chromatophores)
 - Sucker discs
 - Tentacles and Arms (compare and contrast)
 - Eyes (you may remove the eyes to get a better view)
6. Turn the squid over so that it is oriented fin side down with the arms pointing towards you. Use tweezers to grab the base of the mantle near the arms and pull up gently. Use scissors to make one long incision from the base of the mantle, above the funnel, to the tip of the mantle near the fin. Be careful not to damage any of the internal organs by lifting up with the scissors when cutting. Spread the mantle open to identify and observe the internal anatomy of the squid.
7. Use the SOAR to look at the following internal parts of the squid. After you observe each part, complete a sketch and write down some observations made in the spaces provided on the *External and Internal Anatomy Sheet*.
 - Beak (you may remove the beak to view it more easily by grasping the beak with tweezers and pulling gently)
 - Funnel
 - Gills
 - Ink sac
8. Complete the *Thinking Questions* at the bottom of the *External and Internal Anatomy Sheet*.

External and Internal Anatomy Sheet

| | | | |
|---|---|---|---|
| <p>Mantle</p>  <p>Notes:</p> <hr/> <hr/> <hr/> <hr/> <hr/> | <p>Sucker Discs</p>  <p>Notes:</p> <hr/> <hr/> <hr/> <hr/> <hr/> | <p>Tentacles</p>  <p>Notes:</p> <hr/> <hr/> <hr/> <hr/> <hr/> | <p>Arms</p>  <p>Notes:</p> <hr/> <hr/> <hr/> <hr/> <hr/> |
| <p>Beak</p>  <p>Notes:</p> <hr/> <hr/> <hr/> <hr/> <hr/> | <p>Funnel</p>  <p>Notes:</p> <hr/> <hr/> <hr/> <hr/> <hr/> | <p>Gills</p>  <p>Notes:</p> <hr/> <hr/> <hr/> <hr/> <hr/> | <p>Ink Sac</p>  <p>Notes:</p> <hr/> <hr/> <hr/> <hr/> <hr/> |

Thinking Questions

1. What new discoveries did you make about this organism during the lab?
2. Describe how each part of the squid's anatomy that you observed aids in its survival.
3. If you could "magically" inherit one physical characteristic of a squid, which would you choose and why? Draw a picture of the "new" you!

Squid Bumper Sticker

Create a bumper sticker that could help teach others about the unique survival techniques of SQUID. Be imaginative! Be sure to use lots of color and cool designs.

Squid Riddle

What do these three things have in common?

- Elephant's trunk
- A human tongue
- Squid tentacles and arms



Extensions

Music: Sing a Little Squid Song

Pretend that you are a songwriter. It is your job to create a catchy tune for that loveable sea creature – the squid! Decide upon a tune that is familiar to most of the students in your class. Write lyrics that will teach others about what you have learned. Write your song and make copies to share with fellow students. Your classmates may want to perform it for you. Add music to your composition. Someone in your class might play a musical instrument. Have fun!

Home Economics: Squid Treats

Squid are a delicious gourmet dish. The following recipe is a wonderful dish that is very easy to prepare. There are many more wonderful squid recipes that can be found on the Internet and in cookbooks.

Squid (Calamari) Salad

Ingredients

| | | | |
|-----------------------|--------------|------------------------|---|
| Squid mantle, chopped | Diced celery | White vinegar | Sliced green and red pepper (for color) |
| Chopped onions | Olive oil | Salt & pepper to taste | |

Use about half as much onion, celery and peppers as squid. Use enough vinegar to cover mixture.

Directions

Boil squid pieces in lightly salted water for no more than 20 minutes. Allow the squid to cool in the cooking water. In a separate pan, sauté chopped onions, diced celery, and green and red peppers in olive oil. After the squid is cooled, combine the meat and vegetables in a dish. Add white vinegar to the mixture. Salt and pepper to taste. Marinate for 12 hours. Serve cold.

Squid Rings

Ingredients

| | | |
|-----------------------|------------------------------|--|
| Squid, cut into rings | 2-3 tablespoons of olive oil | 1 cup dried breadcrumbs |
| 2 eggs | 1/2 cup of plain flour | Freshly ground black pepper (to taste) |

Directions

Place the flour in a plastic bag, add the squid rings and, holding the top of the bag tightly closed, shake the contents. Break the eggs into a small mixing bowl, add pepper and beat. Dust off the excess flour from the rings, dip them in the beaten egg and roll in breadcrumbs. Place them on a plate and refrigerate for 15 minutes (to set the breadcrumbs). Heat the olive oil in a frying pan and cook the rings for 15-20 seconds on each side, or until golden brown. Don't overcook! Drop the rings onto a couple of layers of absorbent paper towel to remove excess oil. Serve quickly, piping hot, with quarters of lemon to squeeze on top.

Note: Remember to review safe handling instructions when cooking seafood.

Art: Tentacle Painting

You can make your own paintbrush using materials found in that incredible sea creature – the squid.

Materials

| | | |
|--|----------|----------------------|
| 1 squid (you may use the same squid from the earlier dissection) | | |
| forceps | scissors | small disposable cup |
| wooden probe | water | paper |

Directions

1. If the squid has not already been cut open, do so by placing the squid fin side down and making an incision along the mantle, from the mouth area to the tip near the fin. You should be able to see the silvery-black ink sac lying beneath the tube-like rectum and on top of the large liver.
2. Carefully separate the ink sac from the rectum and the liver using your forceps or a wooden probe. Next, grasp the ink sac with your forceps close to the end nearest the mouth area. Cut the ink sac away from the body of the squid with your scissors and place it in a small cup. Use your forceps and scissors to tear open the ink sac. Add water, 1 mL at a time, mixing constantly, until it reaches the consistency of writing ink.
3. To remove the pen from the squid, you must first push aside the internal organs until you can feel the stiff pen within the mantle. This may require some cutting with your scissors or wooden probe. Once you have located the pen, use your scissors to make a small incision at the base of the pen, cutting through the mantle. Grasp the pen firmly and pull it out. You may want to have a partner help hold the body of the squid down while you do this step.
4. Dip the tip of the pen (from the area of the mantle nearest the fin) into the ink and . . . Voila! You now have your own hand-made sepia ink to draw with!

Be very careful when handling squid ink. It will stain skin and clothing.

Squid Poetry

Write an acrostic poem using one of the following terms:

Squid
Tentacles
Marine
Ink sac



Resources

References

- Coulombe, Deborah, A., 1984, *The Seaside Naturalist: A Guide To Study The Seashore*, Fireside Books.
Synopsis: This book offers an easy to read guide to seaside nature.
ISBN: 0-671-76503-5; Reading Level: Ages 12-adult
- Ganeri, Anita, 1990, *The Usborne Book of Ocean Facts*, EDC Publishing.
Synopsis: This book contains hundreds of amazing facts about the ocean.
ISBN:0-7460-0621-7; Reading Level: Ages 9-upper teens
- Morris, Rick, 1989, *Usborne Mysteries & Marvels of Ocean Life*, EDC Publishing.
Synopsis: This book takes a detailed look at many of our oceans' mysteries.
ISBN: 0-86020-753-6; Reading Level: Ages 9-upper teens
- Pearse, John and Ralph Buchsbaum, 1987, *Living Invertebrates*, The Boxwood Press.
Synopsis: This book is designed to offer an introduction to invertebrates.
ISBN: 0-86542-312-1; Reading Level: College

Internet Links

Giant Squid

The following website offers images and explanations about squid anatomy.
http://www.thetech.org/exhibits_events/traveling/robotzoo/about/squid.html

The Cephalopod Page

This is a great website for information about octopuses, squid, cuttlefish, and nautilus.
<http://is.dal.ca/~ceph/TCP/index.html>

Squid Page

This is a great website for students to navigate for research and classroom projects. It also has terrific links to over 100 websites from around the world that are all about squid. Check this one out!
http://seawiffs.gsfc.nasa.gov/OCEAN_PLANET/HTML/squid.html

Ocean Lab Giant Squid Page

Photos of a giant squid that washed ashore in 1998 are found at this British marine lab's website. There are also links that offer facts about the elusive giant squid.
<http://www.abdn.ac.uk/octopod/archi/index.htm>

Smithsonian Institute Squid Page

Lots of valuable information can be found here for research. There are terrific photos and images that can be used in the classroom.
<http://partners.si.edu/squid/Default.html>

CephBase

View more than 1,700 photos and videos, search by species, and learn about cephalopods' prey and predators at this comprehensive site. The National Resource Center for Cephalopods at the University of Texas Medical branch.
<http://www.cephbase.utmb.edu>

Bridge

The *Bridge* is a component of the National Marine Educator's Association's homepage. It is a very resourceful tool that should be utilized when researching information for lessons that incorporate marine studies. There is a lot of information on squid that can be used for the activities in this folio.
<http://www.vims.edu/bridge/mollusc.html>

Suppliers

Local seafood markets, grocery stores, and bait shops are excellent sources for fresh squid.

If using frozen squid, do not defrost until ready to use. A large squid (about 1.5 feet long) will require at least two hours to thaw.

Carolina Biological Supply Company

2700 York Road
Burlington, NC 27215-3398
Customer Service: 1-800-334-5551
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