

OMSI

Property of Science Playground

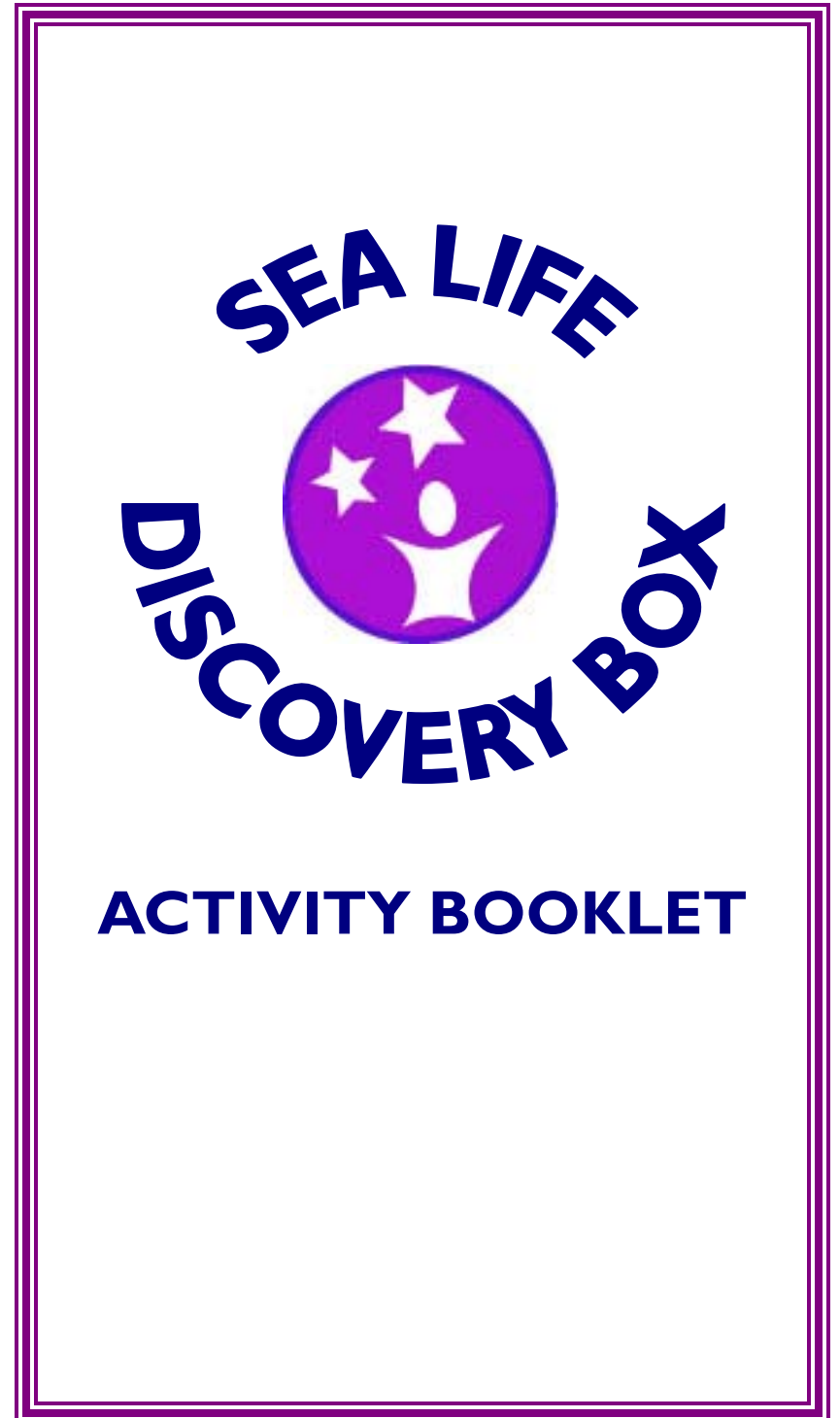


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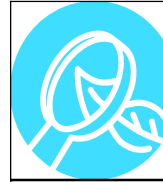
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Skeletal Secrets

Visitors will have the opportunity to learn about how and why some animals use camouflage.

Age Range: 3 & up

Supplies

- Walkingsticks
- Branch stand
- *Walkingsticks* book

Procedure

Explore the visitor's knowledge on the subject through open-ended questions before explaining how the subject works.

Ask: Some animals have a special way of hiding themselves. There is a name for the way animals and insects hide themselves. Does anyone know what that name is?

Say: Camouflage means the hiding of something by covering it up or changing the way it looks. Some insects camouflage themselves to look like sticks, leaves, flowers, bark, or even other creatures.

Ask: Can you think of why insects would make themselves look like a stick?

Say: Insects camouflage themselves so that a predator like a bird who likes to eat insects, can't see them very well. By camouflaging themselves, they stay safe.

Say: I want to show you a real insect who uses camouflage today. It is called a walking stick. Let's see if we can find it.

Explore: Bring out the walking stick on the branch stand. Ask the children to observe and find the walking stick.

Ask: How does the walking stick camouflage himself?

Say: It uses camouflage to look like a stick or a leaf. They stay hidden from hungry predators this way.

Do: Read the *Walkingsticks* book.



Make a Sea Creature

By creating and playing with a butterfly and flower made out of craft materials visitors can learn about anatomy and feeding habits.

Age Range: 3 & up

Supplies (These materials are not in the Discovery Box.)

Option 1

- Pipe cleaners
- Colored tissue paper cut into 4"x4" squares.

Option 2

- Pipe cleaners
- Coffee filters
- Markers

Procedure

Explore the visitor's knowledge on the subject through open-ended questions before explaining how the subject works.

Ask: Has anyone ever seen a butterfly? What did it look like? What was it doing when you saw it?

Say: Today, we are going to make our own butterflies. We have tissue paper to be the wings, and pipe cleaners to hold them together and be antennas.

Do: If using coffee filters and markers, give the children time to decorate the coffee filters with markers before continuing. The coffee filters can then be used as tissue paper.

Do: Illustrate constructing a butterfly while the children make their own. First, fold the pipe cleaner in half.

Say: Now we are going to make the wings. Find the middle of your tissue paper, and pinch it so it looks like a bowtie.

Do: Illustrate pinching the tissue paper into a bowtie shape.

Say: Now, we will wrap the pipe cleaner around the tissue paper to hold the wings in the bowtie shape.

Do: Illustrate wrapping the pipe cleaner around the middle of the tissue paper.

Sea Life Discovery Box Contents

Books

- **Stars of the Sea** by Allan Fowler
- **Fish Eyes** by Lois Ehlert
- **Shoreline Scientist** by Craig Strang
- **Baby Whale** by Lynn Wilson
- **What Lives in a Shell?** by Kathleen Weidner Zoehfeld
- **Somewhere in the Ocean** by Jennifer Ward and T.J. Marsh
- **Sally and the Limpet** by Simon James
- **What's It Like to Be a Fish?** by Wendy Pfeffer
- **Wish for a Fish** by Bonnie Worth
- **Whales & Dolphins** by Caroline Bingham
- **Ocean** by Samantha Gray
- **This is the Sea that Feeds Us** by Robert F Baldwin
- **The Best Book of Whales and Dolphins** by Christiane Gunzi
- **Seashells of the World** by R. Tucker Abbott, Ph.D.

Sea otter puppet

Sea Life Fact Cards set

Underwater floor puzzle

Box with five (5) magnifiers

Box with assorted shells

Box with sea life creatures and four (4) finger puppets

Sea Life specimen set with four (4) pieces

Specimen viewing tray

Layers of the Ocean laminated page and accompanying pieces

Skeletal Secrets laminated pages and accompanying pieces

Introduction to the Discovery Boxes

The main goal of the Discovery Boxes is to give young children hands on and authentic experiences around a big idea. We can introduce the ideas through storybooks, open-ended explorations of real objects, open-ended questions and conversations, investigations and role-playing.

In this activity booklet you will find many things to help you introduce or further explore a thematic topic with young children. It was also designed for an Educator or Volunteer to choose which works best for them and their space. The materials provided can guide you or you can make up completely new activities for the materials in the box. The choice is yours. **We only ask that you supervise the use of items in the box and return it the way you found it!**

The Discovery Box themes were selected for their relation to the real world. Young children are very egocentric and therefore experience most ideas from a personal perspective. For example, activities associated with how things work, animals, habitat, family dynamics, food, shelter, survival hold the most meaning for young children. Keep these in mind when discussing how something works. Try to relate it to these ideas, as they are concepts that young children relate to.

Young children are natural scientists, eager to find out about the world around them. Children use the process of play to investigate in much the same way scientists use the scientific method. A comparison of the two processes reveals many similarities:

Process of Play	Scientific Method
See	Observe
Wonder	Hypothesize
Try	Test
Make Sense	Conclude

Adult roles during play vary from commenting on play, extending the activity and actively participating, to providing verbal interpretations, emotional support and suggestions or alternatives. By fostering children's natural curiosity, adults can help them develop positive attitudes toward learning, as well as important critical-thinking and problem-solving skills. The Discovery Box activities were designed to help children develop confidence in their own abilities.



Sea Animal Lengths

Children will have the opportunity to practice shape identification by matching insect images with see-through outlines of an insects.

Age Range: 3 & up

Supplies

- Insect cards

Procedure

Explore the visitor's knowledge on the subject through open-ended questions before explaining how the subject works.

Do: Put out 5-10 cards and their matching outlines.

Say: I have two different pictures of insects. One is a picture of the outside of an insect and the other is a see through outline of an insect. If I put them together I can match them up. Let's look at some that match.

Ask: Can you see-through the outline to the matching card?

Say: When you put the see through picture on top, it should have the same outline as the picture underneath. Do you want to play a game with them? I will mix them up and you can put them back together. You can be the Entomologist which is what an insect scientists is called.

Ask: Can you match the shapes together?

Do: Help as needed. If the child gets stuck encourage them to rotate the shape or flip it over to match it to the photo image.



Fishing for Facts

Visitors will explore some of the ways insects defend themselves.

Age Range: 3 & up

Supplies

- “Insect Color Defense” chart
- Butterflies specimens under glass
- *Peterson First Guides—Insects*

Procedure

Explore the visitor’s knowledge on the subject through open-ended questions before explaining how the subject works.

Say: When an insect has bright color combinations like red, yellow, orange, and black, that usually means that the insects taste bad, are poisonous, or even sting.

Explore: “Insect color Defense” chart

Ask: How do you think this helps insects?

Say: These bright colors are used as a defense from being eaten.

Ask: What colors are bumblebees? What do bees do if you upset them?

Explore: The Butterfly specimens under glass. Notice the bright colors on the butterfly’s wings.

Ask: What colors do you see on the butterfly’s wings? How do you think these bright colors help the butterfly?

Show: p. 83 of the *Peterson First Guides—Insects*. Compare the Monarch and the Viceroy.

Ask: Do these two butterflies look similar? Do they look exactly the same? What is different?

Say: Monarch butterflies have a bad taste as their defense because

Directions for Using the Discovery Box Activity Booklet

The activities that follow are directions for hands-on experiences that can take place anywhere in the museum. The activities are arranged in the booklet so that the most basic concepts about the topic are covered in the beginning and then move onto to more in depth concepts at the end.

Each activity includes the following:

Icons: These icons will indicate the subject of an activity. All the activities are scientific in their nature, but they may fall more into a craft activity or a game.



Title & Purpose: A brief explanation of the activity.

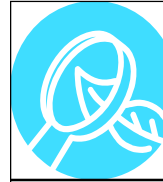
Supplies: These are the items that you need to take out of the box in order to complete the activity. **Please do not take everything out of the box at once or leave the box lid open for children to rummage through. You are responsible for returning the items neatly back into the box. Do not let visitors wander away with the items. Kindly ask them to leave the items with you when they are done. Let the visitor know that the items belong to OMSI and they are for everyone to play with.**

Procedure: It is best to review the activity cards before you interact with the visitors. This allows you to understand the main idea so you can start the activity with confidence. You can read from the script directly or refer to it as needed as a way to converse with visitors. Remember to go with the flow and don’t worry if the child is not interested. Just follow their lead.

Notes: These are helpful hints, cautions and extensions to the activity. It is best to review the entire card before getting started.

Teaching Methods for the Discovery Box Activities

- Don't be a "teacher." Be a partner in learning.
- Let the child lead with their ideas and suggestions for play. Introduce new concepts through your conversations and actions. Talk ideas through as you're doing it. Not only does this introduce a new idea and model how to do it, but also models the concept to the child as a way to share their ideas.
- Test the theories and construct new knowledge through hands-on exploration, investigation and play.
- Model the scientific process, stating it as you do it.
- Model this process to caregivers around you.
- Body language says a lot. Don't just sit in front of them and talk about something or ask questions in an intimidating "authoritarian figure" manner. Get on their level. Invite them to find the answer with you. Ask them to tell you what they think.
- If you don't know the answer to a question ask the child what they think the answer is. Try looking for the answer in a book.
- Play and be silly.
- Go with the flow and expect the unexpected. If a child is not interested in doing what you are suggesting, ask them what they would like to learn, or observe what they are doing with the object and ask them to tell you about it. You could also give them words for their actions. "Oh, I see you like the way the skeleton moves. Can you feel the bones in your body move? Put your hand on your knee and bend it." Show the child how.
- Don't be offended when a child is disinterested. Be interested in what they are interested in. Learning is a two way street. You may have put out an item that you want to teach a child about, but an opportunity has arisen for you to observe and learn what a child will creatively do with that item. You have a chance to observe how they will place meaning onto it and listen to how they relate it to their own lives.



What Would We Wear?

Visitors will have the opportunity to learn about how and why some animals use camouflage.

Age Range: 3 & up

Supplies

- Diver and gear

Procedure

Explore the visitor's knowledge on the subject through open-ended questions before explaining how the subject works.

Ask: Some animals have a special way of hiding themselves. There is a name for the way animals and insects hide themselves. Does anyone know what that name is?

Say: Camouflage means the hiding of something by covering it up or changing the way it looks. Some insects camouflage themselves to look like sticks, leaves, flowers, bark, or even other creatures.

Ask: Can you think of why insects would make themselves look like a stick?

Say: Insects camouflage themselves so that a predator like a bird who likes to eat insects, can't see them very well. By camouflaging themselves, they stay safe.

Say: I want to show you a real insect who uses camouflage today. It is called a walking stick. Let's see if we can find it.

Explore: Bring out the walking stick on the branch stand. Ask the children to observe and find the walking stick.

Ask: How does the walking stick camouflage himself?

Say: It uses camouflage to look like a stick or a leaf. They stay hidden from hungry predators this way.

Do: Read the *Walkingsticks* book.



What Makes a Mammal?

Visitors will have the opportunity to explore the insect vision through the use of specially designed plastic lenses.

Age Range: 5 & up

Supplies

- “How Insects See!” box
- *Eye Wonder Bugs* book
- *The Practical Entomologist* book

Procedure

Explore the visitor’s knowledge on the subject through open-ended questions before explaining how the subject works.

Ask: Do you know what a mammal is?

Say: A mammal is a type of animal that follows five main rules. The rules are:

1. Mammals give birth to live young
2. Mammals nurse their young
3. Mammals have hair or fur
4. Mammals breathe air
5. Mammals are warm-blooded

Ask: Can you think of any animals that fit all of these rules?

Say: (While looking at the visitor.) I can think of one. Here’s a hint: I’m looking at a mammal right now! Humans are mammals!

Do: Let one of the children have a turn trying on the goggles.

Say: Insects like flies have special eyes called compound eyes. These compound eyes have many different lenses to see out of instead of just one lens in each eye like we do. It’s a little like watching the same channel on a 100 different TV’s.

Ask: What do you see? How do you think having eyes like this helps flies?

Say: With eyes like this, flies cannot see very much detail or things that are far away. However, they can see extremely quick movements and things that are close to them.

Layers of the Ocean

Children will be able to explore the habitats of ocean creatures through matching and learning reinforcement.

Age Range: 2 & up

Supplies

- *Wish for a Fish* book
- Layers of the Ocean laminated page and accompanying pieces
- DK Eye Wonder book *Ocean*

Procedure

Explore the visitor’s knowledge on the subject through open-ended questions before explaining how the subject works.

Do: Read *Wish for a Fish* by Bonnie Worth.

Do: Set out Layers of the Ocean laminated page and accompanying pieces face up. Distribute animal pieces evenly between visitors.

Say: Let’s find a where all these animals live.

Ask: Where does your sea creature live? What layer of the ocean does it belong in?

Do: Assist visitors in matching animals to the ocean layers. (Backs of animal pieces match the color of the layer they belong in.)

More information on ocean zones can be found in the DK Eye Wonder book called *Ocean*.



Is it a Fish?

Visitors will have the opportunity to explore what makes a fish a fish.

Age Range: 3 & up

Supplies

- *What's It Like to Be a Fish?* book by Wendy Pfeffer
- Clownfish puppet

Procedure

Explore the visitor's knowledge on the subject through open-ended questions before explaining how the subject works.

Ask: Have you ever seen a fish? What did it look like? Do you know what kind of fish it was? What do you think it eats? Where did you see it?

Say: I know a song about fish. I can teach it to you and then we can sing together!

Sing: "I'm a Little Fishy" Tune of "I'm a little tea pot"
I'm a little fishy, watch me swim
Here is my tail, here is my fin,
When I want to have fun with my friends,
I wiggle my tail and dive right in!

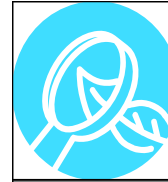
Say: I have a book that can help us learn more about fish.

Do: Read *What's It Like to Be a Fish?* by Wendy Pfeffer. Take time to look at pictures, make observations, and ask open-ended questions. With young children, it may not be necessary to read every word on every page.

Do: Stop on page 11 and name the body parts: Tail fin, dorsal fin, pectoral fins, pelvic fins. Finish reading the book.

Show: The clownfish puppet

Ask: I wonder if this is a fish. How can we tell if it is?



Whale or Shark?

Visitors will have the opportunity to explore the differences between whales and sharks.

Age Range: 3 & up

Supplies

- Plastic whale and shark toys
- DK Eye Wonder book *Ocean*

Procedure

Explore the visitor's knowledge on the subject through open-ended questions before explaining how the subject works.

Ask: Has anyone ever seen a whale? What about a shark? Where did you see them? What did they look like? Were they big or small?

Show: DK Eye Wonder book *Ocean* pages 14 — 19.

Ask: Have you ever seen sharks or whales that look like these in the pictures?

Say: One big difference is that whales are mammals like humans and sharks are a type of fish. For more information on mammals, see activity called 'What Makes a Mammal' on the next page.

Ask: Can you think of some ways that mammals (whales) are different from fish (sharks)?

Do: Bring out the whale and shark toys. Encourage the visitors to sort them into two piles



Just Keep Swimming!

Visitors will create and act out the swimming motions of whales and sharks by creating their very own tails!

Age Range: 2 & up

Supplies

- Whale and shark tail templates
- Construction paper, popsicle sticks, markers/crayons, glue/tape

Procedure

Explore the visitor's knowledge on the subject through open-ended questions before explaining how the subject works.

Ask: Has anyone ever seen a whale? What about a shark? Did you see how their tails moved?

Say: Today we will get to swim like whales and sharks!

Do: Move the whale tail up and down.

Ask: Can you guess whether that was a shark tail or a whale tail? It was a whale!

Do: Move the shark tail from side to side.

Say: Can you guess whether that was a shark tail or a whale tail? It was a shark!

Ask: Would anyone like to swim around like whales and sharks with me?

Do: Hand out whale and shark tails cut out of construction paper. Let them decorate with crayons and markers, attach popsicle stick with glue or tape and swim, swim, swim!

Ask: How many fins does this fish have? Let's count. Does it have a fin on top? Does it have a tail? How about pectoral and pelvic fins? This must be a fish!

Ask: Do you think fish have bones inside their bodies?

Say: Fish do not have bones inside their bodies like humans and animals do. They have a bone-like structure called cartilage. This cartilage is the same thing that gives shape to our ears and is what our fingernails are made of. The cartilage is more flexible than bone and allows the fish to move smoothly through water.

Do: Show the fish x-rays.

Say: These are x-rays of two different kinds of fish. Can you see the cartilage? How do the fish look different from each other? How do they look the same? The smaller fish is a Pumpkinseed Sunfish which lives in warm waters such as Lake Erie and the Ohio River. The larger fish is a Frontosa Cichlid which lives in the deep waters of Lake Tanganyika in Africa.



Sea Songs

Visitors will have the opportunity to sing a song about the sounds different sea animals make!

Age Range: 3 & up

Supplies

None

Procedure

Explore the visitor's knowledge on the subject through open-ended questions before explaining how the subject works.

Say: I have a song that can help us remember the body parts of insects. I'll sing it one time by myself, and then we can sing it together.

Sing: To "The Wheels on the Bus"

The sharks in the sea go chomp, chomp, chomp!
Chomp, chomp, chomp!
Chomp, chomp, chomp!
The sharks in the sea go chomp, chomp, chomp!
All through the day!

Other verses: The fish in the sea go swim, swim, swim...

The lobsters in the sea go pinch, pinch, pinch...
The octopus in the sea go wiggle wiggle wiggle...
The sea horse in the sea rocks back and forth
The whale in the sea goes quirt squirt squirt...
The clam in the sea goes open and shut...
The crabs in the sea go click click click...
The jellyfish in the sea go bloop bloop bloop...

Do: As you sing, act out the song!



The Fishy Pokey

Visitors will have the opportunity to sing a song about the body parts of a fish!

Age Range: 3 & up

Supplies

None

Procedure

Explore the visitor's knowledge on the subject through open-ended questions before explaining how the subject works.

Say: I have a song that can help us remember the body parts of insects. I'll sing it one time by myself, and then we can sing it together.

Sing: Sung to 'The Hokey Pokey'

Put your left fin in, take your left fin out
Put your left fin in and you shake it all about
You do the fishy pokey and you turn yourself around
That's what it's all about!

Right fin...
Left gill...
Right gill...
Head...
Tail...

Do: As you sing, act out the part of the fish you're singing about. Just like the Hokey Pokey!