Exploring Echolocation

The ocean is filled with undiscovered wonders and sometimes areas of darkness that make it difficult to see. Dolphins have a special tool that helps them navigate the depths of the ocean—echolocation! Echolocation is a process by which animals, like dolphins, locate objects by emitting sounds and listening to echoes as the sound bounces back. Scientists believe that through this process, dolphins are able to obtain information about their surroundings, including the size, shape, distance and direction of nearby objects like predators or prey. Dolphins eat a variety of food including fish, squid, crustaceans and even small sharks and rays. If their prey is hiding in rocks or coral or if lighting is not the best, dolphins can use echolocation to help locate their prey.

Have you ever had difficulties understanding someone speaking to you from another room? How did you solve this problem? Most of us would either ask the person to speak up or look where their voice is coming from. In some ways, this is similar to how echolocation works for dolphins—by utilizing sound, echolocation helps dolphins locate objects they are unable to examine with their eyesight alone. Head to the next page to learn more about how dolphins like Echo use echolocation by exploring sounds in your own home environment!

Making Waves with Sound

Now that you have a better understanding of what echolocation is, let’s dive deeper to explore how sound moves through different materials like water and wood. First, finish the phrase below by unscrambling the last word.

One way dolphins can find prey is by using ________________________

Answer Key: ECHOLLOCATION

With your eyes closed, have a family member or friend communicate the phrase in the box above in various locations at different volumes. Record what you hear in the table below—leave the space blank if you do not hear anything and note when you were able to understand them.

<table>
<thead>
<tr>
<th>Location</th>
<th>What did you hear?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Whisper:</td>
<td>Normal:</td>
</tr>
<tr>
<td>Loud:</td>
<td></td>
</tr>
</tbody>
</table>

Have a friend or family member stand on one side of a big tree while you stand on the other side of that tree. Ask them to speak into the tree. Nature Note: Be sure to check with an adult before heading outdoors.

<table>
<thead>
<tr>
<th>Whisper:</th>
<th>Normal:</th>
<th>Loud:</th>
</tr>
</thead>
</table>

Fill up a sealable bag with water. Press the sealed bag against your ear. Ask them to say the phrase from the other side of the bag.

<table>
<thead>
<tr>
<th>Whisper:</th>
<th>Normal:</th>
<th>Loud:</th>
</tr>
</thead>
</table>

Stand facing away from your friend or adult and have them say the phrase standing with their back to yours.

<table>
<thead>
<tr>
<th>Whisper:</th>
<th>Normal:</th>
<th>Loud:</th>
</tr>
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</table>

Finally, head back inside, stand in different rooms and have them say the phrase.

<table>
<thead>
<tr>
<th>Whisper:</th>
<th>Normal:</th>
<th>Loud:</th>
</tr>
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</table>

When did you hear the phrase the best?

When was it most difficult to hear or understand the phrase?

Why do you think this was the case?

You may not have used echolocation to hear what your friend or family member was saying to you, but now you have a better understanding of how and why dolphins use echolocation in the ocean!
Rainforests Of The Sea

Though coral reefs look like a collection of plants or brightly colored rocks, you might be surprised to know that corals are actually tiny living animals called polyps. Together, large colonies of coral polyps form diverse ecosystems that we call coral reefs. Although coral reefs only cover less than 1% of the ocean floor, amazingly, they provide a home to about 25% of all ocean species. With such a rich diversity of life, it’s no wonder that coral reefs are sometimes referred to as the “rainforests of the sea.”

Found in warm, shallow waters around the world, coral reefs play an incredibly important role in the survival of many species. From tiny fish, to dolphins like Echo and his family. For starters, corals help filter ocean water and keep it clean for all life to thrive. Coral reefs also provide shelter for smaller animals to hide and raise their young, while larger animals hunt for food near coral reefs due to the abundance of life that lives there. Coral reefs even provide natural protective barriers for human communities by withstanding storms and acting as buffers to help guard coastal areas from erosion.

Unfortunately, coral reefs face many serious threats. Pollution, overfishing, coastal development and warming ocean temperatures all threaten coral reefs, as well as the animals that depend on them for survival. Luckily, no matter where you live, everyone can play a role in helping to protect coral reefs and their inhabitants with simple actions like recycling or sharing what you know about corals with others. Be inspired by the beauty and diversity of corals and head to the next page to create your own colorful coral reef scene.

Disney Conservation
As a part of its efforts to save wildlife, the Disney Conservation Fund and Disney Conservation Team Wildlife are collaborating with experts in the Caribbean and Florida to invest in comprehensive research and taking action to create coral nurseries, limit harmful human contact around existing reefs and promote reef rehabilitation and ecosystem resilience.

You can learn more about the Disney Conservation Fund by visiting Disney.com/conservation

Underwater Watercolor

Artists frequently use watercolors to create paintings of the natural world, especially when trying to recreate the fluid look of an underwater scene. Create your own artistic rendition of a coral reef habitat like the ones featured in Disneynature DOLPHIN REEF. Use different watercolor textures to bring diverse corals to life. You can practice the textures below in their corresponding bubbles, and then pick and choose a combination to create your coral reef on the canvas below!

Ocean Spray
After creating a shape of color, use your brush to splatter drops of water on the wet paint.

A Salty Ocean
Create a shape of color, sprinkle on some salt, and let it dry.

Prints of the Sea
Use your finger like a stamp to create a pattern on wet paint.

Sea Sponges
Soak up some watercolor onto a dry sponge and use it to stamp dry paper.

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Caring For The Ocean

The ocean is filled with incredible creatures, both big and small—from whales and dolphins like Echo and his family, to tiny fish and corals. But, many of these animals and the ocean ecosystems they call home are threatened by issues such as pollution, habitat destruction, unsustainable fishing practices.

Having a positive attitude toward all living things can help make a difference for their well-being. Combine this positive attitude with actions that would benefit the world around us—including the ocean—and make an impact! It may seem like a big task, but there are many things you can do in your own home or backyard to help marine animals and the ocean as a whole. Consider a few ways you can help:

**Take Care When Exploring Marine Habitats.**
Avoid standing on or touching corals when swimming or snorkeling as reefs can take decades to rebuild once damaged. When visiting the beach, be sure to stay in designated areas and be careful not to disturb habitat such as bird or sea turtle nesting areas.

**Reduce, Reuse and Recycle.**
Items like plastic bags and single-use water bottles can be harmful to the animals that live in the ocean. Reduce the use of single-use plastics by reusing items and recycling anything you are able to.

**Be Drain Smart.**
All drains lead to the ocean and not everything should go down the drain. Items like grease, cooking oil and cleaning supplies should be kept away from drains and recycled or disposed of properly.

**Make Wise Shopping Choices.**
Look for and purchase products that are friendly to the environment and sustainably sourced. Choose sustainable seafood to keep fish and shrimp populations in balance.

**Support Conservation Efforts.**
Join or organize a beach, river, lake or stream clean-up, or volunteer with your local marine or environmental organization or AZA accredited aquarium (Go to AZA.org to learn more). Visit DisneyAnimals.com to learn more about incredible ocean animals and what you can do to help them.

Now that you have a better understanding of ways to protect the ocean, head to the next page to develop your own commitment to help maintain a healthy ocean.

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**Appreciate Our Oceans**

Think about a time when you visited the beach or watched something about the ocean on television. Were you inspired by the natural beauty of the ocean? In the bubbles below, finish the prompts by writing out or drawing the aspects of the ocean that you care about. Then, go to the next page to create your own conservation pledge.

I will protect them by:

This will make a positive impact because:

An animal I want to protect:

This will make a positive impact because:
Pledge to Protect

Utilize the answers you provided in the bubbles on the previous page to complete your own conservation pledge. Cut out the statement and hang it on your wall as a daily reminder of your commitment.

Disney has a long history of supporting oceans and marine life around the world. Grants from the Disney Conservation Fund and expertise from Disney Conservation Team Wildlife have helped leading conservation organizations and communities to establish coral nurseries to help to re-grow their damaged reefs, build fisheries that save fish and provide local job opportunities, rescue stranded dolphins, and inspire children to explore and protect coastlines, reefs and other marine habitats.

My Conservation Pledge

I, _______________________________ , will protect ________________________________ Animal
by ________________________________ Verb/Action which will make a positive impact because __________________________________________.

Acknowledgement

Disney’s Animals, Science and Environment would like to take this opportunity to thank the amazing teams that came together to develop the Disneynature DOLPHIN REEF Activity Packet. It was created with great care, collaboration and the talent and hard work of many incredible individuals. A special thank you to Dr. Mark Penning for his ongoing support in developing engaging educational content that connects families with nature. These materials would not have happened without the diligence and dedication of Kyle Huetter who worked side by side with the filmmakers to help create these compelling activities. Special thanks to Bethany Eriksen and Ashley Dion who authored the unique writing found throughout each page and whose creative thinking and artistry developed games and activities into a world of outdoor exploration. Special thanks to directors Alastair Fothergill and Keith Scholey as well as producer Roy Conli, for creating such an amazing story that inspired the activities found within this packet. Lastly, thank you to Angela Shaw, Noah Duman and Samantha Rosenberg at The Walt Disney Studios for your help and unwavering support of this project.

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