



Intertidal Discovery Hike

Objective:

To explore the beach and become familiar with the plants and animals in the marine intertidal habitat while collecting some basic observational data.

Concept:

Students need time to "discover" the beach. An initial Discovery Hike can provide a hands-on learning environment by familiarizing the students with common abundant organisms and an introduction to tide zones.

Materials:

- ⊙ Handout: Biodiversity Checklist
- ⊙ Clipboards
- ⊙ Marine invertebrate guides or ID charts
- ⊙ Stopwatch

Preparation:

Make copies of the Biodiversity Checklist.

All classes should participate in a beach discovery walk as an initial field trip to observe local organisms, check out the various types of organisms to be found at the different tidal heights and to do an initial species biodiversity checklist. This will help classes who are participating in the Coastwalk and/or Intertidal Sampling projects pick their species to monitor and get the students excited about their field work.

Make sure you have done the pre-trip activities relevant to this field trip. Students should be dressed warmly and have an idea of what they will be looking for on their beach walk.

Activities & Procedures

Tell the students that they are going on a Discovery Hike which means they should walk with eyes

wide open - exploring every nook and cranny on the beach, searching under rocks and beneath algae, and looking for plants and animals in every tide zone.

As a class you should decide on one of the following activities to do while you are at the beach as a way to structure your field experience. At the very least you should do the Biodiversity Checklist, which will provide data on the organisms that can be found at your beach and can provide the beginnings for further inquiry activities if you choose to do them. Timed counts can be a very exciting way to focus your search for animals and are highly recommended.

Biodiversity Checklist:

Use this list to check off all of the organisms you observe on the beach while on your Discovery Hike.

Divide your class into tide zones and have groups of students exploring tidal bands on the beach or you can have different groups walk a vertical band by beginning at the water's edge and working their way up to the highest level on the beach where an organism can be found.

Positively identify the organisms by checking with your identification guide and matching the scientific name if possible.

Once done, the class data can be combined to get a final comprehensive species diversity list.

Timed Counts:

Timed counts are a beach scavenger hunt! Groups will count one species (or animal group) of intertidal organism at a time for a 10 minute period.





Intertidal Discovery Hike *Continued*

Following at least 15 minutes of initial beach exploration, ask the class to choose the animal groups to count based on what they saw in their explorations.

Divide students into pairs.

Work as a class to assign each group an animal (or animal group) to count.

Each group should search for animals in a limited area where the category of animal is known to occur. For example, if you are searching for seastars, go to where you know seastars occur, then start your 10 minutes of counting.

If you have a large class, pairs of students can count the same animals but search in different areas of the beach. The numbers can then be combined for data analysis.

The goal is to count as many of the organisms as possible to give you an idea of the overall abundance of the organism on your beach.

Instruct students that they should only count those organisms they can see on the surface and should not turn over rocks or search under seaweed.

A student or the teacher should give the signal for starting and stopping the counts. Each group should count only one category of animal at time.

At the end of 10 minutes, gather students together to share observations.

Do another timed count with other animals, if you have time.

Wrap-up:

Hold a scientific convention to give students a chance to share their findings, talk about differ-

ences in observation techniques and scientific monitoring methodology, and learn from their peers.

Gather the group together and have a scientific convention. Ask each student group to report their findings to the rest of their scientist peers.

Act as a convention reporter, asking key questions of the scientists and audience: "How did you come about these findings?" and "How would you have gone about answering this question?"

In particular, it is key to prod students to ask and answer their own questions about the data they are collecting and the merits of their methodology.

Make a list of all of the students' questions, group them in categories and discuss what makes a good "inquiry" or testable question.

Stress that scientists are just everyday people who have questions and attempt to answer to them. Sometimes you can begin with one hypothesis but over time it can change with more observation or knowledge. Discuss the importance of sharing scientific knowledge within not only the scientific community, but the entire community at large as well.

Extensions & Lesson Connections:

This lesson works as a great introduction to student-designed inquiries or more involved monitoring projects.

Evaluation:

Assess data sheets for completeness and accuracy. Evaluate student participation and cooperation during group work, and observe student contributions during the scientific convention.



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INTERTIDAL BIODIVERSITY CHECKLIST

Molluscs:

Bivalves

- Butter Clam
- Steamer/Pacific Littleneck Clam
- Nuttall's Cockle
- Truncated Mya
- Northwest Ugly Clam
- Arctic Rock Borer
- Baltic Macoma
- Stained Macoma
- Pacific Surf Clam
- Pacific Blue Mussel
- Horse Mussel
- Pink Scallop
- Rock Jingle

Snails

- Sitka Periwinkle
- Helicina/Spiral Margarite
- Puppet Margarite
- Hairy Triton
- Arctic Moonsnail
- Channelled Dogwinkle
- Emarginate Dogwinkle
- Frilled Dogwinkle
- File Dogwinkle
- Big Mouth/Paper Whelk
- Amphisna Snail

Limpets

- Dunce Cap Limpet
- Plate Limpet
- Shield Limpet

Chitons

- Black Katy/Leather Chiton/Bidarki
- Lined Chiton
- Mossy Chiton
- Tiger Chiton
- Gumboot Chiton
- Dwarf Chiton

Nudibranchs

- Maned/Shaggy Nudibranch
- False Sea Lemon/False Lemon Peel
- Opalescent Nudibranch
- Barnacle-Eating Nudibranch

Pulmonates

- Leather Limpet
- False Limpet

Cephalopods

- Pacific Octopus
- _____
- _____
- _____
- _____

Arthropods:

Shrimp

- Broken-back Shrimp
- Coonstripe Shrimp
- Sand Shrimp

Barnacles

- Acorn Barnacle
- Thatched Barnacle

Amphipods

- Beach Hopper
- Pink Beach Hopper
- Skeleton Shrimp

Isopods

- Pillbug Isopod
- Rockweed Isopod

Crabs

- Black-clawed Cancer/Pygmy Rock Crab
- Helmet/Horse Crab
- Decorator Crab
- Graceful Kelp Crab
- Carapace/Hairy Crab
- Red Hermit Crab
- Bering Hermit Crab
- Hairy Hermit Crab
- Greenmark Hermit Crab
- Widehand Hermit Crab
- Heart Crab
- Umbrella Crab
- _____
- _____

Cnidarians:

Anemones

- Burrowing Green Anemone
- Orange Colonial Anemone
- Frilled/Plumose Anemone
- Christmas Anemone
- Scarlet Anemone

Sea Jellies

- Moon Jelly
- Many-Ribbed Hydromedusa
- Sea Nettle
- Lion's Mane Jelly
- _____

Echinoderms:

Sea Stars

- True Star
- Little Six-rayed Star
- Leather Star
- Sunflower Star
- Ochre Star
- Red-banded/Rainbow Star
- Morning Sun Star
- Stimpson's Sun Star
- Rose Star
- Blood Star

Brittle Stars

- Daisy Brittle Star
- Serpent Star

Sea Urchins

- Green Sea Urchin
- Purple Sea Urchin
- Red Sea Urchin

Sea Cucumbers

- Red/Orange Sea Cucumber
- Silky Sea Cucumber
- Black/Tar Spot Sea Cucumber
- _____

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INTERTIDAL BIODIVERSITY CHECKLIST (Page 2)

Worms and Worm-like Organisms:

Annelids

- Mussel/Clam Worm
- Northern Feather Duster/Carpet Worm
- Cone Worm
- Free Swimming Scale Worm
- Commensal Scaleworm
- Calcareous Tube Worm
- Spiral Tube Worm
- Terebellid/Spaghetti Worm
- Blood Worm
- Slime-Tube Worm

Flatworms

- Giant Flatworm

Nemerteans

- Amphiporous Worm
- Red Ribbon Worm
- Black/Green Ribbon Worm

Echiurans

- Fat Innkeeper/Alaskan Spoonworm

Sipunculids

- Peanut Worm

- _____
- _____

Sponges:

- Breadcrumb Sponge
- Purple Encrusting Sponge
- Orange Sponge
- Wandering Sponge

Brachiopods:

- Transverse Lampshell

Ctenophores:

- Gooseberry
- Comb Jelly

Bryozoans:

- Encrusting Bryozoan
- Staghorn Bryozoan

Chordates:

Tunicates

- Colonial Tunicate/Sea Pork
- Sea Peach

Fish

- Tidepool Sculpin
- Gunnel Fish
- Pacific Sand Lance
- Northern Clingfish

Other:

- _____
- _____
- _____

Total Intertidal Biodiversity Count: _____

Other Observations:

Mammals and Birds

Abnormalities in animals

Landscape Changes

Human Impact

Location of Survey: _____ **Date:** _____

School/Group: _____ **Weather:** _____

Low Tide: _____ **Wind:** _____ **Air Temp:** _____ **Water Temp:** _____

Other Notes: _____
