

TALKING TO THE TEXT and ANNOTATING

Instructions and Rubric

Name: _____

Per: _____

<input checked="" type="checkbox"/>	TASK	5	4	3	2	1
	Annotate the Title "I already know..." "I want to know..." "This makes me think of..." "I wonder..."					
	Annotate Pictures, Drawings, Graphs "This shows..." "This tells me..." "What I don't understand is..."					
	Vocabulary 1. Circle or highlight bolded vocabulary words and other words you do not know. 2. Add definitions using the article, your textbook or a dictionary.					
	Questions Ask at least 1 question per page about something you read.					
	Connections Describe connections between 1. The reading and yourself, 2. The reading and your world or something else you have read					
	Summarize Clarify your understanding by summarizing the text into your own words at the bottom of each page or in the margins "In summary, ..." "After reading this, I've learned that..."					

Total Score:

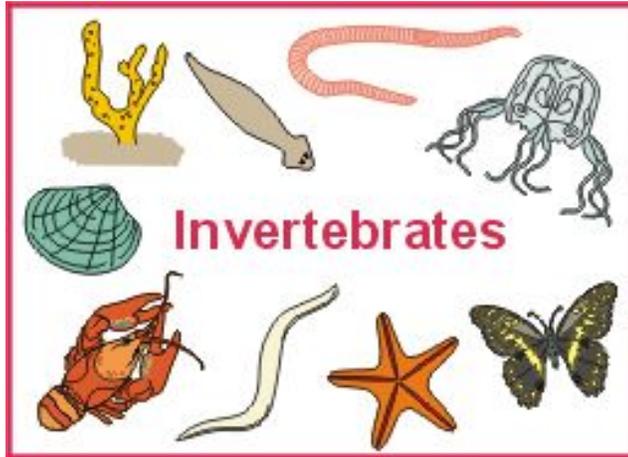
- 5 = ADVANCED effort and information
- 4 = GOOD effort and information
- 3 = SOME effort and information
- 2 = VERY LITTLE effort and information
- 1 = NO EVIDENCE of effort or information

	ANNOTATIONS, QUESTIONS, NOTES
<p style="text-align: center;">INTERTIDAL HABITATS</p> <p style="text-align: center;"><i>Adapted from Marine Science Institute</i></p> <p>An invertebrate is an animal without an internal supporting structure, better known as a backbone. As a group, the invertebrates are highly successful in the natural world and are well adapted to many habitats. To become well adapted means that, over time, the organism's body structures and behaviors have changed to suit the habitat. They are found everywhere: on land and in the soil, in freshwater, in saltwater, and in the bodies of</p>	

other animals. In fact, invertebrates make up 97% of all the animals on the earth.

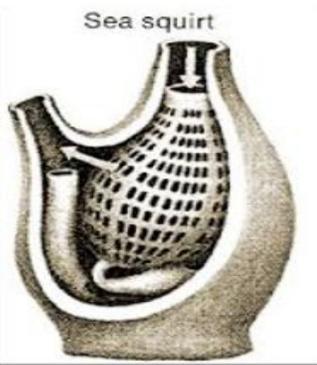
Intertidal invertebrates

are simply invertebrates living between the range of the highest and lowest tides. In the Marine Science



Institute program we will compare the invertebrates of the **San Francisco Bay** to those of the **Rocky Shore** of the Pacific Coast and see how different habitats favor different **adaptations**.

San Francisco Bay Habitat:

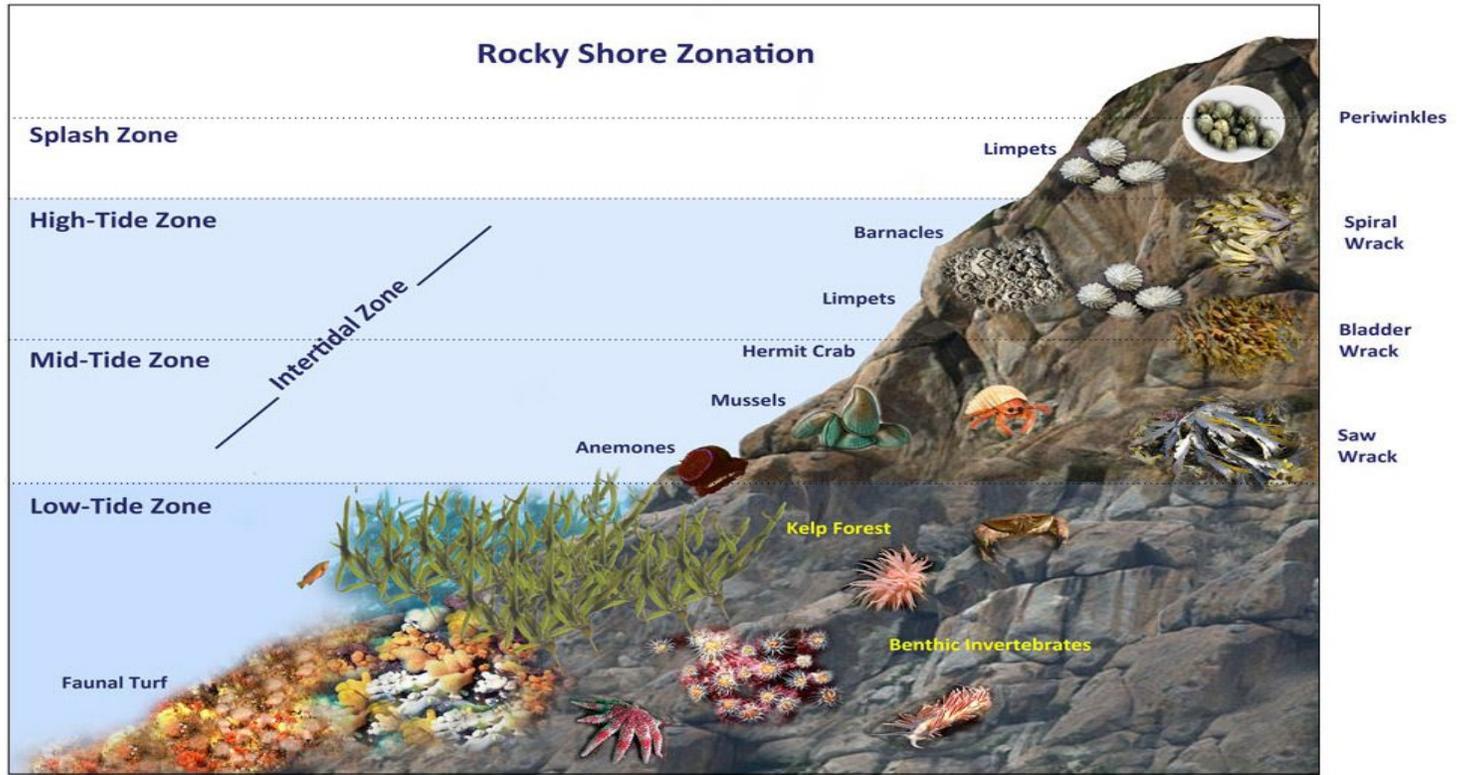


Many people don't realize how many communities of invertebrates live in and on the muddy, bottom sediments of the S.F. Bay Estuary. This area is called the **benthos**, and is a habitat for many varieties of plant and animal life. Crabs, snails and sea squirts live on top of the Bay's mud, while clams, mussels and tube worms feel more at

home in the mud. Each has its own set of adaptations to feed, move and hide from predators.

Unlike the invertebrates of our coast, most of the invertebrates living in the bay are **non-native**, having been introduced to the bay through human activities. Invertebrates living inside San Francisco bay have less need for rugged bodies of their coastal peers but

they must deal with the added stress or changing **salinities** (which are levels of salt in the water) since they live in an estuary, which is the water where the ocean meets a river on land.



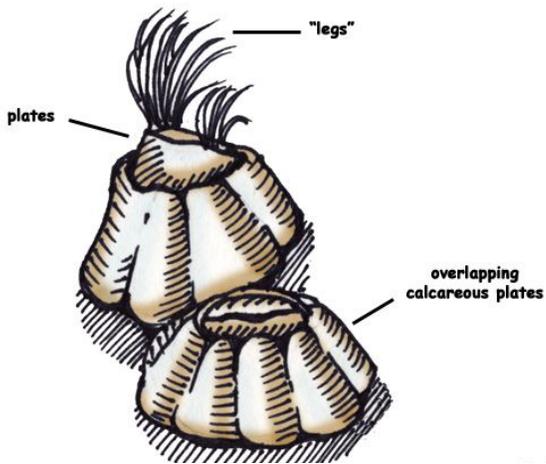
Rocky Shore Habitat:

The rocky shores of the Pacific coast have some of the world's richest intertidal life. These rocky shores are usually layered shale (a soft rock) leading up to steep cliffs. The changing tide levels often form tidepools which are home to a huge diversity of marine invertebrates. These are regions of constant and radical change. During high tide the animals and plants are underwater, but during low tide they are exposed to pounding waves, drying wind, rain that dilutes salinity, and air, which can be very hot or extremely cold. In addition to these stresses, intertidal animals are also exposed to predation from land animals such as sea gulls, sandpipers, and, unfortunately, humans. It's a tough life, and in order to survive, these intertidal dwellers have adapted to these kinds of adversity.

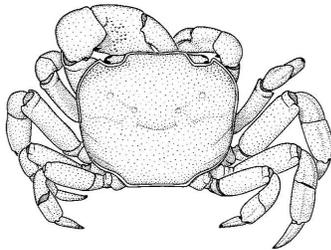
The intertidal zones extend from the highest wave-splashed rocks down to levels that are only uncovered by extreme low tides. There are four basic zones:

Zone 1: The splash zone is the uppermost zone that is closest to the cliff area, and is only covered during very high tides. It receives wind-blown spray which moistens animals such as blue-green algae, periwinkles, limpets and acorn barnacles. **Barnacles** are “clingers”, and can close their shells and wait for the return of oxygenated, food-bearing water.

Barnacles
Balanus glandula



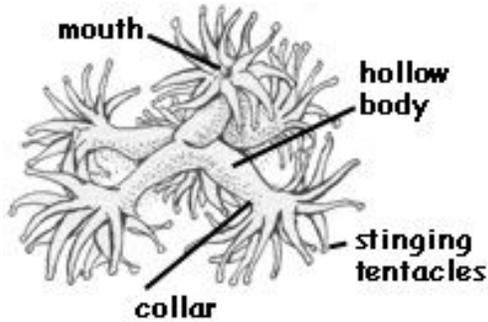
Zone 2: High tide is the next zone down, and may be **exposed** (left uncovered by water) for 12 hours at a time. This area may have large rocks and boulders, which during winter storms can pound the animals at this level. Animals found here include the lined shore crab, California mussel, hermit crabs and turban snails.



Zone 3: The middle zone is less physically stressful, as exposure may last only six hours or less. It is the center of the intertidal region and has the most abundant number of inhabitants. Green sea

anemones, sea stars, and purple sea urchins are a few of the species found here.

Sea Anemone
(general anatomy)



Zone 4: The low tide zone is only exposed during times of the new or full moon (minus tides). It can be the largest zone, and has a complex diversity of animals competing for food and room to grow. Here, clinging animals are again visible. Anemones resist drying at low tide by contracting their delicate feeding tentacles and looking like small stumps on the rock. Sea stars can be found in clumps under rocks, using their tube feet to hold on. Mussels attach themselves to rocks by secreting tough byssal threads.

Notes: _____
