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A COOPERATIVE PROJECT OF THE SANTA BARBARA NEWS-PRESS AND THE EDUCATORS' ROUNDTABLE, PUBLISHED MONTHLY TO PROMOTE LEARNING AMONG YOUNG READERS IN NATURAL SCIENCE, HISTORY, TECHNOLOGY, AND ART

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This Month's Theme: Sand Crabs at the Beach!

Living on Sandy Beaches

The sand-covered area where the land meets the sea can be a difficult place to live. It has only a small number of plants and animals compared to other shoreline habitats. Sandy beach animals must be able to move quickly to stay above the waterline or to burrow in the sand. One of the biggest challenges is that sand is always shifting or moving. Burrowing beneath the sand protects some animals from predators, waves, drying out, and extreme temperatures.

One of our favorite sandy beach dwellers is the sand crab or Pacific mole crab (*Emerita analoga*). It is a fast moving, rapidly burrowing crab. The back legs are like paddles, making it a good swimmer. It digs into the sand backwards and can bury itself in less than 1.5 seconds, with its head near the surface. Only the eyes and antennae are held above the sand. When a wave recedes, its large antennae are unfurled to capture phytoplankton (plant plankton). The entire population of sand crabs moves up and down the beach with the tides.



Photo by Matthew Sata

Close-up look at a female sand crab with eggs.

The sand crab is one of the most important herbivores (plant eaters) on the beach and is a vital link in the sandy beach food web. Sand crabs are prey for birds, mammals, and fishes. Humans collect them for bait in recreational fishing. In Southern California, approximately two million sand crabs are taken for bait each year.



Photo by Claire Fackler, NOAA National Marine Sanctuaries

Measuring a sand crab carapace.



Photo by Claire Fackler, NOAA National Marine Sanctuaries

Young scientists monitoring sand crabs at the beach.

Sand Crab* Quick Facts (*Pacific Mole Crab)

Description:
Egg-shaped and small in size; carapace (shell) of females grows up to 35 mm, males up to 22 mm; gray or sand colored. They have two pairs of antennae to gather food and oxygen and, unlike many other crabs, do not have claws or spines.

Distribution:
Along the Pacific Coast from Alaska to Baja California in the northern hemisphere and from Ecuador to Argentina in the southern hemisphere.

Habitat:
Live on exposed sandy beaches; spend most of their time buried in the shifting sand of the swash zone. The swash zone is the area between the highest and lowest reach of the waves.

Diet:
Suspension feeders; use large, feathery secondary antennae to sieve food from the water; feed primarily on small, drifting phytoplankton (plant plankton).

Monitoring Sand Crabs

Channel Islands National Park has been monitoring (observing and recording) sand crabs and other sandy beach animals for almost 20 years. Channel Islands National Marine Sanctuary and other national marine sanctuaries in California have developed a monitoring program for students. The LiMPETS (Long-term Monitoring Program and Experiential Training for Students) network provides an opportunity to teachers and students to experience the scientific process firsthand. Students use methods

similar to those of park and university scientists and learn the importance of taking care of our local marine ecosystems. The data collected by the park and the LiMPETS network can help us know if and how our beaches are changing. The impact of any future natural or human-caused event cannot be measured without such data. Big changes in sand crab populations can be an indicator of a larger problem in the ecosystem.

To find out how you can become involved in LiMPETS visit www.limpetsmonitoring.org

How Can You Help Sand Crabs?

It's important to keep beaches clean for sand crabs and other animals that live there. To find out a way you can help, use the letters in the grid at the right to fill in the empty boxes. Printed above and below each empty box are coordinates to two possible letters. To solve the puzzle, choose the correct one for each box. Four boxes have been filled in for you.

3B	4D	4B	2A
		'	
2C	1A	3B	1D

1A	2C	3C	3A	1D
f				
3A	1B	3D	2D	4A

A	B	C	D
1	o	r	p
2	y	a	d
3	e	m	g
4	s	n	u

4D	3A	1B	4A	1D	4C
					l
3B	1A	2B	1C	4D	2B

4D	2A	4B	2B	3D	4C	1C
3C	2D	3A	1A	4B	2A	3D

1C	4C	2A
2C	2B	3B

1A	2C
3C	4B

3D	3A	1C	1D	2B	2C	3D	4C	1B
4A	2D	2C	1C	3A	3B	4A	3A	1D

1	9
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Answer: Don't forget coastal cleanup day on September 19!



CALIFORNIA COASTAL CLEANUP DAY
SATURDAY, SEPTEMBER 19, 2009 • 9AM-NOON
Presented by California Coastal Commission and "White House Market"


To participate in Coastal Cleanup Day go to www.coastal.ca.gov/publiced/ccd/ccd2.html

Page by Carol Peterson, Channel Islands National Park and Laura Francis, Channel Islands National Marine Sanctuary

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