

Nature's Microworlds



The Sunlit Zone

The sunlight zone contains most of the oceans' plant and animal life. Here you can find a wide variety of plants and animals that require sunlight to live and grow. This zone extends from 5 to 300 feet and has a temperature range of 68 to 56 degrees Fahrenheit.

OCEAN LIFE

March 10, 2003
www.courierpostonline.com

Brainstorm!

SUNLIT ZONE

The ocean is home to billions of plants and animals, from microscopic plankton to the giant blue whale. Most marine life is found in the warm lighted upper zone also known as the euphotic zone. This is where photosynthesis occurs, supporting vital plantlife and aquatic microorganisms called plankton, which form the basis of the food chain.



Part one of three

Marine life is divided into three vertical zones based on the amount of light penetration. This page is the first of three parts. Collect them all and tape together to make one large poster. Look for part two on Monday, March 17, 2003.

A representation of the ocean at a continental slope, similar to the Pacific Ocean Basin. Drawing is not to scale.

Graphics and text by
LORI A. GALLO
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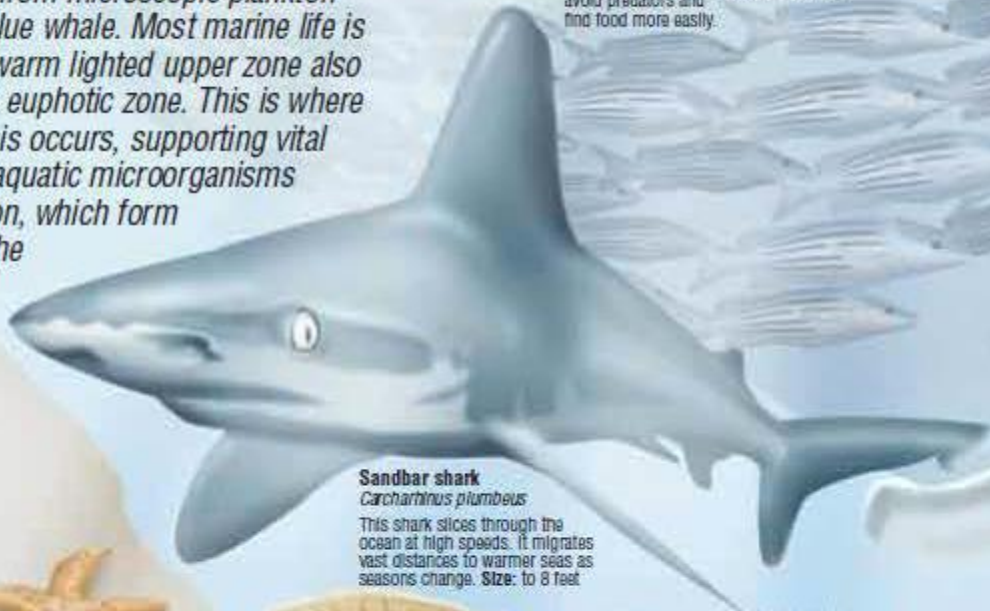
650 feet



Bottle-nosed dolphin *Tursiops truncatus*
Social mammals that swim in groups called pods. They are powerful and acrobatic swimmers.
Size: to 12 feet

Plankton
Microorganism with the greatest amount of biomass in the oceans. They play a role in the food chains and oxygen production. They are floating plant and animal life.

School of fish
Some fish like Silver snappers swim in large groups called schools or shoals to help avoid predators and find food more easily.



Sandbar shark *Carcharhinus plumbeus*
This shark slices through the ocean at high speeds. It migrates vast distances to warmer seas as seasons change. **Size:** to 8 feet



Starfish *Asterias rubens*
Starfish move slowly across the ocean floor. They eat mussels and clams. Suckers on their feet pull the shells apart, then they push their stomachs into the gap and eat their prey. **Size:** 20-inch diameter



Green sea turtle *Chelonia mydas*
Paddle-like flippers allow this reptile to move gracefully through water. They can swim underwater for two hours before coming to the surface for air.
Size: to 4 feet



Hammerhead shark *Sphyrna zygaena*
Unlike most sharks, the hammerhead shark travels in schools of up to 100. Eyes on their wide head allow them to see more.
Size: 14 feet

Phytop

Twilight Zone

Dive a little deeper into the twilight zone and discover even more interesting ocean life. From 300 to 3,300 feet, you'll find many fascinating animals, but usually no plants due to the lack of sunlight. The temperature in this zone ranges from 56 to 43 degrees. Many of these fish have their own lights to be able to see or attract their prey in these murky waters.

TWILIGHT ZONE

March 17, 2003

www.courierpostonline.com

Beneath the sunlit surface waters, light grows dimmer and plants can no longer exist in this area, also known as the disphotic zone. The animals who live here have adapted unique ways to survive the dimly lit waters, cold temperatures and increasing water pressure.



Part two of three

Marine life is divided into three vertical zones based on the amount of light penetration.

This page is the second of three parts. Collect them all and tape together to make one large poster. Look for part three on Monday, March 24, 2003.

To buy a copy of the March 10th paper which contains part one, call 1-800-677-6289.

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3,300 feet —

Crystal jellyfish

Aequorea victoria

Jellyfish go with the flow, swimming a bit, drifting where the current takes them. The crystal jellyfish gives off a glow when disturbed.

Size: bell diameter 3 to 10 inches

Tentacles

All cephalopods have tentacles with suckers. An octopus uses them to grip the ocean bed, feel, taste and capture prey.

Speedy retreat

Squid and octopus can speed through water by jet propulsion, pulling water into their bodies, then squirting it out.

They can also eject a cloud of ink to distract predators and allow time to escape.

Oarfish

Regalecus glesne oceanus

Longest bony fish in the world. Size: to 30 feet

Crawfish

Palinurus vulgaris

Size: 20 inches long

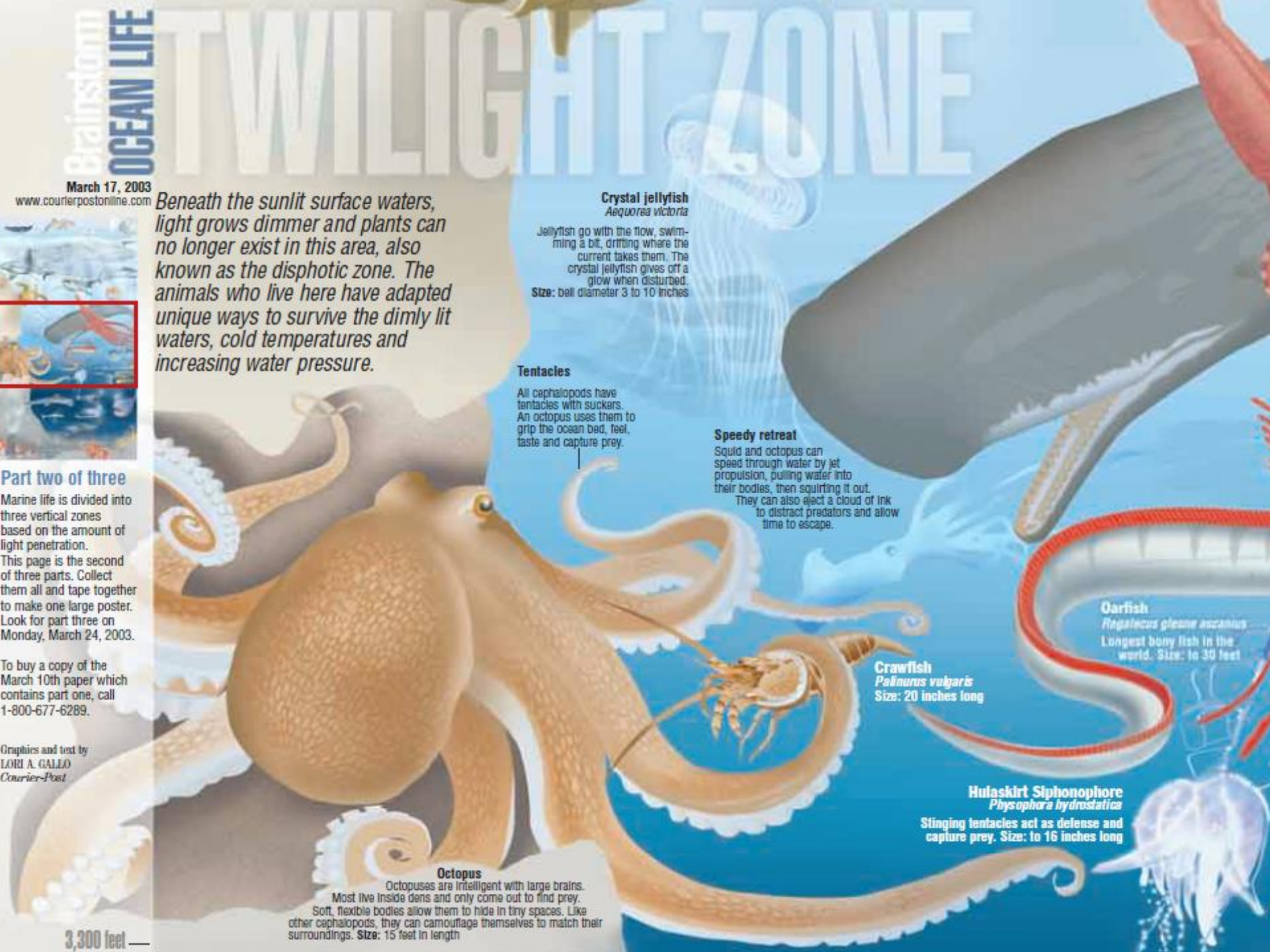
Hulaskirt Siphonophore

Physophora hydrostatica

Stinging tentacles act as defense and capture prey. Size: to 16 inches long

Octopus

Octopuses are intelligent with large brains. Most live inside dens and only come out to find prey. Soft, flexible bodies allow them to hide in tiny spaces. Like other cephalopods, they can camouflage themselves to match their surroundings. Size: 15 feet in length





Midnight Zone

When you finally reach the midnight zone, you will need to turn on your light! It is a region of complete darkness where very few plants and animals dwell. Extending from 3,300 feet to the ocean floor at 15,000 feet, the temperatures range from 43 to 32 degrees Fahrenheit. The animals in this zone have special adaptations to survive in these harsh conditions.



MIDNIGHT ZONE

March 24, 2003
www.nationalgeographic.com

This lightless zone, also known as the aphotic zone, is a habitat for a myriad of unique and bizarre life forms. They have adapted to the harsh depths of the sea including eternal darkness, icy cold waters and crushing water pressures. The deep ocean floor also provides a habitat for life as well. In some places, there are cracks on the ocean floor where volcanic activity within the earth causes mineral-rich hot water to erupt through vents where ecosystems thrive.

Hydrothermal vent communities

Along ridges in the oceans are cracks in the seafloor called hydrothermal vents. Mineral-rich water heated as high as 750° Fahrenheit by magma from the Earth's interior seeps from seafloor chimneys into the freezing ocean. The minerals spewing upward provide fuel for bacteria. These bacteria form the basis of the food chain (in vent communities). In a lightless realm where photosynthesis cannot occur, the bacteria use chemical energy to make food. This process is called chemosynthesis.

Tubeworms
Riftia pachyptila

Have no mouths or stomachs and depend on bacteria for survival. Size: 8 feet

Bacteria live within tubeworms and giant clams, providing food in exchange for a place to live. This is known as a symbiotic relationship.

Clams
Calypoglossus magnificus
 Size: 8 inches

Vent Crab
Bythograea thamyrostris
 A sightless scavenger. Size: 5 inches

Basket starfish
Gygonocaphtakus aeneus
 This starfish captures plankton with long branching arms, then brings it to its mouth on its underside. Size: 20 inches across



Viperfish
Chirocentrus albus

Swims with jaws open to catch prey. Stomach may be distended to allow the fish to swallow prey larger than itself; never chews prey. Size: 12 to 24 inches



Tripod fish
Bathyporeia longipes

Rests on its pelvic and tail fins and uses dorsal fins as a fishing net to capture plankton as they float by. Size: 8 to 14 inches



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Phylum: Mammals

Characteristics
 Vertebrates; breathe air with lungs; bare live young; warm-blooded



Dolphin

Fish

Characteristics
 Vertebrates; lay eggs; paired fins; gills; scales; bony and cartilaginous skeletons



Bony fish: Hatchet fish



Cartilaginous skeleton: Shark

Mollusks

Characteristics
 Invertebrates; soft, unsegmented bodies; bivalve; univalve; gills



Cephalopods: Octopus



Bivalve: Scallop



Univalve: Snail