

The Color-changing Squid

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Try to solve the mystery of the color-changing squid.

Many squid have their lower (ventral) surfaces covered with small light-emitting **photophores** which put out a soft glow when the squid turns them on.

These squid also move vertically through the water each day (vertical migration). They stay down deep during the daylight, but come up to the surface at night under cover of darkness.

Counterillumination

You should know that many animals use bioluminescence for **counterillumination**. Predators often hunt by looking upward as they swim, in the hopes of detecting a shadow or silhouette. To defend against this search pattern, potential prey will counterilluminate, and produce light on their bellies which matches the light coming down from above. If done well enough, this technique makes them essentially invisible.

Hold your hand above your head and look at it. Now imagine how well camouflaged it would be if you could make the bottom of your hand the same color and brightness of the light above.

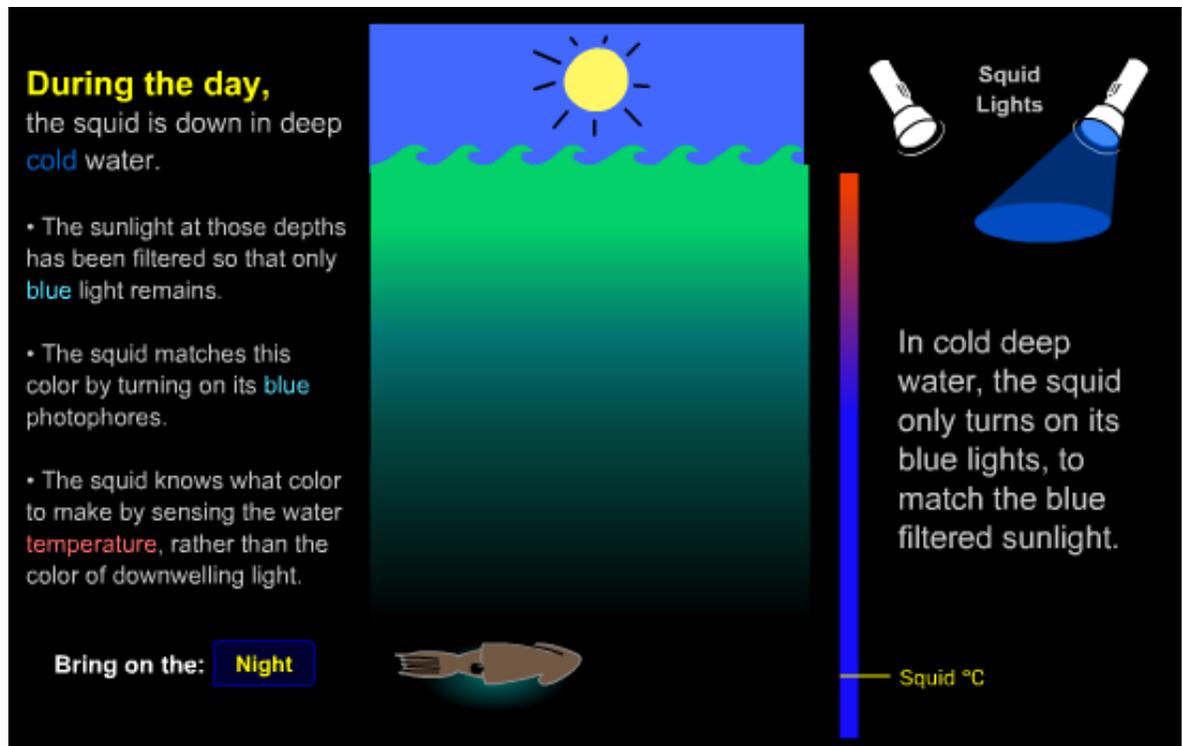
A Special Adaptation

One interesting variation on this behavior is a squid which changes the color of its light, depending on the **temperature** of the water around it.

When it is swimming in warm water, the squid produces green light, and in cold water, it makes blue light.

Before reading below, think for a minute of some reasons why the squid might change its color in this way.

The Solution to the Mystery



Does this make sense ?

Not only does this squid carefully match the intensity of the light that it makes, but it matches the color. This is probably important because the eyes of the predators, both deep and shallow, can be tuned to particular wavelengths, and they might notice even subtle differences.

References and Additional Reading:

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