

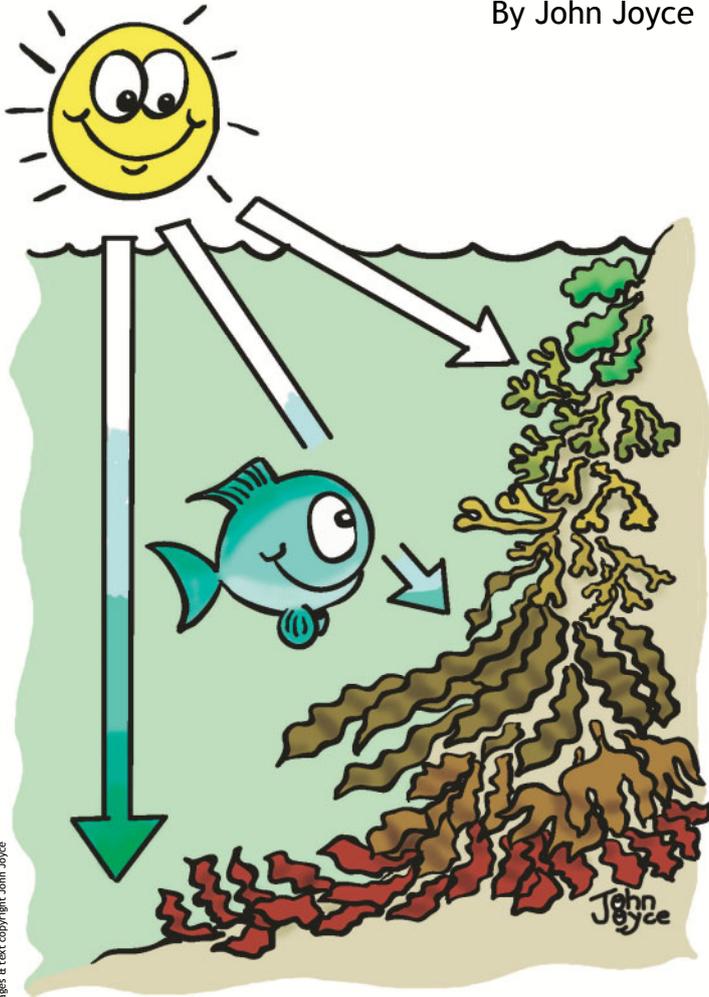


# Black John - the Bogus Pirate



## Why are Seaweeds Green, Brown and Red?

By John Joyce



Images & text copyright John Joyce

Avast there, me hearties! When people ask me what they can do to protect the marine environment I always say “‘tis the little things that make the biggest difference!”

Seaweeds, like other plants that live on land, use light energy from the Sun to turn chemicals from the environment around them into plant tissue. This plant tissue is used for their own growth and reproduction.

Unfiltered ‘white’ light from the Sun contains all seven colours in the ‘spectrum’ – red, orange, yellow, green, blue, indigo and violet. But seawater has the effect of filtering ‘white’ light, removing the red, orange and yellow colours. This means that only blue and green light penetrates to any depth in the ocean – which is why any photographs taken underwater without an artificial flash, show only blues and greens.

Seaweeds, the plants that live in the sea, have adapted to this environment by evolving the ability to absorb the green and blue light, which exists underwater. They have done this by developing colours – browns and reds – which absorb blue and green light the best. And the deeper a seaweed lives underwater, the more red it becomes in order to better absorb blue light.

The best way to see this in action is to take a supervised walk\* down a rocky shore on the lowest of Spring Tides. At the top of the shore you will see more green seaweeds – the same colour as land plants – since they have to adapt least to the filtering effect of seawater. But as you pass down the shoreline you’ll find that the colour and types of seaweeds change from green, to brown and – at the deepest part of the shore – to red, which allows the seaweeds to best absorb the blue light they have to cope with at depth.

\* Always make sure you have adult supervision on walks down a rocky shore – and even adults should be extremely careful not to slip and fall.

## HOW TO DRAW A FISH



DRAW THE UPPER LIP



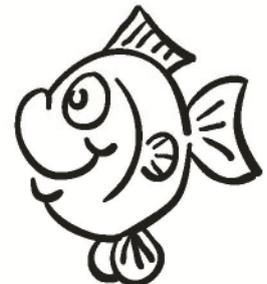
DRAW THE BOTTOM LIP



OUTLINE THE BODY



PUT IN THE EYE AND THE GILLS



PUT IN THE FINS AND TAIL

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