



DEFENSE MECHANISMS IN AQUATIC ANIMALS

PREPARED BY

REHAM HELAL - ALLAA HASHISH

NADA BASAL

SUPERVISOR/ DR.MONA NAWAREG

Marine animal defense mechanisms

Marine environments may be beautiful and full of wonder, but it's also a race to survive for every plant and animal that calls the ocean home.

Aquatic animals face a variety of threats in their environment, including predators, parasites, and diseases. To survive, they have evolved a variety of defense mechanisms:

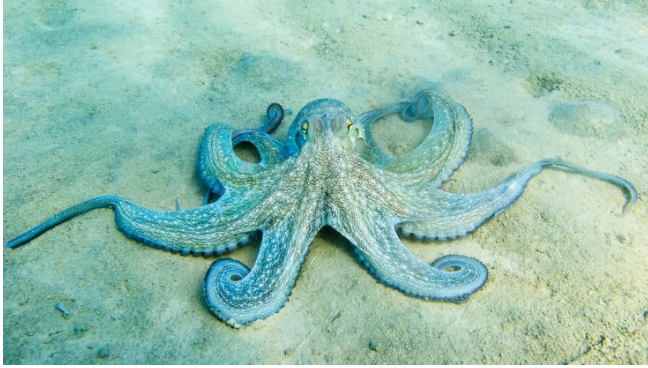
Camouflage

Many aquatic animals use camouflage to blend in with their surroundings, making it difficult for predators to see them. For example, seahorses have shapes and colors that resemble the coral reefs they live on.



Mimicry

Some aquatic animals mimic other animals or objects to avoid predation. For example, the stonefish has a body that looks like a rock, and the mimic octopus can change its appearance to look like other animals, such as poisonous lionfish or venomous sea snakes



Poison

Some aquatic animals produce toxins that can deter predators. For example, the pufferfish is one of the most poisonous vertebrates in the world. Its organs contain a neurotoxin that is up to 1,200 times more potent than cyanide

The Pufferfish contains inside its body some extremely potent toxins. A predator that manages to snag a puffer before it inflates won't feel lucky for long. Almost all pufferfish contain tetrodotoxin, a substance that makes them foul tasting and often lethal to fish.



Inflation and spines

A variety of fishes use numerous sharp spines and armored scales to help fend off predators. By swallowing a lot of water when alarmed, balloon fishes and pufferfishes can inflate their bodies, erecting a number of very sharp spines. The rigid and sharply pointed spines give an attacker an unpleasant mouthful of “nails and needles” instead of an easy meal.



Jet propulsion and ink

Some aquatic animals use jet propulsion to escape from predators. For example, the squid can quickly jet away from danger by expelling water from its siphon.

One of the most famous defensive adaptations of cephalopods is their ink. Used to distract a predator and allow a squid or octopus to escape quickly, ink not only provides a visual distraction or barrier, but it also disrupts a predator's sense of smell and taste.



Jumps out of the water

More than 50 species of flying fishes (Excoet) use their ability to glide above the surface of the ocean to escape predators such as tunas, billfish, sea lions, dolphins, sharks and more. Flying fishes are able to “jump” out of the water and then glide through the air over considerable distances. When spread while airborne, their greatly enlarged pectoral creates an airfoil similar to an airplane wing providing lift and enabling these fishes to glide. Those species that have four “wings” also have enlarged pelvic fins that provide additional lift.

Once flying fish break the surface they spread their fins and beat their tail. The enlarged lower lobe of the tail works like an outboard motor with the sideways motion of the tail enabling the fish to gain height and extend the duration of the flight. Flying fish can glide for at least 325 feet (100 m), and they are occasionally seen as high as 10 feet (3 m) above the surface.



Electric shocks

The **Electric Eel** is a freshwater fish who looks like an eel but belongs to a different family. This fish is the most dangerous of this group because it is capable of sending electric shocks from 100 to 700 volts. It is able to kill a human being.



Staying in School

Schooling is one of the primary ways many fishes help defend themselves from predators. To overcome the problem caused by fish small size, many small fishes gather in schools. It is believed that the schools look like a single large creature, and many predators tend to leave large animals alone.



Safe at Home

Many fishes, including tile fishes, a variety of gobies and jaw fishes, reside in self-made burrows to where these fishes retreat when they detect danger. In some cases, the burrows are rather elaborate and have several entrances and exits meaning that a predator cannot just watch one opening and be ensured of cornering its prey.



Venom and Poison

When threatened, some sea cucumbers discharge sticky threads to ensnare their enemies. Others can mutilate their own bodies as a defense mechanism. They violently contract their muscles and jettison some of their internal organs out of their anus. The missing body parts are quickly regenerated.



Regeneration

Some aquatic animals can regenerate lost body parts. For example, the sea star can regenerate an entire arm if it is lost

