

THE MIMIC OCTOPUS

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Abstract: The Mimic octopus is best known for being a mimic. It is a species of octopus from the tropical southwestern Pacific Ocean. Like other octopuses, it utilizes its chromatophores to camouflage itself with its background. Also, it is noteworthy for being able to mimic a wide range of other marine animals. It imitates other sea creatures, from flatfishes to sea snakes to anemones. It can also match its color scheme to those creatures. Mimics are also subterranean experts. They can dig burrows, navigate underground tunnels, and even blindly stick their arms into holes in search of snacks. Unlike the stereotypical octopus, which likes reefs with many crevices and holes to hide in, the Mimic octopus prefers the muddy areas of river mouths and estuaries. Because of its fantastic ability to change color and behavior and quickly burrow into soft sediment, the Mimic octopus doesn't need to rely on structures to hide in. This makes wide-open, silty ocean floors a perfect habitat for them.

Keywords: Octopus; Sea species; Disguise; Mimic

1. Introduction

In 1998, the Mimic octopus (scientific name *Thaumoctopus mimicus*), a fascinating creature, was discovered on the bottom of a muddy river mouth off the coast of Sulawesi in Indonesia. Scientists hypothesize that additional mimic species will be found in muddy rivers and estuary bottoms of the tropics since these areas are usually unexplored. All octopus species are brilliant and change their skin's texture and color for camouflage to avoid predators [1]. However, until the Mimic octopus was discovered, the exceptional ability to mimic another animal was not observed. Although mimicry is a common survival strategy, certain flies assume bees' black and yellow stripes to warn potential predators. The Mimic octopus is the first known species to take on the characteristics of other species [2].

2. Abilities different from the other octopuses

As the name says, the Mimic octopus (Figure 1) specializes in copying or, in other words, mimicking its chosen animal. It can copy everything from color to animal shape movement and even characteristics. The most unusual thing about the Mimic octopuses is



the range of their repertoire. Compared with other animals, most mimics impersonate just one animal. On the other hand, the Mimic octopus impersonates several and can switch between them rapidly. Like other mimics, the octopus changes its color to camouflage itself. Even more unusual, she can also warp her body to take on the appearance and behavior of several animals.

Figure 1. The picture of the Mimic octopus ¹

Seen in its generic state, the Mimic octopus might appear to be just another run-of-the-mill small octopus. However, the impression of the Mimic octopus is bound to change when observed in its natural habitat going about its daily routine. It is for good reason that this species of octopus is colloquially known as the Mimic octopus. That is precisely what it does to significant effect. It can alter its coloration and shape to mimic other animals that share its habitat. Among the animals that the Mimic octopus can impersonate are jellyfish, sea snakes, flatfish, and lionfish. All told individual Mimic octopuses have been observed to have the ability to mimic as many as 18 different sea creatures [3].

Marine biologists have not fully cataloged all the animals that the Mimic octopus can imitate. It is believed that the range of animals that the Mimic octopus can emulate varies depending on the immediate area that a single specimen inhabits. In other words, depending on what other sea creatures are their neighbors, those are the species that the Mimic octopus will assume. The Mimic octopus not only takes on the general shape and coloration of those animals but can also mimic their movements and behavior. The Mimic octopus doesn't just try to blend in - it acts like the animal it mimics.

¹ Figure is original work of mrganso, available at Pixabay. Please consider supporting this author by visiting the following link <https://pixabay.com/photos/octopus-fish-deep-sea-monster-2745286/>

When marine biologists first discovered this species of octopus in 1998, they were impressed by its shapeshifting abilities. No other species of octopus can do what the Mimic octopus does. Yes, many octopi species are adept at camouflaging themselves into the background of their respective habitats by changing pigmentation. Still, none come close to what the Mimic octopus does [4].

3. Way of life

The Mimic octopus has been found to inhabit the Indo-Pacific, from the Red Sea in the west to New Caledonia in the east. It is mainly found in areas with silt or sand at depths of less than 15 m. It prefers obscuring murky and muddy sea floors to blend in with its natural brown-beige coloring [5]. Since the Mimic octopus prefers to live in shallow, murky waters, its diet is believed to consist almost exclusively of small fish and crustaceans. In these shallow waters, there are also plenty of animals that put the Mimic octopus in danger. It is usually preyed on by predators like sea snakes, stingrays, jellyfish, lionfish, and the poisonous sole fish. However, the octopus's talent for mimicry often drives away these predators [6].

Is mimicry purely instinctual, or is it learned?

The debate is still open in the marine biology community as to how the Mimic octopus hones its natural talent. While the ability to morph in appearance to emulate other creatures is undoubtedly the result of natural selection and evolution, how the Mimic octopus uses this ability does spark some interesting questions. How does it select which animals to emulate? How can they customize this ability to different regions with different local fauna? Is this an indication that individual observation and learning on the part of the octopus might be involved?

The Mimic octopus may use passive observation of local fauna to mimic those creatures better. The Mimic octopus is camouflaged on the sea bottom, watching one of its predators or competitors and using cognitive input to improve its portrayal of that animal [7].

Ways the Mimic octopus leverages its mimicry

Since the octopus can mimic various creatures, it can use this ability in a much more diverse way than other animals, which use coloration solely for survival through camouflage. Those other animals use pigmentation manipulation and transformation to blend in - to try to go unnoticed by predators or to wait for potential prey to approach them [8].

While the Mimic octopus can use its ability to camouflage itself into its surroundings just like other color-shifting creatures, it can up its game to a much higher level. By emulating

the movement and behavior of another animal, the Mimic octopus can take active actions in its defense and improve its performance as a predator [9].

Are Mimic Octopi on the Cutting Edge of Evolution?

Some classify the Mimic octopus's unique adaptation as one that the individual octopus actively uses for a tactical gain - not just a natural strategic advantage. This would be similar to how our ancestors used thumbs for improved tool building, resulting in larger brains and enhanced cognition. This could be happening with the mimic octopus due to this adaptation [10].

4. Conclusions

The Mimic octopus is seen to be highly intelligent, especially towards its predators. The octopus learns which animals bother their predators and takes on that form to drive away potential predators or danger. For instance, if they are attacked by damselfish, the Mimic octopus will take the form of a sea snake that preys on damselfish. Many strange ocean creatures can camouflage. But in all marine habitats, only the Mimic octopus and the Wunderpus, its close relative, are known to imitate several other marine species actively. They can imitate over 18 different sea animals, especially poisonous ones. They can live about 1-2 years. Whether you are a marine biologist, a sea life enthusiast, or an ordinary observer of nature - the mimic octopus is one of the most amazing creatures that share our planet. The more we study and observe this species, the more we learn about the nature of octopi and all cephalopods.

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