# SUMMARY BY ALYSSA BURNETTE DAZZLED AND DECEIVED BY PETER FORBES



# **Summary of Dazzled and Deceived by Peter Forbes**

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Learn about nature's masters of disguise.

## **Table of Contents**

Introduction	5
Why do Animals Use Camouflage?	6
How Camouflage Differs Among Species	8
Final Summary	



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### Introduction

It looks like a light-- a little flicker in the depths of the ocean that invites you to draw closer, to investigate, to wonder what that little light might be. And in the darkest parts of the ocean, where light is very rare, it's not surprising that any fish would be curious about that little flickering light. In fact, we can easily imagine why any fish would swim closer and closer, inquisitive up until the moment when the terrible jaws clamp over them and their life is snuffed out. They never saw it coming, never had a moment's inkling that that little dancing light was attached to one of the most terrifying predators of the deep.

This is how we come to meet the anglerfish: a master of camouflage and disguise. To put it very simply, anglerfish are cannibalistic creatures who fish for other fish. And they do so in a very unique way. Anglerfish are slow and lazy by nature; they drift lackadaisically through the water, expending very little energy. The light that they use to attract their prey is actually a bulb of flesh that dangles from their enormous foreheads. They also have a vast array of tentacle-like sensors that function in a similar way to a cat's whiskers. Just as a cat can twitch its whiskers to detect changes in its environments, an anglerfish can twitch its sensors to detect the presence of a potential meal. When they don't want to be noticed by other fish, they simply extinguish their glowing rod of flesh and blend into the inky depths by allowing their naturally dark coloring to disguise them.

But when those little sensors tingle with a notification that dinner has arrived, they change tactics entirely and light up, dazzling their prey with an amazing display of flashing lights that encourages them to swim closer and closer until it's too late. In this respect, the anglerfish really embodies the title of this book; its victims are quite literally dazzled and deceived. And over the course of this summary, we'll learn more about predators like the anglerfish and how these fearsome hunters use a combination of camouflage and glamor to ensnare their prey.



#### Why do Animals Use Camouflage?

By definition, camouflage is the art of blending in to your surroundings. So, why would animals want to blend in to their environment and avoid notice? There are two primary reasons for this: an animal might use camouflage as a defense mechanism to conceal itself from predators. Or an animal might use camouflage to appear harmless so it can lure in prey. And some animals use camouflage to accomplish both of these goals. For example, the eastern screech owl's feathers almost perfectly match the bark of the trees in its native habitat. When an eastern screech owl sits in one of those trees, it blends in to the background and becomes almost invisible. This conceals the owls from potential predators and puts their prey off guard; no one's going to notice a tree. Until, that is, the owl swoops out and gobbles up its prey. By the time the owl's dinner realizes that the predator is not actually an extension of the tree, it's too late.

The same is true of fish like the Northern Stargazer. As you might imagine, Stargazers get their name because of their bulbous eyes, which are forward-facing and situated right on top of their heads. This notoriously ugly fish always appears to be looking up at the sky. So, what makes a Stargazer so scary? Well, these fish commonly make lists like "The World's Top 10 Scariest Fish" for one reason: their predatory camouflage tactics. And it doesn't help that they're venomous as well! Stargazers commonly kill their prey in one of two ways. When they leap out at their victim and open their mouths, their cavernous mouths create a force of swirling suction that sweeps their prey right into their mouths. From the moment they are sucked into the stargazer's mouths to the moment the predator's jaws snap shut, the unsuspecting fish is completely helpless. But when this method doesn't work, stargazers also employ their electric shock abilities.

Much like an electric eel, stargazers are capable of delivering a powerful electric jolt that stuns their prey. They typically use this skill to ambush much bigger fish and this enables them to prey on creatures that are more than twice its size. So, how do stargazers hunt? Where do their camouflage skills come in? Well, because Stargazers are ambush hunters, they disguise

themselves in the sand at the bottom of the sea floor. So, if you've ever been swimming in the ocean and thought you saw a face staring up at you, maybe you did! The pattern of a stargazers' scales is such that it literally looks just like the sand that covers the ocean floor. So, when it buries itself deep within the sand, they're almost impossible to spot. The only clue is their massive eyes which protrude above the sand, but most people-- and, more importantly-- most fish never even spot them.

These complex camouflage skills work to the stargazer's advantage because they use them to hunt. No one notices them, so when an unsuspecting fish swims by, a stargazer can burst out from its hiding place and quickly grab its prey. Fish don't stand much of a chance, but if you're a swimmer who wants to stay safe, you might be out of luck too. Stargazers can live pretty much anywhere; they can be found in any ocean on the Atlantic shores between the states of North Carolina and New York in the United States. The northern stargazer can be found up to depths of 120 feet, but they are also comfortable in the shallows. Since you might not notice them as you're entering the water, it's a great idea to wear swimming shoes or some type of foot covering that will protect you if you encounter its venom.

The stargazer and the eastern screech owl are only two examples of camouflage as a hunting tool in the wild. But as you can see, camouflage and mimicry are very effective tactics for survival! In fact, this is true for any animal, whether they are predator or prey. For example, because some butterflies and insects are natural targets for predators like birds, they have adapted to blend in with their surroundings. This may take the form of complex patterns or dull colors that blend in with tree bark and dirt, but in either form, the effect is the same: the insect is able to conceal itself, avoid predators, and live another day. So, now that we've learned about common camouflage tactics and how animals use them, let's take a closer look at the environmental factors that impact camouflage.



#### How Camouflage Differs Among Species

As you can see from the disparity between the examples of the owl and the stargazers, all animals practice camouflage in different ways. The principle of concealment may be universal but every species has their own unique way of accomplishing that goal. And the methods of camouflage differ greatly depending on a creature's biology, behavior, and environment. For example, just consider the zebra. When you think about the contrast between a zebra and the golden, dusky backdrop of the African savanna, you would think that a zebra's black and white stripes would cause it to stand out. As a result, it seems likely that a zebra would garner unwanted attention. But it might surprise you to learn that nothing could be further from the truth!

The zebra's camouflage works so well for two reasons: firstly, because lions are colorblind. Lions are the zebra's primary predator, so the zebra's defense mechanism makes sense when you realize that a lion can't even see their vivid black and white strips. But a lion can see that all zebras look the same and this is the important part. Because when zebras cluster together in a herd, a lion is incapable of telling the difference between each individual zebra. This means that it's very difficult for a lion to isolate one zebra from the herd and attack it. So, when a predator is colorblind, the prey animal doesn't need to blend in to its surroundings. Instead, it simply needs to blend in with its herd enough to confuse the predator and keep them all safe. As you can see from this example, camouflage tactics sometimes depend on a combination of the predator's behavior and the prey animal's environment.

Camouflage can also be influenced by other factors such as the prey animal's physical characteristics. For example, insects are going to camouflage themselves in a different way than animals who have fur. Although insects and reptiles may sometimes be able to adapt their patterns to fit their environment, the old saying really is true: a leopard can't change his spots. Fur can take weeks or even months to grow in and once it does, it's almost impossible for an animal to change the color or pattern of their fur. So, prey animals who have fur might adopt different camouflage techniques such as

blending in with their environment or camouflaging seasonally. For example, many animals who live in the arctic tundra have white fur that helps them blend in with all the snow. The arctic fox, however, is able to change its coat seasonally as a defense mechanism. Its winter coat is white, but it sheds this coat in the summer and its fur grows back brown. By the time winter comes around again, the brown has changed back to white!

However, other prey animals employ a different tactic altogether. Where some may rely on seasonal camouflage or the protection of a matching herd, other animals use a strategy called "disruptive coloration." Disruptive coloration differs greatly from camouflage-- where an animal attempts to blend in with its surroundings-- or mimicry, which occurs when an animal's pattern or coloring enables it to pass itself off as a different type of object or animal. By contrast, disruptive coloration is the use of a complex color pattern that confuses predators.

For example, just think about the color patterns of many butterflies. You've probably noticed that many butterflies have an array of beautiful spots that sometimes resemble large eyes. People see this and think, "How pretty!" but predators like birds look at that and mistake the pattern for the eyes of an even more dangerous animal. This is where we have to consider the food chain in the animal kingdom. Because even though a songbird is a fearsome predator to a butterfly, the songbird may not be objectively terrifying to other creatures who are not insects. In fact, to a large, predatory bird like an owl, a songbird is just lunch. So, when a butterfly has a pattern that looks like eyes, a songbird might mistake that pattern for the bulbous, unblinking eyes of an owl and leave that butterfly alone.

And lastly, we come to another form of visual deception called aposematism. Aposematism is the use of bright and vivid colors to signify danger in the animal kingdom. Shockingly bright colors such as neon red, orange, blue, black, green or yellow serve as a warning to predators. When other animals see these colors, they get the message loud and clear: "I'm poisonous, so don't even think about eating me!" A great example of aposematism can be found in the poison frogs of the rainforest. These tiny, brightly colored frogs have often been called "the jewels of the rainforest," and the name certainly fits!

But even though they're beautiful to look at, they're far too toxic to touch. In fact, the golden poison frog is considered one of the most deadly animals in the world because its skin produces enough nerve toxin to kill ten people instantly. However, not all species of poison frogs are fatal to animals or humans. Some frogs are simply so toxic that contact with them will cause a very unpleasant physical reaction. This means that if a predator is foolish enough to mess with a poison frog, they will experience so much pain that they will remember and avoid poison frogs in the future. Common side effects from touching a poison frog include swelling, nausea, and paralysis so horrifying that many predators do not survive the encounter. This deadly superpower enables poison frogs to stay active and safe throughout the day. Although many prey animals only come out at night when they can hide under the cover of darkness, the poison frog is able to be active at any time because it knows it will be safe.

As you can see from these examples, camouflage, mimicry, and disruptive coloration are very effective methods for helping predators hunt and keeping prey animals safe!



#### **Final Summary**

When we think about camouflage, our minds might jump to the army fatigues worn by soldiers. And while humans have certainly adopted the principles of camouflage for safety in conflict, the animal kingdom did it first! Whether they're disguising themselves on the ocean floor, pretending to be a tree, or sending deadly messages with bright colors, animals have evolved to develop a wide variety of complex defense mechanisms. By dazzling and deceiving the other animals around them, prey animals and predators alike have adopted strategies that keep them safe and help them find food.





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