THE MIMIC OCTOPUS
Chapter 3: Life Mimics Life

My project focuses on the idea of mimicry in nature. Bates discovered mimicry in the Amazon whence upon studying butterflies he became confused by 2 species. They looked almost exactly the same and he could only differentiate them upon close inspection of their wing veins and color patterns. He realized that one of the species was palatable to predators and one was not, further concluding that the palatable butterfly actually mimicked the colors/ patterns of the unpalatable. This phenomenon, which he called mimicry, was evidence of Darwin's theory of natural selection - the gradual process by which biological traits become more or less common in a species depending on their function in the reproduction and survival of the species [1].

An adaptation is a trait that has a current functional role in the life of organism. Adaptations are not static, they are continuining dynamic processes [2]. Mimicry is exactly this - an adaptation. Mimicry is a self preservation strategy in which one species evolves to resemble another in order to deceive a predator. It is a way of compensating for a weakness or a trait that draws attention from natural predators; it is a literal disguise that species take on in order to not get eaten, by pretending to be another species that the given predator does not want to eat (because it is dangerous, tastes or smells bad, has venom, etc.)

In chapter 3 we read about Bate's encounters with the butterflies and the coral snakes and king snakes. Upon further research I read about another species that is famous for practicing mimicry - the Thaumoctopus Mimicus, or Mimic Octopus, of southeast Asia. This creature is known to mimic more than 15 different species by changing color and contorting its body [3]. It has adapted to mimic certain species depending on its local predators. Mimicry serves this octopus 2 purposes. One, its mimicry of poisonous creatures is its best defense against predators such as sharks and other carnivorous fish who find its soft muscle and boneless body delicious. Two, mimicry allows the octopus to prey on creatures that would usually flee an octopus [4].

I have designed four patterns which depict the Mimic Octopus defending itself against predators by pretending to be different poisonous creatures. Each pattern is composed of only 2 shapes - one being the mimiced species, the other being the octopus taking on that species' form. I have silhouetted the shapes of the creatures in order to focus on the octopus's fascinating ability to contort its body and arms into many deceiving formations. Depicted in my patterns are the mimicing of the poisonous Sea Snake, Sting Ray, Brittle Star and Lion Fish.

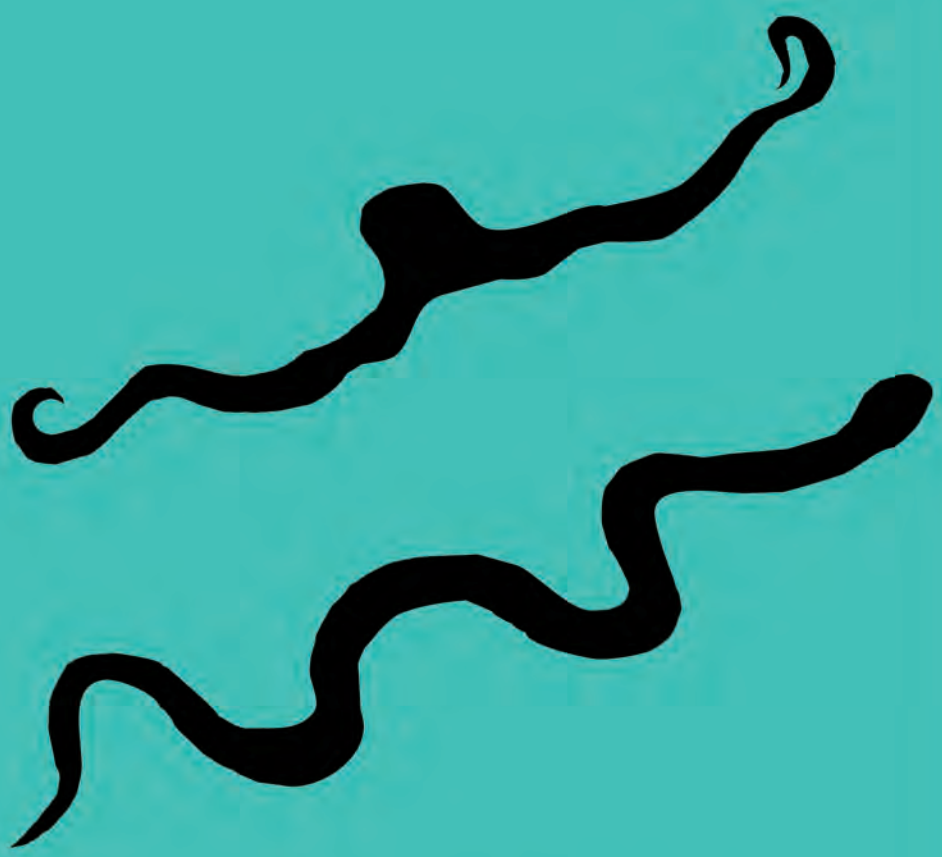
The juxtaposition of the mimic and model in pattern formation serves multiple purposes. In the patterns, the shapes of the model and the mimic become blended together and it is hard to differentiate one shape from the other - similar to how a predator would be confused by the mimicing species in the wild. Secondly, the repetitive nature of the patterns implies multiplicity, showing how mimicry sustains the Mimic Octopus species by giving it less chances of being eaten and higher chances of reproduction. The Mimic Octopus has adapted to its surroundings and increased its chances of survival by learning to imitate these specific species.

1. Wikipedia, "Natural Selection," http://en.wikipedia.org/wiki/Natural_selection, Accessed 15-Sept-2012.
2. Mayr, Ernst (1982), "The Growth of Biological Thought: Diversity, Evolution, and Inheritance," (1st ed.). Cambridge, Mass: Belknap Press. p. 483, Accessed 15-Sept-2012.
3. Hemdal, Jay, "Aquarium Fish: Captive Observations of the Mimic Octopus, Thaumoctopus mimicus," Advanced Aquarist, 2007, http://www.advancedaquarist.com/2007/4/fish, Accessed 16-Sept-2012.
4. Roach, John, "Newfound Octopus Impersonates Fish, Snakes," National Geographic News, 2001, http://news.nationalgeographic.com/news/2001/09/0920_octopusmimic.html, Accessed 16-Sept-2012.

LION FISH

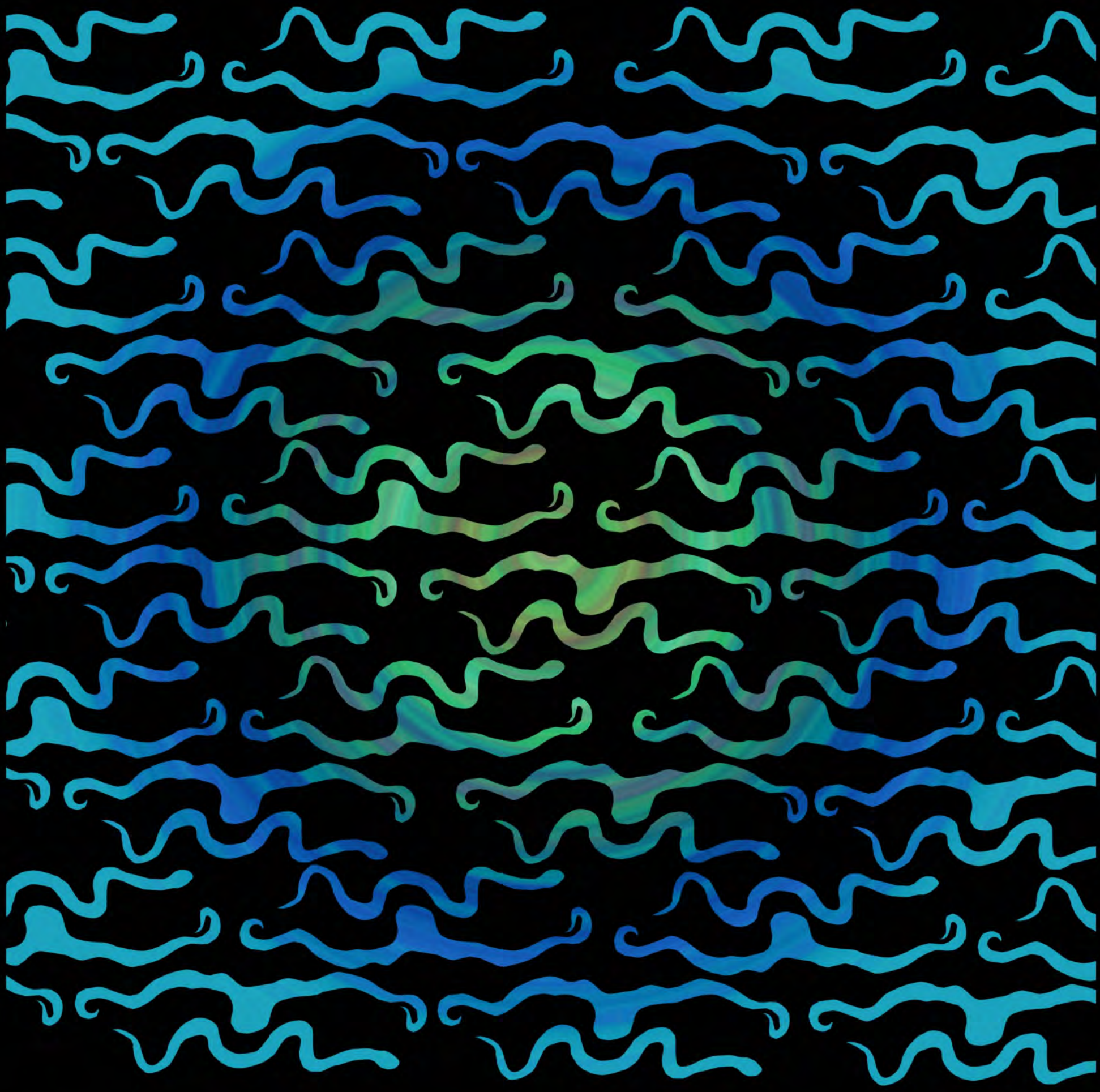
STINGRAY

MIMIC OCTOPUS

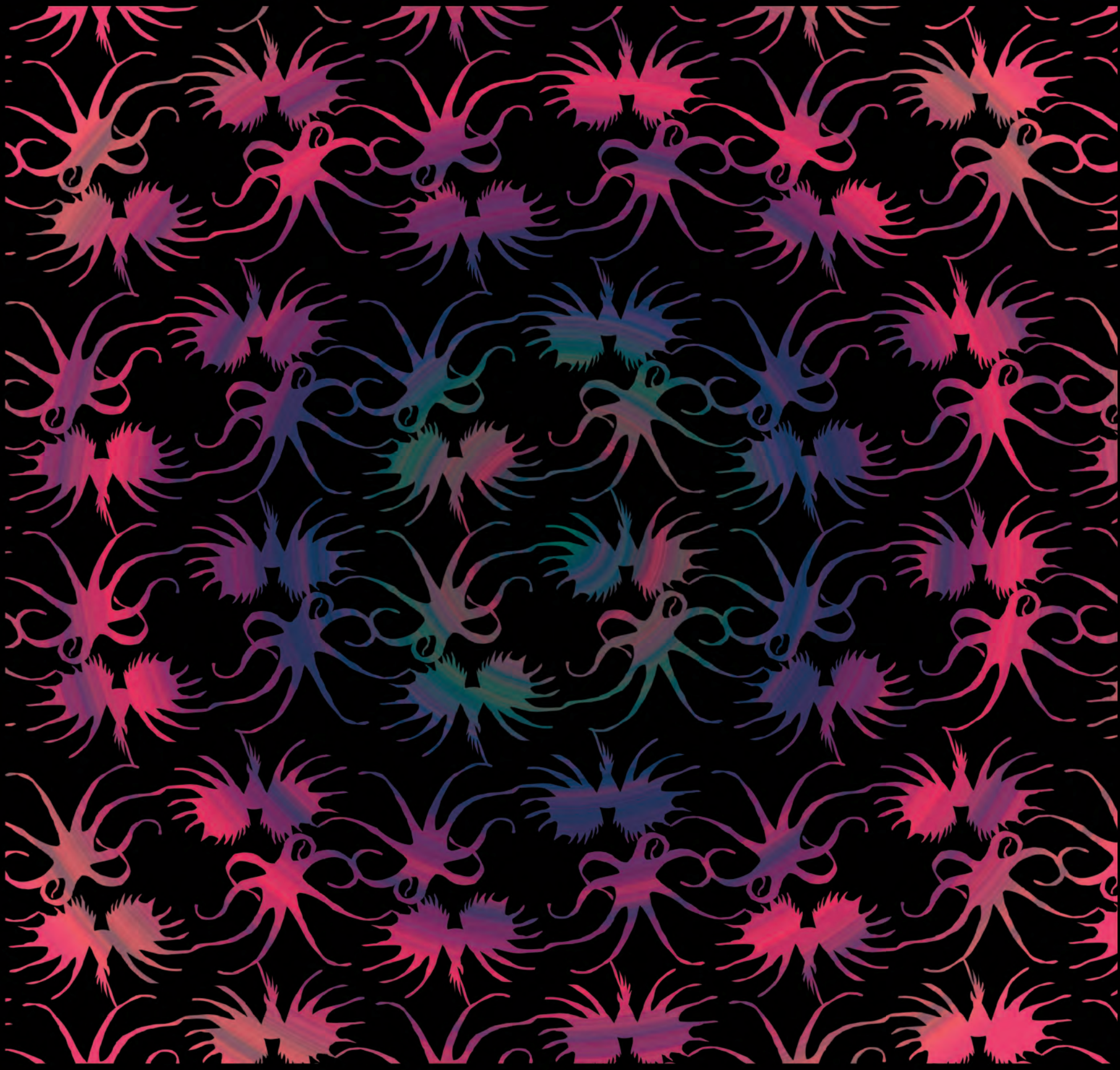


SEA SNAKE

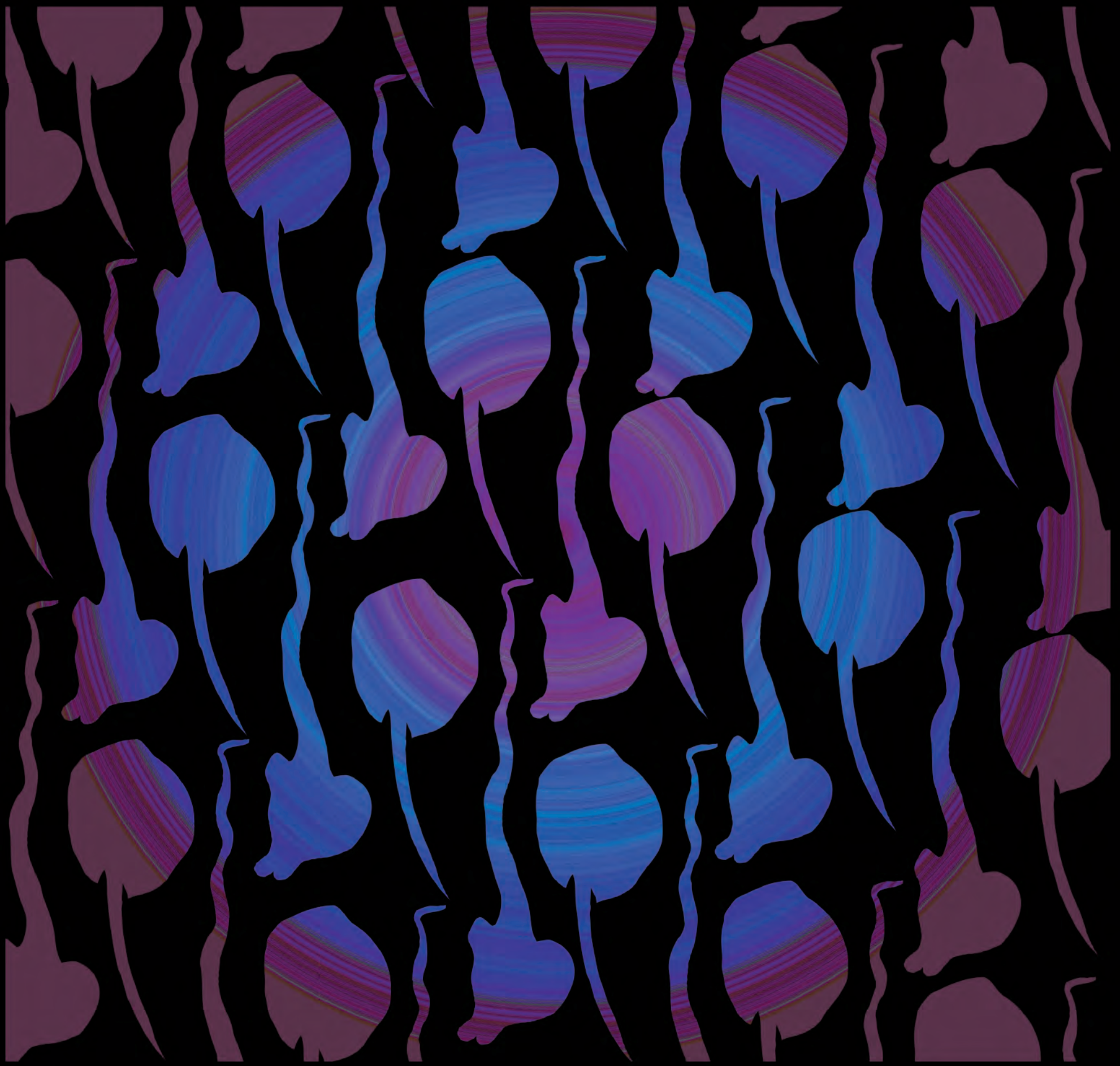
BRITTLE STAR



MIMIC OCTOPUS & SEA SNAKE



MIMIC OCTOPUS & LION FISH



MIMIC OCTOPUS & STINGRAY

MIMIC OCTOPUS & BRITTLE STAR