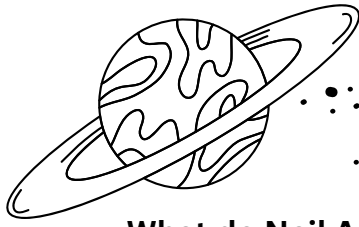


The Magic of Monarchs

Dr. Emily Geest



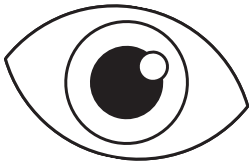
What do Neil Armstrong and Monarchs have in common?

They've both been to space! In 2009, three monarch butterflies and four painted lady butterflies flew on the International Space Station. Butterflies were studied to see how microgravity affected each stage of development from caterpillar to adult. Both butterfly species were able to successfully pupate and emerge as adults.



What does a monarch see?

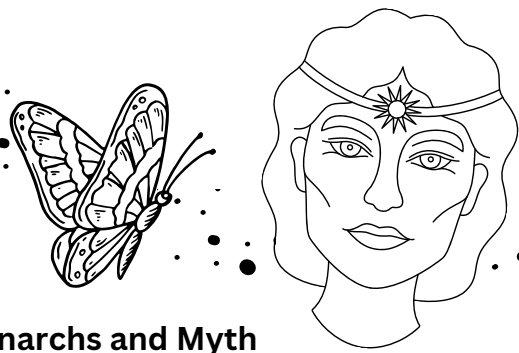
Monarchs have true color vision! Caterpillars have 12 simple eyes called ocelli which can see from red to ultraviolet, while adults have two complex compound eyes that can see all colors from infrared to ultraviolet, as well as polarized light.



So, what does the world look like to a monarch butterfly? Imagine being in a bubble, with thousands of cameras lining the walls and pointing in every direction. Then every moment the cameras take a single picture. Butterflies are presented thousands of still images at once that are then processed into a single image. Due to this way of viewing the world, depth-perception, distance, and pattern recognition are thought to be limited in butterflies.

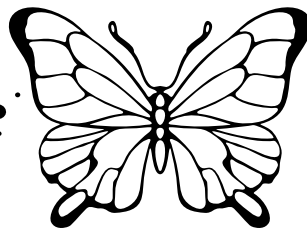
Planting a **pollinator garden** with native flowers and grasses is a great way to support the Monarchs! Use your creativity to design a pollinator garden in the space below:





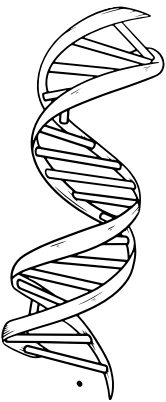
Monarchs and Myth

The scientific name of monarch butterfly is *Danaus plexippus* [Dane-es-plex-eh-pis]. Monarchs were named during a romantic era of entomology when many species were named after Greek or Roman myths and legends. For monarchs they are named after the myth of King Danaus and Prince Plexippus. King Danaus had 50 daughters called the Danaides. King Aegyptus of a neighboring kingdom, had fifty sons and commanded that his sons marry the Danaides in order to take over King Danaus's land. Instead of going to battle, King Danaus told his daughters to agree to marry the men, but to kill them on their wedding nights. Forty-nine followed through, with only Hypermnestra refusing. King Aegyptus' son, Prince Plexippus was not the lucky husband of Hypermnestra, instead he was wed and subsequently stabbed to death by King Danaus' daughter Princess Amphicomone. So why did Carl Linnaeus name the monarch after this dark tale? It is thought that the two dark spots that only male monarchs have on their hindwings may resemble stab wounds.



Nivosus Monarchs

Instead of orange and black, sometimes monarchs emerge as white and black, a color form called nivosus! This rare form is only reported a handful of times each year, except in Hawaii where as much as 10% of some populations have nivosus coloration. The nivosus form is thought to emerge from a genetic defect that prevents the synthesis of orange pigment, however much more research is needed to understand the origin of this rare monarch type.



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