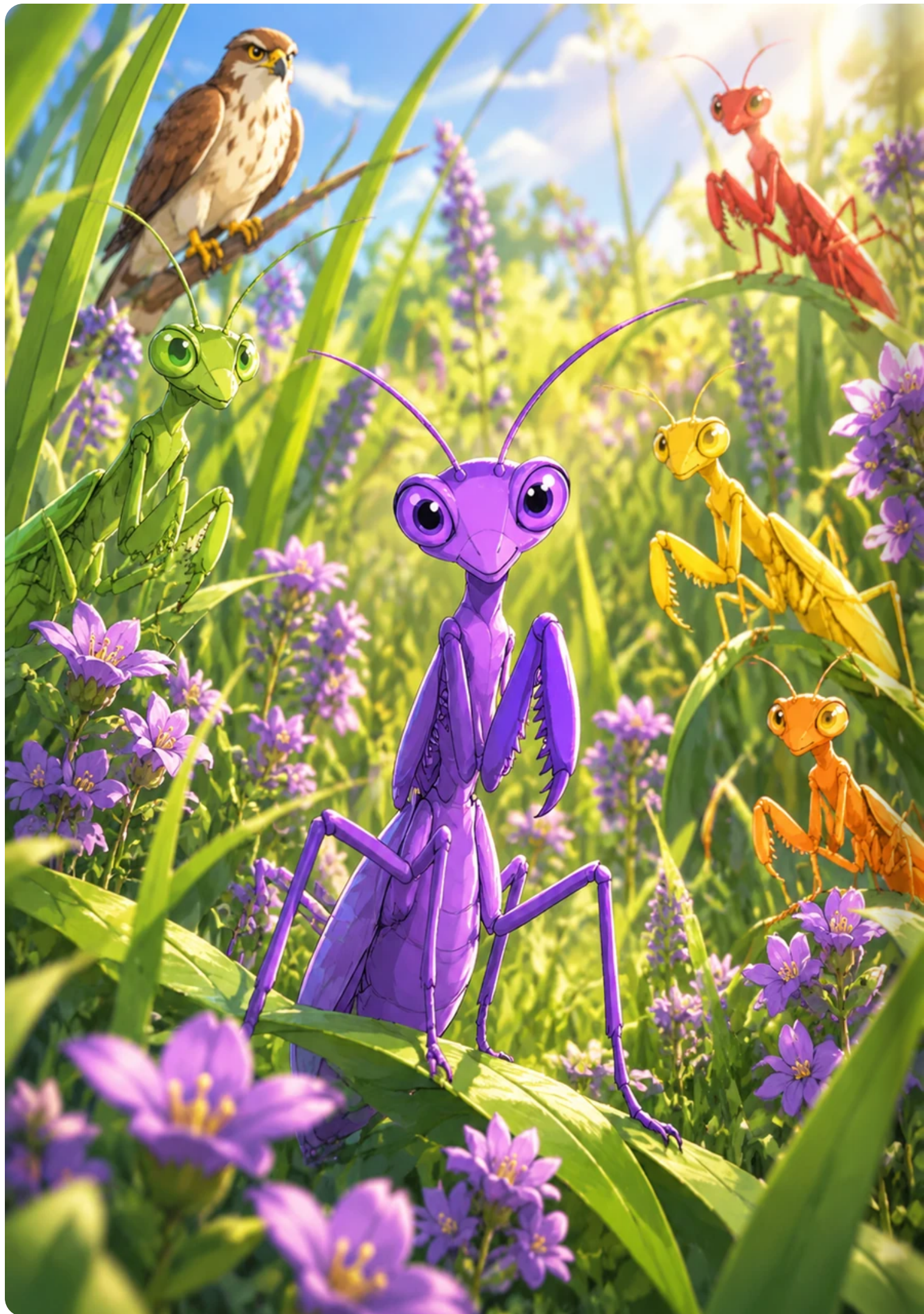




Pip and the Purple Meadow: A Story of Directional Selection

Absorbing Full



In a vast, sun-drenched meadow filled with fragrant purple flowers, lives a tiny praying mantis named Pip. The meadow is alive with color, home to mantises of many different shades—vibrant green, bright yellow, warm orange, deep red, and rich purple like Pip.



These varied colors were not acquired on purpose, and no mantis could change its hue at will. Instead, these different colors were natural variations present in the population from the very beginning, just like how humans naturally have different hair or eye colors.



Before any major challenges arrived in the meadow, all five colors were equally common. A clear bar graph shows the starting population, with identical bars standing tall for purple, green, yellow, orange, and red mantises living side by side.



One morning, a hungry songbird swoops into the meadow looking for insects to eat among the purple petals. Perched high above the field, the bird uses its keen sight to scout for any movement down below.



The green, yellow, orange, and red mantises stand out sharply against the sea of purple blossoms, making them easy for the bird to spot and catch. However, Pip and the other purple mantises blend naturally into the flowers, remaining safely hidden from the predator.



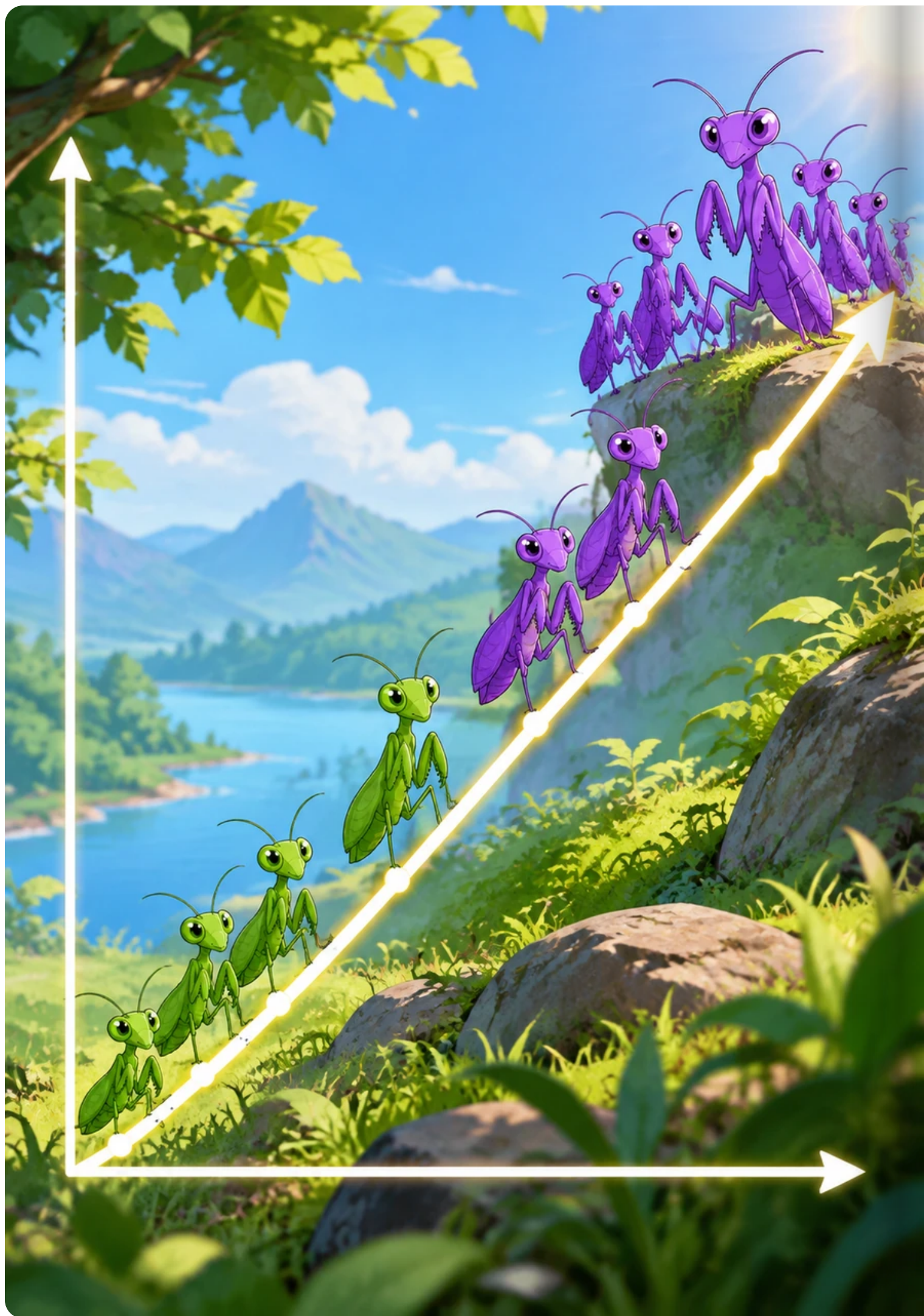
Because the purple mantises are so well camouflaged, they are far more likely to survive the bird's hunts. These lucky survivors grow up to reproduce, passing their natural purple color trait down to their many offspring.



As time passes, more purple mantises are born in each new generation. The non-purple mantises continue to face higher predation, leading to fewer of them surviving long enough to have young of their own.



After several generations, the makeup of the mantis population has completely transformed. A second bar graph highlights this shift, showing a towering bar for purple mantises while the bars for green, yellow, orange, and red have shrunk significantly.



A line graph tracking the percentage of purple mantises over multiple generations makes the trend easy to follow. With Generation marked along the bottom axis and Percentage of Purple Mantises along the side axis, a bold line climbs steadily upward toward the top.



This shift in the population is a classic example of directional selection, where nature favors one extreme trait over others. The purple mantises did not change because they wanted to survive; rather, the purple flowers created an environment where purple coloration offered a distinct survival advantage.