

The diversity of the bumblebee is staggering. Scientists believe that while over 2.3 million species have been identified, this represents just a fraction of the true biodiversity of our planet. Each species, whether it be the bumblebee on the front cover, a flowering plant, or a fungi growing in the forest, is the result of a long evolutionary history characterized by adaptations to its environment and interactions with other species.

The bumblebees on the front cover are just one example of that evolutionary diversity. There are over 250 known species of bumblebees in the genus *Bombus*. Bumblebees are pollinators, meaning that they move pollen between flowering plant species. The success of the flowering plants (Angiosperms) is due to the coevolution of plants with their pollinators. In the case of the bumblebee, the length of its tongue determines which plant species it can collect nectar from, which the bees need for flight. As the bees collect nectar, it also collects pollen from the flowers to its larvae for food. Some of the pollen sticks to the bee and is transferred between plants, allowing the plant to complete its life cycle. Bumblebees also have the ability to precisely regulate their body temperature. They do this by shivering a set of muscles to generate heat. This allows them to begin foraging for nectar earlier in the season and to continue late into the fall, and thus gives them a wider range of plant species to collect pollen and nectar from.

And yet, like many species of bees, the bumblebees are facing challenges due to changes in their environment, specifically human use of pesticides, urbanization, and climate change. Many species of bumblebees are in decline. Ultimately, the loss of any species can have a ripple effect throughout an ecosystem. The loss of the bumblebee, which plays an important role as a pollinator, will undoubtedly have a wide-spread negative influence on our agriculture and the health of many ecosystems.

The goal of this book is to broaden a fundamental knowledge of our scientific understanding of life—the science of biology. Biology is an exciting area of science, with new discoveries being made every day in the areas of genetics, physiology, and medicine. Our goal with this book is to help you in developing an appreciation of what it means to be alive and to encourage you to learn more about the complexity of everything that occupies our planet with life.



SMARTBOOK®

Available within McGraw-Hill Connect®, SmartBook® makes study time as productive and efficient as possible. It identifies and closes knowledge gaps through a continually adapting reading experience that provides personalized learning resources at the precise moment of need.

This ensures that every minute spent with SmartBook is returned to you in a continually added value-added minute positive. The result? More confidence, better grades.

9 781 950640 289 生物学

分册 18.9

通册

1 册 00802

1 册 00802

