



Pollinators and Me Day 3 Student Activity Pollinator Population Graphs

Monarch Butterfly

For this activity, visit [Monarch Joint Ventures](#) and analyze the graph entitled, "Total Area Occupied by Monarchs at Overwintering Sites in Mexico."

- During which winter did monarch butterflies occupy the greatest area (as measured in hectares)?
- Compare that area with the area occupied by monarch butterflies in the winter of 2023-2024.
- What is the overall trend in the size of the area occupied by monarch butterflies from 1993-1994 to 2023-2024?

Challenge

What was the difference in the area occupied by monarch butterflies in the winter of 2023-2024 as compared to the minimum of hectares needed to sustain the monarch population? (Hint: Read the caption of the graph to find the information you need to do the math.)

American Bumble Bee

For this activity, visit [Petition to List the American Bumble Bee as an Endangered Species](#) and analyze the graph entitled, "The American Bumble Bee Population over the Past 100 Years" (see p. 17)

- The x-axis of the graph is labeled in decades. During which decade was the population of American bumble bees the greatest?
- During which decade did the population of the American bumble bee begin to decline?
- During which decade was the population of American bumble bees the least?
- What do you notice about the overall trend of the American bumble bee population?





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LESSON PLAN

Mason Bee

For this activity, visit the conservation report on mason bees by [NatureServe](#) and analyze the graph entitled, “% of Species at Risk.” (p. 5)

What percentage of mason bee species are at risk for extinction?

How does this risk percentage compare with those of other insect pollinators, such as butterflies, moths, and bumble bees?

Does this mean the mason bees are in more danger or less danger of extinction than other insect pollinators?

Challenge

There are 342 species of mason bees. About how many of those species are at risk for extinction? (Hint: Change the percentage from your answer to #1 to a decimal and multiply it by the total number of species. Round your answer to the nearest whole number.)

Center for Biological Diversity (2021). Petition to list the American bumble bee as an endangered species under the U.S. Endangered Species Act.

<https://www.biologicaldiversity.org/species/invertebrates/pdfs/Center-et-al-2021-Petition-to-List-the-American-Bumble-bee.pdf>

Monarch Joint Venture (2024). Eastern monarch butterfly population falls to less than one hectare in the 2023-2024 overwintering season. <https://monarchjointventure.org/blog/eastern-monarch-butterfly-population-falls-to-less-than-one-hectare-in-the-2023-2024-overwintering-season>

Young, B. E., Schweitzer, D. F., Sears, N. A., & Ormes, M. F. (2015). Conservation and management of North American Mason Bees. NatureServe.

https://www.natureserve.org/sites/default/files/web_-_natureserve_osmia_report_brochure.pdf





Pollinators and Me Day 3 Answer Key Pollinator Population Graphs

Monarch Butterfly

For this activity, visit [Monarch Joint Ventures](#) and analyze the graph entitled, "Total Area Occupied by Monarchs at Overwintering Sites in Mexico."

- During which winter did monarch butterflies occupy the greatest area (as measured in hectares)? **1996-1997**
- Compare that area with the area occupied by monarch butterflies in the winter of 2023-2024. **17.29 less hectares**
- What is the overall trend in the size of the area occupied by monarch butterflies from 1993-1994 to 2023-2024? **The area occupied by overwintering monarchs is decreasing.**

Challenge

What was the difference in the area occupied by monarch butterflies in the winter of 2023-2024 as compared to the minimum of hectares needed to sustain the monarch population? (Hint: Read the caption of the graph to find the information you need to do the math.)

The area occupied by monarch butterflies in the winter of 2023-2024 is 5.1 hectares less than the minimum of hectares needed to sustain the monarch population.

American Bumble Bee

For this activity, visit [Petition to List the American Bumble Bee as an Endangered Species](#) and analyze the graph entitled, "The American Bumble Bee Population over the Past 100 Years" (see p. 17).

- The x-axis of the graph is labeled in decades. During which decade was the population of American bumble bees the greatest? **1972-1981**
- During which decade did the population of the American bumble bee begin to decline? **1982-1991**
- During which decade was the population of American bumble bees the least? **2002-2012**
- What do you notice about the overall trend of the American bumble bee population? **The overall trend is that the American bumble bee population is declining.**





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LESSON PLAN

The Mason Bee

For this activity, visit the conservation report on mason bees by [NatureServe](#) and analyze the graph entitled, “% of Species at Risk” (p. 5).

- What percentage of mason bee species are at risk for extinction? **about 28%**
- How does this risk percentage compare with those of other insect pollinators, such as butterflies, moths, and bumble bees? **The risk percentage of mason bees is higher than that of most other insect pollinators.**
- Does this mean the mason bees are in more danger or less danger of extinction than other insect pollinators? **The mason bees are in more danger of extinction than most other insect pollinators.**

Challenge

There are 342 species of mason bees. About how many of those species are at risk for extinction? (Hint: Change the percentage from your answer to #1 to a decimal and multiply it by the total number of species. Round your answer to the nearest whole number.) **About 96 species of mason bees are at risk for extinction.**

References

Center for Biological Diversity (2021). Petition to list the American bumble bee as an endangered species under the U.S. Endangered Species Act.

<https://www.biologicaldiversity.org/species/invertebrates/pdfs/Center-et-al-2021-Petition-to-List-the-American-Bumble-bee.pdf>

Monarch Joint Venture (2024). Eastern monarch butterfly population falls to less than one hectare in the 2023-2024 overwintering season. <https://monarchjointventure.org/blog/eastern-monarch-butterfly-population-falls-to-less-than-one-hectare-in-the-2023-2024-overwintering-season>

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