

Distribution of Monarch Butterfly Populations Across Different Land UseTypes

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PLIGHT OF THE MONARCH

Monarchs butterflies (Fig. 1A,C) are very important for many reasons. Monarchs pollinate many types of wildflowers and are also a key food source for birds and other small animals (1).

Monarchs depend on milkweed (*Asclepias tuberosa*) as it is the only plant they will lay their eggs on and it is the only food source for the caterpillars to eat (Fig. 1B). These butterflies have to make a several month long journey from the northern U.S all the way to Mexico (2). To prepare, monarchs need to drink a lot of nectar.

In recent years, monarch populations have been decreasing in large numbers. The reasoning for this is likely due to milkweed eradication as noxious weeds, as well as from an increase in developed lands, urbanization, and subsequent loss of winter habitat.

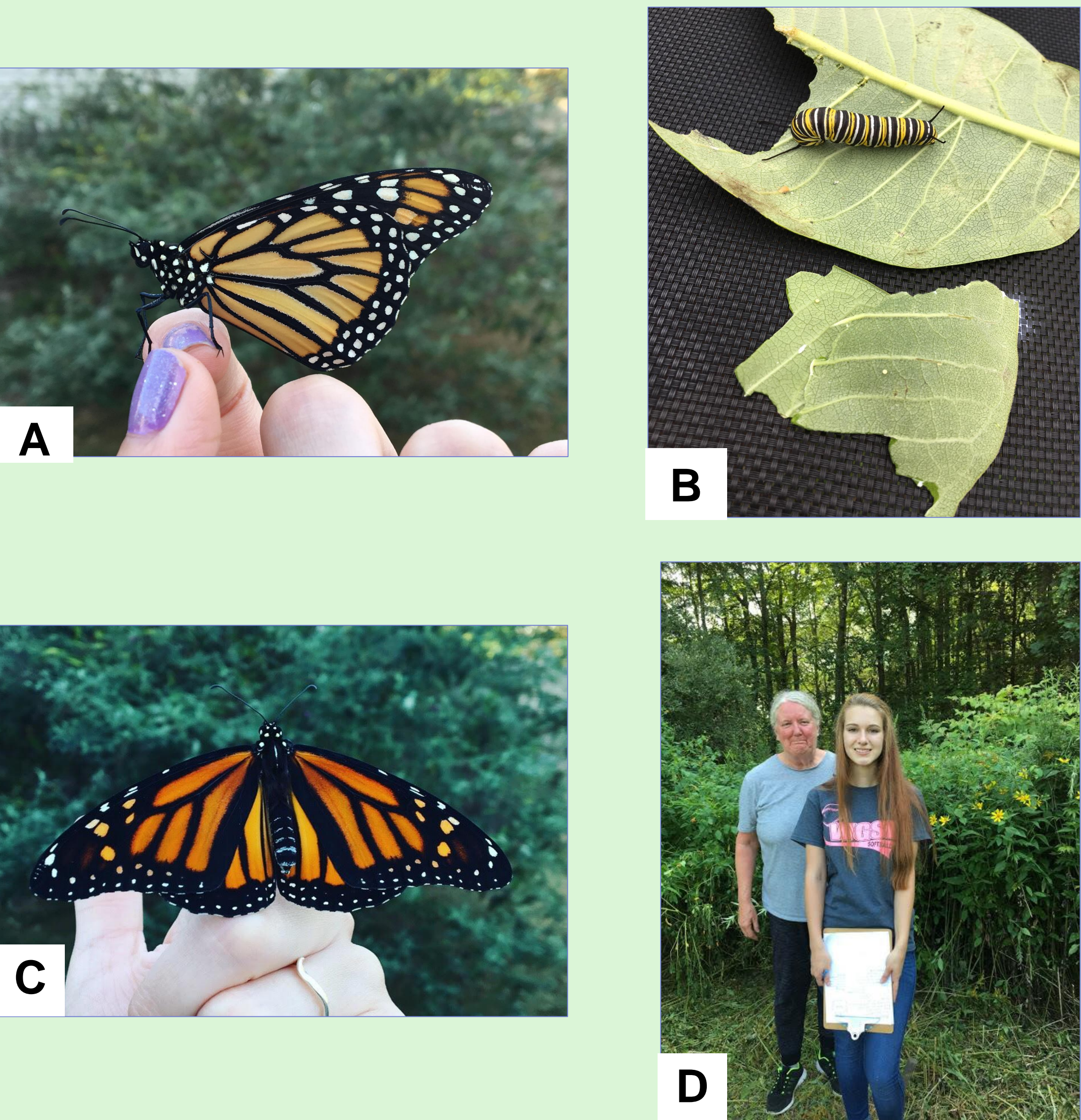


Fig. 1: A,C: Monarch specimens collected from home garden site; B: monarch caterpillar and two eggs found at the home garden site; D: Mary and Hayley at the Tyler Mill site.

PROJECT OBJECTIVES

This project investigated how monarch populations are affected by human development. Do monarchs prefer rural or suburban areas over densely populated urban ones? The objective of this study is to document the dispersal of monarch populations in different habitats.

This topic is important because it can show what habitats monarchs prefer, which can contribute to actions that can be taken to protect and promote these habitat preferences.

MATERIALS AND METHODS

- In August 2017, four 363 ft² study plots were established (Fig 2):

Site Name	Location	Land Type
Home Garden (control)	Wallingford	Suburban
Tyler Mill	Wallingford	Suburban
Fresh Meadows	Wallingford	Suburban
Meriden Public Library	Meriden	Urban

- Size of each plot was kept uniform with the control plot.
- Number of milkweed plants were recorded in each plot.
- Weekly, the number of monarch eggs and caterpillars on each milkweed plant were counted and recorded between August and September.
- All data was recorded in a field notebook (Fig 2D).
- Eggs, caterpillars, and plants were counted rather than butterflies, because it would be difficult to count moving butterflies accurately.



Fig. 2: A: Home garden site; B: Tyler Mill site; C: Fresh Meadows Location; D: Data recordings in the field notebook.

RESULTS

- There were more milkweed plants in less developed areas.
- There was more evidence of monarchs where there was both milkweed and pollinator plants nearby. For example, a greater number of monarch caterpillars and eggs were observed in the home garden site which had multiple pollinator plants such as verbena, butterfly bushes, and more. At the other sites, there was less evidence of monarchs and also far less pollinator plants growing in the vicinity.

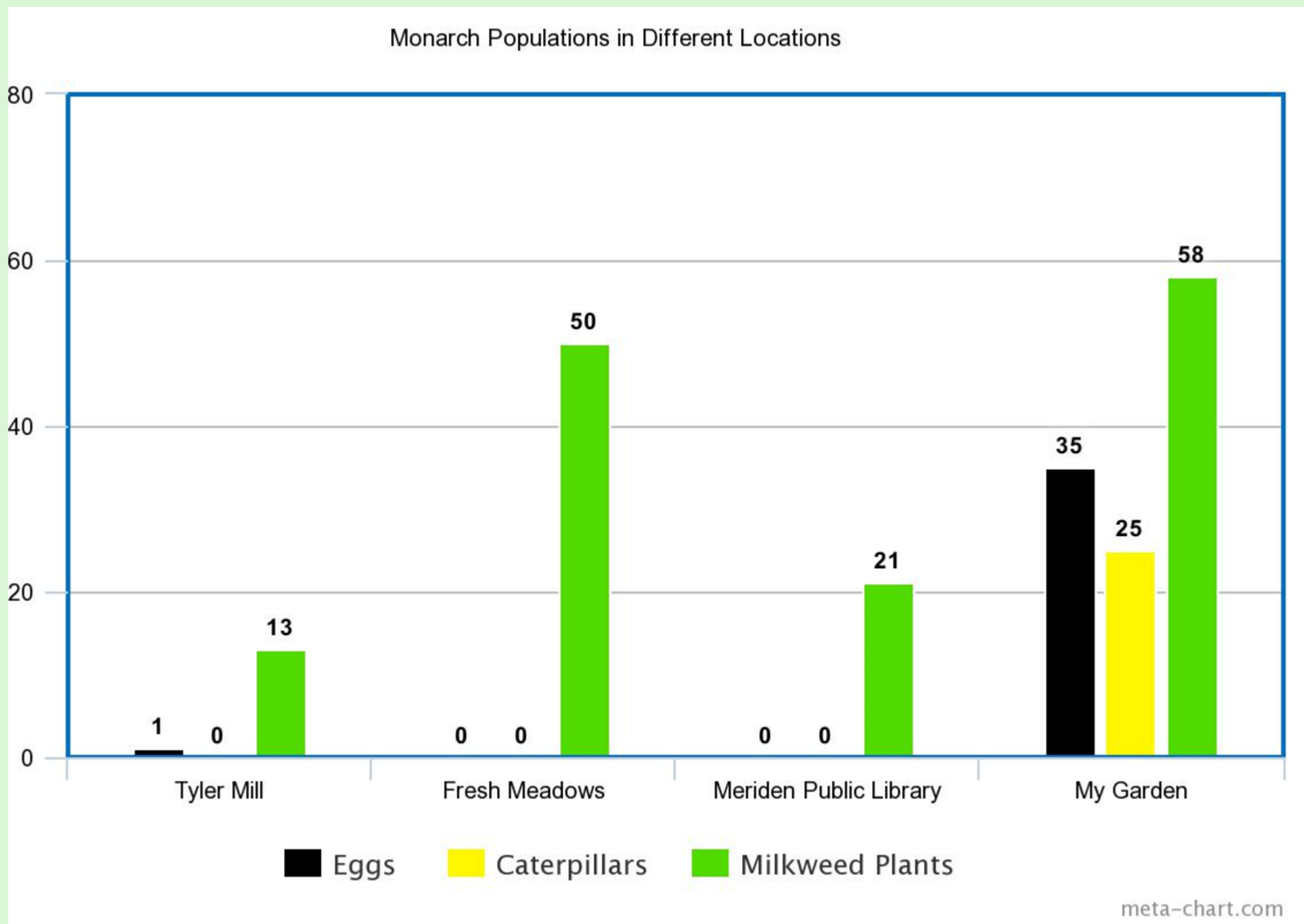


Fig. 3. Distribution of eggs, caterpillars, and milkweed plants found across the four study plots.

CONCLUSIONS

- From this study, it can be concluded that monarch butterflies were attracted to areas with pollinator plants nearby (such as a suburban garden or an untouched field). The presence of milkweed alone did not necessarily predict more evidence of monarchs.
- Pollinator gardens act as a feeding station for monarch butterflies. More pollinator gardens means monarch populations may increase and thrive.
- From these findings, we should promote the planting of pollinator gardens, or leave open fields alone, and discourage urban development.

REFERENCES

- National Park Service: <https://www.nps.gov/articles/monarch-butterfly.htm>
- National Geographic: <http://theplate.nationalgeographic.com/2014/09/23/jose-andres-why-we-need-to-protect-monarch-butterflies/>

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