Brief Report: Nelson Transect Monitoring Project Summary

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Introduction

This project involves a long-running transect survey in Nelson, where butterflies and moths are recorded along a fixed route during the active months of the year. The value of this project lies in its consistency over time, which makes it possible to observe broad changes in butterfly abundance across monitoring seasons.

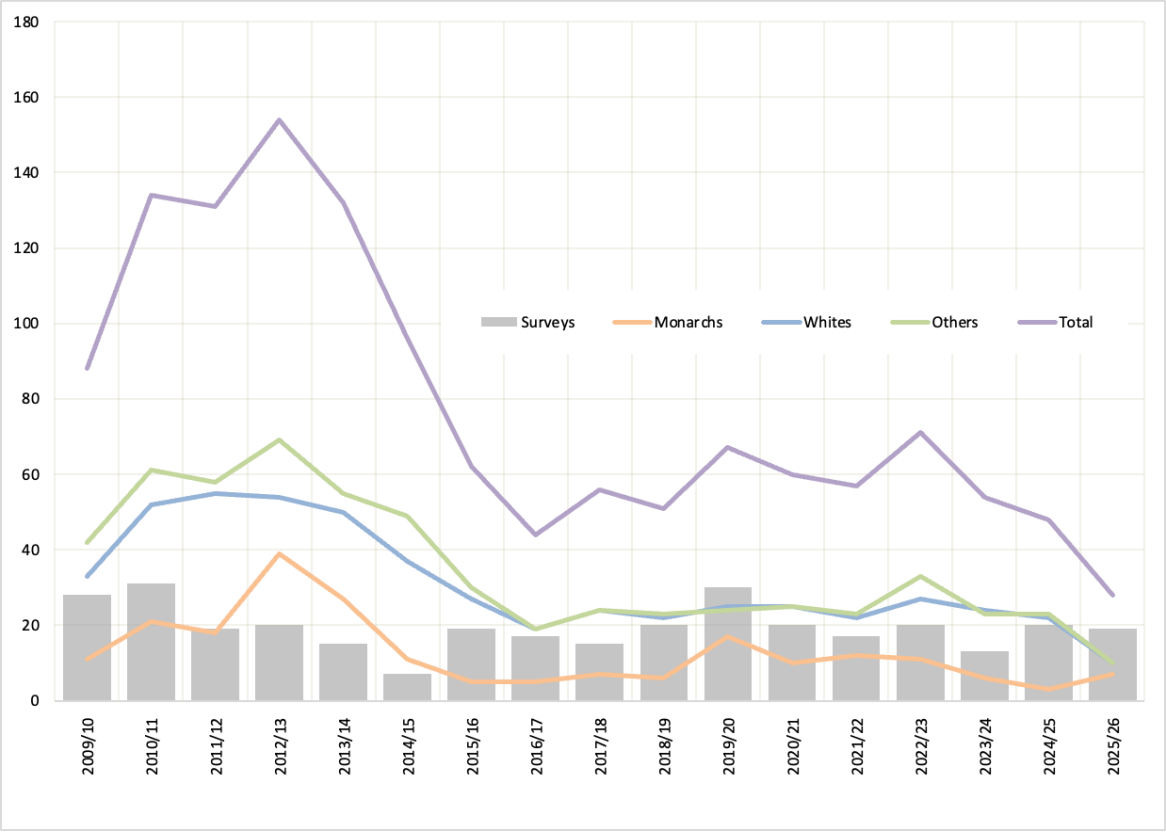
This summary is based on monitoring-season averages per survey, which helps account for differences in the number of surveys undertaken each year.

Summary of Findings

The transect data show a clear long-term pattern of change in butterfly abundance.

Chart: A once strong butterfly transect shows long-term decline and only partial recovery.

Mean Number of Butterflies per Survey by Monitoring Season.



A **monitoring season** is calculated by treating **September to May** as one biological survey season rather than splitting by calendar year.

The earliest years of monitoring were the strongest. Between **2009/10 and 2013/14**, the transect recorded high average counts per survey, with especially strong seasons in **2010/11**, **2011/12**, and **2012/13**. The highest average total count occurred in **2012/13**, with a mean of **154 butterflies per survey**. This peak appears to have been driven by high counts of both **monarchs** and **white butterflies**, along with strong counts from other species.

After this early peak period, the data indicate a marked decline. Average total counts per survey fell from **132 in 2013/14** to **96 in 2014/15**, then to **62 in 2015/16**, reaching a low of **44 in 2016/17**. This suggests that the transect moved from a high-abundance phase into a sustained period of reduced butterfly activity.

From **2019/20 to 2022/23**, there are signs of a modest recovery. Mean total counts per survey rose again to between **57 and 71**, showing improvement from the low levels of the mid-2010s. However, this recovery did not return the transect to the very high levels recorded in the early part of the time series.

The most recent seasons suggest another weakening in sightings. The mean total count per survey declined to **54 in 2023/24**, **48 in 2024/25**, and **28 in 2025/26**. The latest season should be interpreted with some caution, but it currently represents the lowest value in the series.

Species-Level Patterns

White butterflies were the most consistently abundant group across the monitoring period. They remained a major component of the transect counts in almost every season and appear to form the core of overall butterfly activity along the route.

Monarchs showed much greater year-to-year fluctuation. Their counts were especially strong in the early 2010s, peaking at **39 per survey in 2012/13**, before falling sharply in later years. There was some recovery in the early 2020s, but recent values have again been low.

The **other species** category also followed the broader pattern seen in total counts. Other species were relatively strong in the early years, weakened in the mid-2010s, and showed only partial recovery later. This indicates that the observed decline is not limited to monarchs alone, but reflects a broader change in the butterfly community recorded on the transect.

Interpretation

Overall, the transect tells a strong long-term story. The early years were characterised by high butterfly abundance, followed by a substantial decline, a moderate recovery, and then signs of renewed weakening in recent seasons. Because the results are based on mean counts per survey rather than raw totals, the findings are less affected by variation in survey effort between years.

The data suggest that:

- the transect experienced its strongest period in the early 2010s
- butterfly activity dropped sharply in the mid-2010s
- recovery in the early 2020s was only partial
- recent seasons may indicate further decline
- whites remain the most consistently abundant species group
- monarchs are more variable and appear more sensitive to change over time

Conclusion

This project highlights the importance of long-term, repeated monitoring. The Nelson transect provides a valuable local record of butterfly activity over time and shows that even a simple, consistent citizen-science method can reveal meaningful ecological trends.

The findings suggest that butterfly abundance along this transect has changed considerably over the years, with recent seasons warranting attention. Continued monitoring will be important to determine whether the latest low values represent short-term fluctuation or the continuation of a broader decline.