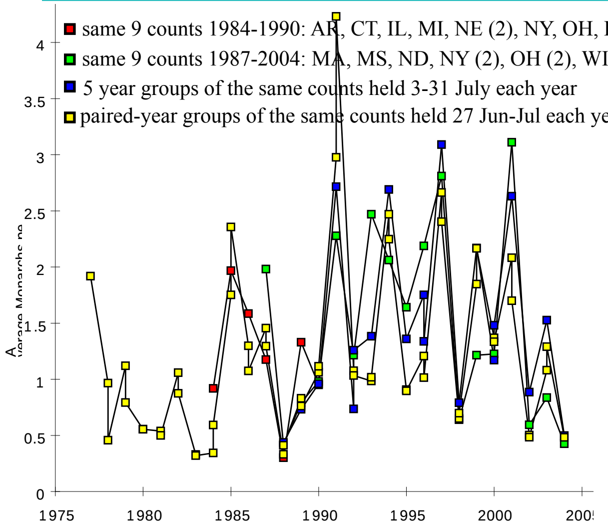
NABA Butterfly Count Column



by Ann Swengel

EASTERN MONARCH ABUNDANCE

This graph plots Monarch abundance on butterfly counts east of the Rocky Mountains and north of the Gulf coastal plain. Only counts ever reporting a Monarch are analyzed, as including all counts would dilute patterns. Monarch abundance is expressed as individuals observed per party-hour per count. A party-hour is an hour spent observing by counter(s) working together as a party (group). This calculation makes results comparable among counts. Only counts held within a four-week span are included, because Monarch abundance can vary among months within the growing season. Ideally, for monitoring, the sample of counts would be both large (since local conditions on one or several counts may not reflect general patterns in the region) and the same each year (since Monarch abundance varies among counts because of differences in habitat). By accounting for these other factors affecting Monarch numbers, we can characterize how annual variation (e.g., climatic fluctuation) influences Monarch abundance.

The different plots in this graph represent different tradeoffs between more counts and more variable control. By keeping count circles the same each year, only nine are available for 1987-2004, with count date under the four-week spread within count, but from 30 June to 7 August for all counts pooled. To project back earlier, the sample of counts changes somewhat, and covers a shorter span of years.

To boost number of counts, I shortened the spans to five years. Within each five-year group, the counts are the same, always held 3-31 July. But among five-year groups, the number and location of counts vary. The sample was sufficient for 1988-2004. I overlapped each five-year group for one year (1992, 1996, 2000).

The sample of counts is largest for paired-year analysis, which only keeps the counts the same within a consecutive year-pair. The pairs overlap (e.g., the 1977-78 pair overlaps with the 1978-79 pair, etc.). The time period (27 June-25 July) was selected to optimize number of counts in the earlier years (see also count column in Summer 1999). The "paired-year" analysis is best suited to determining whether Monarch abundance went up or down since last year.

Within each analysis, there are many ups and downs. Among some analyses, there is some variation about whether they go up or down, and how much. But where analyses overlap in enough years (>6) to support statistics, they correlate very strongly and positively with each other. So the different analyses usually agree on the ups and downs.

What about long-term trends? In all analyses, there is no trend (up or down) over the entire period, with 1988 and 2004 similarly the lowest years. But there is a significant increase from the late 1980s into the 1990s, then a significant decrease to 2004.

Are you very curious about what happened in 2005? I sure am. They will appear in the next issue's column.

TO ORDER THE COUNT REPORT
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