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Studying Butterfly Populations in Urban Areas

Although seldom reported in the scientific literature, studying butterfly populations in urban settings can be exciting as well as provide important information. The urban environment provides parks, golf courses, and backyard areas. In addition, most larger cities have extensive parks with jogging or biking trails, and often these trails pass through woods, cultivated flower beds, and brushy fields. Such areas provide larval food and nectaring sources for many species of butterflies.

Long-term population studies can be very important in determining the effect of urbanization on butterfly populations. Some species may decline in numbers, while other may increase. In addition, with the possibility that global warming may be occurring, long-term studies may detect earlier flight seasons as well as shifts in butterfly populations (some will become rare as they are "pushed" further north, while other more southerly species will become more common as they expand their range northward).

Little formal training, equipment or expense are needed to conduct these studies. Furthermore, no collecting is required, no permits are needed, and anyone can participate from the quite young to the elderly. Many of the most common butterflies are easy to identify by sight. Indeed, it can be done without ever leaving an automobile by slowly cruising along trails in state parks or forests. Most park managers are happy to have non-collecting research done in their areas and welcome species records because it often helps them to answer questions posed by the public.

In selecting a study area several factors should be considered. First and foremost, there must be butterflies present in good numbers. A tour through parks or along roads will show where butterflies are common. The count route should be as long as possible, and preferably of the same habitat. If the count route goes through cultivated flower beds, deep woods, and grassy areas, try to keep the data separated by habitat type. The denser the butterfly population, the shorter the route can be. An abundance of flowers will add greatly to the populations of several species. Red, purple, and blue flowers seem to be preferred by many butterflies.

The equipment needed for this type of study is minimal. A small field guide to the local butterflies is useful until the common species are learned. Most common butterflies can be identified without having the specimen in hand, and those species which require close inspection with microscope or hand lens are not well-suited for population studies by the amateur. Some method of keeping track of the number of individuals seen is essential. A notebook and pen is the simplest, but requires stopping to tally the sightings, which may not appeal to the jogger or walker who is trying to maintain a steady pace. Small hand held counters are ideal. They can be carried easily and operated without ever breaking stride. Some have several buttons so more than one species can be counted at the same time. With no more than this equipment, some very detailed and valuable studies can be carried out.

It is best to begin with the large species if one is not very familiar with butterflies. The Monarch and the Tiger Swallowtail are probably the easiest for the beginner to recognize with the Spicebush Swallowtail close behind. In mid- to late-summer, the Great Spangled Fritillary is common and east to spot. In some areas, Mourning Cloaks and Red Admirals will be abundant, especially in the early spring. Red Admirals will usually be seen resting on the trail ready to dart up and defend their territory.

Some of the smaller species are also very common and make good subjects for on-the-wing counting. The Question Mark and Comma are very difficult to distinguish from each other, but are often the most common of all. Both like to rest on the trail until flushed. If there is any clover and especially alfalfa nearby, Sulfur butterflies should be common and easy to identify by sight. In wooded areas the Falcate Orange Tip is east to spot, but it is present only during the early spring. One of my favorites is the Hackberry Butterfly. In late summer, it can be found in very large numbers, especially along wooded trails. It usually rests on the trail and will dart up and often alight on unwary hikers. The Silver-spotted Skipper is a common visitor of flowers and can be instantly identified by the silver spots in the lower surface of the hind wing. In wooded areas, the Little Wood Satyr may be common, but often is overlooked because of its coloring and flight pattern.

There are two groups of Lepidoptera that require an especially well-trained eye. These are the small Skippers and the group commonly called Blues. Both may be common, but there are often two or more similar species in a given area at the same time. These species are

frequently difficult to identify even with technical keys and the specimen under a microscope. It is possible to lump them as "blues" and "skippers" just to get an idea of their numbers, but the information is not as valuable as that collected on a single species.

The procedure for making a count is quite simple. One merely moves along the count route and tallies each of the species as it appears. If biking or driving, a slow speed is best. Always be careful not to count the same individual twice and assume that any butterfly which overtakes you has already been counted. Count those close by first especially those along the side of the trail. You will develop a technique which will become almost automatic. If you do not have a circular route, retrace your path and divide the total for both directions by two to get an average. At the beginning or end of the count, be sure to write down on the same sheet with the count data, the date, time of day, weather conditions, flowers in bloom, and any other information. It is far better to have too much of this type of information than not enough. Remember that the data you collect at this time will NEVER be available again!

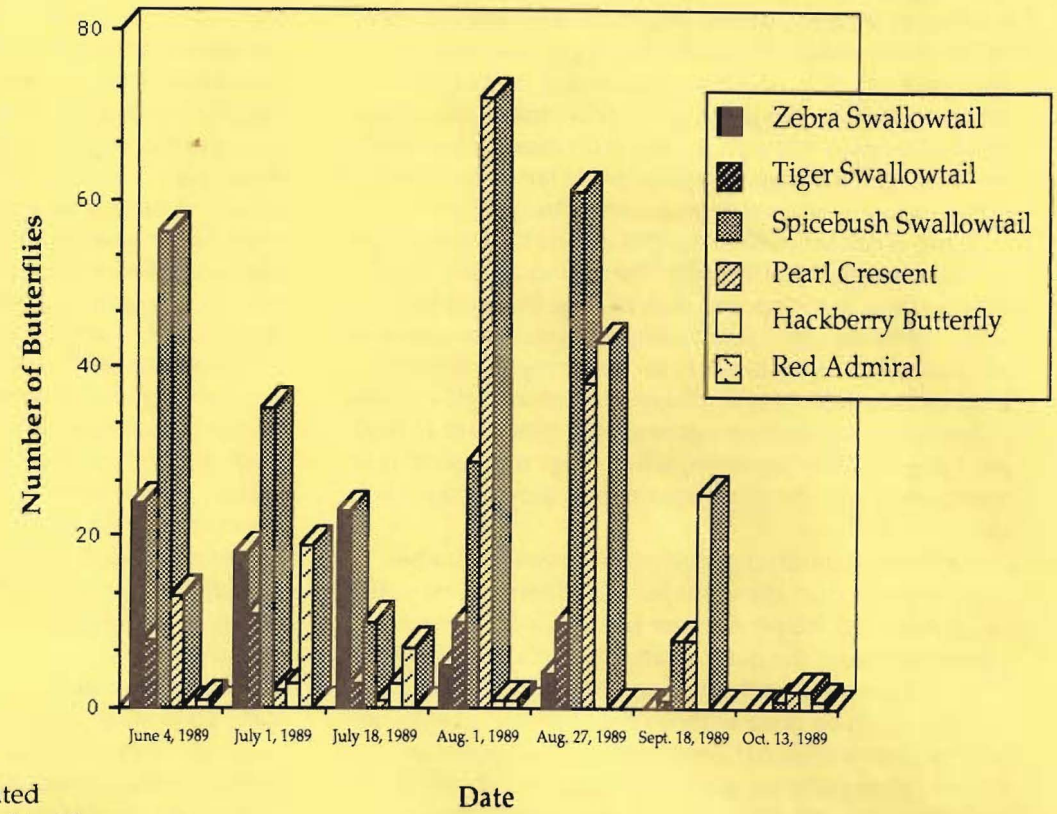
After the information is collected - at the end of a month or season - it is time to analyze and present it. Just a table of dates and numbers counted is sufficient. However, a bar graph with dates on the horizontal axis and numbers counted on the vertical axis is much more eye-catching. Reference to this type of graph can show if a species is single or double brooded. Over a period of several years, valuable information can be gained about peak flight periods, and variation in numbers from year to year.

Research is worthless unless it is communicated. Most park managers are glad to have such information. They are often not trained in entomology and usually do not have the time to do this kind of research. I have found that park managers welcome anything that will help them answer questions from the public. Most entomological societies have newsletters where members can get their results into the public domain. One never knows when the information they have contributed will be just the piece needed to answer some larger question.

Finally, let me suggest that butterfly population studies would make ideal science fair projects. Such studies can be conducted during the summer, they teach research techniques, and utilize the scientific method. The data tables and graphs made in butterfly population studies can look terrific and really impress the judges. Consider starting a butterfly population study as soon as possible.

Joe McMahon

Example of some Butterfly Census Population Data from Ohio in 1989



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