IN SEARCH FOR *PIERIS VIRGINIENSIS* IN MASSACHUSETTS

by WALFRIED J. REINTHAL

Following a friendly invitation from SIDNEY A. HESSEL I went with him on April 30th to visit the habitat of *Pieris virginiensis* Edwards in Washington, Connecticut. There is a dirt road running through a damp, decidous forest in a hilly area. A brook winds, with more or less dense scrubby vegetation, around this road. The foodplant of the species, *Dentaria diphylla,* grows locally in smaller or larger groups mostly on the banks of this brook, but also on the road sides in woods. At the time of our visit, only a few of the plants were in blossom. Shortly after we parked our car on the road side at 10.30 A.M. we netted the first male *virginiensis* a few yards from the road. We collected other specimens thereafter, which were caught on stream banks, in heavy brush, or on the road. At times it was not easy to follow the butterfly and handle the net in the dense vegetation. We stayed here for about one hour, then went to investigate some other places. Coming back we made a short stop at the same place in the early afternoon. The species was still flying at 2.30 P.M. All together we saw ten specimens, of which we caught six males and two females. Most specimens were fresh, and it seemed certain that they emerged that very morning, April 30th, 1955, since it was the first sunny day in that area after six days of rain.

My first acquaintance with the habitat and habits of this interesting species encouraged me to look for it in western Massachusetts. On May 14th I was on a collecting trip in the Berkshires, in the northwest corner of the state. It was a clear but cool day with a north wind. Along picturesque Highway 2 and in several seemingly good collecting spots nothing was flying, not even a *Pieris rapæ* Linné or *Colias eurytheme* Bdv. In some moist meadows where the *Vaccinium* was in full bloom, we expected *Incisalia,* but we did not see one. In the early afternoon it turned warmer and, discouraged with no results, we decided to pay a short visit to Wahconah State Park near Dalton before going home.

This park lies northeast of Pittsfield, Massachusetts, and occupies a wooded area where a stream falls into a gorge forming a little waterfall. My collecting guest that day, H. WILHELM from Willimantic, Connecticut, and I decided to try our luck here. As soon as we stepped down to the waterfall I got a butterfly in my net in a damp place along the path in the woods. To my surprise it was a male of *P. virginiensis.* Of course, a feverish and diligent search began immediately. Along a tiny stream running down a shady, woody slope, we found some patches of *Dentaria* in bloom, the foodplant of the species. And here we soon obtained a few other specimens some of which, however, turned out to be *Pieris napi* Linné. So both species flew here together in the same biotope. We soon depleted this tiny habitat after we caught a couple of specimens. We then turned our attention to the swampy forested area below the waterfall. There were two places where both the Pierids were flying. One was a steep woody slope with water running down in several tiny streams where in shade of some trees and bushes a few patches of foodplant were growing. Most of the area was

densely covered by a growth of *Equisetum* about two feet high. Intermingling with this vegetation were also some nice patches of violets in bloom. Here a few *P. napi* and *P. virginiensis* were caught. The other place, even better, was a shady, swampy, deciduous woods at the foot of that slope, along the banks of a small stream. We noticed some small open spaces along the water where the sun found ready access and white flowers of *Dentaria* were waiting for the guests to feed upon. Both species were flying in these open spaces but also in dense brush and even on the steep woody slopes. The woods in this habitat were mostly composed of the following trees, predominantly in scrubby form: maple, birch, beech, hazelnut, linden, hemlock, and ash. Some more typical of the lower vegetation, besides the several species of ferns and the *Equisetum*, were: *Viola* sp., *Trillium erectum, Erythronium americanum, Arisæma triphyllum, Anemone quinquefolia, Asarum canadense, Tiarella cordifolia, Sanguinaria canadensis,* etc. As mentioned above both species, *napi* and *virginiensis,* were thriving here together. Since no other representatives of the Cruciferæ family were noticed besides the Toothwort, the last one presumably formed the foodplant for both species.

At times our battlefield remained empty and not one "white" was on the horizon. Then suddenly a single specimen emerged from the vegetation or flew down the woody slope to feed upon Toothwort flowers. Its normal flight is slow, zigzagging a foot or two above the ground, stopping for a while on flowers or resting on the ground enjoying the sun. *P. virginiensis* is a rather "nervous" and jerky species. If disturbed it gets panicky and goes into an erratic flight, and at times it really soars. I have seen it fly as high as the tree tops or hasten up a steep woody slope. There was some opportunity in this place to compare both species in their habits, and it probably would not be wrong to say that their habits are quite similar, except that perhaps *P. napi* is more temperamental, more sensitive, and is more easily disturbed. When this happens it flies away fast.

Since it was getting cooler and darker in the afternoon we left Wahconah Park at about 4 P.M. The result of our mutual effort was: we saw about 20 *Pieris*, of which we collected one male and three females of *P. napi*, and one female of *P. virginiensis*. The *napi* were more fresh than *virginiensis,* the last one being on the wing, in my estimation, for about 7-10 days.

The next day I returned to Wahconah Park in the morning, hoping to have more luck with both species. I arrived at 9.30 A.M., but in spite of the sunny weather it was too cool and nothing was on the wing. I drove about one mile to Windsor Reservoir to look for some other species in more open, warmer surroundings. An inviting swampy meadow, with large patches of a low *Vaccinium* in full bloom, did not yield anything. The sandy hills on the other side of the road, where wild cherry was in full bloom and wild strawberry and *Glechoma hederacea* blossoms decorated the ground, remained lifeless. As I was walking back to my car along the sandy road, a *Pieris* came flying toward me. To my surprise it turned out be a fresh male of *virginiensis*, about one half mile away from its habitat in Wahconah Park, here in an open, sandy and meadowy terrain! General experience has been that the *virginiensis* does not go far out of its biotope in the woods, but evidently there are exceptions at times, as in this case.

Back in the Park again, I saw the first *Pieris* flying at noon. During one hour of collecting, I was able to catch only one male and one female of *napi,* and one male and two females of *virginiensis*, in addition to the above mentioned male obtained on the sandy road. I observed only a few more specimens but did not net any of them.

Leaving Wahconah State Park, I drove north of Pittsfield on Highway 7, seeking other likely places for *virginiensis*. I remembered two suitable habitats in that area from the previous autumn. Today I actually located two more places in Berkshire County where *virginiensis* were breeding and flying. After passing New Ashford, a little village on Highway 7, I noticed a large patch of Toothwort along the road in full bloom. Five or six specimens were flying above the flowers or feeding on them. The area consisted of swampy ground and was shaped like a triangle, about 40-50 yards long and 12-15 yards wide. It lay between a narrow creek and the highway which leads through a dense, shady, mixed type forest. In this triangle were a few shrubs and some other plants, not yet in bloom, and a dense growth of *Dentaria.* In spite of it being late afternoon, though still with enough sunshine, I collected about one hour and obtained eleven males and two females, rather worn specimens, of *P. virginiensis.* Later, after passing Lanesboro, on my way back to Pittsfield, I recognized a white butterfly crossing the road as being undoubtedly *virginiensis.* I failed to catch it but then started to look around for the place from which it could have come. After traversing a farm meadow 40-50 feet wide I discovered the possible habitat. It turned out to be a swampy, dense, and semishady brush where several small brooks criss-crossed each other, thus forming a number of small islands. Among the other plants growing in the swampy ground were violets in full bloom, a good amount of them belonging to the yellow-colored *Viola eriocarpa.* The Toothwort, *Dentaria diphylla,* grew in small scattered groups under the brush, mostly on the very edge of the small brooks. *P. virginiensis* were still flying here at 4:00 P.M. During my twenty minute stop I collected two males and two females, one pair of them *in copula.* The last one was frightened from a small bush of wild roses.

Lack of more time and good weather, together with the short flight period of the species, gave me little chance to look for more *virginiensis* this spring. I did, however, make one catch on May 30. While on my way home from a trip to Vermont, I made a short stop in the late afternoon on a dirt connecting road on the outskirts of Colrain, a small village northwest of Greenfield, Massachuetts. On this abruptly ascending road, bordered by a brook in a canyon, I unexpectedly netted a worn male of *virginiensis.* A brief search along the brook for the foodplant was fruitless, so I concluded the specimen evidently came from a more distant place.

The above brief observations of this interesting species convinced me that *virginiensis* probably has a wider distribution of localized habitats in western Massachusetts, since there are numerous suitable places in Berkshire County similar to those described in this article. This, of course, depends again on distribution of the foodplant to which this butterfly is closely bound. The short period of flight, no more than three to four weeks, certainly makes the study of this

species more difficult for one who has to choose between a day off from work and a good weather favoring a field trip.

There remain a few words to be said about some experiences with the first stages of *P. virginiensis*. My partner, H. WILHELM, found one egg on Toothwort on our first trip on May 14 to Wahconah State Park where the species flew together with *P. napi*. The larva from this egg was raised to maturity on Toothwort, producing a female of *napi*, of second brood, which emerged from chrysalid on June 7. On June 16, Mr. WILHELM paid another visit to Wahconah State Park and in several hours of searching Toothwort leaves, he collected about three dozen or more of *Pieris* larvæ, about one-half to full-grown in size. He raised them to chrysalids, but only one female *Pieris napi*, belonging to the second brood of this species, emerged on July 6. All other chrysalids are hibernating at this time and will probably produce butterflies in the spring of 1956. Whether they all turn out to be *virginiensis* is uncertain. However, assuming a part of the chrysalids collected are *napi*, some of them should have emerged in the fall of 1955 as the third brood of *napi*.

On June 17 I went to check my habitat of *virginiensis* near New Ashford in Berkshire County. It was not easy anymore to recognize the place as a biotope for this species. Last May, when the *Dentaria* was in full bloom, it was the most prominent feature of the vegetation in this habitat. But the place was now unrecognizably overgrown with man-high ferns and other plants. To find the fading remainder of the Toothwort in the luxuriant high vegetation, it was literally necessary to crawl into the dense growth and look very close to the ground. After working "on all fours" for a good two hours, I was able to find only five *Pieris* larvæ. They were resting on the upper side of the green leaves of Toothwort and were five-eighths to one inch in length. Only about one-half of the Toothwort leaves were fresh and green. The rest were faded in color or entirely yellow.

The said five caterpillars were raised in a 14x19x10 cm. plastic box with a tight cover and a layer of cellucotton on the bottom of the box to absorb surplus moisture. One of the caterpillars was parasitized and died the next day. The others pupated from June 19 to June 21, two of them on the box wall (one in vertical and the other in horizontal position), and two on plant leaves. They are hibernating as this is written and presumably are *P. virginiensis*, since only this species was seen flying in New Ashford in May.

Northampton State Hospital, Northhampton, Mass., U. S. A.