

hilltops under various conditions of wind. The matter might perhaps be best studied with the *Papilio*s for which the movement might be bold and clear.

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PAPILIO ZELICAON AND HILLTOPS

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In the southeast parts of Vancouver Island, *Papilio zelicaon* Lucas is very noticeably commoner on the summits of mountains than in the adjacent valleys. I have regarded this merely as proof that the species prefers the high altitude, but the recent discussion in the *Lepid. News* on butterflies and hilltops, has prompted me to give this theory a more careful scrutiny.

First, does *P. zelicaon* really prefer a high altitude, or for that matter is there really such a thing as an alpine butterfly, in the strict sense of the word? I have an idea that it is a matter of climate, rather than altitude. On V. I. there are only two species, *Plebeius aquilo* Bdv. and *Lycaena mariposa* Reak. that cannot be taken at or near sea level. Probably both will be found at low altitude further north. *P. zelicaon* occurs in California; it does not appear to be a species strictly adapted to short summers.

On Mt. Benson, altitude 3300 ft., the collector can depend on finding *P. zelicaon* flying at the extreme summit, though they are very seldom seen during the climb. Since they are nearly impossible to net, due to their wariness and the precipitous nature of the terrain, I have never been able to catch enough to decide whether any females are present. A host plant could be in the vicinity, but I have not located it. Wherever I have taken female *P. zelicaon* intent on oviposition, I have always found nearby tall, conspicuous Umbelliferae such as *Heraclium lanatum* Michx. There are certainly no such plants on Mt. Benson. Any Umbelliferae there must be small and easily overlooked.

Had I collected only on Mt. Benson, I might be tempted to conclude that the butterflies congregate on the mountain top, while mating, and the females, always more difficult to find than the males, later disperse to the valleys to search for their host plants. But further observations do nothing to strengthen this theory. *P. zelicaon* is a common species above tree line on Mt. Arrowsmith.

In order to reach any open country near sea level where host plants might be found, these butterflies would have to travel through or over at least five miles of dense coniferous forest. As on Mt. Benson, I have been unable to find any likely looking plants near the summit.

The extreme summit of Mt. Arrowsmith, altitude about 6000 ft., is hardly a safe playground for net addicts. In fact, being always alone on these expeditions, I have never attempted to scale it. About 2 miles distant, a sort of preliminary peak, referred to by hikers as "the hump", rises to 5400 ft. This is easily climbed and has a small flat area on top. I have never failed to find several *P. zelicaon* resting on this peak. It is virtually impossible to catch them. They rise before one is in swinging range, circle out over the abyss, and return again just out of reach.

While these butterflies are not confined to "the hump", there is certainly no other spot, even if one allowed an area many times as large, where they could always be found. In the dense forest, which extends upwards to about 4800 ft., I have never seen *P. zelicaon* or any other butterflies. On my last visit to Mt. Arrowsmith, one fresh female *P. zelicaon* was captured just at tree line on the upward climb. Later a number of specimens were seen at scattered points in the valley between the hump and Arrowsmith proper. Here two males were captured, and one pair was seen flying *in coitu*. Conditions on the hump were as usual, five or six *P. zelicaon* there, but I never came close to netting one.

P. zelicaon is one of the very few butterfly species which thrive on the humid west and northeast coasts of V. I. Here I have found them always close to the sea. On the west coast I have caught occasional specimens hovering around clumps of *Heracleum*, on beaches exposed to the open ocean. At the north of the island they seemed to like one particular spot, a marshy tidal flat at the head of a long inlet. Here again the food plant was not difficult to locate. It was not *Heracleum*; I do not know the species.

Some years ago my brother, who has spent many summers on the west coast, mentioned in a letter that "swallow tails" always like to fly around rocks. Unfortunately I have not kept the missive, and I have forgotten his exact words. But this statement was definitely not coached; I had never at that time noticed any proclivity for rocks or hill tops on the part of *P. zelicaon*. In fact I had not yet managed to find their east coast haunts.

I am aware that the above jumble of observations proves nothing. I can only hope that they will add something to the pattern, and eventually we will learn why *Papilio zelicaon* likes hilltops.

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