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THE CASE OF *PERRHYBRIS LYPERA* (PIERIDAE) AND THE LAURACEAE: HOST-PLANT RECORD OR ASSUMPTION?

The study on *Perrhybris lypera* (Pieridae) in Costa Rica by Young (1980, J. Lepid. Soc. 34:36–47) reveals some interesting differences from my own observations on that species and raises some points I would like to clarify concerning host-plant records. While engaged in studies on the butterflies of the La Selva field station, Heredia Province, Costa Rica, I was able to study *P. lypera* intermittently for a period of six months (July through December 1979). Both study sites used by Dr. Young (La Selva and "La Tigra") are part of the same tract of forest and have adjoining boundaries. Although "La Tigra" is under extensive cultivation, the remnant patches of forest there have a considerable number of both butterfly and plant species in common with La Selva.

While it is of great interest that Dr. Young has found *P. lypera* in association with *Ocotea* sp. (Lauraceae), because it represents a divergence from host-plant relationships known in the Pieridae, my own experiences with *P. lypera* at La Selva differ considerably, and I feel that he is in error concerning his host-plant record. I have in eleven instances while at La Selva reared *P. lypera* to adulthood and all were on *Capparis pittieri* (Capparidaceae). This is in accord with my other host-plant records for other *Perrhybris* species in Costa Rica and Peru as well as records of other workers (L. Gilbert, M. Singer & J. Smiley, pers. comm.). These rearings are also in accord with my host-plant records for other closely related genera (*Itaballia* and *Pieriballia*) in Costa Rica, which likewise feed on Capparidaceae as larvae. While Dr. Young has observed an oviposition record by *P. lypera* on the host-plant (which I believe is *Capparis*) and obtained first instar larvae, he has not reared them to adulthood. This does not constitute a host-plant record for the butterfly; reared butterflies are from larvae that feed on and develop to adulthood on a certain plant. In figure 2 (Young, op. cit.) several photographs are shown with eggs on the upperside of a leaf along with a photograph of the first instar larvae. All of the photographs show "pronounced stellate pubescence," which appears to me to be highly characteristic of many Capparidaceae in Costa Rica, yet I know of no Lauraceae occurring at La Selva (*Ocotea* in particular) which show this character. It is my suspicion that Dr. Young has confused the identity of the larval host-plant with that of the leaf he originally found the pupae of *P. lypera* upon. I therefore question his speculations on the aposematic nature of *P. lypera*, because they are based on suspect host-plant data, not because of features inherent to the natural history of the butterfly.

His assumption that the pupation site constitutes the larval host-plant may be misleading. In Dr. Young's paper the assumption is made that the genus *Pereute* (Pieridae) uses *Ocotea*, and this was perhaps influential in his recording *P. lypera* as the second record of a member of the Pieridae to feed on the Lauraceae; both are very interesting records. This assumption is based on Jorgenson (1916, Ann. Museo Nacional, Buenos Aires 28:427–520), which says that groups of larvae and pupae of *Pereute* were found on the trunk of an *Ocotea* tree. However, my own field work in Costa Rica indicates that the genus *Pereute* does not feed on the Lauraceae as has been assumed. *Pereute* and other closely related genera in Costa Rica feed on the Loranthaceae (DeVries, ms. in prep.), which are common epiphytic parasites of many tropical forest trees, including *Ocotea*. Larvae feeding on these epiphytes crawl down the tree and **pupate** on the tree trunk. They do not feed on the leaves of the plant where pupation takes place. While the use of the Loranthaceae by New World Pieridae is still somewhat novel (i.e., unstudied), the allied genus *Delias* in the Old World uses Loranthaceae extensively, and their pupation behaviors are similar to those of *Pereute*; both genera follow the theoretical lines of coevolution of butterflies and plants of taxonomic relatedness. Thus the genera *Pereute* and *Perrhybris* both appear to be erroneous records on Lauraceae and have little in common regarding their respective host-plants.

As tempting as it may be, unless larvae actually feed upon and develop into adults

on a particular plant, I do not feel one can draw lines of host-plant relationships by casual observation. With this in mind I would urge future workers to be suspicious of host-plant records that are far afield from what we know of coevolutionary relationships (Ehrlich & Raven, 1965, Evolution 18:586–618), to double check the identity of host-plant material that is **taken from the plant on which larvae are feeding**, and to record oviposition observations as such. By following such criteria, perhaps future misconceptions and errors can be minimized.

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PERRHYBRIS LYPERA (PIERIDAE) FEEDING ON LAURACEAE: A RESPONSE TO DEVRIES

In an earlier paper in the pages of this journal (Young, 1980, J. Lepid. Soc. 34:36–47) I reported both oviposition and first instar larval feeding on the young leaves of a tropical rain forest understory tree identified, albeit from vegetative parts alone, by reputable authorities as a species of *Ocotea* in the Lauraceae. I had originally discovered the gregarious pupae of this butterfly on a mature leaf of a tree from Finca La Selva in 1969 and tentatively identified at that time by Dr. William Hathway of the University of Washington as either *Ocotea* or *Nectandra* (both Lauraceae). The subsequent observations, several years later, of oviposition and larval feeding at Finca La Tigra, approximately ten km from the La Selva site but at a slightly higher elevation, also revealed an association with Lauraceae (Young, op. cit.).

Mostly by accident and indirect communication, I learned of the note by Mr. DeVries already submitted to this journal (DeVries, 1982, J. Lepid. Soc. 36:229–230), in which he suggested an error in the identification of the oviposition and larval host for *P. lypera* which I reported (Young, op. cit.). At my request, Mr. DeVries very graciously sent me a copy of his note. At the time I was preparing to leave for Costa Rica, and therefore, had the timely opportunity to once again check in the wild the food plant questioned.

I retrieved additional samples of the leaves and stems of the exact same tree, a feat made simple because that tree had been marked for further studies of *P. lypera* behavior and natural history at this locality. This fresh material was taken to San Jose where Dr. Gary Hartshorn, the well-known authority on tropical trees who identified Mr. DeVries's La Selva food plant of *P. lypera*, made an identification of my material. Thus, the opportunity offered a control of sorts, since *P. lypera* food plant materials from two different sources (DeVries and Young) would have been identified by the same authority, something indeed worth doing if an error had been made by other authorities in earlier identifications. Dr. Hartshorn kindly examined my fresh material and gave me his very assured identification of the tree as *Nectandra gentlei* (Lauraceae). He also indicated to me that, while the tree was very clearly lauraceous, the