

## ESPECIALLY FOR FIELD COLLECTORS

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### LEPIDOPTERA COLLECTING IN THE SIERRA SAN PEDRO MARTIR, BAJA CALIFORNIA

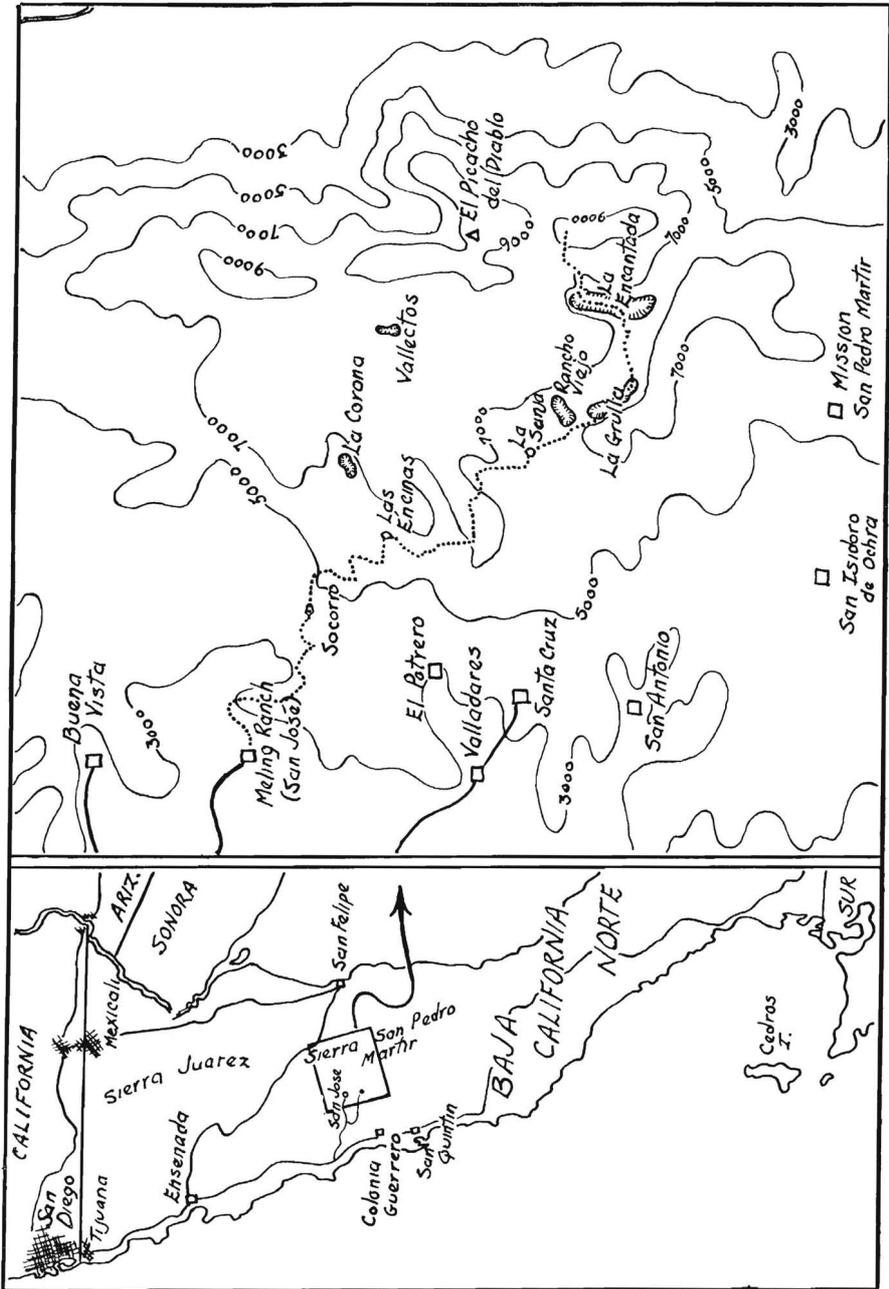
by DONALD PATTERSON and JERRY A. POWELL

The Sierra San Pedro Martir is Baja California's highest mountain range and, together with the Sierra Juarez to the north, forms a 175 mile long direct continuation of the coast range in southern California. The San Pedro Martir, which stands isolated in the form of a high plateau, is separated from the lower Sierra Juarez by San Matias Pass about 100 miles below the international border. These ranges in general fall off in abrupt granite escarpments to the east and descend more gradually in a series of foothills toward the west, thus splitting the semi-desert of the northern part of the peninsula longitudinally.

The high tableland of the San Pedro Martir has a width of 25 to 30 miles, averages about 7000' to 8000', and is said to support a half million acres of coniferous forests. The highest peaks of the range reach elevations above 9000' and 10,000' and form an east rim to the plateau. With its extensive meadows, deep canyons, permanent streams, canadian zone floral elements, and jutting rocky peaks, the range forms a boreal "island" which is separated by some 175 miles from the nearest comparable mountain areas to the north. An excellent first hand account of the physiography and dominant features of the biota in the area has been given by NELSON (1921).

An aura of remoteness has surrounded the San Pedro Martir from the time of Indian legends, through the missionary period and on into the present century. Mining ventures in the foothills have failed, lumbering has been discouraged by the government and farming is not economical, so that even now, a few hunters and a few *vagueros* with their cattle are about all who find it profitable to go into this area of no roads, no detailed maps and no permanent inhabitants. Occasional adventurous naturalists have visited the mountains over the past 80 years, and considerable knowledge has accumulated on the plants and the vertebrates of the region, but apparently no lepidopterists had previously found prospects of the trip worth their while.

The two of us, together with BILL PATTERSON, while doing a certain amount of collecting in the lowland areas of Baja California Norte, had become increasingly curious over the past few years as to the composition of the butterfly fauna in the remote uplands of the Martir. There were virtually no butterfly records available from these mountains (Powell, 1958). After contacting various sources, we decided that late May might offer the best cross section of the spring season for a collecting trip. Snowmelt occurs in April



and the summer rains characteristic of the highlands begin about the first of July. We were indeed fortunate in the selection of this time of year in 1958, which had been an especially wet winter, for we found water everywhere and many plants in bloom at all elevations. We have heard that during many years the area is very dry by the first of June.

The most practical avenue of ascent into the mountains seems to be via the Meling Ranch at San José on the Rio San Telmo, some 30 miles inland from the coastal highway. There the MELING family operates a cattle ranch and a small lodge, and there pack animals can be obtained. So it was that on May 25 we found ourselves overlooking the ranch buildings of San José nestling among the cottonwoods in San Telmo Valley, a welcome sight after a dusty day of driving from San Diego capped by a final 30 miles of typically poor Baja California back roads.

We elected to make the trip on foot, with two mules carrying our gear so as to reduce the logistics of packing and handling of animals to a minimum and make collecting possible all along the trail. In addition we decided against taking a guide, and we subsequently found, with the aid of a detailed briefing by the MELINGS, little trouble in following the well-marked cattle trails over the whole of our 90 mile journey.

The lower foothills are traversed by a deteriorating wagon road which had been constructed by a lumbering concern, and it was by means of this road that we hoped to reach Las Encinas and the first permanent stream by the end of the first day. Although the lower slopes were a profusion of blooms (especially *Speralcea*, *Diplacus*, *Encelia*, and *Eriogonum*) due to the exceptional rains, the area was very hot and dry, and we found that the climb from the ranch at 1700' to Las Encinas at 6000' was more than we should have attempted considering the amount of collecting we were anxious to do. Sundown found us at 5000' in the first piñon pines at a small seepage just under the edge of the plateau, some fourteen miles from the ranch. During the first day one man led the mules and two collected; subsequent to that it was necessary to lead each animal separately due to the steep and narrow trails.

As was expected, the Lepidoptera of the foothills were those typical of the dry lowlands of southern California. One interesting catch was that of a single male *Pyrgus scriptura* (Bdv.), an uncommon species in southern California, taken shortly after leaving the ranch. One specimen of *Schinia scarletina* (Sm.) was also taken in this vicinity. Although most of the flowers in bloom at the time were not found to be good collecting for butterflies, *Eriogonum fasciculatum* was frequented by *Philotes battoides bernardino* (Bdv.) and a few individuals of *Incisalia iroides* (Bdv.) and other species. *P. battoides*

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#### EXPLANATION OF MAP

Sketch map of Baja California Norte showing location of the Sierra San Pedro Martir, and inset showing detail of the area discussed in the text. Dotted line indicates route followed on the trip. Scale of inset: one and one-half inches equal to ten miles. Inset adapted primarily from Heald (1957).

*bernardino* was also encountered in large numbers on a small area of damp earth in an otherwise dry wash at about 3500'. A few other species taken in the chamise-sumac chaparral slopes below 4000' were *Colias harfordi* Hy. Edw., *Nathalis iole* Bdv., *Leptotes marinus* (Reak.), *Hemiargus gyas gyas* (Edw.), *Erynnis lucilius afranius* (Lint.), and *Stenaspilates apapinaria* Dyar.

One of the better moth collecting nights was encountered the first night, and our coleman lantern attracted several geometrids, *Chlorochlamys hesperia* Sperry, *Nasusina inferior* Hulst, *Platæa ursaria* C. & S., *Neoterpes edwardsata* Pack., and *Drepanulatrix hulsti hulsti* Dyar. In addition a number of micros were taken, including *Argyrotenia niscana* (Kft.), *Phalonia* sp., *Ethmia arctostaphylella* (Wlsh.), *Aroga paulella* (Busck), and *Pleurota albastrigulella* (Kft.).

The following day, May 27, dawned clear and warm; we were extremely fortunate in having near perfect weather for the entire trip. After a short ascent we attained the first ridge of the high country and dropped a short distance to the welcome sight of the cool, clear stream which flows through Las Encinas, a small lush meadow among the oaks which give the camp its name. Many of our common California butterflies frequented this creek. *Papilio rutulus* Lucas, *P. eurymedon* Luc. and *Limenitis lorquini lorquini* Bdv. flew among the willows, and collecting along the stream produced a number of other species we had not seen the previous day such as *Anthocharis sara sara* Bdv., *Zerene eurydice* Bdv., *Hemiargus isola* (Reak.) and *Thorybes pylades* (Scud.). Downstream lupine was in bloom in abundance and a dense population of *Plebius icarioides* (?evius Bdv.) was flying, along with occasional examples of *Everes amyntula* (Bdv.) and worn *Glaucopsyche lygdamus australis* Grin. Here we entered the Ponderosa Pine forests, which we were seldom to leave during the remainder of our ten day stay in the high country. The trail followed the creek downstream for about three miles into a steep walled canyon of heavy vegetation before leaving this watershed to climb abruptly back onto the plateau. This canyon looked very interesting and on the return trip proved to be so, as *Staphylos ceos* (Edw.) and *Epargyreus clarus ?huachuca* Dixon were taken there, indicating Arizonan elements in the fauna. However, on the trip in we hurried past, anxious to reach the large meadows to the east.

We reached La Grulla at 6500' during the third day and found ourselves looking onto the lower end of a beautiful meadow which stretches amongst the conifer forest for some three miles in a sinuate expanse of lush green grass, following up the water course to the east. Each summer the local people bring cattle here from the distant lowlands, but heavy rainfall of the current year delayed their invasion, and they had not arrived. Two days were spent collecting in and around La Grulla, the area proving to be our most profitable stop for non-lepidopterous insects. The butterfly collecting there was disappointing, the abundant *Polites sabuleti tecumseh* Grin., and *Heliopetes ericetorum* Bdv. being the only species not previously encountered. Some interesting micros were taken, however, including a pale *Gyros* which is seemingly distinct from the Sierra Nevada *G. muii* Hy. Edw. The elusive

flight of this inconspicuous pyralid was confined to the glaring, white decomposed granite slopes bordering the meadow, but a little effort produced a nice series. Dr. E. MUNROE informs us (*in litt.*) that the series represents an undescribed species. MUNROE (1959) is reporting on the Pyraustinae collected on the trip. Moth collecting in the meadow yielded only some very widespread species, and the night collecting had begun to slacken, for, although we were very fortunate with the season and the weather, full moon occurred on May 31 and was already serving to disperse the moth flight considerably. However a few species were taken including *Eupithecia appendiculata* McD., *Elpiste metanemaria* Hulst, *Lithostege angelicata* Dyar, *Pherne subpunctata* Hulst, *Heterographis morrisonella* Rag., *Sparganothis* sp., and a *Martyrhilda* species near *thoracefasciella* (Chamb.).

On May 30 we set up our last camp before beginning the long journey back, at the largest of the high meadows, La Encantada, which lies at 7000' just at the base of the rugged east rim peaks. Although higher, La Encantada proved to be drier, and with a few notable exceptions we did not take Lepidoptera there not previously seen. A single worn specimen of *Mitoura spinetorum* (Hew.) was taken on the trail leading into the area. *Polites mystic sonora* (Scud.), which had been encountered in a small swale at about 6000' on the second day, was found here again. Thus here was another indication of "stepping-stone" distribution from the Sierra Nevadas to the high mountains of southern California to the high country in the Sierra San Pedro Martir. One other interesting species at La Encantada and again the subsequent day on the higher slopes at about 8000' was a seemingly distinct population of the *Apodemia mormo* complex. Light collecting at this camp was virtually non-existent, with evening temperatures in the low forties and an early morning minimum of about 37° F. However, incidental day collections of moths in the area included *Spalotis havilæ* (Grt.) taken under dead bark, a single specimen of *Cosymbia serrulata* Pack., and three pyraustines, *Nomophila noctuella* D. & S., *Pyrausta futilalis inconcinnalis* Led., and *Mecyna mustelinalis* (Pack.).

The following day, leaving the mules behind, we made the final few miles ascent to the east rim. The coniferous forests of these higher areas are for the most part heavier and take on a more varied aspect, as lodgepole pine becomes a dominant element, along with many examples of the endemic Martir Cypress, *Cupressus montana* Wig. On the rocky slopes between the trees manzanita and ceanothus, the latter in bloom at the time, grow in dense thickets. Although most of the butterflies here were typical lowland species and those which we had been taking each day, several moths not previously seen were encountered. A single specimen of *Pyrausta tatalis* Grt. and a striking aegeriid clearwing moth were netted in small open meadows, and several *Phobus funerellus* Dyar (Phycitinae) were startled up from around a fallen burned pine. Single males of *Erynnis callidus callidus* (Grin.) and *E. lacustra* (Wgt.) were taken, flying together with numerous *E. lucilius afranius* (Lint.) and *Thorybes pylades* (Scud.), and, interestingly, on a peak well above 9000' several specimens representing a population of *Hesperia pahaska*

nearest to *williamsi* Lindsey whose affinities lie with the fauna of southeastern Arizona rather than to the north.

On this peak we stopped for lunch and contemplated a scene that is not often seen in North America, an area in which there has been almost no change in the natural conditions due to the effects of man. Below us to the west stretched the broad tableland of the Martir, the area we had traversed during the past four days, an area of no human inhabitants, no roads, no power lines marring the horizon, and no tin cans or rubbish lining the trails.

We were impressed by the fact that the elevational sequence we had crossed had shown little effect in general on the species of butterflies around us. *Colias eurytheme* Bdv., a resident of the coast, had been seen all along the way and was taken at the peak; *C. harfordi* Hy. Edw., first encountered below 3000' on the first day, had been taken at every stop along the way; *Nathalis iole* Bdv. was everywhere and remained one of the commonest species flying at 9000'. *Precis lavinia cænia* (Hbn.) seemed almost to replace its nymphalid relatives, flying in every habitat which we visited on the trip. Among the Lycænidæ, *Incisalia iroides* (Bdv.), *Leptotes marinus* (Reak.), *Hemiargus gyas gyas* (Edw.), and *Plebeius acmon acmon* (West. & Hew.) seemed not to be affected by the altitudinal differential. *Erynnis lucilius afranius* (Lint.) was first taken on the dry hills at about 3000', subsequently was seen in almost every area, and was, perhaps, the most abundant butterfly on the slopes above 8500'. Apparently the southern latitude of the Sierra San Pedro Martir serves greatly to reduce the elevational zoning of the biota.

Just before leaving the high peaks to return to our camp at La Encantada, a specimen of *Mitoura loki* (Skin.) was taken on a composite flower. It is difficult to explain its occurrence there at 9000', since no juniper, the foodplant, was seen in the area. Possibly the specimen had flown up from the juniper belt of the desert slopes to the east.

On the return trip out of the mountains we retraced our steps, stopping to collect at the more promising spots. Our best moth collecting nights were these last three, the first at La Sanja, a stream several miles west of La Grulla, and the final two at Las Encinas again on the western edge of the plateau. At La Sanja (6500') larvæ were collected on manzanita which subsequently proved to be *Epinotia subplicana* (Wlsh.), a tortricid previously recorded from the foothill areas of coastal central California and thence northward. Some of the more interesting of 30 species taken at light June 2 and 3 at Las Encinas were, *Dasypoudea lucens* Morr., a noctuid apparently known only as far west as the mountains of southern Arizona, *Aseptis perfumosa* Hamp., *Synedoida scrupulosa* Hy. Edw., *Merocchlora graefaria* Hulst, *Nemoria punctularia* B. & McD., *Protitame pallicolor* Dyar, *Hydriomena nevada* B. & McD., *Pero occidentalis canaster* Rindge, *Choristostigma zephyralis* (B. & McD.), three species of pterophorids, and one widespread tortricid, *Endothenia hebesana* (Wlsh.).

As we passed through the foothills on the last day, we were impressed by the extreme dryness of the vegetation which had been in full bloom ten days before. The flowering season is very short and possibly the flight season

here for many insects is correspondingly short. Although we considered ourselves fortunate with the number of species of Lepidoptera taken (some 52 butterflies and about 80 moths), four of the butterflies (*Melitæa gabbi* Behr, *Strymon sepium* (Bdv.), *Lycæna gorgon* (Bdv.), and *Erynnis zarucco funeralis* (Scud. & Burg.) were taken only on the last day, on the trail below 4000', and together with the dryness, served to emphasize that our collection was but a small sample from the overall seasonal sequence.

One trip to a relatively unknown place serves only to scratch the surface of the knowledge of the faunal complex of the region, and there is very much yet to be learned about the insects of the Sierra San Pedro Martir. Apparently the butterfly fauna consists primarily of southern California lowland species and to a lesser degree of elements from the high mountains of both California and southern Arizona. Only one season has been sampled; there certainly must be a flight following the summer rains. We hope that the present account may serve to stimulate further collecting in this area.

We wish to acknowledge with thanks the assistance of the following in determining many of the species mentioned above: WILLIAM R. BAUER, Petaluma, California (Noctuidæ); JOHN M. BURNS, University of California, Berkeley (*Erynnis*); C. DON MACNEILL, California Academy of Sciences, San Francisco (Hesperiidæ); Dr. EUGENE MUNROE, Entomology Research Institute, Ottawa, Canada (Pyraustinæ); and Dr. FRED H. RINDGE, American Museum of Natural History, New York (Geometridæ). The nomenclature systems followed are essentially those of McDUNNOUGH (1938, 1939) and EVANS (1953, 1955) emended by the above specialists.

The trip which is the basis for the present report was in part supported by the Associates in Tropical Biogeography, University of California, Berkeley.

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