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POPULATION OUTBREAK OF PANDORA MOTHS
(*COLORADIA PANDORA* BLAKE) ON THE KAIBAB PLATEAU,
ARIZONA (SATURNIIDAE)

The pandora moth (*Coloradia pandora* Blake) is fairly widespread in the pine forests of the Rocky Mountains, and occasionally exhibits large population outbreaks as noted by Ferguson (1971. *Moths of America North of Mexico*, Fascicle 20.2A, E. W. Classey, Ltd., London). Such an impressive outbreak was noted on a visit to the Kaibab Plateau of northern Arizona in August 1982. During a field trip to the plateau, thousands of adult pandora moths were observed flying about or landed upon tree trunks in yellow pine (*Pinus ponderosa*) forest in the daytime hours. While driving a north-south transect the full length of the Kaibab Plateau on 15 August 1982, the greatest concentrations of pandora moths were noted within a two-three mile zone surrounding the Jacob Lake Junction, on State Highway 89 (Alt.) and Highway 67. Hundreds of adult moths (many freshly emerged) and thousands of eggs were noted on the buildings and tree trunks at Jacob Lake, especially near outside lights that were kept on at night.

Adult males and females were active in large numbers nocturnally as well as diurnally, because "black lighting" at night produced heavy catches near the North Rim of the Grand Canyon on 16 August. Wygant (1941. *Jour. Econ. Entomol.* 34(5):697-702) noted in Colorado that the peak emergence of adults was in July, every-other-year, because of a two-year life cycle, and the primary food plant was lodgepole pine (*Pinus contorta*). In another area, Oregon, yellow pine was reported to be the principal food plant of the pandora moth by Packard (1914. *Mem. Nat'l. Acad. Sci.* 12:1-276). Since the yellow pine predominates on the Kaibab where pandora moths were observed to be most abundant in August 1982, this pine is probably the most important food plant there.

Several hundred eggs were oviposited by freshly collected females placed in glassine envelopes. The ova were glossy blue-green spheres which hatched in early September three to four weeks after oviposition. This fits with Ferguson's notation that the young larvae overwinter, mostly in the second instar, on the pine branches at the base of needles. Attempts to rear the larvae on *Pinus palustris* (which was available to the author) failed.

Adult pandora moths are clearly strong flyers, since one was observed flying across a barren desert landscape some 45 miles west of the edge of the Kaibab Plateau and the nearest pine trees. Undoubtedly, during large population outbreaks, some individuals wander great distances in search of suitable food plants to oviposit upon.

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TWO LARGE COLLECTIONS OF MACROLEPIDOPTERA
TO THE MILWAUKEE PUBLIC MUSEUM

The Milwaukee Public Museum in recent years has received two major Lepidoptera collections, the William E. Sieker Collection of Sphingidae and the James R. Neidhoefer Collection of Macrolepidoptera of several families.

A donation from the wife of the late Mr. Sieker and daughter Marie, the Sieker Collection was acquired by the Milwaukee Public Museum in September 1982. Amassed

over almost fifty years, this outstanding collection totals over 9000 prepared Sphingidae representing some 150 genera, 1000 specific and subspecific taxa, and includes some type material. All major faunistic regions are well represented. Mr. Sieker acquired a major portion of the collection through exchange and donations from biologists conducting field research in different parts of the world. The collection includes all of the known Wisconsin sphingid species, the result of Mr. Sieker's own collecting and his strong association with other naturalists in the state over the years. There are also several hundred prepared *Catocala* moths (Noctuidae), an additional several thousand papered specimens, associated field notes, several hundred reprints of important works on sphingids and other groups, and reference books.

William E. Sieker was born in 1912 in Milwaukee, Wisconsin and died in Madison, Wisconsin in January 1982 at age 70. Although a tax attorney by profession, he pursued a second career of collecting and studying sphinx moths, particularly in the northern reaches of Wisconsin. His interest in Sphingidae was fused with a dedication of helping conservation efforts, particularly in Wisconsin. Mr. Sieker was a founder of the Wisconsin Entomological Society and a past president of that organization as well as of the Madison Audubon Society. He was also legal counsel for the Wisconsin Chapter of Nature Conservancy and helped that organization acquire the Ridges Sanctuary at Baileys Harbor in Door County.

The museum acquired the James R. Neidhoefer Collection in January 1976, a collection which includes about 95,000 specimens of Macrolepidoptera (approx. 45,000 prepared and 50,000 papered specimens) of which approximately 1200 are gynandromorphs, sexual mosaics and aberrations (structural and color). The collection is particularly strong in Papilionidae, Nymphalidae, Heliconiidae, Ithomiidae, Morphidae, Pieridae, Saturniidae and Sphingidae. All of the major faunistic regions are represented, with particular strengths in the Neotropical and Indo-Australian Regions. Mr. Neidhoefer's donation also included 132 insect storage cabinets with 105 drawers, and an extensive library of rare books, reprints, and monographs on the Lepidoptera. At the time the collection was donated to the museum, Mr. Neidhoefer also financed the renovation of a collection storage room in the Invertebrate Zoology Section (which includes entomology).

Mr. Neidhoefer acquired his collection over forty years, through buying and exchanging specimens with collectors all over the world, and through field expeditions (i.e., Brazil) financed by him and for the purpose of collecting. With the cooperation of a former curator of the Milwaukee Public Museum, Kenneth MacArthur, Mr. Neidhoefer was instrumental in acquiring other Lepidoptera collections for the museum, most notably the George Berg Collection (which includes a good series of Nicaraguan Rhopalocera), the P. Gagarin Collection (Brazil), and others.

James R. Neidhoefer was born in Milwaukee in 1917 and became an avid naturalist at an early age. He received an undergraduate degree in zoology from Marquette University and did a thesis on the freshwater sponges of Wisconsin. He took over the family carpet business in Milwaukee but continued to pursue his interests in natural history by collecting Lepidoptera and teaching his 12 children about insects. Prior to moving to Miami, Florida in 1981 to pursue a new retirement job as president of a wholesale pet distributorship, Mr. Neidhoefer was very active in local nature organizations and the Boy Scouts, as well as the Milwaukee Public Museum. As an honorary curator for the museum, he now collects Lepidoptera and other invertebrates in Florida during his spare time.

With the acquisition of the Neidhoefer Collection, and through grants from the Institute of Museum Services and the Friends of the Milwaukee Public Museum, a major collection reorganization and upgrading of facilities was initiated by the museum's full time curators in the Lepidoptera area, myself and Susan S. Borkin. With the acquisition of the Sieker Collection, and combined with further collecting efforts in Wisconsin and also from ecological studies in the Neotropical Region, one of our goals is to make these outstanding collections of use to curators, systematists, and biologists working on groups represented in them.

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