

# LEPIDOPTERA RECORDED ON SANTA CATALINA ISLAND

compiled by Jerry A. Powell

August 2004; revised Jan. 2012

## INTRODUCTION. --- HISTORY OF LEPIDOPTERA INVENTORY ON SANTA CATALINA ISLAND, CALIFORNIA

Santa Catalina Island is the third largest of the eight Channel Islands off the coast of southern California. It is the largest and nearest to the mainland (ca. 20 miles) of the four southern islands and historically has been the most easily accessible to visitors, some of whom collected Lepidoptera long before any were recorded on the other islands. Catalina island has an area of 76 mi<sup>2</sup> (122 km<sup>2</sup>) and is about 21 miles (34 km) long and 8 miles (13 km) wide near its center. The island is mountainous, with a central ridge along its length, reaching elevations of 2,097' (670m) and 2,010' (648m). The flora is diverse, 2<sup>nd</sup> only to Santa Cruz among the CA islands, with more than 400 native species of vascular plants and 175+ introduced taxa. It is the only CA island open to the public, receiving daily residential and tourist traffic, with ferry and air transportation to and from Avalon (3,000 resident population) and Two Harbors (200 residents) (Schoenherr et al. 1999).

The town of Avalon was founded as a potential resort in 1887, and later the island was purchased by the Banning family, who formed the Santa Catalina Island Company and completed work on Avalon, which they promoted as a fishing resort. By the 1890s photographs taken around Avalon indicate extensive vegetation stripping by feral goats and sheep. Feral ruminants were excluded from the southeastern portion of the island following its purchase by Wm. Wrigley in 1919. The Santa Catalina Island Conservancy was established in 1972 to preserve open space and native plants and animals.

**HISTORICAL COLLECTIONS.**--- The first insect collections from Catalina probably were made in the 1890s in severely altered habitats. The earliest Lepidoptera species to have been newly described from the island were a butterfly, *Strymon avalona* (Wright 1905) (Lycaenidae) and three moths, *Hellinsia catalinae* (Grinnell 1908) (Pterophoridae), *Givira marga* B. & McD. 1910a (Cossidae) and *Lophocampa indistincta* B. & McD. 1910b (Arctiinae). The latter two and other moths were collected by an unknown person who used undated, machine-printed labels (unusual in CA collections a century ago) "Santa Catalina Islands, Calif." However, no comprehensive collection was made until Don Meadows worked on Catalina during 1927-1934.

Meadows was educated in biology at Pomona College and took a teaching position in the Long Beach public schools. After two years he conceived the idea of doing a biological survey of Santa Catalina Island, which recently had been taken into the Long Beach school system, enabling him to transfer to Avalon High School. During residency there, 1927 to 1934, Meadows built a home overlooking Avalon but each year returned to the mainland for the summer months. He surveyed diurnal Lepidoptera extensively over the island, and collected moths at lights, primarily at Avalon. In 1930-31, at the height of the great depression, Don took a leave of absence from his teaching position in order to complete a M.S. degree in Entomology at University of California, Berkeley, with the hope of obtaining a position teaching zoology at Santa Ana Junior College. He conducted his thesis research under the direction of H. B. Herms on the biology and ecology of a salt marsh-inhabiting horsefly. The thesis research failed to convert Meadows into a dipterist, and the experience at Berkeley had a profound effect on him as a lepidopterist. Evidently inspired by association with faculty, including E. O. Essig and E. C. Van Dyke, to broaden and increase his survey efforts on Catalina Island, Meadows expanded his collecting repertoire by designing a light trap, and for the first time lists of species in his field notebooks began to include micro moths (archives of the Santa Barbara Natural History Museum, SBMNH). Probably he was encouraged by H. H. Keifer in Sacramento, as that was during Keifer's active period of research with microlepidoptera, and Meadows' notebook entries mention identification of his specimens by Keifer. Immediately upon his return to Catalina, Meadows began to inventory by light trapping in a canyon back of the high school, resulting in a dramatic increase in the numbers of collection records and species compared to his efforts in 1927-30. Also, in 1932-1933, he enlisted one of his 8<sup>th</sup> grade students, Noel Turner, to run a light trap at Middle Ranch, where he lived, located at 650 ft. elevation on the Pacific side of the island. In total

Meadows accumulated more than 400 records for 100+ species of micros and pyraloids, all represented by nicely spread specimens.

Entries in his field notebooks include many lists of birds and butterflies, notes on macro moth larvae, etc., from various parts of the island and provide glimpses of his moth sampling. For example, in late September through the winter, 1929-1930, he collected at the Avalon Club House lights on 20 dates, recording lists of moths including Sept. 14: "a great many silver lined crambid moths" [*Crambus occidentalis* Grote], Oct. 23: "54 specimens", and on Feb. 7: 1930 "8 geos, 4 noctuids, two of the beautiful flecked green variety" [38 years later named *Feralia meadowsi* Buckett]. After the light trapping program began, Meadows evidently limited his collections by time available for spreading, as Sept. 18/19, 1932: "Collection fine, 2 or 3 hundred micros and about 100 noctuids, only 50 specimens saved, mostly the noctuids, no time to mount them all." On June 10, 1932, he counted the Catalina collection, 2,375 specimens, including 90+ butterflies, 602 Noctuidae, 475 Geometridae, 367 Pyralidae, 46 Tortricidae, 416 micros.

Meadows was the first to collect microlepidoptera on any of the islands, and several species were new to science, named from his specimens. He was featured in a newspaper article as the 'Moth Man of Catalina', which stated that he had captured more than 400 different species, many of them new to entomology (Los Angeles Times, Sunday Magazine, Feb. 16, 1933, Buckett 1968). That number was optimistic, but I have recovered Catalina records in the National Museum of Natural History (USNM) and Los Angeles County Museum of Natural History (LACM) of about 260 species, the most comprehensive local inventory of Lepidoptera in California up to that time.

After the Catalina experience, Meadows returned to Long Beach and taught high school biology for the remainder of his career. He published several notes on the birds of the island, two papers on the butterflies, sphingids, and arctiids (Meadows 1936, 1939), and compiled an annotated list of 160 species of macro moths (1943 LACM, unpublished). In addition to his Catalina survey, Don Meadows is credited by Comstock (1939) as having initiated a proposal to the authorities of the LACM for a biological survey of all the Channel Islands. A five-year project was approved by the Board of Directors in December 1938, and trips began in February 1939. Meadows acted as field supervisor on the first five of the expeditions in 1939-40. He worked on six of the islands, along with other lepidopterists, Lloyd Martin and Chris Henne, one or both of whom took part in most of the trips. Altogether 13 expeditions were conducted, visiting each of the eight islands at least twice before the last trip was abruptly terminated in December 1941 after the bombing of Pearl Harbor. Meadows (1943) estimated that 40,000 insect specimens were collected, of which about 5,000 were Lepidoptera. Thus the 1939-41 LACM expeditions laid the foundation for all subsequent inventory of insects, and Meadows' visionary proposal was a pivotal event in the development of our knowledge of the insects of the California Channel Islands. During that following decade, Meadows described a new species of noctuid moth from San Clemente Island (1942), published magazine articles on butterflies and biology, and attempted to identify the moths from the 1939-41 expeditions. His ms draft lists of Catalina and Channel Island macrolepidoptera (1943) indicated plans to publish lists, but evidently he tried to identify all the species without seeking assistance from specialists, and the project bogged down. Meadows gave or sold his microlepidoptera to the LACM and in 1950 sold his macro moth and pyraloid collections to the Smithsonian and disappeared as a lepidopterist, although he continued to lecture and write books and articles on California and Baja California history for another 30 years – many of his specimens were still unidentified in the USNM in 2004.

**POST WW II INVENTORY.** --- I became interested in diversity and endemism of Channel Islands moths in the 1950s, when as a graduate student I studied specimens of *Argyrotaenia* (Tortricidae) in the LACM that had been collected during the 1939-41 Biological Survey. I described a new species from the smallest island, Santa Barbara, and applied a new subspecific name to populations of the northern tier of islands (Powell 1964). Over the years I have continued survey of *Argyrotaenia* populations on all the islands except Anacapa, including molecular assessment and cross-population mating trials (Landry et al. 1999). The supposed endemic species on SBI has been supported by DNA evidence (Rubinoff & Powell 2004).

I began systematic inventory of the Lepidoptera of the islands in 1966, after the UC Field Station was established on Santa Cruz I. (SCr) in 1965, and have continued to develop it during the subsequent 45 years via 30 expeditions. (Powell 1964, 1967, 1985, 1994, 2005, 2007, Powell & Brown 2000, Powell & Povolný 2001, Powell & Wagner 1993). I visited SCr twice in 1966, with a team of 5 graduate students in April-May, and with Bob Langston, in June (Langston 1985). Those trips generated records of about 250 species of Lepidoptera, rivaling the number recorded on all the islands combined up to that time, and resulted in discovery of a new species of

*Cerostoma* (now *Ypsolopha*) (Plutellidae) associated with Island Ironwood (*Lyonothamnus*, Rosaceae) (Powell 1967). I visited Catalina (SCa) in March-April 1969 with Paul Opler, and through cooperation of the Santa Catalina Island Company we were able to rent a vehicle and travel extensively inland on the southern half of the island, emphasizing collections of leaf miners and other larval microlepidoptera (Opler 1974). Subsequently, UC Berkeley groups worked for several days from Middle Ranch, with transportation provided by the Island Conservancy, in May 1978, September 2004, and March 2011. My wife and I visited SCa (Avalon) in December 1979, while I was recovering from heart bypass surgery, and recorded 70 species.

Charles Remington from Yale University visited SCr in 1967, and he stated in a 1971 *Discovery* article that he made expeditions in 1968 to SMI, SRI, SNI, and SCI. I found three moths at Yale Charles collected at Catalina and learned that the Remington family was hosted by the Catalina Conservancy and driven around to various sites over a 3-day period in 1980. Numerous other lepidopterists have visited the island on single-day visits (e.g., Bob Pyle in *Mariposa Road* (2010): AM commercial boat to Avalon, hike up Avalon Canyon to the ridge where the Avalon hairstreak butterfly flies, then hike back and take the late PM boat back to the mainland). Lack of moth records suggest that Remington and others did not collect by blacklight trapping. At the 1978 Channel Islands Symposium in Santa Barbara, discussion with Remington altered my impression of his island work, and I decided my inventory would not be redundant. Our group visited SCa and SNI in May 1978, and I worked with Charles in New Haven in September 1978 to identify and record data from his microlepidoptera.

In 1978-1981, several persons associated with the SBNHM and LACM collected Lepidoptera on Catalina Island, especially J. Hogue and C. Nagano at Ben Weston Beach, Aug. 1978 and Jan. 1981; S. Bennett, S. Miller, and others on many dates at Toyon Bay, Jan.-May and Oct.-Nov. 1981. I recorded these collections in preparation for a review of the islands Lepidoptera in a Channel Islands insects symposium at the Entomological Society of America meeting in San Diego, December 1981 (Menke and Miller 1985). I gained an impression that between Meadows and subsequent lepidopterists, SCa had been more thoroughly sampled than any other island. It may be true that more people have collected Lepidoptera on more dates on SCa than any other CA island, but it was only later that I realized Meadows did not work there during the summer months, and nearly all light trapping had been carried out around Avalon or Toyon Bay. In fact most of the island, including the entire northern half has received very little attention. Our blacklight trap transects along Middle Canyon have spanned sea level to 950', but we sampled only in March, May, and September.

**CURRENT STATUS OF INVENTORY.** --- I compiled a second summary of Channel Islands Lepidoptera (Powell 1995), but the bulk of my islands inventory has taken place since 1994: i.e., an early spring, late spring, and fall visits, each for a week, to SRI, SMI, SBI, SNI, and SCI, as well as additional visits of 5-7 nights on SCr in Sept. 1999, April-May 2000, May 2001, and SCa in Sept. 2004 and March 2011. Moreover, I reviewed, identified, and recorded data from Remington's macro moths at the Yale Peabody Museum in 1997 and from Don Meadows' SCa macros at the Smithsonian in 2004 (Powell 2007). I think I have brought the recorded sampling effort to a comparable level for all the islands except Anacapa, which has been surveyed by numerous people, including LACM and NPS personnel and Scott Miller (SBNHM).

The inventory of Catalina Island Lepidoptera now includes ca. 530 species, including numerous unidentified, which is second only to Santa Cruz I. (600+) in species richness. The Catalina total is appreciably greater than Santa Rosa (370), which is larger but has only about 75% of Catalina's floral richness and had more comprehensive sheep and cattle grazing for more nearly a century longer than Catalina. Considering its size, SRI has hosted considerably fewer lepidopterists and we have made less sampling effort than any other CA island. By comparison, the SCa total recorded is only about 55% of that at Big Creek Reserve, a 16 km<sup>2</sup> coastal site (vs. Catalina 122 km<sup>2</sup>) with comparable elevation range.

It is difficult to project the degree of completeness of the Catalina inventory because the number of sampling dates, a measure of sampling effort, cannot be compared with confidence to other island and coastal mainland surveys. More persons have made collections on Catalina than any other island, but many may have collected Lepidoptera or moths only incidentally. If all participants in the inventory had used the same or a similar array of sampling methods (diurnal netting; nocturnal captures at lights, incandescent, ultraviolet, mercury vapor, at sheets, all night traps; larval searching and rearing) we could apply one or more statistical methods to project sampling achievement. But of course none of these approaches has been applied consistently.

Moreover, large tracts of Catalina have not been sampled at all for nocturnal species. Even so, the distribution of species recorded by major guilds has reached a status expected by results at Santa Cruz Island, Big Creek Reserve in Monterey Co., and other local inventories, i.e. Micro moths 208 (39%), Pyraloids 76 (14%), Macro moths 220 (41%), and butterflies 29 (5.4%), although several of the last are non resident records. Typically, mature inventories in coastal CA achieve a distribution of ca. 40-15-40-5 % of these four groups after the inventory in initial phases is dominated by butterflies and large moths that come to lights more readily in marginal weather conditions. Comparison to Santa Cruz I. and Big Creek (Powell 1995) suggests that for the areas extensively sampled (Avalon, Toyon Bay, Middle Canyon) the inventory is well advanced (e.g., 75-80% complete). No doubt much more effort needs to be invested in larval rearing and in blacklight sampling in less accessible parts of the island.

## References

- Barnes, W. and J. McDunnough 1910a. New North American Cossidae. Entomol. News 21:463-466.
- Barnes, W. and J. McDunnough 1910b. New species and varieties of North American Lepidoptera. Canad. Entomol. 42: 208-213.
- Barnes, W. and J. McDunnough 1911. A taxonomic revision of the Cossidae of North America. Contr. Nat. Hist. Lepid. N. A. 1(1): 35 pp.
- Barnes, W. and J. McDunnough 1912. Illustrations of rare and typical Lepidoptera. Contr. Nat. Hist. Lepid. N. A. 1(4): 29, Pl. 13.
- Buckett, J. S. 1968. A new species of *Feralia* from Santa Catalina Island of California, with notes on the immature stages of *Feralia februalis* Grote (Noctuidae: Cucullinae). J. Research Lepid. 6: 43-51 ["1967"]
- Comstock, J. A. 1939. Contributions from the Los Angeles Museum— Channel Islands Biological Survey. Introductory note. Bull. So. Calif. Acad. Sci. 38: 133-134.
- Landry, B, J. A. Powell, and F. A. H. Sperling. Systematics of the *Argyrotaenia franciscana* (Lepidoptera: Tortricidae) species group: evidence from Mitochondrial DNA. Annals Entomol. Soc. Amer. 92: 40-46.
- Langston, R. L. 1981. The Rhopalocera of Santa Cruz Island, California. J. Research Lepid. 18: 24-35 ["1979"].
- Grinnell, J. Jr. 1908. Notes on the Pterophoridae or plume moths of southern California, with descriptions of new species. Canad. Entomol. 40:313-321.
- Miller, S. E. 1985. Butterflies of the California Channel Islands. J. Res. Lepid. 23(4): 282-296 ["1984"].
- Meadows, D. C. 1936. An annotated list of the Lepidoptera of Santa Catalina Island, California. Part I. Rhopalocera. Bull. So. Calif. Acad. Sci. 35: 175-180.
- Meadows, D. C. 1939. An annotated list of the Lepidoptera of Santa Catalina Island, California. Part II. Sphingidae and Arctiidae. *Ibid.* 37: 133-136.
- Meadows, D. C. 1942. Contributions from the Los Angeles Museum— Channel Islands Biological Survey. No. 25. A new phalaenid moth from the Channel Islands. *Ibid.* 41: 81-82.
- Meadows, D. C. [1943]. A catalogue of the Macro-Lepidoptera of the California Channel Islands. Part I. Papilionidae to Phalaenidae. Unpubl. ms (LACM; 13 pp. + table. [undated but cites Comstock (1942)] [copy in SBNHM].
- Opler, P. A. 1974. Biology, ecology, and host specificity of Microlepidoptera associated with *Quercus agrifolia* (Fagaceae). U. Calif. Publ. Entomol.; v +83 pp., 7 plates. U. Calif. Press; Berkeley, Los Angeles.

- Povolný, D. 1986. *Neopalpa* Povolný, gen. n. and *Eurysaccoides* Povolný, gen. n., two new genera of the Tribe Gnorimoschemini from California, with description of three new species (Lepidoptera: Gelechiidae). SHILAP Revista Lepid 26(103): 139-146.
- Powell, J. A. 1964. Biological and taxonomic studies on Tortricine moths, with reference to the species in California. U. C. Publ. Entomol. 3:1-317.
- Powell, J. A. 1967. A previously undescribed moth reared from Catalina ironwood on Santa Cruz Island, California (Lepidoptera: Plutellidae). Pan-Pacific Entomol. 43(3):220-227.
- Powell, J. A. 1985. Faunal affinities of the Channel Islands Lepidoptera: A preliminary overview. Pp. 69-94 *In*: Menke, A., Miller, D. (eds.) Entomology of the California Channel Islands. Proceedings of the First Symposium. Santa Barbara Nat. Hist. Mus.; iv + 178 pp.
- Powell, J. A. 1994. Biogeography of Lepidoptera on the California Channel Islands. in: Halvorson, W. & G. Maender (eds.) The Fourth California Islands Symposium: Update on the Status of Resources. Sta. Barbara Mus. Nat. Hist, Sta. Barbara [dated 1994 but not distributed until March, 1995].
- Powell, J. A. 2005. Assessment of inventory effort for Lepidoptera (Insecta) and the status of endemic species on Santa Barbara Island, California, pp. 351-371. *in*: Garcelon, D and C. Schwemm, Proc. Sixth Calif. Islands Symp., Ventura, Calif., Dec. 1-3, 2003. Natl. Park Serv. Tech. Publ. CHIS-05-01, Inst. Wildlife Studies, Arcata, CA. Electronic version available as CD ROM, April, 2005; Printed volume August 2005.
- Powell, J.A. 2007. Don Meadows, nearly forgotten as a lepidopterist. J. Lepid. Soc. 61(1): 50-54
- Powell, J. A. and J. W. Brown 1998. A new species of Ericaceae-feeding *Decodes* from the Channel Islands and mainland of southern California (Lepidoptera: Tortricidae: Cnephasiini). Pan-Pacific Entomol. 74: 102-107.
- Powell, J. A. and D. Povolny 2001. Gnorimoschemine moths of coastal strand and dune habitats in California (Gelechiidae). Holarctic Lepid. 8, Supplement 1:1- 51. [describes 16 new species of moths, including two from San Clemente I. and two from Santa Catalina I.]
- Powell, J. A. and D. L. Wagner 1993. The Microlepidoptera fauna of Santa Cruz Island is less depauperate than that of butterflies and larger moths. Proc. 3rd Calif. Islands Symp., Santa Barbara Nat. Hist. Mus., 189-198.
- Remington, C. L. 1971. Natural history and evolutionary genetics on the California Channel Islands. *Discovery* 7(1):2-18.
- Rubinoff, D. and J. A. Powell 2004. Conservation of fragmented small populations: endemic species persistence on California's smallest channel island. *Biodiversity and Conservation* 13(13): 2537-2550.
- Schoenherr, A., C. Feldmeth, M. Emerson 1999. Natural History of the Islands of California. U.C. Press; Berkeley & Los Angeles; xi + 491 pp.
- Wright, W. G. 1905. Butterflies of the West Coast of the United States. San Francisco; vii + 227 pp.

# SYSTEMATIC LIST OF LEPIDOPTERA RECORDED ON SANTA CATALINA ISLAND

August 2004; revised Dec. 2011

This list has been compiled during the past 45 years from several sources: 1) collections of the Los Angeles County Museum of Natural History (LACM) and Santa Barbara Museum of Natural History (SBMNH) at several intervals; 2) the collection at Peabody Museum, Yale University, in 1978 and 1997; and 3) the Smithsonian Institution (USNM) in July 2004, to record data from specimens collected by Don Meadows, who worked on Catalina during 1927-1934, then sold his pyraloids and macro moth collections to the Smithsonian in 1950 (His microlepidoptera went to the LACM); 4) major collections accumulated during visits by my students and me (March-April 1969, May 1978, December 1979, Sept. 2004, March 2011). 5) records by S. Bennett, J. Donahue, G. Gorelick, J. Hogue, R. Leuschner, S. E. Miller, and C. Nagano, and others during short-term visits, 1978-1981 (LACM, SBMNH).

J. Donahue, B. Harris, and Leuschner assisted with recovery and identification of specimens at the LACM, as did S. Miller and P. A. Opler at the USNM.

Abbreviations: [ ] = name formerly used for taxon; **ad**= adult reared; **Lar** = larval collection; **emgd**= adult emergence date from larval collection.; **mi** = larval mines collection or observation; **r.f.**= reared from. Asterisks (\*) refer to singleton records, “(2)” are single date records of 2 specimens; **n. sp.** = new species; **spp.** = species (plural).

Author name abbreviations, also see MONA Check List (1983: x-xi):

**B. & Bsk.** = Barnes & Busck

**B. & McD.** = Barnes & McDunnough

**Bdv.** = Boisduval

**Bdv. & LeC.** = Boisduval & LeConte

**Benj.** = Benjamin

**Bsk.** = Busck

**C. & S.** = Cassino & Swett

**Chamb.** = Chambers

**Clem.** = Clemens

**Comst.** = Comstock, J. A.

**Edw.** = Edwards, W. H.

**F.** = Fabricius

**Ferg.** = Ferguson

**Feld., Fldr.** = Felder

**Fern.** = Fernald

**F. v. R.** = Fischer von Röslerstamm

**Gn.** = Guenée

**Grt.** = Grote

**Gr. & Rob.** = Grote & Robinson

**Grin.** = Grinnell, J.

**Grossb.** = Grossbeck

**Guer.-Men.** = Guerin-Meneville

**Harv.** = Harvey

**H. Edw.** = Henry Edwards

**H.-S.** = Herrich-Schaeffer

**Ham.** = Hammond

**Hamp.** = Hampson

**Haw.** = Haworth

**Hbn.** = Hübner

**Heinr.** = Heinrich

**Hlst.** = Hulst

**Hufn.** = Hufnagel  
**Keif.** = Keifer  
**Kft.** = Kearfott  
**L.** = Linnaeus  
**Lint.** = Lintner  
**McD.** = McDunnough  
**Meyr.** = Meyrick  
**Morr.** = Morrison  
**Munr.** = Munroe  
**Murt.** = Murtfeldt  
**Neun.** = Neunzig  
**Pack.** = Packard  
**Pears.** = Pearsall  
**P. & P.** = Powell & Povolný  
**Pov.** = Povolný  
**Rag.** = Ragonot  
**Reak.** = Reakirt  
**Rob.** = Robinson  
**Rut. & Karsh.** = Rutten & Karsholt  
**Scud. & Burg.** = Scudder & Burgess  
**Sm.** = Smith, J. B.  
**Steph.** = Stephens  
**Stkr.** = Strecker  
**Tr., Treit.** = Trietschke  
**Westw. & Hew.** = Westwood & Hewitson  
**Wlk.** = Walker  
**Wilk.** = Wilkinson.  
**Wlsm.** = Walsingham  
**Z.** = Zeller.

Taxa _____	Record date		<u>larval record</u>
	<u>First</u>	<u>Last</u>	
<b>Nepticulidae:</b>			
Stigmella	III.1968	III.2011	(mi, Cercocarpus)
Stigmella heteromelis Wilk.& Scoble	III.1968	III.2011	(mi, Heteromeles)
Stigmella	III.1968		(mi, ad, Prunus lyonii)
Stigmella variella (Braun)	III.1968	III.2011	(mi, ad, Q. pacifica)
Stigmella	V.1978	III.2011	(mi, Malosma laurina, Rhus integrifolia)
Stigmella n. sp.	IV.1968	III.2011	(mi, Lyonothamnus)
Stigmella 'diffasciae'	III.1968	IX.2004	(mi, Rhamnus pirifolia)
Stigmella	IX.2004	III.2011	(mi Toxicodendron)

**Tischeriidae:**

Tischeria ?ceanothi	IV.1968	III.2011	(mi, ad, Ceanothus)
Tischeria?	III.2011		(mi numerous Q. pacifica)

**Acanthopteroctetidae:**

Acanthopteroctetes ?	IX.2004		(mi many, Ceanothus)
----------------------	---------	--	----------------------

**Heliozelidae:**

Coptodisca cercocarpella Braun	III.1968		(mi, Cercocarpus)
Coptodisca saliciella (Clem.)	IX.2004		mi., Salix lasiolepis

**Tineidae:**

Cephitinea obscurostrigella (Cham.)	IX.2004*		ID: R. Leusch.
Homosetia ?marginimaculella (Cham.)	VIII.1939 (date error?)	IX.2004	
Monopis crocicapitella (Clem.)	III.1968	III.2011	
Nemapogon sp. nr. arcella	VIII.1970*		(worn)
Nemapogon ?defectella (Z.)	III.1992*		(worn)
Oinophila v-flava (Haw.)	III.1968	IX.2004	
Opogona (golden)	IX.2004	IX.2004 (3 dates)	
Tinea occidentella Cham.	1931 or 32	III.2011	
Tinea pallescentella Staint.	V.1978	III.1992	
Tinea ?pellionella L.	V.1932*		(worn)
Tineola biselliella (Hum.)	XI.1931	XI.1981	
Unplaced tineine	XII.1981	II.1982	
Unplaced tineine (tiny)	IX.2004*		

**Acrolophidae:**

Amydria sp.	IX.2004*		
Ptilopsaltis confusella (Dietz)	X.1931	IX.2004	



**Gracillariidae:**

<i>Caloptilia diversilobiella</i> Opler	III.2011		(mi Toxicodendron)
<i>Caloptilia reticulata</i> (Braun) ?	III.1932	IX.2004	(mi, ad <i>Q. pacifica</i> ) (pale race)
<i>Caloptilia paulstriella</i> (Braun)	V.1978	IX.2004	(mi, ad) r. f. <i>Salix</i> ; IX
<i>Caloptilia palustriella</i> ?	III.2011		r.f. <i>Populus trichocarpa</i>
<i>Caloptilia</i> (pale orange)	III.2011*		
<i>Caloptilia</i> (gray)	III.2011*		
<i>Cremastobombycia</i>	V.1.1978	V.4.1978	r.f. <i>Sphacele</i> & <i>Salvia fragrans</i>
<i>Marmara</i>	V.1978	IX.2004	(mi, <i>Heteromeles</i> )
<i>Marmara opuntiella</i> Busck	III.1968		(mi, <i>Opuntia</i> )
<i>Marmara</i>	III.1968		(mi, <i>Rhus laurina</i> )
<i>Phyllonorycter</i> ? <i>apicinigrella</i> (Braun)	III.1968	IX.2004	(mi, <i>Salix lasiolepis</i> )
<i>Phyllonorycter felinelle</i> Heinr.	IX.2004		mi, adults r.f. <i>Platanus</i>
<i>Phyllonorycter</i> sp.	III.1968	III.2011	(mi, <i>Q. pacifica</i> )
<i>Phyllonorycter</i> ?	III.2011		(mi. <i>Populus trichocarpa</i> )
<i>Phyllonorycter</i> unplaced	III.1968		

**Phyllocnistidae:**

<i>Phyllocnistis populiella</i> Cham.	V.1978	III.2011	(mi, ad, <i>Salix</i> ; mi, ad r.f. <i>Populus trichocarpa</i> , 2011)
---------------------------------------	--------	----------	--

**Bucculatricidae:**

<i>Bucculatrix</i> ? <i>albertiella</i> Busck	III.1968		mi, ad <i>Quercus pacifica</i>
<i>Bucculatrix koebelilla</i> Busck	III.1968	V.1978	lar; r.f. <i>Artemisia californica</i>
<i>Bucculatrix separabilis</i> Braun	III.2011		r.f. <i>Baccharis pilularis</i> [contaminant?]

**Oecophoridae (sens. lat.):**

<i>Borkhausenia nefrax</i> Hodges	XII.1979	IX.2004 (2 dates)	
<i>Agonopterix oregonensis</i> Clarke	V.1933	V.1933 (2 dates)	

<i>Agonopterix sabulella</i> (Wlsm.)	V.1978*	
<i>Ethmia discostrigella</i> (Cham.)	IX.1931	III.2011

**Elachistidae:**

<i>Elachista caranthirella</i> Kaila	III.1968 (type series)	
<i>Elachista</i> (= <i>caranthirella</i> Kaila?)	III.68*	III.2011?
<i>Elachista coniophora</i> Braun	III.1932	III.2011
<i>Elachista</i> (silver marked)	IX.2004 (2 dates, sites)	
<i>Perritia passula</i> Kaila	V.1978	IX.2004 (mi <i>Lonicera</i> )

**Cosmopterigidae:**

<i>Pyroderces badius</i> (Hodges)	XII.1979*
<i>Walshia miscecolorella</i> (Cham.)	IX.2004 (4 sites)

**Momphidae:**

<i>Mompha</i> sp. (black, white marked) canum;	IX.2004	(1a, ad, stem galls <i>Epilobium</i> JAP 04J29)
<i>Mompha</i> sp. (gray, brown mottled) canum;	IX.2004	(1a, ad, tip galls <i>Epilobium</i> JAP 04J28) + 1 adult in field

**Scythrididae:**

<i>Arotrura</i> n. sp. <i>divaricata</i> complex	VIII.1970	III.2011
<i>Arotrura longissima</i> J. Landry	IV.1932	V.1978 (2)

**Blastobasidae:**

<i>Holcocera</i>	V.1978*
<i>Holcocera phenacocci</i> Braun	VIII.1926*

Hypatopa (iceryaeella-like)	III.1968*	III.2011	
unplaced blastobasine (Calosima?)	IV.1968*		r.f. Cupressus cones
unplaced blastobasine (2 spp.?)	V.1978*		
unplaced blastobasine ♀	III.2011		r.f. Quercus pacifica
Symmoca signatella (H.-S.)	III.1968	IX.2004	r.f. Cupressus cones

### **Coleophoridae:**

Batrachedra striolata Z.	IX.2004 (2)	2011	r.f Pontania galls on Salix
Coleophora accordella Wlsm.	III.2011*		
Coleophora "baccharella"		III.2011	cases on Baccharis
pilularis			
Coleophora quadristrigella Busck	V.1932	V.1932	(ID DM)
Coleophora #4 (white-tinged)	IV.1932	V.1932	
Coleophora #5	III.1968		r.f. Artemisia californica
Coleophora #6 (pale tan)	V.1980*		
Coleophora #7	IX.2004		la cases on Isocoma
Coleophora #8 (cream color)	IX.2004*		
Coleophora (small FW broad)	IX.2004*		

### **Gelechiidae:**

Anacampsis lacteusochrella (Cham.)	X.1931*		
Aristotelia #4 (2 spp.?)	X.1931	V.1978	
Aristotelia #5	V.1978*		r.f. Salix lasiolepis
Aristotelia #6 (small, pale costal triangle)	IX.2004 (2)		
Aroga trachycosma (Meyrick)	IX.2004		la webbing Frankenia
Aroga unifasciella (Busck)		V.1978*	
Aroga sp. (brown)	IX.2004*		
Bryotropha hodgesi Rut. & Karsh.	IX.2004 (3 sites, dates)		

<i>Chionodes acrina</i> (Keifer)		III.1968	V.81 (?)	r.f. <i>Quercus pacifica</i>
<i>Chionodes bardus</i> Hodges		V.1932 (paratypes)	IX.1932	
<i>Chionodes braunella</i> (Keifer)		(X.1931?)V.1932	V.1981	
<i>Chionodes ?chrysopyla</i> (Keifer)		IV.1968	V.1978	
<i>Chionodes not chrysopyla?</i>		V.1932	III.1968 (2)	
<i>Chionodes dentella</i> (Busck)		V.1978*		
<i>Chionodes donahueorum</i> Hodges		IV.1932	IV.1932 (2)	
<i>Chionodes figurella</i> (Busck)		V.1932*		
<i>Chionodes nanodella</i> (Busck)		IV.1932	III.2011	
<i>Chionodes occidentella</i> (Cham.)		IX.2004*		
<i>Chionodes trichostola</i> (Meyrick)		X.1931	III.2011	r.f. <i>Quercus californica</i>
<i>Chionodes unplaced</i> (large, dark)		V.1981*		
<i>Chionodes</i> sp. (small brown)		IX.2004		
<i>Chionodes</i> (dark, preapical white)		IX.2004		
<i>Coleotechnites</i> “glinax”		III.1968	V.1978	r.f. <i>Q. pacifica</i>
“ (?)		III.2011		r.f. <i>Q. pacifica</i>
<i>Euscrobipalpa atriplicella</i> (F. v. R.)		V.1978*		
<i>Euscrobipalpa obsoletella</i>	(F. v. R.)		V.1981*	
<i>Evippe</i>		V.1932	IX.2004	mi <i>Q. pacifica</i>
<i>Evippe</i>		IX.2004	III.2011	mi <i>Cercocarpus</i>
<i>Filatima</i> sp. 1		III.1933	V.1978	
<i>Filatima</i> sp. 2		XII.1979*		
<i>Filatima</i> sp. 3		IX.2004*		JAP 8333
<i>Gelechia</i> (bianulella group)		V.1978	IX.2004	r.f. <i>Rhus laurina</i>
<i>Gelechia</i> (large, dark)		V.1978*		
<i>Gnorimoschema baccharisella</i> Busck		IX.14.2004	III.2011	galls <i>Baccharis</i>
<i>Gnorimoschema crypticum</i>	P. & P.	IX.2004 (4 sites)		
<i>Gnorimoschema saphirinella</i> (Cham.)		X.1931	IX.2004	

<i>Gnorimoschema stigmaticum</i> Pov.	IX.1931 holotype	IX.2004 (4 sites)	
<i>Isophrictis</i> sp.	IX.2004 (3 sites)		
<i>Lita sironae</i> Hodges	X.1931	IX.2004 (4 sites)	
<i>Neopalpa neonata</i> Pov., 1998	V.1978*		
<i>Pseudochelaria scabrella</i> (Busck)	IX.2004*		
<i>Rifseria fuscotaeniella</i> Hodges	V.1932	IX.2004	
<i>Scrobipalpula psilella</i> (H.-S.) complex	X.1931	V.1978	
<i>Scrobipalpulopsis lutescella</i> (Clarke)	XI.16.81*		
[ <i>Symmetrischema striatellum</i> (Murt.)	III.1941* label error, host & date? Prob. not Catalina]		
<i>Symmetrischema tangolias</i> (Gyen)	X.1931	V.1932	
<i>Syncopacma ?nigrella</i> (Cham.)	IX.2004*		
<i>Teliopsis baldiana</i> (B. & B.)	X.1931	VI.1932	
<i>Telphusa sedulitella</i> (Busck)	IV.1941	IX.2004	;r.f. <i>Quercus pacifica</i> , Adults beaten from <i>Lyonothamnus</i> trunks
<i>Tuta chiquitella</i> (Busck)	V.1978	III.2004	
<i>Tuta insularis</i> Pov.	II.1932	III.2004	
unplaced <i>gnorimoschemines</i>	X.1931	XII.1979	(6 spms., 3 or 4 spp.?)
unplaced gelechiid #16 ( <i>Syncopacma</i> ?)	V.1978		
unplaced gelechiid #31 ( <i>Ch. nanodella</i> ?)	X.1931, VI.1932, V.1978		(3 spms., 1 or 2 spp.?)
unplaced gelechiid #32 “	V.1978*		
unplaced gelechiid (“ <i>R. glinax</i> ”?)	V.1978		r.f. <i>Quercus pacifica</i> 78E3
unplaced gelechiid ( <i>Aristotelia</i> ?)	III.1992*		tiny, worn
unplaced gelechiid, <i>Coleotechnites</i> ?	III.2011*		

#### **Alucitidae:**

*Alucita montana* (Landry & Landry) I.30.1996\*

#### **Schreckensteiniidae:**

Schreckensteinia festaliella (Hbn.) III.2011\*

### **Plutellidae**

Plutella albidorsella (Wlsm.) V.1932 V.1981  
Plutella xylostella (L.) III.1932 III.2011  
Ypsolopha nr. flavistrigella (Busck) XII.1979\*

### **Argyresthiidae:**

Argyresthia cupressella Wlsm. V.1978\*

### **Lyonetiidae:**

Paraleucoptera heinrichi Jones III.31.1968 IV.1.1968 r.f. Prunus lyoni

### **Heliodinidae:**

Embola powelli Hsu III.2011 ad assoc. Mirabilis

### **Choreutidae:**

Tebenna gnaphaliella (Kft.) V.1978 V.1978 (2)  
Tebenna sp. not gnaphaliella?\* VII.06\* C.de la Rosa image

### **Sesiidae:**

Melittia gloriosa H. Edw. pre 1946 VII.1980 (2 dates, sites)  
Paranthrene robiniae (H. Edw.) VII.1980 VIII.1980 (2 sites`)

### **Cossidae:**

Givira marga B. & McD. Pre 1910 (TL) IX.2004

### **Pterophoridae:**

<i>Adaina</i> sp. nr. <i>ambrosiae</i> (Murt.)	V.1932*		
<i>Agdistis americana</i> B. & L.	IX.2004 (2)		
<i>Anstenoptilia marmarodactyla</i> (Dyar)	IV.1932	I.1982	
<i>Djongia californicus</i> (Wlsm.)	V.1932	IX.2004	[Trichoptilus]
<i>Emmelina monodactyla</i> (L.)	IV.1932	I.1981 (2)	
“ (?)	III.2011		
<i>Gillmeria pallidactyla</i> (Haw.)	IV.1982*		
<i>Lioptilodes parvus</i> (Wlsm.)	IX.1931	X.1932	
<i>Oidaematophorus</i> (H.) <i>catalinae</i> (Grin.)	IX.2004		
<i>Oidaematophorus grandis</i> (Fish)	IX.2004 (2 sites, dates)		
<i>Oidaematophorus</i> sp. nr. <i>gratiosus</i> (Fish)	III.1968*		
<i>Oidaematophorus</i> (H.) <i>longifrons</i> (Wlsm.)	XI.1931	III.1992	r.f. undet. Asteraceae
<i>Oidaematophorus</i> (H.) <i>varioides</i> McD.	X.1981*		
<i>Oidaematophorus</i> sp. (not <i>catalinae</i> or <i>varioides</i> )	IV.1932	V.1932	
<i>Oidaematophorus</i> sp. (white)	IX.2004		RL
<i>Oidaematophorus</i> sp.	IX.2004		(not <i>varioides</i> ?) RL
<i>Platyptilia carduidactyla</i> (Riley)	III.1941	VII.1979	r.f. <i>Cirsium</i> , 1978
<i>Platyptilia williamsi</i> Grinnell	IV.1932	II.1981	

### **Tortricidae:**

#### **Olethreutinae**

<i>Bactra verutana</i> Z.	VIII.1970	IX.2004	
<i>Crociosema plebejana</i> Z.	IX.1931	IX.2004	
<i>Cydia latiferreana</i> (Wlsm.)	IX.1931	IX.2004 (3 dates)	
<i>Epiblema strenuana</i> (Wlk.) complex	V.1978	III.2011	
<i>Epinotia columbia</i> (Kft.)	IV.1941	V.1978	r.f. <i>Salix</i> ; JAP 11C4, C6, C19, C29, C36, C56
<i>Epinotia cupressi</i> Heinr.	III.1968	V.1978	r.f. <i>Cupressus</i>

<i>Epinotia emarginana</i>	V.1978	III.2011	r.f. <i>Q. pacifica</i> ; JAP 11C16, C34.1, C46
<i>Epinotia signiferana</i> Heinr.	X.1931*		ID needs confirm
<i>Epinotia subviridis</i> Heinr.	V.1932	V.1932 (2)	ID Heinrich
<i>Episimus argutanus</i> (Clem.)	IV.1932	V.1978	
<i>Eucosma abstemia</i> Meyrick	VIII.1970 (2)		
<i>Eucosma avalona</i> McD.	IX.1932	IX.2004 (numerous)	
<i>Eucosma costastrigulana</i> Kft.	V.1981 (2)		
<i>Eucosma curlewensis</i> D. Wright	IX.1932	IX.2004	
<i>Eucosma metariana</i> /passerana group	X.1931	IX.2004	
<i>Eucosma ridingsana</i> (Rob.)	IX.2004 (2 sites)		
<i>Eucosma suadana</i> Heinr.	IV.1968	V.1981	JAP 6707
<i>Grapholita conversana</i> Wlsm.	V.1932	III.1968	
<i>Grapholita prunivora</i> (Walsh)	IX.2004 (2)		JAP 8771
<i>Grapholita vitrana</i> Wlsm.	III.1929	III.2011	lar: <i>Astragalus</i>
<i>Phaneta apacheana</i> (Wlsm.)	X.1931	2011	r.f. fls. <i>Gnaphalium</i> ; JAP11C54
<i>Phaneta pallidarcis</i> (Heinr.)	V.1932	V.1981	
<i>Phaneta subminimana</i> (Heinr.)	X.1931*	IX.2004?	
<i>Sonia filiana</i> (Busck)	VIII.1980	IX.2004 (3 dates)	
<i>Sonia vovana</i> (Kft.)	VI.1932	IX.2004	RL

**Tortricinae:**

<i>Acleris hastiana</i> (L.)	III.1941	III.2011	r.f. <i>Salix</i> ; JAP 11C29
<i>Acleris maximana</i> (B. & Bsk.)	I.1981*	III.2011	r.f. <i>Salix</i> ; JAP 11C34.1
<i>Acleris senescens</i> (Z.)	III.2011	III.2011	r.f. <i>Salix</i> JAP11C19, C20.1, C56
<i>Anopina triangulana</i> (Kft.)	V.1932	V.1981 (6)	
<i>Argyrotaenia citrana</i> (Fern.)	IX.1931	III.2011	r.f. <i>Baccharis</i> , <i>Calochortus</i> , <i>Castilleja</i> , <i>Dipsacus</i> , <i>Artemisia californica</i> ,



			Nicotiana	
<i>Argyrotaenia franciscana</i> (Wlsm.)	IV.1941	V.1978	r.f Quercus pacifica [?]	
<i>Amorbia cuneana</i> (Wlsm.)	V.1932	III.2011	r.f. Lyonothamnus, Prunus lyoni, Heteromeles	
<i>Clepsis peritana</i> (Clem.)	X.1931	III.2011		
<i>Cochylis carmelana</i> Kft.	III.1968	II.1981		
<i>Cochylis nr. parallelana</i> Wlsm.	V.1978	V.1978		
<i>Decodes fragarianus</i> (Bsk.)	IX. 2004*			
<i>Henricus umbrabasanus</i> (Kft.)	IV.1968	IX.2004	r.f. Quercus pacifica	
<i>Lorita scarificata</i> (Meyrick)	IX.2004		r.f. Isocoma vetusta	
<i>Platphalonidia deinandrae</i> Powell n.sp.	V.3.1978 (3)			
<i>Platphalonidia isocomae</i> Powell n.sp.	IX.2004		series r.f. Isocoma menziesii	
<i>Platphalonidia psammophila</i> Powell n.sp.	V.1978?	III.2004		
<i>Platynota stultana</i> Wlsm.	IV.1968	IX.2004	r.f. Eriogonum grande	
<i>Saphenista?</i>	IV.1932	IX.1932		
<i>Sparganothis senecionana</i> (Wlsm.)	IV.1968	V.1978		
unplaced cochyline (or 2 spp.)	V.1932	III.1968		
unplaced cochyline	III.2004			

### Copromorphidae:

<i>Bondia comonana</i> (Kft.)	V.1978	IX.2004	
-------------------------------	--------	---------	--

### Crambidae:

<i>Abegesta remellalis</i> (Druce)	IX.1931	IX.2004 (2)	
<i>Dicymolomia metalliferalis</i> (Pack.)	V.1932	IX.2004 (many sites)	
<i>Dicymolomia opuntialis</i> Dyar	IV.1932	XI.2005 C.de la Rosa image	r.f. Opuntia
<i>Eudonia commortalis</i> (Dyar)	Date and det. by unknown, USNM		

<i>Eudonia ?expallidalis</i> (Dyar)	III.1932	IV.1932	
<i>Eudonia ?franciscalis</i> Munroe	III.1968		
<i>Eudonia rectilinea</i> (Z.)	III.1932	V.1981	
<i>Evergestis angustalis catalinae</i> Munroe	II.1932	II.1981	
<i>Hellula aequalis</i> B. & McD.	IX.2004*		(ID RL)
<i>Hellula rogatalis</i> (Hulst)	IX.1931	IX.2004 (6 sites)	
<i>Petrophila schaefferalis</i> (Dyar)	V.1981*		
<i>Scoparia ?palloralis</i> Dyar	IV.1932	IX.2004	
Uplaced sp.	IX.2004*		
<b>Pyraustinae:</b>			
<i>Achyra occidentalis</i> (Pack.)	1932?	IX.2004	
“ (?) yellow form	VII.2006		C. de la Rosa image
<i>Achyra rantalis</i> (Gn.)	Date and det. by unknown, USNM + IX.2004 (ID RL)		
<i>Choristostigma elegantalis</i> Warren	III.1968	I.1981	
<i>Diastictis fracturalis</i> (Z.)	V.1978	IX.2004	
<i>Diastictis sperryorum</i> Munroe	VIII.1980	III.2004	(det. JPD)
<i>Lineodes integra</i> (Z.)	IX.1931	IV.1932	
<i>Lygropia octonalis</i> (Z.)	V.1978	III.2011	
<i>Mecyna mustelinalis</i> (Pack.)	IV.1932	V.1981	
<i>Mimorista subcostalis</i> (Hamp.)	V.1932	IX.2004 (5 sites)	
<i>Nomophila nearctica</i> Munroe	V.1932	III.2011	
<i>Pyrausta laticlavata</i> (Grt. & Rob.)	X.1931	IX.2004	
<i>Pyrausta morenalis</i> (Dyar)	IV.1932	III.2011	[not napaealis (Hulst)?]
<i>Pyrausta ?perrubralis</i> (Pack.)	IX.2004 (4 sites)		[=scurralis (Hulst?)]
<i>Pyrausta pilatealis</i> B. & McD.	IV.1932	V.1981	
<i>Pyrausta pseudonythesalis</i> Munroe	Date and det. by unknown, USNM; not cited in original description		
<i>Pyrausta zonalis</i> B. & McD.	Date and det. by unknown, USNM		
<i>Udea berberitalis</i> (B. & McD.)	IX.2004 (2)		

<i>Udea profundalis</i> (Pack.)	II.1941	II.1981 (2)	
<i>Uresiphita reversalis</i> (Gn.)	1932?	XI.29.2007	C. de la Rosa images

### **Crambinae**

<i>Crambus ?occidentalis</i> Grote	IX.1932 (“a great many”—D. Meadows);	XI.05	image de la Rosa
<i>Euchromius ocellus</i> (Haw.)	IX.1931	IX.2004 (5 sites)	
<i>Hemiplatytes epia</i> (Dyar)	IX.2004 (4 sites)		ID RL
<i>Microcrambus copelandi</i> Klots	X.1931	V.1932 (type series); IX.2004 (6 sites)	
<i>Parapediasia teterrella</i> Zincken	IX.2004 (series)		
<i>Thaumatopsis fernaldella lagunella</i> Dyar	V.1978	VIII.1980	
<i>Tehama bonifatella</i> (Hulst)	III.1930* (ID?)		
unplaced sp. 1	III.1968*		
unplaced sp. 2	V.1978*		

### **Pyralidae:**

<i>Aglossa nr. acallalis</i> Dyar	II.1981	XI.1981	
“ (?) (or <i>Pyralis</i> )	III.2011*		
<i>Arta epicoenalis</i> Rag.	V.1978 (2)		
<i>Alpheias</i> sp.	IX.2004*		
<i>Galleria mellonella</i> (L.)	IX.2004*		
<i>Herculia phoezalis</i> Dyar	V.1978		r.f. Cupressus cones
<i>Cacotherapia angulalis</i> B. & McD.	X.1931	IX.2004	[Macrotheca] r.f. Cupressus cones
<i>Pyralis farinalis</i> L.	1931-32?		
<i>Pyralis</i> (narrow FW)	IX.2004		
<i>Tallula fieldi</i> B. & McD.	III.1968		r.f. Cupressus cones
<i>Toripalpus trabalis</i> Grote	IX.2004 (2)		

### **Phycitinae**

<i>Acrobasis comptella</i> Rag.	IV.1941	IX.2004	r.f. <i>Quercus californicus</i>
<i>Acrobasis tricolorella</i> Grote	X.1931	IX.2004 (5 sites)	
<i>Ambesa mirabella</i> Dyar (?)	V.1981*		
<i>Baphala eremiella</i> (Dyar)	IX.2004 (4 sites)		[ID RL=B. <i>phaeolella</i> Neunzig NC] JAP 8760, 8812, 8835, 8841, 8869
<i>Elasmopalpus lignosellus</i> (Z.)	V.1978*		
<i>Ephestia kuehniella</i> Z.	V.1978	III.2011	
<i>Ephestiodes gilvescentella</i> Rag. (incl. <i>erythrella</i> Rag.)	III.1968	III.2011	
<i>Etiella zinckenella</i> (Treit.)	IX.1931	IX.2004	
<i>Eumysia pallidipennella</i> (Hulst)	V.1978*		
<i>Euzophera semifuneralis</i> (Wlk.)	IX.2004 (4 sites)		(+ RL ID <i>E. aglaeella</i> )
<i>Heterographis morrisonella</i> Rag.	IX.1931	III.2011	
<i>Homoeosoma electellum</i> (Hulst)	IX.2004 (2)		
<i>Homoeosoma striatellum</i> Dyar	V.1/2.1978 (3)		
<i>Laetilia zamacrella</i> Dyar	IX.2004*		
<i>Ozamia fuscomaculella</i> (W. Wright)	IX.1931 ID RL	IX.2004 (many sites)	JAP 8838, 8840  <i>Amyeloides transitella</i> by
<i>Passadena</i> n. sp.?	V.1978	V.1978 (2)	
<i>Patagonia peregrina</i> (Heinr.)	IX.2004	III.2011 (2 sites)	r.f. fls., <i>Gnaphalium</i>
<i>Phobus curvatellus</i> (Rag.)	V.1981 (2)		
<i>Phycitodes mucidellum</i> (Rag.)	IV.1929	III.2011	JAP 8834 – ID <i>Unadilla erronella</i> by RL
<i>Pima albiplagiata</i> <i>occidentalis</i> Heinr.	III.1929	V.1978	
<i>Sosipatra proximanthophila</i> Neun.	V.1978 paratype	IX.2004	JAP 8843
<i>Trachycera caliginoidella</i> (Dyar)	V.1932	III.2011	r.f. <i>Quercus pacifica</i>
<i>Vitula edmansae</i> (Pack.)	IX.2004 (2)		
<i>Vitula insula</i> Neun.	IX.1931;	XII.1979 (holotype)	III.2011

**Geometridae:**

<i>Aethaloida packardaria</i> (Hulst)	V. 1978	III.2011	(also III.68?)
<i>Anacamptodes fragilaria</i> (Grossb.)	III.1968	IX.2004	
<i>Anacamptodes obliquaria</i> (Grote)	V.1978	V.1978	
<i>Archirhoe neomexicana</i> (Hulst)	V.1931	I.1981	
<i>Chetoscelis faseolaria</i> (Gn.)	V.1929	III.2011	
<i>Chlorochlamys appellaria</i> Pears.	V.1932	VI.1933	
<i>Cochisea ?sinuaria</i> B. & McD	IX.2004*		[RL: n. sp., in San Gabriel Mts.]
<i>Cyclophora dataria</i> (Hulst)	V.1978	IX.2004	
<i>Cyclophora nanaria</i> (Wlk.)	IV.1931	IX.2004	[ <i>Cosymbia serrulata</i> Pack.]
<i>Dichorda illustraria</i> (Hulst)	XI.1931	X.05	de la Rosa image
<i>Digrammia californiata</i> (Pack.)	IX.1931	IX.2004	[ <i>Semiothisa</i> ]
<i>Digrammia colorata</i> (Grote)	X.1931	VI.1932	
<i>Digrammia delectata</i> Hulst	V.1978*		
<i>Digrammia excurvata</i> (Pack.)	XII.1979*		
<i>Digrammia neptaria</i> (Gn.)	IV.1933	II.2011	
<i>Disclisioprocta stellata</i> (Gn.)	IX.2004*		FL sp. introd So CA fide RL
<i>Drepanulatrix monicaria</i> (Gn.)	IX.1931	IV.1932	
<i>Drepanulatrix quadraria</i> (Grote)	IX.2004*		ID needs confirm
<i>Drepanulatrix unicalcaria</i> (Gn.)	IV.1932*		
<i>Dysstroma brunneata</i> (Pack)	IV.1932	V.1932	[=hulstata Taylor]
<i>Dysstroma mancipata</i> (Gn.)	IV.1932	V.1981	
<i>Euphyia implicata</i> (Gn.)	X.1929	III.2011	
<i>Eupithecia acutipennis</i> (Hulst)	II.1930	III.2011	
<i>Eupithecia litoris</i> McD.	II.1941*		
<i>Eupithecia leucata</i> (Hulst)	V.1832*		JAP 8728♂
<i>Eupithecia maestosa/subvirens</i> Dietze	IX.11932	IX.2004	

Eupithecia misturata (Hulst)	III.1941	IX.2004	on <i>Stelaria media</i>
Eupithecia nevadata Pack.	III.1929	III.2011	
Eupithecia rotundopuncta Pack.	III.1968 (2)		
“ (?)	III.2011 ♀	JAP 9607	
Eupithecia ?scabrogata Pears.	V.1978*	III.2011 (?)	
Eupithecia shirleyata C. & S.	II.1930	III.2011	
Eupithecia sp. cant place	IV.1932*		JAP 8747♀
Eustroma semiatrata (Hulst)	II.1928	III.2011	
Hesperumia sulphuraria Pack.	V.1932	V.1978 (2)	
Hydriomena albifasciata (Pack.)	II.1941	III.2011	
Hydriomena glaucata (Pack.)	IV.1932	V.1978	
Hydriomena nubilofasciata (Pack.)	I.1981	V.1981	
Hydriomena?	III.2011		♀ JAP 9614
Lobocleta granitaria (Pack.)	III.1930	V.1932 (2)	
Macaria neptaria (Gn.)	IV.1933	IX.2004	
Nasusina inferior (Hulst)	III.1932	IV.1932	JAP 8740, 9648
Nasusina vaporata (Pears.)	III.1968	V.1978	
Nasusina?	VIII.1970 (4)		
Nemoria leptalea Ferg.	IX.1929	III.2011	
Nemoria pistaciaria (Pack.)	V.1929	IX.2004	
Neoterpes edwardsata (Pack.)	IV.1932	X.1932 (2)	
Palaeacrita longiciliata Hulst	I.1932*		
Parexcelsa ultraria Pears.	IX.1932	IX.2004	
Perizoma custodiata (Gn.)	IV.1929	III.2011	
Perizoma epictata B. & McD.	V.1932	IX.2004	
Pero catalina Poole	X.1931	III.2011	[=“macdunnoughi”]
Pherne subpunctata (Hulst)	XI.1931	III.2011	USNM: vernalaria Wright,

<i>Prochoerodes forficaria</i> (Gn.)	III.1928	V.2006	de la Rosa images
<i>Pterotaea crinigera</i> Rindge		IV.1932	III.1968
<i>Pterotaea ?glauca</i> Rindge		V.1981	V.1981
<i>Pterotaea lamiaria</i> (Strkr.)	IV.1941	V.1978	on <i>Adenostoma</i>
<i>Sabulodes aegrotata</i> (Gn.)	I.1932	IX.2004	
<i>Spargania magnoliata</i> Gn.	IV.1932	III.201	[ <i>S. quadripunctata</i> ]
<i>Speranza marcescaria</i> (Gn.)	IX.2004	III.2011	[Elpiste]
<i>Stamnodes affiliata</i> Pears.	XI.1931	I.1981 (2)	
<i>Stamnodes albiapicata</i> Grossb.	I.1932	XII.1979	
<i>Stamnodes anellata</i> (Hulst)		I.1932	III.1933
<i>Stamnodes nr. annellata</i>	I.1981	I.1981	
<i>Stamnodes coenonymphata</i> (Hlst.)	III.1929	III.1933	
“ (?)	III.2011*		
<i>Stamnodes rickseckeri</i> Pears.	XII.1979	II.1981	
<i>Stergammataea delicata</i> (Hulst)	V.1978	IX.2004 (2)	
<i>Tornos fieldi</i> Grossb.	IV.1932	IX.2004	
<i>Trichopteryx veritata</i> Pears.	III.1929	IV.1994	
<i>Triphosa californiata</i> (Pack.)	II.1932	III.2011	
<i>Venusia duodecemlineata</i> (Pack.)	II.1932	III.2011	
? <i>Xanthorhoe defensaria</i> (Gn.)	III.1968*		
<i>Zenophleps lignicolorata</i> (Pack.)	XII.1928	III.2004	
<i>Zenophleps obscurata</i> Hulst	II.1930	IX.1932	

### **Sphingidae:**

<i>Erinnyis ello</i> (L.)	IX.2004*		
<i>Erinnyis obscura</i> (F.)	IX.2004*		
<i>Hyles lineata</i> F.	III.pre 1933	II.2007	Image de la Rosa
<i>Manduca quinquemaculata</i> (Haw.)	XI.2.32	IX.2004	

Manduca sexta (L.)	1927	IX.2004	<b>Lar.</b> on Solanum wallacei, Nicotiana, & Datura
Smerinthus cerisyi Kirby	III.1928	III.2011	Lar. on Salix lasiolepis
Sphinx perelegans H. Edw.	IV.1928	V.1981	

**Dioptidae:**

Phryganidea californica Pack.	V.1978*		[USNM dioptids are on loan to AMNH]
-------------------------------	---------	--	--

**Lymantriidae:**

Orgyia vetusta Bdv.	V.1932	V.1981	
---------------------	--------	--------	--

**Notodontidae:**

Furcula scolopendrina (Bdv.)	pre 1934	III.2011	
------------------------------	----------	----------	--

**Lithosiinae:**

Cisthene deserta (Fldr.)	IX.1931?	IX.2004 (3 sites)	
Cisthene faustinula (Bdv.)	IX.1931	IX.2004	lichen feeders
Cisthene liberomacula (Dyar)	IX.1931	XI.2005 image	IX.16/17.2004 in Middle Cyn.: 100, 500+. and 1200 Cisthene <i>per</i> <i>BL trap</i> , incl. deserta, faustinula (mostly), and liberomacula
Crambidia suffusa B. & McD.	X.1931	IX.1932	

**Arctiinae:**

Grammia nevadensis (Grt. & Rob.)	IV.1928 (lar.)	IX.2004 [Apantesis]	general feeders
Notarctia proxima (Guer. Menev.)	X.1927	III.2011	“
Arachnis picta meadowsi Comst.	IX.1932	X.2005	de la Rosa images
Estigmene acrea (Drury)	III.1930*		
Hemihyalea edwardsii (Pack.)	X.1929	IX.2007	images Quercus agrifolia
Lophocampa indistincta (B. & McD.)	pre 1910	IX.2004 (series, 2 sites)	



**Noctuidae:**

<i>Abagrotis denticulata</i> McD.	V.1981*		
<i>Abagrotis erratica</i> (Sm.)	IX.2004 (3 sites)		
<i>Abagrotis kirkwoodi</i> Buckett	IX.2004 (series)		RL ID
<i>Abagrotis orbis</i> (Grote)	IX.2004 (series)		RL ID
<i>Abagrotis reedi</i> Buckett	IX.2004*		RL ID
<i>Acontia sedata</i> (H. Edw.)?	IX.1929	X.1931	
<i>Adelphagrotis carissima</i> (Harvey)	IX.2004*		RL ID
<i>Adelphagrotis indeterminata</i> (Wlk.)	IX.1932	IX.2004 (4 sites)	
<i>Admetovis similaris</i> Barnes	III.1928	III.2011	
<i>Agrochola purpurea</i> (Grote)	X.1931	XI.1932	
<i>Agrotis ipsilon</i> (Hufn.)	IX.1929	III.2011	
<i>Agrotis subterranean</i> (F.)	VII.1929	XII.1979	
<i>Agrotis venerabilis</i>	X.1929	X.1931	[ <i>Feltia annexa</i> (Tr.)]
<i>Agrotis vetusta</i> Wlk.	IX.2004*		RL ID
<i>Annaphila decia</i> Grote	III.1929	III.2011	
<i>Annaphila divinula</i> Grote	II.1928	III.2011	
<i>Apamea cinefacta</i> (Grote)	III.1929	III.2011 [Septis] (ID <i>Morrisonia mucos</i> by DM)	
<i>Ascalapha odorata</i> (L.)	IX.1933	X.1984	[ <i>Erebus odora</i> ]
<i>Aseptis perfumosa</i> (Hamp.)	IV.1932	V.1978	
<i>Autographa californica</i> (Speyer)	X.1927	X.2005	images de la Rosa
<i>Autoplusia egenoides</i> (Strand)	X.1927	XI.1933	
<i>Benjaminiola colorada</i> (Sm.)	X.1931*		
<i>Bulia deducta</i> (Morr.)	X.1932	IX.2004 (2)	
<i>Caenurgia togataria</i> (Wilk.)	XI.1927	III.2011	
<i>Catabena lineolata</i> Wlk.	III.1933	III.2011	
<i>Catabena saggitata</i> B. & McD.	X.1931	XI.1931 (2)	

<i>Catocala ?arizonae</i> Grote	VII.1980		
<i>Catocala faustinula cleopatra</i> Stkr.	IX.2004 (3)		
<i>Catocala hermia verecunda</i> Hulst	pre 1934		(=stretchi Behr?)
<i>Catocala ilia zoe</i> Behr	VIII.1970	V.1981	
<i>Catocala verilliana</i> Grote	V.1981	IX.2004	
<i>Cissusa indiscreta</i> (H. Edw.)	II.1981	III.2011	[Ulosyneda]
<i>Cobalos angelica</i> Sm.	V.1931	V.1981	
<i>Conochares acutus</i> Sm.	IV.1932	III.2011	(or <i>C. altera</i> Sm.)
<i>Copibryophila angelica</i> Sm.	V.1933	IX.2004 (3)	
<i>Copicucullia eulepis</i> (Grote)	IV.1929	IX.1932	
<i>Cryphia viridata</i> (Harvey)	X.1931	III.2011	[Agriopodes or Cerma]
<i>Cucullia eccissica</i> Dyar	II.1932	V.1978	[formerly ID <i>C. dorsalis</i> Sm.]
<i>Cucullia serraticornis</i> (Lint.)	II.1932	I.1981	
<i>Dargida procincta</i> (Grote)		III.1929	III.2011
<i>Dicestra trifolii</i> (Hufn.)	III.1933*		
<i>Egira crucialis</i> (Harvey)	II.1932	III.1933	[Xylomiges]
<i>Egira curialis</i> (Grote)	I.1932	III.2011	
<i>Egira hiemalis</i> (Grote)	X.1931	III.1981	
<i>Egira perlubens</i> (Grote)	IV.1994	III.2011	
<i>Egira rubrica</i> (Harvey)	II.1933	III.2011	
<i>Eumicremma minima</i> (Gn.)	IX.1932	IX.2004 (3 sites)	[Eublemma]
<i>Euxoa atomaris</i> (Sm.)	IX.1932	III.1941 (lar)	r.f. white sage, emgd. V.1941
<i>Euxoa difformis</i> (Sm.)	X.1931	IX.1932	
<i>Euxoa messoria</i> (Harris)	V.1981	IX.2004 (2)	
<i>Euxoa olivia</i> (Morr.)	X.1929	XI.1981	
<i>Euxoa selenis</i> (Sm.)	V.1929	IV.1933	
<i>Euxoa serricornis</i> (Sm.) ?	V.1978	V.1978	
<i>Euxoa septentrionalis</i> (Wlk.)	V.1981	IX.2004 (3 sites)	(ID RL)

<i>Euxoa tocoyae</i> (Sm.)	III.1929	III.2011?	
<i>Feralia meadowsi</i> Buckett	II.1930	II.1981	[F. februalis]
<i>Forsebia perlaeta</i> (H. Edw.)	IX.2004?		Id by RL, no specms.EME
<i>Heliothis phloxiphagus</i> G. & R.	VI.1929	IX.2004	
<i>Heliothis virescens</i> (F.)	IX.1929	X.1931 (2)	
<i>Heliothis zea</i> (Boddie)	IX.1929	IX.2004 (many sites)	
<i>Heliothodes diminutivus</i> (Grote)	IV.1928	V.1978 (2)	
<i>Hemeroplanis finitima</i> (Sm.)	III.1930	III.2011	
<i>Hemeroplanis incusalis</i> (Grt.)	X.1931	X.1931	
<i>Hemieuxoa rudens</i> (Harv.)	IX.1932	V.1981	
<i>Homoglaea dives</i> Sm.	I.1981(2)	III.2011	r.f. Sallix, JAP 11C29 (=?carbonaria Harvey)
<i>Homoncocnemis fortis</i> (Grote)	IV.1994*		
<i>Homorthodes communis</i> (Dyar)	IX.1931	III.2011	
<i>Homorthodes ?fractura</i> (Sm.)	IX.1932	V.1978	
<i>Hypena ?californica</i> Behr	III.1941	IV.1941	r.f. <i>Urtica gracilis</i>
<i>Lacinipolia cuneata</i> (Grote)	IV.1932	V.1978	
<i>Lacinipolia patalis</i> (Grote)	V.1932	V.1978	
<i>Lacinipolia quadrilineata</i> (Grote)	III.1929	V.1981	
<i>Lacinipolia stricta cinnabarina</i> (Grote)	IV.2004 (2 sites)		
<i>Lacinipolia strigicollis</i> (Wallengren)	VI.1932	V.1981	
<i>Lepipolys behrensi</i> (Grote)	XII.1979	II.1981	
<i>Lepipolys perscripta</i> Gn.	III.1929	I.1981	
<i>Leucania farcta</i> (Grote)	III.1933	IX.2004	(=oregona Sm)
<i>Leucania imperfecta</i> Sm.	III.2011		
<i>Leucania oaxacana</i> Schaus	III.1928	III.2011	(“oregona”]
<i>Mammifrontia rileyi</i> Benjamin	VI.1932	V.1981	

Megalographa biloba (Steph.)	IV.1929	II.1981	
Mesogona subcuprea Crabo & Ham.		IX.2004 (2)	
Mesogona olivata (Harvey)	X.1931	IX.2004	[Pseudoglaea]
Micrathetis triplex (Wlk.)	V.1981	IX.2004 (3 sites)	
Mythimna unipuncta (Haw.)	IV.1932	IX.2004	[Pseudaletia]
Neogalea esula (Druce)	X.1931	V.1934 (2)	
Nocloa rivulosa Sm.	II.1932	III.2011	
Nola "minna" (Butler) (?n. sp.)	IV.1932	IX.2004	
Nycteola sp.	III.2011		la Populus trichocarpa
"Oligia" marina (Grote)	IV.1929	V.1981	
Oncocnemis ragani Barnes	V.1978	IX.2004 (4 sites)	
"Orthodes" ?			[Unable to locate VIII.04]
Orthosia behrensiana (Grote)	I.1932	III.1933 (50+)	[includes O. macona Sm.?]
Orthosia erythrolita (Grote)	II.1932	III.2011	
Orthosia hibisci (Gn.)	II.1932	III.2011	
Orthosia pacifica (Harvey)	III.1933*		
Orthosia terminata (Sm.) ?	I.1932	II.1981	
Orthosia transparens (Grote)	III.2011*		
Paectes declinata (Grote)	IX.2004 (6 sites)		
Parabagrotis insularis (Grote)	V.1928	IX.2004	[Rhychagrotis exertistigma (Morr.)]
Peridroma saucia(Hbn.)	IX.1931	III.2011	
Platyperigea extima (Wlk.)	II.1941*		
Properigea albimacula (B. & McD.)	IV.1932	IX.2004	
“ (?)	X.2005		de la Rosa image
Properigea suffusa rubida (B. & McD.)	IX.2004*		ID RL
Protorthodes alfkeni (Grote)	X.1928	IX.2004 (many sites)	
Protorthodes rufula (Grote)	III.1933	III.2011	

<i>Pseudobryomima fallax</i> (Hamp.)	I.1930	III.2011	
<i>Pseudorthosia variabilis</i> Grote	X.1931	IX.2004	
<i>Schinia sara</i> Sm.	IX.2004 (4 sites)		
<i>Spodoptera exigua</i> (Hbn.)	IX.1928	III.2011	[Laphygma]
<i>Spodoptera ornithogalli</i> (Gn.)	V.1932	IX.2004 (3)	[Prodenia]
<i>Spodoptera praefica</i> (Grote)	II.1932	VIII.1980	
<i>Synedoida divergens</i> (Behr)	VIII.1929	VIII.1970	[Drasteria]
<i>Synedoida edwardsii</i> (Behr)	pre 1910	IX.2004 (4 sites)	
<i>Synedoida ochracea</i> (Behr)	pre 1910	IX.2004 (5)	
<i>Synedoida fumosa</i> (Strkr.)		IX.2004	IX.2004
<i>Synedoida pallescens</i> (G. & R.)	IX.1927	IX.2004 (5 sites)	
<i>Synedoida tejonica</i> (Behr)	IX.1931	IX.2004 (4 sites)	
<i>Tathorhynchus exsiccatu</i> s (Led.)	V.1978*		[ <i>T. angustiorata</i> ]
<i>Tetanolita palligera</i> (Sm.)	IX.2004*		
<i>Trichoclea antica</i> (Sm.)	V.1981*		[ <i>misid. edwardsii?</i> ]
<i>Trichoclea edwardsii</i> Sm.	IV.1932	III.2011	
<i>Tricholita fistula</i> Harvey	IX.2004 (5 sites)		
<i>Trichoplusia ni</i> (Hbn.)	IX.1931	IX.2004 (5 sites)	[ <i>Autographa brassicae</i> ]
<i>Tridepia nova</i> (Sm.)	XI.1932	V.1978	
<i>Tripudia balteata</i> Sm.	V.06*		C.de la Rosa image
<i>Ufeus plicatus hulsti</i> Sm.	III.2011*		
<i>Zale insuda</i> (Sm.)	IX.2004		RL ID
<i>Zale lunata</i> (Drury)	XI.12.2006*		de la Rosa image
<i>Zosteropoda hirtipes</i> Grote	X.1931	III.2011	

## BUTTERFLIES

### **Hesperiidae:**

<i>Erynnis funeralis</i> (Scud. & Burg.)	V.1930	1983	
--	--------	------	--

<i>Heliopetes ericetorum</i> (Bdv.)	2011*		JAP sight record
<i>Pyrgus communis</i> (Grote)		V.1932	VI.1978
<i>Hylephila phyleus</i> (Drury)	1927		IX.2004
<i>Ochlodes sylvanoides</i> (Bdv.)	VII.1929	VIII.1981	[IX.2004 netted, released, uncertain ID]

**Papilionidae:**

<i>Papilio zelicaon</i> Lucas	1928?		III.2011
-------------------------------	-------	--	----------

**Pieridae:**

<i>Anthocaris cethura catalina</i> Meadows	III.1928		III.2011
<i>Anthocaris sara</i> Lucas	III.1932		III.2011
<i>Phoebis sennae</i> (L.)	1928	1933	[Callidryas]
<i>Colias eurytheme</i> Bdv.	XI.1927		VII.1978
<i>Eurema nicippe</i> (Cramer)	1927		1934
<i>Pieris rapae</i> L.	1927		III.2011
<i>Pontia protodice</i> (Bdv. & LeC.)	IX.1927		VIII.1969

**Lycaenidae:**

<i>Strymon avalona</i> (W. Wright)	1885 (summer)		III.2011
<i>Brephidium exile</i> (Bdv.)	1927	IX.2004	r.f. <i>Atriplex</i> patula
<i>Celastrina ladon echo</i> (Edw.)	1928		III.2011
<i>Everes amyntula</i> (Bdv.)	1928?	III.2011	r.f. <i>Astragalus</i> seeds (2 sites)
<i>Leptotes marinus</i> (Reakirt)	1927	VI.1978	r.f. <i>Lotus</i> scoparius
<i>Plebejus acmon</i> West. & Hew.	VIII.1969		III.2011 (JAD sight record)

**Nymphalidae:**

Danaus berenice (Cramer)	XI.1927*		
Danaus plexippus (L.)	1932	1934	
Agraulis vanillae (L.)	II.1930	XII.1979	r.f. Passiflora '79
Junonia coenia (Hbn.)	1927	VII.1978	
Nymphalis antiopa (L.)	1928?	IX.2004 (DOA)	
Nymphalis californica (Bdv.)	X.1932	IV.1933	
Vanessa annabella Field	1928?	XII.1979	
Vanessa atalanta (L.)	I.1928	III.2011	r.f. Urtica holocericea, JAP 11C57
Vanessa cardui (L.)	1927?	XII.1979	
Vanessa virginiensis (Drury)	1927?	V.1981	

Totals:

Microlep	208
Pyraloid	76
Macro moth	220
Butterfly	20
Total	533