

UC Merced

The Journal of California Anthropology

Title

The Cahuilla Use of *Piyatem*, Larvae of the White-Lined Sphinx Moth (*Hyles lineata*) as Food

Permalink

<https://escholarship.org/uc/item/6pd8k8r3>

Journal

The Journal of California Anthropology, 5(1)

Authors

Fenenga, Gerrit L
Fisher, Eric M

Publication Date

1978-07-01

Peer reviewed

The Cahuilla Use of *Piyatem*, Larvae of the White-lined Sphinx Moth (*Hyles lineata*), as Food

GERRIT L. FENENGA
ERIC M. FISHER

The importance of insect resources to indigenous peoples is relatively well known. Historical and anthropological literature indicates California Indians utilized insects or insect exudates as food,¹ for ornamentation,² for medicinal³ or ritualistic reasons,⁴ as items of economic and commercial value,⁵ and for technological purposes.⁶ Generally, however, ethnoentomological documentation consists of casual or minor observations included in historic or ethnographic accounts or of brief mention in cultural trait or word lists, without precise identification of the insects involved. Some articles have dealt specifically with the use of insects by California Indians (Essig 1931:12-47; Barrett 1936:1-5; Woodward 1938:175-180; Heizer 1950:35-41). Barrett neglected, however, to include proper identification of his "armyworm."⁷ This problem is common to most existing notes on the aboriginal use of insects. Primarily, this is due to the extraordinarily great number of insect species that exist. For accurate identification, specimens usually must be submitted to entomologists who specialize in insect classification; few of the earlier ethnographers followed this procedure. In addition, insects were often described by informants, but never actually seen by the ethnographer. This might have been the result of the seasonal unavailability of the species of insect, or due to the particular interests of the recorder. Occasionally, ethnographers did have opportunities to collect specimens and have them identified, or, better yet, entomologists themselves were able to

observe and record the human use of insects.

One such individual was William Greenwood Wright. Wright made many important discoveries and collections of butterflies and other insects in California during the late nineteenth century. His data may generally be considered reliable, although he evidently was known to be somewhat eccentric. In September, 1884, Wright published an article entitled "A Naturalist in the Desert" in the popular serial *Overland Monthly* (Wright 1884:279-284). This short paper contains a number of observations which substantiate existing ethnographic data regarding Cahuilla Indian village locations,⁸ agricultural methods,⁹ ethnobotanical practices,¹⁰ and social customs.¹¹ Specifically, however, it contains a detailed graphic description of Cahuilla caterpillar exploitation. This particular paragraph of Wright's article is worth reprinting here for several reasons: (1) identification of the insect and its host plant are included; (2) the use of this insect, the White-lined Sphinx Moth, *Hyles lineata* (Fabricius), shown in Fig. 1, has seldom been recorded previously in an ethnographic context in California or elsewhere; and (3) Wright's description has not received attention and might be of interest to Cahuilla scholars.

Wright's observations concerning this subject are as follows:

In an hour we came to the caterpillar pasture.¹² The sand is dotted with mats and patches of a procumbent plant,¹³ much resembling in flower the common sand verbena, *Abronia*, on which vast armies of caterpillars—the larvae of *D. linearis*¹⁴—are feeding; they are huge worms three and four inches long. Another small army of Indians—[men, women, and children]—are out gathering them as though they were huckleberries, for use as food. The Indians do not notice us, but go on with their gathering. Seizing a fat worm, they pull off its head, and by a dexterous jerk the viscera are ejected, and the wriggling carcass is put

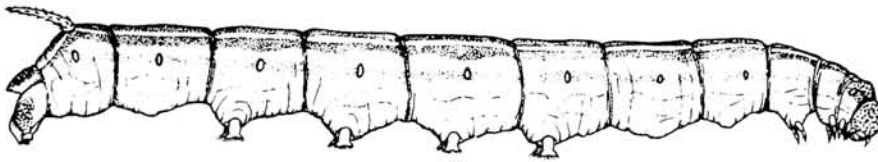


Fig. 1. *Piyatem*: Larva of White-lined Sphinx Moth (*Hyles lineata*). Actual length is 8.5 cm.

into a small basket or bag, or strung upon strings and hung upon the arm or about the neck, till occasion is found to put them into a large receptacle. I got three of these gathering baskets. One is funnel-shaped, holding a quart or two; another is like a large, flat saucer, and the third is similar but with a deep rim. At night, these Indians carry their prey home, where they have a great feast.¹⁵ Indians from a long distance come to these worm feasts, and it is a time of great rejoicing among them. The larvae that are not consumed at the time (and they eat incredible quantities), are put upon ground previously heated by a fire, and thoroughly dried, when they are packed away whole, or pulverized into a meal [Wright 1884:283].

The use of caterpillars and other insects by the Cahuilla and their neighbors is well documented (Drucker 1937:9; Bean and Saubel 1963:63-64; Bean 1972:61). One particular caterpillar, as described in several sources, appears to be the species observed by Wright. Bean (1972:61) states:

A worm called *piyatem* [*piyaxtem*]¹⁶—possibly an army worm—was a favorite treat of the Cahuilla. The worms appeared at the surface of the ground in abundance after warm spring rains, and were collected in large quantities, prepared by parching, and stored for future use. Their arrival was celebrated by a first-fruit ritual as were those of other insects and worms

Mrs. Ruby E. Modesto, Cahuilla consultant,¹⁶ substantiates the use of *piyatem*, describing its use as follows:

She remembered that her grandmother went out in the spring toward the hills, and they would gather the worms, killing them by pinching off the heads. The worms were roasted on a *comol* 'griddle' and either immediately eaten or stored. Sometimes they were parched over hot coals, which dried them out and allowed them to be stored longer without turning rancid [Lando and Modesto 1977:110].

In April, 1976, Philip J. Wilke, University of California, Riverside, collected specimens of *Hyles lineata* which were identified by Mrs. Modesto as *piyatem*.¹⁷ She also provided an additional method of preparing this foodstuff, stating that they were skewered on an arrowweed (*Pluchea sericea* Nutt.) stem, after pulling off the head, and roasted.

The striking similarities between these different accounts of *piyatem* exploitation attest to the importance and desirability of this species as a food source to the Cahuilla. The availability of this insect, however, is somewhat unpredictable. In certain years, in desert areas of the southwestern United States, "outbreaks" of this species occur and within a local area larvae can be found swarming over the ground and vegetation in countless numbers. These outbreaks usually happen in the spring, but otherwise are sporadic, sometimes occurring in consecutive years, sometimes separated by periods of three or more years. The exact cause of this phenomenon is unknown, although it likely involves some combination of abundant desert vegetation and low numbers of larval parasites and predators. Grant (1937:356) has shown a

correlation with rainfall. Outbreaks frequently occur in a spring preceded by a wet winter following a dry year. The Cahuilla were fully conscious of the relationship of *piyatem* availability to other environmental factors. Evidence for this is provided by Mrs. Modesto's observation that *piyatem* appeared in great numbers in years when there was a good bloom of spring flowers. This is perhaps also the reason Drucker's Desert and Mountain Cahuilla informants told him "rainbow shows where caterpillars fall" (1937:26). Bean (1972: 135-159) discusses at some length the acute awareness the Cahuilla possessed in regard to the delicate balance of their ecosystem, and how they attempted to maintain this balance through the mechanisms of various rituals.

Our purpose in writing this paper was twofold. First, we wished to call attention to an overlooked minor source of Cahuilla ethnohistory. Second, we were concerned with clarifying the ethnographic record in regard to the identification and utilization of *piyatem*. In researching this subject, it has become apparent to us that the relatively uncharted field of ethnoentomology has considerable potential for adding to existing knowledge of California Indian life. Hopefully, this minor contribution will stimulate further research into this topic.

ACKNOWLEDGEMENTS

This paper was made possible through the interests and cooperation of a number of individuals. We are indebted to Dr. Lauren D. Anderson, Professor Emeritus, Department of Entomology, University of California, Riverside, for the identification of *Hyles lineata*. The figure was very kindly drawn by Janice Findley Fisher. Larvae of *H. lineata* were provided by Dr. Ronald E. Somerby, California State Department of Food and Agriculture, and information and literature by Dr. Charles L. Hogue and Mr. Julian P. Donahue, Entomology Section, Natural History Museum of Los Angeles County. Dr. Philip J. Wilke, Depart-

ment of Anthropology, University of California, Riverside, and Mr. Harry W. Lawton, University of California, Riverside, provided encouragement and critical editorial commentary on an earlier draft of the manuscript. Dr. Wilke also provided access to pertinent data collected during his anthropological research in the Coachella Valley. Finally, we would like to express our gratitude to Mrs. Ruby E. Modesto for the Cahuilla identification of *piyatem*, and for her sincere interest in preserving the cultural heritage of her people.

Berkeley, California

University of California, Davis

NOTES

1. Ethnographic evidence for the collecting, cooking, and eating of insects in California may be found in a number of papers. Primary sources include many of the University of California Cultural Element Distribution Lists, the *Handbook of the Indians of California* (Kroeber 1925), and most general culturally specific ethnographic works. A few historic accounts also contain some information on this subject (Leonard 1839:38; Hutchings 1888:428-429; and others). Summaries, from many sources, on the aboriginal use of insects as food are given by Bodenheimer (1951) and Taylor (1975), while Hitchcock (1962) treats several aspects of insect utilization by North and South American Indians. Archaeological data substantiating insect consumption in California are more limited, but do exist. For instance, larvae of a species of crane fly (Tipulidae) comprise 25% of a single human coprolite found in historic or late prehistoric context at Bamert Cave in Amador County (Nissen 1973:66-68). Equally relevant to this topic is the fact that certain California groups, notably the Tübatulabal, viewed the eating of insects with repugnance (Voegelin 1938:12), ate them only in times of stress (Kroeber 1925:84; Latta 1976:169-170), or as in the case of the Yurok practice of eating body lice, consumed them purely for ideological reason (Heizer and Mills 1952:131).

2. In 1775, Pedro Font noted of the Colorado River Yuma: "... they wear about the neck good-

sized strings of the dried heads of animals that look like tumble bugs, which are found here" (Font 1973:251). The remains of a necklace fashioned, at least in part, of beads made from the legs of beetles (probably Tenebrionidae), was discovered with an historic interment at Isabella Meadows Cave, an archaeological site in Monterey County (Meighan 1955:10). Also worthy of consideration here is the relatively frequent use of insect motifs as design elements in basketry and in rock art in certain areas of California.

3. A number of general references to such practices exist. Some specific examples have been recorded (Freeland 1923:60; Benedict 1924:384-385; Barrett and Gifford 1933:192; Blackburn 1976:79; and others).

4. The *antinic* or "ant ordeal" appears to have been associated with initiation and the *toloache* (jimson weed) ritual, as the distribution of these institutions approximate each other (Kroeber 1925:672; Strong 1929:317). Its greatest expression was, however, to be found among the Luiseño. The practice of ant ingestion was known among several Yokuts groups (Wukchamni, Yaudanchi, Yauelmani, and Paleuyami), the North Fork Mono, some of the Northern Miwok, the Kitanemuk, the Tübatulabal, and the Kawaiisu (Blackburn 1976:79). Ant ingestion served both medicinal and ritual purposes, sometimes in connection with acquiring power and in vision quests (Blackburn 1976:79). The importance of insects to the mythology and world view of various California groups has been discussed by Essig (1931:41-47). Also of possible significance is Drucker's (1941:171) observation that the Pima (Arizona) "name of the caterpillars means 'shaman's ornaments' suggesting some ritual importance of these creatures."

5. In his analysis of trade routes and economic exchange in aboriginal California, Davis presented a total of nine references to insect foods being imported or exported (1966:17). The most important "commercial" insect was undoubtedly *kutsavi*, the larvae of a small fly (*Hydropyrus hians* [Say]). Capt. J. W. Davidson, while at Owens Lake in 1859, saw "... hundreds of bushels of this food ..." (Wilke and Lawton 1976:30). Heizer (1950:35-41) presents other important early descriptions of

kutsavi exploitation and discusses the distribution of its use. Other insects mentioned as trade items by Davis include caterpillars of the Pandora Moth (*Coloradia pandora* Blake) and grasshoppers (1966:21, 32).

6. An exudate produced on Creosote Bush (*Larrea tridentata* Cov.) by the lac insect *Tachardiella larreae* (Comstock) (as *Carteria larrae*) was of importance as a cementing agent to aboriginal peoples to whom it was available (Coville 1892:361; Colton 1944:1-24; and others). The Kamia of the Imperial Valley are reported to have used grasshoppers, which they did not eat, for fish bait (Gifford 1931:13).

7. Barrett's "armyworm" probably refers to the larvae of a species of *Spodoptera* (Noctuidae); however, the name armyworm can be applied equally well to species of several other genera of the same moth family.

8. Aboriginal villages seen by Wright can be substantiated from a variety of ethnographic, historic, and archaeological sources (Strong 1929:39, 89; Wilke and Lawton 1975:30, Fig. 6; Lando and Modesto 1977:99, Fig. 2). Villages specifically noted by Wright are Agua Caliente, Indian Wells, and Torres (1884:280, 282, and 283).

9. Wright comments on the agricultural fields near the village of Torres at the mouth of Toro Canyon, and indicates alfalfa, corn, beans, and peppers were being cultivated at that time. Wright also describes briefly the aboriginal wells at both Torres and at Indian Wells (1884:282, 284).

10. The use of the Chuparosa plant (*Beloperone californica* Benth.) as a source of red dye for painting faces and objects was also observed by Wright (1884:281).

11. Wright makes minor references to mortuary customs (1884:281) and to bathing at Agua Caliente (1884:280-281).

12. This location is probably somewhere in the area just southeast of La Quinta.

13. The plant described here is the desert Sandverbena (*Abronia villosa* Wats.), abundant in sandy areas below 3000 feet in elevation throughout the Mojave and Sonoran deserts.

14. Wright's "*D. linearis*" refers to *Deilephila lineata*, as *Hyles lineata* was then known. This moth, a member of the family Sphingidae, has also gone under the generic names *Sphinx* and *Celerio* (Hodges 1971:153). It is an abundant and commonly seen insect, and its larvae are known to feed on a wide variety of plants. Although *H. lineata* is found throughout most of North America, larval "outbreaks" occur only in the desert areas of its range.

15. Note reference to the first-fruit, thanksgiving ritual (festival) as described for the Cahuilla (Bean 1972:143-144, 148).

16. Mrs. Ruby E. Modesto is a member of the *A'wilem* 'dog' clan of the Desert Cahuilla. She is the granddaughter of Francisco Nombre, one of William Duncan Strong's most important Desert Cahuilla consultants.

17. According to Mrs. Modesto, *piyatem* is the plural of *piyakhut*.

REFERENCES

- Barrett, S. A.
1936 The Army Worm: A Food of the Pomo Indians. *In* Essays in Anthropology in Honor of A. L. Kroeber, R. H. Lowie, ed., pp. 1-5. Berkeley: University of California Press.
- Barrett, S. A., and E. W. Gifford
1933 Miwok Material Culture. *Bulletin of the Public Museum of the City of Milwaukee* 2 (4).
- Bean, Lowell John
1972 Mukat's People: The Cahuilla Indians of Southern California. Berkeley: University of California Press.
- Bean, Lowell John, and Katherine Siva Saubel
1963 Cahuilla Ethnobotanical Notes: The Aboriginal Uses of the Mesquite and Screwbean. Los Angeles: University of California Archaeological Survey Annual Report 1962-1963:55-74.
- Benedict, Ruth Fulton
1924 A Brief Sketch of Serrano Culture. *American Anthropologist* 26:366-392.
- Blackburn, Thomas
1976 A Query Regarding the Possible Hallucinogenic Effects of Ant Ingestion in South-Central California. *Journal of California Anthropology* 3(2):78-81.
- Bodenheimer, Friedrich S.
1951 Insects as Human Food; a Chapter of the Ecology of Man. The Hague: W. Junk.
- Colton, Harold S.
1944 The Anatomy of the Female American Lac Insect *Tachardiella larrea*. *Flagstaff: Museum of Northern Arizona Bulletin* 21.
- Coville, Frederick Vernon
1892 The Panamint Indians of California. *American Anthropologist (o.s.)* 5:351-361.
- Davis, James T.
1961 Trade Routes and Economic Exchange among the Indians of California. *Berkeley: University of California Archaeological Survey Report No. 54:1-79*.
- Drucker, Philip
1937 Culture Element Distributions: V, Southern California. *University of California Anthropological Records* 1(1).
- Drucker, Philip
1941 Culture Element Distributions: XVII, Yuman-Piman. *University of California Anthropological Records* 6(3).
- Essig, E. O.
1931 California Indians in Relation to Entomology. *In* A History of Entomology, pp. 12-47. New York: The Macmillan Company.
- Font, Pedro
1973 The Colorado Yumans in 1775. *In* The California Indians: A Source Book, R.F. Heizer and M. A. Whipple, eds., pp. 247-254. Berkeley: University of California Press.
- Freeland, L. S.
1923 Pomo Doctors and Poisoners. *University of California Publications in American Archaeology and Ethnology* 20:57-73.

- Gifford, E. W.
1931 The Kamia of Imperial Valley. Smithsonian Institution, Bureau of American Ethnology Bulletin 97.
- Grant, K. J.
1937 An Historical Study of the Migrations of *Celerio lineata lineata* Fabr. and *Celerio lineata livornica* Esp. (Lepidoptera). London: Transactions of the Royal Entomological Society 86(15):345-357.
- Heizer, Robert F.
1950 *Kutsavi*, A Great Basin Indian Food. Kroeber Anthropological Society Papers No. 2:35-41.
- Heizer, Robert F., and John E. Mills
1952 The Four Ages of Tsurai: A Documentary History of the Indian Village on Trinidad Bay. Berkeley: University of California Press.
- Hitchcock, Stephen W.
1962 Insects and Indians of the Americas. Bulletin of the Entomological Society of America 8:181-187.
- Hodges, R. W.
1971 The Moths of America North of Mexico. Fascicle 21: Sphingoidea. Middlesex and Oxford: E. W. Classey, Ltd. and R. B. D. Publications, Inc.
- Hutchings, J. M.
1888 In the Heart of the Sierras, etc. Oakland: Pacific Press Publishing House.
- Kroeber, A. L.
1925 Handbook of the Indians of California. Smithsonian Institution, Bureau of American Ethnology Bulletin 78.
- Lando, Richard, and Ruby E. Modesto
1977 *Temal Wakish*: A Desert Cahuilla Village. Journal of California Anthropology 4:95-112.
- Latta, Frank F.
1976 Tailholt Tales, as Related to Frank F. Latta by Thomas Jefferson Mayfield. Santa Cruz: Bear State Books.
- Leonard, Zenas
1839 Narrative of the Adventures of Zenas Leonard. Clearfield, Pennsylvania: D. W. Moore. Reprint 1966, Readex Microprint Corporation.
- Meighan, Clement W.
1955 Excavation of Isabella Meadows Cave, Monterey County, California. Berkeley: University of California Archaeological Survey Report No. 29:1-30.
- Nissen, Karen
1973 Analysis of Human Coprolites from Bamert Cave, Amador County, California. In The Archaeology of Bamert Cave, Amador County, California, by Robert F. Heizer and Thomas R. Hester, Appendix V. Berkeley: University of California Archaeological Research Facility.
- Strong, William Duncan
1929 Aboriginal Society in Southern California. Berkeley: University of California Publications in American Archaeology and Ethnology 26. Reprint 1972, Banning, California: Malki Museum Press.
- Taylor, Ronald L.
1975 Butterflies in My Stomach: or, Insects in Human Nutrition. Santa Barbara: Woodbridge Press.
- Voegelin, Erminie W.
1938 Tübatulabal Ethnography. University of California Anthropological Records 2(1).
- Wilke, Philip J., and Harry W. Lawton
1975 The Cahuilla Indians of the Colorado Desert: Ethnohistory and Prehistory. Ramona, California: Ballena Press Anthropological Papers 3:9-43.
- Wilke, Philip J., and Harry W. Lawton, eds.
1976 The Expedition of Capt. J. W. Davidson From Fort Tejon to the Owens Valley in 1859. Socorro, New Mexico: Ballena Press Publications in Archaeology, Ethnology, and History 8.
- Woodward, Arthur
1938 The "Honey" of the Early California Indians—A Strange Ethnological Error. The Masterkey 12(5):175-180.

Wright, William Greenwood
 1884 A Naturalist in the Desert. Overland
 Monthly 4(21):279-284.



A Material Representation of a Sacred Tradition

CHARLES N. IRWIN

This paper suggests an explanation of a circular rock artifact found in northern San Diego County and Orange County. The importance of the object lies in its resemblance to the groundpaintings (or sandpaintings) employed by the Luiseño and other southern California Indians in rites of passage, including the Chinigchinich initiation complex, an idea suggested by Paul Chace (1972). It is the author's objective to suggest correlations between this symbol and the groundpaintings as well as the function of the artifact in a socio-religious context.

Every human society has a world view that includes the structure of the universe and earth, the origin and history of the society, and its aspirations. World view embodies space-time coordinates and embraces symbolic conceptualizations of values.

World view has been expressed in rites of passage surrounding birth, adolescence, marriage, and death. Among southern California societies, such as those of the Diegueño, Luiseño, Juaneño and Gabrielino, world view was reflected in rites of passage, including the Chinigchinich initiation rites for adolescent boys and girls. The ritual dances and costumes worn by youthful initiates and by older functionaries in the religious system were analogous to the dance and costume of Chinigchinich "who taught the elders how to dance" (Boscana 1970:12). The tortures and privations endured by males included whipping, ant bites, fasting,

and doses of a beverage extracted from the roots of Jimson weed. Shamans administered a tobacco concoction to girl initiates (Dubois 1908:94), who underwent ordeals differing from those in boys' initiation.

The groundpaintings illustrated by Sparkman (1908:Plate 20) and Dubois (1908:Fig. 2) were a component of Luiseño ritual; they were symbolic representations of the Luiseño universe (Dubois 1908:88) and the ideal development of an individual in his or her quest to learn group mores and to reach an upper realm of spiritual fulfillment after death. The "paintings" formed part of the Chinigchinich complex including the Jimson weed ceremony and the ant ordeal: they were used to instruct youthful initiates about the origins and structure of the universe. The attributes of the deity, Chinigchinich, found expression in the groundpaintings as in other ritual elements of the saga of boys' and girls' initiation. The "punishers," who occupied positions around the center of the painting, were "Chinigchinich" animals such as the rattlesnake, the bear, "panther," and the black spider, and were capable of inflicting misfortunes upon ritually wayward individuals (Sparkman 1908:Plate 20). The paintings were also used in such mortuary rituals as the *Unish matakish*, during which the clan or "party" chief buried the feathers of a deceased Chinigchinich initiate (Dubois 1908: 92, 93). The doctors or shamans made these abstract and colorful sacred symbols in the ceremonial brush shelter (*wamkish* or *vanquech*)¹ on ritual occasions.

The groundpainting illustrated by Sparkman had three nearly complete concentric rings: each was broken at the same location or the "North." Beginning with the outermost, the broken rings symbolized "Milky Way," "night," and "blood."² A complete circle lay at the center.³ According to Sparkman (1908: Plate 20), the same groundpainting was used in both boys' and girls' initiation.

Dubois' monograph contains two varying