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REPORTS

Barrett's Armyworm: A Curious Ethnographic Problem

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EDITOR'S NOTE: This paper is excerpted from a book in preparation by the author entitled California Entomophagy: The Use of Insects as a Food Resource in Native California.

In May, 1904, S. A. Barrett, then a graduate student in Anthropology at the University of California, Berkeley, personally observed and photographed Central Pomo from Yokaia *ranchería* collecting a larval insect food which he described as an "army worm," known as *li* to the Central Pomo (Barrett 1936:1-7, 1952:108). This "almost hairless" caterpillar, feeding exclusively on the foliage of ash trees (*Fraxinus* sp.),¹ made one of its periodic spring appearances in large numbers that year in a nearby grove on the eastern bank of the Russian River.² Barrett described in some detail the "brownish" larvae "2½ inches in length . . . with . . . red stripes along the sides. The male is distinguished . . . from the female . . . by the fact that it has a pinkish white belly, while the belly of the latter is always yellow in color." The larvae were observed to completely defoliate ash saplings and trees in the grove *en masse*, drop precipitously to the ground, and move rapidly to another tree. Barrett also described a system of small, sand-lined pits and foliage girdles arranged around the base and trunks of the ash trees, designed to capture the crawling

larvae. Further note was made of a strange behavioral characteristic of the larvae:

Custom requires that conversation shall be carried out in low tones and that no undue noise shall be made by those gathering the army worms, because it is said that the worms become alarmed and leave. If any noise is made, the army worms in the vicinity will stop eating, raise their bodies at an angle of about 30 degrees, and sway the elevated part of the body rapidly back and forth in agitation for some time [Barrett 1936:5].

Barrett noted finally:

Just as the army worm appears, so suddenly and mysteriously does he disappear. Without any warning of any kind he is gone and does not appear again for several years [Barrett 1936:5].

Barrett wrote his account of the "army worm" in 1936, based on his original field notes taken in 1904. Since 32 years had elapsed between the original observation and publication of the account, it is not surprising that Barrett neglected or was unable to provide taxonomic identification of the insect in question. Proper identification of this food source is an ethnographic fact of potential importance to anthropologists and entomologists interested in the use of insects as a food resource in Native California. Moreover, Barrett was not the only ethnographer to omit identification of the "army worm." In providing less detailed accounts of the use of the caterpillar as food among various tribes in the north Coast Ranges, Loeb (1926:164, 1932:46; Pomo, Kato), Gifford and Kroeber (1937:178;

Pomo), Chesnut (1902:378; Round Valley), Foster (1944:166-167; Yuki), Essene (1942:4; Northwestern Pomo, Kato, Huchnom, Lassik) and Curtis (1924:25; Wailaki) all used the appellation "army worm" for this larva, as did Ellen Wood when giving an account of the caterpillar in her autobiography:

But I eat them army worms. Twice I think I see that kind of worm come. They don't come on all the trees . . . just on one kind of tree. I think I was about ten or eleven years old then, and my aunt dried lots of them with the Indian basket. She had lots of them . . . about four baskets full. And when they were good and dry, I used to grab them and eat them. Gee, that was good [Colson 1974:130].

With the exception of Ellen Wood's statement, all of the above accounts specifically mention "ash," "ash leaves," or "ash trees" as the host plant for the caterpillar. However, the "army worm" has remained unidentified with respect to binomial taxonomic designation, even though its host plant is well-documented.

That Barrett (and indeed many other California ethnographers) neglected to properly identify the "army worm" and other insects used as food and material resources has been most recently noted by Fenenga and Fisher (1978:84) as a common deficiency in the ethnographic record. They correctly state that most ethnographers did not personally see or collect specimens of the insect resources described by their consultants, and even more rarely submitted field material to specialists for accurate identification. However, Barrett's 1936 account of the "army worm" (unlike most other such citations) contains sufficient detail to make identification of this insect, in retrospect, somewhat less than a *de facto* guess.

Fenenga and Fisher (1978:87) speculate that Barrett's "army worm" could be the larva of a species of *Spodoptera* (Lepidoptera: Noctuidae). The family Noctuidae is a large group of moths commonly referred to as

"cutworms" or "army worms" as larvae, including several genera which attack agricultural crops in gregarious "armies." I believe the "army worm" in question is not a species of *Spodoptera*; rather it is another species of Noctuidae, *Homoncoenemis fortis* (Grote).³ The larva of *H. fortis* was first described under the synonymous name, *Agrotis vorax* in 1884 by an early California insect collector, James Behrens (Behrens 1884:21). Behrens made many of his collections and notes of previously undescribed species of insects in northern California, and the following observation, appearing in the journal *Papilio* in 1884, was signed "James Behrens, San Francisco":

About the middle of August, I observed the caterpillar forming an "army worm", thousands marching, or rather wriggling across roads and stones and fences to attack a new tree, often having left a former one leafless; they choose young ash trees, making their way up the green stem, of about four to six inches thickness. While feeding, they are continually shaking one end of their body, either holding on by fore or by hind legs.

The larva is chocolate color, scarcely over an inch long; emaciated thin in spite of all feeding. The next thing observed about them was that, coming to the ground in thousands, skinny and meagre, they bored themselves into the soil, leaving a small sandy tumulus outside. Forming afterwards such a bulky chrysalis and heavy moth, one might conclude they continue feeding underground. On September 4, the moth made its appearance from my chrysalids in captivity [Behrens 1884:21].⁴

H. fortis was first described by A.R. Grote (1880:257) from adult specimens collected in Nevada, and Behrens' *A. vorax* is considered a synonym of *H. fortis* (Comstock and Dammers 1939:31). In his *Key to the Larvae of the Phalaenidae* [Noctuidae], Crumb (1956:74) describes the immature form as approximately



Fig. 1. Ukiah Valley Pomo woman, Joseppa, with armyworms in basket. Previously published in Barrett (1936). Photograph by S. A. Barrett, 1904. (Figs. 1-4 courtesy of the Lowie Museum of Anthropology, University of California, Berkeley.)



Fig. 2. Ukiah Valley Pomo women and girls eating roasted caterpillars. Previously unpublished photograph by S. A. Barrett, 1904.



Fig. 3. Ukiah Valley Pomo man gathering armyworms from foliage of young ash shoots. Note defoliation of sapling at right. Previously unpublished photograph by S. A. Barrett, 1904.

35 mm. (1.38 inches) long, skin smooth, dorsally black with white or yellowish middorsal stripes and spots, venter pale, with an extremely broad orange subventral stripe. The specimens described were collected in Oregon, however the distribution cited includes records on *Fraxinus* spp. from Arizona, California, Utah, and Colorado.

These descriptions of *H. fortis* from the entomological literature, including morphological information, host plant records, and behavioral characteristics, correspond to Barrett's "army worm" description in several important respects. The larva is described as "chocolate color" by Behrens ("black" by Crumb), and although Behrens' observation

was made in mid-August (as opposed to Barrett's account of May 15), he observed the formation of the "army," intensive defoliation of ash saplings, and the "shaking" of the larvae while feeding, behavior which Barrett's consultants attributed to agitation of the caterpillar at noise and conversation by gatherers in the grove.⁵ The "mysterious disappearance" of the larvae, which Barrett cited, is apparently not only explained by the periodic nature of outbreaks by arboreal defoliators in general, but also in Behrens' observation that the larvae pupate in the soil after dropping from the foliage. The "emaciated" appearance of the larvae in August, unless feeding had actually ceased at this late date, is otherwise unexplained. Although both Behrens and Crumb describe a somewhat smaller larva, Crumb's description (made from preserved material which could be somewhat darkened or faded) of the dark color, pale venter, orange stripes, and dorsal spots agrees with both Barrett's observations and even more closely with V. K. Chesnut's brief description:

The ash leaf is a favorite food of a little black army worm which has white spots on its back. The worm is consumed in large quantities as food by several of the tribes in Round Valley [Chesnut 1902:378].

Foster (1944:166) also describes "an army worm a little more than an inch long, hairless, with a black back and reddish underside."

With allowance for somewhat inexact reporting, casual field observations or variation in larval coloration, it seems likely that Barrett's "army worm" is, in fact, the noctuid *Homoncoenemis fortis* (Grote). This identification clears up a longstanding (if somewhat minor) question in the ethnographic literature. Although my attempts at field collection of the larva during the spring feeding period along the Russian River have thus far been unsuccessful, eventual field collection of *H. fortis* and consultation and examination of specimens with people of the Pomo tribe will, I



Fig. 4. Collection pits at base of ash tree. Sand lining at edge prevented escape of caterpillars. Previously unpublished photograph by S. A. Barrett, 1904.

believe, substantiate the conclusions set forth above.

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NOTES

1. The "ash" referred to is undoubtedly Oregon ash (*Fraxinus latifolia* Benth.) which ranges from British Columbia to south central California in riparian habitats. Chesnut (1902:378) named the same host plant, using the old specific name *F. oregona*.

2. The periodicity of the appearance of the "army worm" and Pomo collecting activities is a well-known fact of the ethnographic record. However, the exact temporal interval between the periodic formation of the "armies" is less clear. Ellen Wood said she saw the caterpillar appear twice, at least once during her childhood, when she was "ten or eleven years old" (Colson 1974:130). Ellen Wood was 59 years of age in 1941 (Colson

1974:1). This would place her childhood experience in the years 1892-1893. Loeb (1926:164, 1932:46) reported that the caterpillar appeared every "ten to fifteen" years. Foster (1944:166) says it "appeared every three to four years" in Yuki territory. Central Pomo from Yokaia *rancheria* asserted that the "army worm" came "only at most a few days, in the early summer and only in years when there is a great deal of fog" (Barrett 1936:1). Behrens (1884:21) observed the "army worm" in 1884, and Barrett (1936:1) reported a previous occurrence in 1898 (in addition to his eye-witnessed account of 1904). The years 1884, 1892-3, 1898, and 1904 are thus the only temporal markers available, and certainly these observations were not all made on the same population of *H. fortis*. However, the highly visible massing of the caterpillar and the attendant defoliation of the ash trees appears to have occurred every 6-10 years in Pomo territory, if the various accounts are evaluated together.

3. Although several species of Noctuidae have been recorded as feeding on *Fraxinus* spp., the genus *Spodoptera* (formerly *Laphygma*) has not been recorded or collected from this host plant, according to Tietz (1972:888-889). Although this does not conclusively eliminate consideration of *Spodoptera* as the "armyworm," it would appear that the available host plant literature does not support such consideration.

4. Behrens' collections of California insects were sent to his home in Lübeck, Germany, several years before his death in 1898. However, one of the adult specimens of *H. fortis* reared by Behrens in 1884 is in the Essig Museum of Entomology as part of the California Insect Survey, University of California, Berkeley. The specimen bears the labels: "Sept. 4 from Lower S. Sp.; [?] larvae" and "*Agrotis vorax* n. sp. Behrens." Although the collection locale is obscure, the specimen was probably collected somewhere in Mendocino County, where Behrens lived and did much of his insect collecting.

5. This phenomenon is common to many species of caterpillars and larval sawflies which aggregate during early development and feeding. The "shaking" response to disturbance apparently functions to deter potential predators and parasites.

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An Unusual Stone Effigy from San Clemente Island, California

TRAVIS HUDSON

Sculptured in the round, the unusual stone object pictured here (Fig. 1) was recovered some ten years ago on San Clemente Island. The finder, Mr. Michael Hammer, discovered it on the surface near a small cave, high above Seal Cove, along the west coast of

the island. No less than ten small shell middens are known along the tops of the cliffs on the seaward edge of Seal Cove (McKusick and Warren 1959:122), but unfortunately the effigy was not directly associated with any archaeological midden in the area. Mr. Hammer noted, however, that midden debris was nearby. The specimen has been kindly loaned to the Santa Barbara Museum of Natural History by Mr. Hammer for the description presented here.

The effigy is made from a dark gray and highly porous vesicular basalt, a substance which is indigenous to the island (Emory 1954:107). In maximum dimensions it measures 20.5 cm. high, 14.8 cm. wide, and 10.5 cm. thick. Aside from the original shaping by pecking and polishing, there are no other marks or alterations of recent date; the object is thus in good condition.

It is quite obvious that the effigy is representational of some form of animal, and thus it was subjected to identification by ornithologists and terrestrial and marine zoologists at the museum. Initially it was felt by Mr. Hammer that some sort of sea turtle was represented, but our marine zoologist (Dr. Charles Woodhouse) eliminated this possibility by comparisons to known sea turtles of southern California: if such an animal is figured, then the head has been rotated 180° and the facial features greatly distorted. Examination by other zoologists (Waldo Abbott, Paul Collins, Janet Hamber, and John Stohrer) at the museum suggests that the body form and facial features more closely correspond with that of a Burrowing Owl (*Athene cunicularia hypogaea*). This small (under 28 cm. tall), brown bird is characterized by a round head, stubby tail, and long legs. In behavior, it is diurnal (daylight), with a southern California distribution which extends from the coast to the base of the mountains, as well as on the larger offshore islands where it is a common resident (Willett 1912:53; Peterson 1961:162).