KUTSAVI, A GREAT BASIN INDIAN FOOD

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When one becomes preoccupied with a topic or an area he is apt to accumulate formidable piles of notes and references on cultural traits which are intriguing, but not highly significant. Often these accumulations evade utilization in the student's published works. The present note is a by-product of a long and continuing interest in the archaeology and ethnology of the Great Basin, and because these data will probably never, to me have any particular significance, I offer them here in the hope that some other student may benefit from my literary gleanings.

One of the most interesting foods of the Indians of the Intermontane-Plateau was kutsavi, the larva of a small fly (Ephydra hians Say) which was to be found from northern Nevada to Mono Lake on the eastern border of California. Native exploitation of this economic resource has been discussed by O. Essig (1) and J. Steward.(2) The present note will show the essential distribution of the use of Ephydra larvae as food.

Among the earliest references to kutsavi collecting at Mono Lake is that of Zenas Leonard in 1833. He says:(3)

> The water in this lake becomes stagnant and very disagreeable -- its surface being covered with a green substance, similar to a stagnant frog pond. In warm weather there is a fly, about the size and similar to a grain of wheat, on this lake, in great numbers. ... When the wind rolls the waters onto the shore, these flies are left on the beach -- the female Indians then carefully gather them into baskets made of willow branches, and lay them exposed to the sun until they become perfectly dry, when they are laid away for winter provender.

Some years later (1863), W. H. Brewer while engaged in work for the Whitney Survey, visited Mono Lake. He mentions kutsavi as follows:(4)

> No fish or reptile lives in it [Mono Lake], yet it swarms with millions of worms which develop into flies. These rest on the surface and cover everything on the immediate shore. The number and quantity of these worms and flies is absolutely incredible. They drift up in heaps along the shore (5) -- hundreds of bushels could be collected. The Indians come from far and near to gather them. The worms are dried in the sun, the shell rubbed off, when a yellowish kernel remains, like a small yellow grain of rice. This is oily, very nutritious, and not unpleasant to the taste, and under the name of koo-chah-bee forms a very important article of food. The Indians gave me some; it does not taste bad, and if one were ignorant of its origin, it would make fine soup. Gulls, ducks, snipe, frogs, and Indians fatten on it.

Two years later, J. Ross Browne in his charming travel account details the occurrence of kutsavi at Mono Lake as follows:(6)

> A curious and rather disgusting deposit of worms about two feet high by three or four in thickness, extends like a vast rim around the shores of the lake. I saw no end to it during a walk of several miles along the beach. These worms are the larvae of flies, originally deposited in a floating tissue on the surface of the water. So far as I could discover most of them were dead. They lay in a solid oily mass, exhaling a peculiar though not unpleasant odor in the sun. Swarms of small black flies covered them to the depth of several inches. Such was the multitude of these flies that my progress was frequently arrested by them as they flew up. Whether they were engaged in an attempt to identify their own progeny or, cannibal-like, were devouring the children of their enemies, it was impossible to determine. ...The air for a circle of several yards was blackened with these flies, and their buzz sounded like the brewing of a distant storm. My eyes, nose, mouth, and ears were filled. I could not beat them off. Wherever they lit there they remained, sluggish and slimy. I fain had to rush out of reach and seek a breathing place some distance from the festive scene.
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> It would appear that the worms, as soon as they attain the power of locomotion, creep up from the water, or are deposited on the beach by the waves during some of those violent gales which prevail in this region. The Mono Indians derive from them a fruitful source of subsistence. By drying them in the sun and mixing them with acorns, berries grass-seeds, and other articles of food gathered up in the mountains they make a conglomerate called cuchaba, which they use as a kind of bread. I am told it is very nutritious and not at all unpalatable. The worms are also eaten in their natural condition. It is considered a delicacy to fry them in their own grease. When properly prepared by a skillful cook they resemble pork "cracklings." I was not hungry enough to require one of these dishes during my sojourn, but would recommend any friend who may visit the lake to eat a pound or two and let me know the result at his earliest convenience... There must be hundreds, perhaps thousands of tons of these oleaginous insects cast up on the beach every year. There is no danger of starvation on the shores of Mono. The inhabitants may be snowed in flooded out, or cut off by aboriginal hordes but they can always rely upon the beach for fat meat.

In the Report of the Commissioner of Agriculture for the year 1870 is the following account of Indian collecting and use of kutsavi at Mono Lake:(7)

> A large fly deposits its eggs in the frothy edge of the surface of Mono Lake, in California each of which when hatched becomes a larva of considerable size, and is called ke-chah-re by the natives. These larvae when dried and pulverized are mixed with water and boiled with hot stones for soup. The color of the powdered larvae being similar to that of coursely ground black pepper, gives a forbidding appearance to the compound.

An incidental mention of kutsavi occurs in the records of the meeting of December 7 1869 of the California Academy of Sciences as follows:(8)

> Professor Bolander spoke of the recently reported rise of six feet in the waters of Mono Lake said to be accompanied by a freshening of the waters and the disappearance of the dense clouds of flies, of which the larvae were formerly abundant in the lake.

Judging from this statement the annual supply of kutsavi may not have been steady and assured, but subject to occasional influences which did not permit the Ephydra flies to produce the eggs from which the larvae were hatched. In times of a kutsavi shortage the Mono Lake people could fall back on such delicacies as dried caterpillars of the pandora moth(9) or birds' eggs.(10) The pandora moth caterpillars descend from the Jeffrey pines (whose needles they eat) to pupate, and at this time are gathered in trenches dug around the base of the tree. Some estimate of the quantity which could be collected is seen from the fact that one small group put up one and a half tons of dried caterpillars in 1920. The favorite hunting area for this food is the vicinity of Mono Mills. Miller and Hutchinson note that this food was formerly used by the Klamath and Modoc tribes to the north.

Oscar Loew in his report on alkali lakes of Southern California and adjacent country says of Owens Lake:(11)

> One of the most striking phenomena [of Owens Lake] is the occurrence of a singular fly that covers the shore of the lake in a stratum 2 feet in width and 2 inches in thickness, and occurs nowhere else in the county; only at Mono Lake another alkaline lake it is seen again. The insect is inseparable from the alkaline water and feeds upon the organic matter of...algae that is washed in masses upon the shore. In the larva state it inhabits the alkaline lake, in especially great numbers in August and September, and the squaws congregate here to fish with baskets for them. Dried in the sun and mixed with flour, they serve as a sort of bread of great delicacy for the Indians. Humboldt relates that in Mexico, the dried larvae of an insect from the lake Tescuco, form an article of commerce among the Indian population of the province.

No less an authority than Samuel Clemens observed the Mono Lake Paiute collecting kutsavi. In Roughing It, he says:

> There are no fish in Mono Lake no frogs, no snakes no polliwogs, nothing in fact, that goes to make life desirable. Millions of wild ducks and sea gulls swim about the surface but no living thing exists under the surface except a white, feathery sort of worm one-half inch long which looks like a bit of white thread frayed at the sides. (12) If you dip up a gallon of water, you will get about 15,000 of these. They give the water a sort of grayish white appearance. Then there is a fly which looks something like our house fly. These settle on the beach to eat the forms that wash ashore, and anytime you can see there a billion of flies an inch deep and six feet wide, and this belt extends clear around the lake a belt of flies one hundred miles long. If you throw a stone among them, they

swarm up so thick that they look like a dense cloud. You can hold them underwater as long as you please. They do not mind it; they are only proud of it. When you let them go, they pop up to the surface as dry as a patent office report and walk off as unconcerned as if they had been educated especially with a view to afford an instructive entertainment to man in that particular way. Providence leaves nothing to go by chance. All things have their uses and their part and proper place in nature's economy. The ducks eat the flies the flies eat the worms, and Indians eat all three.

In addition to the foregoing, a number of other citations, which add nothing, may be given to kutsavi at Mono Lake.(13)

Elsewhere than Mono and Owens Lake, Ephydra larvae occurred in Great Salt Lake (Utah); Soap Lake and Como Lake (Washington); Abert Lake (Oregon); Borax Lake, East Lake and Borax Pond near Clear Lake (California); Soda Lakes South Slough of Pyramid Lake, Walker Lake, and Quinn River sloughs near Sod House (Nevada). The Ephydra fly did not breed in Humboldt Lake, Carson Sink, or Pyramid Lake proper. The above distributional data come from the works of E. Essig,(14) O. Stewart, and J. Aldrich.(15)

Fremont, on his second expedition describes the kutsavi type of larvae at Great Salt Lake and quotes Joseph Walker who may be referring to either Soda Lakes (Nevada) or Owens Lake since Walker was a member of the same party as Zenas Leonard. Fremont says:(16)

> Among the successive banks of the beach, formed by the action of the waves our attention as we approached the island had been attracted by one 10 to 20 feet in breadth, of a dark-brown color. Being more closely examined this was found to be composed to the depth of seven or eight and twelve inches entirely of the larvae of insects, or in common language, of the skins of worms, about the size of a grain of oats, which had been washed up by the waters of the lake.
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> Alluding to this subject some months afterwards, when travelling through a more southern portion of this region, in company with Mr. Joseph Walker, an old hunter, I was informed by him, that, wandering with a party of men in a mountain country east of the great Californian range, he surprised a party of several Indian families encamped near a small salt lake, who abandoned their lodges at his approach, leaving everything behind them. Being in a starving condition, they were delighted to find in the abandoned lodges a number of skin bags, containing a quantity of what appeared to be fish dried and pounded. On this they made a hearty supper; and were gathering around an abundant breakfast the next morning, when Mr. Walker discovered that it was with these, or a similar worm, that the bags had been filled. The stomachs of the stout trappers were not proof against their prejudices, and the repulsive food was suddenly rejected. Mr. Walker had further opportunities of

seeing these worms used as an article of food; and I am inclined to think they are the same as those we saw, and appear to be a product of the salt lakes. It may be well to recall to your mind that Mr. Walker was associated with Captain Bonneville in his expedition to the Rocky Mountains; and has since that time remained in the country, generally residing in some one of the Snake villages, when not engaged in one of his numerous trapping expeditions, in which he is celebrated as one of the best and bravest leaders who have ever been in the country.

The Soda Lakes occurrence is attested by Hague and Williston.(17) O. Stewart notes that some Nevada Paviotso (the Toe, Tövusi and Pakwi bands) and the Washo either went themselves to Mono Lake for kutsavi or secured this food from there by trade. The Southern Sierra Miwok and Monache (Western Mono) were also acquainted with kutsavi from the Mono Lake source. Indeed, the Yokuts term of Monache means "fly people," a reference to Ephydra hians Say.(19)

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(1) E. O. Essig "The Value of Insects to California Indians." Scientific Monthly, vol. 38, pp. 181-186, 1934. The Science Press New York.

(2) J. H. Steward, "Ethnography of the Owens Valley Paiute." University California Publications in American Archaeology and Ethnology, vol. 33, no. 3, Berkeley, 1933, p. 256.

(3) Z. Leonard, Adventures of Zenas Leonard, Fur Trader and Trapper, 1831-1836. Edited by W. F. Wagner. The Burrows Brothers Co. Cleveland, 1904, p. 166. Possibly Leonard is referring to Owens rather than Mono Lake. At any rate, the account does not refer to Humboldt Lake as some, including myself, have thought previously, the proof resting in the known fact that the Ephydra fly does not breed in Humboldt Lake. Owens Valley is further indicated by references to pottery and semi-subterranean houses which the Humboldt Lake Paiute did not possess.

(4) W. H. Brewer, Up and Down California. New Haven 1931, p. 417. Reprinted by University of California Press, Berkeley, 1949. See also Williston, op. cit. in note 17, pp. 1-3.

(5) See photograph of a windrow of larvae on the Mono Lake shore in J. M. Aldrich "The Biology of Some Western Species of the Dipterous Genus Ephydra." New York Entomological Society, vol. 20 pp. 77-99, 1912. Photo reprinted in Essig, op. cit. in note (1), p. 186.

(6) J. Ross Browne, "A Trip to Bodie Bluff and the Dead Sea of the West." Harpers Monthly, vol. 30, pp. 274-284, 411-419, 1865. Harper and Bros., New York, p. 417.

(7) Anonymous, "Food Plants of the North American Indians." Washington, 1871, p. 426.

(8) Proceedings of the California Academy of Science, vol. 4 p. 89, 1873. San Francisco. Actually the Ephydra fly and its larva are both small. E. O. Essig (Insects of Western North America. The Macmillan Co., New York, 1926) states the fly is 3.2 to 5.6 mm. long, the larva 12 mm. in length.

(9) J. M. Aldrich, "Coloradia Pandora Blake, a Moth of Which the Caterpillar is Used as Food by the Mono Lake Indians." Annals of the Entomological Society of America, vol. 14 pp. 36-38, 1921. Columbus, ohio. J. M. Miller, "Peagie Trenches in Which the Monos Trapped their Suppers." Yosemite Nature Notes, vol. 6 pp. 6-7, 1927. Stockton. J. Miller and W. Hutchinson "Where Pe-ag'gie Manna Falls." Nature Magazine, vol. 6 pp. 158-160, 1928. Baltimore. I. F. Eldredge "Caterpillars a la Piute." American Forestry, vol. 29 pp. 330-332, 1923. Washington.

(10) J. Ross Browne, op. cit. in note (6), p. 418.

(11) O. Loew, "Report on the Alkaline Lakes, Thermal Springs, Mineral Springs, and Brackish Waters of Southern California and Adjacent Country." Annual Report Upon the Geographical Surveys West of the 100th Meridian, Appendix H3, pp. 188-199, 1876. Government Printing Office Washington, pp. 189-190. For additional notes on kutsavi at Owens Lake, see J. Steward, op.cit. in note (2), p. 256; J. M. Aldrich, "Collecting Notes from the Great Basin and Adjoining Territory." Entomological News vol. 24, pp. 214-221, Philadelphia. 1913.

(12) The author here forgets the Phyllopod crustacean or brine shrimp, Artemia Monica Verrill.

(13) G. Clark, Indians of Yosemite Valley. Yosemite Valley, 1904, pp. 44, 46; W. A. Chalfant, The Story of Inyo. The Author, Bishop, 1922, pp. 15, 19; J. Muir, My First Summer in the Sierra. Houghton Mifflin Co., 1911, p. 227; C. P. Russell, "Unique Food of the Monos." Yosemite Nature Notes vol. 6, pp. 23-24, 1927. Stockton: Closely similar to newspaper article by A. Hall in Merced Sun, December 11, 1924); R. G. McClellan, The Golden State, a History of the Region West of the Rocky Mountains. W. Flint & Co., Philadelphia, 1872, p. 179; J. le Conte "Journal of Ramblings Through the High Sierras of California by the University Excursion Party, 1875." Sierra Club Bulletin, vol. 3, no. 1, 1900 San Francisco. p. 83; A. S. Taylor in California Farmer (newspaper), May 8, 1863, San Francisco; Yosemite Nature Notes, vol. 3, pp. 2-4, 1924. Stockton: Bodie Daily Free Press (newspaper), August 7, 1880. Bodie: S. Powers, "Centennial Mission to the Indians of Western Nevada and California." Smithsonian Institution Annual Report for 1876, pp. 449-460, Washington, 1877, p. 453; I. C. Russell, "Quaternary History of Mono Valley, California." Eighth Annual

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(14) E. O. Essig, Insects of Western North America. The Macmillan Co. New York, 1926.

(15) O. Stewart "Culture Element Distributions: XIV, Northern Paiute." University of California, Anthropological Records, vol. 4, no. 3, Berkeley, 1941, Element No. 338 pp. 426-427; J. Aldrich, op. cit. in note (5) pp. 90-93; J. M. Aldrich, op.cit. in note (11).

(16) J. C. Fremont, Report of the Exploring Expedition to the Rocky Mountains in the Year 1842 and to Oregon and California in the Years 1843-'44. Gales & Seaton, Washington, 1845, p. 154.

(17) S. W. Williston, "Dipterous Larvae from the Western Alkaline Lakes and Their Use as Human Food." Transactions of the Connecticut Academy, vol. 6 pp. 1-4, 1883. New Haven. See also United States Geological Exploration of the Fortieth Parallel, vol. 4, "Paleontology and Ornithology." Washington, 1877, p. 352; A. Hague, "West Humboldt Region." United States Geological Explorations of the Fortieth Parallel, vol. 2, chap. 5 sec. 5, pp. 713-750, Washington 1877, p. 749.

(18) Op. Cit. in note (15).

(19) Western Folklore, vol. 4, California Folklore Society. University of California Press, Berkeley, 1945 pp. 90 ff.