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Ethnobiological Inferences from Great Basin Oral Tradition

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ORAL tradition refers to a variety of verbal expressions that include song, poetry, proverbs, stories, and mythological tales (Liljeblad 1986). Within oral tradition is information intended to convey certain beliefs, including ritual, cultural values, cosmology, and explanations of phenomena and events. Many of these messages are timeless but many also contain detailed information regarding a variety of subjects. Stories sometimes can serve as a sort of history and tales have been used to help document events in prehistory, including cultural contact (Pendergast and Meighan 1959), environmental change (Wilke 1978), and linguistic succession (Sutton 1987). Further, oral tradition can contain data that relate to social organization, religion, and economics.

Ethnobiological data also are present in oral tradition. Zigmond (1972) conducted an analysis of some ethnobiological data taken from Kawaiisu myth but the whole of Great Basin myth was not examined. Myers (1987, 1988) also approached Numic myth from an ecological standpoint, but not from an ethnobiological one.

The ethnobiological data present in Great Basin oral tradition form the basis of this paper. The oral tradition of a variety of Great Basin groups was examined and references to economic activities, specifically the procurement and preparation of foods, were recorded. This information was then compared with the extant data regarding Great Basin economic activities in an effort to broaden our understanding of Great Basin subsistence strategies and cultural ecology.

THE BASIS FOR INFERENCE

Several issues are important when using oral tradition data. The first is the reliability of the detail of the data. Two questions must be asked. The first is concerned with the "reality" (e.g., Waardenburg 1980) and levels of context (e.g., Guiart 1972) in the meaning of myth. Assuming we are dealing with the correct level of meaning, the question of the reliability of detail emerges. Are the examples and/or practices (information) related in a particular tale accurate reflections of the actual aboriginal condition (e.g., "reality"), or do they reflect a different reality? If reflecting actual practices and resources, have the details been augmented and/or exaggerated in the transmission of the story?

The majority of Great Basin tales were obtained relatively early and from persons who themselves practiced a traditional lifestyle. On this basis, it generally is assumed that the resources and practices noted in these tales were personally familiar to the informants. Further, none of the information is contrary to the ethnographic record. If one were to encounter very unusual practices, those not previously noted in the ethnographic record, they might be considered suspect. For these reasons, the reliability of the data is viewed as being high.

The second, and related, issue is the reliability of the information over time. Vansina (1985:197) noted that oral tradition data tend to reflect the recent past, within a century or so. After that point, the quantity and quality of data lessen, although some

information still remains. From that viewpoint, the tales from the northern Great Basin might reflect aspects of culture closer to aboriginal times while those from the southern Great Basin would more likely have been influenced by Euroamerican (read Spanish) contact.

Both these factors are potential problems. However, neither is viewed as a problem in the analysis of the data described below.

THE DATA

Data on the aboriginal utilization of plants and animals are present in oral tradition. Accounts often include information on sexual division of labor, collection methods and technology, processing and cooking methods and technology, seasonality, storage, preference, and the combination of foods. While all of the plant resources noted in Great Basin oral tradition also are recorded in the various ethnographies, details sometimes are given that broaden our understanding of their use. Lists of "important" resources sometimes are included, giving insight into the aboriginal views of their own subsistence patterns, and occasional hints at recent changes in those patterns are present.

An important point to note is the fact that most of the tales discussed herein were available in the English versions only and were not texted in the native languages. This likely affects the specificity of some of the taxonomic identifications, for example "seeds" in general rather than a specific species of seed. The result is a loss of specific information and utility of the data.

Further, oral tradition data should not be viewed as a comprehensive review of resources used or not used, as not all aspects of culture or resources used may be included in oral tradition. Zigmond (1981) listed some 250 plants as having been used by the Kawaiisu while only 19 were noted in myth. The

oral tradition data augment ethnographic information; they do not substitute for it. Further, items noted in myth surely have cultural significance beyond economics, including basic taxonomic systems (see Fowler and Leland 1967). Such a consideration is well beyond the scope of this paper.

A total of 566 myths (including different versions of the same story) was examined for ethnobiological data. Eight Great Basin groups, in effect those speaking a Numic language, were designated: (1) Western Shoshoni (including Panamint, Death Valley Shoshoni, Nevada Shoshoni, and Gosiute); (2) Northern Shoshoni (including Bannock and Eastern Shoshoni); (3) Owens Valley Paiute; (4) Northern Paiute (including Mono Lake Paiute and Surprise Valley Paiute); (5) Kawaiisu; (6) Chemehuevi (considered separately from Southern Paiute); (7) Southern Paiute; and (8) Ute (Fig. 1).

Forty-seven plant and 31 animal genera were mentioned as being used for food, medicine, and/or technological purposes (tools, decorations, etc.). Only those plants or animals that clearly were *used* by people are tabulated; animals as characters are not included. Occasionally, there were references to the consumption of introduced foods (wheat, chicken eggs, etc.) and these are not considered here. Many of the tales have several versions. Resources noted in these stories were counted only once, even if mentioned repeatedly in the different versions.

PLANT RESOURCES

Many plant resources (Table 1) were noted to have been used in the Basin, mainly for food, but also for medicine and technology. Good descriptions of the use of plant foods usually are lacking. There are many notes of the gathering and eating of "seeds," but they usually are not identified or described in detail (e.g., Smith 1940,I:147-148).

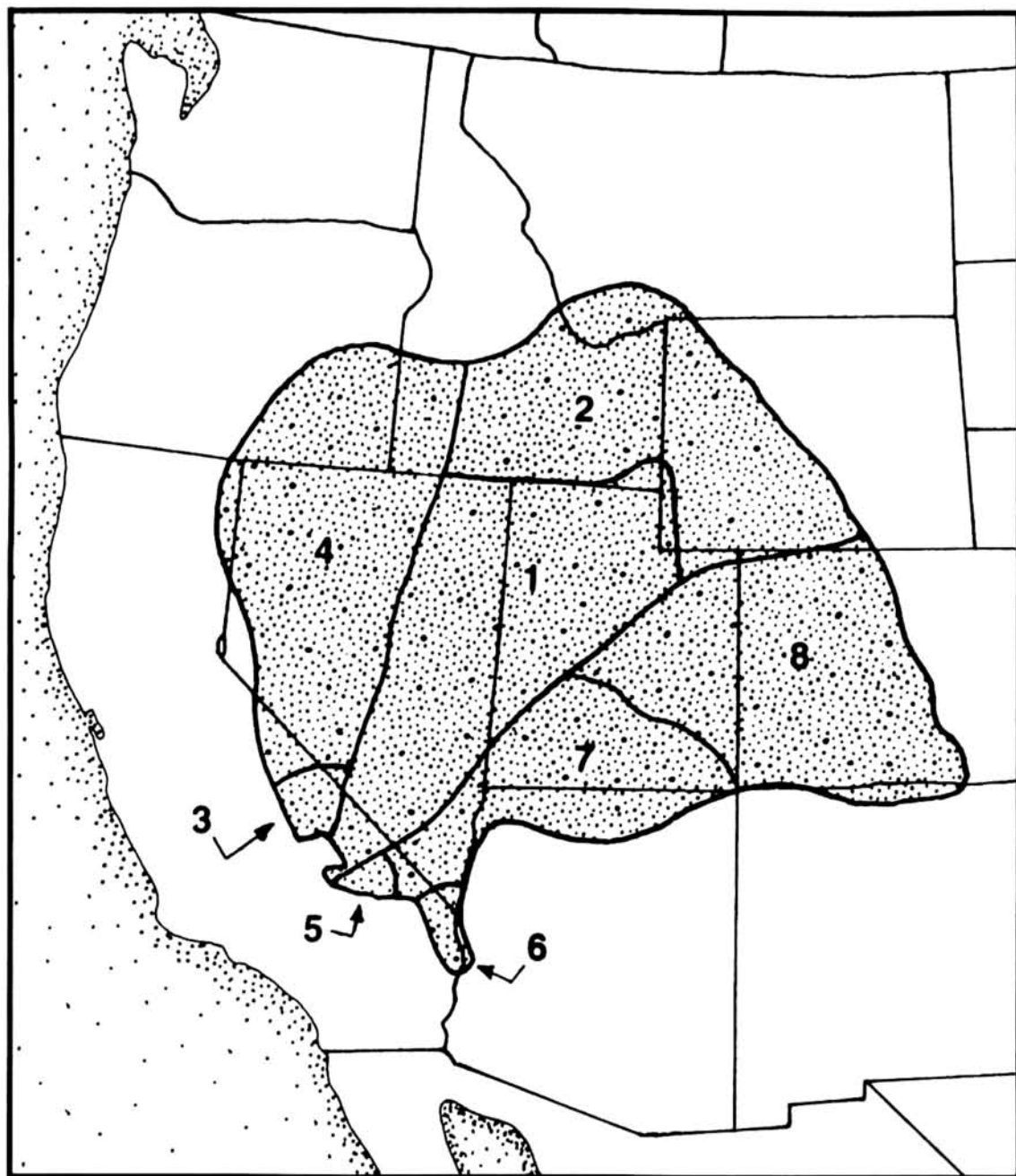


Fig. 1. Native groups in the Great Basin: (1) Western Shoshoni (including Panamint, Death Valley Shoshoni, Nevada Shoshoni, and Gosiute); (2) Northern Shoshoni (including Bannock and Eastern Shoshoni); (3) Owens Valley Paiute; (4) Northern Paiute (including Mono Lake Paiute and Surprise Valley Paiute); (5) Kawaiisu; (6) Chemehuevi (considered separately from Southern Paiute); (7) Southern Paiute; and (8) Ute.

Table 1
SUMMARY OF PLANTS NOTED AS RESOURCES IN GREAT BASIN ORAL TRADITION^a

Plant	Group ^b								Total 566
	WSho (54)	NSho (140)	OVPa (38)	NPa (75)	Kaw (65)	Chem (38)	SPa (31)	Ute (125)	
Juniper	--	--	--	--	--	--	2	4	6
Sugar Pine	--	--	--	--	2	--	--	--	2
Pinyon	6	2	--	7	5	--	--	2	22
Sumac	--	--	--	--	--	1	3	1	5
Wild Carrot	2	3	--	--	--	--	--	--	5
Yampa	--	4	--	--	--	--	--	--	4
Milkweed	1	--	--	--	--	1	--	--	2
Sagebrush	1	2	1	4	--	--	2	--	10
Balsamroot	1	--	--	--	--	--	--	--	1
Thistle	1	--	--	--	--	--	--	--	1
Tickseed	--	--	--	--	2	--	--	--	2
Sunflower	1	--	--	--	--	--	--	--	1
Arrowweed	--	--	--	--	--	1	--	--	1
Cactus	3	--	--	--	--	1	--	2	6
Elderberry	--	--	--	--	3	--	--	--	3
Pickleweed	1	--	--	--	--	--	--	--	1
Pigweed	--	--	--	--	--	--	1	--	1
Greasewood	--	--	--	--	--	--	--	1	1
Gourd	--	--	--	--	--	1	--	--	1
Mesquite	--	--	--	--	--	2	--	--	2
Acorn	1	--	1	--	10	--	--	--	12
Filaree	--	--	1	--	--	--	--	--	1
Chia	--	--	--	--	2	--	--	--	2
Blazing Star	1	--	--	--	2	1	--	--	4
Serviceberry	1	--	--	1	2	--	1	3	8
Chokecherry	1	1	--	1	--	--	--	4	7
Bitterbrush	--	--	--	--	1	--	--	--	1
Blackberry	--	1	--	--	--	--	--	--	1
Willow	2	4	1	4	2	--	--	2	15
Currant	1	2	--	--	--	--	--	--	3
Jimsonweed	--	--	--	--	1	--	--	--	1
Box Thorn	--	--	--	--	1	--	--	--	1
Tobacco	--	2	1	--	3	--	--	--	6
Wild Potato	2	1	--	--	--	--	--	1	4
Yucca	--	--	--	--	--	3	--	--	3
Nettle	--	--	--	--	1	--	--	--	1
Wild Onion	1	--	--	--	--	--	--	--	1
Grass Nut	--	--	3	--	--	--	--	--	3
Sedge	--	--	--	--	1	--	--	--	1
Tule	--	--	--	--	1	--	1	1	3
Camas	--	--	--	--	--	--	--	1	1
Ryegrass	1	--	--	6	--	--	--	--	7
Melic	2	--	--	--	1	--	--	--	3
Ricegrass	--	--	--	--	1	--	--	--	1
Cane	2	--	2	--	3	3	--	--	10
Cattail	1	1	--	--	--	--	--	--	2
named but unknown	6	4	4	6	--	6	1	6	33
Totals	39	27	14	29	44	20	11	28	212

^a Numbers in parentheses are the total number of tales examined by group; number in table is the number of tales, not including versions of the same tale, where resource is mentioned.

^b WSho = Western Shoshoni; NSho = Northern Shoshoni; OVPa = Owens Valley Paiute; NPa = Northern Paiute; Kaw = Kawaiisu; Chem = Chemehuevi; SPa = Southern Paiute; Ute = Ute.

Some stories contained lists of plant foods. In a Gosiute story entitled "The Pickleweed Winter" (Miller 1972:44-45), a large number of plants (seeds and other parts) that were eaten were identified, including pickleweed, sunflower, bunchgrass (cf. melic), ryegrass, wild onions, Indian balsam, wild carrots, wild potatoes, pinyon, cactus, mustard, and several kinds of thistle. Of note is the fact that in recent times these plants were no longer eaten, as the modern Indians (a Gosiute in the quote below)

. . . wouldn't eat them. They taste bad, they say. The sweetness [of Euroamerican foods] has killed their mouths. They eat and drink canned sweet things. Only these taste good (to them today). Indian food doesn't taste good anymore. It tastes too strong. It just tastes bad. It can't be swallowed. This is how it is [Miller 1972:45].

For the most part, however, the old "Times were good, they say. They [the Gosiute] didn't go hungry" (Miller 1972:45).

Pinyon nuts, cactus, yucca, and sunflower specifically were noted in a Ute tale (Powell 1881:44; also Fowler and Fowler 1971:80), apparently as primary foods. A Kawaiisu tale related a similar fare where "acorns, pinyons, chia, and deer" were the primary foods to be eaten (Zigmond 1980:31).

Juniper (*Juniperus* spp.)

Juniper, sometimes called "cedar" (e.g., Zigmond 1941:83, 89), is a very common tree in the arid west and frequently was used as food and for other purposes as well, as noted by Palmer (1871:411, 1878:593-594), Zigmond (1941:85-99), and Fowler (1986:Table 1). Juniper was not listed as food by either Coville (1897) or Steward (1938).

Juniper rarely was mentioned as food in Basin myth. In a Southern Paiute tale (Sapir 1930:392), a mush of "cedar-berries" was prepared and was then eaten "heartily."

Juniper was used for manufactured items,

e.g., bows (Wilke 1988), clothing, mats, structures, and fire-drill hearths (Zigmond 1941:91-97), and medicines (Zigmond 1941:97-98). Juniper also was used for blankets (made of "cedar-bark"; Ute, Mason 1910:362) and a bed was made in the top of a cedar (as protection; Ute, Kroeber 1901:279). Coyote built a house of "cedar" bark (S. Paiute, Sapir 1930:463).

Juniper was popular as firewood (Chamberlin 1911:372; Zigmond 1941:84) and is specifically noted several times as such (e.g., Ute, Kroeber 1901:259, 260), once being piled on top of sagebrush (cf. *Artemisia tridentata*) when the fire was being built. Juniper bark also was used as tinder (S. Paiute, Sapir 1930:391).

Pine (*Pinus* spp.)

The seeds of various pines were eaten but only pinyon was identified as food. The inner bark of a species of pine was used to make leggings (N. Shoshoni, Smith 1940,II:76). Pine pitch, used as a mastic and sealant, also was noted. In a Ute tale (Fowler and Fowler 1971:96) it was gathered by children and returned to camp in baskets. Pine pitch was gathered by a male in one Northern Shoshoni tale (Smith 1940,II:62). A "pitch-copulator" was noted in a Southern Paiute tale (Sapir 1930:511). In a Ute tale (Smith 1940,II:174), Coyote gathered and burned pine pitch as a smudge fire so the smoke would kill Skunk.

Pitch was used for adornment and disguise. In a Northern Shoshoni tale (Smith 1940,II: 68), "Coyote was all dressed up. He had some pine gum on his hair." In another (Smith 1940,II:139), pitch was put around the eyes (along with ashes in the hair) to make an individual look older (also N. Shoshoni, Smith 1940,II:143; Ute, Smith 1940,II:159, 177).

Pitch also was used as "traps." In a Northern Shoshoni tale (Lowie 1909:270) "melted pitch," presumably pine pitch, was

poured on a blanket to serve as a sticky trap to catch Skunk. Pine pitch was melted and poured on the ground around a garden to protect it from thieves (N. Shoshoni, Smith 1940,II:138; Ute, Smith 1940,II:173).

Sugar Pine (*Pinus lambertiana*)

The dried sap of the sugar pine sometimes was eaten like sugar. In several Kawaiisu tales (Zigmond 1981:50, 67) such "sugar" was made by Mountain Lion (a male) and given to several boys.

Pinyon (*Pinus monophylla* and *P. edulis*)

Pinyon was a very important food resource (Steward 1938:27-28). *P. monophylla* is very predictable and productive (Sutton 1984) and may have been a staple (i.e., Steward 1938). Pine nuts (presumably pinyon) as food are noted in various tales (Kawaiisu, Zigmond 1980; N. Paiute, Steward 1936:431, Kelly 1938:395; N. Shoshoni, Lowie 1909:245, 247; Ute, Fowler and Fowler 1971:91, 97; W. Shoshoni, Fowler and Fowler 1971:259; Miller 1972:65).

Pinyon nuts were processed by roasting in a fire (Kawaiisu, Zigmond 1980:46), made into mush (N. Paiute, Steward 1936:431; N. Shoshoni, Steward 1943:260), and were stored for the winter (Ute, Fowler and Fowler 1971:91). Pinyon (*Pinus monophylla*) was carried in a bag by Mountain Lion, presumably as rations (Kawaiisu, Zigmond 1980:64).

Squawbush (*Rhus* cf. *trilobata*)

Squawbush (or sumac) was used for a variety of purposes. Parts of the plant were used in basketry by a variety of Great Basin and California groups (e.g., Merrill 1923:235; Zigmond 1981:59). Several times Coyote gathered squawbush twigs for his wife so she could make him a "gathering basket" (S. Paiute, Sapir 1930:375, 457) and its use for basketry was noted in another Southern

Paiute tale (Sapir 1930:451). A "squaw bush" knife was used to butcher a bison (Ute, Smith 1940,II:165).

Squawberries also were eaten (e.g., Steward 1938:29). A group of people (males and females?) gathered squawberries in a Chemehuevi tale (Laird 1984:216).

Wild Carrot (cf. *Lomatium* or *Daucus* spp.)

The consumption of "wild carrots" was noted only once in the Western Shoshoni literature (Miller 1972:44, 80), but was noted three times in Northern Shoshoni tales (Lowie 1909:240, 263; Smith 1940,II:22), always gathered by women. It is possible that "wild carrots" refers to yampa (*Perideridia*) rather than a different plant.

Yampa (*Perideridia* cf. *gairdneri*)

Yampa was an important food to the Northern Shoshoni (Lowie 1909:188; Fowler 1986:Table 1) and this emphasis is mirrored in Northern Shoshoni oral tradition (Lowie 1909:272; St. Claire and Lowie 1909:269; Smith 1940,II:53, 72).

Milkweed (*Asclepias* spp.)

Milkweed was used as cordage material in parts of the Basin (e.g., Driver 1937:79; cf. Hoover 1974:7). String made of milkweed fibers was used by Coyote to make false hair (W. Shoshoni, Steward 1943:254) and also was noted as used to make string for a snare (Chemehuevi, Laird 1984:85).

Sagebrush (cf. *Artemisia tridentata*)

The roots of sagebrush were said by the Kawaiisu to have been eaten by the peoples around Owens and/or Mono lakes (Zigmond 1980:55; cf. Steward 1933:243). While sagebrush seeds were eaten by Basin peoples (e.g., Coville 1897:105; Chamberlin 1911:362-363; Steward 1938:22; Zigmond 1981:13), no other references refer to the eating of its roots.

In a Northern Paiute tale (Kelly 1938:388) a female gathered an unknown (animal?) resource, sawábstuni 'things on top of sagebrush'. They were put into a basket, cooked, and ground (into a meal?).

The Ruby Valley Shoshoni were identified as the "Artemisia Seed Eaters" in one story (W. Shoshoni, Miller 1972:70-71), a name taken from a major local food source (Miller 1972:71, 100 n. 3; also see Fowler 1982). The Ruby Valley Shoshoni have usually been identified as Wadadüka 'ryegrass seed eaters' (e.g., Kroeber 1909:267; Steward 1938:144; Thomas et al. 1986:282). This discrepancy centers on the identification of the root words wara for sagebrush seeds (Miller 1972:70) and wada (Steward 1938:144) or wara (Kroeber 1909:267) for ryegrass (*Elymus*) seeds. In his Shoshoni dictionary, Miller (1972:147) listed wata as "a kind of grass (*Suaeda depressa* [seep weed] and *Artemisia biennis*)" and watatekka as the "Ruby Valley Shoshoni."

Sagebrush bark was used to make blankets (Ute, Mason 1910:362), rope (N. Paiute, Kelly 1938:414, 424), and bags (N. Shoshoni, Lowie 1909:255). It also was used as firewood (N. Shoshoni, Lowie 1909:255) and in a Ute example (Kroeber 1901:259), it apparently was used as kindling with juniper wood placed on top. In a Southern Paiute tale (Sapir 1930:393), sagebrush told Coyote that it was "accustomed to burn even when wet," suggesting the use of this wood under certain conditions.

Sagebrush also was used for shelter. In a Northern Paiute tale (Kelly 1938:390), Coyote was in the desert when he "stopped by a big bush of sage. He put a hide on top of the sagebrush to make a shade and lay down underneath." In another tale (N. Paiute, Kelly 1938:415), Coyote told two women to "make a shade," who then "made a sagebrush enclosure with two openings." The two women later were camped in "a sagebrush en-

closure" (Kelly 1938:417). They also had a "sagebrush circle in which they were going to dance. There was a pole in the center" (Kelly 1938:417). A sagebrush shelter was built by a man in a Northern Shoshoni tale (Smith 1940,II:112) and was used in the construction of a hunting blind (N. Shoshoni, Smith 1940,II:111).

A Ute tale detailed the origin of the use of sagebrush for fire-drill hearths (Kroeber 1901:260; see also Steward 1938:22). In this tale, Coyote took a piece of sagebrush, bored a hole through the length of it, filled it with hot coals, and sealed the end:

It looked only like a stick. He [Coyote] took an arrow point and bored a small [starter] hole into the stick. Then he whittled hard greasewood [cf. *Sarcobatus*]. "Now look, you people," he said. He told two men to hold the sagebrush firmly on the ground. Then he bored it with the greasewood [the drill], and picked up the borings, and put them into dry grass. Blowing on this, he soon had a fire [Kroeber 1901:260].

Sagebrush as a fire-drill hearth (with a willow handle) also was noted in a Northern Paiute tale (Kelly 1938:365) and the use of sagebrush as a fire carrier was noted in a Gosiute tale (Fowler and Fowler 1971:269).

Balsamroot (*Balsamorhiza* spp.)

Balsamroot was eaten by the Gosiute (Chamberlin 1911:363). It was mentioned as food in oral tradition only once (W. Shoshoni, Miller 1972:44).

Thistle (*Cnicus* spp.)

Several kinds of thistle are noted as having been eaten in a Gosiute tale (Miller 1972:44). Chamberlin (1911:366) reported that the Gosiute ate the stems of three species of thistle (*C. drummondii*, *C. undulatus*, and *C. eatoni*), the latter being the species "most used as food." Steward (1938:23) also noted its importance.

Tickseed (*Coreopsis bigelovii*)

Tickseed leaves (Kawaiisu, Zigmond 1980:143, 182) and flowers (Kawaiisu, Zigmond 1980:179) were noted as being eaten in several tales. Zigmond (1981:21) reported that this plant was an important spring food to the Kawaiisu, and Fowler (1986:Table 1) noted the consumption of leaves by the Panamint Shoshoni.

Sunflower (*Helianthus* spp.)

Sunflower was used widely as a food in the Basin (e.g., Chamberlin 1911:371; Steward 1938:25, 306; Fowler 1986:Table 1). Steward (1938:306) identified AK as sunflower (see below). It is noted as a food only once, in a Gosiute tale (Miller 1972:44).

Arrowweed (*Pluchea sericea*)

Arrowweed is a slender willow-like shrub that grows in consistently wet places. This plant was used to make arrows, but not ones that required foreshafts. This plant was noted only once, in an informant's note (Chemehuevi, Laird 1984:78.)

Cactus (Cactaceae)

Cacti were widely used as food (e.g., Steward 1938:26). Beavertail cactus (*Opuntia basilaris*) was processed by a Panamint woman for eating by "winnowing," removing the spines (Zigmond 1980:235). Pincushion cactus (possibly *Mammillaria* sp.; Miller 1972:45; Chamberlin 1911:374) also was noted as food in a Gosiute tale (Miller 1972:45). In another tale (W. Shoshoni, Miller 1972:64) cactus (species unknown) was being gathered by women, but several males apparently assisted briefly, before they went to hunt pronghorn. The juice of the "cactus apple" (u-wu-pa) was consumed in a Ute tale (Fowler and Fowler 1971:96). Saguaro cactus (*Carnegiea gigantea*) fruit was noted as food in a Chemehuevi tale (Laird 1984:175).

Elderberry (*Sambucus caerulea*)

Elderberry stems were used by some groups, including the Cahuilla, to make a dye used in basketry (Merrill 1923:235). In addition, elderberry was noted as having been used to make a flute (Kawaiisu, Zigmond 1980:70, 72, 77, 127, 128; O. V. Paiute, Steward 1936:418).

Pickleweed (*Allenrolfea occidentalis*)

Pickleweed or burroweed is noted as a food source both ethnographically (Fowler 1986:Table 1) and in antiquity (Jennings 1957; Aikens 1970). Pickleweed forms the centerpiece of a Western Shoshoni tale (Miller 1972:44-46), being an important food. In some winters rain would wash great quantities of the seed into the water (possibly Blue Lake) where the seed would be washed up on the shore. The seed then would be gathered in burden baskets, being pushed in with basketry scoops, and dried. "During the winter, one ate all he wanted. . . they called it the pickleweed winter. They ate it with pine nuts, they say. They ate it with jack rabbits" (Miller 1972:45). Pickleweed was stored in "sacks" and in caches in the ground (Miller 1972:46).

Pigweed (*Chenopodium* spp.)

Pigweed (or goosefoot) was a fairly important source of food during ethnographic times (e.g., Palmer 1871:419; Steward 1938:23; Ebeling 1986; Fowler 1986:Table 1). Pigweed seeds are noted only once as food (S. Paiute, Sapir 1930:338, 529 n. 2), requested from a female.

Greasewood (*Sarcobatus vermiculatus*)

Greasewood is a common plant but the term "greasewood" frequently was used to refer to creosote bush (*Larrea tridentata*). Greasewood was used to make a drill for a fire-drill hearth (Ute, Kroeber 1901:260).

Gourd (*Cucurbita* spp.)

Although used as food in ethnographic times (e.g., Fowler 1986:Table 1), gourds never were mentioned as food in oral tradition. However, a gourd rattle was noted (Chemehuevi, Laird 1984:214).

Mesquite (Honey Mesquite, *Prosopis glandulosa*; Screwbean, *P. pubescens*)

Mesquite was noted very few times as food, in spite of its ethnographic importance in the southern Basin (e.g., Steward 1938:28; Fowler 1986:67, Table 1). Mesquite bread was mentioned in a Chemehuevi tale (Laird 1984:158), as was the use of "prepared mesquite gum" to glue arrowpoints to foreshafts (Laird 1984:66).

Acorns (*Quercus* spp.)

Acorns were important to groups in the western Basin but rarely were noted other than in Kawaiisu tales (see Table 1). Bluejay gathered acorns (of *Quercus wislizenii*) that she pounded in a mortar, put into a bowl, then leached with water (Kawaiisu, Zigmond 1980:59-60). Acorns were gathered (O. V. Paiute, Steward 1936:403), made into a mush (W. Shoshoni, Steward 1943:283), and sometimes were served with dried deer meat (Kawaiisu, Zigmond 1980:175). Acorns were stored (with chia) in a cave by the Kawaiisu (Zigmond 1980:82).

Filaree (*Erodium cicutarium*)

A Kawaiisu tale noted that the seeds of filaree were eaten by groups around Owens and/or Mono lakes (Zigmond 1980:55) but not by the Kawaiisu (Zigmond 1981:31). Filaree is an introduced species that quickly colonized the West and served as forage for livestock. It also may have been a food source adopted by some native groups as their traditional sources of grass seeds were eliminated by grazing.

Walnut (*Juglans* spp.)

Shells of native walnut were used as dice in both California (e.g., Wallace 1978:Fig. 9) and the Great Basin (e.g., Culin 1907:Fig. 208). The most common walnut (*Juglans californica*) is distributed along the coastal portion of southern California (Griffin and Critchfield 1972:Map 30). Walnut dice were noted in a Kawaiisu tale (Zigmond 1980:52).

Chia, Sage (*Salvia* spp.)

Chia is a term sometimes used to refer to the seeds of sage (*Salvia*), not the same as sagebrush (*Artemisia*). To the Chumash of California, "chia" referred to *Salvia columbariae*, a particular species that was eaten, other sage not being eaten (Timbrook 1986). Sage was an important seed resource (Steward 1938:29; Zigmond 1981:62; Timbrook 1986) in aboriginal times in the Great Basin but it is not clear which species are being referred to. *Salvia columbariae* is limited in distribution to the southern Great Basin (Munz 1974:537). Chia was noted only twice, both in Kawaiisu stories, once being stored in cave with acorns (Zigmond 1980:82).

Zigmond (1981:62) identified *Salvia columbariae* as "chia" and noted the importance of the plant as food for the Kawaiisu. However, Zigmond (1981:62) also noted that a different (and unidentified) species of *Salvia* was identified as "a big variety of chia," collected, prepared, and eaten in the same way as *S. columbariae*. A third species of sage (*S. dorrii*) was not identified as being consumed (Zigmond 1981:62).

Blazing Star (*Mentzelia* spp.)

Blazing star seeds were used widely in the Basin (Fowler 1986:Table 1). The seeds were noted as being ground by women on a metate (Kawaiisu, Zigmond 1980:137) and as having been gathered and made into porridge (W. Shoshoni, Miller 1972:94). Blazing star seeds

also were noted as medicine. The seeds (Kawaiisu, Zigmund 1980:171-172) were pounded into a paste that looked like "peanut butter," to be rubbed on sunburned skin.

Ku'u (*Mentzelia albicaulis*; see Kelly 1964:42, 153) seed was implied as an important food in a Chemehuevi tale (Laird 1984:49, 58). The teller of the tale (George Laird) did not know what ku'u was but "in Coyote's time there was lots of ku'u" (Laird 1984:58).

Serviceberry (*Amelanchier pallida*)

Serviceberry was used both for food (Steward 1938:21; Chamberlin 1950:9; Fowler 1986:Table 1) and as a raw material for manufactured items. Serviceberries are noted as being eaten (W. Shoshoni, Miller 1972:81; Ute, Mason 1910:322; Ute, Smith 1940,II:8) and stored in underground caches (W. Shoshoni, Miller 1972:81).

Serviceberry roots were used by Coyote to make sharp stakes with which to impale Bear (Kawaiisu, Zigmund 1980:72). Zigmund (1980:72 n. 12) reported that the Kawaiisu made "arrows" from the stems but not from the roots. Serviceberry sticks were gathered to make into arrows (N. Paiute, Kelly 1938:376; S. Paiute, Sapir 1930:339) and to use alone as weapons (Ute, Mason 1910:332). In one Southern Paiute tale (Sapir 1930:339), shirts were made of serviceberry stick bark, one from the outer bark and one from the inner bark, some of which apparently were made to wear in battle (Sapir 1930:340).

Chokecherry (*Prunus cf. virginiana*)

Chokecherries were widely eaten by Basin groups (e.g., Steward 1938:28; Chamberlin 1950:9-11; Fowler 1986:Table 1) and were noted in myth as having been gathered (N. Shoshoni, Smith 1940,II:147; W. Shoshoni, Miller 1972:81; Ute, Mason 1910:322; Reagan 1935:47; Smith 1940,II:158, 176). Rose-berries (perhaps a species of *Prunus*) were mentioned

in a Northern Shoshoni tale (St. Claire and Lowie 1909:269).

Bitterbrush (*Purshia glandulosa*)

Desert bitterbrush was noted only once in oral tradition. In a Kawaiisu tale (Zigmund 1980:195) it was noted that it can "make a medicine which is bitter and is taken to relieve menstrual cramps."

Blackberry (*Rubus* sp.)

Blackberries were commonly consumed in aboriginal times (e.g., Steward 1938:29; Fowler 1986:Table 1). However, they were noted as having been gathered in only one tale (N. Shoshoni, Smith 1940,II:81).

Willow (*Salix* spp.)

Willow commonly was used in basketry in the western United States (e.g., Merrill 1923:224) and often was mentioned in myth, although few details were given. Willow as basketry material was noted often (e.g., N. Paiute, Kelly 1938:370, 434; N. Shoshoni, Lowie 1909:258, 265, 288; Ute, Fowler and Fowler 1971:86). It also was noted as being used to make a shade house (Kawaiisu, Zigmund 1980:137, 1981:61; N. Paiute, Kelly 1938:380, 411, 412), to make hoops and sticks (for the hoop-and-pole game; N. Shoshoni, Lowie 1909:281, 282), to make arrows (N. Shoshoni, Lowie 1909:282), as a handle for a fire-drill hearth (N. Paiute, Kelly 1938:365), and as sticks to put cooked meat on (Ute, Smith 1940,II:159).

In a Western Shoshoni tale (Steward 1943:275), willow was used to make a cradle. The Kawaiisu used either red willow (*S. laevigata*) or arroyo willow (*S. lasiolepis*) to make cradles, the infants would die if sandbar willow (*S. hindsiana*) was used (Zigmund 1980:185; cf. Zigmund 1972:131).

In a Northern Shoshoni tale (Steward 1943:281), two boys "tried to get willow sugar

(suhuviha)," either willow sap or perhaps the product of aphids, as is found on cane.

Currant, Gooseberry (*Ribes* spp.)

Currants or gooseberries were popular foods (e.g., Palmer 1878:597-598; Coville 1897:97). Smith (1940,II:cf. 85) recorded several Northern Shoshoni tales where eyes thrown into the air turned into a currant bush laden with "ripe" berries. They were noted as food in a Western Shoshoni tale as well (Miller 1972:82). Smith (1940,II:34) recorded a Northern Shoshoni tale where bows and arrows were made from currant wood.

Jimsonweed (*Datura* spp.)

Jimsonweed was noted only rarely in the ethnographic literature of the Basin (e.g., Palmer 1878:650; Zigmond 1981:23-25), it being more common in California. In myth it is mentioned as a medicine, ingested as a drink (Kawaiisu, Zigmond 1980:175, 178).

Box Thorn (*Lycium andersonii*)

The berries of box thorn were eaten fresh (Kawaiisu, Zigmond 1980:142, 145). This plant was noted ethnographically as a common food by both Steward (1938:26) and Fowler (1986: Table 1).

Tobacco (*Nicotiana* spp.)

Tobacco was noted as having been smoked (O. V. Paiute, Steward 1936:408; N. Shoshoni, Lowie 1909:251, 252) and used (smoked?) by several women (Kawaiisu, Zigmond 1980:50). It also was ingested by the Kawaiisu in liquid form, making the person "drunk" (identified as *N. bigelovii*; Zigmond 1980:177), and eaten (in this case without lime; Zigmond 1980:179).

Nettle (*Urtica* spp.)

Nettles were applied to the skin for medicinal purposes (Kawaiisu, Zigmond 1980:

175, 178). Kawaiisu also used the plant to make cordage (Zigmond 1981:68).

Yucca (*Yucca* spp.)

Yucca is a common plant in the arid parts of North America and served as an important food (e.g., Palmer 1871:418). It was noted as such in several tales (Chemehuevi, Laird 1984:109, 112, 210; Ute, Powell 1881:44). In another tale (Chemehuevi, Laird 1984:52), Coyote told his daughter to gather "Dry yucca stalks" for firewood to "roast" (e.g., sweat) herself since she was menstruating (she actually wasn't; Coyote had lied).

Wild Onion (*Allium* cf. *bisceptrum*)

Wild onion was used by various Basin groups (Steward 1938:21; Fowler 1986:Table 1). The bulb was eaten fresh in the spring and never stored for later use (e.g., Chamberlin 1911:360). Wild onion was noted as food in only one tale (W. Shoshoni, Miller 1972:44).

Grass Nuts (*Dichelostemma pulchella*)

Grass nuts were widely used as food by natives in the western United States and were one of the plants irrigated by the Owens Valley Paiute (Lawton et al. 1976). Grass nuts were noted as food in several Owens Valley Paiute tales (Steward 1936:389, 401, 410).

Sedge (*Carex douglasii*)

Sedge roots were gathered by Cottontail (a female) and brought back by the "carrying-basket full" (Kawaiisu, Zigmond 1980:63). They then apparently were eaten raw (Zigmond 1980:63 n. 3, 1981:17). Chamberlin (1911:365) reported that the Gosiute "rarely" used sedge roots as medicine.

Tule, Bulrush (*Scirpus* spp.)

Tule was widely used for various technological purposes (e.g., Merrill 1923:236; Wheat

1967) but the roots also were used as food (Palmer 1871:408; Steward 1938:29; Zigmond 1981:63; Ebeling 1986; Fowler 1986:Table 1). In one tale (S. Paiute, Sapir 1930:397), a boy's great-grandmother dug bulrush roots and the boy later learned the technique. Some tule (parts unspecified) was "ground . . . and made [into] a kind of mush" (Ute, Fowler and Fowler 1971:88). Tule frequently was mentioned as the material used for mats.

Camas (*Camassia quamash*)

Camas was a commonly consumed food in the northern portions of the Basin (Palmer 1871:408; Chamberlin 1950:11; Fowler 1986:Table 1). A Ute tale referred to people "eating camas, big camas" (Sapir 1930:489).

Ryegrass (*Elymus* spp.)

Ryegrass species (probably *E. cinereus* and *E. triticoides*; Lawton et al. 1976:20) were important food sources in the Basin (Steward 1938:24) and were so identified in several tales (W. Shoshoni, Miller 1972:44). Houses of "rye grass" were noted in several Northern Paiute tales (Kelly 1938:372, 380, 426, 435).

Melic (*Melica imperfecta*)

Melic was not noted by Steward (1938) as an important food but was listed by Zigmond (1986:399) as being important to the Kawaiisu. Melic seed was pounded by Coyote's wife (Kawaiisu, Zigmond 1980:84, 88), probably in a mortar (i.e., Zigmond 1981:40). Melic seed also was noted in several Western Shoshoni tales (Miller 1972:44, 63). In the latter, the seed was "ground up . . . and made . . . into gruel" (Miller 1972:63). It is possible that the identification of "bunchgrass" as melic has been confused with *Stipa* and/or *Hilaria*.

Ricegrass (*Oryzopsis hymenoides*)

Ricegrass was a very important food source in the Great Basin (Steward 1938:26-

27) and to the Kawaiisu (Zigmond 1986:399). However, ricegrass specifically was noted as food only once in myth (Kawaiisu, Zigmond 1980:109). As noted above, it is possible that these terms have been confused with bunchgrass (cf. *Melica*, also *Stipa* and *Hilaria*).

Cane (*Phragmites australis*)

Cane was noted as being used as a cutting tool (Kawaiisu, Zigmond 1980:164) and as arrow (mainshaft) material (Chemehuevi, Laird 1984:78-79, 213; O. V. Paiute, Steward 1936:412; W. Shoshoni, Steward 1936:436, 1943:262). Flutes of cane were noted several times (Chemehuevi, Laird 1984:204; O. V. Paiute, Steward 1936:422).

Cattail (*Typha* spp.)

Cattail was a fairly important food in the Basin (e.g., Steward 1938:30) and cattail pollen also has been identified as a major food constituent in antiquity (Wilke 1978). A Gosiute tale (Miller 1972:58) told of "lots of people" gathering and cutting cattail, apparently the roots, "The nappah (the edible part of the cattail root), the cattail 'seeds'. It (the nappah) was taken apart and they gathered its 'seeds'. They were gathering the nappah" (Miller 1972:58). Later in the same story, a girl made gruel from the cattail, and a male gathered more (Miller 1972:59). (Mountain) Lion made a jail out of cattail to incarcerate several Water Babies (N. Shoshoni, Smith 1940,II:153).

Agricultural Products

Reference to agricultural products is rare and it often is unclear if the association is aboriginal. A Chemehuevi tale (Laird 1984:50) related the presence of "corn mush" left for Coyote as food and a corn cob was used as a nose-ring in another tale (Chemehuevi, Laird 1984:226). It is possible that the corn is aboriginal due to the proximity of the

agricultural Mohave. Corn as food also was mentioned in several Ute tales (Fowler and Fowler 1971:79, 96).

Unidentified

A great many references are made to plants, primarily "seeds," with no further identification. In some instances, however, the native names of the plants are given. These are noted below.

Seeds. The term "seeds" is a very general category, perhaps with no hint even of size (as with the N. Paiute, Fowler and Leland 1967:383). However, in the Northern Paiute "seed" category,

All members do have a hard outer layer. Informants discussed similarities in terms of preparation: all are winnowed, either to remove shells or chaff, ground into flour, and later liquefied into a porridge or gruel. Only one member is leached: the acorn [Fowler and Leland 1967:383].

Aka seeds are commonly identified as having been used and there are differing identifications of aka. Jones (1948:179) felt that ak was a term referring to seeds in general rather than to the seeds of a specific plant while others identified it as a specific but unknown plant (i.e., Chamberlin 1911:385). For the Southern Paiute, Bye (1972:93) identified "Ok" as tansy-mustard while Kelly (1964:153, 179) identified aka as *Helianthus*.

Zigmond (1980:155, 156; 1981:26) identified aka (or aki, Kelly 1964:153) as tansy-mustard (*Descurainia*) or *Sophia* (Steward 1938:306), possibly an introduced species. These seeds were eaten mixed with water (Kawaiisu, Zigmond 1980:155). Mustard seed was identified in a Gosiute tale (Miller 1972:46) as having been eaten but that it tasted bitter. 'aka (or ?aka) was noted in Chemehuevi myth (Laird 1984) and was identified as "the plant known in Spanish as *palmita*" (Laird 1976:107) and later only as a "variety of edible seed" (Laird 1984:355).

Fowler and Leland (1967:Fig. 2) reported that aca was identified by the Northern Paiute as tansy-mustard (*Descurainia*) and aki as mule's ears (*Wyethia*; cf. Couture et al. 1986:Table 1).

A Panamint tale (Zigmond 1980:233-234) noted the collection and consumption of poiya seeds (cf. *Descurainia* sp.). In a Chemehuevi tale, piivo'o (or piivu'u) also was noted as a food (Laird 1984:49, 50); it was "a kind of grass that grows in the valleys where the River overflows" (Laird 1984:59). This plant possibly is a *Calochortus* (see Laird 1984:342-343 note 8). Coyote went to get seeds of 'antsi (Chemehuevi, Laird 1984:63), identified only as "seed of a plant resembling wheat or oats" (Laird 1984:76, 355; possibly a domesticate borrowed from the Mohave). Atsa (possibly either *Descurainia* or *Wyethia*, Fowler and Leland 1967:Fig. 2; or the introduced *Sisymbrium altissimum*, Couture et al. 1986:Table 1) seeds were noted in several Northern Paiute tales (Kelly 1938:422, 436), being made into mush in the former example.

The seeds of wa'a (a grass) were gathered (Chemehuevi, Laird 1984:134-136, 139; possibly *Oryzopsis*, see Kelly 1964:42) and parched on a tray. Wai seeds, identified as "a species of sand grass" (Steward 1936:410; possibly *Oryzopsis*, Fowler and Leland 1967:Fig. 2) was noted as food in an Owens Valley Paiute tale. Wa.da, possibly *Suaeda* seed, was cooked for Coyote and Wolf (N. Paiute, Kelly 1938:391, 395; also see Fowler and Leland 1967:Fig. 2; Couture et al. 1986:150, 151).

The seeds of sihma were gathered in a Gosiute tale (Miller 1972:94). Later, sihmu was identified as "bunch grass (probably *Atriplex confertifolia*)" (Miller 1972:133), although *Atriplex* is a saltbush and not a bunchgrass. The same problem is true of waapih seed (Miller 1972:94). Waa and wai(-a) were identified as "wild rye (*Oryzopsis cuspidata*)" (Miller 1972:146; also Fowler and Leland 1967:Fig. 2). The above noted seeds

were made into porridge (Miller 1972:94).

Roots. Wild potato was noted as a food plant in several Gosiute tales (Miller 1972:44, 81). This "wild potato" likely is the bulb of spring-beauty (*Claytonia* cf. *caroliniana*; Chamberlin 1911:366, 387), although the Gosiute called the cultivated potato (*Solanum tuberosum*) by the same name (Chamberlin 1911:366). "Potatos" also were noted as being gathered by women in a Northern Shoshoni (Lowie 1909:291) and a Ute (Smith 1940,II:185) tale.

A Northern Shoshoni tale relates two girls digging nap: roots that they later cooked (Steward 1943:280-281); appi roots were collected and stored underground (W. Shoshoni, Miller 1972:81, 84). Ya'pá roots (probably Indian potato, *Perderidia*, Fowler and Leland 1967:Fig. 2) were gathered by women in several Northern Paiute tales (Kelly 1938:388, 429, 431); in the first Coyote took some ya'pá roots that had been gathered by women and left to dry. Some unnamed roots were dug by females in a Ute tale (Smith 1940,II:8) and in several Northern Shoshoni tales (Lowie 1909:253, 264, 288, 290; St. Claire and Lowie 1909:268), although in one (Lowie 1909:272), they most likely are yampa.

In a Chemehuevi tale (Laird 1984:66), Coyote dug tiavi (perhaps *Amelanchier*) roots that were used to manufacture arrow shafts. George Laird thought that this plant may have had "purple berries; he never saw it growing anywhere except on Providence Mountain" (Laird 1984:79). "Flag-roots" were dug by women in a Ute tale (Fowler and Fowler 1971:83).

Berries. Several females gathered hu:pi berries (W. Shoshoni, Steward 1943:288) and ha.pi' (possibly huckleberry, Fowler and Leland 1967:Fig. 2) was being gathered by two young women (N. Paiute, Kelly 1938:415). Steward (1936:408) noted the probable use of a ball of berries from an unknown plant used

for food. Berries (Po-oap) were gathered by women (S. Paiute, Fowler and Fowler 1971:79). The berries of a "wiamp-berry bush" (red berries on a bush with holly-like leaves, perhaps buckberry [*Sheperdia canadensis*, Couture et al. 1986:Table 1]) were eaten (S. Paiute, Sapir 1930:395). Unnamed berries were gathered by women in a Ute tale (Smith 1940,II:185) and in several Northern Shoshoni tales (Smith 1940,II:81, 100), once being "dried and ground" (Smith 1940,II:148). Berries stored in the ground were noted in a Ute tale (Smith 1940,II:7).

Vine. In a Northern Paiute tale (Kelly 1938:403), Coyote used the fibers of a vine to manufacture netting. Coyote was

making nets from some kind of vine fibers. He was pulling off the leaves. He was breaking the fibers in his teeth and splitting them in half.

Unknown. Kanna was noted as being eaten (W. Shoshoni, Miller 1972:84). In a Northern Shoshoni tale (Smith 1940,II:143), several people ate unidentified "weeds which are used for making soap." They began foaming at the mouth and died, but later were revived. In another Northern Shoshoni tale (Smith 1940,II:152), rope was made from "soapweed," perhaps the same plant as noted above.

Sexual Division of Labor

General references to plant foods, most notably seeds, but including acorns and pin-yon, are made throughout Basin myth. In most of those references, females were responsible for their procurement and processing. There were few specific references relating to the gathering of firewood, and although the gatherers usually were identified as female (e.g., Laird 1984:70, 129; Zigmund 1980:71), there were several exceptions (N. Shoshoni, Lowie 1909:255; Smith 1940,II:149; Ute, Kroeber 1901:265).

Environmental Manipulation

References to environmental manipulation (e.g., Downs 1966; Lewis 1973) in oral tradition are rare. In a Gosiute tale (Miller 1972: 66), a man set fire to some ground and

he said pigweed [or goosefoot; *Chenopodium*], bunch grass [*Melica*], mustard [e.g., tansymustard; *Descurainia*] and such would grow in the burn. They said they planted things this way and that with fire, with the finding of Indian food with this fire.

Fire also was noted in a Chemehuevi tale (Laird 1984:49) where Coyote goes to a stand of *sihivimp̄* bushes for basketry material. Coyote previously had burned the stand, presumably to improve the growth and quality of the basketry material. The identity of *sihivimp̄* is not clear, but Laird (1984:59) noted that it probably was not willow (*Salix*), the most popular plant used by the Chemehuevi for basketry (see Laird 1976:106).

Had it been the small willow species frequently used in basket making, it would have been alluded to as *sagasihivimp̄* [*saga'* is a kind of willow used by the Surprise Valley Paiute, Kelly 1932:77]. The shrub known as *sihivimp̄* usually has a low, vine-like growth, "like a wild grapevine," but sometimes reaches a height of four feet. . . . He [George Laird] explained that *sihivi* are the "twigs" (preparation not described) which are woven around the *wawavi*, "warp" [Laird 1984:59].

This plant might be *Rhus* sp., a popular basket material known to have been burned to improve its productivity. The description in Munz (1974:66) generally fits that in the quote above.

There is a vague reference in a Chemehuevi tale to women burning off a stand of grass and picking up the charred seeds that survived (Laird 1984:136, 141). The reference is problematic but is still suggestive of a possible collection technique, one that also would serve to stimulate growth the following year.

ANIMAL RESOURCES

Animal resources, both vertebrates and invertebrates, often were noted in oral tradition (Table 2). The primary use was as food but other functions, such as skin for bags, blankets, and house coverings, were included.

A variety of vertebrates were noted as having been hunted and eaten: several birds, and numerous mammals. Some animal products also were used as materials for blankets, dresses, or tools and are noted below.

Reptiles

Reptiles very rarely were noted as food in Great Basin oral tradition. There is a vague reference to the consumption of tortoise (*Xerobates agassizi*) in a Chemehuevi tale (Laird 1984:159, 165). The substance (presumably tortoise meat) was cooked in a roasting pit. In a Southern Paiute tale (Sapir 1930:401), however, "Land Turtle" or "Hard-shell Turtle" was killed in combat by Coyote who then

roasted him in the ashes [of a fire]. . . . [later, Coyote took an arrow and] poked the Turtle out [of the fire] with its point. Then, having done so, he said, "In that way shall it always be done with you, who are destined to be a hard-shell turtle. You shall always be eaten," said Coyote. And then they all ate him.

Fish

Fish sometimes were noted as having been taken (e.g., O. V. Paiute, Steward 1936:364, 424; N. Paiute, Kelly 1938:432, 434; N. Shoshoni, Smith 1940,II:101, 112; W. Shoshoni, Steward 1943: 261; Miller 1972:38, 40; Fowler and Fowler 1971:269; Ute, Smith 1940,II:179) but the specific fish rarely were identified. Salmon (cf. *Onchorynchus*) was noted several times in Northern Shoshoni tales, being roasted in one (Lowie 1909:301). In another (Lowie 1909:266), a salmon was caught by Otter, boiled and given to Coyote

Table 2
SUMMARY OF ANIMALS NOTED AS RESOURCES IN GREAT BASIN ORAL TRADITION^a

Animal	WSho (54)	NSho (140)	OVPa (38)	Group ^b NPa (75)	Kaw (65)	Chem (38)	SPa (31)	Ute (125)	Total 566
REPTILES									
Tortoise	—	—	—	—	—	1	1	—	2
FISH									
Salmon	—	2	—	—	—	—	—	—	2
Unidentified	4	3	3	3	—	—	—	3	16
BIRDS									
Swan	—	—	—	1	—	—	—	—	1
Goose	—	1	—	—	—	—	—	1	2
Quail	—	—	1	—	2	—	—	—	3
Duck	3	5	2	—	—	1	—	1	12
Sage-hen	1	—	—	—	—	—	—	—	1
Unidentified	—	2	—	3	1	—	—	—	6
MAMMALS									
"Rabbits"	11	6	6	8	8	2	1	9	51
Cottontail	2	—	—	3	2	1	1	—	9
Hare	—	4	—	—	6	6	6	5	27
Rodent ^c	5	7	1	12	4	3	1	3	36
Beaver	—	1	—	—	—	—	—	2	3
Porcupine	—	1	—	—	—	—	—	—	1
Canine	—	—	1	—	—	—	—	—	1
Fox	1	—	—	—	—	—	—	—	1
Bear	—	—	—	2	1	1	—	1	5
Mountain Lion	—	1	—	—	—	—	—	1	2
Elk	1	4	—	6	—	—	—	3	14
Deer	12	13	8	15	12	3	6	14	83
Moose	—	1	—	—	—	—	—	1	2
Pronghorn	4	1	—	2	—	—	2	5	14
Bison	1	15	—	2	—	2	—	11	31
Mountain Goat	—	1	—	—	—	—	—	—	1
Bighorn	8	9	1	1	2	12	3	5	41
INSECTS									
Brine Fly	—	—	1	—	—	—	—	—	1
"Bug Sugar"	3	—	—	—	1	—	—	2	6
Ant	—	1	—	1	1	—	—	1	4
Lac Resin	—	—	—	—	1	—	—	—	1
Totals	56	78	24	59	41	32	21	68	379

^a Numbers in parentheses are the total number of tales examined by group; number in table is the number of tales, not including versions of the same tale, where resource is mentioned.

^b WSho = Western Shoshoni; NSho = Northern Shoshoni; OVPa = Owens Valley Paiute; NPa = Northern Paiute; Kaw = Kawaiisu; Chem = Chemehuevi; SPa = Southern Paiute; Ute = Ute.

^c Includes squirrels, groundhogs, prairie-dogs, and rats; beaver and porcupines are considered separately.

to eat. In several other Northern Shoshoni tales (Lowie 1909:275, 278), Coyote freed the salmon from a trap or dam but ate one.

Fish were speared in a Western Shoshoni tale (Miller 1972:40). In a Ute tale, Crow

told a boy where fish were and told him to "Take arrows and put long points on them. Shoot the fish and eat them" (Mason 1910:357). The significance of the "long points" is unclear but may be related to some functional

aspect of fishing with a bow and arrow. However, in spite of Crow's instructions, the boy used an iron hook and line.

There is an indication that specific wood was used to prepare fish. In an Owens Valley Paiute tale, Coyote used wood instead of a sheep vertebra to destroy the *vagina dentata* (often referenced in origin myths). The wood was from "a certain brush with hard knotty wood which is used for cooking fish" (Steward 1936:368).

Birds

Few birds specifically were noted as having been used, although many were characters in the various tales. Bird eggs were sought on the shore of a body of water (W. Shoshoni, Steward 1943:271) but the identification of the eggs was not included.

Swans. Swans (cf. *Olor* spp.) were noted only once as food, in a Northern Paiute creation tale (Kelly 1938:373). In other such tales, ducks usually were eaten.

Geese. Geese (cf. *Branta* spp.) were noted rarely as food in Basin myth. An exception is a Ute tale (Mason 1910:314) that reported geese (and ducks) being eaten, with the feathers being used for arrow fletching and pillows. The birds were captured by grabbing their legs from under the water. Geese also were noted as "good to eat" in a Northern Shoshoni tale (Smith 1940,II:71-72).

Ducks. Ducks (cf. *Anas*) were hunted according to Shoshoni creation tales. In one tale (W. Shoshoni, Steward 1943:261, 262), ducks were shot with arrows made of cane (cf. *Phragmites*). In these stories, women cooked and ate some of the ducks but "disposed" of others, and at least some of the bones were eaten using the *vagina dentata* (in a Northern Shoshoni version [Lowie 1909:237, 238], duck eggs were eaten in that same manner).

In other Western Shoshoni references to ducks, women plucked them and boiled them

in a pot (Steward 1943:264). Sometimes the bones would be discarded, but in one instance they were "pulverized" with a rock (Steward 1943:264). Owens Valley Paiute tales are quite similar in these details (Steward 1936:365, 367).

In an Owens Valley Paiute tale of a great duck hunter (Steward 1936:374), it was noted that

In the winter he made ducks [magically from burned or rotted rabbit-brush (cf. *Chrysothamnus nauseosus*) roots] float down the [Owens] river. Then he sat on the bank and shot them [with arrows?] as they floated by. He always shot them one at a time. When they were dead they floated close to the bank where the river made a turn, and he fished them out with a [long] stick. He took them home for big feasts [see also Steward 1933:255].

A Ute tale (Mason 1910:314) notes the use of ducks (and geese) as food, with the feathers being used for arrows and pillows. They were captured by grabbing their legs from under the water and drowning them (i.e., Fowler 1986:87). The use of nets to capture ducks was never noted.

Duck eggs were eaten in several variations of creation tales (N. Shoshoni, Lowie 1909:237; W. Shoshoni, Fowler and Fowler 1971:269), and in several other Northern Shoshoni tales (Lowie 1909:276, 282, 284). Ducks were noted as food in a Chemehuevi creation story (Laird 1984:42) but were not noted in another (Kroeber 1908).

An Owens Valley Paiute tale (Steward 1936:383) hinted that the bill of mudhens (coot, *Fulica americana*) may have been processed into a glue (also see Zigmond 1972:131, 1980:89). In the story, Coyote paid Mudhen "money . . . and the glue and enamel which Mud-hen now has on his bill." Such an adhesive was not noted by Steward (1933:277) but it seems unlikely that coot bills could be made into such a product. The story more likely refers to the color of the bill.

Quail. Both blankets (Kawaiisu, Zigmond 1980:175, 182), and a dress (Kawaiisu, Zigmond 1980:182) made from the feathers of mountain quail (*Oreortyx pictus*) were noted. Quail also was eaten (Kawaiisu, Zigmond 1980:181; O. V. Paiute, Steward 1936:397).

Sage-hen. Sage-hens (sage grouse, cf. *Centrocercus urophasianus*) were widely used in the Basin (Fowler 1986:Table 3). However, they were noted only once as having been hunted (W. Shoshoni, Miller 1972:38).

Unidentified Birds. "Small birds" were hunted in a Chemehuevi tale (Laird 1984:160-161). The birds were attracted to the hunter by making a squeaking sound with his bow and shot with arrows having crossmembers rather than stone points. The birds then were cooked in a roasting pit and eaten. A similar event was depicted in a Northern Shoshoni tale (Lowie 1909:265-266) and the eating of small birds was noted in several versions of a Northern Paiute tale (e.g., Kelly 1938:384). In a Northern Shoshoni tale, Cottontail "saw many snow birds (gaim) [perhaps geese]. He killed 8 or 10 of them" (Steward 1943: 280).

Mammals

The majority of the animals noted in oral tradition as having been used are mammals. General references to "hunting," but with no detail, were common. Of some interest is the occurrence of references to eating "fat" (e.g., Chemehuevi, Laird 1984:220; Kawaiisu, Zigmond 1980:123, 161), tallow (N. Shoshoni, St. Claire and Lowie 1909:271), or "intestine fat" (Ute, Kroeber 1901:265) by itself, or boiled with blood (Ute, Kroeber 1901:265). A "blood sausage," "uncooked blood stored in intestines" (Chemehuevi, Laird 1984:64, 221) was noted as being eaten; it also was called "blood pudding." For the Southern Paiute, Sapir (1930:469, 533 n. 89) reported a "blood roast" consisting of "Blood that has been roasted in a paunch under the ashes."

In a Ute tale (Smith 1940,II:182), meat was stored in "rawhide" bags. At the end of winter, Coyote decreed, there will be a month called the "buckskin end."

By the time winter is over the meat will be gone. During the winter the rawhide bags will soak up grease from the meat they contain. By March they [the Indians] will be cutting up the grease soaked rawhide and eating that. That is why they will call the end of winter "the buckskin end" [Smith 1940,II:182].

Important animals sometimes were identified. In one Western Shoshoni tale (Fowler and Fowler 1971:269) people were "roasting sheep, deer and rabbits" and in another (Steward 1943:297-299), Wolf kept "deer, sheep, buffalo [*Bison*], and antelope [pronghorn]" in a cave as a private hunting stock, possibly implying that these were the most important game animals (also N. Paiute, Kelly 1938:378). A Ute tale (Mason 1910:351) noted "antelope [pronghorn], deer, mountain sheep, and buffalo [*Bison*], and other animals" as being the primary sources of meat.

Rabbits and Hares. "Rabbits" commonly were mentioned as having been hunted, but it is unclear if these are references to cottontail rabbits (*Sylvilagus*) or black-tailed hares (*Lepus*). Rabbits (actually hares) were caught with nets (O. V. Paiute, Steward 1936:366) and were surrounded (along with rats) in a circle of fire, killed (Kawaiisu, Zigmond 1980:97, 98), and then roasted. Rabbitskin blankets sometimes were noted (e.g., Kawaiisu, Zigmond 1980:81, 112, 168; O. V. Paiute, Steward 1936:365, 367; N. Paiute, Kelly 1938: 423, 428; W. Shoshoni, Steward 1943:291, 294), as were cloaks (Chemehuevi, Laird 1984:52, 126) and robes (Fowler and Fowler 1971:270).

An Owens Valley Paiute tale (Steward 1943:375) contained explicit instructions for hunting rabbits with arrows:

When you shoot a rabbit, shoot him when he is running away from you or when he is running toward you. Don't shoot when he is running with his side toward you because you will lose [the] arrow.

Cottontail rabbits (*Sylvilagus*) were only rarely identified specifically as food. They were roasted in hot coals (Kawaiisu, Zigmond 1980:126; N. Paiute, Kelly 1938:423, 426; N. Shoshoni, Smith 1940,II:93; W. Shoshoni, Steward 1943:279) or cooked over a fire (Kawaiisu, Zigmond 1980:157). A number of cottontails were killed, apparently with arrows (W. Shoshoni, Miller 1972:48); they were then taken back to the camp and roasted in the coals of a fire, being turned with a stick. A smudge fire was made to smoke a cottontail out of its hole (Chemehuevi, Laird 1984:201).

Black-tailed hares (jackrabbits; *Lepus cf. californicus*) often were noted. Laird (1984:25) reported that jackrabbits were the animals most frequently mentioned in Chemehuevi oral tradition, and were the most important small game animal (see Table 2). Special camps for "the hunting of jackrabbits" were noted in several Southern Paiute tales (Sapir 1930:367, 390).

Jackrabbits were killed with arrows by single or small groups of hunters (Kawaiisu, Zigmond 1980:125, 157, 205), captured in nets (with a large group of people, Chemehuevi, Laird 1984:154) and then killed with clubs (Kawaiisu, Zigmond 1980:158), driven with fire (S. Paiute, Sapir 1930:455), and caught in snares (Chemehuevi, Laird 1984:87), although this may be a method used only in mythical times. They were baked or roasted (S. Paiute, Sapir 1930:449, 503; Chemehuevi, Laird 1984:87, 124; Kawaiisu, Zigmond 1980:76; N. Shoshoni, Lowie 1909:255), and sometimes dried (Kawaiisu, Zigmond 1980:171). In one Southern Paiute tale (Sapir 1930:449), jackrabbit bones were split "in two by hitting them on a stone," presumably to gain access to marrow. Coyote instructed a Chemehuevi boy that

This is the way he [jackrabbit] will always be killed-aikya, by circling around and around him-aikya! When the jackrabbit squatted down, Coyote shot him [with an arrow]. Haikya! Thus it will be done to all jackrabbits-aikya! [Laird 1984:87].

This technique again was noted in a different tale (Chemehuevi, Laird 1984:146).

Blankets made of "jackrabbit skins" were noted several times (Chemehuevi, Laird 1984:162; N. Shoshoni, Lowie 1909:236). Coyote used "rabbitskins" (cf. *Lepus*) to cover a winterhouse, a structure usually covered by "bark and tule mats" (Kawaiisu, Zigmond 1986:401). A "jackrabbit tail" was used as an apron (Chemehuevi, Laird 1984:40).

Rodents. Rodents (squirrels, mice, and rats) commonly were mentioned as being hunted, since they were "good to eat." Squirrels (cf. *Spermophilus*) were hunted and eaten (Kawaiisu, Zigmond 1980:133; Ute, Smith 1940,II:1). Ground squirrels were cooked and eaten in a Northern Shoshoni tale (Lowie 1909:300).

Groundhogs were noted as food several times in Northern Shoshoni (e.g., Lowie 1909:256, 274, 300) and Northern Paiute tales (Kelly 1938:384, 388). In one (N. Shoshoni, Lowie 1909:256), two males lured a groundhog out of its hole, "killed it, ate its flesh and made moccasins of its skin." In a Western Shoshoni tale (Steward 1943:280), Cottontail told some women that

You will be good to eat. You will be groundhogs [likely either marmots or ground squirrels]. My people will eat you when you turn into groundhogs.

Chipmunks (cf. *Tamias*) were noted as being hunted with the use of deadfall traps (W. Shoshoni, Miller 1972:92).

There was a small willow burden basket about so small, with lots of deadfall traps packed in it. It [the basket] was made for that purpose long ago. They killed such things as prairie dogs. They killed mountain chipmunks in the

mountains. The rocks that they killed them with were real flat like this. One could fix the trap so that when it touched it, it would flip out. It would kill them.

In this fashion they found their food. The trap was important. The trap was important to their way of life. It was like a gun. It was something to be thought about.

Later in the same story (Miller 1972:92), a male took the traps out of the basket and established a trap line. It is clear that rodents were an important food source and that trapping was a major procurement strategy (e.g., Echlin et al. 1981).

"Woodchucks" (possibly rock squirrels [*Spermophilus variegatus*] or marmots [*Marmota flaviventris*]) were noted in a tale (W. Shoshoni, Steward 1943:291-294) as "very good to eat." In that tale, the animals were killed with a stick, skinned, and made into jerky and stew. The hunting of "rock-squirrels" by poking sticks into their holes was noted several times (N. Shoshoni, Lowie 1909:249; Ute, Kroeber 1901: 269).

In a Northern Shoshoni tale, Coyote told his wife, "If you are in need of food, go to the rocks and look for rock-squirrels" (Lowie 1909:249). In that same tale, many "rock-squirrels" were brought to a woman. "She cleaned them and threw them on the fire to burn off the hair" (Lowie 1909:249).

"Woodchucks" were noted in several Western Shoshoni tales (Miller 1972:38, 53). In the latter story, Cottontail placed "cedar" (juniper) bark into the nests, lit them and killed all the "woodchucks" with smoke. Cottontail then took some of them and roasted them in a fire. Some were eaten there and others were taken. He later told Coyote that a woodchuck "really tastes good" (Miller 1972:53). Coyote then caught some and baked them (Miller 1972:54).

Prairie dogs (*Cynomys* spp.) occur in portions of the eastern Basin and were noted in several tales (Comanche, St. Claire and

Lowie 1909:273; Ute, Smith 1940,II:173), cooked in the fire. The tale is very similar to others in which "woodchucks" or "rock-squirrels" were identified, with just the species of large rodent varying. Prairie dogs also were noted in several Western Shoshoni tales (Miller 1972:38, 92).

Beaver (*Castor canadensis*) are widely distributed throughout the Arid West. Steward (1938) did not report their use as food but they were noted by Fowler (1986: Table 2). Beaver were noted as food in several Northern Shoshoni tales (Lowie 1909: 266; Smith 1940,II:41-42), and were mentioned in several Ute tales. Coyote and an Indian friend shot beaver with arrows (Mason 1910:304-306). The Indian told Coyote to get the beaver and "skin and tan them. 'Tan them well.' said the Indian, 'they make blankets as good as buckskin'" (Mason 1910:304). Beaver also were taken with a spear, roasted, and eaten (Fowler and Fowler 1971:88).

Rats often were noted as having been hunted. Rats living in nests or mounds, no doubt woodrats (*Neotoma* cf. *lepida*), were hunted (Chemehuevi, Laird 1984:147; S. Paiute, Sapir 1930:463, 531 n. 52; Kawaiisu, Zigmond 1980:67, 80, 82, 83, 85, 86). Several techniques were noted: poking the mound to scare the rat out where it would jump into Coyote's mouth (also O. V. Paiute, Steward 1936:381-382); or setting fire to the nest and shooting the rats (with arrows) as they came out. In one of those stories a rat was cooked "and left under the fire" (Zigmond 1980:80), implying that rats sometimes were cooked in or under a fire, rather than above it, this also was mentioned in several other myths. In another Kawaiisu tale, rats (with rabbits) were surrounded in a circle of fire and then killed (Zigmond 1980:97, 98).

In a Chemehuevi tale (Laird 1984:86) a woodrat was caught in a snare by a young boy and given to Grandmother.

She took it and broke off his heart [pressed thumbs on the chest and pulled downward, severing the aorta]. Then she roasted him. When he got done, she ate him and gave the entrails to Coyote [who also lived there].

In another Chemehuevi tale (Laird 1984: 125) moccasins were made (by a male) from "tanned rat skin," although judging from a later passage, they did not seem to last long and were not a normal moccasin material.

Porcupines (*Erethizon dorsatum*) were not noted as a food source by Steward (1938) but were listed by Fowler (1986:Table 2) as having been widely used. Porcupine was noted as food in one Northern Shoshoni tale (Smith 1940,II:45).

Coyotes and Dogs. Coyotes and dogs (*Canis*) were only rarely mentioned as having been eaten. A Kawaiisu tale (Zigmond 1980: 55) stated that peoples around Owens and/or Mono lakes ate coyotes and dogs (possibly an insult), and a Chemehuevi tale included an observation that "when you kill a coyote, and take the loin, it tastes like mountain sheep meat" (Laird 1984:77).

Foxes. Foxes (cf. *Vulpes*) were never noted as being eaten but arrow quivers of fox skin were mentioned (W. Shoshoni, Steward 1943:262).

Bears. Several references suggest use of traps to catch bears (*Ursus* spp.). A hole would be dug and spikes (of serviceberry, *Amelanchier*) put in the bottom, and Bear would fall in and be killed (Kawaiisu, Zigmond 1980:69, 74). In several Kawaiisu versions, Coyote failed to place an organ (either the spleen or pancreas; Zigmond 1980:69 n. 2, 77 n. 34) into the fire, apparently as an offering. This failure angered the organ that "hopped" away to tell the other bears who became angry at the news (also see a Ute tale in Fowler and Fowler 1971:97). The Chemehuevi apparently used a "quiver made out of bear skin" (Laird 1984: 79, 175).

In a Northern Paiute tale (Kelly 1938:421), Coyote killed Bear and roasted him to eat. Crows ate all the meat but Coyote broke the bones "and ate the marrow." Coyote once made a necklace from bear claws (Ute, Smith 1940,II:167).

Mountain Lion. The mountain lion (or cougar, *Felis concolor*) occurs throughout the Basin (Zeveloff 1988:304) but was noted only once as having been used as food, when Coyote ate the marrow from some mountain lion bone (N. Shoshoni, Lowie 1909:273). A quiver made of mountain lion skin, including the tail, was noted in one myth (Ute, Kroeber 1901:269).

Elk. Elk (*Cervus elaphus*) range over much of the eastern and northern Basin (Zeveloff 1988:323) but may have been of limited importance in Great Basin economies (Steward 1938:38). Elk were mentioned as being hunted several times in Ute myth (Kroeber 1901:278; Mason 1910:333, 334), being roasted in one tale (Kroeber 1901:279). An "elk skin tent" was mentioned in one tale (W. Shoshoni, Fowler and Fowler 1971:259) and an "elk horn scraper" was noted in a Northern Shoshoni tale (Lowie 1909:237).

Deer. Deer were the most commonly mentioned large game animal. Mule deer (*Odocoileus hemionus*) occur throughout the Basin (Zeveloff 1988:325-328) and probably represent most of the deer mentioned in myth. White-tailed deer (*Odocoileus virginianus*) specifically was named only once (Ute, Kroeber 1901:274), also referred to as "long-tailed deer" (Kroeber 1901:275). "Long-tailed deer" had been noted in another Ute tale (Mason 1910:356) and probably represents a white-tailed deer. White-tailed deer "always tastes good. That is why we eat it" (Ute, Kroeber 1901:275).

Deer were mentioned as having been shot with arrows (e.g., Chemehuevi, Laird 1984:88; Kawaiisu, Zigmond 1980:176; N. Paiute, Kelly

1938:386; O. V. Paiute, Steward 1936:375; Ute, Fowler and Fowler 1971:92, 94). Coyote instructed a Chemehuevi boy that deer would be killed by circling the animal until it crouched down, when it would be shot (Laird 1984:88), instructions similar to those given for jackrabbits (see above).

Deer, including the head, might be cooked in a roasting pit (Chemehuevi, Laird 1984:189; N. Shoshoni, Lowie 1909:250) or pieces roasted over an open fire (O. V. Paiute, Steward 1936:405). Jerky was made from deer meat (Chemehuevi, Laird 1984:169; Kawaiisu, Zigmond 1980:39, 174; O. V. Paiute, Steward 1936:406; W. Shoshoni, Steward 1936:435). Dried deer meat was packed into bags for trips (Ute, Kroeber 1901:266) and was stored (S. Paiute, Sapir 1930:395). Western Shoshoni tales often mentioned deer as a food and one (Miller 1972:37) noted that deer were hunted "anytime (of the year)."

The "bones and parts" of deer left by other people were edible (Ute, Mason 1910:353). Coyote was given deer bones with no marrow and he became angry (N. Paiute, Kelly 1938:396) but he then "melted the grease that was left in the bones," presumably to eat.

Deerskin was used to make balls for games (Kawaiisu, Zigmond 1980:221; see Lowie 1909:Fig. 12). Buckskin (presumably deer) was used to make bags (N. Shoshoni, Lowie 1909:302), to tie the umbilical cord of a newborn (W. Shoshoni, Steward 1943:273), to cover the hoop for the hoop-and-pole game (O. V. Paiute, Steward 1936:401), and (apparently) as blankets (O. V. Paiute, Steward 1936:417; Ute, Mason 1910:304), sometimes made using "Deer-hide with the hair on" (Mason 1910:362). Deerskin also was used for leggings and moccasins (Ute, Mason 1910:362) and for dresses for women (e.g., O. V. Paiute, Steward 1936:406). A Chemehuevi

male made "buckskin dresses with deer hoof fringe" for his wives (Laird 1984:222).

Rattles, one a "deer's-ear rattle" (O. V. Paiute, Steward 1936:396), and one a "fawn's hoof rattle" (N. Paiute, Kelly 1938:416) were noted, as was the use of antler for shaping "flints" or "arrowheads" (O. V. Paiute, Steward 1936:409, 411). Deer bones were used to make "four sticks . . . for the hand game" (O. V. Paiute, Steward 1936:430), apparently such pieces were usually not made of deer bone.

It was observed (W. Shoshoni, Steward 1943:274) that women should not eat deer meat during menstruation as it will turn them "old and wrinkled." The way to avoid that was to work hard and "carry lots of wood."

Moose. Moose (*Alces alces*) inhabit the northeastern Basin (Zeveloff 1988:331) and weigh up to 1,700 lbs. A moose was killed by two brothers in a Ute tale (Mason 1910:359) but neither knew what kind of animal it was. One called it a "water elk," apparently a literal translation into English. A "water-elk" again was mentioned in a Northern Shoshoni tale (Lowie 1909:260-261) as being hunted, killed, and skinned.

Pronghorn. Pronghorn (*Antilocapra americana*) were important game animals in western North America (Steward 1938:34-36; Arkush 1986; Parr 1989). They infrequently were noted as being hunted (W. Shoshoni, Steward 1943:297; Miller 1972:35, 64, 86; Ute, Powell 1881:50; Kroeber 1901:281; Mason 1910:333; Fowler and Fowler 1971:84, 95). In the various stories, pronghorn were hunted by individuals or small groups; large communal hunts never were noted. In a Gosiute tale (Miller 1972:65), some men hunted pronghorn "carelessly (without proper preparation)" and apparently with no success.

Bison. Bison (*Bison bison*) occurred mostly in the northern and eastern Basin and northeastern California, although they were

noted in Chemehuevi myth (Laird 1984:194). In addition to food, bison were mentioned as having been used for manufactured items such as tipi covers (S. Paiute, Sapir 1930:507), blankets (N. Paiute, Kelly 1938:419; N. Shoshoni, St. Claire and Lowie 1909:267; Ute, Mason 1910:342; Chemehuevi, Laird 1984:146), and rope (N. Shoshoni, St. Claire and Lowie 1909:268).

Bison were hunted with bow and arrow (Ute, Mason 1910:301; Fowler and Fowler 1971:86). Bison meat was eaten, along with the "fat, blood, and grease [bone marrow]" (Ute, Mason 1910:346). Dried bison meat also was noted (Ute, Mason 1910:331, 339).

Mountain Goat. Mountain goats (*Oreamnos americanus*) were listed as food by Steward (1938:37) who noted that they occurred "only in the Bitterroot Mountains [of Idaho] and [were] of minor importance." Fowler (1986:Table 2) noted [their] use by the Northern Shoshoni. Mountain goats were mentioned as being hunted in one Northern Shoshoni tale (Smith 1940,II:55).

Mountain Sheep. The hunting of mountain sheep (*Ovis canadensis*) was noted only once each in Kawaiisu (Zigmond 1980:193), Ute (Powell 1881:46), and Owens Valley Paiute tales (Steward 1936:386), but was noted several times in Northern Shoshoni (St. Claire and Lowie 1909:270), Western Shoshoni (e.g., Miller 1972:72; Fowler and Fowler 1971:259) and Chemehuevi tales (e.g., Laird 1984:42, 52, 54, 87, 115, 198).

Sheep (including lambs) were shot, presumably with an arrow (Chemehuevi, Laird 1984:55, 198, 217, 221; W. Shoshoni, Steward 1943:264, 287; Fowler and Fowler 1971:259). The eating of the entrails of mountain sheep may have been considered bad, as hinted in a Chemehuevi tale (Laird 1984:97).

Several tales detail the hunting of sheep. A Chemehuevi tale related that ambush is the way in which mountain sheep "will custom-

arily be killed" (Laird 1984:87); in another tale sheep were driven past an ambush point by other people (Chemehuevi, Laird 1984:198). A Gosiute tale (Fowler and Fowler 1971:259) described a person using the skin of a sheep as a disguise to crawl into a group of sheep to kill them with arrows.

In a Northern Shoshoni tale (Smith 1940,II:111), two men from "groups to the west" constructed a hunting blind next to a trail, ostensibly to hunt sheep, but actually to kill and eat other people.

The two men started digging, and dug a place big enough to sit in. Around the edge of the hole they put a lot of sagebrush. They were right by the trail, where they could shoot at anyone who went by. They had holes in the side of the sagebrush to shoot through.

A Chemehuevi tale included the killing of two young female mountain sheep, primarily to obtain replacement eyes for an individual's young wives (Laird 1984:219-224). In the notes following the tale, Laird (1984:225) reported that the individual

returned with the carcasses of the . . . sheep and their eyes, but not with the entire heads. It was not customary to pack in the heads of big game . . . Other myths imply that it was customary to roast the head at the site of the kill [also see Laird 1984:189].

In several instances where sheep meat was eaten, it was prepared by boiling (Chemehuevi, Laird 1984:52; W. Shoshoni, Steward 1943:264). It also was made into jerky, spread out on rocks to dry (Chemehuevi, Laird 1984:115). The marrow of sheep bones also was eaten (S. Paiute, Sapir 1930:493; N. Shoshoni, St. Claire and Lowie 1909:270; Smith 1940,II:75; Ute, Mason 1910:316) and soup was made from a sheep bone (O. V. Paiute, Steward 1936:387). A quiver was made from sheep skin (Chemehuevi, Laird 1984:217) and in another Chemehuevi tale (Laird 1984:54), sheep skins were tanned. A bow of "moun-

tain sheep horn" was mentioned in a Northern Shoshoni tale (Smith 1940,II:117).

Several tales included sheep-hunting episodes (W. Shoshoni, Steward 1943:263, 267) where the goal was to obtain a cervical vertebra to use as a penis sheath, rather than meat for food (a deer vertebra was used in a similar tale), but in the Chemehuevi version (Laird 1984:42), the sheep was used for both its vertebrae and as food.

Invertebrates

Several phyla of invertebrates were used for food and other purposes, including shellfish, snails, and arthropods. Insects probably were the most important invertebrate food in the Great Basin (Sutton 1988) and while insects often were characters in oral tradition, they rarely were mentioned as being used for food or other purposes.

Red ants (unidentified) were ingested as a medicine (Kawaiisu, Zigmond 1980:175, 178). In several Ute tales (Lowie 1924:56; Smith 1940,II:167), Coyote ate ants without any apparent preparation such as parching. The same is true in a Northern Shoshoni tale (Smith 1940,II:95, 96). In the latter two examples, the implication is that the ants were a food of secondary preference.

In a Northern Paiute tale (Kelly 1938:420), Coyote's wife and son gathered ants (species unknown). "They found an ant nest, and Coyote's wife was gathering those ants. She sent her little boy to hunt more nests."

Several western Basin tales (Steward 1936:429; Smith 1940,I:36) described the origin of kutsavi (brine flies, *Hydropryus hians*). Kutsavi was an important food in the western Great Basin (Heizer 1950; Sutton 1988:45-49).

Honeydew or "bug sugar" (the excretions of certain insects; e.g., the mealy plum aphid [*Hyalopterus pruni*] on several plants, usually *Prunus*, *Phragmites*, or *Typha*) was widely

utilized (Sutton 1988:73-76). In Kawaiisu, Panamint, and Death Valley Shoshoni tales, all the animals traveled to Barstow and/or Victorville (in the Mojave Desert) to eat honeydew (Zigmond 1980:141, 231; Steward 1943:268). "Cane sugar" also was noted in an Owens Valley Paiute tale (Steward 1936:424), a Western Shoshoni tale (Steward 1943:281), and a Ute tale (Fowler and Fowler 1971:84) as having been gathered by women.

A Ute tale (Powell 1881:44; also Fowler and Fowler 1971:80) of the conversation of the Cin-au-av brothers described not only the origin of honeydew, but also the procurement, processing techniques, and the sexual division of labor used.

"... how shall they [the Ute] be furnished with honey-dew? I have thought all night about this, and when the dawn came into the sky, I sat on the summit of the mountain and did think, and now I will tell you how to give them honey-dew: Let it fall like a great snow upon the rocks, and the women shall go early in the morning and gather all they desire, and they shall be glad." "No," replied the elder brother, "it will not be good, my little brother, for them to have much and find it without toil; for they will deem it of no more value than dung, and what we give them for their pleasure will only be wasted. In the night it shall fall in small drops on the reeds, which they shall gather and beat with clubs, and then it will taste very sweet, and having but little they will prize it more." And the younger brother went away sorrowing, but returned the next day and said: "My brother, your words are wise; let the women gather the honey-dew with much toil, by beating the reeds with flails."

A "red pitch" was paid Mallard by Coyote for his services (Kawaiisu, Zigmond 1980:89). This substance, found on creosote (*Larrea tridentata*) and sagebrush (*Artemisia tridentata*), was used by the Kawaiisu to fashion tool handles (Zigmond 1972:131, 1980:89, 1981:13). There is no doubt that the substance from the creosote bush is the product of a lac insect (*Tachardiella larrae*) rather than of a plant (e.g., Sutton 1989).

The way in which body lice (*Pediculus humanus*) are to be killed is explained in a Chemehuevi tale. A woman told her grandson " 'This is body louse . . . this is the way he will always be killed.' Then she burst him between her thumbnails" (Laird 1984:85). In that same tale, Grandmother explained that head lice (*P. h. capitis*) would be killed by being crushed between the teeth.

DISCUSSION

There is a wide variety of ethnobiological data represented in oral tradition, including information on the use of 47 plant and 31 animal genera. Eighteen (38%) of the plant resources were mentioned only once with 13 others (28%) being mentioned 2-3 times (Table 1). The most frequently mentioned plant was pinyon (25 occurrences), with acorns (12, mostly Kawaiisu), willow (15), and cane (10) being common as well. Several of the resources commonly viewed by anthropologists as having been of great importance in the aboriginal economy (e.g., sunflower, mesquite, and ricegrass, although mesquite has a limited distribution) only rarely were mentioned.

A similar situation is evident with the animals (Table 2). The most commonly noted animals were lagomorphs (87), with deer (83) and bighorn (41) following closely. Fifteen animals were noted rarely, between one and three times. Of some interest is the fairly consistent reference to rodents (36) as food. Fish, were noted primarily by groups in the western Basin.

There are several notable resources that rarely were mentioned. For example, juniper was mentioned only by the Ute and Southern Paiute, this in spite of the fact that juniper was very important to the Kawaiisu (Zigmond 1981) and other groups in the Basin (Zigmond 1941). Pinyon was not included in (the limited number of) Owens Valley Paiute tales,

in spite of its importance to that group. Other important foods such as sunflower, pigweed, mesquite, chia, tule, ricegrass, and cattail were mentioned only once or twice. Insects, known to have been important (Sutton 1988), rarely were noted and the most important, grasshoppers and crickets, never were mentioned.

The most detailed ethnobiological information is contained in Kawaiisu oral tradition and these data were briefly discussed by Zigmond (1972:131-132). Zigmond (1972: 129) observed that the Kawaiisu themselves provided detailed accounts but Zigmond's training was in botany, a fact that undoubtedly resulted in greater detail being recorded. The other Basin myths are far less detailed.

It is reasonably clear that there was a fairly strict sexual division of labor, at least during mythological times, although the same pattern appears evident in the ethnographic record. Males hunted and females gathered plants and bug sugar, and collected firewood. Also of some interest are the several references to the storage of foods in the rafters of structures, in addition to pits and caches.

All of the resources identified in oral tradition are known from the ethnographic literature. This suggests that functional data do exist in oral tradition and such analyses can be fruitful. In addition to the presence/absence data, considerable detail regarding techniques, labor, preparation, etc., exist and add breadth to our understanding of native adaptations in the Great Basin.

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