SOME LEXICAL CLUES TO UTO-AZTECAN PREHISTORY[1]

CATHERINE S. FOWLER

UNIVERSITY OF NEVADA, RENO

0. Introduction. Over the years many have used linguistic evidence of various kinds and in various ways in the quest for parsimonious solutions to the many problems of Uto-Aztecan prehistory. Archaeologists, armed principally with evidence of present-day language distributions and speculations about genetic connections for language phylla and macrophylla, have argued for both early and late migrations of Uto-Aztecan speakers into and out of several specific areas in the Desert West (e.g., Taylor 1961, Gunnerson 1962, Swanson 1972, Hayden 1970, and Haury 1976). Ethnologists, using these same materials as well as data of their own on material culture, social organization, mythology, etc., have made some of the same as well as alternative proposals (e.g., Zingg 1939, Eggan 1950, Romney 1957, Riley and Winters 1963, Fowler 1972*b*, and Fowler and Fowler 1981). Linguists, too, have entered into these discussions, contributing lexical reconstructions, data from dialect geography, and occasionally comparisons of grammatical features, sometimes with different conclusions (e.g., Lamb 1958, Hopkins 1965, Miller 1966, Goss 1968; 1977, Shaul 1979, and Hale and Harris 1979). In all, however, as with much that is basically speculative, suggestions outweigh conclusions.

In this article, I add some additional fuel to these small fires by considering, through the examination of lexical evidence, ecological clues to the location of a homeland/homelands for the family and certain of its branches and subbranches. Given the quality and quantity of data presently available, suggestions will continue to outweigh conclusions.

1. Methodology. In recent years, several scholars have suggested that carefully reconstructed plant and animal vocabularies can contain valuable clues for determining both the nature and the location of potential homelands for protolanguages. Among those who have discussed the possibilities are: Siebert (1967), whose work on Proto-Algonquian flora

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and fauna was the first demonstration of the technique of comparative mapping of species distributions toward homeland determinations attempted for a New World language family; Friedrich (1970), whose study of Proto-Indo-European tree names remains as the most explicit consideration of the multidisciplinary nature of such studies and their problems; Whistler (1977), whose study of Proto-Wintun biota demonstrates the successful use of these data in establishing internal relationships and assessing borrowings; and Callaghan (1980), whose study of Proto-Miwok shows that floral and faunal referent changes can be indicative of complex multidirectional migrational patterns. For Uto-Aztecan specifically, one can cite Romney's (1957) use of his "genetic model" as the first deduction of a homeland for the family based on this technique, Miller's (1966) reconstruction and evaluation of Romney's data base, and my own efforts at suggesting a homeland for Proto-Numic and its neighbors (Fowler 1972*b*).

As these works suggest, the effective use of plant and animal vocabularies for the solution of homelands questions depends on the availability of certain types of information. Viewed in this context, the limitations of the Uto-Aztecan data base are apparent. One type of essential information is ethnobiological. The biotaxonomic identification of all native terms should be absolutely clear. Ideally, one would like to have exhaustive ethnobiological studies for groups in each of the languages under scrutiny in order to ensure accurate referent identification. By *exhaustive*, I mean comprehensive biotaxonomic studies of the principles of inclusion and exclusion for each native term; that is, does the native term refer to one and only one species of a genus, to a few species and not others, or is it more inclusive? Table 1 gives a rough assessment of the taxonomic data base for the Uto-Aztecan languages. As is apparent, exhaustive ethnobiological studies are lacking for most of the Uto-Aztecan groups; fair-to-good information is, however, available for a number of the groups.

A second type of essential information is linguistic. It goes without saying that the data must be accurately recorded. Ideally, one would like a detailed historical phonology of the language family in question. It might then be possible to use different reconstructions of plant and animal terms at different levels of relationship to suggest population shifts on a smaller and more accurate scale. Several recent studies contribute toward that goal in regard to Uto-Aztecan, including Voegelin, Voegelin, and Hale (1962), Bascom (1965), Langacker (1970; 1976; 1977), Campbell and Langacker (1978), Munro (1973), Bright and Hill (1967), etc; however, much remains to be done.

Third, we need to know about the social context of the languages in question. Social conditions clearly affect inter- and intragroup exchange

TABLE 1

THE UTO-AZTECAN ETHNOBIOLOGICAL DATA BASE

	Status	Principal References
Numic	good to excellent for some languages and dialects; fair to poor for others; genus-species identifications exhaustive for some genera	Carlson and Jones (1939), Chamberlin (1905; 1909), Fowler (1972*a*; 1972*b*), Goss (1972), Kelly (1965), Maher (1953), Shimkin (1947), Steward (1933), Train, Hendricks, and Archer (1941), Zigmond (1971)
Tübatulabal . .	good; nonexhaustive genus-species identifications particularly for flora; common name only for most fauna	C. Voegelin (1958), E. Voegelin (1938)
Hopi	excellent for flora, birds; fair to good for other fauna; exhaustive for some genera	Bradfield (1974), Mearns (1896), Voegelin and Voegelin (1957), Whiting (1939)
Takic	good; nonexhaustive genus-species identifications, particularly for flora; common name only for fauna	Barrows (1900), Bean and Saubal (1974), Bright (1967; 1968), Bright and Hill (1967), Kroeber and Grace (1960)
Pimic	fair to good; some genus-species identification for flora, fauna	Bascom (1965), Curtin (1949), Mathiot (1972), Russell (1908), Saxton (1969)
Tepehuan . . .	good to excellent in NT; genus-species identifications for flora and fauna; nonexhaustive; ST common name only	Bascom (1965), Pennington (1969; 1979)
Taharamura . .	good to excellent; genus-species identifications exhaustive for some flora	Bye (1976), Hinton (1959), Pennington (1963), Thord-Gray (1955)
Guarahio	fair to poor; common name only in general vocabulary lists	Kroeber (1934), Miller (n.d.)
Cahitic	fair to poor; common name only in general vocabulary lists	Collard and Collard (1962), Kroeber (1934), Miller (1967)
Corachol	good to excellent on flora and fauna for Hch, with genus-species identifications; fair to poor for Cr on fauna and flora with common name only	Grimes (1980*a*; 1980*b*), McMahon and McMahon (1959), Price (1967)
Aztecic	good to excellent for CAZ, with genus-species identifications for flora and fauna; modern languages fair to poor with common name only in vocabulary lists	Cambell and Langacker (1978), Dibble and Anderson (1963), Key and Key (1953)

of vocabulary items, new coinages, and the loss of forms, etc. For example, as groups adopt agriculture to varying degrees, one might expect attendant changes to occur in their knowledge and naming of the former products of their foraging economies. Or, after centuries of linguistic acculturation to Spanish and English and the attendant cultural changes in subsistence and medicinal practices, one might expect significant changes in plant and animal vocabularies. The cultural diversity in Uto-Aztecan is well known. We have linguistic groups representing the entire spectrum from hunting and gathering adaptation through high civilization; we have groups with sparse populations, characterized until recently by high mobility, others that were of intermediate size and semisedentary, and yet others that formed empires and urban city-states. But, sociolinguistic work of the type described has received little attention.

A fourth consideration is biological and ecological. We need accurate biogeographical studies of the genera and species in question. Some may be ubiquitous and, therefore, of little utility to comparative mapping; the distribution of others could be crucial. Although we have some excellent taxonomic studies available for several regions within the present range of Uto-Aztecan speakers (e.g., Munz 1959, Kearney and Peebles 1960, Shreve and Wiggins 1964, and Hall and Kelson 1959, etc.), we are lacking comparable data for others. Environmental change at various points over the vast Uto-Aztecan range in its rather long history is also potentially significant. Preliminary paleoecological studies seem to indicate that there has been no "significant change" in the past 5,000 years (Martin 1963 and Mehringer 1977), but microchanges, such as local droughts, changes in frost cycles, etc., may induce changes in subsistence strategies and lead to population shifts faster than long-term trends. Some recent changes in species distributions may be reflected in the linguistic record (i.e., the disappearance of the native turkey from many areas, the reduction of native grasses and other plants by overgrazing, and the loss of many native cultigens for various reasons), but the record is by no means complete.

Finally, any study of this nature also presupposes a family tree of the language in question. The one that is assumed here as a starting point is that which holds that there are nine branches within the family; Numic, Tübatulabal, Hopi, Takic, Pimic, Tarahumara, Cahitic, Corachol, and Aztecan (Lamb 1964). Section **5**, however, bears on some of the recent proposals on internal diversity, such as that by Heath (1977) for a Northern Uto-Aztecan subfamily and that by Campbell and Langacker (1978) for a Southern Uto-Aztecan grouping.

2. Previous proposals. Romney (1957) proposed, based on studies of plant and animal vocabularies as well as other data, that the probable

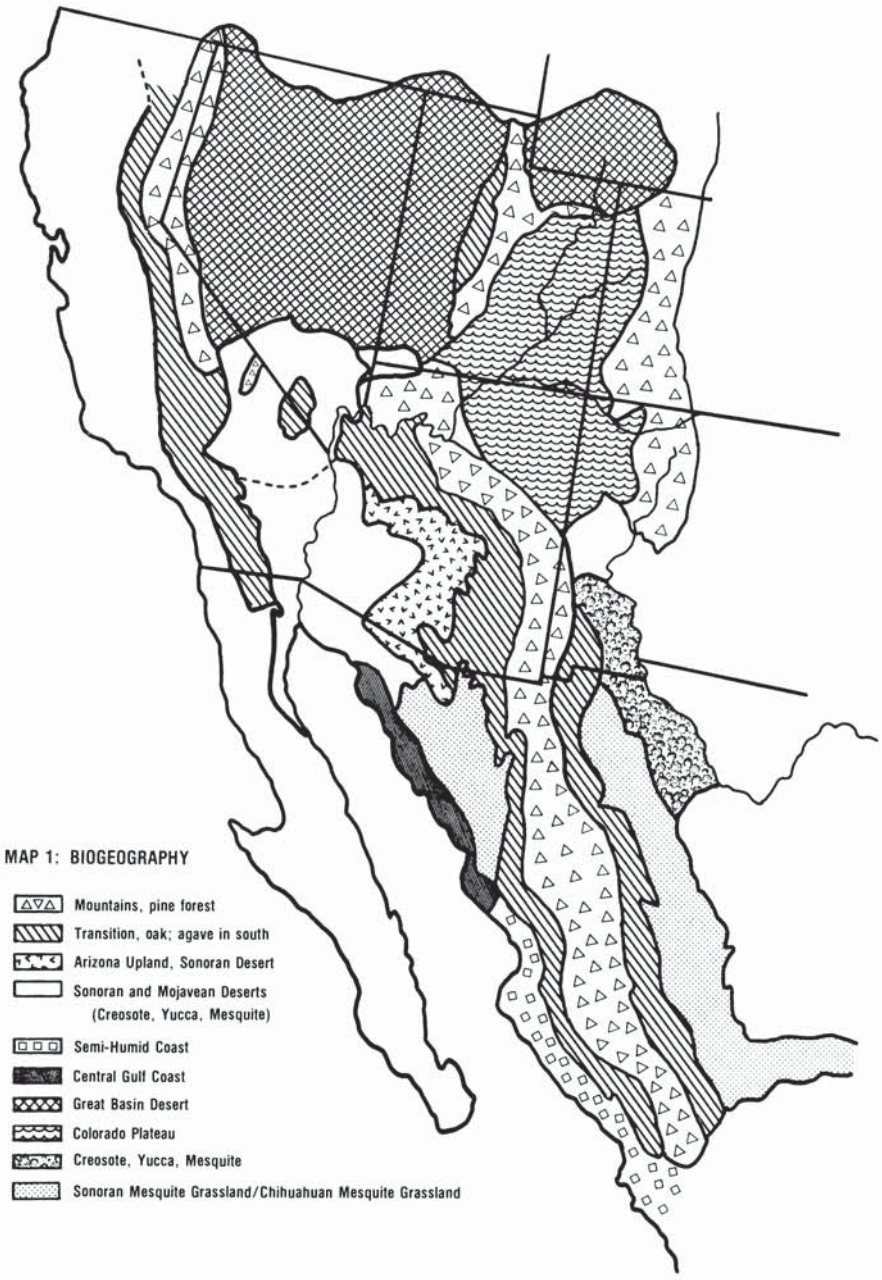
homeland for Proto-Uto-Aztecan was somewhere in the area from the upper Gila River drainage of southern New Mexico and Arizona through the northern Sierra Madres of Mexico. He found the following plants, presumably reconstructible for Proto-Uto-Aztecan, with overlapping distributions in that region: pine, juniper, oak, phragmites, prickly pear, and bear grass.[2]

In 1965, Hopkins proposed a general model of Uto-Aztecan prehistory based on distributional and genetic evidence that placed the ultimate Proto-Uto-Aztecan homeland north of the Great Basin, at an unspecified locality, presumably on the Columbia Plateau. He then suggested a basic division in the protofamily in this northern sector at roughly 4,000 B.P. (based on glottochronological counts for Shoshonean versus Sonoran), with the Northern Uto-Aztecans moving through the Great Basin and along the flanks of the Sierra Nevada and the Southern Uto-Aztecans skirting the area on the east and moving to the Southwestern United States and ultimately to northern Mexico. Hopkins's proposal was not based on lexical evidence, but it has certain lexical implications.

Most recently, Goss (1977) has suggested that perhaps the most parsimonious solution to the Proto-Uto-Aztecan homelands question is simply to leave the family (and other suggested macroaffiliates) basically where it is: in the whole of the western intermontane region. Unknown events at a guess date of 2,000 B.C. then "pushed a rapid diversification of the Proto-Uto-Aztecan community, sending Aztecic, Coric, Taracahitic and Pimic off to the south; and Luisenic, Tubatulabalic and Numic off to the west and north, leaving Hopi roughly in place" (Goss 1977:22). Goss does not cite specific data beyond distributional and suggested genetic evidence for certain macrophylla affiliations, but his proposal also has certain lexical implications.

3. Uto-Aztecan homelands. A somewhat different hypothesis about Proto-Uto-Aztecan homelands is suggested by the data from plant and animal vocabularies. The data upon which this discussion is based are

[2] Miller (1966), in an attempt to reassess and basically reconstruct the evidence for Romney's proposal (Romney did not provide the raw data), was able to confirm only pine, phragmites, and prickly pear as having anything approaching a broad-based lexical distribution in Uto-Aztecan. Although the Sonoran groups share a term for oak (**tua*; Miller 1966), the term is apparently not found in any Uto-Aztecan language north of them. Tarahumara and Papago appear not to share the same term for beargrass (Pg *moho*, Tr *duya*), nor is a cognate found, to my knowledge, in any Southern Uto-Aztecan language. Tarahumara does appear to have a form for juniper (actually *Cyprus arizonica*) that is shared with several Northern Uto-Aztecan languages (see below), but junipers are more widely distributed than the location posited by Romney (1957:39). That leaves his proposal, at least based on these data, without much foundation (see also Miller 1966 and Liljeblad 1972 for additional discussion of Romney's proposal).



found in table 2; the cognate sets for table 2 are in Appendix A. (See also map 1 for reference.)

I begin with the lexical evidence for the biotic components of the protohomeland. Table 2, 1–9, contains items found in at least seven of the nine branches of the family. On the basis of these data, we can include with a reasonable degree of assurance in the Proto-Uto-Aztecan homeland the following: pine (long-needled), prickly pear, grass sp., phragmites, hawk sp., screech owl, snake sp., fly, and louse. Table 2, 10–27, contains forms found in six out of the nine branches, or in five branches including one Numic language and one Cahitan, Corachol, or Aztecan language. The inclusion of these data adds the following to the list above: agave, cottontail, squirrel, mole/pocket gopher, turkey, eagle/hawk, horned owl, vulture, heron, sandhill crane, small bird sp., woodpecker sp., turtle/tortoise, frog, mosquito, bee, flea, etc. Although genus/species identification is far from secure for several of the protoforms (cf. Appendix A), something of the ecological character of the general complex begins to emerge.

TABLE 2

PROPOSED PROTO-UTO-AZTECAN PLANT AND ANIMAL LEXEMES (WITH DISTRIBUTIONS)

1. ***woko* 'pine', probably *Pinus ponderosa*. Mn, NP, Sh, Ch, SP, U, K, Tbl, Cp, Ls, Ca, Hp, Pg, Pi, NT, ST, Tr, Gu, Eu, Yq, My, Cr, Hch, CAZ, Mj, To, Za, Pi, Po.
2. ***nabu* 'prickly pear', *subgenus Platyopuntia*. NP, Sh, Ch, SP, U, K, Sr, Cp, Ls, Ca, Hp, Pg, Pi, NT, ST, Tr, Gu, Eu, Yq, My, Mj.
3. ***paso* 'grass', (?). Cp, Ls, Ca, Hp, Pg, Pi, NT, ST, Yq, My, Cr, Hch, CAZ, To, Za, Pp.
4. ***paka* 'cane', *Phragmites communis*. Sh, Ch, SP, U, K, Tbl, Cp, Ls, Ca, Sr, Hp, Pg, NT, ST, Tr, Gu, Cr, Hch, My, CAZ, To, Za, Pp, Po.
5. ***k*^{w}*isa* 'hawk', probably *Accipiter* spp. Mn, NP, Ch, SP, K, Cp, Ls, Ca, Hp, Pg, Hch, Cr, Mj.
6. ***tuku* 'screech owl', *Otus asio*. SP, Sh, Tb, Ls, Hp, Pg, Pi, NT, ST, Tr, Co, Tr, CAZ, To, Za, Po, Pp.
7. ***kowa* 'snake', possibly rattlesnake. NP, Mn, Sh, Ch, SP, Ka, U, Hp, Pg, Pi, NT, ST, Cr, Hch, My, Mj, CAZ, To, Za, Pi, Po.
8. ***muu* 'fly'. Mn, NP, Sh, Cm, Ch, SP, U, K, Ls (?), Pg, Pi, NT, ST, Mj, (mosquito) CAZ, To, Za, Po, Pp.
9. ***ati* 'louse'. Sr, Cp, Ls, Ho, Pa, Pi, NT, ST, Tr (?), Cr, Hch, Yq, My, CAZ, To, Za, Po, Pp.
10. ***amol* 'agave', *Agave* spp. Tbl, Cp, Ls, Ca, Pg, Pi, (NT, Tr, Gu, Eu, Yq, My), CAZ, SN.
11. ***k*^{w}*a* 'coyote', *Canis latrans*. Sr, Hp, Pg, Pi, NT, ST, Tr, Yq, My, Cr, Mj, CAZ, To, Za, Po, Pp.

TABLE 2, *continued*

12. ***tapu* 'cottontail', *Sylvilagus* spp. Mn, NP, Sh, Ch, SP, U, K, Tbl, Ca, Hp, Pg, Yq, My.
13. ***tiku* 'squirrel', *Sciurus* spp. Cm, U, Hp, Pg, Pi, NT, ST, My, Tr.
14. ***tipo* 'pocket gopher or "mole"', *Thomomys* spp. NP, Ju, Mn, NT, Tr, My, ST, Pi, Pg.
15. ***k*^{w}*iyo* 'turkey', *Meleagris gallopavo*. Sh, Ch, SP, U, Cm, Hp, Tr (?), My, CAZ.
16. ***k*^{w}*aa*, *k*^{w}*aCa* 'eagle', *Aquila chrysaetos*. SP, U, Tbl, Sr, Hp, Pg, Pi, NT, ST, Cr.
17. ***muhu* 'horned owl', *Bobo virginianus*. NP, Mn, Sh, Pn, Ch, SP, U, K, Tbl, Sr, Cp, Ls, Ca, Hp, My.
18. ***wiku* 'turkey vulture', *Cathartes aura*. NP, Mn, Sh, Pn, Ch, SP, U, K, Tbl, Ga, Hp, Tr, Yq, My, Hch.
19. ***k*^{w}*asa* 'heron', probably *Ardea Herodias*. NP, Mn, Sh, Pn, Tbl, Ls, Tr, Cr, Hch.
20. ***koda* 'sandhill crane', *Grus canadensis*? NP, Mn, Sh, Ch, SP, K, Cp, Ls, Pg, My.
21. ***wici*, *wiki* 'small bird'. Ch, SP, U, K, Tbl, Sr, Pg, Pi, Yq, Hch, My.
22. ***cuutu* 'bird', probably woodpecker. Mn, Ls, Tbl, Hp(?), Tr, Cr, CAZ, To, Za, Pp.
23. ***ayV* 'turtle/tortoise'. Mn, Sh, Ch, SP, U, K, Ca, Ls, Cp, Hp, Hch, CAZ, Po, To, Za, Pp.
24. ***waka* 'frog'. Mn, Sh, Ch, Sp, U, K, Tbl, Sr, Lu, Ca, Tr.
    ***k*^{w}*a* 'frog'. Ch, SP, U, Hp, Pg, NT, Tr, Mj.
25. ***wipo* 'mosquito'. Sh(?), Pn(?), NP, Ch, SP, K, Sr(?), Pg, Tr, My.
26. ***mumu* 'bee'. SP, U, K, Tbl(?), Pg, NT, ST, Tr, Gu, Yq, My.
27. ***tepu* 'flea'. NP, Sh, Pg, NT, ST, Tr, Gu, My, Yq, Cr, Hch, Mj.

With some degree of assurance, all of the above forms can be comfortably and compatibly placed in a mixed woodland/grassland setting, in proximity to montane forests. Eagles prefer mountainous, foothill, canyon, or prairie habitats. Screech owls inhabit woodlands and wooded canyons. Horned owls nest in woodlands and deserts, often choosing abandoned nests of herons. Herons, and particularly great blue herons, prefer brushland along rivers, marshes, and swamps as nesting sites. Cranes favor some of these same localities but also frequent mountain meadows. Turkeys prefer wooded and mountainous locations. Hares and cottontails are found in more open habitats, such as grasslands and brush or shrublands. Coyotes follow hares and cottontails, as well as other lowland and upland prey such as gophers, mice, and frogs. Pine and prickly pears may be found in association or close proximity in many upland zones throughout much of western North America.

Conspicuously absent from the above list is any appreciable representation of "hot desert" flora and fauna (except perhaps for turtle/tortoise). Most species of prickly pears (subgenus *Platyopuntia*) are found at mid-altitude ranges rather than at lower elevations. Several are characteristic of pinyon-juniper woodlands, and sagebrush deserts, and some reach Sierran zones (Benson 1969). Also absent, at least from the

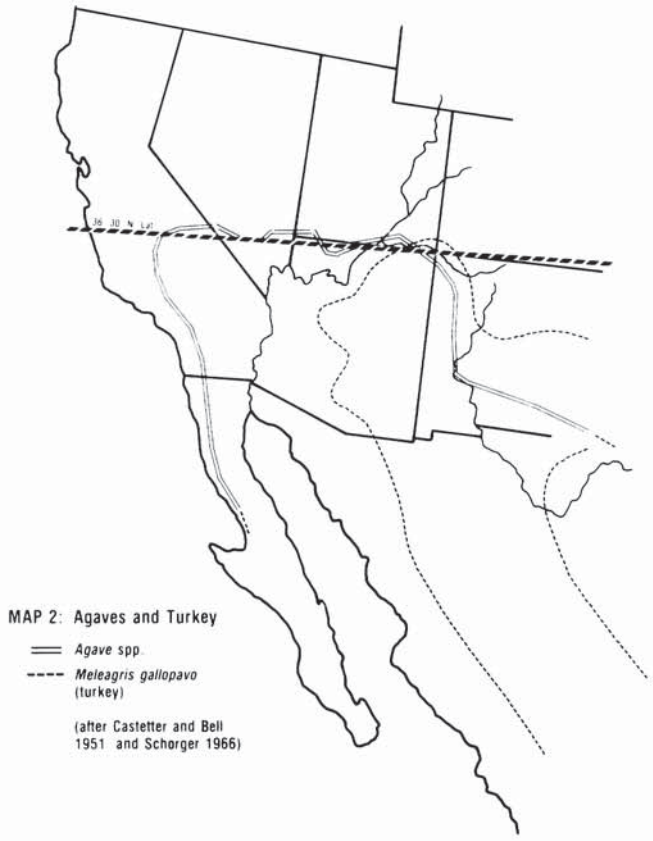
present distributional evidence, are "hot desert" flora such as creosote, mesquite, *Franseria*, palo verdes, ocatillo, additional agaves and yuccas, as well as fauna such as the roadrunner, peccary, cactus wren, etc. (See Shreve and Wiggins 1964 for the floral characteristics of the Sonoran Desert.)[3]

Presuming for the moment that the forms presented can be reconstructed to Proto-Uto-Aztecan, that leaves the maximal unit less than clearly placed geographically. Most of the genera involved range from roughly British Columbia to central and southern Mexico. Prickly pears are actually known from British Columbia to the Straits of Magellan (Britton and Rose 1920:42). However, if we narrow our focus to species concentrations for prickly pears with potentially edible fruits (i.e., the fleshy-fruited *Platyopuntias*), and to wintering, breeding, and nesting grounds for several of the birds, we can probably confine the search for a homeland roughly to woodland and foothill regions south of the Nevada–Idaho border and north of Guatemala. If data on two slightly problematic forms are considered (agave and turkey), the search can again be narrowed.

Bright and Hill (1967) reconstruct for Proto-Cupan a form **amul* 'agave'. This form in turn may be related to Aztec *amol* 'soap plant' or 'agave' (Robinson 1966), and perhaps ultimately to several other forms in Uto-Aztecan for agave. (See Appendix A.) If this form is legitimate, and not the result of some more recent contact phenomenon involving Aztec speakers, or perhaps early Mexican Spanish speakers with Aztec loans (cf. also Hale and Harris 1979 for mention of possible Aztec loanwords in Piman), then we may be able to place at least one species of agave in the potential homeland. The northern boundary for agaves can be placed below 36° 30 north latitude, the boundary in the western United States between "hot" and "cold" deserts. (See map 2.) This would rule out Hopkins's northern homeland as well as all but the Southwestern and north Mexican areas of Goss's proposal. Romney's more delimited upper Gila River area is, however, safely within the agave distributions.

The terms for turkey are similarly intriguing. Campbell and Langacker (1978) reconstruct as Proto-Aztec **tootol-* 'turkey', relating it to several other Uto-Aztecan forms for 'chicken'. Yet the Northern Uto-Aztecan languages all seem to reflect a form like **k*^{w}*iyu*, apparently related to Aztec *huexolote* 'male turkey' (Dibble and Anderson 1963:53). At

[3] Curiously absent as well are pinyons, junipers, and oaks. Although these latter species are represented by cognate forms in several Uto-Aztecan languages, none of the forms involved, with the exception of juniper, bridges the Northern-Uto-Aztecan/Southern Uto-Aztecan gap. Section **4** touches on this fact.



present there is no archaeological basis for placing turkeys in the West north of roughly the same 36° 30 north latitude boundary across southern California through Colorado. (See map 2.)[4] Even southern California localities would be questionable, since the known natural range of the wild species does not definitely extend west of the San Francisco Peaks in northern Arizona (Schorger 1966). However, a rather continuous band of woodland habitat does exist across the upper

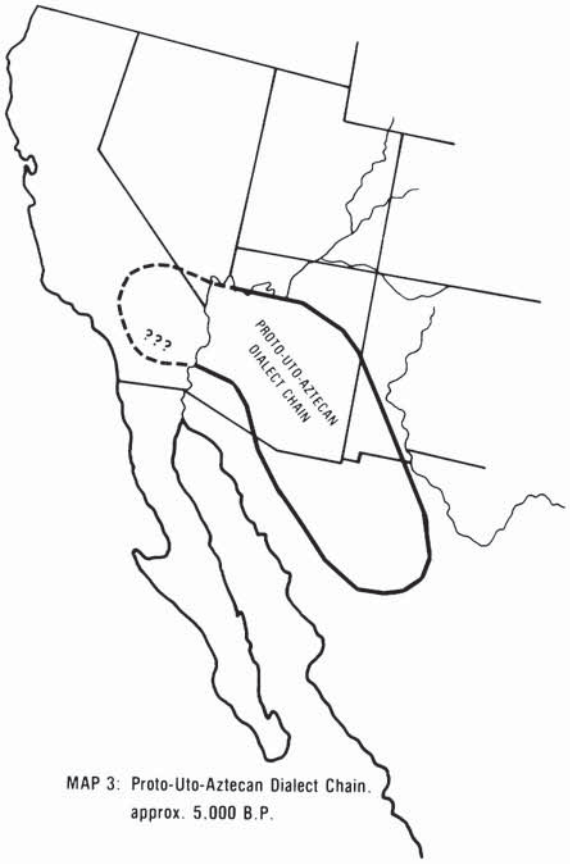
[4] Since the preparation of this article, a new paper on the prehistoric distribution of turkeys in the Southwest has been published (Rea 1980). Based on a reanalysis of turkey remains from numerous Southwestern sites, Rea suggests that the "modern" turkey (*Meleagris gallapovo*) may have been introduced into the region from Mesoamerica as part of a cultivar complex. These data might further call into question the status of Proto-Uto-Aztecan ***k*^{w}*iyu*, unless it can be associated with the early turkey species *M. crassipes*. According to Rea, this turkey persisted until roughly 3300–6600 B.P. in the Southwest. Additional work is required on this problem.

Mojave Desert to the southern Sierra Nevada near the parallel cited above—if some intervening low-lying basins are discounted. Other components on the list would easily be at home in woodland localities across this zone, including particularly Sierran California, the Colorado Plateau, or Sierran Mexico. Again, of the three homeland proposals cited, only Romney's (1957) definitely places the homeland within the known distribution of both agaves and turkeys. However, the focus on the upper Gila River drainage is too narrow for the list here proposed.

Based on these data, then, the Proto-Uto-Aztecan homeland would be in the area presently occupied by Uto-Aztecan speakers, with the exception of the Sonoran, Chihuahuan, and northern Great Basin deserts and the semitropical and tropical areas of Mexico. Furthermore, it is conceivable that most of this area was originally occupied by a continuous distribution of Proto-Uto-Aztecan dialect groups in mixed woodland settings. Map 3 represents these hypotheses. As hunters and gatherers at this early stage, they could easily have maintained some degree of contact in a network or mesh pattern across the area. They would have been characterized by relatively small, mobile, continuously interacting groups. (See also Hale and Harris 1979 and Goss 1977.) It is significant that most Proto-Uto-Aztecan reconstructions also include material items such as the metate (**mata*) and the atlatl (**ʔata*), hallmarks of the Desert Archaic and frequent tool types in much of the Desert West (Miller 1966 and Jennings 1964). Irwin-Williams (1979) has applied the term Oshara Tradition to the Desert Archaic of much of the area proposed, although its distinctive characteristics and distribution are poorly known at present.

4. Northern–Southern split. Assuming a more or less continuous distribution in Proto-Uto-Aztecan times, across the (relatively) wide area in map 3, I turn now to the lexical evidence for later movements. Heath (1977), for example, has recently suggested that Numic, Takic, Tübatulabal, and Hopi form a Northern Uto-Aztecan subfamily, while Campbell and Langacker (1978) place together Pimic, Taracahitic, Corachol, and Aztec in a Southern Uto-Aztecan unit. Careful consideration of the plant and animal lexical data in some ways supports such a differentiation, although gaps in the record make this conclusion tentative.

Items 1–29 in table 3 suggest a geographic break between Northern Uto-Aztecan and Southern Uto-Aztecan languages. On the one hand, each division includes innovations for the same or similar genera and species: note oaks, chia, palm, manzanita, wolf berry, deer, bear, wolf, badger, bat, fish, horned toad, etc. On the other hand, one division may have a well-reflected form and the other lack terms for any comparable



MAP 3: Proto-Uto-Aztecan Dialect Chain.
approx. 5,000 B.P.

genus or species. The terms which are, by and large, exclusive to Northern Uto-Aztecan languages are in table 3, items 30–56. Southern Uto-Aztecan forms without comparable genera or species in Northern Uto-Aztecan are fewer in number and presently less well attested; however, the data upon which comparisons can be made are not as complete. The forms are found in table 3, items 57–70.

Closer examination of these forms also supports a split at some early time between the northern and southern languages. The term for oaks and pinyons are of primary interest; biogeographical data are presented in maps 4 and 5. For both of these biotic forms, a clear break exists between the Northern Uto-Aztecan and the Southern Uto-Aztecan languages. The Northern Uto-Aztecan languages reflect to varying degrees two forms for oak, which I cite here for convenience under their Proto-Cupan (Bright and Hill 1967) forms as **kwini* and **wiʔa*. Southern

TABLE 3

PLANT AND ANIMAL LEXEMES DIFFERENTIATED IN NORTHERN UTO-AZTECAN VERSUS SOUTHERN UTO-AZTECAN LANGUAGES

1. oaks
   NUA: PN **wiya*, **kʷia*; Tbl *winiya*; Hp *kʷi:ŋvi*; PC **wiʔa* (+Sr), **kʷinila* (+Sr).
   SUA: **tua*, Pa, Pi, NT, ST, Tr, Gu, Eu, Cr, Hch. **kaʔal*, Pg, NT.
2. chia
   NUA: PN **pasi*; Tbl *paši:l*; PC **paṣal* (+Sr).
   SUA: Pg *kuʔuvahtE*, Tr *kujubi*.
3. sunflower
   NUA: PN **pakɨ* ~ *ʔakɨ*; Hp *a:qawu*; PC **paʔaq-*(+Sr).
   SUA: Pg *hihawai*, Tr *se-wačari*.
4. palm
   NUA: PC **maxwal*.
   SUA: variously *taku* in ST, Tr, Cr, Hch, Mj.
5. manzanita
   NUA: PC **kəlVl*; PN **tɨmaya*, Tbl *tu:mayu:t*.
   SUA: ST, NT *yoli*; Tr *uwi*, Hch *ʔuupapaari*.
6. mustard (*pesourania* spp.)
   NUA: PN **aca*; Hp *ʔa:sa*; Ca *as-il*.
   SUA: Pg *huʔuvat*; Tr *suavoli*.
7. *Lycium* spp.
   NUA: PN **pici-*, **ici-*; Tbl *piʔis-t*; Ls *ʔɨ:ci-s*.
   SUA: variously *koa-* Pg, Pi, Tr, Cr.
8. agave
   NUA: see table 1, #10 (?); PC **amul*.
   SUA: see table 1, #10 (?); variously *mai*, *me-* in NT, Tr, Gu, Eu, Cr, Hch, CAZ; *cawi*, NT, Tr, Hch; *kuvu*, NT, Hch, My.
9. yucca
   NUA: PC **hunuvat*, **panal*; *kuku*, Tbl, Ca; others in Takic.
   SUA: *hapa*, Pi, NT.
10. bear
    NUA: PC **hunwət*, Hp *ho:nawɨ*, Tbl *ʔu:nal*.
    SUA: **pos*, **poc*, Pi, NT, My, Cr, Hch.
11. deer
    NUA: PN **tɨhi*, Tbl *tohii*, Sr, *tɨiʔ*.
    SUA: **masa*, Pi, Tr(?), Gu, Yq, My, Cr, Hch, Mj, To, Za, Po, Pp.
12. wolf
    NUA: PC **iswət*, Tbl *ist*, Hp *ʔi:sawɨ* (coyote), PN **issa* wolf/coyote.
    SUA: PT **sɨiʔi*, Tr, Cr.
13. dog
    NUA: PN **sadɨ*; **puku* (pet), PN, Hp, Tbl; PC **awal*.
    SUA: PT **go'gosi*, Tr; **cu*, Tr, Gu, Yq, My, Cr, Hch.
14. badger
    NUA: PN **huna*, Tb *ʔu:nal*, Hp *honani*, PC **hunwət* (+Sr).
    SUA: *kaw*, Pg, Pi.
15. gopher
    NUA: PN **mɨyɨ*, Hp *mɨ:yɨ*, PC **məhəta* (+Sr).
    SUA: see table 1, #14.

TABLE 3, *continued*

16. bat
    NUA: PN **paca*, Tbl *paca:wai*, Hp *sawya*.
    SUA: PT *naa'kamɨri*; *sopici*, Tr, My.
17. fox
    NUA: PN **woci?a*, Hp *le:taya*, PC **qawe . . . ic*.
    SUA: PT **ka'sio*, My *ayes*.
18. hawk
    NUA: PN **kini*, Hp *ke:le* + other forms.
    SUA: variously *tobowi*, Pg, NT, ST, Tr, Gu, My.
19. fish
    NUA: PN **kuyu*, PC **kəyul*, Tbl *kuyu-l*, Hp *pa:kiw*.
    SUA: PT *vatopa*, PA **micɨm*.
20. mouse
    NUA: PN **puʔica*, Hp *po:sa*, Ls *paʔa-š*.
    SUA: PT *vo'sɨki*.
21. horned lizard
    NUA: PN **maca*, Hp *maca:k^{w}a*.
    SUA: *cikama*, Pg, Tr.
22. spider
    NUA: *huk^{w}a-* (SN), Hp *ko:kaŋ^{w}*, Ls *xwaxwal*.
    SUA: variously *tuki*, Pa, Tr.
23. scorpion
    NUA: PC **suyila*.
    SUA: PA *kooloo*, PT **na'kasɨrai*; variously *maci*, Tr, Mj.
26. ant
    NUA: PN **ani*, Tb *ʔa:nin*, Hp *a:nɨ*, PC **anVt*.
    SUA: PT **totoni*, PSUA **sika*, PA **ɬiika*.
27. tortoise/turtle
    NUA: PN **koyo*, Tbl *ko:yo-t*, Hp *yöŋösona* (?).
    SUA: Tr *muri*, My *motchic*, Cr *muaarij*.
28. skunk
    NUA: PN **poni*, Tbl *ponihw*, Sr *ponyavat*.
    SUA: PT **ʔuupai*, My *huppa*, Yq *hupa*, Cr, *ʔəpih*, Hch *ʔəpaa*, Mj *epa-t*, Tr *ipa-ka* (M #391c).
29. duck
    NUA: SN *cɨga*, Hp *cɨkɨmana* (mudhead duck).
    SUA: Pa *pahdo*, Cr *puaatu* (M #145).
30. pinyon
    NUA: PN **tɨba*, Tbl *tɨba-t*, Hp *tɨva*, PC **tevat* (Tr: *wiyo*; NT: *pipikami ukui*).
31. ephedra
    NUA: PN **tutu-*, Tbl *uʔtu:dul*, Hp *ösvi*, Ca *tutut*.
32. elderberry
    NUA: PN **kunuki*, Tbl *ku:hupɨ-l*, Ls *ku:ta*.
33. rabbitbrush
    NUA: **sibu-*, Tbl *siba-pul*, Hp *sivapi*.
34. grass
    NUA: a. PN **huki*, Tbl *ʔuugibi-l*; Hp *ho:ki*.
    b. Sh *sihu*; Hp *sɨhɨ*, *PC ɻsamVt* (+Sr).
35. service berry
    NUA: PN **tɨwa*, Hp *tuvavi*, Cp *təwa*.

TABLE 3, *continued*

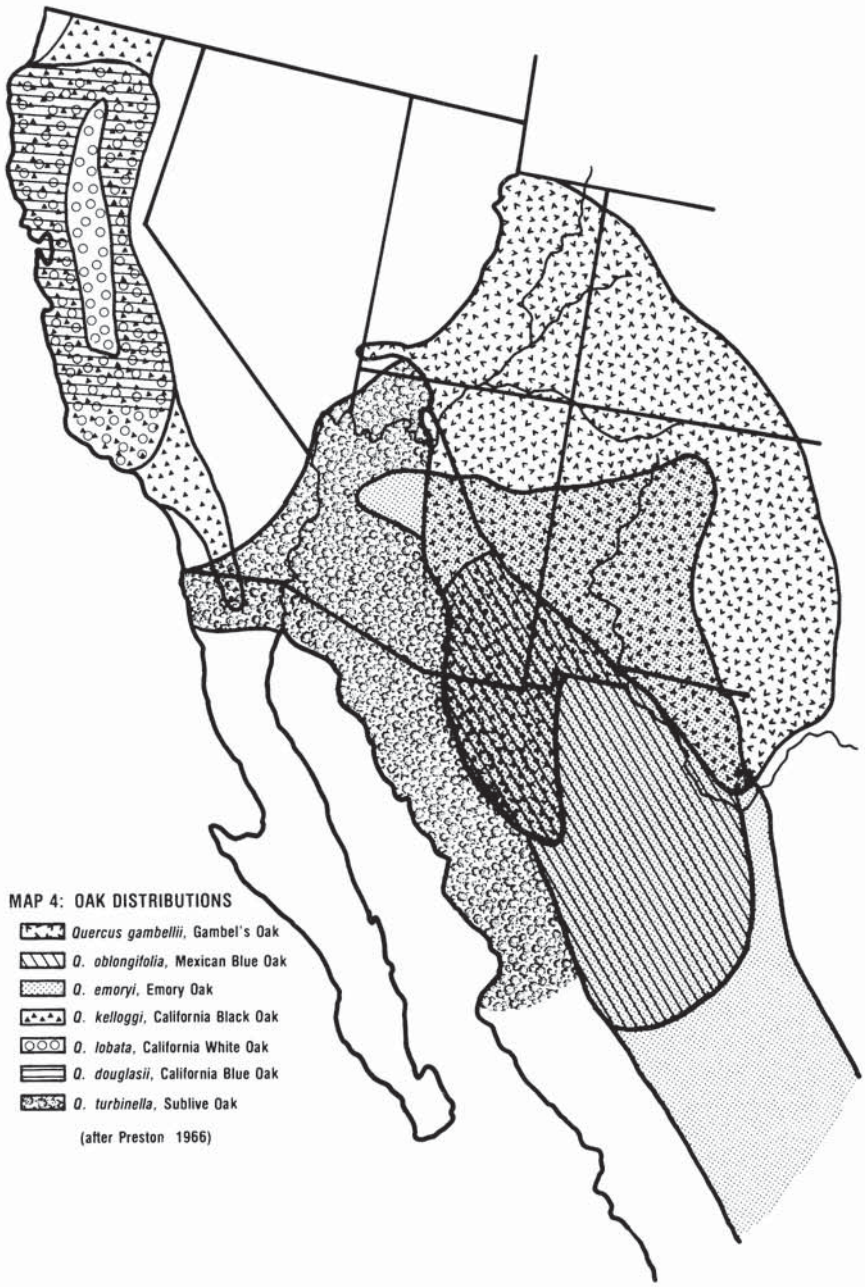
36. cliffrose/bitterbrush
    NUA: PN **hi̶na*, Hp *hu:nvi*, Ls *hun-la*, Ca *henily*.
37. narrow-leafed cottonwood
    NUA: PN **saka*, Tbl *sa:ha-t*, Ls *saxat*.
38. hemp (*Appocynum* sp.)
    NUA: PN **wiha*, PC **wica*.
39. spruce
    NUA: PN **yi̶wi*, PC **yuyila*.
40. biscuitroot
    NUA: PN **tunna*, Hp *tumna*.
41. ricegrass
    NUA: PN **waʔi*, Ph *le:hu*, ? PC **wavic* (foxtail).
42. seepweed
    NUA: PN **wata*, Hp *la:tci*.
43. greasewood
    NUA: PN **tono*, Hp *te:ve*.
44. mentzelia
    NUA: PN **kuʔa*, **kuma*, Tbl *ku:l*.
45. slat grass
    NUA: PN **ti̶si*, Tbl *tu:-t*.
46. Indian potato
    NUA: Pn **yampa*, Tbl *yamba-l*.
47. sego lily
    NUA: PN **sigo*, Tbl *siko:nist*.
48. chipmunk
    NUA: PN **taba*, Tbl *tapa:ya-l*, Ls *tapaš-mal*.
49. bluebird
    NUA: **cai-* (PN), Tbl *ʔa:zayibis-t*, PC **caʔic*.
50. mudhen
    NUA: PN **saya*, Tbl *sa:ya-l*, Ls *sayla*.
51. caterpillar
    NUA: PN **piʔagi̶*, Tbl *piʔagi̶n-t*, Hp *piʔaki̶* (corn worm).
52. squirrel
    NUA: PN **ki̶mpa*, PC **qenic*.
53. grasshopper larvae
    NUA: **woʔa*, Sr *wöʔöh-t*.
54. tick
    NUA: PN **mata*, PC **mac*.
55. porcupine
    NUA: PN **mi̶ha*, Hp *mi̶ŋʷawi̶*.
56. ground squirrel
    NUA: WN **yi̶nazi*, Hp *yi̶nYaya*.
57. oxalis
    SUA: Tr *cokobari*, NT *socoyle*.
58. ash
    SUA: Tr *ure*, CAZ *ilin*.
59. cotton tree
    SUA: Tr *akaba*; NT *jakomali*.
60. acacia
    SUA: Pg *uhpaD*, Pi *o-opat*, NT *uparai*, Hch *ʔʌpa*.

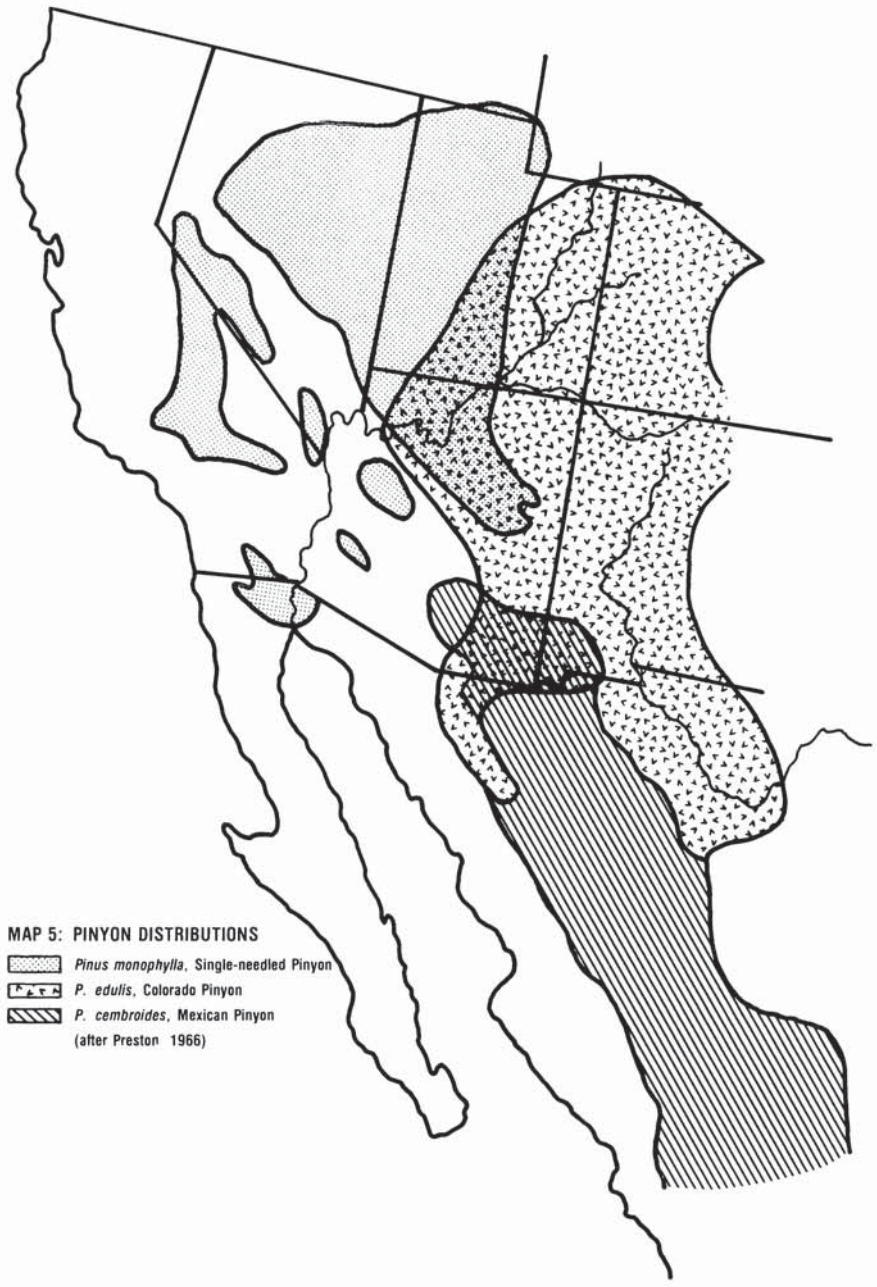
TABLE 3, *continued*

61. fig
SUA: Tr *čuna*, *čanaka*; Pg *suhna*, My *chuuna*.
62. mulberry
SUA: Tr *koi*, Pg *koi*, Hch *koyi*.
63. peyote
SUA: Pg *hikugdag*, Hch *hiikuri*, Tr *hikuri*; NT *ikuli*, Cr *icuri*.
64. prickly pear
SUA: Pg *na:kak*; NT *nakisi*; Cr *naca*; Hch *naakari*.
65. saguaro
SUA: Pg *hacani*, *hahshani*; Pi *harsany*; NT *aasani*.
66. amaranthus
SUA: Pi *kiak*; NT *giagi*; Hch *ge?uza*.
67. peccary
SUA: Pg *kohji*, *gohtci*; Pi *ka-atci*; Tr *gowi*, My *coohui* (Span. *cochino*?).
68. jaguar
SUA: PT **di'dɨvari*; Tr *tuberi*, *tuweri*; Cr *juripuj*.
69. turkey
SUA: PT **tova*; PA **tootol-*, PSUA **totoli*.
70. buzzard
SUA: PT *'nui*; Gu *honoori*.

Uto-Aztecan clearly reflects **tua*, but also has a number of other forms, none of which appears to have a cognate outside that unit (e.g., Pimic *ka?a*, Corachol *siu*, etc.). A term for pinyon pine or pinenut is also strongly reflected in the Northern Uto-Aztecan languages (table 3, no. 30) (Proto-Numic **tɨba*), while counterpart terms in Southern Uto-Aztecan languages seem to be language specific. For example, although the Tarahumara and the Northern Tepehuan collected nuts from *Pinus ayacahuite* as well as other pines, they apparently do not share a term for this or the other species (Tarahumara Northern *wiyo*, Tepehuan *pipikami ukui* 'tree with many spines'—Pennington 1963; 1969). Similar differences are noted for common plants such as chia, sunflower, and palm, and terms for several animals. In addition, the sets that show noncomparable genera in each area suggest sufficient time in situ for each group to explore environmentally distinctive biota. The lists are now also characteristically "northern" (Sierra Nevada to Colorado Plateau) and "southern" (upper Sonoran and Chichuhua deserts to the Mexican Sierra).

Elsewhere (Fowler 1972*b*), I have argued for the geographic contiguity of the Northern Uto-Aztecan languages in the remote past, approximately 3,000+ years ago, and tentatively placed these groups together in the southern Sierra Nevada, where distributions of several species of oaks overlap the distribution of species of pinyon pine. A second center





for these features is also found in southeastern Arizona and northern Sonora. (See maps 4 and 5.) A review of these data in the larger Proto-Uto-Aztecan context has not radically changed my opinion, although if the form for 'turkey' and turkey distributions remain valid, there would be reason to suggest that the movement of at least Proto-Takic, Proto-Numic, and Proto-Tübatulabal to the southern Sierra Nevada may have been slightly later. A good avenue for entry into that region would still have been the Mojave and Amargosa river drainages.

If I were to choose a likely center for the Southern Uto-Aztecan forms (table 3, nos. 57–70), it would be in the Sonoran foothills, perhaps close to Rio Sonora and Rio Yaqui drainages. Distributions of the various trees on the list overlap in this region. As an additional point, both lists, but particularly the southern, also begin to show evidence of lower desert adaptations (e.g., terms for chollas, agaves, yucca, etc.). Various groups may now be spreading into these environments.

If we maintain that there was in Proto-Uto-Aztecan times a continuity in distribution for all languages and dialects, and add the evidence for some type of geographic Northern Uto-Aztecan–Southern Uto-Aztecan split, it seems likely that the language or languages that may have triggered, if not caused, the disruption were Proto-Yuman. Present distributions place them along the Colorado River between Takic, Numic, and Hopi and the Pimic languages to the south. Hale and Harris (1979) also seem to favor such an explanation, although perhaps from a different perspective.

5. Later divisions. Given the evidence of a Northern Uto-Aztecan–Southern Uto-Aztecan geographic split, we can consider, finally, forms in individual language branches, or pairs of branches, that may suggest additional continuities and discontinuities. (Table 4 contains a summary of the data.)

Beginning in the north (cf. also Fowler 1972*b*), the plant and animal vocabulary items that appear to be uniquely Numic seem to show a northward expansion of early Numic dialects into "cold desert" environments. Forms appear for Great Basin wild rye, wild rose, buffalo berry, spiny hopsage, Great Basin goose, several ground squirrels, a new term for jackrabbit, and deer and elk ('water-deer'), as well as a divergent set for mountain sheep and a problematic form for bison. The term for big sagebrush, a ubiquitous cold desert plant, is weakly reflected, with Western and Southern Numic sharing a form and the Central Numic form being different (WN *sawa-*, SN *saŋ^{w}a-*, CN *poho*). These data, as well as archaeological evidence and data from material culture studies (Fowler and Fowler 1981) tend to support Lamb's (1958) hypothesis of a southern California homeland for Proto-Numic with a

TABLE 4

PLANT AND ANIMAL LEXEMES REFLECTED IN SEPARATE UTO-AZTECAN BRANCHES

Numic

1. **toca-* 'Indian balsam', *Lomatium dissectum* var. *multifidum*; NP, Sh, SP.
2. **tuʔu* 'broom rape', *Orobanche fasiculatta*; NP, SH, K, SP, U.
3. **tuna* 'mountain mahogany', *Cercocarpus* spp.; M, NP, Sh, K, SP, U.
4. **kana* 'bitterroot', *Lewisia redivivi*; NP, SH, SP.
5. **kɨnka* 'onion', *Allium acuminatum* (?); NP, Sh, Ch, SP, U.
6. **kanɨ* 'shadscale', *Atriplex confertifolia*; NP, Sh, SP.
7. **huʔu* 'boxthorn', *Lycium andersonii*; M, NP, Pn, Sh, K, SP, U.
8. **ciʔa-* 'wild rose', *Rosa* spp.; M, NP, Sh, K, SP, U.
9. **saŋʷa-* 'sagebrush', *Artemesia tridentata*; M, NP, SP, U.
10. **sɨna-* 'aspen', *Populus tremuloides*; M, NP, Sh, SP, U.
11. **mono* possibly 'dropseed', *Sporobolus* spp.; M, NP, Sh, SP.
12. **waha* 'giant rye' *Elymus condensatus*; M, NP, S, SH, U.
13. **wiʔa-* 'buffalo berry', *Shepherdia argenta*; NP, S, SP, U.
14. **muʔa-* 'onion', probably *Allium pleianthum*; NP, Sh, SP.
15. **tɨʔi* 'deer', *Oceocoilus hemionus*; M, NP, Pn, Sh, Ch, K, SP, U.
16. **kucu* 'bison', *Bison bison* (?); NP, Sh, Ch, SP, U.
17. **wani-* 'gray fox', *Urocyon cinereoargenteus*; NP, Sh, SP.
18. **kammɨ* 'jackrabbit', *Lepus californicus*; M, NP, Sh, K, SP, U.
19. **sɨssɨka* 'weasel', *Mestela frenata*; M, P, K.
20. **kɨmpa* 'ground squirrel', *Spermophilus townsendii*; NP, Sh, SP.
21. **woʔi* 'ground squirrel', *Spermophilus lateralis*; M, NP, S, S, SP.
22. **ekʷɨ* 'ground squirrel', *Spermophilus* sp.; M, NP, Pn, K, U.
23. **yɨpa* 'red fox', *Vulpes fulva* (?); NP, Pn, Sh, SP.
24. **cipi* 'a ground squirrel'; NP, Sh, SP.
25. **nakaʔi* 'marsh hawk', *Circus cyaneus*; NP, S, SP.
26. **nagɨ-* 'goose', *Branta canadensis*; NP, Pn, Sh, K, SP.
27. **hito* 'meadowlark', *Sturnella neglecta*; M, NP, Sh, K, SP.
28. **suku* 'robin', *Turdus migratorius*; M, NP, Sh, SP.
29. **patɨci* 'a water bird'; M, NP, Sh, SP.
30. **kɨʔa* 'locust'; M, NP, Sh, SP.

Takic, including Proto-Cupan (after Bright and Hill 1967)

31. **hulaqala* 'buckwheat'; Ls, Cp, Ca.
32. **cay-* 'mistletoe'; Ls, Cp, Ca.
33. **hunavat* 'Yucca mohavensis'; Ls, Cp, Ca, Sr (?) + **panal* 'Y. whipplei', LS, Cp, Ca.
34. **iyala* 'poison oak'; Ls, Cp, Ca.
35. **kəlVl* 'mansanita'; Ls, Cp, Ca.
36. **mutal* 'cholla cactus'; Ls, Cp, Ca.
37. **nakʷət* 'sumac'; Ls, Cp, Ca.
38. **nexic* 'wild gourd'; Ls, Cp, Ca.
39. **sevela* 'sycamore'; Ls, Cp, Ca, Sr.
40. **səyila* 'reed'; Ls, Cp, Ca.
41. **maxwal* 'palm'; Ls, Cp, Ca.
42. **ʔayamal* 'raccoon'; Ls, Cp, Ca.
43. **mVxel* 'dove'; Ls, Cp, Ca.
44. **tama-wət* 'mockingbird'; Ls, Cp, Ca.

TABLE 4, *continued*

45. **calaka* 'horned toad'; Ls, Cp, Ca, Sr.
46. **səwət* 'rattlesnake'; Ls, Cp, Ca, Sr.
47. **suyila* 'scorpion'; Ls, Cp, Ca.

Pimic, including Proto-Tepiman (after Bascom 1965)
48. **haa'sani* 'tall cactus species'; NT, ST, UP.
49. **ko'okori* 'chili'; NT, ST, UP, LP.
50. **sa'i* 'grass'; ST, UP, LP.
51. **vasoi* 'grass'; NT, UP.
52. **ka'kasio* 'foxes'; NT, ST, UP, LP.
53. **sii'ii* 'wolf'; NT, ST, UP.
54. **'uupai* 'skunk'; NT, ST, UP, LP.
55. **vo'siki* 'mouse'; NT, ST, UP, LP.
56. **naa'kamiri* 'bat'; NT, ST, LP.
57. **nui* 'buzzard'; NT, ST, LP, UP.
58. **to'va* 'turkey'; NT, ST, UP, LP.
59. **ko'konoi* 'crow'; NT, ST, LP, UP.
60. **va'konoi* 'heron'; NT, ST, LP.
61. **na'kasirai* 'scorpion'; NT, ST, UP, LP.
62. **soo'oi* 'grasshopper'; NT, ST, UP, LP.

Aztecic, including Proto-Aztec (after Campbell and Langacker 1978)
63. **aawaka-* 'avocado'; Po, CAZ, To, Za.
64. **saka-* 'grass'; Po, CAZ, To, Za, Pi.
65. **aama-* 'fig' ('paper' *amate*); Po, CAZ, To, Za, Pi.
66. **počoo-* 'silk tree'; Po, CAZ, Pi.
67. **toma-* 'tomato'; Po, CAZ, To, Za, Pi.
68. **ɬapo-* 'zapote'; Po, CAZ, To, Za, Pi.
69. **ɬinaakan* 'bat'; Po, CAZ, To, Za, Pi.
70. **kʷəɬ-* 'iguana'; Po, CAZ, To, Pi.
71. **kooloo-* 'scorpion'; Po, CAZ, To, Za, Pi.

subsequent northward expansion about 1,000 to 1,500 years ago. Instead of Lamb's (1958) postulated Death Valley homeland for the branch, I have suggested a more distinctly Sierran environment, perhaps near Owens Valley (Fowler 1972*b* and Liljeblad 1972).[5]

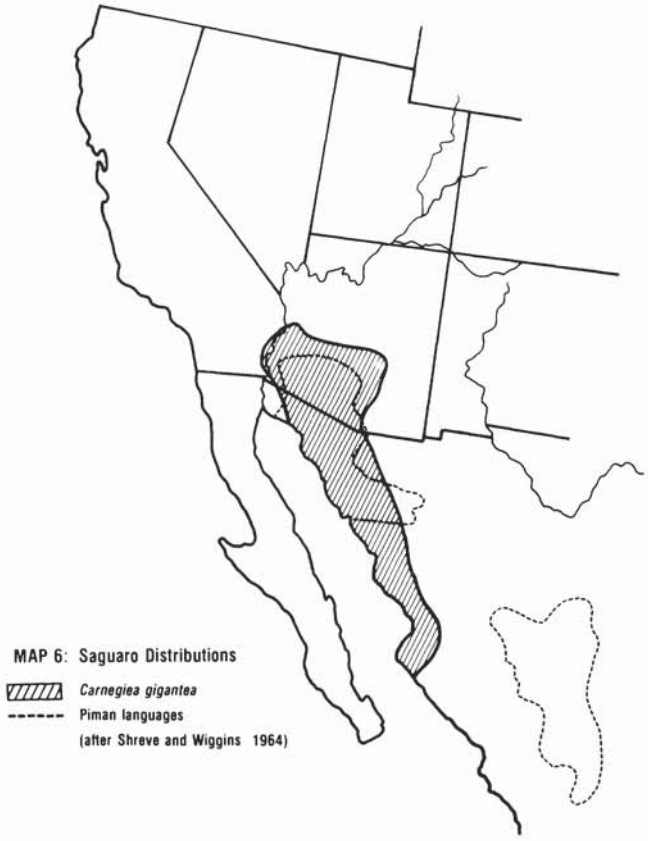
Items 31–47 in table 4 list the forms reconstructed by Bright and Hill (1967) as Proto-Cupan and presently known to occur only in these and other Takic languages. Among them are terms for several Mojave Desert plants: specifically *Yucca mohaviensis, Y. whipplii*, a cholla, sycamore, palm, sumac, and gourd, as well as coyote, rattlesnake,

[5] I might also point out that there is good evidence for two fairly extensive tephra layers from the Mono-Inyo craters dating roughly 750 B.P. and 1200 B.P. (Wood 1977). These events, coupled with other factors such as increased population pressures and drying trends, could have been the impetus for expansion.

scorpion, etc. These in turn seem to reflect the expansion of Takic-speaking groups into the Mojave Desert, perhaps again from a southern Sierran homeland. Although these deserts have a long record of occupation (cf. Wallace 1978), little can be said at this point about correlations between archaeological complexes and either Yuman or Takic groups (but see True 1966 for a review of the matter). Schroeder (1979) links post-A.D. 600 phases of his Hakatayan complex with Yuman but leaves open the question of an Amargosa-to-Hakatayan continuum that would carry the adaptation to the lower Colorado River area back to 3000 B.C. Regardless of whether Proto-Yuman has this much time depth, its point of origin is apparently Baja or southern California rather than elsewhere.

Any discussion of internal diversity and/or separate migrations for the Southern Uto-Aztecan branches or languages is severely hampered by lack of good data. Table 4, items 48–62, gives the few forms that are shared only among the Pimic languages, including Bascom's (1965) reconstructed Proto-Tepiman forms. Bascom gives Proto-Tepiman forms that do not appear to have cognates elsewhere in Uto-Aztecan, such as forms for saguaro, wolf, fox, skunk, mouse, bat, turkey, hummingbird, crow, heron, fish, and scorpion, but none except saguaro is sufficiently well identified or characteristic to warrant further discussion. Nor can any habitat generalizations be made from them, other than that they appear to be generally foothill as opposed to hot desert forms. That the presently discontinuous branches of Pimic share a cognate term for saguaro (in Tepehuan 'tall cactus sp.') is of some interest, however, since the distribution of this species is clearly confined to the Sonoran Desert. (See map 6, after Shreve and Wiggins 1964:148.) The southernmost individuals of the species appear at approximately Cajeme, Sonora, some distance north of present Tepehuan distributions. This seems to suggest that there has been a southward spread of both Northern and Southern Tepehuan out of saguaro habitats, at some time in the not too distant past. The once continuous Pimic distribution is now broken by Tarahumara and Cahitan groups, who have apparently moved toward coastal zones.

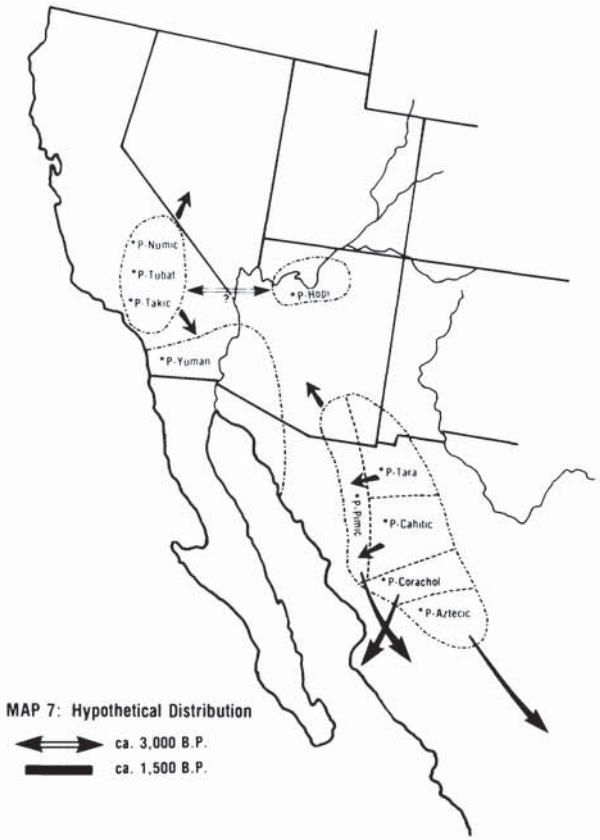
Lastly, the recent reconstructions by Campbell and Langacker (1978) for Proto-Aztec contain some forms of interest to the general discussion. Although the plants and animals represented on their lists are few, the forms present seem to suggest a migration into subtropical floristic zones by speakers of Proto-Aztec. Specific examples of southern flora include: avocado, fig, tomato, zapote, and silk tree (see table 4, nos. 63–71). Of these, only the silk tree has a more northerly distribution. However, it also is referred to by terms that are not cognate with PA



**pocoo*-, Campbell and Langacker's (1978) reconstruction. Proto-Aztec also had a form for the iguana, another semitropical species.[6]

6. Conclusion. The "best bet" for a Proto-Uto-Aztecan homeland, then, appears to be that given in map 3. The data support a Northern Uto-Aztecan–Southern Uto-Aztecan split, as presented in map 7, although there are some forms that bridge the gap and require further

[6] Table 4 contains no lexical information on Hopi and, therefore, I have not discussed their movement from present-day California to present-day Northern Arizona. Just how long the Hopi have been in their present location is not known, although there is archaeological evidence to derive at least some of their population from the Virgin-Kayenta and Winslow regions within the last 700–800 years. (See Euler et al. 1979 for a recent review.) It also appears, based on glottochronological counts, that they separated themselves from their linguistic kin in present-day California quite early, perhaps by roughly 3,000–4,000 years ago (cf. Hale 1958).



investigation and explanation. Whether or not a split is reflected, the flora and fauna seem to suggest the gradual and deeper penetration of various geographically southern languages into central Mexico. They also indicate northward and eastward expansion for the Numic languages, and movements into adjacent deserts by Takic and Pimic groups, as well as what may be a series of movements by various groups in Sonora. All of this is, of course, very speculative; more and better data and more detailed analysis are required. At least in spirit, one must agree with the tenor of Goss's (1977) recent suggestions that, with such matters, there are always some things that we know, some we think we know, some we do not know, and some that we shall probably never know.[7]

[7] The references which follow Appendix A pertain to a much longer version of this paper that also included a section on lexical evidence for the spread of cultigens (corn, beans, squash, cotton).

APPENDIX A

Uto-Aztecan Cognate Sets

(1) ***woko* 'pine', probably *Pinus ponderosa* Dougl.
Mn: *wohwopiɨ* '*P. ponderosa*'; NP: *wogopi* '*P jeffreyi*'; Sh-Pan: *woŋg*^{w}*obe* 'pine'; Sh-Ow: *woŋoˀobi* '*P. flexis*'; K: *wohohara* '*P. ponderosa* (nut)'; Ch: *hogompɨ* 'fir or spruce'; SP: *ogompɨ* '*Pseudotsuga taxifolia*'; U: *ohmp* 'fir'; Tbl: *wohombo.-l* 'bull pine'; Cp: *wəxitit* 'pine'; Ls: *wixeˀtut* '*P. coulteri*'; Ca: *wexet*; Hp: *löqö* '*P. ponderosa*'; Pg: *huk* 'pine'; Pi: *hukɨ* 'pine'; NT: *hukui* '*P. ayacahuite*'; ST: *ˈhuk* 'pine'; Tr: *okoko* '*P. ponderosa*'; Gu: *wohko* 'pine'; Eu: *woko-t* 'pine'; Yq: *woko* 'pine'; My: *wokko* 'pine'; Cr: *huku* 'pine'; Hch: *huku* 'pine'; CAZ: *okotl* 'pine'; To: *oko-* 'pine'; Za: *oko*; P: *ukut*; Po: *okot*. (VV&H #142: **wo*$_{s}$*ko* 'pine'; M #320a, b: **woko*, **hoko* 'pine'; B&H: P-C **wexet-* pine; B: P-T **ˈhukui* 'pine'; C&L #126. 265: P-A **oko-*; ***woko*.)

(2) ***nabu* , 'prickly pear', *subgenus Platyopuntia*.
NP: *nabu* '*O polycantha*'; Sh: *nabombɨ* '*O. basilaris*'; Ch: *navumpɨ* 'prickly pear'; SP: *nabumpɨ* '*O. polycantha*'; U: *nabu* 'prickly pear'; K: *nabɨbɨ* 'cow tongue cactus'; Sr: *na:bəɨt* 'prickly pear'; Cp: *navət* 'prickly pear'; Ls: *na:vu-t* 'prickly pear'; Ca: *navet* '*O. tuna*'; Hp: *na:vu* '*O. hystriciana, O. polyacantha*'; Pg: *nav, nawɨ* 'prickly pear'; Pi: *naw* '*O. engelmanni*'; NT *navoi, nopal*; ST: *nav*; Tr: *napo* '*O.* sp.'; Gu: *napo, nopal*; Eu: *navu-c* 'cactus fruit'; Yq: *naabo*; My: *naabo*; Mj: *nohpaa-l*. (VV&H #16: **na*$_{s}$*pɨ* 'prickly pear'; M #70: **nap*; B&H: P-C **navət* 'prickly pear'; B #169: P-T **ˈnavoi* 'cactus'.)

(3) ***paso* 'a grass sp.'.
SP: *sɨhu* '*Bromus* sp.'; Cp: *səmat* 'grass', *səva* 'grass'; Ls: *ṣa:mut* 'grass'; Ca: *samat* 'grass'; AC: *saval* 'grass'; Sr: *haamət, hammt* 'grass'; Hp: *pashö* 'grass', *söhö* 'plantes grass'; Pg: *vašai, ša*^{ʔ}*i* 'grass'; Pi: *waṣai*; NT: *vasoi*; ST: *ˈsaʔi*/*ˈsaiʔ*; Yq: *baso, basso*; My: *basso*; Cr: *Asaj, zacate*; Hch: *vaza*; CAZ *sakatl*, Po: *seket*; To: *sakatl*; Za: *sakat*; P: *sakat*. (M #204: **(pa)sa*, **(pa-)ca* 'grass'; B&H: P-C **samVt* 'grass'; B #187: **ˈsaʔi* 'grass'; B #262: **ˈvasoi* 'grass'; C&L #72, 237: P-A **saka-*; ***paso* 'grass'.) Data from P-T seem to indicate that there may be two grasses variously represented in these sets.

(4) ***paka*, 'cane or reed', *Phragmites communis* or *Arundo* sp.
Sh: *pagambɨ* '*P. communis*'; Ch: *pagampɨ* '*Arundo* sp.'; SP: *pagampɨ* '*P. communis*'; U: *pagabɨ* '*P. communis*'; K: *pagampɨ* 'cane'; Tb: *pahaˑbɨ-l* '*P. communis*'; Ls: *pacxaya-t* 'bulrush'; Ca: *pakhal* '*P. communis*'; Cu: *paxa* 'arrowweed'; Sr: *paqat* 'reeds'; Hp: *pa:kavi* '*P. communis*'; Pg: *vaapk* 'reeds'; NT: *vajaji* '*Arundo donax*'; Tr: *baca* 'carrizo, and *P. communis*'; Gu: *paka* 'reed'; Cr: *jaca* 'carrizo'; Hch: *haka* 'a grass for arrows'; My: *bacau* 'bamboo'; CAZ: *aakatl* 'reed'; Po: *aket*; To: *ɔkatl*; P: *aakat*. (VV&H #8: **pa*$_{s}$*ka* 'reed'; M #344: **paka* 'reed'; C&L #133, 267: P-A **aaka-*; ***paka*.)

(5) ***k*^{w}*isa*, 'hawk', probably *Accipiter* spp.
Mn: *k*^{w}*išara* 'big hawk'; Ch: *kɨsavɨ* 'hawk'; SP: *kɨsabɨ* 'sennet'; K: *kɨsavɨ* 'bullet hawk'; Cp: *kisi* 'hawk'; Ca: *kisil* 'hawk'; L: *xeče:mal* 'sharp-shinned hawk'; *pa:kiš-la* 'chicken hawk'; Hp: *ki:sa* 'predatory hawk'; Pg: *wishag* 'chicken hawk';

Hch: *kʷizu* 'hawk'; Mj: *kʷiisiniin*, *kʷiišin* 'hawk'; Tr: *kusa* 'hawk'. (M #146b, c: **kʷi*, **ku* 'hawk/eagle'.)

(6) ***tuku*, 'screech owl', *Otus asio*.

Mn: *hutudu* '"blue" owl'; Sh: *tukumbɨ* 'large owl'; SP: *tukupɨci* 'screech owl'; Tb: *tukluluh* 'screech owl'; L: *tukyapa-l* 'screech owl'; Hp: *tokori* 'screech owl'; Pg: *cukuḍ* 'owl'; Pi: *tukur*; NT: *tukurai* 'screech owl'; ST: *tu'kuur* 'owl'; Tr: *tutuguri* 'screech owl'; Co: *tuhpua'ame* 'screech owl'; CAZ: *tekolootl* 'owl'; Po: *tekolot*; P: *tapuwa*; Zo: *tekoloot* 'owl'. (VV&H #105: **tukur(i)*; M #313: **tuku*; B #233: P-T **tu'kurai* 'owl'; C&L #123, 264: P-A **təkoloo-*; ***tɨkul-* [or **tukul-*].)

(7) **kowa* 'snake', possibly rattlesnake.

Mn: *toqohqʷa* 'rattlesnake'; NP: *togogʷa* 'rattlesnake'; Pn: *togowah* 'rattlesnake'; Sh: *togoʔa* 'rattlesnake'; K: *togowa* 'rattlesnake'; SP: *togoabɨ* 'rattlesnake'; U: *togoʔev* 'rattlesnake'; but also Ch: *kogo* 'snake'; SP: *kogompɨci* 'bull snake'; U: *koqʷa* 'bull snake'; K: *kogo* 'gopher snake'; Cp: *gəgənə* 'gopher snake'; *gəgiŋi* 'king snake'; Ls: *qiqiŋ-la* 'king snake'; Pg: *koʔowi* 'rattlesnake'; LP: *'koʔo* 'snake'; NT *koi*, *koyi* 'rattlesnake'; ST *'koʔ* 'snake'; Co: *cuʔucuʔu* 'snake'; My: *baakot* ':snake'; Yq: *baakot* 'snake'; Hch: *kuu* 'snake'; Mj: *kowaa-t* 'snake'; Po: *kuet*; CAZ: *kooaatl*; To: *kowatl*; Zo: *koowaat*; P: *kuwat*, *kuuwat*. (M #395: **ko*, **kowa* 'snake'; B #116: P-T **koʔoi* 'snake'; C&L #153, 275: P-A **koowa-*; ***kowa* 'snake').

(8) ***muu* 'fly'.

Mn: *muipi*; NP: *muibi*; Pn: *muibiya*; Sh: *animui*; K: *muupi-ži*; Ch: *muuitsi*; SP: *moopici*; U: *muwav*; Ls: *kʷaʔa:-l*, *kuʔa:-l* 'fly' (?); Pg: *muuval*; LP: *'muuvil*; NT: *nuuvali*; ST: *'muuvaly*; Mj: *mooyoo-t*: CAZ: *mooyootl*; Po: *moyut*; To: *muyutl*; Zo: *mooyot*; P: *muuyuut*. (M #180: **mu* 'fly (insect)'; B #156: P-T **muu'vari* 'fly'; C&L #65, 232: P-A **mooyoo-* 'fly, mosquito'; ***muu-* 'fly'.)

(9) ***atɨ* 'louse'.

Sr: *ʔačəmpɨc* 'louse'; Cp: *ʔaləʔə* 'head louse'; L: *ʔula:t* 'head louse'; Ju: *olat* 'louse'; AC: *n-ala-m* 'my lice'; Ga: *ni-ar* 'louse'; Hp: *ʔatɨ* 'louse'; Pg: *ahʔach* 'louse'; LP: *'ʔaʔaši-* 'head louse'; NT: *aatɨi* 'head louse'; ST: *ʔa'ʔaat*; TR: *teke* 'louse' (?), also *te*; My: *ettem* 'lice'; Cr: *ate* 'black louse'; Yq: *ʔetem*; Hch: *ʔatee*; CAZ: *atemitl*; Po: *atomt*; To: *atImItl*; P: *atimet*. (VV&H #24: **ʔatɨ* 'louse'; M #269: **ate* 'louse'; B# 309: P-T **ʔa'ʔatɨi* 'head louse'; C&L #103, 251: P-A **atəmV-* 'louse'; ***atɨ(mɨ)*, 'louse').

(10) ***amol* 'agave', *Agave* sp.

Tb: *ʔumu:bɨ-l* '*Yucca brevifolia*'; Cp: *ʔəmul* 'agave'; Ls: *ʔamu:l* '*Agave deserti*'; Ca: *amul* '*A. deserti*'; Sr: *ʔuamut* 'yucca'; Hp: *mo:hu* '*Y. augustifolia*'; Pg: *ʔumug* 'sotol'; *aʔut* 'century plant'; Pi: *aot* 'Agave americana'; Tr. *aweke* '*A. vilmoriniana*, *A. parryi*'; Sierra Nahuat: *amol* 'soap plant'; Cr: *muaij* 'agave'; plus perhaps NT: *mai* 'agave'; Hch: *mahi* 'agave'; Eu: *mei-t* 'agave'; CAZ: *metl* 'agave'; Tr: *meke* '*A. patonii*, *A. schottii*, *A. chihuahuana*, *A. hartmani*'. (M #3: **ma* 'agave'; M #482: **mu*, **(h)umu* 'yucca'; B&H: P-C **ʔamul* 'agave'.)

(11) ***kʷa* 'coyote', *Canis latrans*.

Sr: *wanat*, *wahi* 'coyote'; Hp: *kʷew* 'wolf'; Pg: *ban*; LP: *'ban*; UP: *'banɨ*; NT: *banai*; ST: *ban*; Tr: *basaci*; Cr: *huaabeʔe*; My: *guoʔi*; Mj: *teckwaari*; Yq: *woʔi*; CAZ: *koyootl*; Po: *koyud*; To: *koyutl*; Zo: *koyoot* 'white man'; P: *kuyuut*. (M

#110a, b: *$k^w a$, *wa; B #3: P-T *$'banai$ 'coyote'; C&L #39, 217: P-A *$koyoo$-; **$k^w a$ 'coyote').

(12) **$tapu$ 'cottontail', *Sylvilagus* spp.
Mn: *tabu* 'brush rabbit'; *tapu$^?$* 'small rabbit'; NP: *tabu$^?u$* 'cottontail'; Pn: *tawucI$^?$* 'cottontail'; Sh: *tabu* 'cottontail'; K: *tavuci* 'cottontail'; Ch: *tavuci* 'cottontail'; SP: *tabuci*; Ut: *tavuc*; Tb: *tahpun-t* 'cottontail'; Ca: *tavut*, *tevit-em* 'rabbit'; Hp: *ta:vo* 'cottontail'; Pi: *taapi* '*Lepus arizonas*'; My: *taabu* 'rabbit'; Yq: *baabu* 'rabbit'; Cr: *tatziu$^?u$* 'rabbit' (M #334: 'cottontail').

(13) **$t\dot{\imath}ku$ 'squirrel', *Sciurus* spp. or 'Prairie dog', *Cynomys* spp.
Co: *tʌ$^?$rikuu$^?$* 'prairie dog'; SP: *t̨ikuci* 'squirrel, *Sciurus* sp.' U: *tuc$^?e$* 'prairie dog'; Hp: *t̨ika* 'prairie dog'; LP: *'t̨ikil*; NT: *tuukuli* 'bushy-tailed squirrel'; ST: *'t̨ikul^y*; Tr: *tekamuchi* '*Sciurus* sp.'; My: *teccu* '*Sciurus vulgaris*'. (B #251: P-T **t̨ii'kuri* 'ground squirrel'.)

(14) **$t\dot{\imath}po$ 'pocket gopher or "mole"', *Thomomys* spp.
NP: *t̨ipo* 'pocket gopher'; SP: *tuboci* 'pocket gopher'; Ju: *topo* 'mole'; NT: *tuvoki* 'small black mole'; Tr: *riposi* 'mole, *Scapanus* sp.'; ST: *t̨i'vua*; UP: *'čiwho*; LP: *'t̨ivi*; My: *tebbos* 'mole'. (B #247: P-T **t̨ivoha~i* 'gopher'.)

(15) **$k^w iyo$ 'turkey', *Meleagris gallopovo* (or *M. crassipes*; see n. 1).
Sh: *ko-oi-nit* 'turkey'; Cm: *kuyunii$^?$* 'turkey'; Ch: *kuyuita* 'turkey'; U: *q^{w}iyut* 'turkey'; Hp: *koyoŋo* 'turkey'; Tr: *čiwi(?)*; My: *huijolo*; CAZ: *huexolote* 'male turkey'.

(16) **$k^w aa$, *$k^w aCa$* 'eagle', *Aquila chrysaetos*.
SP: *k^{w}ananci* 'golden eagle'; U: *q^{w}anac* 'eagle'; Ch: *k^{w}anantsitsi* 'hawk sp.'; K: *k^{w}anazi* 'squirrel hawk'; Tb: *waa$^?$a-l* 'hawk'; Sr: *k^{w}aa$^?$-t* 'condor'; L: *k^{w}a$^?$la* 'hawk'; Ca: *k^{w}a$^?$al* 'hawk'; Hp: *k^{w}a:h̨i* 'eagle'; Pg: *ba$^?$ag* 'eagle'; LP: *'ba$^?$ag* 'eagle'; NT: *baagai* 'eagle (turkey-sized)'; ST: *ba'$^?$aa$^?$* 'eagle'; Cr: *cua'ʌra$^?$abe* 'eagle'. (VV&H #49: **k^{w}a* 'eagle'; M #146a: **k^{w}a* 'eagle'; B #5: P-T **ba'$^?$agai* 'eagle'.)

(17) **$muhu$ 'horned owl', *Bobo virginianus*.
Mn: *muhu*; NP: *muhu$^?u$* 'horned owl'; Pn: *mumbič* 'horned owl'; Sh: *mu$^?$umbi* 'horned owl'; K: *muhuci* 'owl'; SP: *muup̨ici* 'horned owl'; Ch: *muhup̨ic̨i* 'horned owl'; U: *mupac* 'horned owl'; Tb: *muhumbiš-t* 'owl'; Cp: *mu:t*; Ls: *mu:ta* 'horned owl'; Ca: *mu:t* 'owl'; Sr: *muupət* 'owl'; Ju: *muut* 'owl'; Ga: *muhut* 'owl'; Hp: *moŋ^{w}į* 'owl'; My: *muu'u* 'owl'. (M #312: **muhu* 'owl'; B&H: P-C **muhuta* 'owl'.)

(18) **$wiku$ 'turkey vulture', *Cathartes aura*.
Mn: *wiho* 'buzzard'; NP: *wiho* 'buzzard'; Pn: *wiyombic* 'buzzard'; Sh: *wikompici* 'buzzard'; K: *wik̨imbaze* 'buzzard'; Ch: *wikump̨ici* 'buzzard'; SP: *wikump̨ici* 'turkey vulture'; U: *wiq^w* 'buzzard'; Tb: *višokombiš-t* 'song of turkey buzzard'; Hp: *wisoko* 'buzzard'; Tr: *wiruku* 'vulture'; Yq: *wiiru* 'vulture'; My: *huiiru* 'vulture'; Hch: *wirəkə* 'vulture'. (M #67: *witu* 'buzzard'.)

(19) **$k^w asa$ 'heron', probably *Ardea herodias*.
Mn: *wakits* 'blue crane'; NP: *wassa* 'great blue heron'; Pn: *wasə* 'crane'; Sh: *wassa* 'heron'; Ch: *k^{w}aanupitsį* 'ibis'; SP: *wasa* 'heron'; Tb: *wa:sa-l* 'gray crane'; Ls: *we:sa-l* 'brant'; *k^{w}ala* 'blue heron'; Tr: *wačoko* 'heron'; Cr: *cuaasu* 'heron'; Hch: *k^{w}aazuu* 'heron'; plus perhaps LP: *'vakin* 'heron'; NT: *vakoni* 'large heron, *A. herodias*'; ST: *va'koon* 'heron'. (M #146a: **k^{w}a* 'eagle'; B #259: P-T **va'konoi~i* 'heron'.)

(20) ****koda** 'sandhill crane'; *Grus canadensis*?
Mn: *kodito* 'sandhill crane'; *kodiʔi* 'sandhill crane'; Sh: *koandata* 'sandhill crane'; K: *koʔota* 'a kind of goose'; Ch: *koʔwata* 'bittern'(?); *tsakora* 'sandhill crane'; SP: *cakoda* 'goose'; *qoca-itoitɨmɨ* 'sandhill crane "gray sloping back"'; Cp: *kərə* 'bird sp., probably a wild goose'; Ls: *qaru:-t* 'sandhill crane'; Pg: *kookoḍ* 'pelican? seagull? crane, heron'; My: *coorou* 'crane, *Ardea grus*'.

(21) ****wici, wiki** 'small bird sp.'.
Ch: *witsiʔitsɨ* 'small birds'; SP: *wicici* 'little birds'; Ut: *wicic* 'bird'; Sh: *wicici* 'sparrow'; Ca: *wikikimal* 'bird'; Tb: *čiki:-t* 'bird'; Sr: *witcit* 'bird'; Hp: *ciro* 'snowbird'; Pg: *kul-wichigam* 'curved-bill thrasher'; Tr: *čipi* 'small bird sp.'; My: *wiikʷit* 'sparrow or small bird'; Yq: *wiikit* 'bird sp.'; Hch: *wiikɨi* 'bird'; plus perhaps Mn: *ciihpa* 'bird (generic)'. (M #40: ***wici, *wiki**.)

(22) ****cuutu** 'bird', probably woodpecker.
Mn: *soroki* 'speckled woodpecker'; Ls: *so:-la* 'California woodpecker'; Tb: *culus-t* 'woodpecker'; Hp: *co:ro* 'bluebird'; Tr: *koraca* 'woodpecker'; *pacoruri* 'woodpecker'; Cr: *curugi* 'woodpecker'; *cuurrkaʔi* 'woodpecker'; CAZ: *tootootl*; To: *tututl*; Zo: *tootoot*; P: *tuutut*. (M #41: *cutu* 'bird'; C&L #15, 204: P-A ***tootoo-**; ****cuutu** 'bird'.)

(23) ****ayV** 'turtle/tortoise'.
Mn: *anya* 'tortoise'; Pn: *anəci* 'tortoise'; Ch: *ai* 'desert turtle'; *ʔaja* 'tortoise'; SP: *aya* 'tortoise'; U: *ayapuc* 'small turtle'; K: *ʔaya* 'turtle'; Cp: *ʔayi* 'desert tortoise'; Ls: *paːʔi-la* 'turtle'; Ca: *ʔayily* 'tortoise'; Hp: *aaya* 'rattle'; Sr: *ay-* 'rattle'; Hch: *ʔaaye* 'turtle'; Po: *ayut*; CAZ: *aayootl*; To: *ɔyutl*; Zo: *aayotoočiin* 'armadillo (turtle rabbit)'; P: *aayuu-cin*. (M #445: ***ʔay** 'turtle'; B&H: P-C ***ʔayily** 'turtle'; C&L #179, 281: P-A ***aayoo** 'turtle'; ****ay-** 'turtle'.)

(24) ****waka** 'frog' and/or ****kʷa** 'frog or toad'.
Mn: *wacaqaʔ* 'frog'; PN: *əgəttə* 'frog'; Sh: *wagaʔniʔa* 'frog'; K: *wogata* 'frog'; Ch: *wagataci* 'frog'; SP: *wahata, wagata* 'frog'; Tb: *waːgaːiš-t* 'frog'; Cp: *waxəcily*; Ls: *waxaawut*; Ca: *waxačily*; Sr: *wakatat* 'frog'; Tr: *ʔawaka* 'frog'; perhaps for ****kʷa**, SP: *pakʷanabi* 'frog'; Ch: *sogovakʷana* 'bullfrog'; U: *sagupaqʷan* 'frog'; Ga: *qʷarava* 'frog'; Ls: *pakʷari-t* 'tadpole'; Hp: *paːkʷa* 'frog'; Pg: *moʔkʷad* 'tadpole'; *baba't* 'frog'; NT: *babadai* 'frog'; Tr: *sakʷa* 'toad'; Mj: *kʷeya, akʷeya* 'toad'; plus perhaps Mn: *kuaiaki* 'frog'. (M #191, 192: ***waka, *kʷa** 'frog'; B&H: P-C ***waxa-** 'frog'.)

(25) ****wɨpo** 'mosquito' (irregular set).
NP: *wɨponaʔa, moponaʔa* 'mosquito'; Pn: *wəwədə* 'mosquito'; Sh: *mopoʔo*; Cm: *muhpooʔ* 'mosquito'; K: *muhuvaavi* 'mosquito'; Ch: *muhuʷavɨ* 'mosquito'; SP: *woponi* 'mosquito'; Sr: *hawaʔawatɨ* 'mosquito' (?); Ls: *lukuʔci-š* 'mosquito' (?); Hp: *wɨːpamcovɨ* 'mosquito'; Pg: *wahmug* 'mosquito'; Tr: *waho*; My: *guooʔo*.

(26) ****mumu** 'bee'.
K: *muukucize* 'hornet'; SP: *siʔimuʔudɨ* 'bumblebee'; U: *piya murap* 'honeybee'; Tb: *toːmoːgal* 'bumblebee (?); Hp: *momo* 'bee'; Pg: *mumuval* 'bee'; NT: *mimiivai* 'wasp'; ST *məməf* 'bee'; Gu: *momoha* 'bee'; My: *muumum* 'bee'; Yq: *mumu*. (M #31: ***mumu, *meme** 'bee'.)

(27) ****tepu** 'flea'.
NP: *poziʔa* 'flea'; Sh: *puziʔa* 'louse'; Pn: *pusiabi* 'flea'; Pg: *chehpsh* 'fleas'; NT: *tapəsi* 'fleas'; ST: *tapəəis* 'flea'; Tr: *ripuci* 'flea'; Gu: *tepuhci* 'flea'; My: *teput*; Yq:

tepuci; Cr: *tepʌHch*, *tepəKV*; Mj: *tekpiinti*. (M #175: **tepu*, **tepucĭ* 'flea'; VV&H #146: $*ti_upu$ 'flea'.)

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