

GRAND CANYON NATURE NOTES



Vol. 8. No. 9.

December, 1933

GRAND CANYON NATURAL HISTORY ASSOCIATION

ADVISORY COUNCIL

Educational Development:

- Dr. John C. Merriam, President Carnegie Institution.
- Dr. Homer LeRoy Shantz, President University of Arizona.
- Dr. Harold S. Colton, Director Museum of Northern Arizona.

Geology:

- Dr. David White, U. S. Geological Survey.
- Mr. Francois E. Matthes, U. S. Geological Survey.

Paleontology:

- Dr. Charles E. Resser, U. S. National Museum.
- Dr. Charles W. Gilmore, U. S. National Museum.

Mammalogy:

- Dr. Vernon Bailey, U. S. Biological Survey.

Ornithology:

- Mrs. Florence M. Bailey, American Ornithological Union.

Herpetology:

- Mr. L. M. Klauber, San Diego Museum of Natural History.

Botany:

- Dr. Forrest Shreve, Desert Laboratory, Carnegie Institution.

Entomology:

- Dr. Frank Lutz, American Museum of Natural History.

Ethnology:

- Dr. Clark Wissler, American Museum of Natural History.

Archaeology:

- Dr. Harold S. Gladwin, Gila Pueblo.
- Mr. Jesse L. Nusbaum, Director Laboratory of Anthropology.

BOARD OF DIRECTORS

- | | |
|-------------------|--------------------|
| Victor Patrosso, | Mrs. E. J. Kirwan, |
| James V. Lloyd, | Emery C. Kolb, |
| Frank C. Spencer, | L. G. Carr, |
| M. R. Tillotson. | |

TREASURER

B. G. Carson, M.D.

EXECUTIVE SECRETARY

Edwin D. McKee, Park Naturalist

GRAND CANYON NATURE NOTES

Volume 8, Number 9

December 1933

Office of National Parks,
Buildings and Reservations
Grand Canyon National Park.

Grand Canyon Natural
History Association

This Publication is issued monthly for the purpose of recording observations and of making known the results of research and scientific investigation in the Grand Canyon region in the fields of natural history, history and related subjects. It is published by the Natural History Association for the Grand Canyon National Park. Membership in this Association is \$1.00 per year and includes a subscription to Nature Notes. Additional Copies of Nature Notes may be obtained at 10¢ each by addressing The Grand Canyon Natural History Association, Grand Canyon, Arizona

M. R. Tillotson,
Superintendent.

Donald Edward McHenry,
Acting Park Naturalist

Table of Contents

Indian Use of the Pinyon Pine in the Grand Canyon Region	Page 217
Ranger Naturalist Louis Schellbach III	
Bibliography.....	Page 226
"A Grand Canyon Pinyon Pine" by Robert G. Satterwhite	Cover Photograph
Other Illustrations by Louis Schellbach III	



Indian Use of the Pinyon Pine in the Grand Canyon Region



By Ranger Naturalist Louis Schellbach III.

THERE can be no doubt that the Pinyon Pine was and still is an important tree in the lives of the native Indians inhabiting the great Southwest which, of course, includes the Indians inhabiting the Grand Canyon region of Arizona.

This statement has been made before, but just how true it is intrigued the writer. Indians have always held an interest for us yet if one does not give thought to some of the general statements made about them, we will find that we have been going through life believing a lot of things that are not true.

One of the many popular fallacies held by white people in regard to Indians is that their diet was almost exclusively a meat diet. Yet if one would do a little investigating into the food of our aboriginal Americans one would soon find that all resident tribes made good and full use of the vegetal products of the region. This it would be found constituted a considerable part of their diet. Not only that, but wherever agriculture could be practiced in a region it was practiced by the Indians.

The Pinyon Pine then became the object for research, and, in addition, the books in the Grand Canyon reference library, upon this subject were consulted. All the references to Pinyon Pine were gathered together for the purpose of determining its importance to the Indians of the region.

One of the first references stumbled upon told of an Indian mother of the Havasupai people instructing her daughter in the ways of life. "When you marry, do not loiter about

Grand Canyon Nature Notes

the house, but bustle around gathering plenty to grind so you will not starve. You should have plenty of corn, pigweed and silé seeds, pinyon nuts, mescal and prickly pear."¹ Here, then, were the principal items in the food supply of the Havasupai Indians of Grand Canyon, and the only tree mentioned was the Pinyon Pine. Meat was not mentioned.

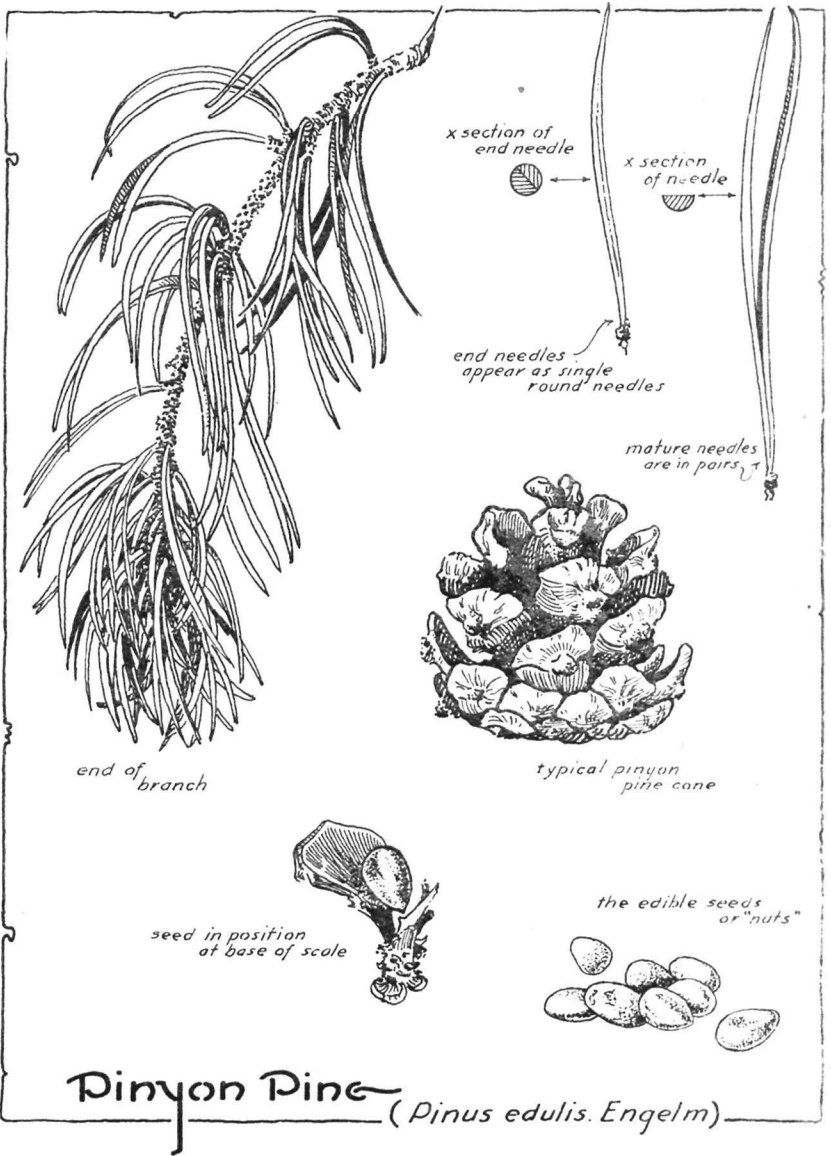
This tree has the scientific name of *Pinus edulis*, Engelm., and is known throughout the Southwest as the Pinyon Pine. It is the dominant tree on the South Rim of Grand Canyon and extends for about a thousand feet below the Canyon rim. Pinyon Pine is also found in a few places on the North Rim. It is the characteristic tree of the Upper Sonoran Zone.

To identify it one need only remember that the needles of all pine trees grow in bundles. The Pinyon Pine has only two needles to a bundle and they are short. This, coupled with the stunted appearance of the tree, and, as a rule, its association with the juniper or "cedar" tree in the same zone make its identification easy. The cones are about the length of the needles and about as broad as they are long. Between the scales of the cone are the nut-like edible seeds. When ripe the seeds are large and have a very thin shell covering. These seeds are called "pine nuts" or "pinyon nuts" and on some news stands, "Indian Nuts."²

The meats of this pinyon nut evidently were highly prized by the ancients in this region as well as by the present day Indians. Today it is considered a delicacy not only by Indians and Mexicans but by the white people as well.³ We find also that the squirrels, birds and rodents are fond of the nuts, and that unwittingly they help the Indians in harvesting the crop. The rats gather the nuts and store them away in their storehouses for the winter. The Indian, ever wise in the ways of the creatures about him finds the storehouses and loots them. There is, however, one thing he does not do, and that is to take the entire store of food from the rats. He will always leave some to tide them over the winter.

1. Spier, 1928, p. 322
2. Sturdevant, 1926, p. 1

3. Robinson, 1928, p. 295



It is interesting to note that the Navaho chiefs valued the Pinyon Pine when they tried to impress the officials at Bosque Redondo in 1863. In making a plea to be returned to their country, Anton C. Damon quotes them as saying: "--then the chiefs began to brag up their own country. When they planted wheat there were two heads on every stalk. They planted potatoes as big as marbles and they grew as big as a man's head. The pinyon nuts grew so thick on the trees that they could fill a wagon in one spot. If he (Gen. Sherman) would let them go back to their own country they would never steal or kill people again."⁴ So the Navahos valued the pinyon also. And again we find no mention of meat.

The Santa Clara Indians of New Mexico believe that the Pinyon Pine is the oldest of all trees and the nuts the first food of the people.⁵

The nuts of the Pinyon Pine became a source of trade among tribes. With the Havasupais, it was an item of trade with the Hopi who live to the East.⁶ The Navahos sell the pinyon nuts to the people of Hano pueblo as well as to those of the Jamez and the Keresan pueblos. Indian store-keepers carry them for sale.⁷ Indians also buy them from the Mexican peddlers, while what the Zuni Indians do not gather for themselves they secure from the Navahos.⁸

We know that the Pinyon Pine was important to the pre-historic peoples for many specimens of the nuts and objects made of pinyon wood and its gum have been found associated with the remains of man in caves and rockshelters as well as in ruins of the region. M. R. Harrington reports Pinyon Pine nuts found in Gypsum Cave, Nevada.⁹ Neil M. Judd reports them found in ruins north of the Rio Colorado.¹⁰ Pinyon nuts have been found associated with Basket Maker remains. The Basket Makers were the people occupying the region prior to the Pueblo peoples, before the time of Christ.¹¹

4. Coolidge, 1930, p. 29

5. Robbins, 1916, p. 41

6. Spier, 1928, p. 244

7. Robbins, 1916, p. 41

8. Stevenson, 1915, p. 70

9. Harrington, 1933, p. 194

10. Judd, 1926, p. 150

11. Kidder & Guernsey, 1919, 156

The tree was used architecturally, for we find that posts of Pinyon Pine were used by the Basket Makers. It was used also by ancient pueblos in pit-house and earth lodge construction as roof supports. Smaller timbers, two and a half inches in diameter, were set on end in the form of a palisade to form the sides of walls.¹² The wood is used extensively by the modern Hopis in house construction.¹³ It is an excellent fire-wood and is much used as such wherever it grows.¹⁴

Of all its uses, however, none is as important as the use of its seeds as food. The nuts are gathered in great quantities and stored for winter use by all the natives of the region. They constitute one of the choicest of their foods. We find them used as food by the Zuni,¹⁵ the Navaho,¹⁶ the Havasupai,¹⁷ the Yavapai,¹⁸ the Paiute,¹⁹ and by the Tewa Pueblos, consisting of the pueblo villages of San Ildefonso, San Juan, Santa Clara Nambe, Tesuque of New Mexico, the village of Hano in the Hopi country of Arizona,²⁰ and the Yumas.²¹

The Indians of the region, as a rule, make quite a picnic of pinyon nut gathering. It is, nevertheless, a serious matter, and, although there is much banter and fun, a great deal is accomplished. Different tribes use different methods of gathering the nuts.²² Fallen nuts are gathered from the ground or the ripe cones gathered from the trees and the nuts removed. Green cones at times are gathered and heated in a fire to open them. They are then pounded with stones to loosen the nuts which are found at the base of the scales of the cone.²³⁻²⁴

From autumn until spring the Havasupai peoples dwell on the South Rim and Plateau of the Grand Canyon. In the fall, families go off to places where pinyon nuts have been reported plentiful.²⁵

12. Hargrave, 1933, p. 29-32

13. Mead, 1930, p. 74

14. Robbins, 1916, p. 41

15. Stevenson, 1915, p. 70

16. Redburn, 1931, p. 125

17. Spier, 1928, p. 105

18. Gifford, 1932, p. 208

19. Hodge, 1910, p. 188

20. Robbins, 1916, p. 41

21. Hodge, 1910, p. 1011

22. Spier, 1928, p. 108

23. Gifford, 1932, p. 208

24. Robbins, 1916, p. 41

25. Spier, 1928, p. 105

Grand Canyon Nature Notes

The gathering of the Pinyon nut crop may sometimes become a hazardous undertaking. The reader may recall that a few years ago some Navaho Indians were caught in a blizzard while harvesting the nuts. Being thus isolated, they were without adequate food supply and protection against the elements. The people of the nation became much concerned about them. The newspapers gave quite a bit of space to the matter and the Federal Government sent airplanes in search of these Indians. When they were discovered, the planes dropped food to them so that they might not perish.

As to the preparation of the pinyon nuts for food, we find several different methods practiced. Briefly, the Havasupai Indians parch and grind the nuts without removing the shells. The resulting paste is spread on bread and eaten at once since it could not be stored.²⁶ The nuts are also ground without parching and made into a gruel. The Yavapai Indians follow much the same procedure and, in addition, sometimes shell the nuts and eat them.²⁷ The Navahos also grind the nuts into a paste and use it like butter.²⁸

It is believed that parching or toasting improves the flavor of the nut meat. This is true, but there is another reason for parching; the nuts are better preserved.²⁹ It seems to the writer that he has heard that the nut meats are sometimes ground into a meal and then baked into cakes by some peoples. No confirmation of this, however, has been found in the authorities so far consulted.

Of the other uses made of the Pinyon Pine by the American aborigines of the Southwest we find that the wood was sometimes employed by the Havasupai people in making handles for a special hatchet, sometimes called a mescal knife. These were made of stone and now, of course, are made of iron. This special tool was used to trim off the green portion of the leaves of the mescal plant (*Agave utahensis*) in preparing it for roasting in stone pits. The handle was held fast to the blade by the use of lashings and pinyon pitch.³⁰

26. Spier, 1928, p. 108-127

27. Gifford, 1932, p. 209

28. Redburn, 1931, p. 125

29. Stevenson, 1915, p. 70

30. Spier, 1928, p. 105

In collecting information on adhesives or glue used by the Indians, it is found that the authorities differ in the names they use for the sticky exudation found on the pinyon pine trees. Sometimes it is referred to as resin, then again as pitch and also as gum. It seems that any one of these three names would apply sufficiently.

As an adhesive or glue, the pinyon gum is used in many ways. It was the principal adhesive of the Yavapai.³¹ They employed it to fasten the wooden handles to their gourd rattles.³² Gifford does not definitely specify pinyon pitch, calling the adhesive pine pitch. The writer assumes that it is the pitch of the pinyon pine.

The Havasupai Indians cap their mescal fiber hair brushes with buckskin held in place by pinyon pitch and lashed with a thong.³³

The people at the Hano pueblo use the resin of the pinyon for the mending of cracked water-jars.³⁴

The Hopi use the pinyon gum as a binder in making the green paint used for painting their katchina dolls. The gum is boiled in water and ground copper added. The water is then poured off and the residue allowed to cool. When dry, the mass is kneaded and pulled, then made up into small balls for future use.

Probably one of the principal uses of the Pinyon Pine gum is that of waterproofing. The Havasupai Indians apply a heavy coating of pinyon pitch to their basketry water bottles as well as a yucca or soapweed paste. They gather the clear gum from the bark and boil it for several minutes until it takes on a dark brown color. It is then ready for waterproofing the basket. The pitch, after hardening, does not run or soften to any extent when exposed to the sun.³⁵ The writer has seen pitched basketry water bottles in use among the Paiute Indians of southern Nevada.

31. Gifford, 1932, p. 222

34. Robbins, 1916, p. 41

32. Gifford, 1932, p. 230

35. Spier, 1928, p. 133

33. Spier, 1928, p. 193

Grand Canyon Nature Notes

When preparing it for use in coating their basketry bottles the Yavapai gather their supply of pinyon pitch in a mesquite stem bowl.³⁶ Their method of applying the pitch to the baskets is somewhat similar to the Havasupai, differing in a few minor details only. Rubbing pulverized cedar (juniper) leaves mixed with water and at times adding red clay over the basket before applying the pitch, is one of these details.³⁷ Another use to which the pitch of the Pinyon Pine is put by the Havasupai is coating liberally the wrappings on their cradle boards.³⁸ The Pueblo Indians of Hano smear pinyon pitch over their earthenware canteens to make them watertight.³⁹

We must not overlook the medical practices of the Indians in which the Pinyon Pine has a part. The Havasupai Indians use clear white pinyon pitch spread on a handful of plucked rabbit fur or on a piece of cloth and apply it to a wound as an antiseptic.⁴⁰ The Zuni Indians do the same except that the pinyon gum is ground into powder and applied directly to the wound.⁴¹ The Pueblo Indians of Hano also use the pitch of the Pinyon Pine for excluding the air from cuts and sores.⁴² The Havasupai Indians use the pitch for filling the cavity of an aching tooth and then they rinse the mouth with cold water.⁴³

Among the Zuni Indians the needles of the Pinyon Pine are chewed and swallowed as a medicine for the cure of syphilis. Frequently a tea is made of the twigs and drunk warm in conjunction with the needles. Ulcers are treated by sprinkling powdered pinyon gum over them. If there is a swelling, it is lanced and the powdered gum sprinkled into the incision as an antiseptic.⁴⁴

Ceremonially the Pinyon Pine also enters the picture. If they desire female children, the Sword Swallower order of the Zuni Indians eat the young buds or shoots at the close of a ceremony.⁴⁵

36. Gifford, 1932, p. 208

37. Gifford, 1932, p. 219

38. Spier, 1928, p. 302

39. Robbins, 1916, p. 41

40. Spier, 1928, p. 284

41. Stevenson, 1915, p. 42

42. Robbins, 1916, p. 41

43. Spier, 1928, p. 285

44. Stevenson, 1915, p. 57

45. Stevenson, 1915, p. 96

The Hopi Indians, upon returning from burying the dead, bring a priest with them to the house. He proceeds to burn pinyon branches in the fireplace and sprinkles sacred meal around the room for purification purposes.⁴⁶

Among the Navaho Indians we find that the leader of the Yebetchi or Nine Day Night Chant directs the song and dance with a pinyon branch baton.⁴⁷

The Havasupai word KOKUMÁ or BOKUMÁ means "to eat pinyon nuts." It is derived from the word KO' or BO' meaning "pinyon tree or nut." This word "KOKUMÁ" is a usual female name among the Havasupai.⁴⁸

This paper does not attempt to cover the entire range of use of the Pinyon Pine. Time, lack of space and an inadequate reference library has limited the amount of material that could be assembled. It is hoped however that further references will be gathered and placed on file with the idea of establishing records of the use of plants found growing within the Grand Canyon National Park boundaries as an aid to the public in line with the work carried on at the Wayside Museum of Archaeology.

Papers in preparation are to be on the "cedar" or Juniper tree (*Juniper utahensis*), the Yucca plant, both the broad leafed and the narrow leafed species and the Century Plant or Mescal.

From this brief paper and the authorities cited one can readily understand why the Pinyon Pine (*Pinus edulis*) is considered a highly important tree by the aborigines and by the present day Indians of this region.

46. Smith, 1931, p. 135

48. Spier, 1928, p. 315

47. Smith, 1931, p. 244



BIBLIOGRAPHY

- Coolidge, Mary R. and Dane
The Navajo Indians
Houghton Mifflin Co., New York, 1930.
- Gifford, E. W.
The Southeastern Yavapai
Univ. of California Publications, Vol. 29, No. 3.
Berkeley, Cal. 1932.
- Hargrave, L. L.
Houses of the San Francisco Mountains, Arizona
Museum of Northern Arizona, Bulletin No. 4.
Flagstaff, Arizona. 1933.
- Harrington, M. R.
Gypsum Cave Report
Southwest Museum Papers No. 8.
Los Angeles, Cal. 1933.
- Hodge, Frederick W.
Handbook of American Indians,
Bureau of American Ethnology, Bulletin 30 Vol. 2.
Washington, D. C., 1910.
- Judd, Neil M.
Archaeological Observations North of the Rio Colorado.
Bureau of American Ethnology, Bulletin 82.
Washington, D. C. 1926.
- Kidder, A. V. and Guernsey, S. J.
Archaeological Explorations in Northeastern Arizona,
Bureau of American Ethnology, Bulletin 65.
Washington, D. C. 1919.
- Mead, Pauline,
Some Grand Canyon Plants and Their Uses,
Grand Canyon Nature Notes, Vol. 4, No. 11.
Grand Canyon, Arizona, 1930.

- Redburn, R. A.
Pinyon Pine Nuts
Grand Canyon Nature Notes, Vol. 5, No. 12,
Grand Canyon, Arizona, 1931.
- Robbins, W. W., Harrington, J. P., and Freire-Marrico, B.
Ethnobotany of the Tewa Indians.
Bureau of American Ethnology, Bulletin 55.
Washington, D. C. 1916.
- Roberts, Frank H. H.
The Ruins of Kiatuthlanna,
Bureau of American Ethnology, Bulletin 100,
Washington, D. C. 1931.
- Robinson, W. H.
Under Turquoise Skies,
MacMillan Company,
New York, 1928.
- Smith, Mrs. White Mountain (Dama M.)
Hopi Girl,
Stanford University Press
Stanford, Cal. 1931.
- Spier, Leslie,
Havasupai Ethnography
Anthropological Papers, Vol. 29, Part 3.
American Museum of Natural History.
New York, 1928.
- Stevenson, Matilda Coxé,
The Zuni Indians
Bureau of American Ethnology, 23rd Annual Report.
Washington, D. C. 1904
Ethnobotany of the Zuni Indians,
Bureau of American Ethnology, 30th Annual Report.
Washington, D. C. 1915.
- Sturdevant, G. E.
Pinyon Pine,
Grand Canyon Nature Notes, Vol 1, Nos. 3 and 4.
Grand Canyon, Arizona, 1926.



