

PRELIMINARY EVALUATION
OF THE
BIOTA
OF THE
LAVA TUBE SYSTEMS
OF
EL MALPAIS NATIONAL MONUMENT

The biota of El Malpais' lava tubes cannot be considered in depth in this report. The inventory was required to cover too much ground in too short a period of time to consider the biota of the lava tubes in any kind of depth. However, in the following a brief inventory reconnaissance will be presented that suggests areas that the consultant believes are of special interest.

VERTEBRATES:

Excepting wood rats, mice, and related rodents, and an occasional raven or owl, vertebrates are not commonly encountered in the lava tubes. However, there are three important exceptions:

BIGHORN SHEEP: two (2) complete bighorn sheep skulls and one (1) horn were located in the Bandera lava tube system at Bighorn Bridge (AC 13), Outlaw Cave (OT 70), and Bighorn Sheep Trap (AC 17) respectively. The discovery of these skulls and the horn is believed to constitute proof positive that bighorn sheep (Ovis canadensis) inhabited El Malpais and at least the Bandera tube system up to the end of the 19th or the beginning the 20th century. Indeed, because bighorn sheep skulls were present in association with Native American artifacts in Alton Lindsey (La Manchia) Cave when the cave's ice wall was opened by David Candelaria (circa 1953), it is the belief of the consultant that one of the major reasons Native American peoples consistently frequented El Malpais was to hunt bighorn sheep. This hypothesis would be strengthened if the structure at the entrance to Bighorn Bridge (AC17) proves in fact to be a bighorn sheep trap.

It appears certain that bighorn sheep were resident in El Malpais as recently as 75 to 100 years ago. Therefore, it is recommended that a study be conducted to determine whether El Malpais' existing habitat can support the reintroduction of this animal. If the study indicates bighorn sheep can be maintained in El Malpais, a reintroduction program should be initiated at the earliest feasible time.

ICE CAVE BIRD: this is the nickname given what is believed to be the small flycatcher Empidonax hammondi or Hammond's flycatcher. This bird was consistently observed near or in the entrances to virtually all large ice caves as well as most large

"cold" caves from June through early August. Further, the bird was observed sitting on a nest in the entrance to Alton Lindsey (La Manchia) Cave with a recorded early July air temperature at the nest of 42 degrees Fahrenheit. This was the only bird observed during the inventory that displayed a marked propensity for seeking cold cave habitats.

The ice cave bird is believed to be Hammond's flycatcher as opposed to other Empidonax because: 1) Hammond's is known to breed in New Mexico only at high elevations in the northern part of the state where summer temperatures might approach those of the entrance to Alton Lindsey Cave; and 2) because of Hammond's obsessive propensity to flick its tail immediately upon perching, which was an observed habit of the ice cave bird.

Say's Phoebe was mentioned as a possible identification for the ice cave bird. However, the coloration of Say's is wrong and it lacks a white eye ring. Another possible identification mentioned was a species of vireo. Although several species of vireo have white eye rings, this species does not have a flycatcher crest. Further, vireos do not catch insects on the wing but rather pick crawling insects from the foliage of trees. Since the ice cave bird was observed to both have a crest and to take insects on the wing, a vireo is not considered the likely identification.

Repeated efforts to photograph the ice cave bird with a 300mm telephoto lens failed. The photographs that were taken with a 105 mm lens clearly showed a white eye ring, white wing bars, olive-brown back and pale yellow belly. When one adds to these characteristics the obsessive tail flicking upon perching, flycatching, size, and cold site habitat preference, Hammond's Flycatcher appears the most likely candidate. However, this conclusion is considered preliminary due to the difficulty of identifying Empidonax and until a good photographic record can be established.

BAT COLONIES: three (3) bat colonies were located during the inventory. The largest and most significant of these, Caulderon Bat Cave (EC-58), was previously known. The species at this cave is Tadarida brasiliensis mexicana. The size of the colony is known to have plunged from a reported 2,000,000-3,000,000 (source: Dr. Alton Lindsey) in circa 1952 to an estimated 50,000 today. The cause of the population crash was guano mining in circa 1952 and thirty-five years of casual visitor entry into the cave and disturbance of the maternal colony.

The other two colonies are located in warm caves on the Bandera tube system at west end of Anasazi Cave (AC-17) and at Outlaw Cave (OT-40). The colonies are not large (200 to 300 individuals); positive species identification was not made.

Species
List
of
Plants
Commonly Associated
with the
Lava Tube Systems
of
El Malpais
National Monument

Scientific Name

Common Name(s)

LOCATION: cave roofs or on floor of collapse structures

Arabis fendleri

Boutelia gracilis

Blue gramma

Castilleja integra

Chrysopsis hispida

Fallugia paradoxa

Apache plume

Forestiera neomexicana

New Mexico Forestiera

Geranium fremonti

Juniperus scopulorum

Rocky Mountain Juniper

Pentstemon tricander

Physocarpus monogyrus

Mountain Ninebark

Pinus ponderosa

Ponderosa pine

Populus tremuloides

Quaking aspen

Pseudotsuga taxifolia

Douglas fir

Rhus trilobata var.
anisophylla

Squawbush

Ribes cereum

Gooseberry

Sitanion hystrix

LOCATION: in cave entrances

<u>Acarospora evoluta</u>	yellow lichen
<u>Amblystegiella sprucei</u>	moss
<u>Anaptychia mexicana</u>	lichen
<u>Brachythecium collinum</u>	moss
<u>Ceratodon purpureus</u>	moss
<u>Cheilanthes feei</u>	fern
<u>Dicranum rhabdocartum</u>	moss
<u>Drepanocladus uncinatus</u>	moss
<u>Gasparrinia elegans</u> var. <u>brachyloba</u>	orange lichen
<u>Hypnum cupressiforme</u>	moss
<u>Hypnum revolutum</u>	moss
<u>Homomallium incurvatum</u>	arctic alpine moss
<u>Marchantia polymorpha</u>	liverwort
<u>Mnium arizonicum</u>	moss
<u>Neckera neomexicana</u>	moss
<u>Orthotrichum anomalum</u>	moss
<u>Pteridium aquilinum</u>	bracken fern
<u>Pseudoleskea arizonae</u>	moss
<u>Paraleucobryum enerve</u>	moss
<u>P. longifolium</u>	moss
<u>Parmelia canina</u>	lichen
<u>P. coloradensis</u>	lichen

<u>Peltigera canina</u>	lichen
<u>Physcia pulverulenta</u>	lichen
<u>Pohlia wahlenbergii</u>	moss
<u>P. cruda</u>	moss
<u>Protococcus viridis</u>	green algae
<u>Reboulia hemisphaerica</u>	liverwort
<u>Sphaerella lacustris</u>	green algae
<u>Stichococcus bacillaris</u>	green algae
<u>S. subtilis</u>	green algae
<u>Tortula ruralis</u>	moss
<u>Tortella tortuosa</u>	moss

The above plant species list was compiled from Dr. Alton Lindsey's "Vegetation and Habitats in a Southwestern Volcanic Area" (1951). This work is the most comprehensive available on the vegetation and ecology of El Malpais lava tube systems and associated resources. However, Dr. Lindsey studied only the northern two miles of the Bandera tube system and apparently was not aware of the extensive cave system that extends for at least another twelve miles south and east. The consultant has no doubt that the above plant species list, but especially as it relates to mosses, ferns, lichens and associated species, will be considerably lengthened as research is extended into, for example, Outlaw and Chantry Caves --the existence of which were not even rumored until this inventory.

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