A Preliminary Report on the Invertebrate Animals of Wild Woman Cave

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Location and Description of the Cave

Wild Woman Cave is located eight miles northwest of Springer, Oklahoma, in the Arbuckle Mountain Uplift. The entrance to the cave is through a small sink-hole in the W½ SW¼ NW¼ SW¼ Sect. 32S, R1E, T2S in Murray County, Oklahoma. The elevation at the entrance is approximately 1200 feet above sea level.

This cave developed in the Arbuckle Limestone in the Cool Creek Formation (Lower Ordovician and Upper and Middle Cambrian) and is a part of an extensive underground drainage system.

The entrance passage winds down to the floor of the cave 100 feet below. Here it joins Jim's Passage which runs southwest and northeast.

The southwest arm of Jim's Passage extends 3600 feet. At a point 1500 feet along Jim's Passage, the South Passage branches off in a general southerly direction and extends for 1800 feet. This South Passage is wet and muddy and is the most difficult one in the cave to explore.

The northeast arm of Jim's Passage makes a 180 degree curve of 1000 feet turning toward the west. Here it joins the Main Passage by way of a short north and south passage. From this point, Jim's Passage extends for another 175 feet to a right angle turn which brings it into the Main Passage.

The Main Passage extends southwest and northeast for over 6000

feet with several smaller passages branching off from the sides. At each end of the Main Passage are streams. These streams connect and cover the floor of the passage with water during extremely wet weather.

Water enters the cave from streams at the southwest end of the Main Passage, from the ends of Jim's Passage and the South Passage and from numerous sink-holes from the surface above the cave.

The ceiling height varies from one and one-half feet to thirty-eight feet. The width varies from two to fifty feet. Most of the floor of the cave is covered with mud, gravel and chert nodules. At several places there are large rocks left by ceiling breakdown.

Plate 1 is a map of this cave.

Environmental Conditions in the Cave

The air temperature of the cave is nearly constant and is the mean annual temperature of the area in which the cave is located. The air temperature in the interior of the cave, everywhere beyond 400 feet from the entrance, ranges between 64 and 65.5 degrees Fahrenheit. The temperature of the water in the cave is also rather constant and varies from 63.5 to 64.5 degrees Fahrenheit. The relative humidity within the cave is 100%. There is no air movement that can be determined beyond 400 feet from the entrance or 200 feet from the air vent. The uniformity of the climatic conditions protects the inhabitants from desiccation or freezing and permits a lowered but constant rate of metabolism. Aquatic species are protected against fluctuations in water temperature and are rarely left dry by declining water levels. The most striking feature of the cave environment is the complete absence of light beyond forty feet from the entrance.

The cave animals would be without food if it were not introduced from the outside. During heavy rains, bits of wood, leaves, bark and other plant parts, seeds, mycelia and spores of fungi and other organic materials are carried in by the streams and through sink-holes. Mice, rats, bats, raccoons, and other visitors deposit fecal material which is also utilized as food by many animals.

The four most important environmental factors necessary for the existence of true cave species are present in Wild Woman Cave. These factors are: a) relatively stable food supply, b) uniform temperature which is high enough to permit adequate metabolism, c) a high, constant relative humidity and d) complete absence of light.

The southwest two-thirds of the Main Passage and the northeast end of Jim's Passage are larger than the other passages and contain much more organic matter and debris. The organic material and debris serve the animals as sources of food and for concealment. Except during very extreme flooding conditions terrestrial animals could easily avoid being flooded out. Animal life is much more abundant here than in other parts of the cave.

The northeast arm of the Main Passage, the southwest end of Jim's Passage and the South Passage are rather small and contain very little organic matter and debris. These parts of the cave are flushed rather completely by even a relatively small rise in water level resulting from moderate rains.

Collection of Invertebrates

Collections were made between January 18, 1959 and July 11, 1959. There was no seasonal variation noted. The following kinds of inverte-

brates were collected. Those indicated by an asterisk (*) are considered true cave inhabitants. The remaining forms are probably accidental occupants.

MOLLUSCA: PULMONATA

Helisoma Swainson, **Polygyra** Say, **Bulimulus** Leach. Shells of these three genera were found.

Hawaiia Gude. Four live specimens were collected.

ANNELIDA: OPISTHOPORA

*Earthworms are common throughout the cave, and nearly every mud bank is partially covered with their fecal material. Most specimens observed were immature and faded.

ARTHROPODA: CRUSTACEA; Isopoda

Trichoniscus Brandt. One pale specimen was collected 1350 feet from the entrance in the Main Passage.

***Asellus tridentatus** (Hungerford). This eyeless, colorless species is abundant in the streams and in every pool of water. It is the most numerous aquatic animal in the cave.

Amphipoda

***Allocrangonyx pellucidus** (Mackin). These are common in every pool in the Main Passage. Several specimens were collected that were similar to *A. pellucidus* (Mackin), but have no third uropod.

Decapoda

***Procambarus simulans** Faxon. This epigean species is common in the streams and small pools throughout the cave. They are photo-positive and easily collected. The crayfish collected from water that was covered with calcite crystals ($CaCo_3$) had a film over their eyes and a lighter color than the ones collected where there were no crystals. Three specimens with blue pigmentation were observed in water that contained no calcite crystals.

DIPLOPODA

***Polydesmus** Latreille. Millipedes of this genus are common at every location in the cave that contains organic material and considerable moisture. Several times they were observed feeding on dead earthworms, and two specimens were seen copulating. Many young and adults were collected.

*Many small, undetermined, white millipedes were collected in the interior of the cave and were not seen in the twilight zone.

ARACHNIDA; Acarina

***Acaridae**

Mites of this family were collected only in the interior of the cave. They are common cave residents.

***Bdellidae**

Several specimens were collected from sticks and other organic material in the southwest end of the Main Passage.

Several undetermined mites were collected from a small drip-pool.

Araneida
Theridiidae

Spiders of this family were collected from deep cracks within 40 feet of the entrance. None were seen in total darkness.

*Araneidae

Spiders of this family are numerous in all parts of the cave except the South Passage and the southwest end of Jim's Passage.

INSECTA
Collembola
*Poduridae

These small springtails are numerous only in the recesses of the cave. They were collected on mud banks, on the surface of drip-pools, and on organic material. On one trip hundreds of young and adults, with several mites, were collected on the surface of a small drip-pool.

*Entomobryidae

Isotomurus palustris (Muller). Six were collected. They were seen crawling on organic material, on the walls, and one was found on the surface of a small pool.

*Sminthuridae

Sminthurides aquaticus (Bour.). One specimen was found 1350 feet from the entrance in the Main Passage. This is a semi-aquatic species.

Hemiptera
*Lygaeidae

These bugs were collected only in the interior of the cave in moist organic material. One was observed flying, and all were very active.

Reduviidae

Melanolestes picipes (Herrich-Schaeffer). One specimen was collected 40 feet inside the entrance.

Orthoptera
*Gryllacrididae

Ceuthophilus Scudder. Camel crickets are common in all parts of the cave but are most numerous at the junction of the Entrance Passage and Jim's Passage.

Coleoptera
Chysomelidae

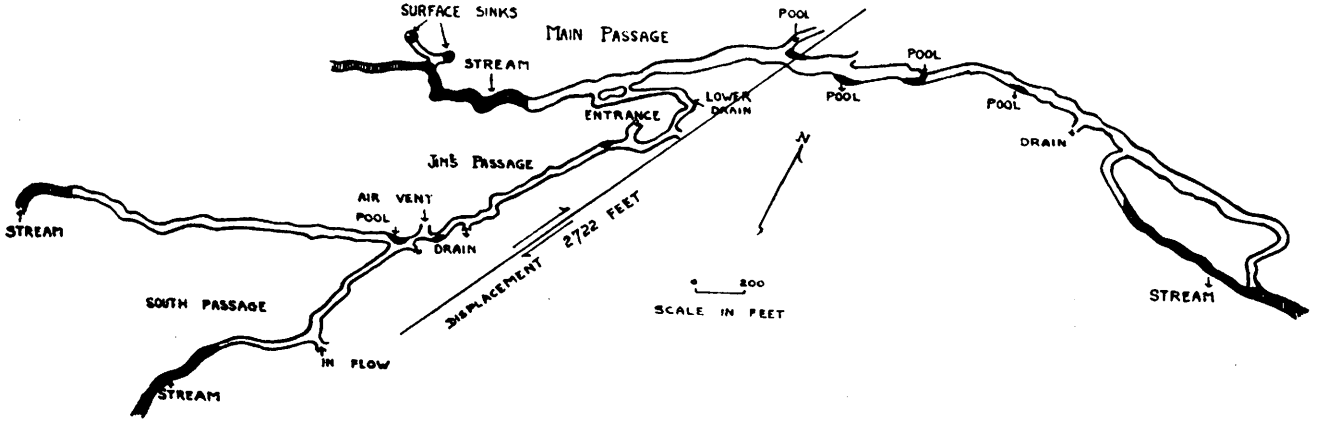
Three beetles of this family were collected 1000 feet from the entrance on a large deposit of organic material.

Lampyridae

One firefly was collected 850 feet from the entrance. It was glowing when first observed.

Omophronidae

One specimen was collected 50 feet inside the entrance.



WILD WOMAN CAVE

PLATE I

*Nitidulidae

These fungus beetles were numerous at two large deposits of organic material over 3000 feet from the entrance. No larvae were collected.

*Carabidae

These beetles were collected and observed throughout the cave. Several larvae were found under the deeper deposits of organic material. The color of adults varied from dark to very light brown. The lighter the color, the more fragile and slender they seemed. Several species of these beetles are represented in the collection.

*Staphylinidae

These are the most numerous beetles in the cave, but their range is not as great as that of the carabid beetles. Larvae and adults are abundant in the organic material in the Main Passage and in the northeast end of Jim's Passage.

Hymenoptera
Cynipidae

One member of this family was collected 680 feet from the entrance.

Diptera
Phoridae

Six specimens were collected. All were within 400 feet of the entrance except one which was 3000 feet from the entrance in the Main Passage and was dead when collected.

*Sciaridae

These tiny flies were collected throughout the Main Passage and in the northeast end of Jim's Passage. None were seen closer than 680 feet to an entrance. Many larvae were found under organic material and in bits of decayed wood.

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