Ants of the Leonora Curtin Natural History Area

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The Leonora Curtin Natural History Area has an abundance of ant species, many of which have interesting life cycles and behaviors. This article will introduce basic ant biology, provide a list of ants found so far, and give brief accounts of some of species living at Leonora Curtin. This work is preliminary; corrections and additions are invited.

Almost everyone is familiar with ants, they can be seen foraging, scouting, and performing other tasks in many different environments. Some ant nests, such as the large conical nests of harvester ants, are very conspicuous throughout Northern New Mexico. The ants that you typically see are in the worker caste. These ants are all sterile females and do the work of gathering food, caring for young, and cleaning the nests. Some species of ants have only one caste of worker ants, but others have many specialized castes which can be distinguished from each other by size or specialized anatomy. Many species have soldier ants with large heads and jaws, whose specialty is defending the nest. You can test for the presence of soldier ants by stomping hard on a nest. If they are there, they will usually come rushing out to defend the nest. Some ants have workers who are specialized foragers, brood care workers, food storage receptacles, seed husk crushers, and many other functions, some of which I will discuss later when describing individual species.

For most of the year, ant colonies consist only of sterile workers and one or more queens who do all the reproduction for the nest. Once per year, each mature nest will produce winged, fertile queens and kings who fly around and mate. The males die right after this nuptial flight, and the now mated females shake off their wings and attempt to start a new nest. At first, the new queen must do all the work, preparing the nest area, laying eggs, gathering food to feed to the larvae (which look like little grains of rice), and defending the nest. This first brood of young form pupae and then emerge as adult ants, ready to forage, defend the nest, care for the young, and to care for the queen (who never works again).

The queen may live (depending on species) for up to 15 years or so and lay millions of eggs. The queen stores the sperm from her nuptial flight in a special organ called a spermatheca.. She is able to control the fertilization of her eggs. In ants, a fertilized egg turns into a female and a non fertilized egg turns into a male. This is unlike humans and most other insects in which sex chromosomes control the sex of each individual (In humans XX is female and XY is male, but in butterflies XY is female and XX is male, so the whole subject is complicated). Sterile and fertile females are both XX; the amount of food a larva is given generally determines whether she will mature into a sterile worker or a fertile queen.

I have identified 20 species so far from Leonora Curtin.
For identification, I used the wonderful on-line resource, *The Ants of New Mexico* by William and Emma Mackay. I also used *Ants of Los Alamos County* by numerous authors and published in Advances in Myrmecology, 1988. Species identification is extremely difficult for some groups and depends on characters which may or may not be present or on lengths of hairs that are often broken. For these difficult groups, I have identified to genus or to species group.

Neivamyrmex nigrescens: This is a species of native army ants. Unlike their infamous cousins in the Tropical Americas, which are famed for eating everything they catch, these only attack the nests of other ant species. This group is easily identified because they have no eyes (or very tiny eyes).

Crematogaster sp.: These are called acrobat ants because of the distinctive way they wave their abdomens over their heads when disturbed. I have found two species.

Species one is a rather large, robust ant with a bright red head and thorax and velvety black abdomen, may be *C. depilis*

Species two is smaller, slender, and all black, probably *C. cerasi*.

The genus is easily identified by their heart shaped abdomens (when viewed from above).

Leptothorax nitens: One individual collected in a pitfall trap. The colonies are very small and nest in the soil.

Pheidole sp.: The common name is big headed ant because they have a special caste with giant heads which specialize in crushing seed husks. Other ants in the same nest are small and slender.

Pogonomyrmex: This is the genus of harvester ants. We have four species, *P. occidentalis, P. barbatus, P. imberbiculus* and *P. rugosus.* All of them collect and store seeds, which are their major or only food. Seeds are stored underground in large granaries. The ants put a special substance on the seeds which prevents them from sprouting. When a nest dies or is abandoned, the remaining seeds will start to sprout. Harvester ants are somewhat infamous for their painful stings, which some people react to very strongly. Their nests are conspicuous because they are covered with small stones and often the ants clear large areas around the entrances. The large, cone shaped nests belong to *P. occidentalis.* Flat nests with stones around the entrance belong to *P. barbatus* (red ants) or *P. rugosus* (darker ants). Their nests are also famous for being good collecting spots for turquoise and fossil rodents bones, both of which are placed around the nest entrances. *P. imberbiculus* are found living under rocks or trunks.

Solenopsis molesta: This ant is related to the dread and destructive red imported fire ant, but is not known to do the sort of damage to habitat and other species. It is a very tiny red ant.

Conomymrma insana: The common name is pyramid ant, because to a small pyramidal projection on the thorax. These ants are common all over the area. They build small mounds of fine soil with a hole in the center.

Forelius analis: Their nests are often associated with the nests of harvester ants. They may steal food from the very much larger harvester ant foragers.

Tapinoma sessile: The common name is odorous house ant because they give off a coconut odor when crushed. They can often be seen crawling on the blind at Leonora

Curtin.

Formica rufa group: These large ants build large nests made of or covered with thatch. The one I collected is a large (7 mm) ant with bright red head and thorax and black abdomen. I have found their nests under cottonwoods,

Formica fusca group: This ant is smaller with little contrast in color between head, thorax, and abdomen. We have two species, they are both about 4 mm long, slender, and red or brown in color.

Camponotus ocreatus: This is an unusual member of the carpenter ant group as it does not nest in wood. It is large (11 mm), with a black head, bright red thorax, and black abdomen.

Camponotus sansabeanus: This is a common red and black carpenter ant that nests under rocks and stones.

Myrmecocystus romanei: This is a honey pot ant. They have a peculiar caste whose members do nothing but hang from the ceiling of the nest by their mouth parts and serve as storage receptacles for liquids brought in by forager ants. If food becomes scarce, these "repletes" regurgitate food for their nestmates. In many places, it is common for these nests to be dug up and the repletes eaten as sweet treats (the ant is held by her head and thorax, and the abdomen is bitten off).

Prenolepsis imparis: a small species which nests in the ground. Workers tend aphids, collecting the sweet "honeydew" they secrete and in turn protecting the aphids from predators and moving them to new plants when the plants they are feeding on dry up.