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ANTS OF THE NATIONAL REACTOR TESTING STATION[1]

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During ecological investigations of ectoparasites in 1966 and 1967 at the National Reactor Testing Station in Idaho, can pit-traps were used to capture small rodents and ground-dwelling arthropods (Allred, 1968). These same techniques, previously used by Allred et al. (1963) from 1960 to 1962 at the Nevada Test Site, were effective for determining species composition and distribution of ants (Cole, 1966). The collections in Nevada extended over approximately 30 months, whereas those in Idaho were conducted for only 15 months. Nevertheless, this latter time was considered adequate to determine the incidence of the majority of kinds of ants and their distribution at the Testing Station in Idaho.

The National Reactor Testing Station is situated in southeastern Idaho, 30 miles west of Idaho Falls. The area of approximately 900 square miles is a level plain with an average elevation of 4,865 ft. The vegetation is characteristic of the cool northern deserts. The most conspicuous plant is *Artemisia tridentata*, but members belonging to *Chrysothamnus*, as well as grasses of several genera, are abundant (Allred, 1968; Atwood, 1970).

Results and Discussion

Ants of 22 species representing 11 genera were collected at the Testing Station during the months of March to November, inclusive (Table 1), although pit-cans were operated continuously. The greatest number of species was taken in June, and the fewest in March. Ants were taken in the greatest abundance in July, whereas the fewest numbers were found in November. Aboveground activity was greatest from May through August.

The greatest number of species was found in study area 2, the fewest in areas 5 and 9 (Table 2). Largest numbers of individuals were taken in areas 1 and 7, whereas the fewest were found in areas 5 and 9.

Ants belonging to *Camponotus vicinus* were the most widespread geographically, although those referable to *Pogonomyrmex owyheei* were the most abundant in numbers of individuals (Table 3). Ants of *Formica obscuripes* and *Veromessor lobognathus* were not widespread geographically but occurred in relatively large numbers. On the other hand, those referable to *F. manni*, *F. subpolita*, and *Myrmica lobicornis* were relatively widespread geographically but occurred in few numbers.

No correlation was evident between plants of a predominant

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TABLE 1. Seasonal, aboveground activity of ants at the National Reactor Testing Station.

Species	Month and number of ants collected								
	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
Camponotus vicinus		1	32	39	55	9	9	3	2
Formica fusca			2					2	
F. haemorrhoidalis			5	104	12	14	21		
F. hewitti				4					
F. lasioides		1		1	2	2			
F. manni		2	9	2	4	4			
F. montana			2						
F. neogagates		4	2	2	1	3			
F. obscuripes	50					1			
F. obtusopilosa			10	6	7	1		2	
F. oreas		2	5	2	1				
F. subpolita		1	2	3	11				
F. whymperi				2					
Lasius crypticus		7	3		5				3
Leptothorax andrei				1					
Manica mutica						15			
Monomorium minimum				6	116	53	9		
Myrmica lobicornis		5	34	32	3				2
Myrmecocystus mojave			39	10	2	1	1	1	
Pogonomyrmex owyheei			32	65	177	53	26	4	
Tapinoma sessile	5		10	1		1			
Veromessor lobognathus			50	52	27	14			
Total species	2	8	15	17	14	13	5	5	3
Total individuals	55	23	235	332	423	170	66	10	4

species and the number of species or individual number of ants. However, ants of each species do have their own affinities for plant types and edaphic conditions. For example, ants of several species were found where *Artemisia tridentata* was the predominant species of plant, whereas others were found only in a *Chrysothamnus-Artemisia* association. Some ants were associated only with *Elymus* and others with *Juniperus*. Ants representing the greatest number of species were found in the *Artemisia-Chrysothamnus*-grass and *Artemisia* associations, and the fewest were found in the *Juniperus*, *Chenopodium-Eurotia*, and *Oryzopsis-Stipa* associations. Greatest numbers of individuals were found in the *Chrysothamnus-Artemisia*-grass and *Chrysothamnus-Artemisia* associations. Fewest individuals were found in the *Juniperus* and *Chenopodium-Eurotia* areas.

NOTES ON DISTRIBUTION

Cole (1966) listed 53 species of 19 genera in his treatise on the ants of the Nevada Test Site. Rees and Grundmann (1940) listed 18 genera and 56 species, including several subspecies and varieties, known to occur in Utah. Beck, Allred, and Despain (1967) listed 42 species of 17 genera of ants in Utah which they designated as having predaceous-scavenger habits. Twenty-two species of 11 genera are known from the National Reactor Testing Station in Idaho. Only

TABLE 2. Abundance of ants in 12 major study areas at the National Reactor Testing Station.

Species	Study area and number of ants collected											
	1	2	3	4	5	6	7	8	9	10	11	12
Camponotus vicinus ...	34	13	4			2	24	17		41		7
Formica fusca												2
F. haemorrhoidalis	49	3	97									
F. hewitti		4										
F. lasioides			2				1					
F. manni	1	2					3			12		3
F. montana										2		
F. neogagates		3	8									
F. obtusopilosa									2	20		
F. oreas	7		2									
F. subpolita	2	9					1	3		2		
F. whymperi		2										
Lasius crypticus	8										3	7
Leptothorax andrei ...					1							
Monomorium minimum	94			26		1		1		2	58	1
Myrmica lobicornis ...		24	4				27	7		12		1
Myrmecocystus mojave	37		1							14	1	1
Pogonomyrmex owyheei	162	31	2	2		28	47			25	4	54
Tapinoma sessile		1	11									
Veromessor lobognathus		1					141			1		
Total species	9	11	9	2	1	3	7	4	1	10	4	8
Total individuals ...	394	93	131	28	1	31	244	28	2	131	66	76

half of those known to occur in Idaho also occur at the Nevada Test Site (Table 4). Twenty-six of the species known to occur in Utah also occur in Nevada, but only 8 of these are known from Idaho. Only 3 species that occur in Idaho and Nevada are not known in Utah, and only 8 species are common to all three states. Six species that occur in Idaho and Utah are not known from Nevada.

The difference in numbers of species found at the Nevada Test Site (53), as compared to the National Reactor Testing Station (22), is significant. It may be due, in part, to the length of time spent in collecting—30 months in Nevada and 15 in Idaho. The Nevada site occupied approximately 1,300 square miles at the time of that study, whereas the Idaho site occupied approximately 900. However, these differences are not considered significant enough to account for the difference in the number of species. Furthermore, the Idaho site contained essentially as many different kinds of habitats as the Nevada site, although the elevational extremes were not as great. Consequently, the difference in species composition is likely due to the latitudinal seasonal differences, wherein conditions in southern Nevada are more conducive to ants than in Idaho.

CAMPONOTUS VICINUS.—In Nevada, ants of this species were common in the Pinyon-Juniper community but were not found associated

TABLE 3. Geographic distribution and relative abundance of ants at the National Reactor Testing Station.

Species	No. study areas where found	Total ants collected
Camponotus vicinus	11	150
Pogonomyrmex owyheei	10	357
Monomorium minimum	8	184
Myrmica lobicornis	7	76
Formica manni	5	21
F. subpolita	5	17
Myrmecocystus mojave	5	54
F. haemorrhoidalis	4	156
F. lasioides	3	6
F. neogagates	3	12
F. obtusopilosa	3	26
F. oreas	3	10
Lasius crypticus	3	18
Tapinoma sessile	3	17
Veromessor lobognathus	3	143
F. fusca	2	4
F. hewitti	1	4
F. montana	1	2
F. obscuripes	1	51
F. whymperi	1	2
L. andrei	1	1
M. mutica	1	15

with other vegetative types (Cole, 1966). Beck et al. (1967) found these ants widely distributed in Utah, mostly in *Artemisia* associations. In Idaho these ants were associated with a variety of vegetative types but were most abundant in *Chrysothamnus-Artemisia* associations.

FORMICA FUSCA.—The Pinyon-Juniper community was the only area at the Nevada Test Site where ants of this species were found (Cole, 1966). In Utah few specimens were taken in association with mountain shrub types of vegetation (Beck, Allred, and Despain, 1967). In Idaho the two specimens were taken in a Juniper community.

FORMICA LASIOIDES.—According to Cole (1966), this species is sparsely represented in the Pinyon-Juniper areas at the Nevada Test Site. In Idaho the three specimens were associated with *Elymus* and with *Chrysothamnus-Artemisia*.

FORMICA NEOGAGATES.—These ants were found only in the Pinyon-Juniper community at the Nevada Test Site (Cole, 1966). In Idaho they were associated with the *Artemisia-Chrysothamnus*-grass and *Elymus*-grass communities.

FORMICA OBTUSOPILOSA.—At the Nevada Test Site, the few ants that were found were in mixed vegetative types where scattered junipers and Artemisia were present (Cole, 1966). In Idaho these ants were found in association with *Chenopodium*, *Eurotia*, and *Artemisia*.

TABLE 4. Occurrence of selected species of ants in Nevada, Utah, and Idaho.*

Species	State occurrence		
	Idaho	Utah	Nevada
Camponotus vicinus	+	+	+
Formica fusca	+	+	+
Formica lasioides	+	+	+
F. neogagates	+	+	+
F. subpolita	+	+	+
Lasius crypticus	+	+	+
Monomorium minimum	+	+	+
Myrmecocystus mojave	+	+	+
Formica haemorrhoidalis	+	+	
F. manni	+	+	
F. obscuripes	+	+	
F. oreas	+	+	
F. whymperi	+	+	
Myrmica lobicornis	+	+	
Tapinoma sessile	+	+	
F. obtusopilosa	+		+
Leptothorax andrei	+		+
Veromessor lobognathus	+		+
Crematogaster coarctata		+	+
C. depilis		+	+
Dorymyrmex bicolor		+	+
D. pyramicus		+	+
Formica integroides		+	+
F. limata		+	+
F. microgyna		+	+
F. moki		+	+
F. neorufibarbis		+	+
Iridomyrmex pruinosum		+	+
Leptothorax nevadensis		+	+
Myrmecocystus mexicanus		+	+
Pheidole bicarinata		+	+
P. pilifera		+	+
Pogonomyrmex californicus		+	+
P. occidentalis		+	+
P. rugosus		+	+
Solenopsis molesta		+	+

*Only those species are listed that are known to occur in two or more of the three states.

FORMICA SUBPOLITA.—According to Cole (1966), ants of this species were common but were restricted to the Pinyon-Juniper community at the Nevada Test Site. In Idaho they were found in a variety of plant situations but mostly in the *Artemisia* associations.

LASIUS CRYPTICUS.—Cole (1966) reported that ants of this species occur in association with Pinyon-Juniper in Nevada. In Utah these ants were associated primarily with mountain-shrub type vegetation (Beck, Allred, and Despain, 1967). In Idaho they were most common in *Chrysothamnus* and Juniper areas.

LEPTOTHORAX ANDREI.—At the Nevada Test Site, only a few specimens were found, and these were in association with the Pinyon-Juniper community (Cole, 1966). The single specimen taken in Idaho was in a Juniper community.

MONOMORIUM MINIMUM.—At the Nevada Test Site, ants of this species were found chiefly in *Coleogyne* and mixed communities, although a few scattered colonies were seen in the Pinyon-Juniper community (Cole, 1966). In Utah these ants were predominantly in areas typified by pinyon and juniper (Beck, Allred, and Despain, 1967). In Idaho they were associated with a variety of plants but were found most commonly where *Chrysothamnus* and grass were abundant. Few were found in the Pinyon-Juniper association.

MYRMECOCYSTUS MOJAVE.—At the Nevada Test Site, ants of this species were restricted to the Pinyon-Juniper areas (Cole, 1966). In Utah few specimens were found associated with *Artemisia* (Beck, Allred, and Despain, 1967). In Idaho these ants were associated with a variety of plants, mostly *Chrysothamnus* and *Artemisia*.

VEROMESSOR LOBOGNATHUS.—Formerly considered rare, ants of this species are common occupants in certain areas, and records are known for Colorado, Nevada, North Dakota, and South Dakota (Cole, 1966). At the Nevada Test Site, nests were largely confined to Pinyon-Juniper areas, mainly under or adjacent to large rocks. In Idaho, ants of this species were most abundant in the *Chrysothamnus-Artemisia* association.

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