

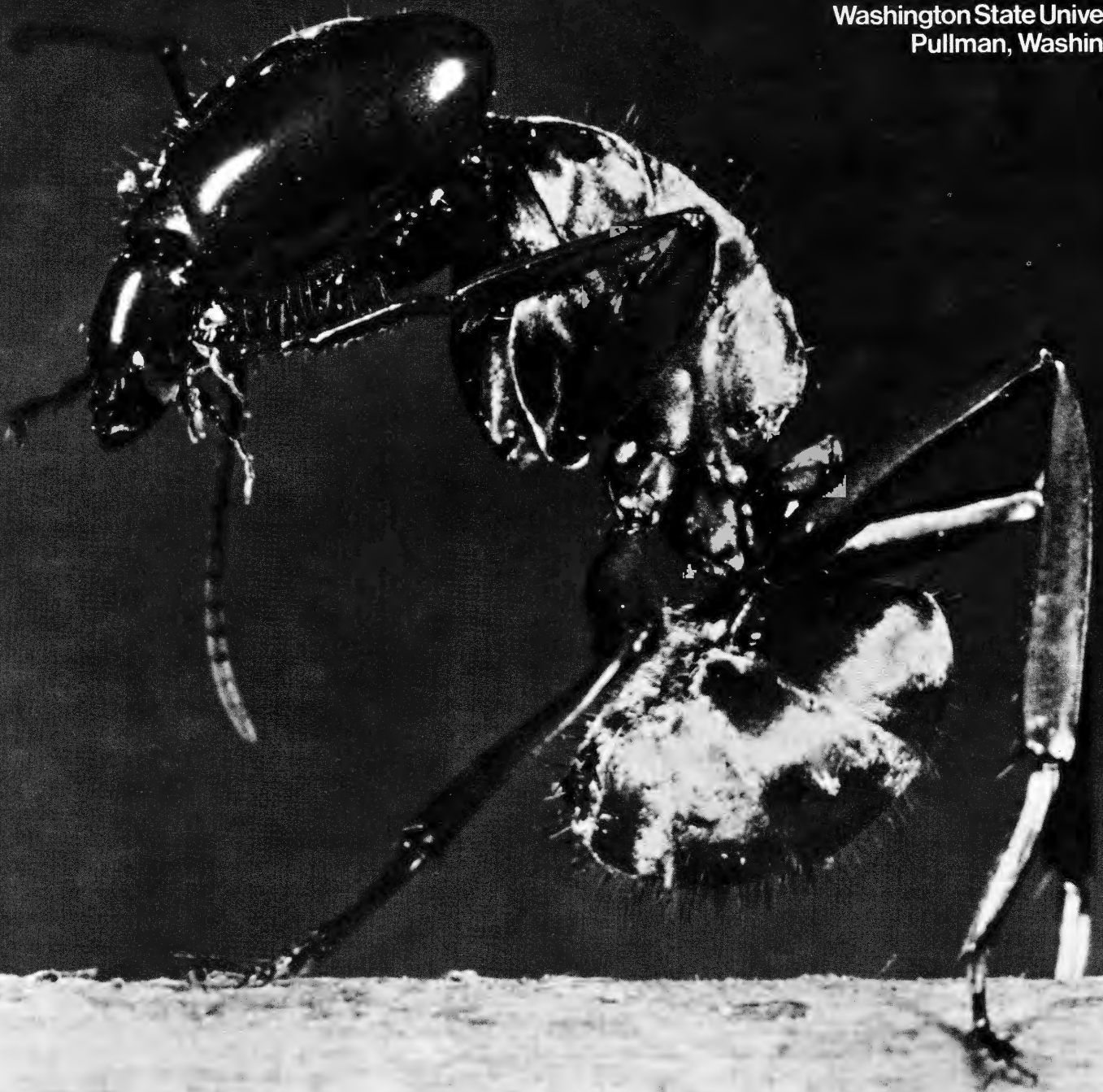
Identification and Habits of Key Ant Pests of Washington

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Ants (Hymenoptera: Formicidae) are an easily recognized group of social insects. The workers are wingless, all possess elbowed antennae, and all have a pedicel (narrow constriction) of one or two segments between the thorax and the abdomen.

One of our most common and abundant insects, a 1968 count revealed 7,600 species of ants had been described — there are still a number of undescribed species in the world. The true number probably lies between 12,000 and 14,000.

Ants are also one of the most widely distributed of all insect groups. They occur from arctic tree line to the humid tropics, from Alaska to the extreme tip of South America, to the tip of Africa, Australia, and even to all the islands in the oceans. They are the most abundant of all social insects.

Since there are so many species of ants, and in such diverse habitats, it becomes obvious that ants are one of man's principal insect competitors. Ants infest buildings as a nuisance, feed on human foods, and even cause structural damage to buildings.

Ants are also annoying because of their biting or stinging habits. Although there are no good data, ant stings are probably responsible for a number of human fatalities in the United States each year. The effects of stings on a human depend on the ant species and the sensitivity of the person. Most deaths are caused by a hypersensitive reaction leading to anaphylactic shock.

General Biology

Most ant colonies are started by a single inseminated female or queen. From this single individual, ant colonies can grow to contain anywhere from several hundred to several thousand individuals. Among the largest ant colonies are the army ants of the American tropics, with up to several million workers, and the driver ants of Africa, with up to 30-40 million workers. However, most ant colonies probably fall within the range of 300-50,000 individuals.

Ants normally have three distinct castes: workers, queens, and males. Males are intermediate in size between queens and workers and can be recognized by ocelli (simple "eyes") on top of the head, wings, protruding genitalia, and large eyes. The sole function of the male is to mate with a queen.

The queen is the largest member of the colony. She has wings but loses them soon after mating. However, scars where the wings were attached still remain. Queens usually also have ocelli, in addition to large eyes, and a large abdomen for egg production.

The worker, the smallest member of the colony, lacks ocelli (usually) and is never winged. Workers may be of one size (monomorphic) or may vary considerably in size (polymorphic). Large workers are usually called soldiers or majors, very small workers are minors.

Ants pass through several distinct developmental stages in the colony: egg, larva, pupa, and adult. The egg is very small and varies in shape according to the species. The larva also varies in size and shape, but is usually white and is always legless. The pupal stage looks like the adult, but is soft, white, and motionless. Many are enclosed in a cocoon of a brownish or whitish, papery material.

Ants produce reproductive forms usually at one time of the year (spring or fall, depending on species and colony disposition). Colony activity at the time of reproductive swarming is high, with winged males and queens and workers in a very active state. The queen and males fly from the colony, mate, and shortly after, the male dies. The inseminated queen then builds a small nest, lays a few eggs, and nurtures the developing larvae that soon hatch from the eggs. When adult workers appear, they take over the function of caring for the queen, the larvae, building the nest, and bringing in food for the colony. Colonies may persist for 20 years or more.

Since there are so many species of ants with extremely diverse habits, it is difficult to outline their general life style. Some ants are strictly carnivorous (army ants), while others may specialize by eating fungi (the fungus ants), seeds (harvester ants), or the "honeydew" of other insects. However, most ants that cause annoyance to homeowners, are omnivorous and feed on a variety of foodstuffs. These include most of the food materials used by man.

Various ants may produce their nests in rotting logs, in trees, in soil, or even live inside the nests of other ants. Since they are such a diverse group, it is always best to check the habits of the particular species.

Identification

Ants are often confused with termites. Here is how to tell them apart:

ANTS

Strong constriction—pedicel or “waist”—
between thorax and abdomen (Fig. 1)
Elbowed antennae (Fig. 1)
Front pair of wings much larger
than hind pair (Fig. 3)
Various colors and hard-bodied

TERMITES

Abdomen broadly joined to thorax
(Fig. 2)
Straight antennae (Fig. 2)
Both pairs of wings of about equal
size (Fig. 4)
Usually whitish and soft-bodied

Over the last 12 years we have kept records of the troublesome ants of Washington. With a few minor exceptions, all pest species belonged to one of the six genera that follow. The key should allow you to distinguish these six genera from each other. The key is only to worker ants. It will not work if males or queens are used.

ELBOWED ANTENNA

PEDICEL

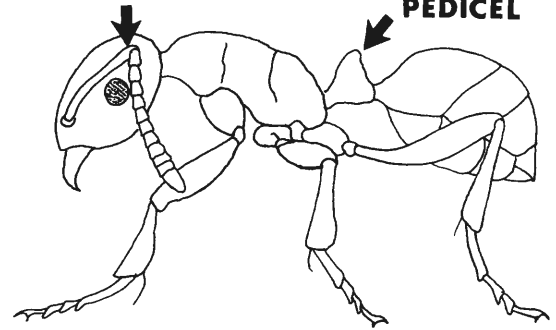
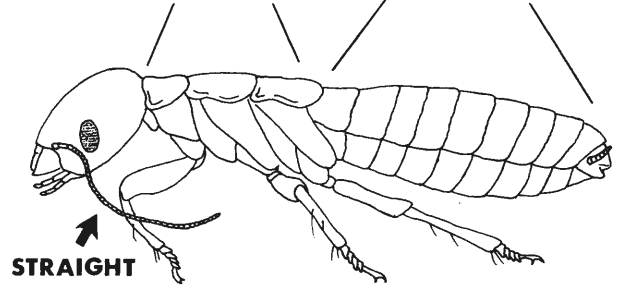


Fig. 1 Typical ant (illustrations not drawn to scale)

BROADLY JOINED WAIST

THORAX

ABDOMEN



STRAIGHT ANTENNA

Fig. 2 Typical termite

KEY (Many of the characters will require use of a hand lens of 20X or greater)

Subfamily:

1. Abdominal pedicel composed of one segment (Fig. 1) 2
Abdominal pedicel composed of two segments (Fig. 5) MYRMICINAE
(*Pogonomyrmex*)
2. Cloacal orifice terminal, circular, surrounded by a fringe of hairs; petiolar node very prominent (Fig. 6) FORMICINAE (*Acanthomyops*, *Lasius*, *Formica*, *Camponotus*)
Cloacal orifice ventral, transverse, slit-shaped, not surrounded by a fringe of hairs; petiolar node scale-like or vestigial (Figs. 7, 8) DOLICHODERINAE (*Tapinoma*)

Species of Formicinae: (Since there is only one Myrmicinae and one Dolichoderinae, no additional keys to these ants are required)

1. Thoracic dorsum, in profile (side view), evenly convex (Fig. 9) *Camponotus*
Thoracic dorsum, in profile, with a notch or dip (Fig. 10) 2
2. Small ants (3-5mm), usually light yellow to brown 3
Larger ants (7-9mm or larger), usually bicolored, red and black. (Fig. 10) *Formica*
3. Petiolar node, in profile, narrow and sharp at the top (Fig. 11) *Lasius*
Petiolar node, in profile, with thicker, blunt top (Fig. 12) *Acanthomyops*

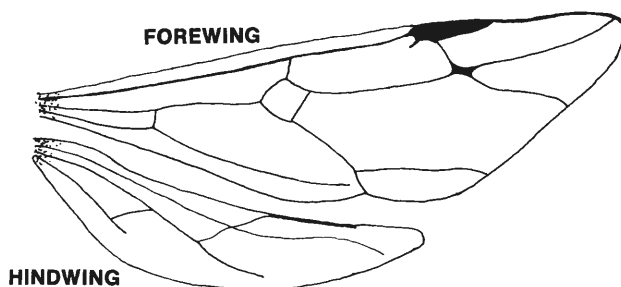


Fig. 3 Ant wings

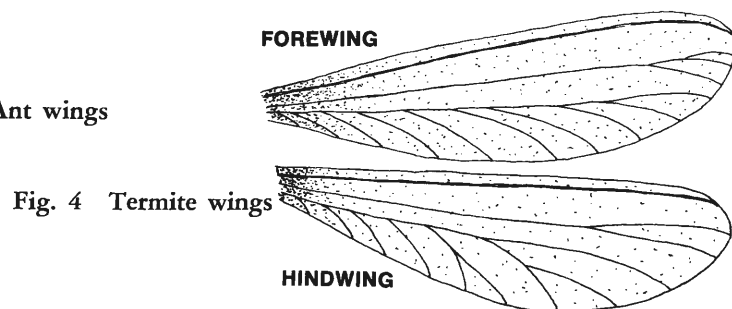


Fig. 4 Termite wings

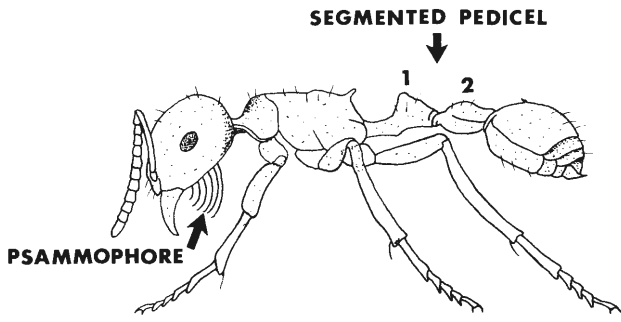


Fig. 5 *Pogonomyrmex* spp. (Harvester ants)

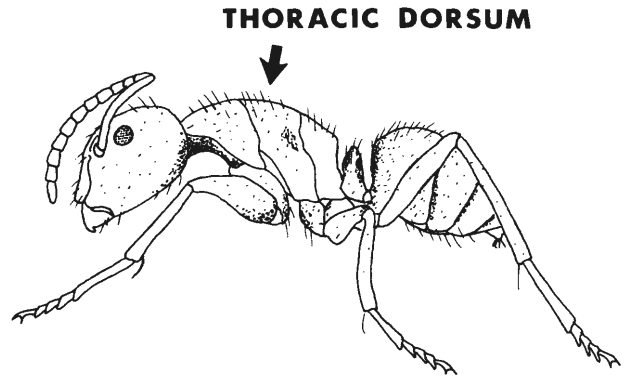


Fig. 9 *Camponotus* spp. (Carpenter ants)

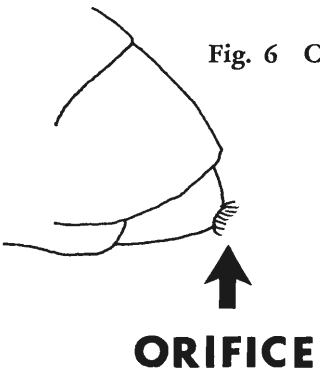


Fig. 6 Circular terminal orifice

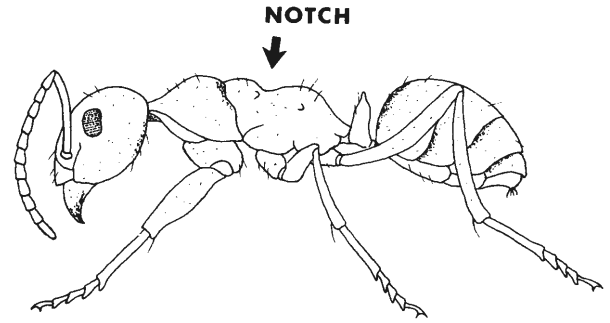


Fig. 10 *Formica* spp. (Western thatching and other ants)

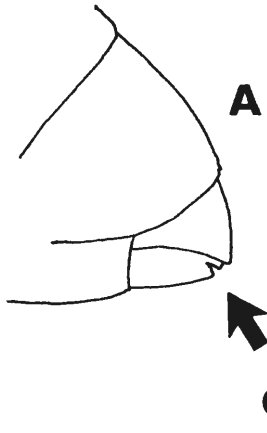


Fig. 7 Transverse ventral orifice (a - lateral view; b - ventral view)

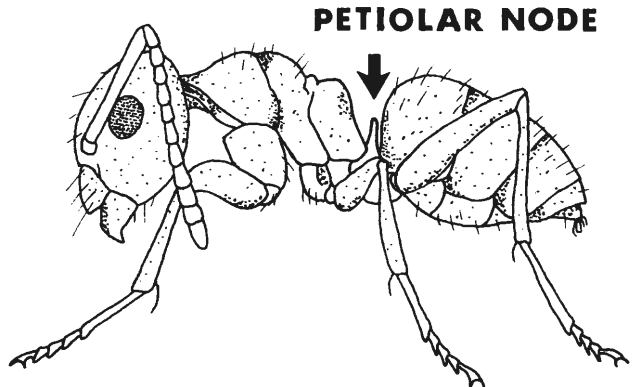


Fig. 11 *Lasius* spp. (Cornfield and other ants)

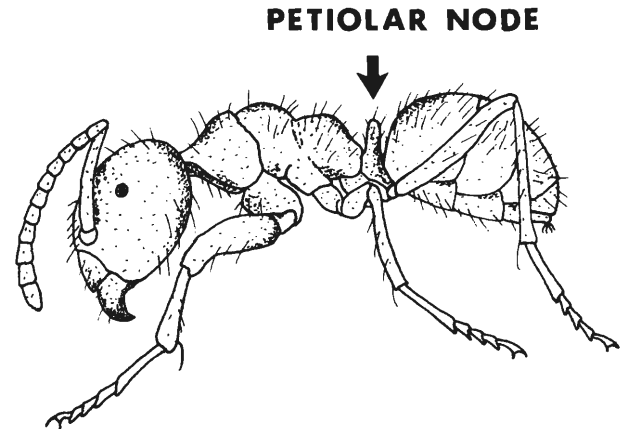
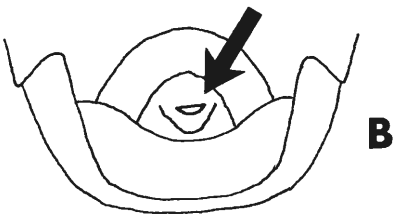


Fig. 12 *Acanthomyops* spp. (Yellow ants)

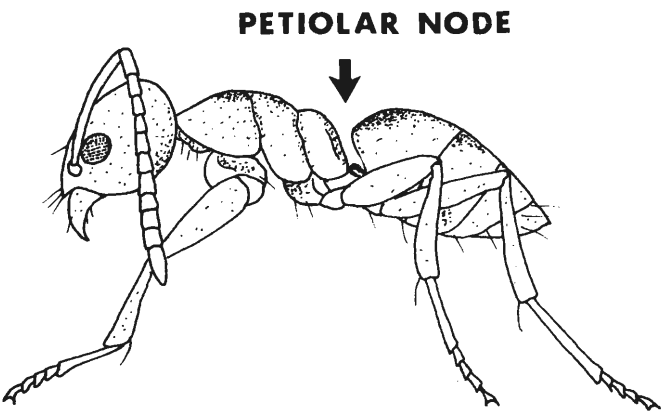


Fig. 8 *Tapinoma sessile* (Odorous house ant)

Figures 5 and 8-12 have been redrawn from USDA Tech. Bul. No. 1326.

In addition to the characters used in the key, you will find some characters listed under the individual species which may be of use in your determinations.

Principal Pest Ants of Washington

Acanthomyops spp. (Yellow Ants)

Most pest species yellow and 3-5mm long. Monomorphic species with all workers of same size. Maxillary palpi short, 3 segmented. Usually found in soil near house or in rotting wood. Will feed on sweet materials and may be an annoyance in the house at times. Will also attend aphids (plant lice) for their sweet excretion (honeydew). Colonies will produce reproductives and swarm in spring or fall. Distributed throughout state of Washington.

Major concern: These ants have been found in wood in houses and sheds, causing concern on the part of the householder. However, their presence in wood (these ants ordinarily nest only in wood in the last stages of decay) can be taken as an indication of a prior problem (the wood was obviously decayed before the ants moved in). Remedial actions should include removing all rotted wood and replacing it with sound material.

Lasius spp. (Cornfield and Other Ants)

Most pest species yellow; can vary to a rather dark brown. Monomorphic species with workers all of same size. Maxillary palpi long, 5 segmented. Colonies usually found in decayed logs and stumps, but some may be found in soil. Also feed on sweet materials, attend aphids for honeydew, and become a general annoyance factor around homes. Reproductive swarming usually late summer to early autumn. Widely distributed genus, containing several species of pest status. Occur throughout state of Washington.

Major concern: These ants have frequently been found associated with rotting wood in houses. While several species may bring moisture into the wood structure to increase damage, the colony was initially started in wood in an advanced stage of decay. They should not be considered a structural pest, as the problem invariably existed before the colony was established. The obvious remedy is to remove the decayed wood and to replace it with sound material.

Camponotus spp. (Carpenter Ants)

Recognized by evenly convex thoracic profile. Color variable, with black or red and black bicolored species most common. Polymorphic species with workers ranging from 6-13mm long. Probably one of the most distinguishing features is that they are large ants. Colonies usually found in logs, trees, or some other wooden structure. Workers forage for dead or live in-

sects, or common household foodstuffs for food. Reproductives present in colony during winter and swarm during first warm days in spring (May-July, depending on locality). Several species distributed throughout the state of Washington.

Major concern: This group of ants can be considered as structural pests. While they will ordinarily start their attack in wood in various stages of decay, they can and do attack sound wooden structures and can be extremely damaging. They do not eat wood, but are merely clearing areas inside the wood in which to raise their brood. The moisture in the food, waste products, etc. also hastens decay of the wood. Remedial measures should obviously include the location of the colony, the removal of all infested material and attendant rotten wood, and replacement with sound wood. It is important that the colony be located, as much undue alarm is caused by sexual forms that wander into homes during and after swarming but are not established in the house or doing damage.

Formica spp. (Western Thatching Ant and Other Ants)

Most species bicolored, red and black; some species can be uniformly brown or black. Large ants (7-9mm) with notch or depression in top of thorax, when viewed from side. Polymorphic with workers varying in size. Usually nest in soil or in rotten logs. Many species make a thatch or mound of plant material, frequently grass. Rarely nest in homes, but can be problem, as they feed on sweet materials and will also attend aphids for "honeydew." Reproductive swarms produced in late summer to early fall. One of most abundant ants; various species throughout Washington.

Major concern: They are usually only incidental pests, but they can bite quite hard and usually spray the area they have bitten with formic acid to produce a painful sensation.

Pogonomyrmex spp. (Harvester Ants)

Most species reddish or reddish-brown. Monomorphic with workers all same size (6-8mm). Easily recognized by psammophore (Fig. 5) or beard under "chin," which is used as an aid in digging. Nest only in sandy soil of a particular texture. Found only in eastern Washington and Columbia Basin. Ordinarily feed on seeds of grasses and various weeds, but can be problem in alkali bee beds. Reproductive swarming in spring.

Major concern; This is one of the few ants in Washington that can give a person a rather severe sting, somewhat like a bee or yellowjacket sting. Since the greatest number of colonies of these ants occurs along the Snake and Columbia River areas, persons receiving stings are usually engaged in picnicking, rock-hounding, or in

some similar activity in the area. This is usually not a serious pest; few people are stung.

Tapinoma sessile (Odorous House Ant)

Varies from brown to black. Monomorphic with all workers of approximately same size. Possesses anal glands which produce a rotten, coconut-like odor. Workers range from 2.5-3.5mm long. Nests in wide variety of habitats from woodland, to beaches along rivers and lakes, under

bark of stumps and logs, and in houses. When alarmed, workers dash about with abdomens raised. Will tend aphids (plant lice) and will also feed on wide variety of household foods, such as raw and cooked meats, dairy products and vegetables; prefer sweets. Distributed throughout Washington.

Major concern: It is primarily an annoyance factor because of its odor and preference for sweets that are usually found in abundance in houses.

COVER PHOTO (R. D. Akre): Carpenter ant worker. Note that thoracic profile is evenly convex; no notch (see text).

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