



Feeder Termites (Infraorder Isoptera)

Introduction

Termites belong to a highly diverse group of highly eusocial, or societally organized, insects consisting of approximately 3,106 species, and many more still to be described found across much of the world except Antarctica. They may be found in temperate, to tropical, to arid or semi-arid environments, and can occupy many different niches and habitats within their worldwide ranges, collectively. Depending on their taxonomy and classification, these highly evolved insects are believed to have survived since the Triassic and Jurassic periods, where they now belong to the same taxonomic order as cockroaches and other extremely successful insect groups. Termite colonies can range in size from several hundred to millions of individuals, and each segment or group is referred to as a “caste”. In many regards, termites are often regarded as “super-organisms”, which all act as a self-regulating entity as the colonies themselves.

Termites are perhaps most well known for their highly organized and highly social division of labor consisting of males and females that serve different functions and purposes. Central to any reproductively viable termite colony is a queen, which consist of one or more fertile, reproductive adult females characterized by very swollen abdomens to increase their fecundity. There may be secondary and/or tertiary queens as well. Kings are the most reproductively viable adult males which often mate for life with the queens to produce soldier and worker termites. Workers are non-retroactively viable males and females that perform the most labor in the colony, and are responsible for foraging, food storage and brooding, nest construction and maintenance. Soldiers, on the other hand, have specialized anatomical and behavioral adaptations for their sole purpose of defending the nest and colony. Soldiers thus have large heads and modified jaws and mandibles for gripping and biting, and some can also spray noxious, sticky secretions from horn like nozzles known as a nasus during defense.

Termites differ in several ways from other highly eusocial insects in that they undergo an incomplete metamorphosis beginning with the egg, which then goes through nymph, and then adult stages as they undergo a series of molts from one stage to another. In some species, termites can also molt from one caste to another, for example, from workers into soldiers, or vice versa. Termites also differ in that much of their colony are diploid, or consisting of both sexes, although males and females can have differing roles in the colony.

Termites are also well-known for their intricate nest structures serving many different functions, including providing a protected living space for the colony, and shelter from predators and other outer weather and environmental conditions. Termite nests, depending on the species and environment, can be subterranean, or completely underground, epigeal, or with mounds protruding above the ground’s surface, or arboreal, or built above the ground. Nests of any configuration, however, almost always are connected to the ground by shelter tubes constructed

<http://www.madisonherps.org>

by the workers for infrastructure. These nests can be constructed of partially digested detritus such as feces, plant material and woods, and/or earth, mud, or soil material. Some, primitive species may construct weak or minimal nests only within moist logs, stumps, dying portions of trees, or in leaf litter, while others can build much more complex nests known as polycalic nests, consisting of multiple nests or structures.

As is also widely known, termites can also have a wide range of both positive and negative relationships with humans. When reproductively viable, they can be serious household and agricultural pests, causing structural damage and loss of crops. However, they are also eaten and considered a delicacy in some areas of the world, and are also used widely in many fields of science and technology, including biomimicry, or learning from and deriving improved products and services for humans based on how these insects have been so successful, among many other developments. They can also be collected and used as feeders for many different species of reptiles and amphibians that will seldom be refused. Many different frogs and toads, as well as geckos, chameleons, and other lizards, and even turtles and tortoises, will all relish termites if one can locate or purchase them. Unlike most other commonly used feeder insects, termites are seldom commercially available in controlled, or self-sustaining breeding populations due to this being inadvisable for their potential to escape and become obvious household or garden pests. However, worker and soldier termites are occasionally farmed for use as feeders, or are sometimes available through biological supply companies online, and can make for very delicious and nutritious feeders for your pet reptiles and/or amphibians.

Taxonomy and Classification

Life: All living, physical, and animate entities

Domain: Eukaryota

Kingdom: Animalia

Phylum: Arthropoda

Class: Insecta

Order: Blattodea

Infraorder: Isoptera

**Taxonomy subject to change and revision.*

Experience Level Required

Novice/Beginner to Intermediate/Moderate.

Legal and Regulatory Status (*Subject to Change)

Consult your nearest United States Department of Agriculture (USDA) branch for any further, current federal regulatory or legal status. Also consult with your local, municipal, and state ordinances and regulations for any ownership restrictions.

Size and Description

Most species of termites are quite small, ranging from 4 to 6 millimeters, or 0.16 to 0.59 inches, although they can vary in size depending on their species, age, sex, and reproductive status or function within the colony. Some of the largest species of extant termites can exceed 10 centimeters, or 4 inches in length. From a sensory perspective, most worker and soldier termites are blind to nearly blind, as they lack external eyes, although some species can have compound eyes used to detect differences in light and darkness. As with most insects, termites have three major body segments consisting of a head with mandibles and other mouthparts, eyes, or lack thereof, and antennae designed to sense and consume their food and their surroundings, a thorax consisting of three pairs of legs and/or wings depending on the age, sex, and reproductive status

<http://www.madisonherps.org>

of the termite, and a ten segmented abdomen. Reproductive termites develop wings and can fly for short distances to aid in their dispersal and to locate a mate, but most tend to be poor flyers, while non-reproductive termites tend to remain wingless and cannot fly.

Housing and Enclosure

Termite cultures consisting of only workers and/or soldiers and slightly moistened or dampened paper and/or wood material that are commercially available through biological supply and other suppliers are quite simple and inexpensive to house in their respective shipping containers or other designated, secure, escape proof containers with secured lids or tops. Any containers used should also be adequately ventilated. Maintaining self-sustaining or reproductive castes or farms of termites in captivity is typically not recommended in most cases as they can become serious household, garden, or agricultural pests in these cases should any escape. Workers and soldiers alone are not reproductively viable, and present little to no risk of household damage and can be used. However, if an active termite colony can be located legally and permissibly in your area, several do-it yourself (DIY) methods for farming, collecting, or harvesting them can also be used, using sections of plastic or PVC piping, plastic caps, and slightly dampened or moistened unpainted or non-dyed corrugated cardboard or packaging paper and ground insulation can also be used. Additional articles on these do-it yourself projects can be found below in this article. If your termite culture or shipment is intended to be used immediately within the next week or so, little to no additional care is typically required for the culture other than occasional monitoring.

Temperature, Lighting, and Humidity

Most species of termites are subterranean or otherwise fossorial, and do not tolerate excess lighting, and instead prefer dark, cool environments. Monitoring appropriate levels of moisture and appropriate temperatures are perhaps the most important factors when maintaining your termite culture. Moisture should not become too dry or too wet as to promote mold growth and unhygienic conditions, and the culture should be lightly sprinkled with water daily. Termite cultures can be maintained from 50 to 70 degrees F, but do not allow temperatures to exceed or fall below this range. Cultures can also be kept refrigerated if necessary as well.

Feeding, Diet, and Nutrition

Most species of termites are detritivorous, feeding on dead and decaying wood, fecal, and/or plant material. Many species tend to feed on the cellulose of plants and wood, and have specialized digestive enzymes and symbiotic protozoans and other microbes which reside in the termites in order to break down these difficult to digest materials. These gut protozoa in turn rely on symbiotic bacteria to produce the necessary digestive enzymes. Some species of termites also have seasonal, or specific feeding habits of specific plants and/or woods, while some others practice fungiculture, where specialized fungi is nourished and promoted by the termites through their feces to aid in the digestion of their food materials. Within the caste, or colony itself, some members may be feeding, while others may be non-feeding, or cannot feed on their own without the assistance of worker termites through a process known as trophallaxis, which allows for the recycling of nitrogenous compounds and greater efficiency of feeding the colony.

Termite cultures consisting of only workers and/or soldiers require little to no additional feeding if a slightly moistened paper or wood is provided, which can serve as a source of food and nourishment for the termites provided.

Handling

<http://www.madisonherps.org>

In order to move or transfer a termite culture, the paper or wood furnishings can simply be removed and shaken to dislodge any termites which may be residing on the substrate. Soldiers in a culture can have large heads and mandibles, and are capable of biting, but termites in general are not venomous and are not capable of stinging, and most species generally are not dangerous or harmful to humans handling them.

****It is possible for some people to develop allergies to feeder insects and/or their frass (droppings and waste products) as a result of too frequent of handling or constant exposure to thereof. Handling your feeder insects in a well ventilated room or other area, and using gloves are some ways to prevent any potential human health related issues. Also remember to be sure to practice basic cleanliness and hygiene associated with proper husbandry after touching or handling any animals or animal enclosures to prevent the possibility of contracting salmonellosis or any other zoonotic pathogens****

Contact

Authored by Eric Roscoe. For any additional questions, comments, and/or concerns regarding this animal, group of animals, or this care sheet, please email and contact the Madison Area Herpetological Society at info@madisonherps.org

Disclaimer: Note that the information provided in these, or any care sheets, are not intended to be all-exhaustive, and further research and care should always be sought and provided when it comes to any species one may prospectively be interested in. These care sheets are also not intended to serve as substitutes for professional veterinary medical care and husbandry should any animal require it. Always seek proper and professional veterinary care for any animal should the need arise, and be prepared ahead of time for any and all husbandry costs and expenses that may occur with any animal beyond the initial purchase. Any animal owned is ultimately a matter of personal/individual care and responsibility. MAHS cannot make any claims or guarantees regarding any information in this care sheet therein. This care sheet may be reprinted or redistributed only in its entirety, including any and all MAHS logos and disclaimers.

Sources

Wells, D. (2004). Rearing Termites as Feeder Insects. *Chameleons! Online E-Zine*, January 2004. (<http://www.chameleonnews.com/04JanWellsTermites.html>)

Noll, Kenneth, How to Build a Termite Farm. NOLL Lab. Accessed 08/0818. <http://www.kennethnoll.uconn.edu/nsf-termite-project/how-to-build-a-termite-farm.html>

*Copyright Madison Area Herpetological Society, 2018