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# A SURVEY ON DIFFERENT KINDS OF TERMITES IN AND AROUND GANDHIGRAM

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## ABSTRACT

*Out of 4,000 species (about 3,106 taxonomically known) are economically significant as pests that can cause serious structural damage to buildings, crops or plantation forests. The eastern termites can have colonies up to 5 millions. Eggleton (2000) Said termites (Lsoptera) are a large and diverse group of insects consisting of over species in 280 genera worldwide. Survey was carried out to document 13 termites species of in and around Gandhigram and various kinds of morphology and behavior of termites were studied in this study.*

## Introduction

## Classification

Kingdom – Animalia, Phylum – Arthropod, Subphylum- Atelocerata,
Class – Hexapoda (Including Insecta), Subclass – Pterygota
Infraclass – Neoptera, Super order – Dictyoptera
Order – Blattodea, Infra order – Isoptera

Termite anatomy is studied by entomologists mainly because it is an key in identifying termite species. The soldier is the main caste that is referred to when differentiating between species because most of the time ,in closely related species. Termites are social insects that live in colonies and have several hundreds to over a million termite's individuals. Termites are ubiquity insects in tropical and subtropical regions and play an important role in ecosystem .It

has been found around residential area, parks, and forests immediately surrounding infected buildings. They play a vital role in recycling wood and plant materials, modifying soil condition, improving soil composition and fertility, providing food for other animals Bignell *et al* (2000). Termites looks like are often described as a" white ant "due to the fact that termite workers and soldiers have white colored bodies. Termites is over the entire world in one form or another. Some types of termites destroy homes as fast as a fire (matter of month) while others consume the home much more slowly (matter of year). Termites play a significant role in a variety of ecosystems, in which they increase or contribute to maintain biodiversity. How they modify the soil properties has been a subject of intense research due to their influence on many pedogenetic process , especially soil porosity , water infiltration , and run off , and soil pH rise , on soil textural changes , including transportation of deep clay particles to the surface and organic matter transformation by termite gut microbiota, all these factors profound having agricultural implications. Harris *et al* (1994).

Most scientific investigation demonstrate role of termites in rising metals from underground. Termite colonies are widespread in Ethiopia like in many other African countries. Studied the soil brought to the surface by two termite species on serpentines from the great Dyke of Zimbabwe, but neither its scale nor emplacement can be compare to those of the farshewa dyke. Boyer (1982). Termite colony site often a compromise between access to water and avoidance of periodic inundations indeed. Termites are dominant to the point where they regulate both water infiltration and nutrient cycle, in turn promoting primary production Holt *et al* (1996). Termite produce winged reproductive's which are few in number with in the termite colony. Workers and soldier are sexually immature and blind. Worker's main task is to feed the colony, construct galleries, and hatch eggs. While soldiers defend the colony from predators Mills *et al* (2007). The model to be described provides an estimate of the probability that a specific house will be attached by termites with in specific time. Never less, various strategies were being recommended for mitigating the effects of termite attack, even to the extent of embedding these in building regulation.They are the primary determinants of terrestrial ecosystem structure, including microhabitat conditions for other organisms at secondary and tertiary tropic levels, and the consequent diversities of these consumers. The latter community also shapes the ecosystem through soil biological processes, such as decomposition, nutrient cycling, bioturbation and suppression of pathogens that are vital to service functions. However, because of their large colony size, neting behavior, and feeding preference, termites can cause considerable damage to

artificial structures and commodities with sufficient moisture, these wood materials become the ideal food sources for subterranean termites.

Dry wood termite groups that have the greatest economic important in North America, with subterranean termites causing 780% of the damage, and dry wood termites causing the other 20%. Termite species vary in their basic biological and ecology, including colony size, nesting feeding swarming and reproductive behavior. Termites are the dominant arthropod decomposers in lowland tropical forests .Termites activity, such as mound- building subterranean tunneling and soil feeding, improves soil structure and quality. Striking different are observed in the species richness, number of cades and functional diversity of termite assemblages , between biogeographical region size are poorly known for most regional faunas, thus limiting the opportunities for ecological and biogeographical analyses. Jones (1991). Termites important pests of building timbers, forestry and crops in economic entomology, with the cost of damage to the building, especially in Asia. Colonies consist of a pair of primary reproductive's or replacement reproductive's, soldiers, nymphs, pseudergates, larvae, and eggs. Hogberg (1986). Termites many types-soldier termite worker termite, Queen termite three types. There's a wide range of termite size. Termite size generally depends on the termite's age and species. Each termite begins with an egg is really. You need a good magnifying glass to identify a termite egg. When the egg hatches into a large, it is still tiny. After a few weeks the larva hatches. They occur wherever there is timber, decaying wood, plant refuse or soil rich in humus on which type can feed. Majority of insects like termites, produce winged adults. Whose only function is to migrate and propagate the species. Termites are a large and diverse group insects consisting of over 2600 species in 280 genera worldwide. Jones (1995).

**Soldier termite**

Soldier termites have a very distinct appearance from termite species to species to species soldier termites picture can be used to help identify what type are causing you problems. The soldier may be hard to find, but if you pester the termites or cause some trouble with their nest assured. In some species, the mature queen has a greatly distended abdomen and may produce 20,000 to 30,000 eggs a day. In 2005 a group of Australian scientists "discovered" (announced) a treatment based on an extract of a species of Eremophila that repels termites.

**Worker termites**

Worker termites are pretty standard looking throughout most termite castes. Termite workers are thin skinned and to be in contact with damp soil.

**Queen termites**

Termite queen pictures tend to be rather. After starting a colony queen termites change into egg laying machine. As they age their bodies become more and more elongated and bloated.

**Types**

**Eastern subterranean termites**

By far the more prevalent type of termite in North America is the subterranean termite also known as the soil feeding termite. The termite feeding on cotton, paper, trees, bush and roots wood. Subterranean termite especially enjoys the cellulose part of wood. The eastern termite can have colonies up to five million strong. Although the average is in the 30-40 thousand range. Akhtar (1974)

**Formosan subterranean termites**

These termites can consume huge amounts of wood very quickly. The nick name the "super termites" .A healthy adult colony of this type of termite can eat up to a pound of wood a day. The queen of a Formosan subterranean termite colony can have up to 1300 termite eggs a day as well. They have been known to eat everything from wood to palter to plastic even metal.

**Western subterranean termites**

This is by far the most common termite. The western subterranean termite enters your house by squeezing thru cracks in the foundation and other things. They usually build their colonies underground below the frost line and above the water table. They specifically eat the cellulose part of wood this means walls, floor, dressers, etc. The best way to notice these guys around is to look for their tell tale tunnels and recognize their swarming behavior. The thing of remember about these type of termites is where they are located in your house. They are also the urban termite in warmer climates.

**Dry wood termite**

Dry wood termites get their name from the fact that they live in dry wood. Dry wood infestation can occur in everything from book shelves to wooden rocking chair to hard wood floor to the wall of you house. Pretty much any where there is dry wood. There are hundreds of species of Dry wood termites. They are the powder post termites or more commonly known as" furniture termites". There can be multiple colonies in the same house. The best way to find these types of termites is look for their tell tale fecal pellets. As with all termites, dry wood termites are social insects, but unlike subterranean termites, they live entirely within the wood members they infest and obtain water adsorbed onto wood fibers any by metabolic processes. Dry wood termites are generally large and more cylindrical in body from compared to subterranean termites. Scheffrahn (1994). Their gallery system are limited to and usually extend only a few meters within their home wood, dry wood termites have proportionally shorter legs & more slowly than their more far-ranging subterranean counterparts. Dry wood termites colonies are composed of three primary castes: the reproductive's (King, queen & unmated winged from called alates) soldiers, & immature reproductive's (or) pseudergates. Egg & larvae are usually near galleries inhabited by the king & queen. All termites species are difficult to distinguish by immature (or) worker stager (or) by the wingless king (or) queen therefore, soliders (or) alates are best be used for species identification. Soliders are present in colonies year round, while alates are formed about a month before swarming season during the first six months, the initial batch of eggs matches into larvae. A colony measures in no less five year, at which time it produces it first crop of alates. Numerous colonies may live in close proximity & are thought to of share gallery system. Colonies of all dry wood termites' species infest sound, solid hare woods & soft woods, including all common building lumbers used in structural framing. Numerous colonies ma inhabit a single, structure. Because dry wood termites seek protection from external predation, galleries are concealed beneath the wood surface. Sounding with a had implement can locate hollowed out wood. External signs of infestations pellet extruded from 0.04 to 0.08 inch diameter. "Kick-out" holes. Pellets vary in color from cream to red to black and are expelled periodically from different kick – out holes communicating with the gallery system. Pellets do not change in shape (or) color over time and their color is often unrelated to the wood from which they were expelled. The nesting behavior and moisture requirement of different

termite. Spices vary and hence. The dry – wood termites eat the wood from within and create a hollow. These species can survive only underground as they need. Scheffrahn (1994)

**Damp wood termites**

The damp wood termites thrive in high moisture condition and do not require staying underground (or) in contact with the soil to survive. You can traces of the damp wood species near water leaks, in wall voids. They are found in moist and decaying wood in dead trees, stumps and logs. If you find exterior damage to your wooden furniture, floors (or) ceiling, then you can be sure about the existence of damp wood termites in your premises. Harris *et al* (1955)

**Formosan termites**

The most destructive species of termites and are sometimes, considered as part of subterranean species in most places. Large size and yellowish brown bodies. These colonies are very large, metering to thousands and millions of members in each colony.

**Flying termites**

Most people refer to termites as silent destroyers because they are known to secretly hide and thrive in your home without any signs of damage. The termites are known to feed on cellulose based plant materials.

**Dry wood termites**

This is because dry wood termites have a very distinctive fecal matter called "fares". However, unlike the fares of other termites the fecal matter of most dry wood termites tend condition very little moisture. To survey different kinds of termites to observe their behavior, To observe their morphology, like, eyes, legs, wings and To document the, various kinds of termites.

**Materials and methods**

For the survey and documentation of different kinds of termites intensive exploration visits were conducted twice in the begging and once in a weak for the through observations of termites in and around Gandhigram, Dindigul district, Tamil Nadu, India.

**Field observation and records**

The termite morphology like head, eye, legs, wings, and behavior like mound formation, and colonization. Were observed and recorded and identification by using standard procedures.

**Results Discussion**

There were 13 termites collected and their scientific name, family name, the species are given in table 1.

**Table 1**

| S.no | Common name | Scientific name | uses |
|---|---|---|---|
| 1. | Dry wood termite | *Cryptotermes tropicalis* | Food values |
| 2. | Indian dry wood termite | *Cryptotermes brevis* | Food values(tribal) |
| 3. | Subterranean termite | *Coptotermes formosanus* | Food values(tribal) |
| 4. | Dry wood termite | *Incisitermes minor* | Food values(tribal) |
| 5. | Swarmers | *Formosan subterranean* | Food values(tribal) |
| 6. | Lowland tree termite | *Incisitermes immigrans* | Food values(tribal) |
| 7. | Damp wood termite | *Schaedorhinotermes actuosus* | Food values(tribal) |
| 8. | Subterranean termite | *Schaedorhinotermes reticulates* | Food values |
| 9. | Lowland tree termite | *Incisitermes immigrans* | Food values |
| 10. | Dry wood termite | *Cryptotermes cynocephalus* | Food values(tribal) |
| 11. | Lowland tree termite | *Incisitermes immigrans* | Food values(tribal) |
| 12. | Damp wood termite | *Zootermopsis angusticollis* | Food values(tribal) |
| 13. | Subterranean termite | *Reticulitermes flavipes* | Food values(tribal) |

The survey of termites was done at in and around Gandhigram, Dindigul district, Tamil Nadu, India, 13 important termites were observed and listed in table 1. The termites were reported with common name, vernacular name, morphology, family name.

This is the first attempt carried out a survey on termites in and around Gandhigram. The morphology, behavior, and role of termites were recorded in the last few decades by the number of workers. Scheffrahn (1994) Current distribution of the Formosan subterranean termite and other termite species (Isoptera: Rhinotermitidae). Jones, *et al* (1995). Survey and ecological studies of the termites (Isoptera: Kalotermitidae) of Mona Island. These termites are doing various functions in the environment. The survey documentation of termites in each and every place is mandatory. These there is enormous scope for termite morphology, behavior, and their role in environment which are yet to be to be studied, and analyzed and documented. Abe *et al* (2009) Physicochemical and morphological intermites. Termite survey and hazard mapping.

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