

Nasutitermes corniger (Conehead Termite)

Order: Isoptera (Termites)

Class: Insecta (Insects)

Phylum: Arthropoda (Arthropods)



Fig. 1. Conehead termite (soldier), *Nasutitermes corniger*.

[<http://www.entsoc.org/PDF/2013/names/conehead-termite.pdf>, downloaded 21 January 2016]

TRAITS. The *N. corniger* soldiers have brown or cream-coloured bodies with dark brown, distinctive cone-shaped heads (Fig. 1). Total length of soldiers may range from 3-4 mm (NPMA, 2016). Dimensions of female termites are generally larger than in males, one example being that female wing length is 1.35 times that of the male (Scheffrahn et al., 2005a). Originally, the common name was the “tree termite”, but the Entomological Society of America approved the name change to “conehead termite” to avoid the misconception that these termites only inhabit and feed on trees (ESA, 2013). Previously, it had been difficult to differentiate among species in the genus *Nasutitermes*, but DNA analyses of *N. corniger* show possible synonymy with *N. costalis* and *N. polygynus* (Scheffrahn et al., 2005a,b). Nests may be dark-brown, large and rounded and can be accompanied by narrow tunnel-like paths alongside trees, walls of houses and other structures (Fig. 2) (ESA, 2013).

DISTRIBUTION. *N. corniger* is a neotropical species found in roughly forty-two Caribbean islands and other countries spanning a longitudinal distance of 6000 km to include parts of Central and South America (ESA, 2013) (Fig. 3). In Trinidad & Tobago its presence has been documented in Little Tobago, Chacachacare and Monos islands as well as on the mainland (Scheffrahn et al., 2005a). Most of these populations are considered native, but some may have arisen in Florida and New Guinea as introduced species as a result of international trade/transport (Scheffrahn et al., 2002, 2005b).

HABITAT AND ACTIVITY. Colonies are found in various habitats: coastal areas such as mangroves, inland regions like rain forests as well as residential areas; located at ground level, in large trees, logs or other solid structures and are generally polycalic (having multiple nests). Nests are good indicators as to colony age/growth as they tend to sprout more extensions with increasing population size during the wet season, which is also when the winged forms emerge for their crepuscular flights (Roisin and Pasteels 1996). Habitat type can directly limit or promote the colony's branching capability; for example, mangrove-dwelling termites can utilize root systems to expand and link nests, thus increasing colony size. *N. corniger* termites can forage as far as 5000m² from their colony and are typically territorial, frequently engaging in battles which result in large gaps of avoidance between territories (Adams and Levings, 1987).

FOOD AND FEEDING. These termites feed on cellulose in material such as trees, roots, fences, furniture/scrap wood, shrubs and paper. These substrates may be wet, dry and/or partially decomposed wood like fallen logs, broken branches, construction plywood and framing (Scheffrahn et al., 2005a). They also have been identified as a pest towards a variety of crops, notably citrus, fruit and palm trees (ESA, 2013).

POPULATION ECOLOGY. The colony typically comprises interconnected nests (up to 50: Atkinson and Adams 1997) of social termites: neuter (responsible for soldier and worker functions), immature instar/nymph, developed imago and primary and/or secondary reproductives (queens & kings). Typically, females are 20-40% heavier than males although males may be more numerous (Thorne 1983). Colonies have been shown to exhibit polygyny and polyandry with unrelated queens/kings cohabiting, although single queen-king colonies (monogamy) may predominate. Colonies may therefore vary in genetic similarity (0.33-0.51 intra-colony relatedness factor), with reduced similarity as a possible cause for strife within the colony (Adams et al., 2007). Regardless, *Nasutitermes* colonies tend to have relatively long lifespans, and can even last for 20 to 40 years (Merritt and Starr, 2010).

REPRODUCTION. Within a colony, genetically similar reproductives from various nests have been associated with budding and replacement reproduction. Alternatively, interconnected nests may have offspring of different haplotypes distributed throughout the colony (Atkinson and Adams, 1997). Colonies with size 5000-400,000 individuals tend to generate between 5000-25,000 developing termites (alates/nymphs) which may remain in the parental colony for roughly 5-8 months. Some colonies may not have fertile offspring at all, but for those that do, approximately 35% of total biomass is allocated to the alate or nymph stage. At maturity (imago stage), alates engage in a "nuptial flight" and leave the colony behind (Thorne, 1983).

BEHAVIOUR. In line with other termite species, the queen(s) and king(s) may bond, shed their wings and search for new nesting sites to burrow into, either at ground level, or along tree trunks (Merritt and Starr, 2010). In colonies with polygamous reproductives, workers and soldiers tend to be more accustomed to and have high tolerance for non-nestmates and/or colony-mates with lower relatedness: this can lead to either a decrease in antagonistic behaviour or an increase in intra-colony recognition errors (Adams et al., 2007), i.e. colony failure as well as survival cannot be easily predicted/explained solely as a result of behavioural observations.

APPLIED ECOLOGY. The conehead termite is a major pest in urban areas: Florida (Scheffrahn et al., 2002), Argentina, Brazil (Scheffrahn et al., 2005a) as well as in farmland; this can lead to destruction of entire residences/crops, loss of livelihoods/dwelling and overall economic loss.

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Fig. 2. Arboreal nest of conehead termites.

[<http://www.casaoceanocostarica.com/tours-activities/wildlife/animalsplants.htm>, downloaded 14 April 2016]

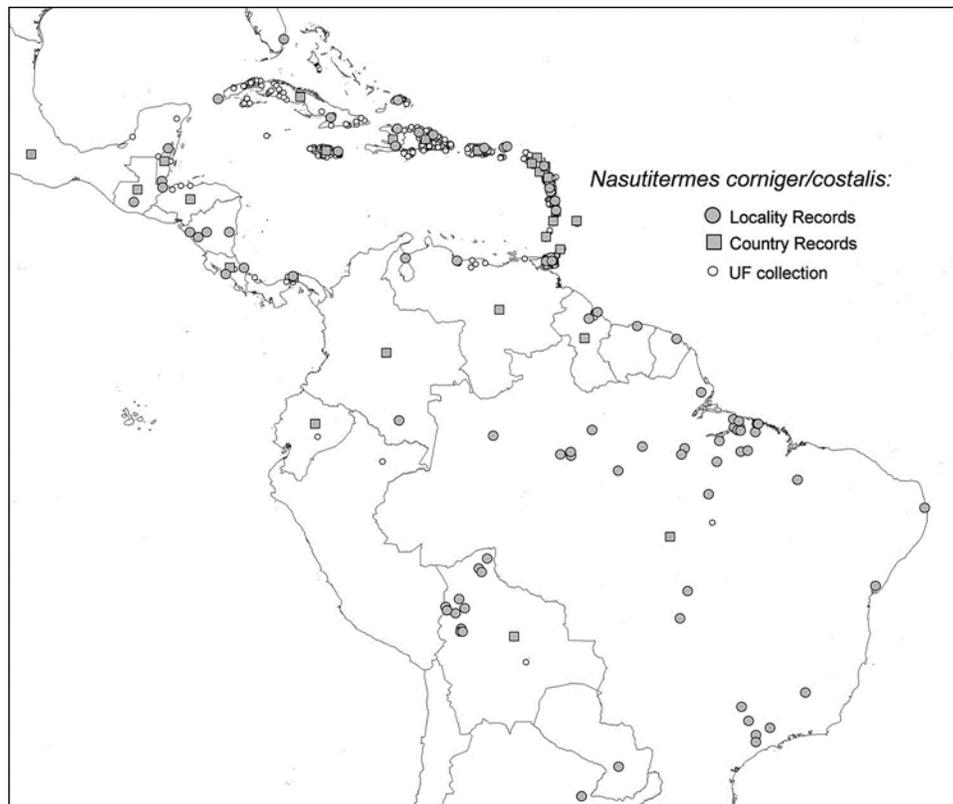


Fig. 3. Geographic distribution of *N. corniger/costalis*.

[From Scheffrahn et al., 2005a]