

***Neoconocephalus triops* (Linnaeus 1758)**

Contributors:

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Complete Latin Name & Higher Level Classification:

Kingdom Animalia (animals)

Phylum Arthropoda (arthropods)

Class Insecta (insects)

Order Orthoptera (grasshoppers, crickets, katydids)

Suborder Ensifera (Long-horned Orthoptera)

Family Tettigoniidae (Katydids)

Subfamily Conocephalinae (coneheads and meadow Katydids)

Genus *Neoconocephalus* (Common coneheads)

Species *Neoconocephalus triops* (Linnaeus 1758)

Common names: Three-eyed conehead katydid

Geographic Range:

Neoconocephalus triops (Linnaeus 1758) occurs in the southern United States and the Caribbean, and undoubtedly represent adventitious species (S.A. Marshall, S.M. Paiero, and O. Lonsdale, 2004). This species has the most extensive range of any *Neoconocephalus*. It occurs throughout the Caribbean area, north to southeastern Ohio, west to California, the Galapagos, and Lima, Peru, and southeast to Guyana. The Caribbean area is rich in *Neoconocephalus*, with as many as six species occurring in one locality and four of five species occurring on each of the Greater Antilles (T.J. Walker & M.D. Greenfield).

Habitat:

Neoconocephalus triops is characteristic of open and disturbed areas including agricultural and urbanized lands. It has a greater tolerance than most species for cold and dry conditions as shown

by its occurrence northward to Ohio and in dry habitats such as salt and tropical scrub. It is a strong flier and is often collected at lights (T.J. Walker & M.D. Greenfield).

Physical Description:

The *Neoconocephalus triops* can be identified by the conehead. No other conehead has a cone that is wider than long. Forewings extending more than 11 mm beyond hind femora; ovipositor about as long as hind femur. Length 43-60 mm for males, 51-67 for females (T.J. Walker & T.E. Moore). In some individuals the tegmina are flecked with dark brown. The fastigium of *Neoconocephalus triops* has a cream colored, transverse, dorso-frontal stripe, beneath which is sometimes a narrow dark line. The green individuals are called *va* (for the latin "variation") *macropterus* Redtenbacher, and the brown ones *vafuscostratus* Redtenbacher (Wolcott 1948). It can be distinguished from other Caribbean species by its large size. The frontal gap is always open. Males have a distinctive longitudinal black line on the left of the stridulatory area. *Neoconocephalus triops* is the only ensiferan Orthopteran in which the course of normal development is known to influence the nature of the calling song. In temperate areas, fall maturing adults are in reproductive diapauses, and when they begin to call the following spring they have a significantly lower wing stroke rate than adults that call without diapausing (T.J. Walker & M.D. Greenfield).

Reproduction:

The ovipositor of the female is almost as long as all the rest of her body and with it she inserts her eggs far down in the central spindle of leaves of high sugarcane. One egg-cluster, observed on Vieques Island, consisted of nine eggs, about half an inch long, light green color and considerably flattened by the pressure between the leaf-sheaths. Adults often hide far down in the leaf spindle of sugarcane, but not necessarily anywhere they have been feeding, so that actual injury by either nymphs or adults cannot be assessed with certainty (Wolcott 1948).

Behavior:

Adult, male tettigoniids and crickets attract mates by rubbing their forewings together to produce a calling song. The wing muscles used in sound production are, with a few possible exceptions, the same muscles used in flight. Some wing muscles of insects have been termed bifunctional

because they participate in both walking and flight. The forewing muscles of male tettigoniids and crickets are multifunctional in that they participate in sound production, and flight, and for many of the muscles in leg movements as well (Wolcott 1948).

Home Range/Communication and perception:

In America, two distinct reproductive generations occur per year. One generation reproduces during the summer and the other generation reproduces in late winter/early spring (Whitesell & Walker 1978). The two generations do not form distinct gene pools, as each generation largely comprises the offspring of the previous generation (Whitesell 1974). The offspring of the summer generation diapause as adults during the coldest months of the year before they reproduce in the late winter. Offspring of the winter generation mature without diapauses and reproduce in the following summer. In the tropics, reproductively active individuals of *N. triops* can be found all year round. Males of these populations express only the summer call (Whitesell 1974; Greenfield 1990). The calls of the summer and winter generations of *N. triops* differ in two temporal aspects. First, summer calls are structured in verses while winter calls are continuous. Second, summer calls have a substantially higher AM rate than winter calls at equal temperatures. By contrast, there were no differences in female preference between summer and winter generations: females of both generations responded readily to calls with and without verse structure and we could not detect differences in their tuning for AM rate. The calls of male *Neoconocephalus* have most energy concentrated in a relatively narrow low-frequency band. Males make loud penetrating calls and reveal their species identity and location. Females identify and approach calling males for mating (Whitesell & Walker 1978; Greenfield 1990).

Predation:

They are eaten by most of the larger birds; Dr. Wetmore reporting the green heron (*Butorides virescens*), the ani (*Genus Crotophaga*), the Mozambique (*Quiscalus niger chachypterus*), mangrove cuckoo (*Coccyzus minor*) and flycatcher, and Dr. Danforth the gracke, the thrush and the sparrow hawk. It was found in the stomach of the judio, clerigo and *Bufo marinus* (Wolcott 1948).

Ecology:

Adults are large, typically occur near the ground, and many species have high population densities (T.J. Walker & M.D. Greenfield).

Other comments:

The species name “triops” is Greek, meaning “three eyes”. Also a character from Greek mythology, an offspring of the sea-god Poseidon and Kanake. This refers to the black spot on the cone, having the appearance of a third eye (J.A. Deily & J. Schull 2006).

References:

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