

THE EVOLUTIONARY SIGNIFICANCE OF DEVELOPMENTAL PLASTICITY IN
THE COMMUNICATION SYSTEM OF *NEOCONOCEPHALUS TRIOPS*
(ORTHOPTERA: TETTIGONIIDAE)

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ABSTRACT

The katydid *Neoconocephalus triops* is a tropical species that extended its distribution range to North America. In North America, males display developmental plasticity in mating calls between reproductive generations: the winter call differs from the summer call in both double-pulse rate and call structure. In the tropics, males express only the summer call.

We found that tropical *N. triops* have the capacity to express the winter call, but tropical conditions do not induce its expression. Female *N. triops* have strong preferences for double-pulse rate, but are not selective for call structure, i.e. females of most populations are attracted to both the summer and winter call structure. The temperature dependency of female preference for double-pulse rate in the Florida population was significantly steeper than those of tropical populations or other *Neoconocephalus* species. This steeper temperature dependency of female preference resulted in an overlap of the preference with the summer call at high temperatures, and the winter call at low temperatures, facilitating communication in both seasons. Thus, female preference evolved in response to male call plasticity in the Florida population of *N. triops*.