

# Chapter 4

## Orthoptera

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### Summary

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Only three species of the Tettigoniidae were recorded during the present RAP survey, two of which appear to be Sichuan endemics (*Tettigonia chinensis* and *Teratura geniculata*). In addition, the third, widely distributed Palaearctic species (*Phaneroptera falcata*) was recorded. All three species of katydids were recorded only at Site 2 (Tongling). Other recorded Orthoptera included two species of Rhaphidophoridae, two Gryllidae, six Acrididae, and one Tetrigidae. One species of *Kingdonella* (Acrididae: Catantopinae) is possibly new to science.

### Introduction

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Orthopteroid insects, a group consisting of such animals as grasshoppers, crickets, katydids, and their relatives have long been used as indicator species in a variety of environmental assessments, including both urbanized areas and natural ecosystems (Samways 1997, 2005). What makes them suitable for such purposes is both their sensitivity to habitat degradation, such as floral changes or the presence of heavy metals in the soil, and the ease with which they can be collected and identified.

The fauna of the Orthoptera of China has been studied extensively over the last 150 years, and over 1,200 species have been reported from its large territory. The most recent catalog of grasshoppers (Otte et al. 2005) lists 875 species of these insects. Katydid and their relatives have been cataloged by Jin and Xia (1994) who list 339 species. Recently Naskrecki and Otte (2005) updated this list to include species described since 1994, bringing it to 377 species of the Tettigonioidae. The least studied group of Chinese Orthoptera are crickets (Grylloidea), with only 51 species listed by Otte et al. (2005).

The recent Rapid Assessment survey (RAP) to Ganzi Prefecture in Sichuan Province, which took place in September 2005, failed to reflect this apparent richness. A combination of the low temperatures of the late summer and high elevations of the surveyed sites (above 2,400 m) resulted in an extremely low number of collected species of the Orthoptera. These insects are associated primarily with warm, low-elevation habitats, and few species survive above the elevation of 2,500 m, especially late in the season. For example, fewer than 10 species of Chinese Tettigoniidae are known from sites at the elevation higher than 2,000 m. This dependence on warm, low-elevation habitats was clearly reflected in the results of the current RAP – the highest diversity of species was found at the lowest site (Tongling village, ~2,400 m). It was also the only site where katydids (Tettigoniidae) were present.

### Methods and study sites

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During the survey 3 collecting methods were employed for collecting katydids: (1) collecting at incandescent and mercury vapor (MV) lights at night, (2) visual search during the day and at night, and (3) net sweeping of the vegetation during the day and at night.

Net sweeping was employed in the vegetation along the roads within the forest, the forest understory, and natural openings within the forest, such as edges of streams or grassy hills. Sweeping was standardized by performing 5 consecutive sweeps in a series before the content of the net was inspected. Collecting at night was the most effective method at low elevation site (Tongling), where nights were warm, but significantly less effective at higher elevations. The MV collecting was done sporadically at each site between approximately 8 pm and 11 pm. This method yielded no