



First record of Amphipoda *Talitroides topitotum* (Burt, 1934) (Gammaridea, Talitridae) in the State of Espírito Santo, Brazil

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ABSTRACT. *Talitroides topitotum* (Amphipoda) was introduced in Brazil by silviculture activities. Currently the species is distributed in the states of Paraná, Rio de Janeiro and São Paulo. This paper describes the species' occurrence in the state of Espírito Santo. The objective of this study was to determine the interference of the edge effect on community structure of macroinvertebrates associated with leaf litter, where a *T. topitotum* female specimen was observed in coffee cultivations in March 2008.

Keywords: amphipod terrestrial, bioinvasion, litterfall, silviculture.

Primeiro registro do Amphipoda *Talitroides topitotum* (Burt, 1934) (Gammaridea, Talitridae) no Estado do Espírito Santo, Brasil

RESUMO. *Talitroides topitotum* (Amphipoda) foi introduzido no Brasil pelas atividades de silvicultura. Atualmente a espécie está distribuída nos Estados do Paraná, Rio de Janeiro e São Paulo. Este trabalho descreve a ocorrência desta espécie no Estado do Espírito Santo. O objetivo deste estudo foi determinar a interferência do efeito de borda na estruturada comunidade de macroinvertebrados associados ao folhiço, onde um espécime fêmea de *T. topitotum* foi observado em cultivo de café em março de 2008.

Palavras-chave: anfípoda terrestre, bioinvasão, serrapilheira, silvicultura.

Introduction

Talitroides topitotum (Burt, 1934) is a terrestrial amphipod that belongs to the family Talitridae. Within the suborder Gammaridea it is the only family with terrestrial representatives (BOUSFIELD, 1982; LOPES; MASUNARI 2004a, b and c). The species is considered endemic in tropical and subtropical regions, as well as in those with warm temperate climate of the Indo-Pacific (FRIEND; RICHARDSON, 1986; LAM; MA, 1989), although nowadays it is distributed all over the world and mainly associated to silviculture of exotic species (ALVAREZ et al., 2000).

The species was first described by Burt (1934) in Sri Lanka. Current records report its presence in the Indian subcontinent, in the Australian region, in the Pacific islands (Marquesas Islands, Hawaii and Hong Kong), the European continent (Germany and United Kingdom) and tropical Atlantic Ocean islands (Azores and Madeira) (FRIEND; RICHARDSON, 1986).

In North America the occurrence of the species was reported in the United States (California, Louisiana and South Carolina) (BIERNBAUM, 1980), and Mexico (ALVAREZ et al., 2000), whereas

in South America it is observed only in Brazil. In Brazil, the species' geographic distribution is limited to the states of Paraná, Rio de Janeiro and São Paulo (LEMONS DE CASTRO, 1972; LEMONS DE CASTRO; PEREIRA, 1978; LOPES; MASUNARI, 2004a, b and c).

According to Lopes and Masunari (2004a, b and c), *T. topitotum* was discovered in Brazil during activities associated with the growin of *Eucalyptus* spp., imported from the USA (ULIAN; MENDES, 1987) and Australia (BOUSFIELD, 1960).

Bousfield (1982) considered that *Talitrus decoratus* Carl, 1934, *Talitrus sylvaticus* Shoemaker, 1963, *Talitrus sylvaticus* Bousfield, 1975, *Talitrus (Talitroides) pacificus* Hurley, 1955 and *Talitrus (Talitroides) topitotum* Burt, 1934, are similar to *Talitroides topitotum* Burt, 1934. The objective of this study was determining the interference of the edge effect on community structure of macroinvertebrates associated with leaf litter.

Material and methods

The specimen was collected in the mountains of Espírito Santos state, within the municipality of Marechal Floriano (20°25'55" S and 40°47'06" W).

The predominating cultures in the region are coffee and eucalyptus, with some remaining patches of native forest. The collection was conducted in March 2008 in five different areas (eucalyptus, coffee, native forest, edges between eucalyptus and native forest and edge between coffee and native forest) using 20 colored Möricke trap (10 and 10 blue roses) in each area. The Möricke was placed 2 m away from one another and the traps were being exposed in the field for 24 hours.

Results and discussion

One single *T. topitotum* female, measuring 10 mm, was captured in the pink Möricke trap placed in a coffee plantation. The spatial distribution of the amphipod may be related to limited availability of suitable refuges and behavioral responses to habitat heterogeneity, moisture, temperature, light, wind action, the amount of litter and soil Ph (GONGALSKY et al., 2005). Kotze and Lawes (2008) showed a positive relationship between the abundance of terrestrial amphipods and degree of disturbance of the area where they are inserted. However, the low abundance found in this study can be explained by the type of trap used, since other authors (LOPES; MASUNARI, 2004a, b and c; MATAVELLI et al., 2009) used a pitfall trapping method.

In Espírito Santo the introduction and the likely spreading of the species may be related mainly to the growth of coffee and eucalyptus. Coffee cultivation in the state was triggered under the influence of the practices adopted in the state of Rio de Janeiro, in the mid-19th century. Coffee was introduced in Espírito Santo State through the southern lands and, by the time, coffee culture became an important economic factor in the state. In turn, eucalyptus was introduced in mid-20th century, and rapidly began to be grown in the state's countryside. Today, eucalyptus is one of the main factors in terms of agriculture in the state of Espírito Santo.

According to some authors (BOUSFIELD, 1982; FRIEND; RICHARDSON, 1986; LOPES; MASUNARI, 2004a, b and c; RICHARDSON, 1992; ULIAN; MENDES, 1987) talitrid amphipods belong to the fauna that inhabits litterfall and are elements of the trophic chain of terrestrial ecosystems, as well as in the diets of birds and terrestrial planaria (LOPES; MASUNARI, 2004a, b and c). Talitrid amphipods contribute directly to the soil decomposition process and to the metabolism of litterfall. Furthermore, the organisms mentioned above contribute for the decomposition process and the metabolism of litterfall, thereby, elevating the soil respiration rates, possibly due to the physical

effects of their movement, which may favor bioturbation (FRIEND; RICHARDSON, 1986). The biology of Talitridae was reviewed by Friend and Richardson (1986), while Biernbaum (1980) investigated the biology of the species *T. topitotum* in South Carolina, Lam and Ma (1989) in Hong Kong, Richardson (1992) in Hawaii and Alvarez et al. (2000) in Mexico. Yet, in Brazil the species was investigated concerning its' systematic and biogeographic aspects (LEMONS DE CASTRO, 1972; LEMONS DE CASTRO; PEREIRA, 1978; LOPES; MASUNARI, 2004a), its physiologic characteristics (ULIAN; MENDES, 1987, 1988), as well as its' morphometric (LOPES; MASUNARI, 2004c) and reproductive (LOPES; MASUNARI, 2004b) traits.

Conclusion

The terrestrial amphipod *T. topitotum* nowadays is a cosmopolitan species that is introduced into new environments can become the dominant species. The species is an important component of the invertebrate community epigeic, contribute directly to the soil decomposition process and to the metabolism of litterfall.

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