

Helena Sabino-Marques · António Mira

Living on the verge: are roads a more suitable refuge for small mammals than streams in Mediterranean pastureland?

Received: 16 April 2010 / Accepted: 19 October 2010 / Published online: 20 November 2010
© The Ecological Society of Japan 2010

Abstract The retention of natural habitat corridors is a useful and practical conservation tool that can attenuate the effects of habitat loss and fragmentation on wildlife. Linear structures may contribute to the conservation of biodiversity by providing additional habitats for small fauna living in highly modified environments. We assessed the importance of road verges as refuge areas for small mammals, in highly intensified grazed pastures, within a Mediterranean landscape and compared the role of road verges as refuges with that of riparian galleries, which have been described as important shelter locations for small fauna. For this purpose, a small mammal trapping study was undertaken on two road verges and beside two small streams in southern Portugal. We captured 457 individuals of five different species, with *Mus spretus* the most common species captured, followed by *Crociodura russula*. Captures were 4.6-fold higher immediately beside both roads and streams than 12 m away in the surrounding matrix. Individuals captured in the matrix presented a smaller body size and lower body condition, suggesting that this suboptimal habitat is occupied mainly by subadults. *M. spretus* was 46% more abundant by roads than by streams, while *C. russula* was present in similar numbers in both habitats. *M. spretus* individuals were larger near streams but exhibited no difference in body condition between habitats. *C. russula* had a better body condition and slightly higher body lengths at roadsides. Our results show that roadside verges in intensively grazed Mediterranean landscapes act as important refuges and constitute equally vital habitats for small mammals as do riparian

vegetation strips in landscapes where other suitable habitats are scarce.

Keywords Linear habitats · Small mammals · Road verges · Small streams · Mediterranean

Introduction

It is widely accepted that the retention of natural remnant habitat corridors is a useful and practical conservation measure that can attenuate the effects of habitat loss and fragmentation on wildlife (Downes et al. 1997; Bennett 2003). By providing additional habitats for species living in modified environments, linear structures make a direct contribution to the conservation of biodiversity. They may substantially increase the overall availability of suitable habitats and, in some cases, may comprise a substantial proportion of the remaining habitat available to wildlife, supporting resident individuals or populations of animals, and playing a key role in maintaining the diversity of wildlife and the continuity of ecological processes in heavily altered environments (Gelling et al. 2007).

Riparian areas constitute one of the most widespread, diverse and dynamic natural remnant corridors and are known as some of the most productive and diverse habitats available to wildlife, providing important habitats for many aquatic and terrestrial species (Naiman and Décamps 1997). They play a significant and often essential role in the maintenance of wildlife communities in adjacent upland habitats (Gomez and Anthony 1998). Riparian strips generally are cooler, wetter, more structurally complex, and more productive than upland areas (Naiman and Décamps 1997). Their diverse composition, structure of vegetation and variability in soil moisture may create important habitats for the survival and reproduction of many species by providing food and other essential resources, such as shelter (Naiman and Décamps 1997; Gomez and Anthony 1998). In the case of small mammals, riparian

H. Sabino-Marques (✉) · A. Mira
Unidade de Biologia da Conservação, Departamento de Biologia,
Universidade de Évora, Pólo da Mitra, 7002-554 Évora, Portugal
E-mail: lenasmarques@gmail.com
Tel.: +351-965308661

H. Sabino-Marques · A. Mira
Grupo de Investigação em Ecossistemas e Paisagens
Mediterrânicas, Instituto de Ciências Agrárias e Ambientais
Mediterrânicas, Universidade de Évora, Pólo da Mitra,
7002-554 Évora, Portugal