Microhabitat selection of the Western green lizard *Lacerta bilineata*

Massimiliano Luppi[1]*, Augusto Gentilli[2], Giuseppe Bogliani[2]

The traditional agricultural environment has been modified in recent decades in order to enhance production. This model of development has led to the reduction of natural areas and especially ecotonal areas and hedgerows that may act as wildlife habitat and ecological corridors between natural and semi-natural areas. Habitat fragmentation is one of the biggest problems for the conservation of biodiversity, especially for animal groups such as reptiles, which have reduced mobility (Rubio & Carrascal, 1994).

The Western green lizard (*Lacerta bilineata*) is a large lizard (adult total length: 30-45 cm) that occupies the Northern part of the Iberian Peninsula, France, Switzerland, West Germany and Italy (Elbing *et al*., 1997; Corti & Lo Cascio, 2002; Schiavo & Venchi, 2006). It lives in open habitats and is widespread in the uncultivated edges of woods and fields, along irrigation channels and roads (Barbieri & Gentilli, 2002; Schiavo & Venchi, 2006; Meek, 2014; Pernat *et al*., 2017).

Lacerta bilineata appeared to be still well distributed in the lowland areas of Northern Italy until a few decades ago, when it was abundant (Scali & Schiavo, 2004; Schiavo & Venchi, 2006). In recent years, however, the status of the species has become quite different because of the homogenization of the countryside, intensive cultivation and the destruction of hedgerows. In addition, the use of pesticides has greatly reduced insect abundance and thus its primary source of food. The Western green lizard is now locally threatened and the conversion of traditional agricultural habitats to intensive methods of farming is causing local population declines (Scali & Schiavo, 2004; Schiavo & Venchi, 2006). Moreover, the requirements of this species coincide with those of several other species typical of ecotones and, therefore, the Western green lizard might serve as an "umbrella species" for many other taxa, playing a key role in protecting these sensitive areas of transition. The species is listed on appendix II (strictly protected fauna species) of the Bern Convention (Council of Europe, 1979) as *L. viridis* and is considered of least concern (LC; population trend: decreasing) in the IUCN Red List of Threatened Species (Pérez-Mellado *et al.*, 2009). In Europe an important legal instrument of conservation is the EU Habitats Directive (Council of Europe, 1992); *L. bilineta* (as *L. viridis*) is inserted in Annex IV (species in need of strict protection). To ensure a favourable conservation status, Member States shall take the required measures to establish a system of strict protection, prohibiting all forms of deliberate disturbance, capture or killing of specimens of these species in the wild and avoiding deterioration or destruction of their habitat. Nevertheless, few resources are invested in monitoring the status of species and habitats and in the absence of reliable data, it will be impossible to assess the impact of conservation measures. Therefore, studies on the ecology and status of these species are essential.

The few remaining natural areas in the plains of Northern Italy, mostly limited to floodplains, offer a unique refuge for many animal species, including the

[1] Via Pionnio 38, 27022 Casorate Primo (PV), Italia.
[2] Dipartimento di Scienze della Terra e dell'Ambiente, Università degli Studi di Pavia, Via Ferrata 9, 27100 Pavia, Italia.
E-mail: augusto@worldwinepassion.it, giuseppe.bogliani@unipv.it

* Corresponding author: massimiliano.luppi85@gmail.com

Fig.1 - Location of study area.

Fig. 2 - Fluorite. (Photo: P. Pallino).

There is an artificial embankment consisting of large boul green lizard, which find a suitable habitat along the riverbanks. The goal of this study was to collect data on microhabitat selection by the Western green lizard in a river floodplain in North-western Italy, in order to obtain essential knowledge for developing appropriate management strategies. Since the species is found in a variety of habitats, our aim was not to describe its general habitat, but to highlight the microhabitat elements determining its presence, weighing all available microhabitats occurring in the study area.

The area has a high environmental heterogeneity and includes hygro-mesophilic woods dominated by the presence of oak (*Quercus robur*) with a rich undergrowth (*Prunus padus*, *Ulmus minor*, *Crataegus monogyna*, *Cornus sanguinea*, *Ligustrum vulgare*), hybrid poplar plantations, wetlands (*Salix* spp., *Alnus glutinosa*), and open areas characterized by a low value of shrub cover and a high value of short herbaceous cover. Along a stretch of the bank of the River Ticino included in our study area, there is an artificial embankment consisting of large boul After capture, each individual was measured (snout-vent length, SVL), photographed (ventral photo) and immediately released at the exact location of capture. Each lizard was also individually marked by a unique colour code

there is an artificial embankment consisting of large boul green lizard, which find a suitable habitat along the riverbanks. The goal of this study was to collect data on microhabitat selection by the Western green lizard in a

REFERENCES

Biancardi C.M., Rigo V., Azzolini S. & Gnoli C., 2014 – Eurasian badger (*Meles meles*) habitat and sett site selection in the northern Apennines. *Natural History Sciences*, Milano, 1 (1): 41-48. doi: 10.4081/nhs.2014.56

Brandbyge J., 1993 – Polygonaceae. In: The families and genera of vascular plants. Flowering plants. Dicotyledons. Magnoliid, Hamamelid and Caryophyllid families. Kubitzki K., Rohwer J. G. & Bittrich V. (eds.). *Springer*, Berlin, 2: 531-544

Fraser N.C. & Rieppel O., 2006 – A new protorosaur (Diapsida) from the Upper Buntsandstein of the Black Forest, Germany. *Journal of Vertebrate Paleontology*, 26 (4): 866-871.

Thiers B., 2014 onwards – *Index herbariorum*: a global directory of public herbaria and associated staff. *New York Botanical Garden*. <http://sweetgum.nybg.org/ih/> (retrieved on December 2014).