

Unsuspected richness near home: new herpetological records in Porto Metropolitan Area (NW Portugal)

Raquel Ribeiro^{1,2}, Joana Torres², Verónica Gomes², Miguel A. Carretero²,
Neftali Sillero³ & Gustavo A. Llorente¹

¹ Departament de Biologia Animal, Facultat Biologia. Universitat de Barcelona. Av. Diagonal, 645. 08028 Barcelona. Spain.

² CIBIO, Centro de Investigação em Biodiversidade e Recursos Genéticos. Campus Agrário de Vairão. 4485-661 Vairão. Portugal.
C.e.: raquel.ribeiro@mail.icav.up.pt

³ CICGE, Centro de Investigação em Ciências Geo-Espaciais. Universidade do Porto. Departamento de Matemática Aplicada.
Rua do Campo Alegre, 687. 4169-007 Porto. Portugal

Fecha de aceptación: 26 de agosto de 2009.

Key words: new records, amphibians, reptiles, Porto Metropolitan Area.

RESUMEN: En el curso de un estudio sobre fragmentación de hábitat, se obtuvieron un total de 1685 registros de anfibios y reptiles en la Área Metropolitana de Oporto (Portugal). Se presentan aquí las nuevas citas de distribución para las 14 cuadrículas UTM 10x10 km prospectadas. Pese al elevado grado de perturbación antrópica, esta área presenta una alta diversidad herpetológica (15 anfibios y 20 reptiles) que iguala e incluso supera a varios Parques Naturales de Portugal.

The very recent Portuguese distribution atlas of amphibians and reptiles (Loureiro *et al.*, 2008) is now a very useful tool in the national herpetological research and conservation policies since it constitutes the first one carried out with a systematic sampling. Nevertheless, as resources were limited, the sampling was primarily addressed towards the regions with the biggest information gaps at national level. This strategy proved to be appropriated as it resulted in some major changes in the shape of species distributions for those regions with less information (e.g. the spectacular change in the distribution of *Blanus cinereus*). As a consequence of this nationally oriented sampling same regions received less attention because some previous information was already available. However, the latter did not necessarily mean that herpetological knowledge was nearly complete. Although it can be surprising, this is the case of the Porto Metropolitan Area (PMA).

Within the framework of study on fragmentation effects on biodiversity, several study areas covered with natural or semi-natural vegetation were selected in the PMA.

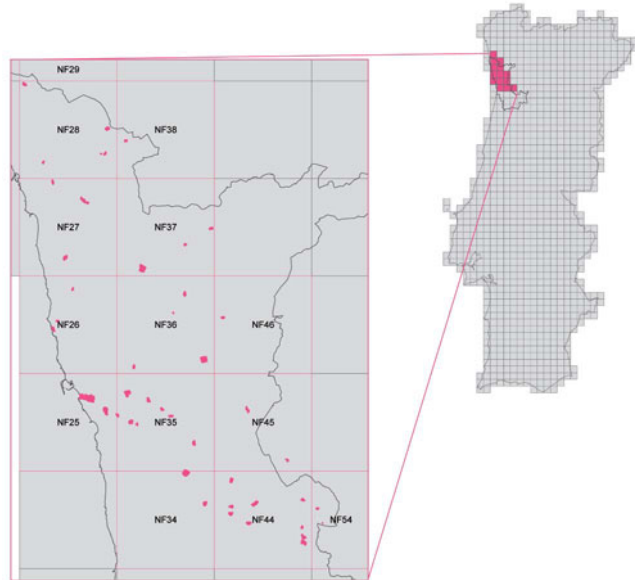


Figure 1. Localization of the UTM squares and the selected study areas within Porto Metropolitan Area.

Figura 1. Localización de las cuadrículas UTM y de las zonas de estudio escogidas en el Área Metropolitana de Oporto.

Table 1. Summary of the herpetological distribution data for the UTM squares containing the study areas (divided in New, Confirmed and Bibliographic presences), both by species and UTM squares. Species detected during field work presented in bold.

Tabla 1. Resumen de los datos de distribución en cuadros UTM para las especies de anfibios y reptiles observados. Los datos se distinguen mediante símbolos en nuevos, confirmados y bibliográficos. Las especies detectadas por primera vez en la zona de estudio se destacan en negrita.

Species	10x10 km UTM Squares														Total (new records)
	NF29	NF28	NF38	NF27	NF37	NF26	NF36	NF46	NF25	NF35	NF45	NF34	NF44	NF54	
<i>Chioglossa lusitanica</i>	---	---		---					---						1
<i>Pleurodeles waltl</i>	---	---	---				---	---		---	---	---	---	---	0
<i>Salamandra salamandra</i>			---												4
<i>Lissotriton boscai</i>						---									1
<i>Lissotriton helveticus</i>	---		---		---			---			---		---	---	1
<i>Triturus marmoratus</i>			---											---	0
<i>Discoglossus galganoi</i>												---	---	---	0
<i>Alytes obstetricans</i>			---				---								4
<i>Pelodytes sp.</i>	---	---	---		---	---	---	---		---	---		---	---	0
<i>Pelobates cultripes</i>	---	---	---		---		---	---	---		---	---	---	---	0
<i>Bufo calamita</i>	---		---		---		---	---	---				---	---	0
<i>Bufo bufo</i>							---								2
<i>Hyla arborea</i>		---	---		---	---	---	---			---	---	---	---	0
<i>Rana iberica</i>	---	---				---			---						1
<i>Pelophylax perezii</i>															0
<i>Emys orbicularis</i>	---	---	---	---	---	---	---	---	---		---	---	---	---	0
<i>Mauremys leprosa</i>	---	---	---		---		---	---	---	---	---	---	---		1
<i>Tarentola mauritanica</i>	---	---	---	---	---	---	---	---		---	---	---	---	---	0
<i>Timon lepidus</i>			---												2
<i>Lacerta shreilberi</i>															1
<i>Podarcis bocagei</i>														---	1
<i>Podarcis hispanica</i>		---	---			---	---		---						0
<i>Psammodromus algerus</i>	---	---	---	---		---	---		---						2
<i>Chalcides bedriagai</i>	---	---	---	---	---	---	---	---	---		---	---		---	0
<i>Chalcides striatus</i>	---		---		---		---		---						2
<i>Anguis fragilis</i>			---						---						1
<i>Blanus cinereus</i>	---	---	---	---	---	---	---	---			---	---			1
<i>Malpolon monspessulanus</i>			---	---					---						3
<i>Rhinechis scalaris</i>		---	---	---		---			---						1
<i>Hemorrhhois hippocrepsis</i>	---	---	---	---	---	---	---	---				---			1
<i>Coronella girondica</i>	---		---	---		---		---	---						2
<i>Coronella austriaca</i>	---	---	---			---	---		---	---	---		---	---	0
<i>Natrix natrix</i>			---				---		---					---	2
<i>Natrix maura</i>			---		---	---								---	0
<i>Vipera latastei</i>	---	---	---				---	---	---			---	---	---	0
Total (new records)	1	7	1	1	3	0	3	0	1	1	2	5	7	2	34

New presence:

Confirmed presence:

Bibliographic presence:

They were contained in 14 10x10 km UTM squares (Figure 1). Of the 770 records found in the Portuguese Atlas database for those squares, only 21.4% were originated from field work carried out during the Atlas project.

During the field seasons of 2008 (from March to July; 55 days of field work) and 2009 (from March to September with a summer interval; 57 days of field work), a total of 1685 species presences were recorded within the selected study areas. Although the aim of the study itself was not chorological, significant new information for the species distribution arose both confirming the presence of species with old records (essentially associated to the Mediterranean corridor of Douro river, Ribeiro *et al.*, 2008) and detecting new presences for the region (Table 1). The UTM squares NF44 and NF28 are the ones presenting the highest increase in terms of new species present with a total of seven new species. Nevertheless, the UTM square that contains more studied areas is the NF44 which might result in a double bias: on one hand, study areas harboured pristine, relatively well conserved landscapes which elevate the ecological value of the UTM square; on the other hand such square received more sampling effort. The species presenting the highest number of new UTM squares were the Common Midwife-toad (*Alytes obstetricans*) and the Fire Salamander (*Salamandra salamandra*) with four new 10 km UTM squares each.

Finally, it is important to stress that these are the results of two years of herpetological sampling in an extremely disturbed region. The study areas are included in nine municipalities being six of those (Porto, Gaia, Gondomar, Matosinhos, Maia and Valongo) categorized at the highest level of population density (1000 – 7293 inhabitants/km²). The

remaining three municipalities (Vila do Conde, Póvoa do Varzim and Trofa) are categorized at the second higher level, corresponding to 250-1000 inhabitants/km² (INE, 2009). This reality reflects on the low amount of natural environment remaining due to habitat alteration, loss and fragmentation. Despite this, results reveal a real herpetological hotspot with 15 amphibian and 20 reptile species, respectively corresponding to 88% and 71% of the total species present in continental Portugal. Our results confirmed the presence of 13 species of amphibians (failing to detect *Pleurodeles waltl* and *Bufo calamita*) and 16 species of reptiles (not detecting *Emys orbicularis*, *Tarentola mauritanica*, *Coronella austriaca* and *Vipera latastei*). In fact, the PMA registers more herpetological species than the nearest Natural Park (Parque Natural do Alvão) that harbours only 10 amphibians and 17 reptiles (Loureiro *et al.*, 2008) and represents even more a transition between Atlantic and Mediterranean regions than PMA (Sequeira *et al.*, 2003). Although smaller than the PMA, contained in only six 10x10 km UTM squares, it is constituted by continuous, not fragmented habitats. Consequently, the herpetological richness around Porto constitutes both a conservation challenge and a learning opportunity. Having such dense human population in areas of high levels of biodiversity, the PMA is extremely demanding in management terms but it is also an ideal scenario for a sustainable urban planning toward biodiversity conservation together with preservation of ecosystem functions. Modern trends in biodiversity conservation advise for including disturbed but rich regions (Anonymous, 2009). The unsuspected herpetological richness found provides an example that biodiversity conservation

is not limited to remote, undisturbed regions. On the contrary, an effort is clearly needed to preserve the residual pristine landscapes inserted in the Porto Metropolitan Area, with active measures to minimise the present problems they struggle (water pollution, habitat fragmentation, invasive alien species, etc.). Furthermore, an environmental educational plan could be easily implemented in the area (e.g. school monitoring ponds and surrounding diversity) contributing to the public

awareness of the environment problems and, hence, increasing the pressure on the policy makers to solve them.

ACKNOWLEDGMENTS: F. Sampaio, S. Costa, C. Vila-Pouca, J. Silva, J. Silva and J^a. Fernandes volunteered during field work. R. Ribeiro is financed by a PhD grant (SFRH/BD/31046/2006) from the Foundation for Science and Technology Portugal (FCT). N. Sillero is supported by post-doctoral positions (SFRH/BPD/26666/2006) also from FCT.

REFERENCES

- Anonymous 2009. Beyond the pristine. *Nature*, 460: 435-436.
- Instituto Nacional de Estatística, I.P. (ed.) 2009. *Retrato Territorial de Portugal 2007*. Instituto Nacional de Estatística. Lisboa.
- Loureiro, A., Ferrand, N., Carretero, M. A. & Paulo, O. (eds.) 2008. *Atlas dos Anfíbios e Répteis de Portugal*. Instituto da Conservação da Natureza e da Biodiversidade. Lisboa.
- Ribeiro, R., Torres, J., Carretero, M. A., Sillero, N. & Carretero, M. A. 2008. New observations of the Iberian Worm Lizard (*Blanus cinereus*) and the Bedriaga's Skink (*Chalcides bedriagai*) bring reliability to the historical records from Porto region (NW Portugal). *Boletín de la Asociación Herpetológica Española*, 19: 49-50.
- Sequeira, F., Gonçalves, H., Soares, C., Teixeira, J. & Carretero, M. A. 2003. Herpetofauna del área Natura 2000 Alvão-Marão (norte de Portugal). *Boletín de la Asociación Herpetológica Española*, 14(1-2): 17-22.

Depredación de *Pelobates cultripes* en Galicia por un mustélido

Pedro Galán & Ricardo Ferreiro

Departamento de Biología Animal, Biología Vegetal e Ecoloxía. Facultade de Ciencias. Universidade da Coruña. Campus da Zapateira, s/n. 15071 – A Coruña. C.e.: pgalan@udc.es

Fecha de aceptación: 22 de julio de 2009.

Key words: *Pelobates cultripes*, predation, mortality, Galicia.

Los anfibios forman una parte relativamente importante de la dieta de algunas especies de carnívoros, especialmente de los mustélidos, existiendo datos en la Península Ibérica de este consumo por parte de la nutria paleártica (*Lutra lutra*), el visón americano (*Neovison vison*) o el turón (*Mustela putorius*), entre otros (Lizana & Pérez-Mellado, 1990; Palazón & Ruíz-Olmo, 1997; García-París *et al.*, 2004; Clavero *et al.*, 2005). Las especies ibéricas sobre las que se poseen más datos de su con-

sumo por parte de los mustélidos son los sapos del género *Bufo*, tanto *Bufo bufo* (Lizana & Pérez-Mellado, 1990; Bartralot & Bonet-Arbolí, 2000; Ayres & García, 2007) como *Bufo calamita* (Sanz-Azkue *et al.*, 2008). En el caso de *Pelobates cultripes*, se han citado las siguientes especies como mamíferos depredadores: *Eliomys quercinus*, *Genetta genetta*, *Herpestes ichneumon*, *Lutra lutra*, *Meles meles* y *Rattus norvegicus* (Valverde, 1967; Salvador & García-París, 2001; García-París *et al.*, 2004).