

# New records of *Pelodytes* spp. and *Pleurodeles waltl* outside their distribution range in northern Portugal

Cátia Matos<sup>1\*</sup>, Neftalí Sillero<sup>2</sup>, Albano Soares<sup>3</sup>

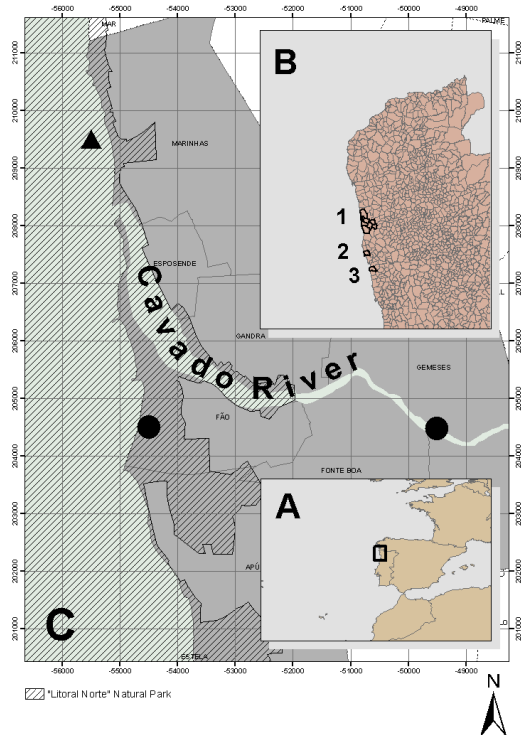
This work aims to present new distribution limits for *Pelodytes* spp. and *Pleurodeles waltl* in the northwest of Portugal. These data were collected during several surveys performed in 2009 at the Natural Park ‘Litoral Norte’ (NPLN) in order to produce a herpetological atlas (Matos, 2009), and in 2010 during other sporadic surveys.

Currently, three species have been described inside the genus *Pelodytes*: *P. punctatus*, in the Iberian Peninsula, France and North-east Italy (Barbadillo, 2002a); *P. ibericus*, endemic to the Iberian Peninsula (Barbadillo, 2002b); and *Pelodytes caucasicus*, in the western coast of Black Sea (Kaya et al., 2008). In Portugal, the taxonomy is not resolved because the limits between *P. punctatus* and *P. ibericus* are not well established, and the existence of a third *Pelodytes* form in the south-western part of Portugal is being investigated (Crespo et al., 2010). In Iberia, Barbadillo (2002a) cited *P. punctatus* in the eastern half of Spain, and in Portugal. Then, *P. ibericus* should occupy only the south-western part of Spain (Barbadillo, 2002b). In any case, the species of the genus *Pelodytes* are distributed in Portugal from the south (Algarve region) to the north (Mindelo, Vila do Conde) following the coast (Crespo et al., 2010).

The genus *Pleurodeles* includes three species: *P. waltl*, distributed in the Iberian Peninsula and North-western Morocco; *P. poireti*, located in North Algeria and Tunisia, and *P. nebulosus*, restricted to Edough Peninsula in Algeria (Carranza & Wade, 2004). In the Iberian Peninsula, *P. waltl* occupies the southern two-thirds with an irregular northern boundary. These species populations are more numerous in the

southern and western parts of Iberia, rarefied to the north, especially above the Central System Mountains and very fragmented to the east (Montori et al., 2002; Montori & Llorente, 2010). In Portugal, this species is present in the interior and southern parts of the country, and extends the distribution to the northwest along the coastline, resulting in a U-shaped distribution. The actual northwest limit known for this species is the region of Mindelo and Póvoa de Varzim, in Ave river-basin (Montori & Llorente, 2010).

In February 2009 and January 2010, we registered



**Figure 1.** A. Location of Portugal; B. Location of the study area (1) and previous known records localities Póvoa de Varzim (2) and Mindelo (3). C. Study area with the 1x1 UTM records of *Pelodytes* spp. and *Pleurodeles waltl*. These records are marked, respectively, with black circles and triangle. Local administrative limits are represented as well as the limits of the natural park ‘Litoral Norte’. The coordinate system used was ETRS 89 TM06 Portugal.

1 Universidade do Porto, Faculdade de Ciências, Rua do Campo Alegre, 687, 4169-007 Porto, Portugal; e-mail: catiasmatos@sapo.pt

2 Centro de Investigação em Ciências Geo-Espaciais (CICGE) Universidade do Porto, Faculdade de Ciências, Rua Campo Alegre, 687, 4169-007 Porto, Portugal; e-mail: neftali.pablos@fc.up.pt

3 Rua da Fábrica, 16 3º esq. 4050-246 Porto; e-mail: albano\_zoares@live.com.pt

\* corresponding author

**Table 1.** Records of the two species in the study area with the locality and indication of the 10x10 and 1x1 UTM squares. Coordinates in ETRS 89 TM06 Portugal system.

No	Species	UTM10x10	UTM 1x1	X	Y	Locality	Year
1	<i>Pelodytes</i> sp.	NF19	NF1795	517949.96	4594980.11	Fão	2009
2	<i>Pelodytes</i> sp.	NF19	NF1795	517837.78	4595561.5	Fão	2010
3	<i>Pelodytes</i> sp.	NF29	NF2345	522973.59	4594886.7	Rio Tinto	2010
4	<i>Pelodytes</i> sp.	NF29	NF2345	523313.55	4594853.3	Rio Tinto	2010
5	<i>Pelodytes</i> sp.	NF29	NF2345	523313.55	4594853.3	Rio Tinto	2010
6	<i>Pleurodeles waltl</i>	NG10	NG1700	517140.57	4600871.79	Marinhas	2009

one adult of *Pelodytes* spp. vocalizing in a temporary pond located in a sand-hill with *Pinus pinaster* in Fão (Esposende) (Figure 1). In March 2010, we found more 3 individuals (Figure 2) in Marachão (Rio Tinto, Esposende), 5 km to the east from Fão record (Figure 1). *P. waltl* was collected in March 2009 on a sand-hill drain that goes directly into the sea, located at Cepães (Marinhas, Esposende) (Figure 1). This drain is exposed and the predominant vegetation is *Juncus* sp. and *Salix alba*. These records for both species correspond to new UTM 10x10 km squares (NF19 and NF29 for *P. punctatus*, and NG10 for *P. waltl*), and constitute new distribution limits in the north-west of Portugal (Loureiro *et al.*, 2010; Matos, 2009) (Table 1).

Previous species records from the Atlas of Portugal (Loureiro *et al.*, 2010) were located 20 km to the south, in Mindelo (Vila do Conde). Also, surveys performed by the Natural Park (ICNB, 2007) did not find any of the two species inside the limits of the park. However, it is not possible to know, currently, if these new records correspond to a regression or a recent expansion process in both species. In fact, more species records between the new and the previous limits are possible and studies are important to define the species distribution limits through the interior of the mainland.

**Acknowledgements.** NS is supported by a post-doctoral position (SFRH/BPD/26666/2006) from Fundação para a Ciência e a Tecnologia from Portugal.

## References

- Barbadillo, L. J. (2002a): *Pelodytes punctatus*. In: Atlas de distribución y Libro Rojo de los Anfibios y Reptiles de España. eds. J. M. Pleguezuelos, R. Márquez, & M. Lizana, p. 100-102. Dirección General de Conservación de la Naturaleza-Asociación Herpetológica Española, Madrid.
- Barbadillo, L. J. (2002b): *Pelodytes ibericus*. In: Atlas de distribución y Libro Rojo de los Anfibios y Reptiles de España. eds. J. M. Pleguezuelos, R. Márquez, & M. Lizana, p. 97-99. Dirección General de Conservación de la Naturaleza-Asociación Herpetológica Española, Madrid.



**Figure 2.** One of the tree *Pelodytes* spp. found in Rio Tinto, Esposende. Photo by Albano Soares.

- Carranza, S. and Wade, E. (2004): Taxonomic revision of Algero-Tunisian *Pleurodeles* (Caudata: Salamandridae) using molecular and morphological data. **Revalidation of the taxon *Pleurodeles nebulosus*** (Guichenot, 1850). *Zootaxa* **488**: 1-24.
- Crespo, E. G., Marquez, R., Pargana, J., and Tejado, M. (2010): *Pelodytes* spp. In: Atlas dos anfíbios e répteis de Portugal, Eds. A. Loureiro *et al.*, p. 112-115. Esfera do Caos, Lisboa.
- ICNB (2007): Plano de Ordenamento e Gestão do Território do Parque Natural do Litoral Norte - Fase I: Caracterização biológica – Volume III. p. 88 Instituto de Conservação da Natureza e da Biodiversidade (I.C.N.B.), DHVFBO Consultores S.A., Algés.
- Kaya, U., Tuniyev, B., Tuniyev, S., Kuzmin, S., Tarkhishvili, D., Tuniyev, B., Papenfuss, T., Sparreboom, M., Ugurtas, U., Anderson, S., Eken, G., Kilic, T., and Gem, E. (2008): *Pelodytes caucasicus*. In: *IUCN Red List of Threatened Species. Version 2010.2*, ed. IUCN.
- Loureiro, A., Ferrand, N., Carretero, M.A., and Paulo, O. (2010): Atlas dos Anfíbios e Répteis de Portugal. Esfera do Caos, Lisboa, pp: 256.
- Matos, C. (2009): Estudo e Conservação da Herpetofauna do Parque Natural Litoral Norte. Relatório Final de Estágio. Licenciatura em Biologia. Faculdade de Ciências, Universidade do Porto. p.72.
- Montori, A. and Llorente, G. A. (2010): *Pleurodeles waltl*. In: Atlas dos anfíbios e répteis de Portugal. Eds. A. Loureiro *et al.*, p. 94-95. Esfera do Caos, Lisboa.
- Montori, A., Llorente, G. A., Santos, X., and Carretero, M. A. (2002): *Pleurodeles waltl*. In: Atlas de distribución y Libro Rojo de los Anfibios y Reptiles de España. Eds. J. M. Pleguezuelos, R. Márquez, & M. Lizana, pp. 51-53. Dirección General de Conservación de la Naturaleza-Asociación Herpetológica Española, Madrid.