

59. NEW CHOROLOGIC CONTRIBUTIONS TO THE ENDANGERED *ISOETES DURIEUI* BORY (ISOETACEAE, PTERIDOPHYTA) IN THE PROVINCE OF HUELVA (ANDALUSIA, SPAIN)

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Nuevas aportaciones corológicas para la amenazada Isoetes durieui Bory (Isoetaceae, Pteridophyta) en la provincia de Huelva (Andalucía, España)

Key words. Chorology, Pteridophyta, *Isoetes durieui*, new records, Iberian peninsula.

Palabras clave. Corología, Pteridophyta, *Isoetes durieui*, nuevas citas, Península Ibérica.

Isoetes durieui Bory is a terrestrial and primitive vascular plant that belongs to the Pteridophyta Division. Its general distribution comprises the west of the Mediterranean region. It is considered a rare species that grows on siliceous soils, always in temporary ponds or humid areas such as riversides (Prada, 1983). In the Iberian Peninsula it is more frequent in the western part. Nevertheless, disjunct areas can be found in Catalonia and even in the Balearic Islands (Prada, 1987). In Andalusia region (south of Spain) it is endangered and

MUNICIPALITY	LOCATION	COORDINATE	ELEVATION	DATE	VOUCHER
		(UTM)	(m)		SAMPLE N°
Aroche	Arroyo de la Helechosa	29SPB69	274	06.V.2014	61972
Aroche	Barranco de los Frailes	29SPC60	287	20.V.2014	61973
Aroche	Rivera de Peramora	29SPC60	223	15.V.2014	61974
Cortegana	Barranco de la Panera	29SPB78	273	02.VII.2014	61975
Cortegana	Rivera de la Fresnera	29SPB78	273	03.VII.2014	61976
El Campillo	Afluente de Rivera del Villar	29SQB07	294	28.V.2014	61977
Rosal de la Frontera	Afluente de Barranco de Enmedio	29SPC60	273	07.V.2014	61978
Rosal de la Frontera	Barranco de los Vegados	29SPB69	239	17.VI.2014	61979
Rosal de la Frontera	Barranco de Valiño	29SPB69	228	17.VI.2014	61980
Santa Bárbara de Casa	Arroyo de la Corte	29SPB68	322	04.VI.2014	61981
Santa Bárbara de Casa	Rivera de Pierna	29SPB59	274	12.VI.2014	61982
Valverde del Camino	Afluente de Barranco de la Parrilleja	29SPB95	198	09.IV.2014	61983

Table 1. Data about the new localities of *I. durieui* in the province of Huelva.

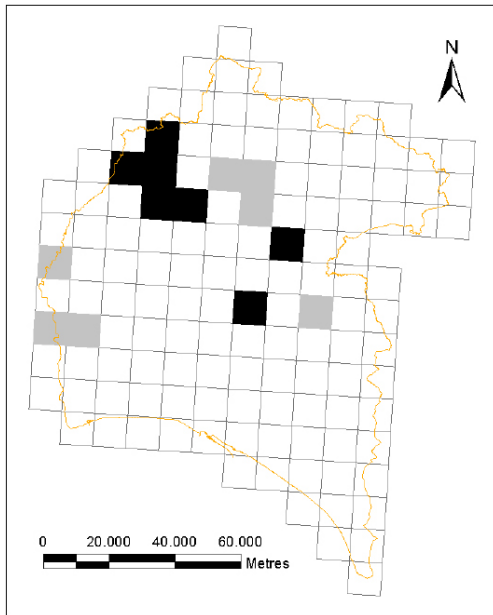


Figure 1. Current distribution of *I. durieui* in the province of Huelva (Andalusia, Spain). Grey cells (10 x 10 km) point out the previously known distribution, whereas the black ones state the new localities.

catalogued as vulnerable (*Ley 8/2003, de 28 de octubre, de la flora y fauna silvestres; Decreto 23/2012, de 14 de febrero, por el que se regula la conservación y el uso sostenible de la flora y la fauna silvestres y sus hábitats*) and included in the red list (Cabezudo and Talavera, 2005).

The study area is located in southwestern Iberian Peninsula, corresponding to the province of Huelva (Andalusia, Spain), area which is composed of acid soils in the main. The mean annual rainfall is quite high (around 800-900 mm). These two factors are very important for the establishment of different species within the genus *Isoetes*. Records from other references (Cabezudo, 1976; Prada, 1983; Rivera and Cabezudo, 1985; Sánchez Gullón and Rubio García, 1999; Delgado Vázquez and Plaza Arregui, 2010) and web sites (such as

www.anthos.es and www.gbif.org, last accessed February 2015) have been compiled. This way, seven 10 x 10 km different cells of occurrence has resulted. During a field work in the spring and summer of 2014 twelve new populations have been found. The new voucher samples (tab. 1) have been deposited in the herbarium of the Faculty of Sciences of the University of Cordoba (COFC).

Isoetes durieui has been frequently found sharing habitat with *I. histrix* Bory, being latter more abundant than the target species of this work. In some cases, pure populations of *I. durieui* composed by numerous specimens have been detected. The current distribution of *I. durieui* has been updated with seven additional new cells. Consequently, the occurrence of *I. durieui* has been doubled (10 x 10 km cells) in the province of Huelva (figure 1). On the other hand, it has been observed how different populations have been lost in recent years. The warming projected in the context of global change could affect adversely the ecology and the reproductive biology of this fern (Salvo Tierra, pers. comm.). The lack of colourfulness and size leads to the genus *Isoetes* to go unnoticed. With some experience on the identification of the natural habitat it is possible to find out new populations, a first step to preserve this species.

REFERENCES

- CABEZUDO, B. -1976- Nota corológica sobre la provincia de Huelva. III. *Lagascalia* 6(2): 251-256.
- CABEZUDO, B. & S. TALAVERA (coord.) -2005- Lista Roja de la Flora Vascular de Andalucía. Junta de Andalucía. Consejería de Medio Ambiente.
- DELGADO VÁZQUEZ, A. J. & L. PLAZA ARREGUI -2010- *Helechos amenazados de Andalucía: avances en conservación*. Junta de Andalucía. Consejería de Medio Ambiente.

- PRADA, C. -1983- El género *Isoetes* L. en la Península Ibérica. *Acta Bot. Malacitana* 8: 73-99.
- PRADA, C. -1987- *Isoetes* L. in CASTROVIEJO, S. et al. (eds.) *Flora Ibérica* Vol. I: 15-20. C.S.I.C., Madrid.
- RIVERA, J. & B. CABEZUDO -1985- Aportaciones al conocimiento florístico de la Sierra de Aracena (Huelva, España). *Acta Bot. Malacitana* 10: 61-78.
- SÁNCHEZ GULLÓN & RUBIO GARCÍA -1999- Novedades florísticas para el litoral de Huelva y provincia. I. *Lagascalia* 21(1):7-16.

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