

# Ecology and habitats of *Serapias perez-chiscanoi* (*Orchidaceae*) near Vila Nova da Baronia (Lower Alentejo, Portugal)

Marizia M.D. Pereira (\*), Caspar Venhuis (\*\*), & Francisco Gutierrez (\*\*\*)

**Abstract:** Pereira, M. M. D., Venhuis, C. & Gutierrez, F. *Ecology and habitats of Serapias perez-chiscanoi (Orchidaceae) near Vila Nova da Baronia (Lower Alentejo, Portugal). Lazaroa 31: 127-132 (2010).*

We present the results of the ecology and variation in habitat of the orchid *Serapias perez-chiscanoi* Acedo, based on field studies between 2002 and 2007. The study area lies in the proximity of the small village of Vila Nova de Baronia, which is situated in the Lower Alentejo province (Portugal).

The following climatophilous series of cork oak forest were identified: *Asparago aphylli-Querceto suberis sigmetum* and their subsequent stages: *Phillyreo angustifoliae-Arbutetum unedonis*, *Halimio ocyroidis-Ericetum umbellatae* and/or the community of *Ulex australis* subsp. *welwitschianus* and *Cistus ladanifer* and *Trifolio cherleri-Plantaginetum bellardii*. Typical communities of wet soils (*Junco pygmaei-Isoetetum velati*, *Periballio laevis-Illecebreum verticillati*, *Loto hispidi-Chaetopogonetum fasciculati*) and saturated soils (*Myosotido stoloniferae-Ranunculeum omiophylli* and the *Juncus bulbosus* and *Myosotis lusitanica* community) were found in depressions.

*S. perez-chiscanoi* was found in the following plant communities: *Junco pygmaei-Isoetetum velati*, *Loto hispidi-Chaetopogonetum fasciculati*, *Gaudinio fragilis-Agrostietum castellanae*, and the community of *Ulex australis* subsp. *welwitschianus* and *Cistus ladanifer*.

**Keywords:** *Serapias perez-chiscanoi*, Portugal, ecology, habitat.

**Resumen:** Pereira, M. M. D., Venhuis, C. & Gutierrez, F. *Ecología y hábitats de Serapias perez-chiscanoi (Orchidaceae) en Vila Nova da Baronia (Baixo Alentejo, Portugal). Lazaroa 31: 127-132 (2010).*

Se presenta un estudio sobre la variabilidad en la ecología y el hábitat de *Serapias perez-chiscanoi* Acedo, realizados entre los años 2002 y 2007. El área de estudio se encuentra en las proximidades de Vila Nova de Baronia, en la provincia del Bajo Alentejo (Portugal).

La serie climatófila de estos territorios se corresponde con un alcornocal de *Asparago aphylli-Querceto suberis sigmetum*, siendo sus etapas seriales principales: *Phillyreo angustifoliae-Arbutetum unedonis*, *Halimio ocyroidis-Ericetum umbellatae*, la comunidad de *Ulex australis* subsp. *welwitschianus* y *Cistus ladanifer* y *Trifolio cherleri-Plantaginetum bellardii*. Fueron también identificadas las comunidades típicas de suelos húmedos (*Junco pygmaei-Isoetetum velati*, *Periballio laevis-Illecebreum verticillati*, *Loto hispidi-Chaetopogonetum fasciculati*) y de suelos saturados (*Myosotido stoloniferae-Ranunculeum omiophylli* y la comunidad de *Juncus bulbosus* y *Myosotis lusitanica*).

Las comunidades vegetales en que se encontró *Serapias perez-chiscanoi* son: *Junco pygmaei-Isoetetum velati*, *Loto hispidi-Chaetopogonetum fasciculati*, *Gaudinio fragilis-Agrostietum castellanae*, además de los matorrales de *Ulex australis* subsp. *welwitschianus* y *Cistus ladanifer*.

**Palabras clave:** *Serapias perez-chiscanoi*, Portugal, ecología, hábitat.

\* Dpto. de Paisagem, Ambiente e Ordenamento, Universidade de Évora. Portugal. E-mail: mariziacmdp3@gmail.com.

\*\* Institute for Biodiversity and Ecosystem Dynamics (IBED), Universiteit van Amsterdam, Kruislaan 318, 1098 SM, Amsterdam, The Netherlands.

\*\*\* Instituto de Geografia e Ordenamento do Território/Centro de Estudos Geográficos da Universidade de Lisboa. Faculdade de Letras. 1600-214 Lisboa, Portugal.

INTRODUCTION

The distribution of the orchid *Serapias perez-chiscanoi* Acedo is limited to the southwestern part of the Iberian Peninsula. It is a rare species with about 25 known populations. The species is characterized by pale, greenish flowers that often have a reddish venation on all plant parts, in contrast to all other members of the genus which generally have red colored flowers.

*Serapias perez-chiscanoi* is found only in Extremadura (Spain), mainly along the Guadiana and Tagus river basin, and in several other scattered populations. One population is known from the most western part of the Castille-La Mancha region, near the border of Extremadura (VENHUIS & al., 2006). One population was also reported from the Algarve, in Portugal (JANSEN, 1993). Although some authors have doubts about its taxonomic status, VENHUIS & al. (2004) consider *Serapias perez-chiscanoi* to be a distinct species as it has a stable and uniform morphological appearance, along with a deviant habitat and breeding system.

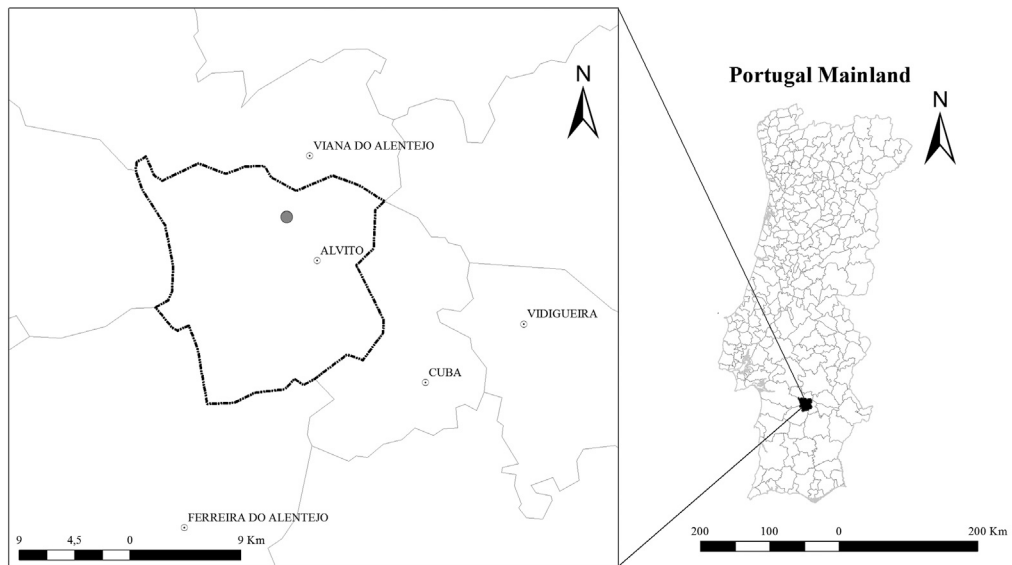
This paper provides a phytosociological and syntaxonomical classification of the habitat of *Serapias perez-chiscanoi* in the Lower Alentejo province (Portugal), based on field data and observations.

MATERIALS AND METHODS

STUDY AREA

The study area is situated near the small village of Vila Nova da Baronia, which is a rural Portuguese community in the Alvito region, located in the Lower Alentejo province. Vila Nova da Baronia has an area of about 124.54 km<sup>2</sup>, 1328 inhabitants (2001) and thus a density of 10.7 per/km<sup>2</sup>. The study area is situated about 175 km from the country's capital, Lisbon (Figure 1).

According to the biogeographic map by COSTA & al. (2002) and RIVAS-MARTÍNEZ & al. (2004), the study area is located in the Mediterranean West Iberian Province (Lusitan-Extremadurean subprovince, Marianic-Monchiquensean sector



Coordinate system ETRS 1989 TM06 (Portugal)  
Source: Agência Portuguesa do Ambiente (2008).

Figure 1 – Global position of the study area (green dot). Source: Edited map of the Agência Portuguesa do Ambiente (2008).

and Baixo Alentejano-Monchiquense subsector). According to RIVAS-MARTÍNEZ & al. (2002), the bioclimatic characterization can be considered as the upper meso-Mediterranean belt and lower sub-humid ombrotype. The climate in this southern region of Portugal has a strong Mediterranean influence, characterized by a relatively low and concentrated rainfall during winters, high average temperatures and a relatively low humidity.

Geologically speaking, the Alvito region, and thus the rural community of Vila Nova da Baronia, is located at the border of the ancient Mesozoic formations, belonging to the western edge of the Hesperic Massif at the southwestern zone of Ossa-Morena, and the modern Mesozoic formations form the western edge, locally represented by Cenozoic formations such as the Sado river basin (CÂMARA MUNICIPAL DE ALVITO, 2009). This basin is characterized by litholic soils, non-humic or microphyritic rocks and lithosoils. This region is predominantly characterized by a landscape of open pastures with scattered trees.

#### NOMENCLATURE

The identification of the regional flora and nomenclature follows ALCARAZ & al. (1991), CASTROVIEJO & al. (1986-2008), FRANCO (1971, 1984), FRANCO & AFONSO (1994, 1998, 2003) and VALDÉS & al. (1987).

The plant communities were analyzed according to the phytosociological method of Braun-Blanquet (BRAUN-BLANQUET, 1979; GÉHU & RIVAS-MARTÍNEZ, 1981; RIVAS-MARTÍNEZ & al., 2002).

#### RESULTS AND DISCUSSION

In total, 239 taxa were found in the study area. Four Portuguese endemic species have been recorded: *Ulex australis* subsp. *welwitschianus* (Planch.) Espírito-Santo & al., *Myosotis lusitana* Schuster, *Hyacinthoides vicentina* subsp. *transtagana* Franco & Rocha and *Allium pruinautum* Link; in addition to seven Iberian endemics,

namely: *Rumex bucephalophorus* subsp. *hispanicus* (Steinh.) Rech. fil., *Adenocarpus complicatus* (L.) J. Gay, *Conopodium marianum* Lange, *Thapsia nitida* Lacaita, *Fritillaria lusitanica* Wikström, *Gladiolus illyricus* W.D.J. Koch and *Serapias perez-chiscanoi* Acedo.

In the Sado river basin, *S. perez-chiscanoi* flowers from April to May. The vegetation type of this orchid can be characterized as cork oak (*Quercus suber*) woodlands (*montado*) although the majority of the plants were found along the margins of shrubs of the communities *Ulex australis* subsp. *welwitschianus* and *Cistus ladanifer*.

Comments, synthetic tables and relevés of the most representative communities and associations are presented below:

#### EPHEMERAL WETLAND VEGETATION

I. *Isoeto-Nanojuncetea* Br.-Bl. & Tüxen ex Westhoff, Dijk & Passchier 1946

1. ***Junco pygmaei-Isoetetum velati*** Rivas Goday 1956. Vila Nova da Baronia (38°05'N; 07°01'W), depression, SW, 2 m<sup>2</sup>. Characteristics: *Juncus pygmaeus* 3, *Isoetes velatum* 2, *Juncus bufonius* 2, *Juncus capitatus* 2, *Solenopsis laurentia* 2, *Illecebrum verticillatum* 1, *Isolepis cernua* 1, *Cicendia filiformis* 1, *Juncus tenageia* 1, *Chaetopogon fasciculatus* 1, *Radiola linoides* 1, *Isolepis pseudosetacea* 1, *Exaculum pusillum* 1, *Lotus hispidus* 1, *Juncus hybridus* 1, *Centaureum maritimum* 1, *Lythrum hyssopifolia* 1; Companions: 2 *Pinguicula lusitanica*, *Sagina apetala* 2, *Serapias perez-chiscanoi* 1, *Serapias strictiflora* 1, *Myosotis welwitschii* 1, *Pulicaria odora* +.

2. ***Loto hispidi-Chaetopogonetum fasciculati*** Rivas-Martínez & Costa in Rivas-Martínez, Costa, Castroviejo & E. Valdés 1980 nom. mut. propos. Vila Nova da Baronia (38°05'N; 7°00'W), depression, NE, 2 m<sup>2</sup>. Characteristics: *Isolepis pseudosetacea* 3, *Isolepis cernua* 3, *Kickxia cirrhosa* 2, *Solenopsis laurentia* 2, *Juncus pygmaeus* 2, *Juncus capitatus* 2, *Juncus bufonius* 2, *Chaetopogon fasciculatus* 1, *Hypericum humifusum* 1, *Cicendia filiformis* 1, *Exaculum pusillum* 1, *Illecebrum verticillatum* 1; Companions: *Pinguicula lusitanica* 3, *Sagina apetala* 2, *Serapias strictiflora* 2, *Anagallis arvensis* 1, *Scilla monophyllos*

1, *Ranunculus trilobus* 1, *Lotus hispidus* 1, *Serapias perez-chiscanoi* 1, *Dipcadi serotinum* +, *Hypochoeris radicata* +, *Pulicaria odora* +.

#### LACUSTRIAN AND FONTINAL VEGETATION

II. *Isoeto-Littorelletea* Br.-Bl. & Vlieger in Vlieger 1937

**3. Community of *Juncus bulbosus* and *Myosotis lusitanica*.** Vila Nova da Baronia (38°05'N; 07°01'W), ponds, 2 m<sup>2</sup>. Characteristics: *Juncus bulbosus* 3, *Myosotis lusitanica* 2; Companions: *Silene laeta* 2, *Cicendia filiformis* 2, *Pinguicula lusitanica* 2, *Juncus bufonius* 1, *Isolepis cernua* 1, *Serapias lingua* 1, *Serapias strictiflora* 1, *Juncus capitatus* 1, *Isolepis pseudosetacea* 1, *Serapias cordigera* +.

III. *Montio-Cardaminetea* Br.-Bl. & Tüxen ex Br.-Bl. 1948

**4. *Myosotido stoloniferae-Ranunculetum omiophylli*** Rivas-Martínez, Fernández-González, Pizarro, Sánchez-Mata & Sardinero 2002. Vila Nova da Baronia (38°05'N; 07°01'W), brook, 4 m<sup>2</sup>. Characteristics: *Ranunculus omiophyllus* 4; Companions: *Callitriche stagnalis* 3, *Glyceria declinata* 2, *Myosotis laxa* subsp. *caespitosa* 2, *Juncus bufonius* 2, *Isolepis cernua* 2, *Lythrum hyssopifolia* 1, *Juncus hybridus* 1.

#### THEROPHYTIC GRASSLANDS

IV. *Tuberarietea guttati* (Br.-Bl. in Br.-Bl., Rous-sine & Nègre 1952) Rivas Goday & Rivas-Martínez 1963 nom. mut. propos.

#### MESOPHYTIC PERENNIAL GRASSLANDS

V. *Stipo giganteae-Agrostietea castellanæ* Rivas-Martínez, Fernández-González & Loidi 1999

**5. *Gaudinio fragilis-Agrostietum castellanæ*** Rivas-Martínez & Belmonte 1986. Vila Nova da Baronia (38°05'N; 07°01'W), brook, 16 m<sup>2</sup>. Characteristics: *Agrostis castellana* 4, *Gaudinia fragilis* 1, *Serapias lingua* 1, *Allium guttatum* subsp. *sardoum* +; Companions: *Cynodon dactylon* 1, *Scilla monophyllos* 1, *Kickxia cirrhosa* 1, *Ranun-*

*culus bulbosus* subsp. *aleae* 1, *Chaetopogon fasciculatus* 1, *Pulicaria odora* 1, *Serapias perez-chiscanoi* +, *Hypochoeris radicata* +, *Serapias cordigera* +, *Pinguicula lusitanica* +, *Dipcadi serotinum* +.

#### SUB-SHRUB SERAL GRASSLANDS

VI. *Cisto-Lavanduletea* Br.-Bl. in Br.-Bl., Molinier & Wagner 1940

**6. Community of *Ulex australis* subsp. *welwitschianus* and *Cistus ladanifer*.** Vila Nova da Baronia (38°16'N; 08°00'W), slopes with a low inclination, 60 m<sup>2</sup>. Characteristics: *Ulex australis* subsp. *welwitschianus* 3, *Cistus ladanifer* 2, *Lavandula luisieri* 2, *Cistus salviifolius* 2, *Cistus crispus* 1, *Orchis morio* +; Companions: *Genista triacanthos* 3, *Asphodelus fistulosus* 2, *Elaoselinum foetidum* 2, *Briza maxima* 2, *Calluna vulgaris* 2, *Daphne gnidium* 2, *Pulicaria odora* 1, *Leontodon taraxacoides* subsp. *longirostris* 1, *Tolpis barbata* 1, *Vulpia bromoides* 1, *Arrhenatherum album* 1, *Asterolinon linum-stellatum* 1, *Hypochoeris glabra* 1, *Thapsia villosa* +, *Urginea maritima* +, *Ornithogalum broteroi* +, *Serapias perez-chiscanoi* +, *Fritillaria lusitanica* +, *Conopodium marianum* +.

#### MEDITERRANEAN CLIMATOPHILOUS VEGETATION

VII. *Quercetea ilicis* Br.-Bl. ex A. & O. Bolòs 1950

**7. *Asparago aphylli-Quercetum suberis*** J.C. Costa, Capelo, Lousã & Espírito-Santo 1996. Vila Nova da Baronia (38°16'N; 08°00'W), slopes with a low inclination, SW, 150 m<sup>2</sup>. Characteristics: *Quercus suber* 4, *Arbutus unedo* 3, *Phillyrea angustifolia* 3, *Scilla monophyllos* 3, *Daphne gnidium* 2, *Quercus coccifera* 2, *Olea europaea* 2, *Osyris quadripartita* 2, *Asparagus aphyllus* 1, *Myrtus communis* 1. Companions: *Ulex australis* subsp. *welwitschianus* 3, *Lavandula luisieri* 3, *Xolantha guttata* 3, *Cistus salviifolius* 2, *Pinus pinaster* 2, *Cistus ladanifer* 2, *Cistus crispus* 2, *Erica umbellata* 2, *Vulpia bromoides* 2, *Genista triacanthos* 2, *Genista hirsuta* 2, *Hyacinthoides vicentina* subsp. *Transtagana* 2, *Asphodelus fistulosus* 1, *Orchis morio* 1.

## SYMPHYTOSOCIOLOGY

In the study area we identified the climatophilous thermomediterranean series of *Asparago aphylli-Querceto suberis sigmetum*, Gaditan-Algarvian and Lusitan-Extremadurean, with sub-humid to humid and silicolous forests of *Quercus suber*.

In this territory, the potential stage of the *Asparago aphylli-Querceto suberis sigmetum* are *Asparago aphylli-Quercetum suberis* (mature forest) was formed by cork oak (*Quercus suber*) and other tall shrubs (*Arbutus unedo*, *Quercus coccifera*, *Myrtus communis*, *Phillyrea angustifolia* and *Olea europaea*), which formed dense groups in the lower parts of valleys and on gentle slopes.

The first substitutional stage was the shrub *Phillyreo angustifoliae-Arbutetum unedonis* which formed the lower layer of the wood. In an advanced regression stage, the bush *Halimio ocymoidis-Ericetum umbellatae* occurs on dry soils in the lower parts of valleys, and the community of *Ulex australis* subsp. *welwitschianus* and *Cistus ladanifer* on the humid slopes. The therophytic grasslands of *Trifolio cherleri-Plantaginetum bellardii* dominate in the herbaceous stratum.

## DISTRIBUTION AND CONSERVATION

Although the literature often reports that *Serapias perez-chiscanoi* occurs in Extremadura (Spain) and adjacent Portugal, no populations were observed in Portugal except for a population near Vale do Lobo - Algarve (JANSEN, 1993). This population was destroyed soon after it was discovered. In 2007, J. Moura discovered a population near Abrantes but we found it destroyed the next spring. A strip was ploughed beside the growing site of *S. perez-chiscanoi* in order to prevent the spread of fire. Several plants were found uprooted but it is not known whether other plants survived. The studied population (Vila Nova da Baronia) combined with another recently discovered population by J. Pessoa (Ereiras), makes two currently known populations in Portugal. The four loca-

tions in Portugal where *S. perez-chiscanoi* was found are spatially widely separated (Figura 2.), which makes it very likely that more populations in Portugal will be found in the future.

In Spain, about 25 populations are currently known. *S. perez-chiscanoi* has been legally protected under Extremadurean law since 2001 (categorized as "in danger of extinction"), which means that the regional government is obliged to set up a protection plan to prevent its extinction. Unfortunately, this plan is still not operative. VENHUIS & al. (2006) report that several populations have been destroyed during the past 10 years.

In Portugal the species is not yet protected. To ensure its survival, it should be given official protection in Portugal as soon as possible, and a protection plan in Extremadura should be set up urgently.

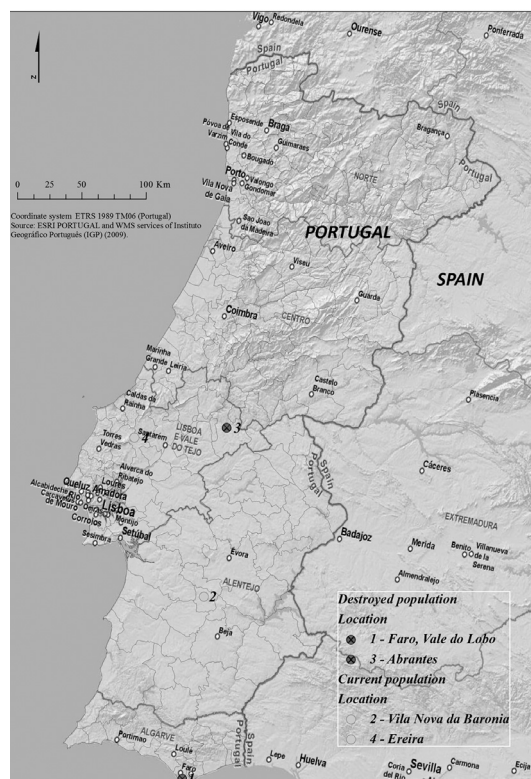


Figure 2. – Current and (probably) destroyed populations of *S. perez-chiscanoi* in Portugal.

## REFERENCIAS

- Agência Portuguesa do Ambiente (APA) —2008— Atlas do Ambiente — Mº Amb. Ord. Territ. Desenv. Reg. [Acceso em 18 de Dezembro de 2008] (<http://www.iamambiente.pt/atlas/est/index.jsp>).
- Alcaraz, J., Téllez, T., Benítez, M., Olivencia, A., Molina, R. & Claver, J. —1991— Las Gramíneas de Extremadura - Ser. Monogr. Bot. Serv. Publ. Univ. Extremadura, Badajoz.
- Braun-Blanquet, J. —1979— Fitosociologia. Bases para el estudio de las comunidades vegetales — Ed. Blume, Madrid.
- Câmara Municipal de Alvito —2009— Caracterização do Concelho. [Acceso em 10 de Dezembro de 2008] (<http://www.cm-alvito.pt/>).
- Castroviejo & al. (Eds.) —1986-2008— Flora Iberica. Plantas vasculares de la Península Ibérica e Islas Baleares — R. Jard. Bot. Madrid. C.S.I.C. Madrid.
- Costa, J.C., Capelo, J., Espírito Santo, M.D. & Lousã, M. —2002— Aditamentos à vegetação do Sector Divisório Português — *Silva Lusit.* 10 (1): 199-128.
- Franco, J. —1971, 1984— Nova Flora de Portugal (Continente e Açores). 1, 2 — Ed. do Autor, Lisboa.
- Franco, J. & Afonso, M. —1994, 1998, 2003— Nova Flora de Portugal (Continente e Açores). 3 (fasc. 1, 2, 3) — Escolar Editora, Lisboa.
- Géhu, J. & Rivas-Martínez, S. —1981— Notions fondamentales de phytosociologie in *Syntaxonomie* — J. Cramer, Vaduz.
- Jansen, H. —1993— *Serapias viridis* Perez Chiscano in Portugal. *AHO NRW* 10 (1): 50 - 53
- Rivas-Martínez, S., Díaz González, T.E., Fernandez-González, F., Izco, J., Loidi, J., Lousã, M. & Penas, A. —2002— Vascular Plant communities of Spain and Portugal. Addenda to *Sintaxonomical checklist of 2001* — *Itinera Geobot.* 15 (2).
- Rivas-Martínez, S., Penas, A. & Díaz, T.E. —2004— Biogeographic and bioclimatic maps of Europe — *Serv. Cart. Univ. León*.
- Valdés, B., Talavera, S. & Galiano, E.F. (Eds.) —1987— Flora vascular de Andalucía Occidental. 1, 2, 3 - Ketres Ed., Barcelona.
- Venhuis, C., Oostermeijer, J.G.B. & Tonk, J.Th.P. —2004— Conservation biology of *Serapias perez-chiscanoi* Acedo in the Guadiana river basin in Extremadura (Spain) — *Eurorchis* 16: 49-63.
- Venhuis, C., Oostermeijer, J.G.B. & Cornado Garcia, M. —2006— *Serapias perez-chiscanoi*: Legal protection and distribution — *Eurorchis* 18: 88-91.

Recibido: 18 enero 2009

Acceptado: 14 abril 2010