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The Orchid Flora of Portugal – Addendum N. 6 – Recent contributions (2003 – 2016), conservation practices and priorities

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Orchidaceae; Portugal; Systematics; Conservation; *Serapias*; *Ophrys*.

Summary

Tyteca, D., Pessoa, J., Borges, L., Pereira, C., Marques, D.V., Areias, F., Rodrigues, I., Monteiro, J. & A. Pereira (2017): The Orchid Flora of Portugal – Addendum N. 6 – Recent contributions (2003 – 2016), conservation practices and priorities.- J. Eur. Orch. 49 (2): 315-360.

Since publication of *The Orchid Flora of Portugal* in 1997 and its follow-ups until 2003, several new contributions were proposed, only part of which have been published. Among these, are discoveries of species that are indigenous in neighbouring Spanish territories, and a significant number of new localities for species that were already known in the country. Even more noticeable are five (sub-) species that were described as new for Science, four of which are endemic to Portugal in the present state of knowledge. Particular hybrid findings were also reported. Those discoveries result either from close examination of critical groups (e.g., *Ophrys*, *Serapias* or *Epipactis*), or from new prospections in poorly explored territories, mainly thanks to intense activities conducted by the newly founded Portuguese Association for Spontaneous Orchids. Nowadays, 65 Orchid (sub-) species are known in (continental) Portugal. The list is most probably not closed, since some critical groups would deserve closer

examination, especially in the genus *Ophrys*. The paper synthesizes the circumstances in which recent contributions were made, and discusses possible areas for further research. Remarks on nature conservation are also proposed.

Zusammenfassung

Tyteca, D., Pessoa, J., Borges, L., Pereira, C., Marques, D.V., Areias, F., Rodrigues, I., Monteiro, J. & A. Pereira (2017): The Orchid Flora of Portugal – Ergänzung Nr. 6 - Aktuelle Beiträge (2003-2016), Schutzmaßnahmen und Prioritäten.- J. Eur. Orch. 49 (2): 315-360.

Seit der Veröffentlichung der *Orchideen-Flora von Portugal* im Jahr 1997 und ihrer Ergänzungen bis 2003 wurden mehrere neue Beiträge verfasst, von denen bisher nur ein Teil veröffentlicht worden ist. Unter diesen finden sich Neufunde von Arten, die in den benachbarten spanischen Gebieten beheimatet sind und eine beträchtliche Anzahl neuer Fundorte für solche, die bereits im Land bekannt waren. Noch mehr Beachtung verdienen fünf Arten/Unterarten, die wissenschaftlich neu beschrieben wurden, und von denen vier nach bisherigem Wissensstand in Portugal endemisch sind. Einzelne Funde von Hybriden wurden ebenfalls dokumentiert. Diese neuen Erkenntnisse ergeben sich entweder aus der gründlichen Untersuchung kritischer Gruppen (z.B. *Ophrys*, *Serapias* oder *Epipactis*) oder aus der gezielten Suche in bisher schlecht erforschten Gebieten, vor allem dank intensiver Aktivitäten der neu gegründeten portugiesischen Vereinigung für Wildwachsende Orchideen. Aktuell sind 65 Orchideen-Arten/Unterarten vom portugiesischen Festland bekannt. Die Liste ist höchstwahrscheinlich nicht vollständig, da einige kritische Gruppen – vor allem in der Gattung *Ophrys* – eine genauere Untersuchung verdienen würden. Die hier vorgelegte Arbeit fasst die rezenten Fortschritte zusammen und zeigt mögliche Bereiche für die weitere Forschung auf. Außerdem werden Vorschläge für Naturschutzmaßnahmen vorgestellt.

Resumo

Tyteca, D., Pessoa, J., Borges, L., Pereira, C., Marques, D.V., Areias, F., Rodrigues, I., Monteiro, J. & A. Pereira (2017): As orquídeas de Portugal – Adenda n.º 6 – Contribuições recentes (2003 – 2016), práticas e prioridades de conservação.- J. Eur. Orch. 49 (2): 315-360.

Desde a publicação de *The Orchid Flora of Portugal* em 1997 e respectivos suplementos até 2003, foram propostas novas contribuições, das quais foi publicada uma pequena parte. Entre estas, constam descobertas de espécies nativas de territórios espanhóis adjacentes, assim como um número significativo de novos locais com espécies já conhecidas para o país. Referimos ainda a descrição de cinco (sub)-espécies novas para a Ciência, quatro das quais endémicas de Portugal no estado actual de conhecimento. Alguns novos híbridos foram também encontrados. Estas descobertas são resultado tanto de um estudo

aprofundado de grupos críticos (p. ex. *Ophrys*, *Serapias* ou *Epipactis*), como de novas prospecções em territórios pouco explorados, principalmente graças à acção eficaz da Associação de Orquídeas Silvestres – Portugal, recentemente criada. Actualmente, são conhecidas 65 (sub-)espécies de orquídeas em Portugal (continental). A lista, certamente, não está terminada, uma vez que certos grupos críticos devem ser objecto de estudo mais aprofundado, nomeadamente o género *Ophrys*. O artigo sintetiza as circunstâncias em que as recentes contribuições foram realizadas e sugere temas para possíveis estudos aprofundados. Medidas sobre a conservação da natureza são igualmente propostas.

Résumé

Tyteca, D., Pessoa, J., Borges, L., Pereira, C., Marques, D.V., Areias, F., Rodrigues, I., Monteiro, J. & A. Pereira (2017): Orchidées du Portugal – Addendum n° 6 – Contributions récentes (2003 – 2016), pratiques et priorités de la conservation.- J. Eur. Orch. 49 (2): 315-360.

Depuis la publication de *The Orchid Flora of Portugal* en 1997 et de ses compléments jusqu'à 2003, plusieurs nouvelles contributions ont été proposées, dont seule une partie ont été publiées. Parmi celles-ci, figurent les découvertes d'espèces indigènes dans les territoires espagnols avoisinants, ainsi qu'un nombre significatif de nouvelles stations pour des espèces qui étaient déjà connues dans le pays. A cela s'ajoute la description de cinq (sous-)espèces nouvelles pour la Science, dont quatre sont endémiques du Portugal dans l'état actuel des connaissances. Quelques hybrides nouveaux ont également été trouvés. Ces découvertes proviennent soit d'une étude approfondie de groupes critiques (p.ex. *Ophrys*, *Serapias* ou *Epipactis*), ou de nouvelles prospections dans des territoires peu explorés, principalement grâce à l'action efficace de l'Association pour les Orchidées Indigènes du Portugal récemment mise en place. A ce jour, 65 (sous-)espèces d'orchidées sont connues au Portugal (continental). La liste n'est certainement pas close, étant donné que certains groupes critiques devraient faire l'objet de recherches approfondies, particulièrement dans le genre *Ophrys*. L'article synthétise les circonstances dans lesquelles ces contributions récentes ont pu être apportées, et discute des thèmes possibles pour des recherches approfondies. Des remarques sur la conservation de la nature sont également proposées.

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1. Introduction

Almost twenty years have elapsed since publication of the *Orchid Flora of Portugal* (TYTECA 1998), and fifteen years since publication of its last update (“Addendum N. 5”, TYTECA & BERNARDOS 2003).

Many new findings were performed since then, not least thanks to the recent foundation of the Associação de Orquídeas Silvestres – Portugal (AOSP), the Society for Indigenous Orchids of Portugal, in 2010. Findings are due to discovery of species existing in neighbouring territories, rediscovery of species thought to be extinct, additional localities for existing species, or even description of new taxa, and were facilitated by extensive field prospections by enthusiastic new prospectors!

It was high time to publish an account of the new findings, to improve knowledge about indigenous orchids and to contribute to preservation of the natural heritage of some of the most remarkable representatives of the Portuguese Flora.

An account of most new findings is given in Appendix 2. Hereafter we will review some examples and some of the most remarkable breakthroughs made in the knowledge of the Portuguese Orchid Flora in recent years. Throughout the paper, the nomenclature given in Appendix 1 will be adopted. Appendix 1 also gives an account of (sub-)species presently known as indigenous in the country.

2. New localities for indigenous species

Here we list just a few examples, taken among the rarest species in Portugal.

2.1. *Cephalanthera rubra*

This species has always been extremely rare in Portugal. Prospection efforts have recently conducted both to confirmation of formerly known localities (Fresulfe, Grandais), but also to discovery of new populations, all in the same surroundings (Vinhais, Ousilhão, Romariz) (See Appendix 2 – Fig. 3).

2.2. *Gymnadenia conopsea*, *Dactylorhiza ericetorum* and their hybrid

Known so far from just a unique locality (Borrageiro, in the Serra do Gerês, in the Minho), *G. conopsea* was discovered in no less than nine new localities, during extensive field prospections made by AOSP, in the surroundings of the

first locality. All populations are located at altitudes comprised between 1100 and 1400 m. Being known as a non-Mediterranean species, *G. conopsea* thrives here at the very margin of its distribution area and the suitable conditions for its survival, at a rather far remote distance from a more consistent distribution area in neighbouring Galicia (see TYTECA & BERNARDOS 2003).

In the same areas *Dactylorhiza ericetorum* was found, in extensive populations as well. At one place, the hybrid between both species was found (Fig. 5). This is the first mention of such a hybrid between a *Dactylorhiza* and a *Gymnadenia* in Portugal. This hybrid was reported from several European territories, mostly in Atlantic areas, corresponding to the distribution of *D. ericetorum*, for example in the British Isles (e.g., SUMMERHAYES 1969).

2.3. *Ophrys scolopax*

This species has always been quoted as rare in Portugal, compared to the sister species *O. picta*, which is much more widespread. Several new localities were found in recent years, most of which in the centre of the country (surroundings of Pombal, Ansião), but also in the north (Trás-os-Montes), where *a priori* *Ophrys* species are rare.

Although *O. scolopax* had been previously reported from the Algarve (see TYTECA 1998), it is rather rare in this region. Additionally, the flowers of the plants identified as such in Algarve somewhat deviate from the usual type generally found farther north (see Fig. 9 vs. Figs. 10-11; see also the figure in TYTECA 1998): particularly noticeable are the very fine horns and petals, and the rather narrow lip. These characters make the flower more resemble an *Ophrys picta*, but the dimensions are those of an *O. scolopax*. We had the opportunity to see one new population (Alte) in 2016, with the same floral characteristics (see Figs. 10-11). This variant would deserve closer examination.

2.4. Mycoheterotrophic plants of *Epipactis* and *Cephalanthera*

It is interesting to point out the discovery of mycoheterotrophic plants (i.e., individuals completely devoid of chlorophyll, therefore totally dependent on their mycorrhizal fungal partners), for two species from the tribe *Neottieae*. One of these is *Epipactis fageticola*: three such plants were observed close to Fresulfe (Vinhais, Trás-os-Montes), and reported as *E. phyllanthes* (ANONYMOUS 2015; see Fig. 2). The other case was observed in a *Cephalanthera longifolia* population from the Serra de São Luís, close to Setúbal (Fig. 1). While mycoheterotrophic plants are occasionally found in species from the tribe *Neottieae* in northern Europe (see, e.g., PRIDGEON et al. 2005), such individuals

are more seldom found in southern Europe. These are, to our knowledge, the first reported cases of albino individuals of *Epipactis* and *Cephalanthera* in Portugal.

3. Species newly discovered in Portugal

3.1. *Serapias perez-chiscanoi*

Described in 1990 from the Spanish province of Extremadura (ACEDO 1990; PEREZ CHISCANO et al. 1991), this species has long been considered as a Spanish endemic. With some hesitation, in 1998 one of us (DT) still excluded it as indigenous in Portugal (TYTECA 1998), but finally accepted it as indigenous in 2000, based on observations from Portuguese colleagues (TYTECA 2000). Now it is well recognized, and at least six populations have been identified as belonging to this species, through all parts of the country (see the map in VENHUIS & OOSTERMEIJER 2011). Although the species usually shows pale, greenish to whitish flowers, colour variants, from pink to red, have been identified and described, also from Portugal, by VENHUIS & OOSTERMEIJER (2011) (Fig. 13).

3.2. *Serapias occidentalis*

In 2006 VENHUIS et al. (2006) described a new Tongue-orchid from Extremadura (South-western Spain). The plant was clearly well distinguished from related species and forms pure populations in its distribution area, even though a hybrid origin between *S. lingua* and *S. cordigera* is sometimes advocated (e.g. DELFORGE 2016). As was the case with the previous species, populations were identified as well in Portugal, first in Beira Litoral (PESSOA et al. 2011), and from then on, the species was considered as a new indigenous taxon (Fig. 14). Later, two more populations were identified in Baixo Alentejo (see Appendix).



Fig. 1: Mycoheterotrophic plant of *Cephalanthera longifolia*, Serra de São Luís (Setúbal, Estremadura), 11 April 2016 (DT).



Fig. 2: Mycoheterotrophic plant of *Epipactis fageticola*, Fresulfe (Vinhais, Trás-os-Montes e Alto Douro), 6 June 2015 (JP).



Fig. 3: *Cephalanthera rubra*, Fresulfe (Vinhais, Trás-os-Montes e Alto Douro), 12 June 2010 (JP).



Fig. 4: *Neotinea ustulata*, São João da Pesqueira (Beira Alta), 8 May 2011 (DT).



Fig. 5: *Dactylorhiza ericetorum* × *Gymnadeniopsis conopsea*, Serra do Gerês, Terras de Bouro, (Minho), 6 July 2013 (JP).



Fig. 6: *Dactylorhiza elata* × *D. ericetorum*, Serra de Nogueira (Trás-os-Montes e Alto Douro), 9 July 2009 (DT).



Fig. 7: *Ophrys vasconica*, Campo de Víboras (Vimioso, Trás-os-Montes e Alto Douro), 25 April 2013 (JP).

3.3. *Neotinea ustulata*

There was a big sensation in 2010 when, for the first time ever, *Neotinea ustulata* was discovered in Portugal by one of us (JM). The news was published for the first time only in 2011 (ANONYMOUS 2011) and confirmed in 2016 (MONTEIRO 2016) (Fig. 4).

This was a big sensation because *Neotinea ustulata* is a species with mountainous – Central European affinities. Some populations were known in neighbouring territories, in Galicia and Castilla-y-León, including two populations along the Spanish border – but on the bad side of it! The Portuguese population is located approximately 60 km West of the closest Spanish population, at an altitude of about 725 m, on an isolated hill that dominates the surrounding landscape. It is therefore thought that the presence of the plant here is marginal and the conditions for its survival are precarious. Indeed, only eight to nine flowering plants, at most, have been found until now, and their survival is dependent on the appropriate (non-) grazing management of the area.

3.4. *Ophrys lupercalis*

It is difficult to tell exactly when this species was first mentioned in Portugal. In 2003, for the Addendum N. 5 (TYTECA & BERNARDOS 2003), there was still no allusion to it, while in the 2nd edition of his book, DELFORGE (2001) already indicates Portugal as one of the countries in the distribution. In extensive correspondence with one of us (DT) in 2006 – 2007, Michael LOWE already pointed out early flowering populations in Algarve, which finally were attributed to *O. lupercalis*. They may flower since the beginning of the year, and even in December (Luis Nunes Alberto, pers. comm.).

3.5. *Ophrys vasconica*

Populations of plants previously reported as *Ophrys dyris* in Portugal received more attention in the last decades. Some of these populations are composed of plants showing atypical characters, e.g., an almost flat lip, or the presence of a clear groove at the basis of the lip. In the former case, populations from Algarve were transferred to the newly described *O. algarvensis* (TYTECA et al. 2003). In the latter case, which is encountered in populations from the centre of the country, the influence or introgression from *O. fusca* was advocated. Those populations were finally identified as original and described as *O. lenae* (see the discussion below; LOWE & TYTECA 2012).

However, another population discovered in 2012 in the North of the country (Vimioso, Trás-os-Montes) showed similar characteristics (groove at the basis of the lip; Figs. 7-8), but the plants were not studied closely so far. As a first approximation, they meet the characters of *O. vasconica* and were reported as such. Although this taxon is mainly distributed in Northern and North-eastern Spain and South-western France, there are reports from several other parts of Spain, including one that is not so far from the Portuguese border, in Castilla-y-León (BERNARDOS 2003). The Vimioso population is located some 100 km north of the Spanish site.

4. Newly described taxa

Generally speaking, the taxa discussed below were illustrated in the original publications; therefore, we refer to these and do not propose additional pictures, except in one case (*Serapias*). All of those taxa are endemic to Portugal, except *Ophrys quarteirae*.

4.1. *Epipactis duriensis*

This taxon was described in 2004 from two populations in North Portugal (Trás-os-Montes; BERNARDOS et al. 2004), and did not receive much support since then. It is somewhat intermediate between *E. tremolsii* and *E. lusitanica* but possesses own characteristics, such as the green floral pedicel, whereas this is tinged with pink in both other species, and the generally pale, whitish flowers. From a genetic standpoint, it is sister of a clade including both other species (BERNARDOS et al. 2004). Therefore, we believe it is better seen as a separate species; treating *E. duriensis* as a variety of *E. tremolsii* as proposed by DELFORGE (2004b) would imply, to be consistent, to consider *E. lusitanica* as a variety of *E. tremolsii* as well.

4.2. *Serapias cordigera* subsp. *gentilii*

The name *Serapias cordigera* subsp. *gentilii* was proposed by C. & P. Venhuis & Kreutz to raise a (sub-)variety of *S. cordigera* to the subspecific level (VENHUIS et al. 2007; KREUTZ 2007). Such plants (Fig. 12), however, are often found in the close vicinity of *S. cordigera*; even both types of flowers can be found on the same plant (see TYTECA 1998)! The taxon designates in fact degenerative forms of *S. cordigera*, and we are in front of a situation that is very similar to the degenerative forms of *Ophrys apifera*. For these reasons, it might be more justified to treat this as a mere variety of *S. cordigera*, for which an appropriate name is *S. cordigera* var. *leucoglottis* Welwitsch.



Fig. 8: *Ophrys vasconica* with pollinator, Campo de Vóboras (Vimioso, Trás-os-Montes e Alto Douro), 25 April 2013 (JP).



Fig. 9: *Ophrys scolopax*, Chanca (Rabaçal, Beira Litoral), 3 April 2016 (DT).



Fig. 10-11: Algarvian *Ophrys scolopax*, Alte (Algarve), 30 March 2016 (DT).



Fig. 12: *Serapias cordigera* subsp. *gentilii*, Montes Novos (Barranco do Velho, Algarve), 23 April 2009 (DT).



Fig. 13: *Serapias perez-chiscanoi*, red-flowered variant, Ereiras (Estremadura), 4 May 2011 (DT).



Fig. 14: *Serapias occidentalis*, Casmilo (Furadouro, Beira Litoral), 7 May 2011 (DT).

As shown by a map in VENHUIS & OOSTERMEIJER (2011), this subspecies / variety is distributed mainly in the Southern half of Portugal (Algarve, Alentejo, Estremadura) but goes as far north as Ribatejo.

4.3. *Ophrys quarteirae*

In 2007 KREUTZ, LOWE & WUCHERPFENNIG (2007) published a new subspecies of *Ophrys lutea*, subsp. *quarteirae*. The plants can be found in small populations in the surroundings of Paderne and Messines (Algarve), as well as in Andalucía (Spain). They favour wet, shaded places in the vicinity of calcareous garigues, and show more numerous, smaller flowers, with non-geniculate lips, than the type species. Because such plants can be found growing often together with *O. lutea*, it makes more sense treating them as a separate species, as proposed by DEVILLERS & DEVILLERS-Terschuren (2013).

4.4. *Ophrys pintoii*

This plant with small to medium sized flowers was long awaiting description. This was achieved in 2012 (LOWE & TYTECA 2012). It grows in sometimes very large populations in the centre of the country (Beira litoral, Ribatejo, Estremadura). Although it was speculated that *Andrena flavipes* might be the pollinator, this is disputed by H. Paulus (personal communication).

4.5. *Ophrys lenae*

Several populations from central Portugal (Ribatejo, Estremadura), similar to *Ophrys dyris* and until recently reported as such, were described as a new species with the name *O. lenae* (LOWE & TYTECA 2012). They differ from *O. dyris* by several characters, including a longer lip with a clear groove at the basis. They probably derived from hybridization or introgression between *O. dyris* and *O. fusca*: both of these species are absent from the *O. lenae* populations. Some authors (including DELFORGE 2016) propose that those plants are not different from the occasional hybrid between *O. dyris* and *O. fusca* and would therefore need to be named after this (i.e., *O. ×brigittae*, described by BAUMANN & DAFNI 1981). However, we established that both plants are significantly different (*O. lenae* showing significantly bigger flowers, and a more pronounced longitudinal convexity of the lip); therefore, the name *O. ×brigittae* should be restricted to designate the occasional hybrid between *O. dyris* and *O. fusca* (LOWE & TYTECA 2012).

5. Unresolved questions

5.1. *Ophrys lucentina* and the mysterious taxon from Palmela

In 1999 DELFORGE (1999) described a new taxon from the Province of Alicante (Spain), *Ophrys lucentina*. In this article he was supposing, still speculatively, that the species might correspond to a population noticed by one of us (DT) in the Serra do Louro (Palmela), composed of *Ophrys fusca* s.l. plants with a remarkable large yellow margin on the lip, which he first assigned to hybrids between *O. fusca* and *O. lutea* (TYTECA 1987). In the second edition of his guide, DELFORGE (2001) considered the possibility that these plants might indeed be *O. lucentina*, but later the third and fourth (DELFORGE 2016) editions no longer mention it. In the last decades, DT simply mentioned those plants as *O. fusca*, without any further comment.

However, the question is raised again by another among us (JM), who in his recent Orchid book (MONTEIRO 2016) considers again the same plants as *O. lucentina*. We believe that the question is far from being settled, and that those populations would deserve additional closer examination.

5.2. *Ophrys bilunulata* – *O. subfusca*

Populations from the *Ophrys fusca* group, with small and usually few flowers, a rather flat lip with a variable yellow margin, flowering rather early (February – March), are reported since long from the Algarve (see, e.g., TYTECA 2000, 2001). These populations were studied more closely by LOWE (2011) in a more global context covering the whole Western Mediterranean Basin. One of his conclusions was that the Algarvian populations should be classified as *O. subfusca*, a taxon which therefore is given a large distribution area, covering South Portugal, Spain (including Balearic Islands), South-western France, Sicily, Malta, Algeria and Tunisia. This option was not given much credit later, as, for example, DELFORGE (2016) did not accept this at all and restricts the distribution of *O. subfusca* to North-Africa. The problem might be that the plants studied by LOWE (2011) were treated in an essentially morphometric manner, without much consideration to colour variants, convexity and shape of the lip. When the latter are taken into account, more species tend to be recognised, and indeed it was difficult to accept that the South-Portuguese plants are identical to *O. subfusca* from North-Africa.

Therefore, as maybe a provisional solution, the plants from the Algarve are still, until now, considered as representatives of *O. bilunulata*. There is still hesitation, however, because *O. bilunulata* is considered a “late flowering” taxon (DELFORGE 2016), somewhat more robust than the Portuguese taxon.

One of us (JM), in his recent book (MONTEIRO 2016), includes **both** taxa, i.e., *O. bilunulata* **and** *O. subfusca*. The latter is restricted to the Algarve, whereas the former would be found as well in Alentejo, Estremadura, and as far north as Beira litoral. It would also have somewhat larger flowers and would flower a little later than *O. subfusca*. Therefore, the question is not settled and would also deserve more attention in the next years. And the question also remains as to the adequacy of the name *O. subfusca* to designate the Algarvian plants.

5.3. *Ophrys tenthredinifera* s.str. – one or two subspecies?

As early as 1985, one of us (DT) described subsp. *praecox* to designate rather early flowering populations of *Ophrys tenthredinifera* (TYTECA 1985). Later, because the combination *O. tenthredinifera* subsp. *praecox* was illegitimate, the plant was renamed as *O. tenthredinifera* subsp. *guimaraesii* (TYTECA 2000).

Admittedly, however, at the outset, the creation of such a subspecies was mainly justified to separate the plant from the clearly later flowering, morphologically distinct populations now designated as *O. ficalhoana*. Since that time, progressively, based on more extensive and detailed observations, the same (DT) considered that the so-called “earlier flowering” populations could not be distinguished objectively from other *O. tenthredinifera* s.str. populations, and abandoned the idea of considering two subspecies.

We are, however, in a rather weird situation, because part of us still considers subspecies *guimaraesii* a “good” subspecies (MONTEIRO 2016) and even provides for a significant number of new localities (see Appendix). Therefore, we believe that there is still provision for additional prospections and research.

5.4. *Serapias elsae*

Since the description of this species in 2004 (DELFORGE 2004a), it is generally well accepted as several published reports confirm. However, there is still hesitation, because some of us (including DT) consider this plant in the variation interval of *S. strictiflora*, while other (including JM) use the subspecific combination *S. strictiflora* subsp. *elsae* (P. Delforge) C.A.J. Kreutz (MONTEIRO 2016).

VENHUIS et al. (2007) performed thorough DNA content and morphological analyses of *Serapias* from the Iberian Peninsula, and concluded, among other, that *S. elsae* “is only a large-flowered variant of *S. strictiflora*”, thereby justifying the combination *S. strictiflora* var. *elsae* (P. Delforge) C. Venhuis & P. Venhuis. We will follow that conception. In the Appendix, no additional localities are given for the taxon.

5.5. The genus *Epipactis*

As we have mentioned already a few times (see, e.g., TYTECA 2000), there should be more clarification as regards the delimitation between *Epipactis helleborine*, *E. tremolsii* and *E. lusitanica*, in which we could include also *E. duriensis*, as regards the morphological distinction, the geographical distribution and the influence of ecological conditions.

Additionally, in this paper we followed the standpoint adopted by GÉVAUDAN et al. (2001), considering that among autogamous species from the *Epipactis phyllantes* group, only *E. fageticola* is present in Portugal, thus replacing previous reports of *E. phyllanthes* in the country (TYTECA & CAPERTA 1999a; ANONYMOUS 2015). Part of us, however, do not agree with such a position. Clearly, there is room for additional research, which might indeed plead for the recognition of the two distinct species.

5.6. The *Anacamptis morio* group

The same can be said about the *Anacamptis morio* group of species (see, e.g., TYTECA 2000). On the one hand, the Portuguese *A. morio* plants were detected as morphologically original compared to Medio-European populations, but more importantly, there are strong morphological variations within the populations reported as *A. picta*. Those variations are observed not only between Portuguese populations and other Mediterranean populations, but also among Portuguese populations themselves. The variability is such that plants observed in Alentejo were recently described as a distinct taxon, i.e., *Anacamptis longicornu* subsp. *linkiana* (VÁZQUEZ et al. 2015). We believe that such plants belong to the (admittedly large) variation interval of *A. picta* and that *A. longicornu* (s.l.) is not present in the Iberian Peninsula, being restricted to North-Africa, Calabria and some islands of the Mediterranean (e.g., DELFORGE 2016).

6. Hybrids

Besides the hybrid between *Gymnadenia conopsea* and *Dactylorhiza ericetorum* mentioned above, there have been more findings of hybrid combinations new to Portugal, most of which have been reported by MONTEIRO (2016). These include *Dactylorhiza elata* × *D. ericetorum* (Fig. 6), *Anacamptis papilionacea* × *A. coriophora* subsp. *fragrans* and *Androrchis mascula* × *A. provincialis*. Additionally, one new hybrid between two *Serapias* species was mentioned, namely *S. perez-chiscanoi* × *S. strictiflora* (see Appendix 2), while the hybrid between *Anacamptis picta* and *Serapias lingua* was reported from Alentejo (RODRIGUES 2015).

All other hybrid combinations, new to Portugal, occur among *Ophrys* species. Thus, we can report here (see MONTEIRO 2016) *O. tenthredinifera* × *O. speculum*, *O. fusca* × *O. incubacea*, *O. picta* × *O. speculum*, *O. incubacea* × *O. picta*, *O. incubacea* × *O. speculum*, *O. apifera* × *O. ficalhoana*, in addition to *O. fusca* × *O. tenthredinifera*, discovered by one of us (IR) quite recently (2017!). It is noticeable that half of these combinations involve *O. incubacea*, one of the rarest species in Portugal.

7. Synthesis – Orchid species richness in Portugal

Table 1 synthesizes the number of (sub-)species presently known to be indigenous in Portugal. The detailed list of species is given in Appendix 1. Of course, such numbers are dependent upon the system of classification adopted, but we can observe that the number of species has steadily increased since a first inventory made in 1986: 47 sp. in 1986; 55 sp. in 1997; 58 sp. in 2001 (TYTECA 2003); 61 sp. in 2007; 65 sp. in 2016. The average growth rate is 1,3 % per year. Such a “growth” is due, as we have seen, to mainly two factors, i.e., better prospections in the country, with discovery of species previously unknown in the country, and closer study of critical groups of species, leading to description of new species. In other articles (TYTECA 1998, 2003), we have commented the diversity of Portuguese Orchids compared to other countries; Portugal appears in the “middle” of European countries due to its position at the margin of the Continent, the relatively low number of different habitats, and a substantial human population density.

Table 1; Number of Orchid species in Portugal, distributed among the different genera.

Genus	N. spec.	Genus	N. spec.
<i>Cephalanthera</i>	2	<i>Gymnadenia</i>	1
<i>Epipactis</i>	5	<i>Himantoglossum</i>	1
<i>Neottia</i>	1	<i>Anacamptis</i>	9
<i>Limodorum</i>	2	<i>Neotinea</i>	3
<i>Spiranthes</i>	2	<i>Androrchis</i>	4
<i>Gennaria</i>	1	<i>Orchis</i>	2
<i>Platanthera</i>	1	<i>Serapias</i>	7
<i>Dactylorhiza</i>	5	<i>Ophrys</i>	19

The genus with the most species, where the “growth” was the highest in recent years, is by far *Ophrys*, since starting from 11 species known with certainty in 1986 (TYTECA 1986), we have now 19 species, i.e., a growth of 2,4 % per year. Among the *Ophrys* species, it is noticeable to see that more than half, i.e., 10 species over 19, are *Pseudophrys* (with abdominal pseudo-copulation), while only 5 species are “archaic *Euophrys*” (*O. speculum*, *O. lusitanica*, *O. bombyliflora*, *O. tenthredinifera*, *O. ficalhoana*), and even less, i.e., 4 species, are “recent *Euophrys*” (*O. apifera*, *O. scolopax*, *O. picta*, *O. incubacea*) (see TYTECA & BAGUETTE 2017). This distribution within the main *Ophrys* clades contrasts strongly with the distribution observed in the Eastern Mediterranean Basin, for example in Cyprus: Figure 15 shows the different profiles. The reasons for such contrasted profiles may deserve further investigation, but they may well be linked with the deeper research effort conducted so far in *Pseudophrys* with respect to *Euophrys*, but more importantly, they may find an explanation in the fact that the main radiation centre of the genus *Ophrys* is located in the Eastern Mediterranean: recent *Euophrys* species may therefore undergo more active radiation in the East, compared with what is observed in the Western Mediterranean.

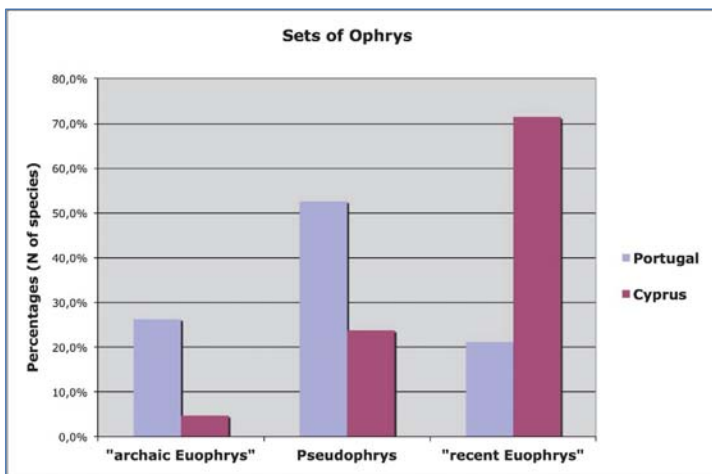


Figure 15: Comparison of *Ophrys* species distribution in the three main *Ophrys* clades, for Portugal and Cyprus.

8. Remarks on nature conservation

8.1. Red data list

As already stressed in several studies, Orchids are poorly protected in Portugal. Only one species actually is part of conservation lists, i.e., *Spiranthes aestivalis*, because it is included in the Directive 92/43/CEE of the European Commission (Conservation of Natural Habitats as well as Wild Fauna and Flora, 1992). In this sense, it was the one and only species protected in the Portuguese law; no other specific Portuguese law would include other orchid species.

Recently, the Portuguese authorities published a Lista Vermelha (Red List) da Flora Vascular de Portugal Continental, stressing the necessity to collect all relevant information on the distribution and occurrence of the species of the list, in order to take appropriate measures towards their conservation (Sociedade Portuguesa de Botânica & Phytos, Associação Portuguesa de Ciência da Vegetação 2016). The list is based on *Flora Iberica*, which as regards Orchids was published by AEDO & HERRERO (eds., 2005). The following species are incorporated: *Epipactis fageticola*, *E. palustris*, *Cephalanthera rubra*, *Neottia nidus-avis*, *Spiranthes aestivalis*, *Platanthera bifolia*, *Gymnadenia conopsea*, *Dactylorhiza elata*, *D. insularis*, *D. sulphurea*, *Neottia ustulata*, *Orchis provincialis*, *Anacamptis collina*, *A. laxiflora* and *Serapias perez-chiscanoi*.

Several remarks can be made about this list. The most important and striking one is the fact that no *Ophrys* species is included! This is of course inconceivable, because there are several *Ophrys* species that are very rare to extremely rare. This is especially the case of some of the recently described or recognised taxa (see previous sections), which would not be considered distinct under a “lumper’s” perspective. But even so, when considering only the species accepted in *Flora Iberica*, some of them are still rather rare in Portugal, the most remarkable case being *O. incubacea*; and the fact that this species is assimilated to *O. sphegodes* (sic) in *Flora Iberica* does not change the perspective, because the rarity would be the same for both taxa in Portugal. Another example is that of the four taxa that are members of the *O. omegaifera* group (in Portugal, *O. dyris*, *O. vasconica*, *O. lenae*, *O. algarvensis*). Each of the four species is extremely rare, but even if they are grouped together (then under the name *O. fusca* subsp. *dyris* in *Flora Iberica*), the lumped (sub-)species remains rare and would deserve conservation efforts.

Other examples of species that should have been taken into consideration because of their rarity are *Androrchis langei* and *Serapias occidentalis*.

8.2. Areas of interest for Orchid conservation

In a 1999 paper (TYTECA & CAPERTA 1999b) we submitted zones of interest for the conservation of Orchids in Portugal. We find it meaningful to incorporate this again in this paper, in a revised and updated form, as a basis and suggestion to implement conservation priorities, and to stress some of the most important areas that should be taken into account, because they host some of the most remarkable species, they are presently under serious threat, and/or they do not benefit from any particular conservation status. Let us remind here that areas that are rich in Orchids are always interesting and valuable as natural areas in general, because they host a high biodiversity that includes, among other, the partners of the living world on which the survival and evolution of Orchids strongly depend (pollinating insects, mycorrhizal fungi). As such, Orchid habitats should always be ranked on a high level in the nature conservation priorities.

The areas we would like to propose are given in Figure 16 and Table 2. Among the habitats / sites that are especially under threat, we would like to stress in particular

- The semi-natural hay and grazing meadows in the north of the country (N. 4), because traditional management practices tend to be left over, as was the case in many other parts of Europe, although these are among the most original and richest habitats, as can still be seen nowadays in Portugal. However, some are being progressively lost, such as, e.g., the grazing meadows near S. João da Pesqueira, which host the unique locality known so far with *Neotinea ustulata*.
- Wet areas in low altitudes (N. 5, 6, 10, 11, 20, 21, 28), which are under threat due to drainage, road construction, land cultivation, or simply abandoned. These habitats host some of the rarest and most characteristic species of Portugal (e.g., *Spiranthes aestivalis*, *Dactylorhiza elata*, *Anacamptis laxiflora*, *Serapias perez-chiscanoi* and other *Serapias* species).
- Generally speaking, calcareous grasslands and garigues, which are mainly under threat because of the progressive abandonment of traditional grazing practices (N. 12, 13-18, 24, 26, 27, 29, 33). Species growing here are numerous and diversified, and as in other Mediterranean countries, they constitute a major heritage. Such habitats are still numerous in Portugal; however, when such areas are left behind, bush overgrowth and forestation are very fast, as we could perceive, dramatically, in the Serra de Montejunto (N. 14), where the last shepherd has left the place some years ago.

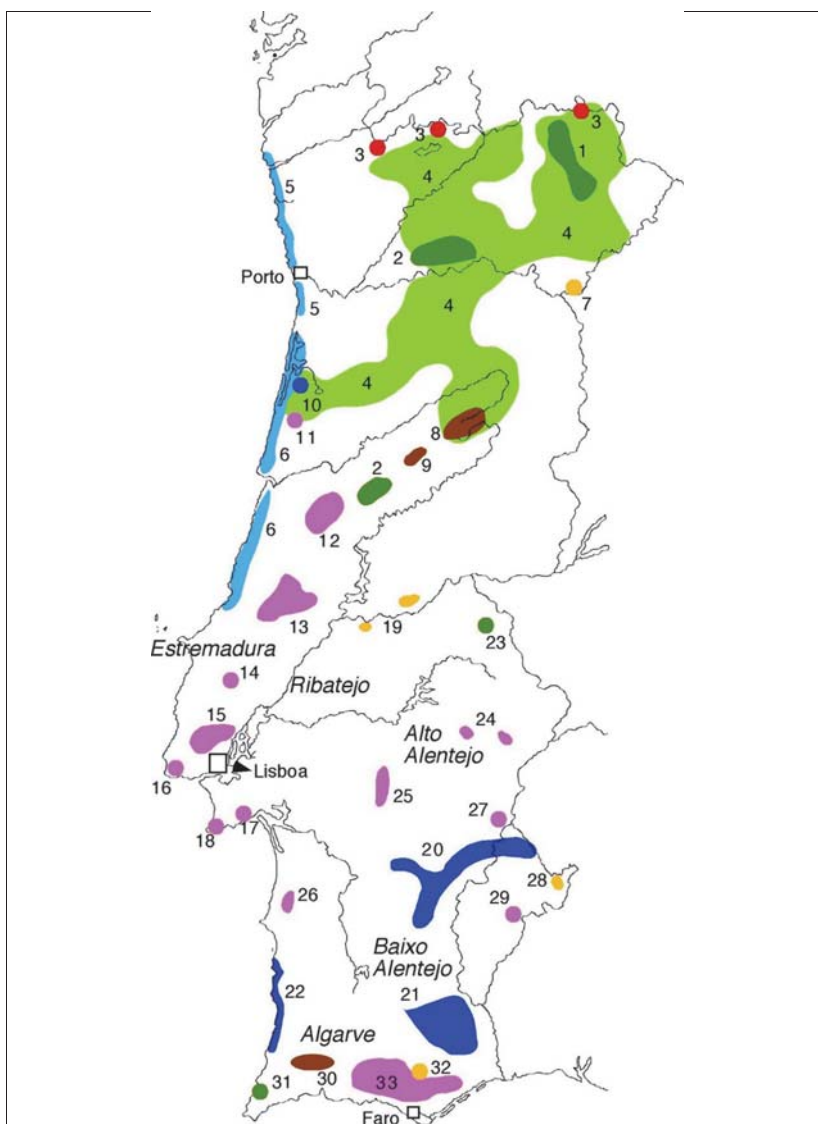


Figure 16: Map of Portugal with indication of sites and habitats of importance for the conservation of Orchids. Numbers refer to Table 2. Adapted and updated from TYTECA & CAPERTA 1999b.

Table 2: Proposed habitats and sites of importance towards the conservation of Orchids (Numbers refer to Figure 16).

North Portugal: habitats	Importance for Orchids	Protection status
1. <i>Quercus pyrenaica</i> woods (Bragança, Grandais, Fresulfe, Serra de Nogueira, Vinhais, Vinhas, ...)	Unique habitat for some very rare species: <i>Neottia nidus-avis</i> , <i>Cephalanthera rubra</i> , <i>Epipactis fageticola</i> ; other rare species: <i>Androrchis langei</i> , <i>Dactylorhiza insularis</i>	Partially Natura 2000
2. Chestnut groves (examples: Covas do Douro, Campeã, Fornelos, Lousã)	Main habitat for some very rare species: <i>Androrchis provincialis</i> , <i>Dactylorhiza markusii</i> , <i>D. insularis</i> , <i>Platanthera bifolia</i>	Partially Natura 2000; in some cases in CORINE biotopes
3. Peatlands and acid bogs (examples: Gerês, Larouco, Montesinho)	Unique habitats for <i>Dactylorhiza ericetorum</i>	Generally included in Natural Parks; Natura 2000
4. Semi-natural hay and grazing meadows (still numerous in Trás-os-Montes, Beira Alta, Beira Litoral)	Remarkable populations of <i>Dactylorhiza caramulensis</i> , <i>Anacamptis coriophora</i> subsp. <i>martinii</i> , <i>Serapias lingua</i> , <i>S. cordigera</i> ; locally <i>Neotinea ustulata</i>	Only partly protected; need for more protection; need for management monitoring (e.g., S. João da Pesqueira)
5. Coastal areas with secondary dunes, between North of Viana do Castelo and Espinho	Habitats for <i>Spiranthes aestivalis</i> , <i>Dactylorhiza elata</i> ; formerly <i>Epipactis palustris</i>	This area covers various protected areas and landscapes, as well as natural reserves
6. "Transition zones" around lakes and ponds (e.g., Lagoa da Vela)	Important habitat for <i>Spiranthes aestivalis</i> ; formerly <i>Epipactis palustris</i>	Partially Natura 2000

North Portugal: sites	Importance for Orchids	Protection status
7. Scrub at margin of cork oak wood near Freixo de Espada à Cinta	One of the only two known localities of <i>Epipactis duriensis</i>	None
8. Meadows, moors and marshes in upper altitudes of Serra da Estrela	Natural habitat of <i>Dactylorhiza caramulensis</i> , which is the species growing at highest altitudes in Portugal	Natural Park; Natura 2000
9. <i>Quercus pyrenaica</i> woods and chestnut groves of Serra do Açor	Populations of <i>Epipactis fageticola</i> , <i>E. helleborine</i> and <i>Neottia nidus-avis</i>	Included in Paisagem Protegida da Serra do Açor

Table 2. – continued.

Beira Litoral: sites	Importance for Orchids	Protection status
10. Wet meadows and alkaline marshes South of Aveiro (Vagos, Fermentelos)	Important populations of <i>Dactylorhiza elata</i> ; <i>Spiranthes aestivalis</i>	None
11. Wet to semi-wet meadows on ancient dunes near S. Romão	Numerous and plentiful Orchids: <i>Anacamptis pyramidalis</i> , <i>A. coriophora</i> subsp. <i>fragrans</i> and their hybrid, <i>Ophrys apifera</i> , <i>Dactylorhiza elata</i>	None
12. Serras de Sicó, do Rabaçal and de Alvaiázere	Numerous species from calcareous areas; oak woods (<i>Q. faginea</i>) with <i>Androrchis provincialis</i> , <i>Dactylorhiza markusii</i> ; meadows with <i>Serapias perez-chiscanoi</i> , <i>S. occidentalis</i>	None
Estremadura and Ribatejo: sites	Importance for Orchids	Protection status
13. Serras de Aire e Candeeiros	Numerous species from calcareous areas; locally both species of <i>Limodorum</i>	Natural Park; Natura 2000
14. Montejunto (Cadaval)	Numerous species from calcareous areas; Chestnut grove with <i>Dactylorhiza insularis</i>	Natura 2000; CORINE
Estremadura and Ribatejo: sites	Importance for Orchids	Protection status
15. Hinterland of Lisboa (e.g., Caneças, Bucelas, Mafra)	High diversity of species from calcareous areas; large populations; hybrids	None; seriously under threat (vineyards; urbanization, roads)
16. Arredores de Cascais	Species from calcareous habitats; <i>Gennaria diphylla</i>	Partial (paisagem protegida) but still under urbanization threat; Natura 2000
17. Serra da Arrábida (including Serras de S. Luís, Palmela & S. Francisco)	High diversity of species from calcareous areas; <i>Ophrys incubacea</i> , <i>Anacamptis papilionacea</i>	Natural Park; Natura 2000
18. Serra dos Pinheirinhos (Sesimbra)	Like Serra da Arrábida; <i>Ophrys dyris</i> , <i>Anacamptis papilionacea</i>	Natura 2000; CORINE
19. Belver and Tramagal, in alluvial deposits of the Tejo valley	Populations of <i>Androrchis langei</i> , <i>Epipactis lusitanica</i> , <i>Serapias perez-chiscanoi</i> and various other orchid species	None

Table 2. – continued.

Alentejo and Algarve: habitats	Importance for Orchids	Protection status
20. Wet meadows in valleys of Alentejo	Some very rare species, including <i>Anacamptis laxiflora</i> , <i>Serapias perez-chiscanoi</i>	None
21. Banks and islands in valleys of medium to high flow rivers (e.g., Odeleite)	Habitats especially favourable for <i>Spiranthes aestivalis</i> , locally abundant; <i>Serapias</i> species	None
22. Litoral Alentejano in dune systems, cliffs and temporary puddles	Various habitats, with (among other) <i>Spiranthes aestivalis</i> , <i>Epipactis lusitanica</i> , <i>Ophrys scolopax</i>	Included in Parque Natural do Sudoeste Alentejano e Costa Vicentina

Alentejo: sites	Importance for Orchids	Protection status
23. Castelo de Vide	Chestnut groves with <i>Dactylorhiza markusii</i> and <i>Androrchis langei</i>	In a Natural Park; Natura 2000
24. Estremoz and Vila Viçosa, in oak woods of <i>Quercus rotundifolia</i> and calcareous scrub	Rich orchid populations with (among other) <i>Anacamptis collina</i> and <i>Ophrys incubacea</i>	None
25. Montemor-o-Novo, in oak woods of <i>Quercus suber</i>	Rich orchid populations with (among other) <i>Gennaria diphylla</i> , <i>Ophrys ficalhoana</i> and its hybrid with <i>O. apifera</i>	None
26. Santiago do Cacém, in calcareous scrub and oak woods of <i>Quercus faginea</i>	Rich orchid populations with (among other) <i>Epipactis lusitanica</i> , <i>Gennaria diphylla</i> , <i>Anacamptis papilionacea</i>	None
27. Reguengos de Monsaraz	Meadows with <i>Anacamptis papilionacea</i> , <i>A. champagneuxii</i> and their hybrid; <i>A. laxiflora</i> , <i>Ophrys incubacea</i>	None; partially destroyed by Alqueva dam
28. Barrancos, in wet meadows	Rich orchid populations with (among other) <i>Serapias occidentalis</i> and <i>S. perez-chiscanoi</i>	None
29. Serra do Ficalho (Serpa, Moura)	Almost the only Portuguese localities of <i>A. collina</i> ; other species from calcareous areas	Natura 2000

Table 2. – continued.

Algarve: sites	Importance for Orchids	Protection status
30. Serra de Monchique	Cork oak woods with important populations of <i>Epipactis lusitanica</i> ; <i>Limodorum abortivum</i> ; meadows with <i>Serapias strictiflora</i>	Natura 2000; CORINE
31. Castelejo (Vila do Bispo)	Parasol pine woods with <i>Gennaria diphylla</i> , <i>Anacamptis morio</i> , <i>Serapias</i> div. spp.	In a Protected Landscape; Natura 2000
32. Barranco do Velho (Loulé)	Only locality with most Portuguese species of <i>Serapias</i> (<i>Cistus</i> scrub)	Natura 2000
33. Calcareous area of central Algarve (Barrocal – includes Rocha da Pena; Northern and Western slopes of Morgado hill)	Region of Portugal with the highest diversity of species from calcareous areas: numerous <i>Ophrys</i> , including endemics (<i>O. algarvensis</i> , <i>O. quarteirae</i>); hybrids; <i>Androrchis olbiensis</i> ; numerous other species in considerable populations	Natura 2000; classified site of Rocha da Pena

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Appendices

Appendix 1. – List of the Orchid species of Portugal

Cephalanthera

C. longifolia (L.) Fritsch

C. rubra (L.) Rich.

Epipactis

E. helleborine (L.) Crantz

E. fageticola (Hermosilla) J. Devillers-Terschuren & P. Devillers

E. tremolsii C. Pau

E. lusitanica D. Tyteca

E. duriensis Bernardos, D. Tyteca, Revuelta & Amich

Neottia

N. nidus-avis (L.) Rich.

Limodorum

L. abortivum (L.) Sw.

L. trabutianum Battand.

Spiranthes

S. spiralis (L.) Chevall.

S. aestivalis (Poir.) Rich.

Gennaria

G. diphylla (Link) Parl.

Platanthera

P. bifolia (L.) Rich.

Dactylorhiza

D. markusii (Tin.) H. Baumann & Künkele

D. insularis (Sommier) Landwehr

D. elata (Poir.) Soó

D. ericetorum (E.F. Linton) Averyanov

D. caramulensis (Verm.) D. Tyteca

Gymnadenia

G. conopsea (L.) R. Br.

Himantoglossum

H. robertianum (Loisel.) P. Delforge

Anacamptis

A. pyramidalis (L.) Rich.

A. coriophora (L.) R.M. Bateman, Pridgeon & M.W. Chase subsp. *martrinii* (Timb.-Lagr.) Jacquet & Scappat.

A. coriophora subsp. *fragrans* (Pollini) R.M. Bateman, Pridgeon & M.W. Chase

A. morio (L.) R.M. Bateman, Pridgeon & M.W. Chase

A. picta (Loisel.) R.M. Bateman, Pridgeon & M.W. Chase

A. champagneuxii (Barnéoud) R.M. Bateman, Pridgeon & M.W. Chase

A. papilionacea (L.) R.M. Bateman, Pridgeon & M.W. Chase

A. collina (Banks & Sol. ex Russell) R.M. Bateman, Pridgeon & M.W. Chase

A. laxiflora (Lam.) R.M. Bateman, Pridgeon & M.W. Chase

Neotinea

N. maculata (Desf.) Stearn

N. conica (Willd.) R.M. Bateman

N. ustulata (L.) R.M. Bateman, Pridgeon & M.W. Chase

Androrchis

A. mascula (L.) D. Tyteca & E. Klein

A. olbiensis (Reut. ex Gren.) D. Tyteca & E. Klein

A. langei (K. Richt.) D. Tyteca & E. Klein

A. provincialis (Balb.) D. Tyteca & E. Klein

Orchis

O. anthropophora (L.) All.

O. italica Poir.

Serapias

S. lingua L.

S. parviflora Parl.

S. strictiflora Welwitsch ex Veiga

S. cordigera L.

S. cordigera subsp. *gentilii* C. Venhuis, P. Venhuis & Kreutz

S. occidentalis C. Venhuis & P. Venhuis

S. perez-chiscanoi Acedo

Ophrys

- O. fusca* Link
- O. lupercalis* J. Devillers-Terschuren & P. Devillers
- O. bilunulata* Risso
- O. pintoii* M.R. Lowe & D. Tyteca
- O. dyris* Maire
- O. algarvensis* D. Tyteca, Benito Ayuso & M. Walravens
- O. vasconica* (O. Danesch & E. Danesch) P. Delforge
- O. lenae* M.R. Lowe & D. Tyteca
- O. lutea* Cav.
- O. quarteirae* (Kreutz, M.R. Lowe & Wucherpfennig) P. Devillers
& J. Devillers-Terschuren
- O. speculum* Link
- O. lusitanica* (O. Danesch & E. Danesch) Paulus & Gack
- O. bombyliflora* Link
- O. tenthredinifera* Willd.
- O. ficalhoana* Guimarães
- O. apifera* Huds.
- O. scolopax* Cav.
- O. picta* Link
- O. incubacea* Bianca

Appendix 2. – List of new localities

<i>Species</i>				
Region	UTM Coordinates	Alt. (m)	Date	Locality (origin)
<i>Anacamptis collina</i>				
Alto Alentejo	29 S - 652540.00 m E 4296498.00 m N	269	21/03/2010	Ciladas, Vila Viçosa
Baixo Alentejo	29 S - 649521.26 m E 4204714.06 m N	334	07/03/2015	Serra do Ficalho, Moura
Baixo Alentejo	29 S - 653250.00 m E 4203069.00 m N	272	07/03/2015	Serra do Ficalho, Moura
Baixo Alentejo	29 S - 651665.00 m E 4202617.16 m N	348	07/03/2015	Serra do Ficalho, Moura
<i>Anacamptis laxiflora</i>				
Baixo Alentejo	29 S - 587353.00 m E 4231080.00 m N	135	05/05/2016	Alvito
Baixo Alentejo	29 S - 591840.24 m E 4218615.75 m N	175	09/05/2007	Trigaches, Beja
Baixo Alentejo	29 S - 655764.63 m E 4208397.76 m N	250	09/05/2010	Sobral da Adiça, Moura
<i>Anacamptis martrinii</i>				
Baixo Alentejo	29 S - 667950.51 m E 4218127.16 m N	226	20/04/2014	Barrancos
<i>Anacamptis picta</i>				
Beira Litoral	29 S - 538067.87 m E 4420570.89 m	352	24/04/2009	Ereiras, Pombal
Beira Baixa	29 S - 598844.00 m E 4377017.00 m N	260	01/05/2013	São José das Matas, Mação
Baixo Alentejo	29 S - 583019.96 m E 4231756.93 m N	125	01/04/2009	Alvito
<i>Androrchis langei</i>				
Trás-os-Montes e Alto Douro	29 T - 677856.00 m E 4635149.00 m N	836	07/06/2013	Gondesende, Bragança
Trás-os-Montes e Alto Douro	29 T - 678685.00 m E 4635012.00 m N	893	03/07/2016	Oleiros, Bragança
Trás-os-Montes e Alto Douro	29 T - 664440.99 m E 4634696.20 m N	759	10/06/2016	Vinhais (Observação de Cassiano Monteiro e Hermengarda

Trás-os-Montes e Alto Douro	29 T - 668877.95 m E 4627924.60 m N	760	10/06/2016	Urbano) Ousilhão, Vinhais (Observação de Cassiano Monteiro e Hermengarda Urbano)
Trás-os-Montes e Alto Douro	29 T - 669718.77 m E 4628280.40 m N	852	17/06/2016	Romariz, Vinhais
Trás-os-Montes e Alto Douro	29 T - 671761.65 m E 4639017.26 m N	713	08/06/2013	Fresulfe, Vinhais
Beira Alta	29 T - 624119.06 m E 4474830.45 m N	1060	07/06/2012	Manteigas (Observação de Paulo V. Araújo e Maria P. Carvalho)
Algarve	29 S - 628717.32 m E 4128842.65 m N	104	01/05/2013	Beliche, Castro Marim (Observação de Valter Jacinto)
<i>Androrchis provincialis</i>				
Beira Litoral	29 S - 543829.59 m E 4423913.31 m N	260	30/04/2006	Carvalhal, Ansião
Beira Litoral	29 S - 543974.00 m E 4424092.00 m N	277	16/04/2014	Moita Santa de Baixo, Ansião
Beira Litoral	29 S - 543717.00 m E 4423885.00 m N	278	16/04/2014	Moita Santa de Cima, Ansião
<i>Cephalanthera longifolia</i>				
Minho	29 T - 570734.77 m E 4627256.82 m N	653	25/05/2012	Mata da Albergaria, Terras de Bouro
Trás-os-Montes e Alto Douro	29 T - 664440.99 m E 4634696.20 m N	759	10/06/2016	Vinhais (Observação de Cassiano Monteiro e Hermengarda Urbano)
Trás-os-Montes e Alto Douro	29 T - 668877.95 m E 4627924.60 m N	760	10/06/2016	Ousilhão, Vinhais (Observação de Cassiano Monteiro e Hermengarda Urbano)
Trás-os-Montes e Alto Douro	29 T - 680535.82 m E 4581674.36 m N	588	18/04/2014	Castro Vicente, Mogadouro
Beira Litoral	29 T - 549069.00 m E 4468477.00 m N	83	20/04/2014	Travasso, Mealhada (Observação de Serafim Pessoa)
Estremadura	29 S - 511443.05 m E 4374201.84 m N	391	19/05/2012	Alqueidão do Arrimal, Porto de Mós
Estremadura	29 S - 470293.94 m E	119	20/03/2014	Rio de Mouro, Sintra

4289795.76 m N

(Observação de Fernando Pires)

Cephalanthera rubra

Trás-os-Montes e Alto Douro	29 T - 671628.05 m E 4639020.53 m N	690	12/06/2010	Fresulfe, Vinhais
Trás-os-Montes e Alto Douro	29 T - 680710.48 m E 4631809.55 m N	778	12/06/2010	Grandais, Bragança
Trás-os-Montes e Alto Douro	29 T - 664440.99 m E 4634696.20 m N	759	10/06/2016	Vinhais (Observação de Cassiano Monteiro e Hermengarda Urbano)
Trás-os-Montes e Alto Douro	29 T - 668877.95 m E 4627924.60 m N	760	10/06/2016	Ousilhão, Vinhais (Observação de Cassiano Monteiro e Hermengarda Urbano)
Trás-os-Montes e Alto Douro	29 T - 668346.28 m E 4628130.15 m N	719	17/06/2016	Romariz, Vinhais
Trás-os-Montes e Alto Douro	29 T - 669718.77 m E 4628280.40 m N	852	17/06/2016	Romariz, Vinhais

Dactylorhiza caramulensis

Minho	29 T - 580608.01 m E 4615223.61 m N	632	16/06/2012	Botica, Vieira do Minho (Observação de Paulo V. Araújo e Maria P. Carvalho)
Trás-os-Montes e Alto Douro	29 T - 592980.00 m E 4625008.00 m N	1045	06/07/2012	Contim, Montalegre
Beira Alta	29 T - 592753.24 m E 4540364.23 m N	929	16/06/2012	Gosende, Castro Daire
Beira Alta	29 T - 592878.09 m E 4533483.19 m N	882	20/06/2015	Nossa Sra. da Ouvida, Castro Daire
Beira Alta	29 T - 630924.00 m E 4485722.00 m N	1161	21/06/2014	Videmonte, Guarda
Beira Alta	29 T - 636057.39 m E 4488936.92 m N	1103	21/06/2014	Prados, Guarda
Beira Alta	29 T - 614057.05 m E 4468653.02 m N	1570	29/06/2013	Lagoa Comprida, Seia
Beira Litoral	29 T - 566723.96 m E 4441375.56 m N	288	07/05/2007	Vilarinho, Lousã

Dactylorhiza elata

Minho	29 T - 516406.30 m E 4606078.06 m N	9	20/04/2009	Laje, Viana do Castelo
Minho	29 T - 517307.57 m E 4605209.43 m N	18	20/04/2009	Belinho, Viana do Castelo
Minho	29 T - 511183.69 m E 4619473.07 m N	14	27/05/2012	Carreço, Viana do Castelo
Trás-os-Montes e Alto Douro	29 T - 677964.26 m E 4635242.61 m N	803	07/06/2013	Gondesende, Bragança
Trás-os-Montes e Alto Douro	29 T - 679228.00 m E 4640077.00 m N	773	11/06/2016	Vilarinho, Bragança (Observação de Cassiano Monteiro e Hermengarda Urbano)
Douro Litoral	29 T - 529911.77 m E 4541659.87 m N	5	18/05/2016	São Félix da Marinha, Vila Nova de Gaia (Observação de Paulo V. Araújo e Maria P. Carvalho)
Beira Litoral	29 T - 525430.64 m E 4489429.73 m N	6	21/05/2015	Vagos (Observação de Alberto Cabral)
Beira Litoral	29 T - 531106.30 m E 4475250.76 m N	46	15/05/2016	Sanguinheira, Cantanhede (Observação de Paulo V. Araújo e Maria P. Carvalho)

Dactylorhiza ericetorum

Minho	29 T - 578895.00 m E 4628180.00 m N	1352	02/07/2011	Minas de Carris, Terras de Bouro
Minho	29 T - 574086.94 m E 4625778.81 m N	1245	29/06/2013	Prado da Messe, Terras de Bouro
Minho	29 T - 574872.00 m E 4623956.00 m N	1123	29/06/2014	Rocalva, Terras de Bouro
Minho	29 T - 572371.91 m E 4623723.97 m N	1224	04/07/2015	Vale do Teixeira, Terras de Bouro
Trás-os-Montes e Alto Douro	29 T - 588742.00 m E 4636038.00 m N	1309	07/07/2012	Pitões das Júnias, Montalegre

Dactylorhiza insularis

Trás-os-Montes e Alto Douro	29 T - 676708.00 m E 4603423.00 m N	617	28/04/2012	Salselas, Macedo de Cavaleiros
Trás-os-Montes e Alto Douro	29 T - 702899.99 m E 4601367.54 m N	502	19/04/2014	Campo de Víboras, Vimioso

<i>Dactylorhiza markusii</i>					
Trás-os-Montes e Alto Douro	29 T - 676708.00 m E 4603423.00 m N	617	28/04/2012	Salselas, Macedo de Cavaleiros	
Trás-os-Montes e Alto Douro	29 T - 674249.00 m E 4596579.00 m N	691	28/04/2012	Serra de Bornes, Macedo de Cavaleiros	
Trás-os-Montes e Alto Douro	29 T - 702896.58 m 4601452.03 m N	475	19/04/2014	Campo de Víboras, Vimioso	
Tás-os-Montes e Alto Douro	29 T - 680535.82 m E 4581674.36 m N	588	18/04/2014	Castro Vicente, Mogadouro	
Tás-os-Montes e Alto Douro	29 T - 683647.29 m E 4548077.84 m N	420	24/04/2016	Freixo de Espada à Cinta (Observação de Cassiano Monteiro e Hermengarda Urbano)	
Beira Litoral	29 S - 543829.59 m E 4423913.31 m N	260	30/04/2006	Carvalhal, Ansião	
<i>Epipactis duriensis</i>					
Trás-os-Montes e Alto Douro	29 T - 683515.32 m E 4547856.14 m N	526	07/06/2009	Freixo de Espada à Cinta	
Tás-os-Montes e Alto Douro	29 T - 683647.29 m E 4548077.84 m N	420		Freixo de Espada à Cinta (Observação de Cassiano Monteiro e Hermengarda Urbano)	
<i>Epipactis fageticola</i>					
Beira Alta	29 T - 626053.46 m E 4470371.16 m N	1075	09/07/2011	Souto do Concelho, Manteigas	
Beira Alta	29 T - 626195.81 m E 4470758.81 m N	953	29/06/2013	Souto do Concelho, Manteigas	
Beira Litoral	29 T - 591911.00 m E 4452281.00 m N	573	27/06/2015	Mata da Margaraça, Arganil	
<i>Epipactis helleborine</i>					
Trás-os-Montes e Alto Douro	29 T - 680668.51 m E 4631880.70 m N	779	06/06/2009	Grandais, Bragança	
Trás-os-Montes e Alto Douro	29 T - 678102.00 m E 4634830.04 m N	879	05/06/2015	Gondesende, Bragança	
Trás-os-Montes e Alto Douro	29 T - 666627.14 m E 4630077.29 m N	524	17/06/2016	Nunes, Vinhais	

Trás-os-Montes e Alto Douro	29 T - 668346.28 m E 4628130.15 m N	719	17/06/2016	Romariz, Vinhais
Trás-os-Montes e Alto Douro	29 T - 668346.28 m E 4628130.15 m N	871	02/07/2016	Ousilhão, Vinhais
Beira Alta	29 T - 638671.52 m E 4478865.48 m N	885	25/06/2008	Famalicão da Serra, Guarda (Observação de Alexandre Silva)
Beira Alta	29 T - 626842.00 m E 4472116.00 m N	838	30/06/2012	Souto do Concelho, Manteigas
Beira Litoral	29 T - 592091.00 m E 4452126.00 m N	625	27/06/2015	Mata da Margaraça, Arganil
<i>Epipactis phyllanthos</i>				
Trás-os-Montes e Alto Douro	29 T - 671557.00 m E 4639736.00 m N	668	15/06/2014	Fresulfe, Vinhais
Trás-os-Montes e Alto Douro	29 T - 664332.00 m E 4634769.00 m N	798	02/07/2016	Vinhais
Trás-os-Montes e Alto Douro	29 T - 666627.14 m E 4630077.29 m N	524	17/06/2016	Nunes, Vinhais
<i>Gennaria diphylla</i>				
Estremadura	29 S - 491814.61 m E 4300438.86 m N	119	07/04/2014	Vialonga, Vila Franca de Xira
Alto Alentejo	29 S - 572894.36 m 4268108.77 m N	317	21/03/2011	Santiago do Escoural, Montemor-o-Novo (Observação de Mário Pinto e Vânia Pirata)
Baixo Alentejo	29 S - 528099.52 m E 4210979.44 m N	162	31/12/2015	Santa Cruz, Santiago do Cacém (Observação de Paulo V. Araújo e Maria P. Carvalho)
Algarve	29 S - 580431.00 m E 4123733.00 m N	413	04/04/2009	Rocha da Pena, Loulé (Observação de Alfredo Franco)
<i>Gymnadenia conopsea</i>				
Minho	29 T - 573052.24 m E 4623782.07 m N	1356	19/06/2010	Lomba do Pau, Terras de Bouro
Minho	29 T - 573964.77 m E 4624332.20 m	1265	16/06/2009	Conho, Terras de Bouro (Observação de Miguel Porto e Ana Júlia Pereira)
Minho	29 T - 574842.00 m E	1128	03/07/2010	Fichinhas, Terras de Bouro

Minho	4623973.00 m N 29 T - 574044.60 m E 4629150.90 m N	1176	06/07/2012	Encosta do Sol, Terras de Bouro
Minho	29 T - 574086.94 m E 4625778.81 m N	1245	29/06/2013	Prado da Messe, Terras de Bouro
Minho	29 T - 572750.00 m E 4623536.00 m N	1345	06/07/2013	Borrageiro, Terras de Bouro
Minho	29 T - 574912.79 m E 4623972.99 m N	1257	29/06/2014	Rocalva, Terras de Bouro
Minho	29 T - 578180.58 m E 4627595.73 m N	1420	29/06/2016	Ponte das Abrótegas, Terras de Bouro
Minho	29 T - 576440.50 m E 4626831.82 m N	1362	29/06/2016	Prado do Absedo, Terras de Bouro
Trás-os-Montes e Alto Douro	29 T - 578650.00 m E 4627280.00 m N	1352	29/06/2016	Minas de Carris, Montalegre
<i>Himantoglossum robertianum</i>				
Trás-os-Montes e Alto Douro	29 T - 667956.02 m E 4543414.71 m N	257	17/03/2013	Almendra, Vila Nova de Foz Côa (Observação de Paulo V. Araújo e Maria P. Carvalho)
Trás-os-Montes e Alto Douro	29 T - 662425.10 m E 4542929.88 m N	404	25/04/2016	Castelo Melhor, Vila Nova de Foz Côa (Observação de Cassiano Monteiro e Hermengarda Urbano)
Alto Alentejo	29 S - 617661.00 m E 4304694.00 m N	357	19/03/2011	Venda da Porca, Estremoz
Alto Alentejo	29 S - 587419.57 m E 4241943.05 m N	324	09/04/2010	Viana do Alentejo
Baixo Alentejo	29 S - 594245.52 m E 4235674.41 m N	199	20/02/2013	Albergaria dos Fusos, Cuba (Observação de Vânia Pirata)
Baixo Alentejo	29 S - 592019.06 m E 4215691.92 m N	200	22/03/2011	Trigaches, Beja
<i>Limodorum abortivum</i>				
Trás-os-Montes e Alto Douro	29 T - 676945.34 m E 4604168.02 m N	614	28/04/2012	Salselas, Macedo de Cavaleiros
Beira Litoral	29 S - 504954.00 m E 4419001.00 m N	51	05/05/2006	Praia do Pedrógão, Leiria (Observação de José Artur Pinto)
Beira Litoral	29 S - 504925.00 m E 4419451.00 m N	34	18/04/2015	Praia do Pedrógão, Leiria

Limodorum trabutianum

Beira Litoral	29 S - 538946.67 m E 4415900.21 m N	264	01/05/2016	Carvalhal, Pombal
Estremadura	29 S - 510618.00 m E 4372650.00 m N	364	19/05/2012	Alqueidão do Arrimal, Porto de Mós
Estremadura	29 S - 499240.00 m E 4328402.00 m N	204	23/04/2016	Ota, Alenquer

Neotinea conica

Alto Alentejo	29 S - 617661.00 m E 4304694.00 m N	357	19/03/2011	Venda da Porca, Estremoz
Alto Alentejo	29 S - 587419.57 m E 4241943.05 m N	324	09/04/2010	Viana do Alentejo

Neotinea maculata

Minho	29 T - 511460.72 m E 4633658.99 m N	12	06/04/2012	Mata do Camarido, Caminha
Trás-os-Montes e Alto Douro	29 T - 702899.99 m E 4601367.54 m N	502	19/04/2014	Campo de Víboras, Vimioso
Trás-os-Montes e Alto Douro	29 T - 680535.82 m E 4581674.36 m N	588	18/04/2014	Castro Vicente, Mogadouro
Beira Litoral	29 T - 547149.00 m E 4465701.00 m N	93	20/03/2007	Canedo, Mealhada (Observação de Miguel Pessoa)

Neotinea ustulata

Trás-os-Montes e Alto Douro	29 T - 630290.00 m E 4555867.00 m N	725	08/05/2011	São João da Pesqueira
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Neottia nidus-avis

Minho	29 T - 570734.77 m E 4627256.82 m N	653	05/05/2014	Mata da Albergaria, Terras de Bouro
Trás-os-Montes e Alto Douro	29 T - 677932.12 m E 4635183.03 m N	809	07/06/2013	Gondesende, Bragança
Trás-os-Montes e Alto Douro	29 T - 664332.00 m E 4634769.00 m N	798	02/07/2016	Vinhais
Beira Litoral	29 T - 554186.00 m E 4468965.00 m N	550	17/05/2009	Serra do Buçaco, Mealhada
Beira Litoral	29 T - 591995.00 m E 4452176.00 m N	597	22/05/2015	Mata da Margaraça, Arganil

<i>Ophrys algarvensis</i>					
Algarve	29 S - 580949.47 m E 4123320.50 m N	357	10/04/2013	Rocha da Pena, Loulé (Observação de Eduardo Filipe Duarte Ferreira)	
<i>Ophrys apifera</i>					
Trás-os- Montes e Alto Douro	29 T - 712076.06 m E 4598441.06 m N	706	19/04/2014	Silva, Miranda do Douro	
Trás-os- Montes e Alto Douro	29 T - 680535.82 m E 4581674.36 m N	588	18/04/2014	Castro Vicente, Mogadouro	
Trás-os- Montes e Alto Douro	29 T - 662425.00 m E 4542929.00 m N	405	23/04/2016	Castelo Melhor, Vila Nova de Foz Côa - (Observação de Cassiano Monteiro e Hermengarda Urbano)	
Douro Litoral	29 T - 528951.67 m E 4545069.65 m N	6	05/05/2016	Aguda, Vila Nova de Gaia (Observação de Paulo V. Araújo e Maria P. Carvalho)	
<i>Ophrys bombyliflora</i>					
Beira Litoral	29 T - 539622.52 m E 4429912.28 m N	350	17/04/2009	Degraças, Soure	
Beira Litoral	29 S - 538345.00 m E 4420501.00 m N	375	10/04/2011	Ereiras, Pombal	
Alto Alentejo	29 S - 617661.00 m E 4304694.00 m N	357	19/03/2011	Venda da Porca, Estremoz	
<i>Ophrys ficalhoana</i>					
Estremadura	29 S - 501157.46 m E 4324934.21 m N	50	26/04/2014	Cheganças, Alenquer	
Estremadura	29 S - 468989.97 m E 4290253.86 m N	168	01/05/2013	Rio de Mouro, Sintra (Observação de Fernando Pires)	
Alto Alentejo	29 S - 559304.97 m E 4289652.45 m N	125	11/05/2013	Lavre, Montemor-o-Novo	
Alto Alentejo	29 S - 600381.12 m E 4243174.34 m N	215	08/03/2010	Oriola, Portel	
<i>Ophrys incubacea</i>					
Alto Alentejo	29 S - 617661.00 m E 4304694.00 m N	357	19/03/2011	Venda da Porca, Estremoz	
Baixo Alentejo	29 S - 611839.05 m E 4202711.88 m N	146	25/03/2014	Quintos, Beja	

<i>Ophrys lenae</i>					
Estremadura	29 S - 512206.00 m E 4375837.00 m N	495	23/03/2013	Portela do Vale de Espinho, Porto de Mós	
<i>Ophrys lupercalis</i>					
Baixo Alentejo	29 S - 650541.09 m E 4202682.85 m N	320	01/02/2014	Serra da Adiça, Moura	
Algarve	29 S - 567946.00 m E 4121351.00 m N	150	26/12/2015	Messines de Baixo, São Bartolomeu de Messines (Observação de Pedro Mascarenhas)	
<i>Ophrys pintoii</i>					
Beira Litoral	29 T - 534971.00 m E 4463822.00 m N	99	15/02/2014	Póvoa da Lomba, Cantanhede	
Beira Litoral	29 T - 546585.00 m E 4444480.00 m N	188	08/03/2016	Cernache, Coimbra	
Beira Litoral	29 T - 546110.83 m E 4434467.34 m N	199	21/02/2008	Zambujal, Condeixa-a-Nova	
Beira Litoral	29 T - 545766.35 m E 4440516.86 m N	150	14/02/2009	Alcabideque, Condeixa-a- Nova	
Beira Litoral	29 T - 545067.00 m E 4438780.00 m N	153	01/03/2016	Alcabideque, Condeixa-a- Nova	
Beira Litoral	29 S - 551139.00 m E 4406960.00 m N	312	11/02/2010	Serra de Alvaiázere, Alvaiázere	
Ribatejo	29 S - 509104.60 m E 4365253.18 m N	302	18/02/2010	Casais Monizes, Rio Maior	
Estremadura	29 S - 501985.44 m E 4318199.29 m N	54	17/03/2014	Quintas, Vila Franca de Xira	
Estremadura	29 S - 467453.29 m E 4287710.20 m N	100	08/03/2014	Manique, Cascais	
Estremadura	29 S - 462547.32 m E 4288482.86 m N	125	13/03/2013	Zambujeiro, Cascais	
<i>Ophrys scolopax</i>					
Trás-os- Montes e Alto Douro	29 T - 712076.06 m E 4598441.06 m N	706	19/04/2014	Silva, Miranda do Douro	
Trás-os- Montes e Alto Douro	29 T - 681332.25 m E 4581851.36 m N	337	18/04/2014	Castro Vicente, Mogadouro	
Beira Litoral	29 T - 542494.59 m E 4435830.54 m N	203	18/04/2013	Furadouro, Condeixa-a-Nova	
Beira Litoral	29 T - 543286.00 m E 4431614.00 m N	464	16/04/2008	Quatro Lagoas, Soure	

Beira Litoral	29 S - 545030.00 m E 4424552.00 m N	288	20/04/2009	Outeiro, Ansião
Beira Litoral	29 S - 538412.00 m E 4420373.00 m N	392	10/04/2011	Ereiras, Pombal
Baixo Alentejo	29 S - 517866.96 m E 4181253.11 m N	49	09/04/2015	Praia do Malhão, Vila Nova de Mil Fontes (Observação de Dinis Cortes)
<i>Ophrys tenthredinifera</i> subsp. <i>guimaraesii</i>				
Beira Litoral	29 T - 550145.70 m E 4464365.96 m N	100	12/03/2007	Pampilhosa, Mealhada
Beira Litoral	29 T - 548634.97 m E 4454536.05 m N	99	25/03/2013	Eiras, Coimbra
Beira Litoral	29 T - 527661.00 m E 4448603.00 m N	75	03/03/2008	Torre, Montemor-o-Velho
Estremadura	29 S - 512189.22 m E 4375646.46 m N	503	23/03/2013	Portela do Vale de Espinho, Porto de Mós
Estremadura	29 S - 475507.00 m E 4293765.28 m N	227	20/03/2011	Casal da Carregueira, Sintra
Estremadura	29 S - 462470.51 m E 4288375.75 m N	125	12/02/2013	Zambujeiro, Cascais
<i>Ophrys tenthredinifera</i> subsp. <i>tenthredinifera</i>				
Alto Alentejo	29 S - 617661.00 m E 4304694.00 m N	357	19/03/2011	Venda da Porca, Estremoz
Alto Alentejo	29 S - 587419.57 m E 4241943.05 m N	324	09/04/2010	Viana do Alentejo
Baixo Alentejo	29 S - 592019.06 m E 4215691.92 m N	200	22/03/2011	Trigaches, Beja
<i>Ophrys vasconica</i>				
Trás-os-Montes e Alto Douro	29 T - 703763.24 m E 4600950.87 m N	552	29/04/2012	Campo de Víboras, Vimioso
<i>Orchis anthropophora</i>				
Trás-os-Montes e Alto Douro	29 T - 680535.82 m E 4581674.36 m N	588	18/04/2014	Castro Vicente, Mogadouro
<i>Platanthera bifolia</i>				
Trás-os-Montes e Alto Douro	29 T - 605944.00 m E 4548380.00 m N	774	16/06/2012	Queimadela, Armamar
Trás-os-Montes e Alto Douro	29 T - 592965.98 m E 4573138.41 m N	833	26/05/2013	Aveção do Meio, Vila Real

Serapias cordigera subsp. gentilii

Estremadura	29 S - 480261.59 m E 4304766.70 m N	301	04/05/2014	Montemuro, Mafra
Estremadura	29 S - 475941.00 m E 4296920.00 m N	277	25/04/2016	Almargem do Bispo, Sintra
Baixo Alentejo	29 S - 583019.96 m E 4231756.93 m N	125	01/04/2009	Alvito

Serapias occidentalis

Beira Litoral	29 T - 543100.13 m E 4431953.73 m N	383	08/05/2006	Quatro Lagoas, Soure
Beira Litoral	29 T - 539884.69 m E 4429821.13 m N	387	30/04/2016	Degracias, Soure
Beira Litoral	29 S - 538202.00 m E 4420424.00 m N	369	15/05/2015	Ereiras, Pombal
Baixo Alentejo	29 S - 655764.63 m E 4208397.76 m N	250	09/05/2010	Sobral da Adiça, Moura
Baixo Alentejo	29 S - 667799.99 m E 4218027.65 m N	225	20/04/2014	Barrancos

Serapias perez-chiscanoi

Trás-os-Montes e Alto Douro	29 T - 630726.34 m E 4557077.00 m N	677	08/05/2011	São João da Pesqueira
Beira Litoral	29 S - 538067.87 m E 4420570.89 m	352	01/05/2009	Ereiras, Pombal
Beira Baixa	29 S - 591350.25 m E 4373788.48 m N	235	01/05/2013	Belver, Gavião
Ribatejo	29 S - 566483.51 m E 4366843.33 m N	75	20/04/2006	Tramagal, Abrantes
Baixo Alentejo	29 S - 667950.51 m E 4218127.16 m N	226	20/04/2014	Barrancos
Baixo Alentejo	29 S - 586480.63 m E 4236012.96 m N	275	11/05/2013	Alvito

Spiranthes aestivalis

Douro Litoral	29 T - 522073.00 m E 4575138.00 m N	11	25/06/2011	Mindelo, Vila de Conde
Baixo Alentejo	29 S - 517489.43 m E 4168153.49 m N	16	18/07/2015	Almograve, Odemira (Observação de Mário Pinto e Vânia Pirata)
Baixo Alentejo	29 S - 653435.37 m E 4207705.61 m N	250	05/06/2011	Sobral da Adiça, Moura
Baixo Alentejo	29 S - 607792.52 m E 4147935.72 m N	140	13/05/2013	Penedos, Mértola (Obser- vação de José Miguel Dias)

<i>Spiranthes spiralis</i>					
Minho	29 T - 518897.63 m E 4594293.41 m N	8	11/09/2015	Apúlia, Esposende	
Trás-os-Montes e Alto Douro	29 T - 590296.90 m E 4574813.16 m N	765	20/10/2012	Campanhó, Vila Real (Observação de Paulo V. Araújo e Maria P. Carvalho)	
<i>Anacamptis fragrans</i> × <i>Anacamptis papilionacea</i>					
Beira Litoral	29 S - 545069.88 m E 4424527.04 m N	285	30/04/2011	Outeiro, Ansião	
<i>Anacamptis champagneuxii</i> × <i>Anacamptis papilionacea</i> (<i>Anacamptis</i> × <i>gennarii</i>)					
Beira Litoral	29 T - 540142.42 m E 4429859.77 m N	420	03/04/2009	Degracias, Soure	
Beira Litoral	29 S - 545029.35 m E 4424479.44 m N	297	26/04/2010	Outeiro, Ansião	
Estremadura	29 S - 512327.00 m E 4371433.00 m N	323	26/04/2014	Mendiga, Porto de Mós	
<i>Androrchis mascula</i> × <i>Androrchis provincialis</i> (<i>Androrchis</i> × <i>penzigiana</i>)					
Beira Litoral	29 S - 543792.00 m E 4423862.00 m N	264	25/04/2010	Carvalhal, Ansião	
<i>Dactylorhiza ericetorum</i> × <i>Gymnadenia conopsea</i> (<i>Dactylodenia</i> × <i>evansii</i>)					
Minho	29 T - 574893.10 m E 4623924.01 m N	1151	29/06/2013	Fichinhas, Terras de Bouro	
Minho	29 T - 574035.05 m E 4626030.40 m	1242	29/06/2014	Prados da Messe, Terras de Bouro	
<i>Ophrys apifera</i> × <i>Ophrys ficalhoana</i> (<i>Ophrys</i> × <i>turiana</i>)					
Alto Alentejo	29 S - 559688.31 m E 4294716.49 m N	174	11/05/2013	Lavre, Montemor-o-Novo	
Alto Alentejo	29 S - 574823.00 m E 4266587.00 m N	350	13/05/2010	Santiago do Escoural, Montemor-o-Novo	
<i>Ophrys bombyliflora</i> × <i>Ophrys picta</i>					
Estremadura	29 S - 491458.00 m E 4312740.00 m N	347	09/04/2016	Mata, Arruda dos Vinhos	
Estremadura	29 S - 489876.00 m E 4306293.00 m N	125	22/04/2010	Bucelas, Loures	
Estremadura	29 S - 501577.30 m E 4264507.28 m N	133	04/04/2006	Vila Fresca de Azeitão, Setúbal	
Estremadura	29 S - 491898.00 m E 4257238.00 m N	171	29/03/2013	Santana, Sesimbra	
Estremadura	29 S - 504957.00 m E 4266143.00 m N	170	05/04/2014	Palmela	

<i>Ophrys fusca</i> × <i>Ophrys incubacea</i> (<i>Ophrys</i> × <i>braun-blanquetiana</i>)					
Estremadura	29 S - 503647.99 m E 4266513.02 m N	124	05/04/2014	Palmela	
Baixo Alentejo	29 S - 592019.06 m E 4215691.92 m N	200	04/04/2008	Trigaches, Beja	
<i>Ophrys incubacea</i> × <i>Ophrys picta</i>					
Estremadura	29 S - 508436.47 m E 4268129.44 m N	95	29/03/2013	Palmela	
<i>Ophrys incubacea</i> × <i>Ophrys speculum</i> (<i>Ophrys</i> × <i>pantaliciensis</i>)					
Baixo Alentejo	29 S - 611839.05 m E 4202711.88 m N	146	25/03/2014	Quintos, Beja	
<i>Ophrys picta</i> × <i>Ophrys speculum</i>					
Beira Litoral	29 T - 548486.81 m E 4460826.60 m N	50	15/04/2013	Souselas, Coimbra	
<i>Ophrys speculum</i> × <i>Ophrys tenthredinifera</i> subsp. <i>guimaraesii</i>					
Beira Litoral	29 T - 528306.00 m E 4444043.00 m N	25	17/03/2009	Costa de Arnes, Soure	
<i>Ophrys speculum</i> × <i>Ophrys tenthredinifera</i> subsp. <i>tenthredinifera</i> (<i>Ophrys</i> × <i>heraultii</i>)					
Alto Alentejo	29 S - 604736.26 m E 4243817.05 m N	251	08/04/2010	Atalaia, Portel	
Baixo Alentejo	29 S - 628674.00 m E 4193355.00 m N	139	17/03/2007	Santa Iria, Serpa (Observação de Alfredo Franco)	
<i>Orchis anthropophora</i> × <i>Orchis italica</i> (<i>Orchis</i> × <i>bivonae</i>)					
Beira Litoral	29 T - 550383.00 m E 4464168.00 m N	100	12/04/2010	Larça, Coimbra	
Beira Litoral	29 T - 537117.00 m E 4464715.00 m N	94	14/04/2014	Póvoa da Lomba, Cantanhede (Observação de Maria do Céu Gomes)	
Beira Litoral	29 T - 545295.00 m E 4436935.00 m N	194	09/04/2008	Poço, Condeixa-a-Nova	
Beira Litoral	29 T - 548003.00 m E 4429943.00 m N	231	17/04/2010	Rabaçal, Penela	
Beira Litoral	29 S - 551082.76 m E 4407090.15 m N	336	17/04/2010	Serra de Alvaiázere, Alvaiázere	
Estremadura	29 S - 491353.00 m E 4312681.00 m N	326	09/04/2016	Mata, Arruda dos Vinhos	
Estremadura	29 S - 489898.00 m E 4306349.00 m N	142	09/04/2016	Bucelas	

Estremadura	29 S - 493775.00 m E 4305720.00 m N	285	09/04/2016	Serra da Aguieira, Vila Franca de Xira
Estremadura	29 S - 488082.25 m E 4297720.99 m N	76	28/03/2013	Frielas, Loures
Estremadura	29 S - 488865.91 m E 4297401.56 m N	125	07/04/2014	Catujal, Loures
<i>Serapias cordigera</i> × <i>Serapias lingua</i> (<i>Serapias</i> × <i>ambigua</i>)				
Minho	29 T - 562323.00 m E 4615379.00 m N	701	15/05/2016	Monte, Terras de Bouro
Beira Litoral	29 T - 587155.00 m E 4458198.00 m N	229	21/05/2016	Coja, Arganil
<i>Serapias perez-chiscanoi</i> × <i>Serapias strictiflora</i>				
Beira Litoral	29 S - 538042.00 m E 4420659.00 m N	350	08/05/2015	Ereiras, Pombal