

Iberian Baetic endemic flora and the implications for a conservation policy

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The Baetic ranges in the Iberian Peninsula are extremely rich and outstanding in biological terms. Based on the existing literature, herbarium sheets and our own field research, we provide a checklist of the endemic flora growing in the Baetic chorological province. The checklist includes 418 taxa belonging to 43 families, with the species pool concentrated within large families. The highest number of endemic species is recorded in the altitudinal range of 1300–1500 m a.s.l. Hemicryptophytes represent the most frequent life form (45.5%). Conservation priorities should concentrate on non-woody life forms (particularly on hemicryptophytes), and on high mountain areas. Most of the taxa can be ascribed to serial shrublands (36.87%), or rock- or scree-dwelling formations (26.25%), with climactic forest formations playing a minor role (3.24%). This successional position has important implications for conservation programmes. Therefore, a clear distinction should be made between serial or plagioclimactic formations (e.g. dolomite thyme-scrub communities) and degraded communities of little interest for the preservation of biodiversity (e.g. synanthropic vegetation). *Astragalus nevadensis* subsp. *andresmolinae* (Díez-Garretas & Asensi) Mota & F.J. Pérez-García is proposed as a new combination.

Introduction

The south of the Iberian Peninsula exhibits one of the richest and most peculiar floras in the Mediterranean Basin and in Europe. The eastern half of Andalusia, for example, has 3655 taxa with a high rate of endemic species in an area of only 42 000 km² (Blanca *et al.* 2009). When Médail and Quézel (1999) proposed ten hot-

spots of plant diversity for the entire Mediterranean Basin, they selected an area comprising the Baetic ranges and the Rifian and Tellian Atlas as the most important area in the territory. This natural heritage is the product of a series of factors: the environmental heterogeneity induced by orographical, geological, edaphic and microclimatic conditions on the one hand, and the geographical proximity between two continents, on the other.

In the past, this proximity promoted floristic interchange (Valdés 1991); however, also periods of isolation were present. In addition, several peninsulas in the south and some North African territories had played a role as refuges for plants during the Quaternary glaciations (Carrión *et al.* 2003, Médail & Diadema 2009).

The rich Baetic flora began to be accurately studied by Boissier (1839–1845). The subsequent inventory work continued with the publication of floras and catalogues dealing (sometimes only partially) with the geographical area of the Baetic Ranges (cf. Willkomm & Lange 1870–1880, Castroviejo 1986–2010, Valdés *et al.* 1987, Rivas-Martínez *et al.* 1991, Melendo *et al.* 2003, Sánchez-Gómez & Guerra 2003, Bañares *et al.* 2003, Blanca *et al.* 2009). In recent years, new taxa have been described (cf. Peñas *et al.* 2005) and new flora records reported from the Baetic Ranges and the adjacent areas. Although progress has been made, there is still a lot of work to be done. In this context, we propose a new combination (*see* Appendix 1) that is needed to update the taxon list.

Endemism is a phenomenon of stenochory, i.e., of taxa growing in a restricted geographic area. Accordingly, the exact meaning of the concept is inevitably dependent on the territorial range covered by the taxon in question. Despite having been profusely used by botanists since the term was first coined by De Candolle (1820), the compulsory circumscription of the distributional area of any taxon puts the expression ‘endemic plant’ in doubt. Nowadays the central role of the concept is no longer disputable as far as research on biogeography and biodiversity is concerned (Parenti & Ebach 2009).

Despite these criticisms, endemic taxa have a great attraction for botanists and naturalists. When the area of the taxa in question is very restricted or their biotope is highly specific, when they are little known or their populations are exiguous or in danger of extinction, the attraction is even greater (Blanca & Valle 1986). For all these reasons, not surprisingly, interest in endemic floras has spread from botanists and conservation biologists to environmental managers and the general public. On top of all these considerations, if we take into account that endemic taxa are viewed as good substitutes of the whole of biodiversity

(Lamoreux *et al.* 2006), there are good reasons for acquiring a detailed knowledge on them and their abundance and distribution patterns.

The main aim of this paper is to provide an up-to-date checklist of the Baetic endemic flora by collecting information from various sources (*see* Material and methods). In addition, for each of the endemic species we provide data on their altitudinal range, phytosociological profile, more frequently recorded successional stages, life form and endangerment level. All this serves to reach conclusions to help improve future conservation strategies.

Material and methods

Study area

The study area is the Baetic chorological province, suggested by Rivas-Martínez (2007) in his biogeographical scheme for the Iberian Peninsula. All the taxa exclusive to this province were included together with all those which, under the category of “non-strict” and with a predominantly Baetic distribution, occasionally reach into other territories bordering the Baetic biogeographical province, such as Sierra Alhamilla, the plateau of Topares, Sierra de Espuña, Sierra Aitana, etc.

The study area covers 53 835 km² and is located in the southern part of the Iberian Peninsula. Most of this area is administratively in the autonomous region of Andalusia, but has some minor intrusions into the regions of Murcia and Castilla–La Mancha (Fig. 1). The climate of this area is typically Mediterranean, with mild winters and severe summer droughts. At the local level, however, topographical and altitudinal factors can significantly affect this general scenario. Indeed, the territory presents the broadest altitudinal range in the Iberian Peninsula, i.e., from 0 to 3482 m a.s.l., this latter corresponding to the highest point in Sierra Nevada. Not surprisingly, according to the classification of Rivas-Martínez (2007), the study area covers up to five bioclimatic belts (from thermo-Mediterranean to cryromediterranean). Geographically, the area can be divided into four large units: the Baetic Ranges, the inland depressions (Hoya de Guadix and Hoya de Baza, together with the Guadiana

Menor river valley), the coastline strip and the Guadalquivir river valley.

The Baetic region has a wide spectrum of substrates, mostly limestones and calco-dolomites, the latter occasionally brecciated. The central cores of Sierra Nevada and Sierra de Los Filabres are made up of siliceous materials. Sierra Bermeja and other neighbouring areas are made up of peridotites. In the depressions, mostly made up of sedimentary materials, salt and/or gypsum outcrops may locally be of significance (Vera 2004). This enormous orographical, bioclimatic and geological diversity induces numerous ecological gradients and microhabitats and, consequently, a highly diversified flora.

Data collection

To compile an accurate floristic catalogue, numerous bibliographical sources were consulted from basic floras (Willkomm & Lange 1870–1880, Castroviejo 1986–2010, Valdés *et al.* 1987, Sánchez-Gómez & Guerra 2003, Blanca *et al.* 2009) to big catalogues (Sagredo 1987, Cabezudo *et al.* 1990, 1991, 1992, Mota 1990, Rivas-Martínez *et al.* 1991, Moreno & Sainz 1992, Sánchez-Gómez *et al.* 1997, Mota *et al.* 2002, Melendo *et al.* 2003, Bañares *et al.* 2003, Pérez-García *et al.* 2007). We also examined chorological compilations, such as that of Fernández Casas and Fernández Sánchez (2002), and the reference sections of publications such as *Contribuciones a la flora vascular de Andalucía (España)* in *Acta Botanica Malacitana* or *Notas taxonómicas y corológicas para la Flora de la Península Ibérica y el Maghreb* in *Lagascalia*. We consulted the MUB-SURESTE and GDA-GDAC herbaria, which was very helpful for the areas of Castilla-La Mancha and Murcia, and the collection of herbarium sheets and references of the Flora de Andalucía Oriental project, which includes 9897 references and 16 384 sheets from ALME, GDA-GDAC, HUAL, JAEN, MGC, SEV, MA, MUB, etc. (herbarium acronyms follow those of the *Index Herbariorum*; see <http://sweetgum.nybg.org/ih/>). We also included the results of our own field research carried out during the last ten years that produced numerous herbarium sheets (see the Spanish node GBIF, <http://www.gbif.es/>) and a number of pub-

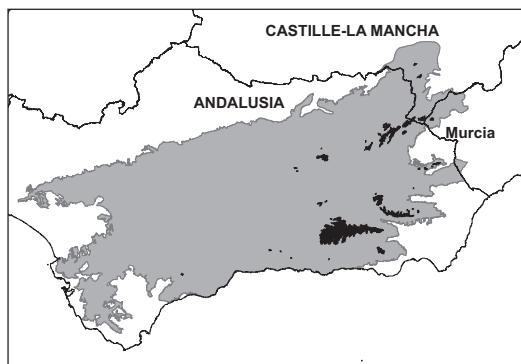


Fig. 1. The Baetic chorological province (high-mountain areas in black).

lications (cf. Mota *et al.* 2002, Pérez-García *et al.* 2005, Medina-Cazorla *et al.* 2005, 2010).

The family placements were taken from Blanca *et al.* (2009). Castroviejo (1986–2010), Bañares *et al.* (2003) and Blanca *et al.* (2009) were the fundamental sources for establishing the life form of each taxon. In line with the criteria of Blanca *et al.* (2009), we accept the existence of taxa that could be classified to two life forms. For this reason, in the analyses of the life forms we do not provide one single number, but a range with maximum and minimum values. Likewise, in line with Blanca *et al.* (2009), we consider only the five basic life forms, although some similar works (e.g., Giménez *et al.* 2004) divide phanerophytes into “nanophanerophytes” and “other phanerophytes”. Given the information available, we decided not to make this distinction. We, however, confirmed that dividing phanerophytes into two form categories did not affect the results of our analyses.

To establish altitudinal ranges, we used the same bibliographical sources as for the life forms. We also accepted that a taxon can exceptionally occur above or below its usual altitudinal range. For altitudinal distribution analyses, we took a 100-m interval as the basic unit. We used ArcView GIS ver. 3.2 to calculate the area between the consecutive altitude-interval lines.

Data on species belonging to different IUCN (2001) risk categories were taken from Bañares *et al.* (2003), Cabezudo *et al.* (2005), Blanca *et al.* (2009) and Moreno (2008). Using the IUCN risk categories we devised a new, quantitative risk-value scale. To calculate risk values, we used the following equation:

$$\text{Risk value} = 5000/n \quad (1)$$

where 5000 is a constant and n is the total number of mature individuals of each species within an area. The “Critically endangered”, “Endangered” and “Vulnerable” categories had risk values > 100 , 20–100 and 5–20, respec-

Table 1. The number and percentatge of taxa in each family of the Baetic endemic flora.

Family	Taxa	Percentage
Asteraceae	67	16.0
Brassicaceae	39	9.3
Caryophyllaceae	36	8.6
Fabaceae	34	8.1
Lamiaceae	30	7.2
Poaceae	26	6.2
Veronicaceae	24	5.7
Plumbaginaceae	22	5.3
Apiaceae	16	3.8
Cistaceae	10	2.4
Rubiaceae	10	2.4
Saxifragaceae	10	2.4
Boraginaceae	9	2.2
Amaryllidaceae	7	1.7
Ranunculaceae	7	1.7
Campanulaceae	6	1.5
Dipsacaceae	6	1.5
Geraniaceae	6	1.5
Fumariaceae	5	1.2
Rosaceae	5	1.2
Orobanchaceae	4	1.0
Resedaceae	4	1.0
Scrophulariaceae	4	1.0
Cyperaceae	3	0.7
Hyacinthaceae	3	0.7
Gentianaceae	2	0.5
Lentibulariaceae	2	0.5
Pinaceae	2	0.5
Plantaginaceae	2	0.5
Primulaceae	2	0.5
Thymelaeaceae	2	0.5
Violaceae	2	0.5
Alliaceae	1	0.2
Araceae	1	0.2
Colchicaceae	1	0.2
Convolvulaceae	1	0.2
Crassulaceae	1	0.2
Ericaceae	1	0.2
Globulariaceae	1	0.2
Juncaceae	1	0.2
Malvaceae	1	0.2
Rutaceae	1	0.2
Salicaceae	1	0.2

tively. In addition, “Near threatened” and “Data deficient” were the categories with risk values 1–5 and “Least concern” with the risk values 0–1. A similar scale was used by Mendoza *et al.* (2009). When a taxon could be classified to two life forms, to calculate the contribution of each life form to the threat category, half of the risk value was added to each life form.

The information on the phytosociological and syntaxonomical profiles of taxa was taken from Rivas-Martínez *et al.* (2001, 2002) or, if not available, syntaxa were ascribed according to the experience of the authors (Mota *et al.* 1991, 1993, 1997, Peñas *et al.* 2005) and the ecological information from the technical reports of Bañares *et al.* (2003). However, in some cases it was impossible to ascribe a taxon to a category because of the lack of accurate information or an imprecise ecological profile. In such cases, we decided to omit such taxa froms our analyses.

Results and discussion

A complete list of the Baetic endemic flora is available at www.sekj.org/35310_Appendix2.html. It includes a total of 418 taxa. The listed taxa belong to 169 genera and 43 families. When the distribution is analysed in terms of plant families (Table 1), Asteraceae are clearly dominant, since they include almost twice as many taxa as the second-ranking family, Brassicaceae. Special mention should be made of Caryophyllaceae, Fabaceae, Lamiaceae, Poaceae, Veronicaceae and Plumbaginaceae. These eight families comprise almost 2/3 of the taxa in the catalogue. This pattern, with the species pool concentrated within large families, is typical of the Mediterranean environments and is the most favourable for the occurrence of rare endemic species, with particularly restricted distribution areas (Domínguez Lozano & Schwartz 2005a). Our results differ from the pattern recorded for the Iberian flora as a whole, where Fabaceae and Poaceae hold the second and third ranking positions (Domínguez Lozano & Schwartz 2005b). Discrepancies are also apparent when these results are checked against those provided by Melendo *et al.* (2003) for the endemic flora of the south of the Iberian Peninsula, particularly as

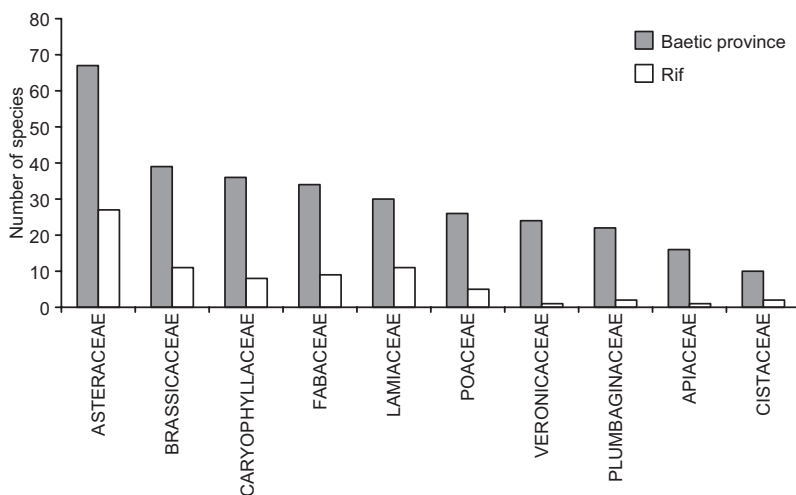


Fig. 2. The main Baetic and Rifean plant families.

regards the relative proportions of Brassicaceae and Caryophyllaceae, which seem to be very important in the Baetic ranges.

Given the unquestionable floristic relationship between the two sides of the Straits of Gibraltar, it is interesting to compare these results with those collected in the Maghreb area in North Africa. Indeed, the hot spot suggested by Médail and Quézel (1999) is called the “Baetic-Rifean Complex”. By combining the information collected from a number of sources (Fennane & Ibn Tattou 1998, 2005, Fennane *et al.* 1999–2007, Valdés *et al.* 2002), we obtained a checklist of the Rifean territory. This territory has 110 endemic taxa belonging to 71 genera and 29 families. The division of plants by families shows many commonalities with the records from the Baetic area (Fig. 2). For example, there is a clear dominance of Asteraceae. With 27 taxa, this family comprises more than twice as many taxa as the second and third families in the ranking (Brassicaceae and Lamiaceae, both with 11 taxa). Fabaceae (with nine taxa) and Caryophyllaceae (with eight taxa) come next. In addition to the taxonomical spectrum and the arrangement with the species pool concentrated within the large families, these two regions have another thing in common: the abundance of endemic plants. With a surface of ca. 13 500 km², the Rifean chorological unit has 8.14 endemic taxa per 1000 km². In the Baetic Province, this value is 7.76.

The altitudinal distribution reveals that the highest numbers of endemics occur between

1300–1500 m a.s.l. (Fig. 3a). However, if we consider the area and divide the total number of endemic species within each 100-m altitude interval by the logarithm of the total area within that particular altitudinal range, the maximum occurs between 1800–1900 m a.s.l. (Fig. 3b). These results testify to the significant contribution of the mountain taxa to the endemic flora as a whole, and confirm that the effect of the area is of little importance. Our results do not coincide with the records provided by Giménez *et al.* (2004) for the bioclimatic belts of the endemic flora in the south of the Iberian Peninsula. Those authors maintain that the mesomediterranean belt (approximately from 600–800 to 1100–1300 m a.s.l.) is the richest of all in endemic species. This discrepancy is probably due to the fact that their survey dealt not only with the Baetic chorological province, but also with large territories without high-mountain areas, namely, some areas located in the Iberian-Atlantic and Murcian-Almeriense biogeographical provinces. In addition, to establish the altitudinal ranges of the endemic flora, those authors used a scale five to ten times less accurate than ours.

The life form distribution (Table 2) reveals a clear dominance of hemicryptophytes, which represent half of the taxa under consideration. Chamaephytes are also well represented while the other life forms are barely represented. Once again, these results differ from the records provided by Giménez *et al.* (2004) for the endemic flora in the south of the Iberian Peninsula, where

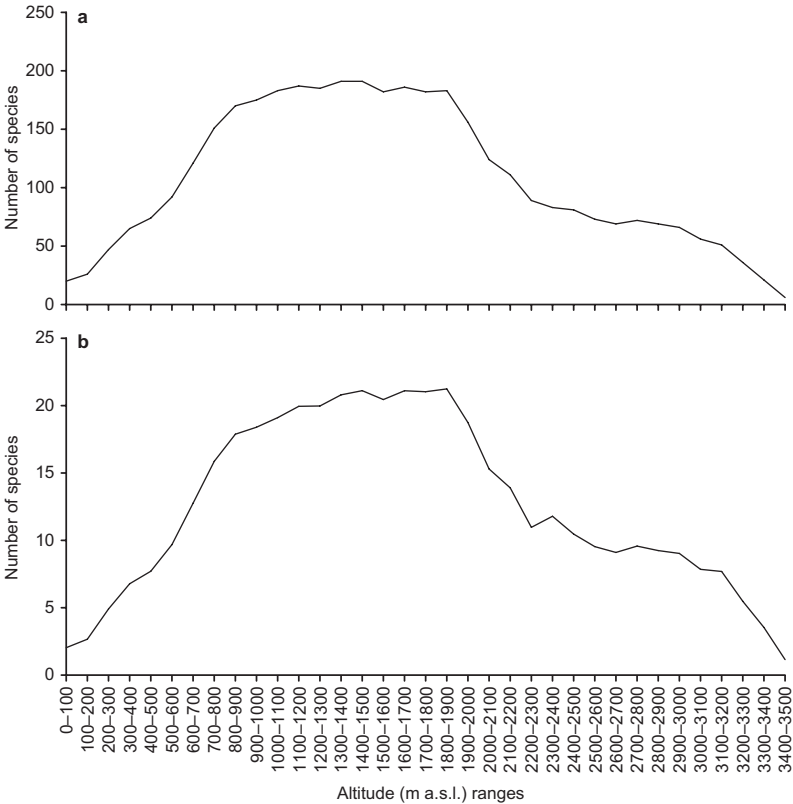


Fig. 3. Altitudinal distribution of the Baetic endemic flora: (a) numbers of species at different altitudes, and (b) log-area adjusted numbers of species.

chamaephyte is the most abundant life form. Comparison of these results with those from the Rifean flora should be made with extreme care, because we only have reliable data on the life forms of the 69 endemic taxa belonging to the 107 families dealt with in the first two volumes of *Flore pratique du Maroc* (Fennane *et al.* 1999–2007). Those data indicate that, as in the Baetic province, in the Rifean endemic flora most plants (25%–26%) are hemicryptophytes, although to a much lesser extent. Consequently, with the exception of geophytes (only 3%), the other life forms are also more abundant: chamae-

phytes (23%–24%), therophytes (12%–13%) and phanerophytes (4%–5%).

The altitudinal distribution of life forms (Fig. 4) reveals that hemicryptophytes and chamaephytes reach their peak values at higher altitudes than other life forms. The fact that therophytes and geophytes tend to be concentrated in low-altitude areas is probably due to the survival strategy of the former and, to a certain extent, of the latter too. The survival strategy of those plants is advantageous in arid zones (Madon & Médail 1997), and in the Baetic ranges the mountain basal zones are always drier.

The data on the conservation status of the Baetic endemic flora (Table 3) reveal that almost 2/3 of the taxa are endangered at one level or another. On the other hand, there is insufficient information about 5% of the taxa and only 29% of them are ranked as “Least concern”. The altitudinal distribution of risk categories (Fig. 5), according to the risk values, shows a maximum at 1800–1900 m a.s.l., with secondary maxima at 800–900 and 1400–1500 m a.s.l. This distribu-

Table 2. The number and percentatge of Baetic endemic taxa belonging to each life form.

Life forms	Taxa	Percentage
Hemicryptophytes	190–203	45.5–48.6
Chamaephytes	141–150	33.7–35.9
Therophytes	36–38	8.6–9.1
Geophytes	23	5.5
Phanerophytes	8–15	1.9–3.6

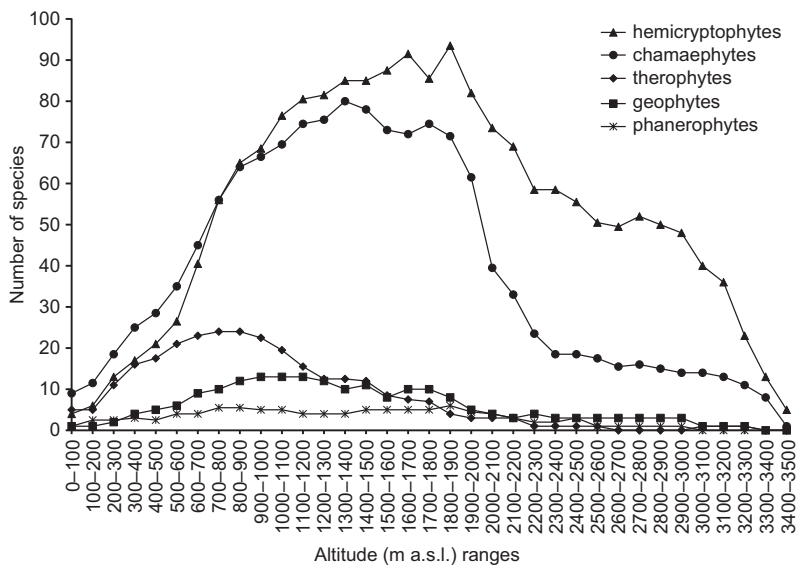


Fig. 4. Altitudinal distribution of life forms of the Baetic endemics at different altitudes.

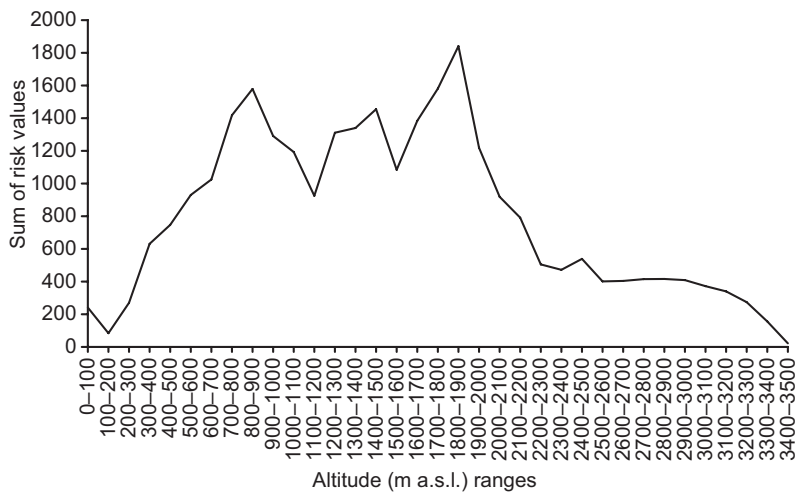


Fig. 5. Sum of the risk values (see Eq. 1) for each altitude interval.

tional pattern suggests that conservation efforts should concentrate on high mountain areas (Pérez-García *et al.* 2007) but without disregarding medium-high mountain areas. However, the results could also be interpreted as revealing an inherent risk for the high mountain flora due to the meagre availability of habitats. In fact, as on islands (Martín 2009), high mountain flora tends to grow in restricted territories that set serious limits to their area of occupancy (criterion B2 of the IUCN).

According to the risk-value scale used here (see Eq. 1), hemicryptophytes and non-woody life forms contribute 47.95% and 64.78%, respec-

Table 3. The number and percentatge of Baetic endemic taxa in each IUCN Red List categories.

Threat category	Taxa	Percentage
Extinct (EX)	1	0.24
Critically endangered (CR)	39	9.33
Endangered (EN)	42	10.05
Vulnerable (VU)	124	29.66
Not threatened (NT)	68	16.27
Data deficient (DD)	23	5.5
Least concern (LC)	121	28.95

tively, to the total sum of the risk values calculated for the endemic flora (Table 4). These results are coincidental with the records obtained for the flora of Corsica (Verlaque *et al.* 2001) and we entirely agree with the remark that “*Environmental managers should focus their attention not on woody species as is often the case but rather on the preservation of herbaceous species, as these plants contribute greatly to species biodiversity and are the most threatened in the Mediterranean area*” (Verlaque *et al.* 2001). It would be interesting to see if this pattern is also applicable to the entire Mediterranean Basin, as the research carried out on two of its most important hot-spots seems to suggest.

The phytosociological arrangement of the Baetic endemic flora (Table 5) reveals that most of the taxa can be ascribed to vegetation groups with the definition of “serial shrubland”. *Rosmarineta officinalis* calcicolous formations, which comprise 1/3 of the taxa, deserve special mention. These are followed by rupicolous or scree-dwelling formations. By contrast, the forest communities present hardly any endemic species. This fact is coincidental with other results (Gómez-Campo 1985, Médail & Verlaque 1997) that suggest that stressing environments encourage high endemism rates. This is the case, for example, of unusual substrates conditioned by chemically-induced (dolomites, serpentines, gypsums, etc.) or physically-induced (steep cliff, screes) edaphic factors and high mountain habitats (cf. Mota 2007).

If, bearing in mind the syntaxonomical arrangement of the Baetic endemic flora, we look at its successional profile, some clear implications arise regarding an effective conservation policy. Thus, serial formations should not be interpreted as degraded and less valuable com-

munities than others, given that they harbour many endemic species. Particular attention must be paid to non-climatic plant communities (e.g. rupicolous vegetation). These should be represented on vegetation maps (Garrido-Becerra *et al.* 2009) in such a way that their peculiarities are taken into account and can be adequately managed through a suitable environmental policy.

An efficient strategy for the preservation of biodiversity must attend to the different levels involved. In the case of climatic communities, there is no justification for concentrating management policies exclusively on dominant species. Instead, conservation strategies should be planned at the community level. In addition, various other organisms, such as insects (Sánchez-Piñero & Ávila 2004) or birds (Martí & Del Moral 2003) also significantly contributing to biodiversity, should not be overlooked.

Acknowledgements

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Table 4. The sums of risk values (see Eq. 1) for each life form.

Life forms	Risk values	Percentage
Hemicryptophytes	2622	47.95
Chamaephytes	1661	30.37
Therophytes	619	11.32
Geophytes	301	5.51
Phanerophytes	265	4.85
Total	5468	100

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Blanca, G. & Valle, F. 1986: Las plantas endémicas de Anda-

Table 5. Phytosociological classes and large groups of Baetic endemic flora, according to Rivas-Martínez *et al.* (2002).

Large groups	Taxa	Percentage	Phytosociological class	Taxa	Percentage
Heathland and dwarf scrub vegetation	125	36.87	<i>Rosmarinetea officinalis</i>	114	33.63
			<i>Cisto-Lavanduletea</i>	9	2.66
			<i>Calluno-Ulicetea</i>	2	0.59
Chasmocomophytic, epiphytic and scree vegetation	47	13.86	<i>Thlaspietea rotundifolii</i>	27	7.97
			<i>Phagnalo-Rumicetea indurati</i>	19	5.6
			<i>Anomodonto-Polypodietea</i>	1	0.30
Chasmophytic vegetation	42	12.39	<i>Asplenieta trichomanis</i>	30	8.85
			<i>Petrocoptido pyrenaicae-Sarcocapneteae enneaphyllae</i>	10	2.95
			<i>Parietarietea</i>	1	0.30
			<i>Adiantetea</i>	1	0.30
Therophytic grasslands	28	8.26	<i>Tuberarietea guttatae</i>	28	8.26
Perennial xerophytic and mesophytic grasslands	22	6.49	<i>Festuco hystricis-Ononidetea striatae</i>	9	2.66
			<i>Lygeo-Stipetea</i>	9	2.66
			<i>Stipo giganteae-Agrostietea castellanae</i>	3	0.89
West-Mediterranean orophilous silicolous vegetation	21	6.20	<i>Festuco-Brometea</i>	1	0.29
Meadows and chionophilous grassland vegetation	15	4.43	<i>Festucetea indigestae</i>	21	6.19
			<i>Nardetea strictae</i>	13	3.83
Eurosiberian and mediterranean climatic zonal and potential natural vegetation	11	3.25	<i>Molinio-Arrhenatheretea</i>	2	0.59
			<i>Quercetea ilicis</i>	6	1.77
			<i>Junipero sabiniae-Pinetea sylvestris</i>	3	0.88
			<i>Querco-Fagetea</i>	2	0.59
Vegetation of lakes, springs, fens and bogs	9	2.66	<i>Scheuchzerio palustris-Caricetea nigrae</i>	6	1.77
			<i>Phragmito-Magnocaricetea</i>	2	0.59
			<i>Montio-Cardaminetea</i>	1	0.29
Coastal and continental halophilous vegetation	7	2.06	<i>Sarcocornietea fruticosae</i>	6	1.77
Synanthropic vegetation	4	1.18	<i>Crithmo-Limonietea</i>	1	0.29
			<i>Artemisietea vulgaris</i>	2	0.59
			<i>Stellarietea mediae</i>	2	0.59
Fringe and megaforbic vegetation	3	0.88	<i>Mulgedio-Aconitetea</i>	3	0.88
Circum-Artic and Eurosiberian vegetation	2	0.59	<i>Salicetea herbaceae</i>	2	0.59
Seral and mantle shrublands	2	0.59	<i>Rhamno-Prunetea</i>	2	0.59
Pioneer ephemeral vegetation	1	0.29	<i>Isoeto-Nanojuncetea</i>	1	0.29

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Appendix 1. Proposed new combination.

The *Astragalus nevadensis* race of Sierra de Las Nieves (Málaga) was first described as *Astragalus sempervirens* subsp. *andresmolinae*, since it differs from the Nevadensian type because of its very hairy leaves, broader folioles and dark purple corolla (Díez Garretas *et al.* 1998). However, according to Podlech (1999), the presence

of *Astragalus sempervirens* should be ruled out in the south of Spain. Therefore, the original combination must be amended. Thus, we propose:

Astragalus nevadensis subsp. *andresmolinae* (Díez-Garretas & Asensi) Mota & F. J. Pérez-García, *comb. nova*.
— BASIONYM: *Astragalus sempervirens* subsp. *andresmolinae* Díez-Garretas & Asensi, *Itinera Geobot.* 11: 346. 1998.