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The role of lichens in selecting Important Plant Areas in Italy.

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Abstract
Aim of the Important Plant Area (IPA) program - integral part of the CBD Global Strategy for Plant Conservation - is the constitution of a network of the most important natural or semi-natural sites for wild plant and fungi conservation. Giving lower plants and fungi the same importance as vascular plants, the program provides to individual countries a considerable freedom of action in the implementation of IPAs number.
Three main principles rule the site identification: Criterion A, based on species contribution; Criterion B, based on floristic richness in relation to the biogeographic zone; Criterion C, based on threatened habitats.
Italian botanists from different areas of research responded to the call comprehensively, including all the groups of plants in the definition of the IPAs. Nevertheless, experts in lichens, fungi and freshwater algae found some operational difficulties, mostly due to the incomplete knowledge of species distribution, the lack of updated databases and official red lists.
In this paper, the methodological approach used to include Italian lichens in the IPA definition is discussed. Seventy two taxa were selected as species of national interest and 21 areas critical for long-term preservation of lichen populations were proposed, including an archaeological area considered representative of cultural heritages as a lichen complex habitat.

Key words: Italy, IPA, lichens.

Riassunto
Il programma Important Plant Area (IPA) ha lo scopo di identificare una rete di siti che siano critici per la vitalità a lungo termine delle popolazioni naturali di piante e funghi. Il programma concede un'ampia libertà di applicazione e attribuisce per la prima volta a licheni, alghe e briofite la stessa rilevanza data alle piante superiori. I criteri base da utilizzare per l'identificazione dei Siti sono tre: il criterio a è basato sul contributo fornito da singole specie, il criterio b sulla ricchezza floristica, il criterio c su habitat minacciati. La risposta dei Botanici italiani alla definizione delle IPA è stata globale, tuttavia proprio nei settori sino ad oggi negletti - funghi, alghe d'acqua dolce, licheni - si rilevano difficoltà operative dovute all'incompleta conoscenza della distribuzione delle specie, alla mancanza di data-base aggiornati e di liste rosse ufficiali.
In questo contributo si presenta l'approccio utilizzato per l'inclusione dei licheni nella definizione delle IPA italiane. Sono stati selezionate settantadue specie d'interesse nazionale e individuate ventuno aree critiche per la conservazione a lungo termine dei licheni. Tra queste, si propone il un'area archeologica considerata rappresentativa di un habitat lichenico complesso ma di massimo rilievo.

Parole chiave: Italia, IPA, licheni.

Introduction

The European Strategy for Plant Conservation (ESPC), developed by Planta Europa and the Council of Europe in 2001, is the regional response to the implementation of the CBD Global Strategy for Plant Conservation. Targets 1.4, 1.5 and 2.14 of this document pointed to the identification, monitoring and management of Important Plant Areas (IPAs) (Anderson, 2002). In the IPAs program, the concept of plants includes vascular plants, bryophytes, algae, and fungi (both non-lichenized and lichenized), suggesting innovative approaches for more integrate nature conservation actions. In particular, the new text, published by Planta Europa (2008), emphasizes the importance of all types of plants, underlining the lack of representation for fungi and lower plants in national and European conservation policies.

Despite the fact that lichens are an important component in many ecosystems (European Commission, 2007), they are not listed in the main annexes of Habitat Directive neither in Bern Convention Appendix I, mainly due to a poor knowledge of their ecology and distribution when the European Community adopted the Bern Convention in 1979.

Although a renewed interest in the Lichenology since the beginning of the 80s, the gaps caused by its decline during the last century are still to be filled. In this framework, it should be also considered that there are severe constraints in determining the conservation status of lichen species in Europe according to the

IUCN criteria (IUCN, 2001). The low presence of lichens in national, European and global Red Lists confirms this situation. Due to their low detectability and to the poor knowledge of individual species, the habitat-based approach is so far considered the most effective conservation practice for lichens (Scott *et al*., 1997; Hallingbäck, 2007).

On this basis only a few countries - Spain (Atienza *et al*., 2004), Belarus (Maslovsky, 2005), Czech Republic (Podhajská & Turoňova, 2005), Estonia (Kulvik *et al*., 2005), Romania (Sârbu, 2005), Slovakia (Galvánek, 2005), United Kingdom (Duckworth, 2006), Bulgaria (Peev *et al*., 2009) - have managed to use also lichens in the application of the IPAs selection criteria.

In Italy, the interest on species inventories and biodiversity monitoring programs is increasing but several groups of organisms are still neglected, and lichens are rarely included in these inventories (Motta, 2002; Chiarucci & Bonini, 2005; Giordani, *et al*. 2006, Bacaro *et al*., 2008; Brunialti *et al*., 2010; Ravera *et al*., 2010 in press). However, the long tradition of lichenological studies (Nimis, 1993) and the availability of a detailed database (Nimis & Martellos, 2008) allows Italy to consistently include also lichens in the IPAs project.

In this work, the IPA concept has been applied in order to select sites worthy of conservation for lichens.

Materials and methods

Source of the data

Italy is among the lichenologically best known countries of the Mediterranean area and Europe. A great amount of information is included in the Herbarium of the University of Trieste (TSB) which hosts c. 40.000 specimens, mainly from Italy. On these basis Nimis (1993) provided his fundamental contribution to the knowledge of the Italian lichens in which 2145 infrageneric taxa were reported. This database was continuously updated and since 1999 it is available on-line (Nimis, 1999). The most updated version (Nimis & Martellos, 2008), which includes 2345 infrageneric taxa, is the main source of data used for the IPAs project.

Criteria for IPA selection

To be qualified as an Important Plant Area, a site needs to satisfy the criteria A or B or C or any combination of these criteria. According to Anderson (2002):

- Criterion A is based on threatened species. A site should be considered nationally important for plant conservation if it supports globally (i) end/or European (ii) end/or national endemic (iii) and/or near endemic/ limited range (iv) threatened species. Thresholds for this criterion can be applied by selecting: all sites containing 5% or more of the national population or the five (-ten) 'best' sites.

- Criterion B is based on species richness. A site should be considered nationally important for plant conservation if it contains high number of species within a range of defined habitats taken as level 2 habitat types using the EUNIS classification. Thresholds for this criterion can be applied by selecting: the five (-ten) 'best' sites for each habitat or up to 10% of the national resource (area) of each habitat.

- Criterion C is based on vegetation of high botanical value. A site should be considered nationally important for plant conservation if it supports any official (according to Habitat Directive) threatened habitat.

Criteria A and B were reviewed to be consistent with the data available for Italian lichens at 2008 (Nimis & Martellos, 2008).

Sites were selected using the 'best sites' approach, encompassing the biogeographical variation of Italy. An additional parameter (Criterion D) has been added, as follows (Tab. 1).

Criterion A

Only two lichens are globally red listed (IUCN, 2009) and do not occur in Italy and no lichens are listed in the annexes of Habitats Directive and Bern Convention admitted for selection (Anderson, 2002). For these reasons lichens can be qualified under subcriterion Aii only through the European Red List of macrolichens (Sérusiaux, 1989).

Subcriterion Aiii, that includes national endemic species with their population range entirely within the country, and subcriterion Aiv, that includes near endemic species which range its limited to 2-3 countries (Anderson et al., 2005), were also considered. The "Material for Red Lists" provided by Nimis & Martellos (2008), including the extremely rare species of the Italian lichen biota was used as source for subcriteria Aiii and Aiv.

Criterion B

The reference habitat of each species was attributed ex-novo using the EUNIS level II classification, on the base of literature data and samples stored in Italian herbaria. For the purposes of the program, archaeological sites are considered to be an environment of particular interest, increasing the biodiversity of a

Criterion	Description	Information source and/or reference
Aii	Site contains European threatened species	Species included in the EU Red List (Sérusiaux, 1989)
Aiii, Aiv	Site contains restricted range species with demonstrable threat	Species included in the IT Red List (Nimis & Martellos, 2008)
B	Site contains high number of species within a range of defined habitat or vegetation type	Expert judgement (Lichen Working Group of the Italian Botanical Society)
D	Site subject of a complete floristic investigation	Italian lichen bibliography

Tab. 1 - Criteria used for the selection of Italian Lichen IPAs

site (Giacobini *et al*., 1986; Nimis *et al*., 1987) and representing a refuge for a few species when the natural habitat is threatened (Ariño & Saiz-Jimenex, 1996). Following the EUNIS level I classification, this habitat could be considered a complex type (EUNIS habitat type code: X).

Site selection was undertaken using lists of indicator species to assess species richness for different habitats where possible. Such lists are available for woodland, parkland, grassland and rock habitats (Ravera *et al*., 2006) and archaeological sites (Nimis *et al*., 1987) of Central Italy, Quercus woodland habitats in Sardinia (Zedda, 2002) and Tyrrhenian and Ionian coastal dune habitats (Nimis & Schiavon, 1985; Potenza et al., 2010in press). Species richness for other habitats was assessed on the base of publications from the last twenty years (reviews in: Nimis, 1993; Nimis & Martellos, 2008), reports (Nimis, unpublished data) and expert knowledge.

Criterion D

A site can be selected as an Important Plant Area if there is comprehensive information on its lichen biota.

Results

Seventy two lichens fulfill Criterion A (Tab. 2): 27 are Regional (European) Threatened taxa (ii), 4 are National Endemic Threatened taxa (iii), 41 are Near Endemic/Limited Range Threatened (iv) taxa. A total of 238 records of these species were found and georeferenced, most of them being included in protected areas (Fig. 1).

Twenty-one Italian Lichen IPAs are proposed: 10 in northern Italy, 6 in central Italy, 5 in southern Italy (Tab. 3). Eighteen IPAs were identified under Criterion A, 17 including regional threatened species, 1 an endemic species. Seven IPAs include near endemic species, mostly Mediterranean-Macaronesian lichens (such as *Caloplaca canariensis, Lecanora rhodii, Ramalina clementeana, Topelia* spp., *Xanthoria resendei*).

Excluding occasional collections - to satisfy the added Criterion D - there are a total of and Italy 106 records of Criterion A species in the Italian Lichen IPAs. Compared to other countries, Italy recognizes both more Criterion A threatened lichens and Lichen IPAs (Tab. 4).

Criterion B was assessed in 17 IPAs with the minimum value of 102 in the riparian Natural Reserve Vincheto di Celarda (92 ha) and the maximum of 750 in Valsesia (67.000 ha) a group of valleys in north-east of Piedmont. Only 3 IPAs were identified exclusively on the basis of Criterion B: Adamello Natural Park, Natural Reserve Vincheto di Celarda and the archaeological park of Tusculum.

Discussion

In the "Important Plant Areas in Italy project" a special effort was devoted to include non-vascular

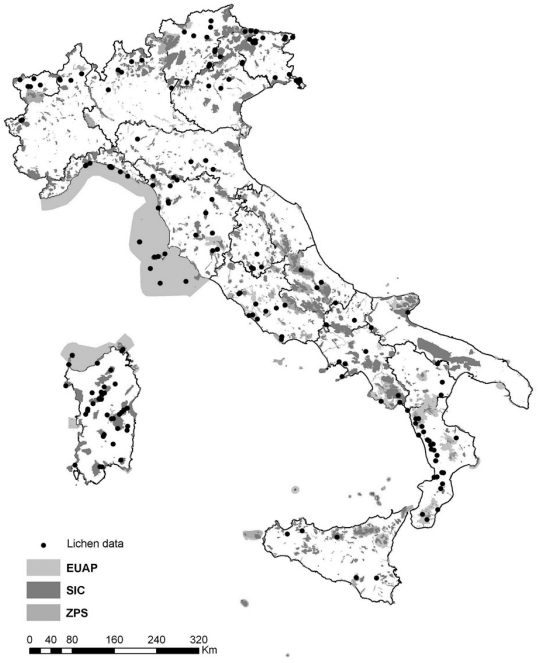

Fig. 1 - Map of all georeferenced data of lichen species fulfilling Criterion A.

Threatened Species	IPA Category	EU Red List	IT Red List	Eunis Habitat*
Acarospora chrysocardia Poelt & M.Steiner	A(iv)		x	H4
Acarospora imbricatula H.Magn.	A(iv)		x	H3
Acarospora placodiiformis H.Magn.	A(iv)		x	H3
Allocetraria oakesiana (Tuck.) Randlane & Thell	A(ii)	x	x	G1, G3, G4
Aspicilia crespiana V.J.Rico	A(iv)		x	H3
Aspicilia hydrocharis Poelt & Nimis	A(iii)		x	C2
Bacidia crozalsiana (H.Olivier) Zahlbr.	A(iv)		x	G1, G2
Belonia caudata (Vězda & Vivant) M.Jørg. & Vězda	A(iv)		x	G1
Buellia fusca (Anzi) Kernst.	A(iv)		x	H3
Buellia griseosquamulata Scheid.	A(iii)		x	B3
Buellia subsquamosa J.Steiner	A(iv)		x	H3
Byssoloma croceum Sérus. & Puntillo	A(iv)		x	G2
Byssoloma kakouettae (Sérus.) R.Lücking & Sérus.	A(iv)		x	G2
Caloplaca canariensis (Follmann & Poelt) Breuss	A(iv)		x	F5
Caloplaca cretensis (Zahlbr.) Wunder	A(iv)		x	B3
Caloplaca rinodinae-albae Poelt & Nimis	A(iii)		x	B3
Caloplaca thamnoblasta Nimis & Poelt	A(iii)		x	B3
Catapyrenium psoromoides (Borrer) R. Sant.	A(ii)	x		G1
Cetraria crespoae (Barreno & Vázquez) Kärnefelt	A(ii)	x	x	F5
Cladonia mediterranea P.A.Duvign. & Abbayes	A(ii)	x	x	F5
Collema curtisporum Degel.	A(ii)	x	x	G1, G2
Collema furfureolum Müll. Arg.	A(ii)	x	x	H3
Enterographa pitardii (de Lesd.) Redinger	A(iv)		x	H3
Fellhanera christiansenii Sérus. & Vězda	A(iv)		x	G2
Fuscopannaria leucosticta (Tuck.) M.Jørg.	A(ii)	x	x	G1, G2, G3
Fuscopannaria saubinetii (Mont.) M.Jørg.	A(ii)	x	x	G1
Gyalectidium puntilloi Sérus.	A(iv)		x	
Gyalectidium minus Sérus.	A(iv)		x	G2
Henrica ramulosa de Lesd.	A(iv)		x	F1
Hypotrachyna sinuosa (Sm.) Hale	A(ii)	x	x	G1, G4
Hypotrachyna taylorensis (M.E.Mitch.) Hale	A(ii)	x	x	G1
Lecanora graeca J.Steiner	A(iv)		x	H3
Lecanora paramerae I.Martinez, Aragón & Lumbsch	A(iv)		x	F3
Lecanora rhizinata Poelt, Barreno & V. J. Rico	A(iv)		x	H3
Lecanora rhodii Szatala	A(iv)		x	H3
Leptogium cochleatum (Dicks.) M.Jørg. & P.James	A(ii)	x	x	G2
Leptogium coralloideum (Meyen & Flot.) Vain.	A(ii)	x	x	G1
Leptogium corticola (Taylor) Tuck.	A(ii)	x	x	G1, G2
Lichenomphalia meridionalis (Contu & La Rocca) §	A(iv)		x	F5
Neocatapyrenium radicescens (Nyl.) Breuss	A(iv)		x	E1, F5
Nephroma helveticum Ach.	A(ii)	x		G1, G3
Parmeliella jamesii Ahlner & M.Jørg.	A(ii)	x	x	G1, G2
Parmeliella testacea M.Jørg.	A(ii)	x		G1
Parmotrema arnoldii (Du Rietz) Hale	A(ii)	x	x	G1
Parmotrema hypoleucinum (J.Steiner) Hale	A(ii)	x	x	B1, F5
Parmotrema robustum (Degel.) Hale	A(iv)		x	G2
Parmotrema stuppeum (Taylor) Hale	A(ii)	x	x	G1
Physconia subpulverulenta (Szatala) Poelt *atlantica* Poelt	A(iv)		x	G2
Pyrrhospora lusitanica (Räsänen) Hafellner	A(iv)		x	F5, G2
Ramalina clementeana Llimona & Werner	A(iv)		x	B3
Ramalina elegans (Bagl. & Carestia) Jatta	A(ii)	x	x	G1, G3
Ramalina implectens Nyl.	A(ii)	x	x	G2
Ramalina lusitanica H.Magn.	A(iv)		x	F5, G2
Ramalina obtusata (Arnold) Bitter	A(ii)	x		G1, G3
Ramonia calcicola Canals & Gómez-Bolea	A(iv)		x	H3
Ramonia chrysophaea (Pers.) Vězda	A(iv)		x	G2
Ramonia luteola Vězda	A(iv)		x	F5, G2
Rinodina furfuracea H.Magn.	A(iv)		x	B1, F5
Rinodina kalbii Giralt & Matzer	A(iv)		x	B1, F5
Rinodina nimisii Giralt & H.Mayrhofer	A(iv)		x	B1, F5
Sticta canariensis Delise f. *dufourii* (Delise) Nimis ad int.	A(ii)	x	x	G1, G2
Teloschistes chrysophthalmus (L.) Th.Fr.	A(ii)	x	x	F5
Teloschistes flavicans (Sw.) Norman	A(ii)	x	x	G2
Thelomma siliceum (Fée) Tibell	A(iv)		x	B3
Toninia toepfferi (Stein) Navàs	A(iv)		x	E1, F5
Topelia heterospora (Zahlbr.) M.Jørg. & Vězda	A(iv)		x	B3
Topelia nimisiana Tretiach & Vězda	A(iv)		x	F5, G2
Tuckneraria laureri (Kremp.) Randlane & Thell	A(ii)	x	x	G1, G3
Usnea longissima Ach.	A(ii)	x	x	G1, G3
Verrucaria poeltiana Clauzade & Cl.Roux	A(iv)		x	B3
Waynea adscendens V. J. Rico	A(iv)		x	G2
Xanthoria resendei Poelt & Tav.	A(iv)		x	B3

Tab. 2 - Species that fulfil Criterion A. In the last column, the main habitat(s) in which each species can be found is reported according to EUNIS codes

* Eunis habitat types. B1: Coastal dunes and sandy shores; B3: Rock cliffs, ledges and shores, including the supralittoral; C2: Surface running waters; E1: Dry grasslands; F1: Tundra; F3: Temperate and mediterranean-montane scrub; F5: Maquis, arborescent matorral and thermo-Mediterranean brushes; G1: Broadleaved deciduous woodland; G2: Broadleaved evergreen woodland; G3: Coniferous woodland; G4: Mixed deciduous and coniferous woodland; H3: Inland cliffs, rock pavements and outcrops; H4: Snow or ice-dominated habitats

Name of IPA	Region(s)	Qualifying criteria				
		Aii	Aiii	Aiv	B	D
Valsesia	Piemonte	*H. sinuosa*, *H. taylorensis*, *R. elegans*			758	Baglietto & Carestia 1867, 1880; Isocrono *et al*., 2004; Isocrono & Piervittori, 2008
Parco Naturale dell'Adamello	Lombardia				430	Nascimbene *et al*. 2006a, b, c; Dalle Vedove *et al*., 2008
Parco Nazionale dello Stelvio - settore trentino	Trentino-Alto Adige	*N. helveticum*, *T. laureri*			425	Nascimbene, 2005; Nascimbene *et al*., 2006b, 2006c
Parco Naturale di Paneveggio - Pale di S. Martino	Trentino-Alto Adige	*A. oakesiana*, *H. sinuosa*, *R. obtusata*, *T. laureri*, *U. longissima*			650	Arnold, 1887; Dalla Torre & Sarnthein, 1902; Nascimbene & Caniglia, 2003; Nascimbene *et al*., 2008a, b; 2009; Nimis *et al*., 2009
Val Rosandra - Carso Triestino	Friuli-Venezia Giulia	*C. psoromoides*, *F. saubinetii*, *N. helveticum*		*R. calcicola*	300	Nimis & Loi, 1982; Nimis *et al*., 2006; Tretiach, 2008
Conca di Sauris	Friuli-Venezia Giulia	*A. oakesiana*, *H. sinuosa*, *P. arnoldii*, *R. implectens*, *R. obtusata*, *T. laureri*, *U. longissima*			500	Nimis, 1982
Foresta del Cansiglio	Friuli-Venezia Giulia, Veneto	*P. arnoldii*, *R. obtusata*, *T. laureri*			250	Caniglia, 1986; Caniglia *et al*., 1983, 1985; Caniglia & De Benetti, 1987; Dissegna & Lazzarin, 1997; Nascimbene *et al*., 2006d, e; 2007a; Thor & Nascimbene, 2007
Vincheto di Celarda	Veneto				102	Nascimbene 2007; Nascimbene *et al*., 2007b, 2008c
Foresta della Val Visdende	Veneto	*U. longissima*				Nascimbene, 2003; Nascimbene & Tretiach, 2009
Parco Regionale Gessi Bolognesi e Calanchi dell'Abbadessa	Emilia-Romagna	*C. psoromoides*		*A. placodiiformis*	206	Nimis *et al*., 1996
Isola di Capraia - Arcipelago Toscano	Toscana	*C. mediterranea*, *P. hypoleucinum*, *S. canariensis* f. *dufourii*		*R. clementeana R. luteola*, *Th. siliceum*, *T. nimisiana*, *X. resendei*	310	Nimis *et al*., 1990
Montebibico	Umbria	*P. testacea*			122	Ravera, 1998a, 1998b; Genovesi *et al*., 2001; Ravera *et al*., 2005, 2006
Tusculum	Lazio				101	Nimis *et al*., 1987; Nimis & Tretiach, 1993
Tenuta Presidenziale di Castelporziano	Lazio	*C. mediterranea*, *L. cochleatum*, *P. hypoleucinum*, *P. stuppeum*, *T. flavicans*		*T. nimisiana*	225	Nimis & Schiavon, 1985; Nimis, 1998
Monte Aquila e Sella di Monte Aquila - Gran Sasso	Abruzzo	*L. graeca*			110	Di Toma, 2003; Nimis & Tretiach, 1999; Ravera, 2008
Basso corso del Fiume Bussento	Campania	*P. hypoleucinum*		*B. kakouettae*, *G. puntilloi*, *G. minus*, *P. robustum*	200	Puntello, 1993; Puntillo *et al*., 2000
Terzo Cavone	Basilicata	*P. hypoleucinum*, *T. chrysophthalmus*				Potenza *et al*., 2010
Foresta Umbra	Puglia	*C. furfureolum*				Nimis & Tretiach, 1999; Thüs & Licht, 2006
Valle del Fiume Argentino	Calabria	*L. cochleatum*, *L. corticola*, *P. testacea*			301	Puntillo, 1993
Isola di Marettimo	Sicilia	*C. mediterranea*, *T. chrysophthalmus*, *T. flavicans*		*C. cretensis*, *T. heterospora*	291	Ottonello *et al*., 1991; Nimis *et al*., 1994
Marghine-Goceano	Sardegna		*A. hydrocharis*	*C. canariensis*, *L. rodii*, *Ph. subpulverulenta atlantica*, *R. furfuracea*		Nimis & Poelt, 1987; Zedda, 2002

Tab. 3 - Sites nominated as IPAs for lichen in Italy.

Countries	Lichens	IPAs
Belarus*	2	1
Bulgaria**	4	0
Croatia**	0	0
Czech Republic*	6	0
Estonia*	4	1
Italy	**72**	**21**
Macedonia**	0	0
Montenegro**	0	0
Poland*	0	0
Romania*	7	7
Slovakia*	31	16
Slovenia*	0	0
UK***	15	-

Tab. 4 - Lichen IPAs with Criterion A threatened species.

* Anderson *et al*., 2005
** Radford & Odé, 2009
*** Duckworth, 2006

plants.

The European Red List (Sérusiaux, 1989) is considered obsolete and not representative of the whole European lichen flora. That basically because the List only contains macrolichens, a group that in Italy, for example, represents approximately only the 30% of the total number of lichen species. However, it doesn't mean that the conservation of red-listed macrolichens lacks in importance: several species, such as *Usnea longissima* or *Teloschistes* spp., are in constant decline (Esseen *et al*., 1981; Esseen & Ericson 1982; Tønsberg *et al*., 1996; Thor 1999; Scheidegger *et al*. 2002; Nacimbene & Tretiach, 2009) and presumed to be extinct in some European stands (UK Biodiversity Group, 1999; Gilbert & Purvis, 2009). Anyway, an updated and more complete Red List certainly would be necessary to identify sites worthy of attention, including habitats like gorges, ravines and rock habitats, typical of crustose microlichens.

Another controversial aspect is that some species, red-listed on the base of the low number of records on the national territory, could be not endangered, but only difficultly detectable or recently described taxa (e.g. *Aspicilia crespiana, Buellia griseosquamulata, Collema curtisporum*). Very few is known about the real status of many Italian lichen populations, and the implementation of the IPAs programme cannot disregard a deeper knowledge of these taxa, especially in an area like the Mediterranean basin, whose great biodiversity is witnessed by the high number of selected lichens (Tab. 4): 72 vs. 25 in Central and Eastern Europe (Anderson *et al*., 2005) and 15 in United Kingdom (Duckworth, 2006).

For Criterion B, a difficulty is defining what is meant by rich in a specific habitat type: the expert assessment was valuable to provide confirmation for sites that were already considered or documented to be rich and to provide information for other sites where these data were lacking.

Finally, the addition of the Criterion D makes our approach different from those used for other groups of plants and the exclusion of occasionally collected samples reduces the number of Lichen IPAs respect to all the georeferenced data for each Criterion A species. Furthermore, some of these sites are within protected areas, where most of recent floristic studies have been carried out.

However we consider a detailed floristic survey an essential condition for identify a site as IPA following the 'best sites' approach.

The high number of Italian Lichen important areas mainly highlight two aspects: i) the richness of lichen diversity and habitats in Italy, and ii) the huge potential connected with the availability of reliable and wide knowledge. The decision taken by the scientific community to use lichens for the definition of Italian IPAs is even more important if we consider that the IPA network is at the moment the only guarantee for this group of being identified, protected and properly managed.

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