Plant Sociology 57(1) 2020, 29–54 | DOI 10.3897/pls2020571/04

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Società Italiana di Scienza della Vegetazione (SISV)

A first checklist of the alien-dominated vegetation in Italy

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Subject editor: Gianluigi Bacchetta ♦ **Received** 27 January 2020 ♦ **Accepted** 20 May 2020 ♦ **Published** 12 June 2020

Abstract

This study provides a first step toward the knowledge of the alien-dominated and co-dominated plant communities present in Italy. The first ever checklist of the alien phytocoenoses described or reported in literature for the Italian territory has been compiled, produced by data-mining in national and local thematic literature. The resulting vegetation-type draft-list has been checked in the light of the most recent syntaxonomic documentation and updated with regards to syntaxonomy and nomenclature, with special reference to the frame proposed in the Italian Vegetation Prodrome. The list includes 27 vascular and one bryophyte vegetation classes, hosting 194 low rank alien-dominated *syntaxa*. The different vegetation types detected for each syntaxonomic class and macro-vegetation group, defined by physiognomical and ecological attributes, are discussed.

Keywords

biodiversity, conservation, habitat, Invasive Alien Species, phytosociology, plant communities, syntaxonomy, threats

Introduction

Biological invasions are an ever-increasing global process arising from the intentional or accidental human-mediated introduction of species to areas outside their native range, overcoming natural dispersal mechanisms and biogeographic barriers (Richardson and Pyšek 2006; Blackburn et al. 2014; Seebens et al. 2018).

The consideration and debate on Invasive Alien Species (IAS) date back to long ago (Allan 1936; Egler 1942; Baker 1948; Elton 1958). In the last few decades, invasion science has emerged, becoming a relevant discipline of its own (Richardson et al. 2000; Richardson and Pyšek 2006; Richardson 2011), also as a consequence of the increasing rates of alien species' introductions at the global scale (Seebens et al. 2017, 2018) with no exception in Europe (DAISIE 2009) and in the Mediterranean (Hulme et al. 2008).

Biological invasions are nowadays widely recognized as an important component of human-induced global environmental change (Vitousek et al. 1997; Parmesan and Yohe 2003; Vilà et al. 2011; Vilà and Hulme 2017), being the second most common threat associated to species that underwent extinction in recent times (Bellard et al. 2016). Despite the accumulation of rigorous evidence of its importance to science and society, invasion biology has been the target of criticisms from scientists and academics who do not agree on the role of alien *taxa* as one of the greatest extinction threat at global scale (Davis 2011; Richardson and Ricciardi 2013; Pearce 2015; Russell and Blackburn 2017; Ricciardi and Ryan 2018). However, it is renowned that the establishment and spread of IAS can drastically affect the native biodiversity by changing community composition, biotic interactions and other ecosystem processes (Vilà et al. 2011; Pyšek et al. 2012; Vilà and Hulme 2017), as well as by replacing it with common and widespread *taxa* (McKinney and Lockwood 1999; Hahs and McDonnell 2016), and can promote alternative successional trajectories that may dramatically affect the landscape (Williamson 1996; McKinney and Lockwood 1999; Weber 2003; Acosta et al. 2007; Del Vecchio et al. 2013; Gaertner et al. 2014; Stinca et al. 2015; Malavasi et al. 2018).

An alien organism needs to overcome geographical, environmental, and reproductive barriers to colonize a new region and spread over wide areas. In this process, some factors and traits can be more significant than others in explaining its success and therefore its invasiveness (Van Kleunen et al. 2015). Particularly, the concept of invasiveness of plant species has been integrated with that of propagule pressure and of "invasibility" of habitats and plant communities, i.e. the susceptibility of an environment to invasions by alien species, as different habitats and phytocoenoses may be more invasible than others and show different degrees of resistance/resilience (Rejmánek 1989; Lonsdale 1999; Rejmánek et al. 2005; Richardson and Pyšek 2006). All these concepts have been included in the unifying theory of invasion syndromes (Perkins and Nowak 2013).

Patterns of distribution and abundance of IAS depend on a number of drivers including introduction history and pathways, life traits, availability of potentially invasible ecosystems, residence time, disturbance (Wilson et al. 2007; Carranza et al. 2010; Richardson et al. 2011; Comin et al. 2011; Dainese and Poldini 2012; Jucker et al. 2013). It is acknowledged that anthropogenic drivers play a crucial role in the establishment and spread of alien species (Pyšek and Richardson 2006; Pyšek et al. 2010a, 2010b; Bolpagni and Piotti 2015; Lazzaro et al. 2017; Stinca et al. 2017), however alien species showed to be largely constrained also by the same broad environmental factors acting on the native vegetation (Rouget et al. 2015). The same applies to IAS populations as well, as it has been demonstrated that what is good for natives is good for aliens too (Pyšek and Richardson 2006; Dalle Fratte et al. 2019).

Vascular plants are the most investigated taxonomic group in the field of invasive biology, and Europe devoted great efforts to their study, being the second continent (after North America) for investigative endeavour on plant invasions (Pyšek et al. 2009; Early et al. 2016). However, in spite of a huge scientific production about alien species numbers, ecology, impacts and distribution (for a synthesis at the European level, see DAISIE 2009 and Galasso et al. 2018 for Italy), their patterns and co-occurrence dynamics have only recently started to be in the spotlight, together with the factors driving alien plant assemblages (Hui et al. 2013; Pyšek and Chytrý 2014; Rouget et al. 2015).

A number of studies addressed the key role of cover and dominance of alien species to understand the invasion patterns (Lundholm and Larson 2004; Smith et al. 2004; Crall et al. 2006; Chytrý et al. 2008, 2009; Pyšek et al. 2010a, 2010b). This seems to some extent more important than alien species number, suggesting the hypothesis that the more an alien *taxon* becomes dominant in a vegetation type, the stronger the impact on native species diversity might be. This approach gave a pulse to research on alien plant species assemblages, and recently investigations on IAS have been addressed also at the community scale and benefitted from the currently available large databases of vegetation plots (see, e.g., Dengler et al. 2011; Landucci et al. 2012; Del Vecchio et al. 2015; Chytrý et al. 2016; Sperandii et al. 2018; Bonari et al. 2019).

A study by Chytrý et al. (2008) demonstrated that the habitat type is a reliable predictor of the level of plant invasion. This paper took into account patterns of plant invasions across habitats at the European scale, suggesting precious insights for biodiversity conservation and habitat monitoring, especially when considering the acknowledged correspondence between syntaxonomic types and habitats *sensu* Dir. 92/43/EEC (European Commission 1992, 2013; Evans 2010; Biondi et al. 2012; Viciani et al. 2016). Indeed, alien species have been listed among the causes of habitat decline and loss also in the most recent red-list assessments, both at European (Janssen et al. 2016) and Italian scale (Gigante et al. 2018).

Some authors started to qualify and quantify the role of alien species in different vegetation and habitat types, and to point out the functional role that alien species play in plant communities (Celesti-Grapow et al. 2010; Pyšek and Chytrý 2014; Prisco et al. 2016). Moreover, habitat misclassification can be favoured by the presence of alien species (Sarmati et al. 2019). However, to date only few studies focussed on alien-dominated plant communities and the role of aliens in natural assemblages. With notable exceptions (e.g. Jurko 1964; Hadač and Sofron 1980; Ubaldi 2003; Vítková and Kolbek 2010; Sîrbu and Oprea 2011; Allegrezza et al. 2019), the large majority of vegetation studies, especially outside Europe, are still mostly focused on natural and semi-natural phytocoenoses with few or no aliens (Chytrý et al. 2009; Pyšek and Chytrý 2014).

Despite a long-dated Italian tradition of phytosociological studies, a national synthesis of the alien-dominated (and co-dominated) plant communities thriving in Italy has never been produced yet. Therefore, the present research aims at taking the first step toward the filling of this knowledge gap.

The European and national projects dedicated to IAS, which involved and currently still involve research academic centres and institutions, are numerous in Italy. Some of them have helped to gather a significant amount of information on invasive plant and animal species. Among the most recent, addressing non-native plant species, their impact and their management, as well as the awareness of the general public on these topics, we can mention: LIFE ASAP (http://www.lifeasap.eu), LIFE GESTIRE IP2020 (http://www.naturachevale.it/il-progetto/life-gestire-2020/), LIFE REDUNE (http://www.liferedune.it), MARITTIMO ALIEM (http://interreg-maritime.eu/web/aliem).

The present work is the result of a research agreement between SISV (the Italian Society for Vegetation Science) and ISPRA (the Italian Institute for Environmental Protection and Research), with financial support from the Italian Ministry of Environment, aimed at supporting the implementation of Regulation EU 2014/1143 (updated by EU Reg. 2017/1263) on the prevention and management of the introduction and spread of invasive alien species. In particular, the general agreement focused on: i) the update of the Database of Italian Alien Species (DIAS) with reference to their impacts on the ecosystems and the most threatened habitats and ii) the identification of the alien-dominated or co-dominated plant communities occurring in Italy. The outcomes of the latter are here presented. The research on alien plant communities and habitats was carried out through the collaboration of a wide working group of experts led by a Coordinating Committee composed by SISV members.

Methods

A dedicated SISV working team, formed by national and local experts, collected all the thematic literature related to terrestrial and freshwater alien-dominated and co-dominated vegetation. On the basis of this bibliographic data-set, a selection of all vegetation data was carried out, with special attention to nomenclature and syntaxonomic classification. All the existing national and regional vegetation databases (e.g. LiSy – http://www.scienzadellavegetazione.it/sisv/lisy/index.jsp; Poldini et al. 1985; Poldini 1991, 2002, 2009; Gallizia Vuerich et al. 1999; Brullo et al. 2001; Gigante et al. 2012; Landucci et al. 2012; Evangelista et al. 2016), together with the regional bibliographic sources (e.g. Poldini 1989; Poldini and Vidali 1989; Poldini et al. 1991, 1999), were consulted. Data concerning each phytocoenosis were selected if one or more alien species played a substantial role in the analysed vegetation unit. In particular, the SISV Coordinating Committee collected and checked the information and selected the data whenever:

1. the analysed low rank *syntaxon* (association, subassociation, phytocoenon) was dominated or co-dominated by one or more alien plant species; a cover value ≥ 3 according to the "Braun-Blanquet" scale (Braun-Blanquet 1979) for alien species cover in each relevé has been set as threshold; if, instead of the "Braun-Blanquet" scale, the "Pignatti" scale was used in the bibliographical reference (Pignatti and Mengarda 1962), the cover value threshold was set to ≥ 2, i.e. 20-40%;
2. the alien species name was included in the name of the *syntaxon*, by that implying that it is a characteristic/differential/diagnostic or somehow important *taxon* for the definition of the *syntaxon*, or even dominating and determining its vertical structure (as stated in Art. 10b of the International Code of Phytosociological Nomenclature: Theurillat et al. 2020).

Starting from this selected dataset, a draft syntaxonomic list was produced. The names of the plant communities and their syntaxonomic attributions at higher ranks have been acknowledged (and are here reported) in the same form as published by the original Authors. In case of inconsistencies or discrepancies, a specific comment has been provided.

The syntaxonomic scheme has then been updated in accordance with the Italian Vegetation Prodrome (Biondi et al. 2014; http://www.prodromo-vegetazione-italia.org/), which however does not take into considerations *syntaxa* below the alliance level. Relevant differences and discrepancies with other syntaxonomic frames, especially regarding the EuroVegChecklist (Mucina et al. 2016), have been commented.

Plant nomenclature in the text follows the Checklists of the vascular flora of Italy (Bartolucci et al. 2018; Galasso et al. 2018) and later updates reported in the "Portal to the flora of Italy" (http://dryades.units.it/floritaly/index.php), to which we referred also to identify the species to be considered as aliens to Italy, including archaeophytes (e.g. *Arundo donax*, *Acanthus mollis* subsp. *mollis*) as well. New hybridogenic species due to xeno-speciation events (e.g. some species of *Oenothera* or *Vitis*) were taken into account, when considered as alien *taxa* by Galasso et al. (2018). In case of species considered alien to an administrative region and native to another one, only the communities reported for the region where the species is alien have been recorded (e.g.: a community dominated by *Acanthus mollis* subsp. *mollis* was considered alien to Liguria but not to Sicily, where this species is considered as native, see Minissale et al. 2019).

This process allowed to produce a first checklist of the Italian alien-dominated plant communities. On this ground, some statistics were calculated considering the number of alien vegetation units with reference to i) each resulting syntaxonomic class and ii) homogeneous groups of the resulting syntaxonomic classes, clustered according to their physiognomic and ecological characteristics.

Results and discussion

A comprehensive and annotated checklist of the alien-dominated and co-dominated plant communities occurring in Italy is provided in Appendix I. All phytocoenoses have been framed in an updated syntaxonomic scheme. A specific bibliographical list with references for all the *syntaxa* quoted in the checklist is available in Appendix II.

The checklist includes a total of 27 classes of vascular plant vegetation and one of bryophyte vegetation, including plant communities dominated or co-dominated by aliens to Italy. The total number of low rank *syntaxa* (associations/subassociations/communities) amounts to 194.

The number of communities for each class is reported in Fig. 1. As expected, the class with the highest number of alien-dominated plant communities resulted by far *Stellarietea mediae*, followed by *Artemisietea vulgaris*. The presence of some higher-rank *syntaxa* named after and mainly formed by IAS (e.g. the class *Robinietea*, the order *Nicotiano glaucae-Ricinetalia communis*) is worth to be noted, which highlights the coenological and physiognomic-structural autonomy of these communities.
The 27 identified classes and some subordinate *syntaxa* have been grouped in clusters based on their physiognomy and ecology. The considered groups are as follows:

- Forest vegetation (*Querco-Fagetea*, *Quercetea ilicis*);
- Anthropogenic woody vegetation (*Robinietea* and part of *Rhamno-Prunetea*);
- Alluvial, marshy and riparian woody vegetation (*Alnetea*, *Salici-Populetea*, *Salicetea*, *Alnion incanae*);
- Perennial herbaceous hygrophilous and hygro-nitrophilous vegetation (*Galio-Urticetea*, *Filipendulo-Convolvuletea*, *Molinio-Arrhenatheretea*, *Phragmito-Magnocaricetea*);

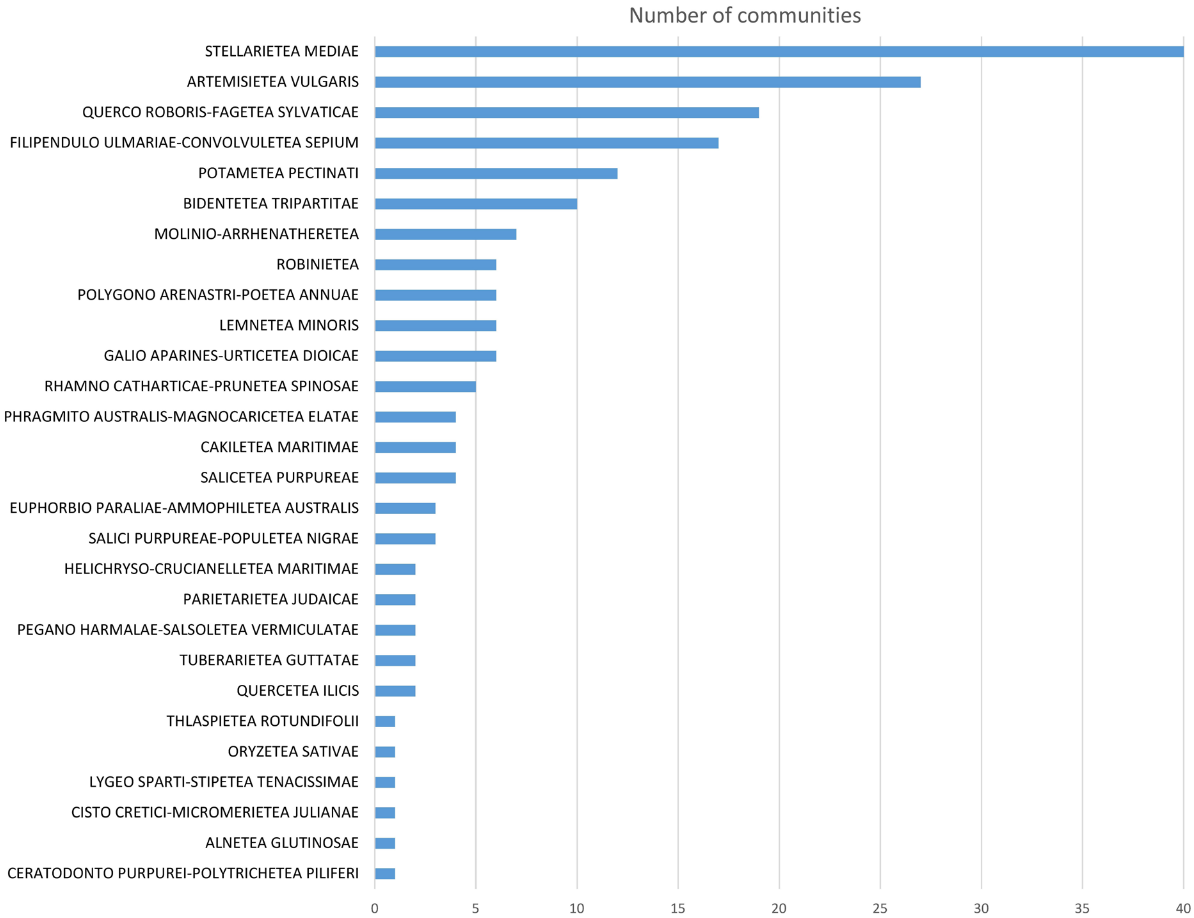

Figure 1. Number of alien-dominated communities for each syntaxonomic class of the checklist reported in Appendix I.

- Perennial ruderal herbaceous vegetation (*Artemisietea*);
- Annual ruderal herbaceous vegetation (*Stellarietea*, *Polygono arenastri-Poetea annuae*);
- Annual herbaceous hygro-nitrophilous vegetation (*Bidentetea*);
- Hydrophitic freshwater vegetation (*Potametea*, *Lemnetea*);
- Psammophilous vegetation (*Euphorbio-Ammophiletea*, *Cakiletea*, *Helichryso-Crucianelletea*).

Results of the community rates per class groups are shown in Fig. 2. The group including the classes of annual ruderal herbaceous vegetation (*Stellarietea mediae* and *Polygono arenastri-Poetea annuae*) hosts about 25% of the total number of the detected alien-dominated communities. *Stellarietea mediae* is by definition characterized by high rates of alien plant species, especially archaeophytes (http://www.prodromo-vegetazione-italia.org/). However, data analysis showed that this explains only part of the story. Actually, the involved alien species and genera are mainly represented by neophytes (e.g. *Robinia pseudoacacia*, *Artemisia* sp.pl., *Amaranthus* sp.pl., *Erigeron* sp.pl., *Euphorbia* sp.pl., *Solidago* sp.pl.). Indeed, it is known that neophytes mostly occur in strongly anthropogenic areas, whose habitats appear to be not only the most invaded, but also the most invasible (Pyšek et al. 2002, 2005; Deutschewitz et al. 2003; Kühn et al. 2003; Chytrý et al. 2008). On the contrary, relatively low- or non-anthropized ecosystems, such as nutrient-poor environments or montane habitats, are least or not invaded (Chytrý et al. 2008; Angiolini et al. 2019). For these reasons, heavily human-impacted environments (i.e. arable lands and fallow fields, urban and industrial areas, aquatic and riparian habitats) show the highest levels of neophyte invasion, as already suggested by previous studies, at least in continental areas (Kowarik 1995; Walter et al. 2005; Richardson and Pyšek 2006; Chytrý et al. 2009; Myśliwy 2014) and, as a consequence, the highest number of alien-dominated plant communities (Bolpagni and Piotti 2015).

Also the coastal areas are highly impacted by IAS (Acosta et al. 2007; Carboni et al. 2010; Del Vecchio et al. 2013, 2015; Lazzaro et al. 2017). Indeed, the close connection between invasibility, propagule pressure and habitat disturbance is a widely accepted relationship (Di Castri 1990; Vitousek et al. 1997; Pino et al. 2006; Perkins and Nowak 2013). This is indirectly confirmed in this study, by the fact that many of the less represented groups of alien-dominated communities refer to scarcely invasible environments, such as screes (*Thlaspietea rodundifolii*) or Mediterranean grass-dominated vegetation (*Lygeo-Stipetea*). Unexpectedly, our data seem to suggest that psammophilous coastal vegetation experiences low rates of alien community occurrence (Figs. 1, 2). However, to correctly interpret this outcome, it should be considered that the collected data might outline a biased picture due to a lack of syntaxonomic investigation and classification for some communities. In support of this hypothesis, it should be noted that many alien coastal communities dominated by *Yucca* sp.pl., *Agave* sp.pl., *Opuntia* sp.pl. or *Acacia* sp.pl. have been noted although not syntaxonomically described yet (Carboni et al. 2010; Santoro et al. 2012; Del Vecchio et al. 2013; Lazzaro et al. 2014, 2015, 2017; Stinca et al. 2017). Moreover, low numbers of alien-dominated communities described for a particular environment do not imply low rates of invasion, as even few IAS can spread dramatically to the detriment of native plant communities. For instance, the neo-phytocoenoses formed by just two species of *Carpobrotus* are nowadays massively distributed along the coasts of the whole Europe (Souza-Alonso et al. 2019), possibly leading to a peculiar coenological diversity which, however, has never been formalized in syntaxonomic terms yet.

Disturbance regimes are often related to fluctuation in resource availability, indicated as a key driver for invasions, in relation to the intermittent resource enrichment or release (Alpert et al. 2000; Davis et al. 2000; Richardson and Pyšek 2006). For this reason, besides strongly anthropized habitats, also aquatic and riparian ecosystems are particularly susceptible and extremely vulnerable to biological invasions and generally show high rates of alien species, due to their intrinsically medium-high levels of disturbance (Di Castri 1990; Rauchich and Reader 1999; Pyšek and Prach 1993; Alpert et al. 2000; Bolpagni 2013; Bolpagni and Piotti 2015). As it is known, alien hydrophytes often become dominant in these environments, and give rise to species-poor alien communities. This is confirmed by our results (Figs. 1, 2) where, despite the relative scarcity of ecological niches in aquatic environments, the percentage of alien hygrophytes communities is relevant (Lazzaro et al. 2019). This can have severe consequences considering that alien aquatic plants, as primary producers and often structural component of the ecosystems, can drastically transform the structure of freshwater habitats and their water quality (Valley and Bremigan 2002; Rommens et al. 2003; Perna and Burrows 2005; Ricciardi and MacIsaac 2011; Brundu et al. 2012; Brundu 2015; Ceschin et al. 2016, 2019).

Other habitats also linked to water (and to the related high levels of disturbance) show a high number of alien-dominated communities. It is the case of riparian non-woody habitats, or of annual and perennial herbaceous hygrophilous and hygro-nitrophilous vegetation types (Fig. 2), which reach high percentages (the latter more than 18%).

Also the alien communities attributed by many authors to *Querco-Fagetea* have a prevalent mesohygrophilous character (Appendix I). The most relevant woody invasive alien species, also found in the anthropogenic neophytic woody vegetation (e.g. *Robinia pseudoacacia*, *Ailanthus altissima*, *Amorpha fruticosa*, and many others) can be defined as "ecosystem engineers", i.e. species that shape habitats and/or cause changes to their state and resources availability (Vitousek 1986; Schmitz et al. 1997; Jones et al. 1997; Crooks 2002; Başnou 2009; Başnou and Vilá 2009; Djurdjevic et al. 2011; Benesperi et al. 2012; Cierjacks et al. 2013; Vítková et al. 2017; Lazzaro et al. 2018). The replacement of native species by alien plants, even when apparently ecologically equivalent, almost always negatively affects the ecosystems, especially if those species act as "ecosystem engineers" (Brown et al. 2006; Wilson and Ricciardi 2009; Lazzaro et al. 2018; Sitzia et al. 2018; Uboni et al. 2019).

In the checklist we also recorded a bryophyte community dominated by the alien *Campylopus introflexus*, which in Europe is considered a neophytic moss, introduced from the Southern hemisphere and rapidly expanding (Hill et al. 2006). It was detected along Mediterranean ponds and neighbouring wood glades (Cogoni et al. 2002; Puglisi et al. 2016; Poponessi et al. 2016, 2018) and its distribution deserves to be monitored.

Few considerations can be made on the number of alien species involved in the communities reported in the checklist. According to Galasso et al. (2018), there are 791 non-native naturalized species in the Italian territory, 221 of which are considered invasive in at least one region. Our checklist shows that, based on the current knowledge, less than one hundred of these species (precisely 88) perform a dominant or co-dominant role in the considered plant communities. Only five of these (*Ailanthus altissima*, *Elodea nuttallii*, *Lagarosiphon major*, *Myriophyllum aquaticum*, *Cenchrus setaceus*) are considered IAS of Union Concern (see https://ec.europa.eu/environment/nature/invasivealien/list/index_en.htm), however this number grows considerably when downscaling at the national level, with 76 of them (i.e. more than 86% of the total) to be considered as IAS in Italy (Galasso et al. 2018). Again, this can be traced back to the fact that most of these IAS are neophytes, many have been introduced in relatively recent times, and probably there was not enough time to give rise to such a degree of invasion to be relevant at European scale yet. Additionally, also at the national scale these invasions are often very localized or at very early stages, and their study from the phytosociological point of view is still a minor topic (although emergent).

At the same time, the continuous rate of introduction-naturalisation-invasion of new alien plants is an ongoing process that should be detected just in early stages, in order to prevent serious damage to native biodiversity. The numbers here reported raise the alarm for planning conservation biodiversity studies, monitoring protocols and management activities.

Conclusion

The here presented first checklist of the alien-dominated plant communities in Italy should not be considered exhaustive. It is the first step toward a better understanding

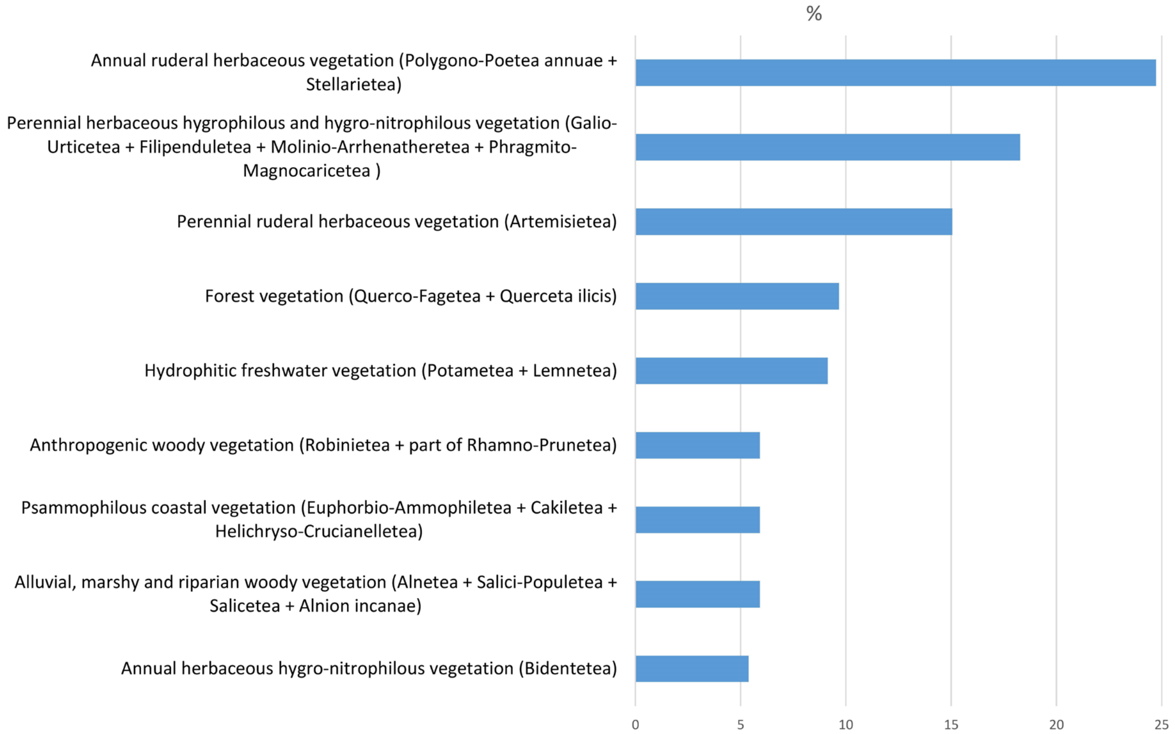

Figure 2. Percentages of alien-dominated communities in physiognomically and ecologically homogeneous groups of classes and subordinate *syntaxa*, based on the checklist reported in Appendix I.

of distribution, ecology and invasion processes of alien species at community level in this country. Our review represents a screenshot of the current knowledge and suggests that a serious lack of investigation for certain vegetation types (and probably for certain areas of the country) has to be highlighted.

The present checklist of the alien vegetation in Italy can represent a very useful tool, not only for stimulating further studies and investigations but also for prevention, management and monitoring purposes. As emphasized by Olaczek (1982), the phytosociological school, taking into account the whole floristic composition of plant communities, was one of the first approaches able to detect the effects of alien species on the diversity of natural phytocoenoses and to include these new communities in the syntaxonomical vegetation classification. In fact, the "floristic and phylogenetic homogenization" (e.g. Pino et al. 2009) and the "degeneration of phytocoenoses" by means of a progressive modification of structure and floristic composition due to the alien species invasion, concepts expressed by Olaczek (1982) and Faliński (1998a, 1998b), can transform a native plant community into an athropogenic one, or even in a "novel ecosystem" (Lugo 2015), susceptible to be classified in a new syntaxonomic frame.

This becomes particularly important when considering the close link between plant communities syntaxonomically described and Natura 2000 habitat types, as listed in the Annex I to the Directive 92/43/EEC (European Commission 1992, 2013). It is mandatory for Member States to conserve Annex I habitats in Europe in a favourable conservation status (Evans 2012; Gigante et al. 2016). Undoubtedly, a better understanding of the processes by which a plant community and a habitat type are firstly invaded and then dominated by alien species, together with the comprehension of the successional (and syntaxonomic) implications of those processes, can effectively support the monitoring and management of biodiversity and protected areas.

Bibliography

Acosta A, Carranza ML, Ciaschetti G, Conti F, Di Martino L, D'Orazio G, et al. (2007) Specie vegetali esotiche negli ambienti costieri sabbiosi di alcune regioni dell'Italia Centrale. Webbia 62(1): 77–84.

Allan HH (1936) Indigene versus alien in the New Zealand plant world. Ecology 17: 187–193.

Allegrezza M, Montecchiari S, Ottaviani C, Pelliccia V, Tesei G (2019) Syntaxonomy of the *Robinia pseudoacacia* communities in the central peri-adriatic sector of the Italian peninsula. Plant Biosystems 153(4): 616–623.

Alpert P, Bone E, Holzapfel C (2000) Invasiveness, invasibility and the role of environmental stress in the spread of non-native plants. Perspectives in plant ecology, evolution and systematics 3: 52–66.

Angiolini C, Viciani D, Bonari G, Zoccola A, Bottacci A, Ciampelli P, et al. (2019) Environmental drivers of plant assemblages: are there differences between palustrine and lacustrine wetlands? A case study from the northern Apennines (Italy). Knowledge and Management of Aquatic Ecosystems 420 (34): 11 pp. https://doi.org/10.1051/kmae/2019026

Baker HG (1948) Stages in invasion and replacement demonstrated by species of *Melandrium*. Journal of Ecology 36: 96–119.

Bartolucci F, Peruzzi L, Galasso G, Albano A, Alessandrini A, Ardenghi NMG, et al. (2018) An updated checklist of the vascular flora native to Italy. Plant Biosystems 152(2): 179–303.

Başnou C (2009) *Robinia pseudoacacia* L., black locust (Fabaceae, Magnoliophyta). In: DAISIE (Ed.) Handbook of Alien Species in Europe. Springer. Dordrecht, The Netherlands, 357.

Başnou C, Vilá M (2009) *Ailanthus altissima* (Mill.) Swingle, tree of heaven (*Simaroubaceae*, *Magnoliophyta*). In: DAISIE (Ed.) Handbook of Alien Species in Europe. Springer. Dordrecht, The Netherlands, 342.

Bellard C, Cassey P, Blackburn TM (2016) Alien species as a driver of recent extinctions. Biology Letters 12: 20150623.

Benesperi R, Zanetti S, Giuliani C, Gennai M, Mariotti-Lippi M, Guidi T, et al. (2012) Forest plant diversity is threatened by *Robinia pseudoacacia* (Black-Locust) invasion. Biodiversity and Conservation 22(8): 1679–1690.

Biondi E, Blasi C, Allegrezza M, Anzellotti I, Azzella MM, Carli E, et al. (2014) Plant communities of Italy: The Vegetation Prodrome. Plant Biosystems 148(4): 728–814.

Biondi E, Burrascano S, Casavecchia S, Copiz R, Del Vico E, Galdenzi D, et al. (2012) Diagnosis and syntaxonomic interpretation of Annex I Habitats (Dir. 92/43/EEC) in Italy at the alliance level. Plant Sociology 49(1): 5–37.

Blackburn TM, Essl F, Evans T, Hulme PE, Jeschke JM, Kuhn I, et al. (2014) A Unified Classification of Alien Species Based on the Magnitude of their Environmental Impacts. PLOS Biology 12 (5): e1001850 https://doi.org/10.1371/journal.pbio.1001850

Bolpagni R (2013) Macrophyte richness and aquatic vegetation complexity of the Lake Idro (Northern Italy). Annali di Botanica Roma 3: 35–43.

Bolpagni R, Piotti A (2015) Hydro-hygrophilous vegetation diversity and distribution patterns in riverine wetlands in an agricultural landscape: a case study from the Oglio River (Po Plain, Northern Italy). Phytocoenologia 45(1-2): 69–84.

Bonari G, Knollová I, Vlčková P, Xystrakis F, Çoban S, Sağlam C, et al. (2019) CircumMed Pine Forest Database: An electronic archive for Mediterranean and Submediterranean pine forest vegetation data. Phytocoenologia 49(3): 311–318.

Braun-Blanquet J (1979) Fitosociologia. Bases para el estudio de las comunidades vegetales. Blume, Madrid, 820 pp.

Brown CJ, Blossey B, Maerz JC, Joule S (2006) Invasive plant and experimental venue affect tadpole performance. Biological Invasions 8: 327–338.

Brullo S, Scelsi F, Spampinato G (2001) La vegetazione dell'Aspromonte. Studio fitosociologico. Laruffa Editore, Reggio Calabria, 370 pp.

Brundu G (2015) Plant invaders in European and Mediterranean inland waters: profiles, distribution, and threats. Hydrobiologia 746(1): 61–79.

Brundu G, Stinca A, Angius L, Bonanomi G, Celesti-Grapow L, D'Auria G, et al. (2012) *Pistia stratiotes* L. and *Eichhornia crassipes* (Mart.) Solms.: emerging invasive alien hydrophytes in Campania and Sardinia (Italy). Bulletin OEPP/EPPO Bulletin 42(3): 568–579.

Carboni M, Santoro R, Acosta ATR (2010) Are some communities of the coastal dune zonation more susceptible to alien plant invasion? Journal of Plant Ecology 3(2): 139–147.

Carranza ML, Carboni M, Feola S, Acosta ATR (2010) Landscape-scale patterns of alien plant species on coastal dunes: the case of iceplant in central Italy. Applied Vegetation Science 13: 135–145.

Celesti-Grapow L, Alessandrini A, Arrigoni PV, Assini S, Banfi E, Barni E, et al. (2010) Non-native flora of Italy: Species distribution and threats. Plant Biosystems 144(1): 12–28.

Ceschin S, Abati S, Leacche I, Iamonico D, Iberite M, Zuccarello V (2016) Does the alien *Lemna minuta* show an invasive behaviour outside its original range? Evidence of antagonism with the native *L. minor* L. in Central Italy. International Review of Hydrobiology 101(5-6): 173–181.

Ceschin S, Abati S, Traversetti L, Spani F, Del Grosso F, Scalici M (2019) Effects of the alien duckweed *Lemna minuta* Kunth on aquatic animals: an indoor experiment. Plant Biosystems 153(6): 749–755.

Chytrý M, Hennekens SM, Jiménez-Alfaro B, Knollová I, Dengler J, Jansen F, et al. (2016) European Vegetation Archive (EVA): An integrated database of European vegetation plots. Applied Vegetation Science 19(1): 173–180.

Chytrý M, Jarosík V, Pyšek P, Hájek O, Knollová O, Tichý L, Danihelka J (2008) Separating habitat invasibility by alien plants from the actual level of invasion. Ecology 89: 1541–1553.

Chytrý M, Pyšek P, Wild J, Pino J, Maskell LC, Vilà M (2009) European map of alien plant invasions based on the quantitative assessment across habitats. Diversity and Distributions 15: 98–107.

Cierjacks A, Kowarik I, Joshi J, Hempel S, Ristow M, von der Lippe M, Weber E (2013) Biological Flora of the British Isles: *Robinia pseudoacacia*. Journal of Ecology 101(6): 1623–1640.

Cogoni A, Flore F, Aleffi M (2002) Survey of bryoflora on Monte Limbara (Northern Sardinia). Cryptogamie, Bryologie 23(1): 73–86.

Comin S, Ganis P, Poldini L, Vidali M (2011) A diachronic approach to assess alien plant invasion: The case study of Friuli Venezia Giulia (NE Italy). Plant Biosystems 145(1): 50–59.

Crall AW, Newman GJ, Stohlgren TJ, Jarnevich CS, Evangelista P, Guenther D (2006) Evaluating dominance as a component of non-native species invasions. Diversity and Distributions 12: 195–204.

Crooks J (2002) Characterizing ecosystem-level consequences of biological invasions: the role of ecosystem engineers. Oikos 97: 153–166.

Dainese M, Poldini L (2012) Does residence time affect responses of alien species richness to environmental and spatial processes? NeoBiota 14: 47–66.

DAISIE (2009) Handbook of Alien Species in Europe. Springer. Dordrecht, The Netherlands, 400 pp.

Dalle Fratte M, Bolpagni R, Brusa G, Caccianiga M, Pierce S, Zanzottera M, Cerabolini BEL (2019) Alien plant species invade by occupying similar functional spaces to native species. Flora 257: 151419.

Davis MA (2011) Researching invasive species 50 years after Elton: a cautionary tale. In: Richardson DM (Ed.), Fifty Years of Invasion Ecology: The Legacy of Charles Elton. Wiley-Blackwell, Chichester, 269-276.

Davis MA, Grime JP, Thompson K (2000) Fluctuating resources in plant communities: a general theory of invasibility. Journal of Ecology 88: 528–534.

Del Vecchio S, Acosta A, Stanisci A (2013) The impact of *Acacia saligna* invasion on Italian coastal dune EC habitats. Comptes Rendus de Biologies 336: 364–369.

Del Vecchio S, Pizzo L, Buffa G (2015) The response of plant community diversity to alien invasion: evidence from a sand dune time series. Biodiversity and Conservation 24: 371–392.

Dengler J, Jansen F, Glöckler F, Peet RK, De Cáceres M, Chytrý M, et al. (2011). The Global Index of Vegetation-Plot Databases (GIVD): a new resource for vegetation science. Journal of Vegetation Science 22: 582–597.

Deutschewitz K, Lausch A, Kühn I, Klotz S (2003) Native and alien plant species richness in relation to spatial heterogeneity on a regional scale in Germany. Global Ecology and Biogeography 12: 299–311.

di Castri F (1990) On invading species and invaded ecosystems: the interplay of historical chance and biological necessity. In: di Castri F, Hansen AJ, Debussche M (Eds.), Biological Invasions in Europe and the Mediterranean Basin. Kluwer Academic Publishers, Dodretch, 3-16.

Djurdjević L, Mitrović M, Gajić G, Jarić S, Kostić O, Oberan L, Pavlović P (2011) An allelopathic investigation of the domination of the introduced invasive *Conyza canadensis* L. Flora 206: 921–927.

Early R, Bradley BA, Dukes JS, Lawler JJ, Olden JD, Blumenthal DM, et al. (2016) Global threats from invasive alien species in the twenty-first century and national response capacities. Nature Communication 7: 12485 https://doi.org/10.1038/ncomms12485

Egler FE (1942) Indigene versus alien in the development of arid Hawaiian vegetation. Ecology 23: 14–23.

Elton CS (1958) The Ecology of Invasions by Animals and Plants. Methuen, London, 181 pp.

European Commission (1992) Council directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora. Official Journal L206. Retrieved July 22, 1992 (Consolidated version 1.1.2007).

European Commission (2013) Interpretation manual of European Union Habitats, vers. EUR28. Brussel: European Commission, DG Environment.

Evangelista A, Frate L, Stinca A, Carranza ML, Stanisci A (2016) VIOLA - the vegetation database of the central Apennines: structure, current status and usefulness for monitoring EU habitats (92/43/EEC). Plant Sociology 53(2): 47–58.

Evans D (2010) Interpreting the habitats of Annex I. Past, present and future. Acta Botanica Gallica 157(4): 677–686.

Evans D (2012) Building the European Union's Natura 2000 network. Nature Conservation 1: 11–26.

Faliński JB (1998a) Invasive alien plants and vegetation dynamics. In: Starfinger U, Edwards K, Kowarik I, Williamson M (Eds.), Plant invasions: ecological mechanisms and human responses. Backhuys Publishers, Leiden, The Netherlands, 3-21.

Faliński JB (1998b) Invasive alien plants, vegetation dynamics and neophytism. Phytocoenosis 10 (N.S.) Suppl. Cartogr. Geobot. 9: 163–187.

Gaertner M, Biggs R, Te Beest M, Hui C, Molofsky J, Richardson DM (2014) Invasive plants as drivers of regime shifts: identifying high priority invaders that alter feedback relationships. Diversity and Distributions 20: 733–744.

Galasso G, Conti F, Peruzzi L, Ardenghi NMG, Banfi E, Celesti-Grapow L, et al. (2018) An updated checklist of the vascular flora alien to Italy. Plant Biosystems 152(3): 556–592. https://doi.org/10.1080/11263504.2018.1441197

Gallizia Vuerich L, Ganis P, Oriolo G, Poldini L, Vidali M (1999) La banca dati fitosociologica del Friuli-Venezia Giulia: struttura e applicazioni. Archivio Geobotanico 4(1) (1998): 137–141.

Gigante D, Acosta ATR, Agrillo E, Armiraglio S, Assini S, Attorre F, et al. (2018) Habitat conservation in Italy: the state of the art in the light of the first European Red List of Terrestrial and Freshwater Habitats. Rendiconti Lincei. Scienze Fisiche e Naturali 29(2): 251–265.

Gigante D, Acosta ATR, Agrillo E, Attorre F, Cambria VM, Casavecchia S, et al. (2012) VegItaly: Technical features, crucial issues and some solutions. Plant Sociology 49(2): 71–79.

Gigante D, Attorre F, Venanzoni R, Acosta ATR, Agrillo E, Aleffi M, et al. (2016) A methodological protocol for Annex I Habitats monitoring: the contribution of Vegetation science. Plant Sociology 53(2): 77–87.

Hadač E, Sofron J (1980) Notes on syntaxonomy of cultural forest communities. Folia Geobotanica Phytotaxonomica 15: 245–258.

Hahs AK, McDonnell MJ (2016) Moving beyond biotic homogenization: searching for new insights into vegetation dynamics. Journal of Vegetation Science 27(3): 439–440.

Hill MO, Bell N, Bruggeman-Nannenga MA, Brugués M, Cano MJ, Enroth J, et al. (2006) An annotated checklist of the mosses of Europe and Macaronesia. Journal of Bryology 28: 198–267.

Hui C, Richardson DM, Pyšek P, Le Roux JJ, Kučera T, Jarošík V (2013) Increasing functional modularity with residence time in co-distribution of native and introduced vascular plants. Nature Communications 4: 2454.

Hulme PE, Bacher S, Kenis M, Klotz S, Kühn I, Minchin D, et al. (2008) Grasping at the routes of biological invasions: a framework for integrating pathways into policy. Journal of Applied Ecology 45: 403–414.

Jzco J (2002) Authors of *syntaxon* names. In: Rivas-Martínez S, Díaz TE, Fernández-González F, Izco J, Loidi J, Lousã M, Penas Á, Vascular plant communities of Spain and Portugal. Addenda to the Syntaxonomical checklist of 2001. Itinera Geobotanica 15(1-2): 5–922.

Janssen JAM, Rodwell JS, García Criado M, Gubbay S, Haynes T, Nieto A, et al. (2016) European Red List of Habitats. Part 2. Terrestrial and freshwater habitats. Publications Office of the European Union, Luxembourg, 38 pp. ISBN 978-92-79-61588-7.

Jones CG, Lawton JH, Shachak M (1997) Positive and negative effects of organisms as physical ecosystem engineers. Ecology 78: 1946–1957.

Jucker T, Carboni M, Acosta ATR (2013) Going beyond *taxon*omic diversity: deconstructing biodiversity patterns reveals the true cost of iceplant invasion. Diversity and Distributions 19: 1566–1577.

Jurko A (1964) Feldheckengesellschaften und Uferweidengebüsche des Westkarpatengebietes. Biologicke práce 10: 1–100.

Kowarik I (1995) On the role of alien species in urban flora and vegetation. In: Pyšek P, Prach K, Rejmánek M, Wade M (Eds.), Plant invasions: general aspects and special problems. SPB Academic Publ., Amsterdam, 83-103.

Kühn I, Brandl R, May R, Klotz S (2003) Plant distribution patterns in Germany: will aliens match natives? Feddes Repertorium 114: 559–573.

Landucci F, Acosta ATR, Agrillo E, Attorre F, Biondi E, Cambria VM, et al. (2012) VegItaly: The Italian collaborative project for a national vegetation database. Plant Biosystems 146(4): 756–763.

Lazzaro L, Bolpagni R, Barni E, Brundu G, Blasi C, Siniscalco C, Celesti-Grapow L (2019) Towards alien plant prioritization in Italy: methodological issues and first results. Plant Biosystems 153: 740–746.

Lazzaro L, Giuliani C, Benesperi R, Calamassi R, Foggi B (2015) Plant species loss and community nestedness after leguminous tree *Acacia pycnantha* invasion in a Mediterranean ecosystem. Folia Geobotanica 50(3): 229–238.

Lazzaro L, Giuliani C, Fabiani A, Agnelli AE, Pastorelli R, Lagomarsino A, et al. (2014) Soil and plant changing after invasion: The case of *Acacia dealbata* in a Mediterranean ecosystem. Science of the Total Environment 497: 491–498.

Lazzaro L, Mazza G, D'Errico G, Fabiani A, Giuliani, C, Inghilesi AF, et al. (2018) How ecosystems change following invasion by *Robinia pseudoacacia*: Insights from soil chemical properties and soil microbial, nematode, microarthropod and plant communities. Science of the Total Environment 622-623: 1509–1518.

Lazzaro L, Viciani D, Dell'Olmo L, Foggi B (2017) Predicting risk of invasion in a Mediterranean island using niche modelling and valuable biota. Plant Biosystems 157(2): 361–370.

Lonsdale WM (1999) Global patterns of plant invasions and the concept of invasibility. Ecology 80: 1522–1536.

Lugo AE (2015) Forestry in the Anthropocene. Science 349(6250): 771.

Lundholm JT, Larson DW (2004) Dominance as an overlooked measure of invader success. Biological Invasions 6: 505–510.

Malavasi M, Acosta ATR, Carranza ML, Bartolozzi L, Basset A, Bassignana M, et al. (2018) Plant invasions in Italy: An integrative approach using the European LifeWatch infrastructure database. Ecological Indicators 91: 182–188.

McKinney ML, Lockwood JL (1999) Biotic homogenization: a few winners replacing many losers in the next mass extinction. Trends in Ecology and Evolution 14: 450–453.

Minissale P, Magro V, Raimondo FM (2019) Why did *Acanthus mollis*, native to West Mediterranean, become a so relevant artistic and symbolic element arising from ancient Greece? Flora Mediterranea 29: 119–128.

Mucina L, Bültmann H, Dierßen K, Theurillat J-P, Raus T, Čarni A, et al. (2016) Vegetation of Europe: hierarchical floristic classification system of vascular plant, bryophyte, lichen, and algal communities. Applied Vegetation Science 19: 3–264.

Myśliwy M (2014) Plant invasions across different habitat types at floristic survey. Applied Ecology and Environmental Research 12(1): 193–207.

Olaczek R (1982) Synanthropization of phytocoenoses. Memorabilia Zoologica 37: 93–112.

Parmesan C, Yohe G (2003) A globally coherent fingerprint of climate change impacts across natural systems. Nature 421: 37.

Pearce F (2015) The new wild: why invasive species will be nature's salvation. Beacon press, Boston, 245 pp.

Pellizzari M (2020) *Cyperus* sp. pl. vegetation in the eastern Po River. Plant Sociology 57(1). https://doi.org/10.3897/pls2020571/06

Perkins LB, Nowak RS (2013) Invasion syndromes: hypotheses on relationships among invasive species attributes and characteristics of invaded sites. Journal of Arid Land 5(3): 275–283.

Perna C, Burrows D (2005) Improved dissolved oxygen status following removal of exotic weed mats in important fish habitat lagoons of the tropical Burdekin River floodplain, Australia. Marine Pollution Bulletin 51: 138–148.

Pignatti S, Mengarda F (1962) Un nuovo procedimento per l'elaborazione delle tabelle fitosociologiche. Acc. Naz. Lincei, Rend. cl. Sc. fis. mat. nat. (s.8) 32: 215–222.

Pino J, Seguì JM, Alvarez N (2006) Invasibility of four plant communities in the Llobregat delta (Catalonia, NE of Spain) in relation to their historical stability. Hydrobiologia 570: 257–263.

Pino J, Font X, De Cáceres M, Molowny-Horas R (2009) Floristic homogenization by native ruderal and alien plants in north-east Spain: the effect of environmental differences on a regional scale. Global Ecology and Biogeography 18(5): 563–574.

Poldini L (1989) La vegetazione del Carso isontino e triestino. Ed. Lint, Trieste, 315 pp.

Poldini L (1991) Atlante corologico delle piante vascolari nel Friuli-Venezia Giulia. Inventario floristico regionale. Regione Autonoma Friuli-Venezia Giulia - Direzione Regionale Foreste e Parchi, Università degli Studi di Trieste, Dipartimento di Biologia, Udine, 900 pp.

Poldini L (2002) Nuovo atlante corologico delle piante vascolari nel Friuli Venezia Giulia. Regione Autonoma Friuli-Venezia Giulia - Azienda Parchi e Foreste regionale, Università degli Studi di Trieste, Dipartimento di Biologia, Udine, 529 pp.

Poldini L (2009) Guide alla Flora - IV. La diversità vegetale del Carso fra Trieste e Gorizia. Lo stato dell'ambiente. Le guide di Dryades 5 - Serie Florae IV (F - IV). Ed. Goliardiche, Trieste, 732 pp.

Poldini L, Vidali M (1989) Studio dell'antropizzazione del Carso triestino e goriziano mediante l'uso della Banca Dati Floristica. Informatore Botanico Italiano 21(1-3): 224–234.

Poldini L, Lagonegro M, Ganis P, Vidali M (1985) Flora computerizzata del Carso triestino e goriziano. In: Poldini L (Ed.), Studio naturalistico del Carso triestino e goriziano. Regione Autonoma Friuli-Venezia Giulia, Università di Trieste, Trieste, 39-52.

Poldini L, Martini F, Ganis P, Vidali M (1991) Floristic databanks and the phytogeographic analysis of a territory. An example concerning northeastern Italy. In: Nimis PL, Crovello TJ (Eds.), Quantitative Approaches to Phytogeography. Tasks for Vegetation Science 24. Kluwer Academic Publishes, The Hague - Boston – London, 159-181.

Poldini L, Rizzi Longo L, Pizzulin Sauli M (1999) Le cenosi sinantropiche di Trieste. I. Indagine sui biotopi antropizzati lungo la direttrice dello scirocco. Bollettino della Società Adriatica di Scienze in Trieste 78(1997-98): 227–276.

Poponessi S, Aleffi M, Gigante D, Venanzoni R (2016) Updates on the bryophyte flora of the lowland woods and temporary ponds west of Lake Trasimeno (Central Italy). Flora Mediterranea 26: 151–162.

Poponessi S, Aleffi M, Maneli F, Venanzoni R, Gigante D (2018) Bryophytic vegetation of fragile and threatened ecosystems: the case of the Mediterranean temporary ponds in inland Central Italy. Plant Sociology 55(1): 31–44.

Prisco I, Stanisci A, Acosta ATR (2016) Mediterranean dunes on the go: Evidence from a short term study on coastal herbaceous vegetation. Estuarine, Coastal and Shelf Science 182: 40–46.

Puglisi M, Minissale P, Sciandrello S, Privitera M (2016) The bryophyte vegetation of the Mediterranean temporary ponds in Italy. Plant Sociology 52(2): 69–78.

Pyšek P, Chytrý M (2014) Habitat invasion research: where vegetation science and invasion ecology meet. Journal of Vegetation Science 25: 1181–1187.

Pyšek P, Prach K, (1993) Plant invasion and the role of riparian habitats: a comparison of four species alien to central Europe. Journal of Biogeography 20: 413–420.

Pyšek P, Richardson DM (2006) The biogeography of naturalization in alien plants. Journal of Biogeography 33: 2040–2050.

Pyšek P, Chytrý M, Jarosík V (2010a) Habitats and land-use as determinants of plant invasions in the temperate zone of Europe. In: Perrings C, Mooney HA, Williamson M (Eds.), Bioinvasions and globalization: ecology, economics, management and policy. Oxford University Press, Oxford, UK, 66-79.

Pyšek P, Jarošik V. Kucera T (2002) Patterns of invasion in temperate nature reserves. Biological Conservation 104: 13–24.

Pyšek P, Jarošik V, Chytrý M, Kropác Z, Tichý L, Wild J (2005) Alien plants in temperate weed communities: prehistoric and recent invaders occupy different habitats. Ecology 86: 772–785.

Pyšek P, Jarošik V, Hulme PE, Kuehn I, Wild J, Arianoutsou M, et al. (2010b). Disentangling the role of environmental and human pressures on biological invasions across Europe. Proceedings of the National Academy of Sciences USA 107: 12157–12162.

Pyšek P, Jarošík V, Hulme PE, Pergl J, Hejda M, Schaffner Vilà M (2012) A global assessment of alien invasive plant impacts on resident species, communities and ecosystems: the interaction of impact measures, invading species' traits and environment. Global Change Biology18: 1725–1737.

Pyšek P, Lambdon PW, Arianoutsou M, Kühn I, Pino J, Winter M (2009) Alien Vascular Plants of Europe. In: DAISIE, Handbook of alien species in Europe. Springer, Dordrecht, The Netherlands, 43-61.

Rauchich J, Reader RJ (1999) An experimental study of wetland invisibility by purple loosestrife (*Lythrum salicaria*). Canadian Journal of Botany 77: 1499–1503.

Rejmánek M (1989) Invasibility of plant communities. In: Drake JA, Mooney HA, di Castri F, Groves RH, Kruger FJ, Rejmánek M, Williamson M (Eds.), Biological invasions: a global perspective. Wiley, Chichester, UK, 369-388.

Rejmánek M, Richardson DM, Pyšek P (2005) Plant invasions and invasibility of plant communities. In: Van der Maarel E (Ed.), Vegetation Ecology. Blackwell, Oxford, 332-355.

Ricciardi A, MacIsaac HJ (2011) Impacts of Biological Invasions on Freshwater Ecosystems. In: Richardson DM (Ed.), Fifty Years of Invasion Ecology: The Legacy of Charles Elton. Wiley-Blackwell, Chichester, 211-224.

Ricciardi A, Ryan R (2018) The exponential growth of invasive species denialism. Biological Invasions 20(3): 549–553.

Richardson DM (Ed.) (2011) Fifty Years of Invasion Ecology: The Legacy of Charles Elton. Wiley-Blackwell, Chichester.

Richardson DM, Pyšek P (2006) Plant invasions: merging the concepts of species invasiveness and community invasibility. Progress in Physical Geography 30: 409–431.

Richardson DM, Ricciardi J (2013) Misleading criticisms of invasion science: a field guide. Diversity and Distributions 19: 1461–1467.

Richardson DM, Carruthers J, Hui C, Impson FA, Miller JT, Robertson MP, et al. (2011) Human-mediated introductions of Australian acacias - a global experiment in biogeography. Diversity and Distributions 17: 771–787.

Richardson DM, Pyšek P, Rejmanek M, Barbour MG, Panetta FD, West CJ (2000) Naturalization and invasion of alien plants: concepts and definitions. Diversity and Distributions 6: 93–107.

Rommens W, Maes J, Dekeza N, Inghelbrecht P, Nhiwatiwa T, Holsters E, et al. (2003) The impact of water hyacinth (*Eichhornia crassipes*) in a eutrophic subtropical impoundment (Lake Chivero, Zimbabwe). I. Water quality. Archiv für Hydrobiologie 158: 373–388.

Rouget M, Hui C, Renteria J, Richardson DM, Wilson JRU (2015) Plant invasions as a biogeographical assay: Vegetation biomes constrain the distribution of invasive alien species assemblages. South African Journal of Botany 101: 24–31.

Russell JC, Blackburn TM (2017) The rise of invasive species denialism. Trends in Ecology and Evolution 32(1): 3–6.

Santoro R, Jucker T, Carboni M, Acosta ATR (2012) Patterns of plant community assembly in invaded and non-invaded communities along a natural environmental gradient. Journal of Vegetation Science 23(3): 483–494.

Sarmati S, Bonari G, Angiolini C (2019) Conservation status of Mediterranean coastal dune habitats: anthropogenic disturbance may hamper habitat assignment. Rendiconti Lincei Scienze Fisiche e Naturali 30(3): 623–636.

Schmitz DC, Simberloff D, Hofstetter RH, Haller W, Sutton D (1997) The ecological impact of nonindigenous plants. In: Simberloff D, Schmitz DC, Brown TC (Eds.), Strangers in Paradise: Impact and Management of Nonindigenous Species in Florida. Island Press, Washington D.C., 39-61.

Seebens H, Blackburn TM, Dyer EE, Genovesi P, Hulme PE, Jeschke JM, et al. (2017) No saturation in the accumulation of alien species worldwide. Nature Communications 8: 14435.

Seebens H, Blackburn TM, Dyer EE, Genovesi P, Hulme PE, Jeschke JM, et al. (2018) Global rise in emerging alien species results from increased accessibility of new source pools. Proceedings of the National Academy of Sciences USA 115(10): E2264-E2273.

Sîrbu C, Oprea A (2011) Contribution to the study of plant communities dominated by *Ailanthus altissima* (Mill.) Swingle, in the Eastern Romania (Moldavia). Cercetări Agronomice în Moldova 44(3/147): 51–74.

Sitzia T., Campagnaro T, Kotze DJ, Nardi S, Ertani A (2018) The invasion of abandoned fields by a major alien tree filters understory plant traits in novel forest ecosystems. Scientific Reports 8(1): 1–10.

Smith MD, Wilcox JC, Kelly T, Knapp AK (2004) Dominance not richness determines invasibility of tallgrass prairie. Oikos 106: 253–262.

Souza-Alonso P, Guisande-Collazo A, Lechuga-Lago Y, González L (2019) The necessity of surveillance: medium-term viability of *Carpobrotus edulis* propagules after plant fragmentation. Plant Biosystems 153(5): 736–739.

Sperandii MG, Prisco I, Acosta ATR (2018) Hard times for Italian coastal dunes: insights from a diachronic analysis based on random plots. Biodiversity and Conservation 27: 633–646.

Stinca A, Chianese G, D'Auria G, Del Guacchio E, Fascetti S, Perrino EV, et al. (2017) New alien vascular species for the flora of southern Italy. Webbia 72(2): 295–301.

Stinca A, Chirico GB, Incerti G, Bonanomi G (2015) Regime Shift by an Exotic Nitrogen-Fixing Shrub Mediates Plant Facilitation in Primary Succession. PLoS ONE 10(4): e0123128.

Theurillat JP, Willner W, Fernández-González F, Bültmann H, Čarni A, Gigante D, et al. (2020) International Code of Phytosociological Nomenclature. 4th edition. Applied Vegetation Science. doi: 10.1111/avsc.12491

Ubaldi D (2003) Flora, fitocenosi e ambiente. Elementi di Geobotanica e Fitosociologia. Clueb, Bologna, 334 pp.

Uboni C, Tordoni E, Brandmayr P, Battistella S, Bragato G, Castello M, et al. (2019) Exploring cross-*taxon* congruence between carabid beetles (*Coleoptera*: *Carabidae*) and vascular plants in sites invaded by *Ailanthus altissima* versus non-invaded sites: The explicative power of biotic and abiotic factors. Ecological Indicators 103: 145–155.

Valley RD, Bremigan MT (2002) Effect of macrophyte bed architecture on largemouth bass foraging: implications of exotic macrophyte invasions. Transactions of the American Fisheries Society 131: 234–244.

Van Kleunen M, Dawson W, Maurel N (2015) Characteristics of successful alien plants. Molecular Ecology 24: 1954–1968.

Viciani D, Dell'Olmo L, Ferretti G, Lazzaro L, Lastrucci L, Foggi B (2016) Detailed Natura 2000 and Corine Biotopes habitat maps of the island of Elba (Tuscan Archipelago, Italy). Journal of Maps 12(3): 492–502.

Vilà M, Hulme PE (Eds.) (2017) Impact of biological invasions on ecosystem services. Vol. 12. Springer, Cham, Switzerland.

Vilà M, Espinar JL, Hejda M, Hulme PE, Jarošík V, Maron JL, et al. (2011) Ecological impacts of invasive alien plants: a meta-analysis of their effects on species, communities and ecosystems. Ecology Letters 14(7): 702–708.

Vítková M, Kolbek J (2010) Vegetation classification and synecology of Bohemian *Robinia pseudacacia* stands in a Central European context. Phytocoenologia 40(2-3): 205–241.

Vítková M, Müllerová J, Sádlo J, Pergl J, Pyšek P (2017) Black locust (*Robinia pseudoacacia*) beloved and despised: A story of an invasive tree in Central Europe. Forest Ecology and Management 384: 287–302.

Vitousek PM (1986) Biological invasions and ecosystem properties: can species make a difference? In: Mooney HA, Drake J (Eds.), Ecology of biological invasions of North America and Hawaii. Springer Verlag, New York, 163-176.

Vitousek PM, D'Antonio CM, Loope LL, Rejmanek M, Westbrooks R (1997) Introduced species: a significant component of human-caused global change. New Zealand Journal of Ecology 21: 1–16.

Walter J, Essl F, Englisch T, Kiehn M (2005) Neophytes in Austria: habitat preferences and ecological effects. Neobiota 6: 13–25.

Weber E (2003) Invasive plant species of the world: a reference guide to environmental weeds. CAB International Publ., Wallingford.

Weber HE, Moravec J, Theurillat JP (2000) International Code of Phytosociological Nomenclature. 3rd edition. Journal of Vegetation Science 11: 739–768.

Williamson M (1996) Biological invasions. Chapman and Hall, London.

Wilson SJ, Ricciardi A (2009) Epiphytic macroinvertebrate communities on Eurasian watermilfoil (*Myriophyllum spicatum*) and native milfoils *Myriophyllum sibiricum* and *Myriophyllum alterniflorum* in eastern North America. Canadian Journal of Fisheries and Aquatic Sciences 66: 18–30.

Wilson JRU, Richardson DM, Rouget M, Procheş Ş, Amis MA, Henderson L, Thuiller W (2007) Residence time and potential range: crucial considerations in modelling plant invasions. Diversity and Distributions 13: 11–22.

Appendixes

Appendix I – Alien-dominated and co-dominated plant communities in Italy (*Syntaxa* authors are abbreviated according to Izco 2002)

Class	Order	Alliance	Association/Phytocoenon	Reference number in the specific bibliographical list of Supplement 1
2 LEMNETEA MINORIS O. Bolòs & Masclans 1955				
	2.1 *LEMNETALIA MINORIS* O. Bolòs & Masclans 1955			
			Lemna minuta community	115
		2.1.1 **Lemnion minoris** O. Bolòs & Masclans 1955		
			Azollo filiculoidis-Lemnetum minuscolae Felzines & Loiseau 1991	82, 83, 90
			Ceratophyllo-Azolletum filiculoidis Nedelcu 1967	56, 58
			Lemna minuta community	110
			Lemnetum minuto-gibbae Liberman Cruz, Pedrotti & Venanzoni 1988	56
			Lemno-Azolletum filiculoidis Br.-Bl. 1952	40, 115
3 POTAMETEA PECTINATI Klika in Klika & V. Novák 1941				
	3.1 *POTAMETALIA PECTINATI* Koch 1926			
		3.1.1 **Potamion pectinati** (Koch 1926) Libbert 1931		
			Callitricho-Elodeetum canadensis Passarge 1964 ex Passarge 1994	39
			Elodea canadensis and *Potamogeton crispus* community	91
			Elodea nuttallii community	28
			Elodeo-Potametum crispi (Pignatti 1953) Passarge 1994	40
			Elodeo-Ranunculetum Richard 1975	114
			Lagarosiphon major community	28
			Myriophyllum aquaticum community	64
			Potametum crispi Soó 1927 *Myriophyllum aquaticum* variant	64
			Potametum lucentis Hueck 1931 *Lagarosiphon major* variant	116
		3.1.2 **Nymphaeion albae** Oberdorfer 1957		
			Hydrocotyletum ranunculoidis Corbetta & Lorenzoni 1976	42

Class	Order	Alliance	Association/Phytocoenon	Reference number in the specific bibliographical list of Supplement 1
		3.1.3 **Ranunculion aquatilis** Passarge 1964		
			Callitriche stagnalis and *Myriophyllum aquaticum* community	64
			Lemno-Callitrichetum cophocarpae (Mierwald 1988) Passarge 1992 *Myriophyllum aquaticum* variant	64
12 BIDENTETEA TRIPARTITAE Tüxen, Lohmeyer & Preising ex Von Rochow 1951				
	12.1 *BIDENTETALIA TRIPARTITAE* Br.-Bl. & Tüxen ex Klika in Klika & Hadac 1944			
		12.1.1 **Bidention tripartitae** Nordhagen 1940		
			Bidens frondosus community	57
			Bidenti-Polygonetum mitis (Von Rochow 1951) Tüxen 1979 *Bidens frondosa* variant	126
			Bidenti-Polygonetum mitis (Von Rochow 1951) Tüxen 1979 *echinochloetosum crus-galli* Baldoni & Biondi 1993	15
			Polygonetum hydropiperis Passarge 1965 *Bidens frondosus* facies	61
			Xanthio italici-Polygonetum persicariae O. Bolòs 1957	61, 60
			Xanthio italici-Persicarietum maculosae O. Bolòs 1957 nom. mut. propos. *Abutilon theophrasti* variant	59
			Xanthium orientale subsp. *italicum* community	46
		12.1.2 **Chenopodion rubri** (Tüxen 1960) Hilbig & Jage 1972		
			Cyperetum esculenti Wisskirchen 1995	62
			Polygono-Xanthietum italici Pirola & Rossetti 1974	1, 7, 13, 20, 29, 38, 43, 44, 46, 53, 55, 63, 68, 70, 75, 76, 81, 92, 94, 95
			Polygono-Xanthietum italici Pirola & Rossetti 1974 *Ambrosia artemisiifolia* variant	4
16 PHRAGMITO AUSTRALIS-MAGNOCARICETEA ELATAE Klika in Klika & V. Novák 1941				
	16.1 *PHRAGMITETALIA AUSTRALIS* Koch 1926			
		16.1.1 **Phragmition communis** Koch 1926		
			Scirpetum maritimi (Christiansen 1934) Tüxen 1937 *Paspalum distichum* variant	60
	16.3 *MAGNOCARICETALIA ELATAE* Pignatti 1953			
		16.3.1 **Magnocaricion elatae** Koch 1926		
			Cyperus eragrostis community	16
			Cyperus glomeratus community	43
	16.5 *NASTURTIO OFFICINALIS-GLYCERIETALIA FLUITANTIS* Pignatti 1953			
		16.5.1 **Glycerio fluitantis-Sparganion neglecti** Br.-Bl. & Sissingh in Boer 1942		
			Eleocharitetum palustris Schennikov 1919 *paspaletosum paspaloidis* Biondi et al. 2002	25
20 EUPHORBIO PARALIAE-AMMOPHILETEA AUSTRALIS Géhu & Rivas-Martínez in Rivas-Martínez, Asensi, Díaz-Garretas, Molero, Valle, Cano, Costa & T.E. Díaz 2011				
	20.1 *AMMOPHILETALIA AUSTRALIS* Br.-Bl. 1933			
		20.1.1 **Ammophilion australis** Br.-Bl. 1933 em. Géhu & Géhu-Franck 1988		
			Carpobrotus acinaciformis community	88

Class	Order	Alliance	Association/Phytocoenon	Reference number in the specific bibliographical list of Supplement 1
			Carpobrotus edulis community	88
			Xanthietum-Ammophiletum Pignatti 1953	91
21 CAKILETEA MARITIMAE Tüxen & Preising ex Br.-Bl. & Tüxen 1952				
	21.1 *EUPHORBIETALIA PEPLIS* Tüxen 1950			
		21.1.1 **Euphorbion peplis** Tüxen 1950		
			Cakilo-Xanthietum italici Pignatti 1953	1, 9, 12, 38, 91, 93
			Salsolo kali-Cakiletum maritimae Costa et Mansanet 1981 corr. Rivas-Martínez et al. 1992 *xanthietosum* (Pignatti 1953) Géhu & Scoppola 1984	17, 24, 48, 70, 91,106
			Xanthio italici-Cenchretum incerti Biondi, Brugiapaglia, Allegrezza & Ballelli 1992	24, 100, 109
			Xanthio italici-Cenchretum longispini Poldini et al. 1999	100, 106
22 HELICHRYSO-CRUCIANELLETEA MARITIMAE (Sissingh 1974) Géhu, Rivas-Martínez & & Tüxen 1973 em. Sissingh 1974				
	22.1 *HELICHRYSO-CRUCIANELLETALIA MARITIMAE* Géhu, Rivas-Martínez & Tüxen 1973 em. Sissingh 1974			
		22.1.1 **Crucianellion maritimae** Rivas Goday & Rivas-Martínez 1958		
			Crucianello-Helichrysetum microphylli Bartolo, Brullo, De Marco, Dinelli, Signorello & Spampinato 1992 *Carpobrotus acinaciformis* variant	125
			Ephedro-Helichrysetum microphylli Valsecchi & Bagella 1991 *Carpobrotus acinaciformis* variant	125
31 PARIETARIETEA JUDAICAE Oberdorfer 1977				
	31.1 *TORTULO-CYMBALARIETALIA* Segal 1969			
		31.1.1 **Parietarion judaicae** Segal 1969		
			Cheiranthetum cheirii Segal 1962	46
			Erigeronetum karvinskiani Oberdorfer 1969	46, 54, 70
33 THLASPIETEA ROTUNDIFOLII Br.-Bl. 1948				
	33.6 *EPILOBIETALIA FLEISCHERI* Moor 1958			
			Oenothera biennis and *Scrophularia canina* community	114
34 ARTEMISIETEA VULGARIS Lohmeyer, Preising & Tüxen ex Von Rochow 1951				
			Sporobolus vaginiflorus community	104
			Senecio mikanioides community	101
			Helianthus tuberosus community	99, 104
			Solidago gigantea community	70, 120
			Senecio inaequidens community	99
	34.1 *ARCTIO LAPPAE-ARTEMISIETALIA VULGARIS* Dengler 2002			
		34.1.1 **Arction lappae** Tüxen 1937		
			Artemisietum verlotorii Lang 1973	41, 99, 101
			Arundo donax community	43
			Saponario-Artemisietum verlotorum Biondi & Baldoni 1993	15, 63, 72
			Sileno albae-Acanthetum mollis Biondi, Allegrezza & Filigheddu 1990	21

Class	Order	Alliance	Association/Phytocoenon	Reference number in the specific bibliographical list of Supplement 1
	34.2 *AGROPYRETALIA INTERMEDII-REPENTIS* Oberdorfer, Müller & Görs in Müller & Görs 1969			
		34.2.1 **Convolvulo arvensis-Agropyrion repentis** Görs 1966		
			Artemisia verlotiorum community	13, 127
			Sorghum halepense community	46
	34.4 *BRACHYPODIO RAMOSI-DACTYLETALIA HISPANICAE* Biondi, Filigheddu & Farris 2001			
		34.4.4 **Bromo-Oryzopsion miliaceae** O. Bolòs 1970		
			Boerhaavio-Oryzopsietum miliaceae Brullo 1984	33
	34.5 *ONOPORDETALIA ACANTHII* Br.-Bl. & Tüxen ex Klika in Klika & Hadač 1944			
			Reynoutria japonica community	118
			Artemisia verlotiorum community	104
			Helianthus tuberosus community	29
			Senecio inaequidens community	29
			Solidago gigantea community	29
		34.5.1 **Onopordion acanthii** Br.-Bl. in Br.-Bl., Gajewski, Wraber & Walas 1936		
			Erigeron canadense and *Broussonetia papyrifera* community	91
		34.5.2 **Dauco carotae-Melilotion albi** Görs 1966		
			Artemisia verlotiorum community	47, 118
			Artemisio absinthii-Senecionetum inaequidentis Pirone 2001	45, 96
			Echio-Melilotetum Tüxen 1947 *Senecio inaequidens* and *Erigeron annuus* variant	30
			Echio-Melilotetum Tüxen 1947 *Oenothera biennis* (aggr.) variant	31
			Erigeron annuus community	78
			Helianthus tuberosus community	29
			Oenothera biennis community	123
			Senecio inaequidens community	29, 31, 129
			Solidago gigantea community	29
	34.6 *CARTHAMETALIA LANATI* Brullo in Brullo & Marcenò 1985			
		34.6.2 **Onopordion illyrici** Oberdorfer 1954		
			Carduo pycnocephali-Nicotianetum glaucae Biondi, Blasi, Brugiapaglia, Fogu & Mossa 1994	23
36 ORYZETEA SATIVAE Miyawaki 1960				
	36.1 *CYPERO DIFFORMIS-ECHINOCHLOETALIA ORYZOIDIS* O. Bolòs & Masclans 1955			
		36.1.1 **Oryzo sativae-Echinochloion oryzoidis** O. Bolòs & Masclans 1955		
			Heteranthera sp.pl. community	39
37 PEGANO HARMALAE-SALSOLETEA VERMICULATAE Br.-Bl. & O. Bolòs 1958				
	37.2 *NICOTIANO GLAUCAE-RICINETALIA COMMUNIS* Rivas-Martínez, Fernández-González & Loidi 1999			
		37.2.1 **Nicotiano glaucae-Ricinion communis** Rivas-Martínez, Fernández-González & Loidi 1999		
			Nicotiano glaucae-Ricinetum communis (Br.-Bl. & Maire 1924) de Foucault 1993	37, 87
			Polycarpo-Nicotianetum glaucae Sunding 1972	37

Class	Order	Alliance	Association/Phytocoenon	Reference number in the specific bibliographical list of Supplement 1
38 POLYGONO ARENASTRI-POETEA ANNUAE Rivas-Martínez 1975 corr. Rivas-Martínez, Báscones, T.E. Díaz, Fernández-González & Loidi 1991				
			Eleusinetum indicae (Slavnic 1951) Pignatti 1953	30
			Euphorbio-Oxalidetum corniculatae Lorenzoni 1964	30
	38.2 *SAGINO APETALAE-POLYCARPETALIA TETRAPHYLLI* de Foucault 2010			
		38.2.1 **Polycarpion tetraphylli** Rivas-Martínez 1975		
			Eleusine indica community	91
			Eleusinetum indicae (Slavnic 1951) Pignatti 1953	46, 70, 99, 104
			Euphorbietum maculatae Poldini 1989	70, 99, 101, 104
			Euphorbio-Oxalidetum corniculatae Lorenzoni 1964	38, 99, 101
39 STELLARIETEA MEDIAE Tüxen, Lohmeyer & Preising ex Von Rochow 1951				
	39a.3 *SOLANO NIGRI-POLYGONETALIA CONVOLVULI* (Sissingh in Westhoff, Dijk, Passchier & Sissingh 1946) O. Bolòs 1962			
		39a.3.1 **Digitario ischaemi-Setarion viridis** Sissingh in Westhoff, Dijk, Passchier & Sissingh 1946		
			Amarantho-Chenopodietum albi (Morariu 1943) Soó 1957	101
			Amarantho-Digitarietum sanguinalis Pignatti 1953	67, 71, 91, 101
			Chenopodium album and *Amaranthus retroflexus* community	99
			Cynodonto-Sorghetum halepensis (Laban 1974) Kojic 1979	38
			Echinochloo-Setarietum pumilae Felföldy 1942 corr. Mucina 1993 *xanthietosum italici* Poldini et al. 1998	105
			Oxalido-Chenopodietum polyspermi (Br.-Bl. 1921) Sissingh (1942) 1946 (*)	66, 67, 91
			Oxalido-Chenopodietum polyspermi (Br.-Bl. 1921) Sissingh (1942) 1946 *Galinsoga parviflora* (*) subassociation	66
			Panico sanguinalis-Polygonetum persicariae Pignatti 1953 *sorghetosum halepensis* Baldoni 1995 (*)	14
			Panico sanguinalis-Polygonetum persicariae Pignatti 1953 *Acalypha virginica* (*) facies	67
			Panico sanguinalis-Polygonetum persicariae Pignatti 1953 *Echinochloa oryzoides* (*) facies	66
			Panico sanguinalis-Polygonetum persicariae Pignatti 1953 *Panicum capillare* (*) subassociation	66
			Panico sanguinalis-Polygonetum persicariae Pignatti 1953 *Datura stramonium* and *Portulaca oleracea* (*) variant	51
			Panico sanguinalis-Polygonetum persicariae Pignatti 1953 *Bolboschoenus maritimus* and *Paspalum distichum* (*) variant	51
			Euphorbio-Galinsogetum ciliatae Passarge 1981	79
			Galeopsido tetrahit-Galinsogetum parviflorae Poldini et al. 1998	105
			Galinsogo-Portulacetum Br.-Bl. 1949 ex Pedrotti 1959	78, 91
			Setario-Echinochloetum colonum A. & O. Bolòs ex O. Bolòs 1956	34, 38
			Setario-Galinsogetum parviflorae (Beck 1941) Tüxen 1950 em. Müller & Oberdorfer	70
			Setario ambiguae-Cyperetum rotundi Brullo, Scelsi & Spampinato 2001	38
		39a.3.3 **Diplotaxion erucoidis** Br.-Bl. in Br.-Bl., Gajewski, Wraber & Walas 1936 em. Brullo & Marcenò 1980		
			Amaranthus retroflexus community	86
		39a.3.5 **Fumarion wirtgenii-agrariae** Brullo in Brullo & Marcenò 1985		
			Oxalis pes-caprae community	85, 87

Class	Order	Alliance	Association/Phytocoenon	Reference number in the specific bibliographical list of Supplement 1
	39b.1 *CHENOPODIETALIA MURALIS* Br.-Bl. in Br.-Bl., Gajewski, Wraber & Walas 1936			
		39b.1.1 **Chenopodion muralis** Br.-Bl. in Br.-Bl., Gajewski, Wraber & Walas 1936		
			Amarantho blitoidis-Chenopodietum ambrosoidis O. Bolòs 1967	46
			Amarantho muricati-Chenopodietum ambrosioidis O. Bolòs 1967	34
			Amarantho-Chenopodietum ambrosioidis O. Bolòs 1967	34, 38, 99
			Conyzetum albidae-canadensis Baldoni & Biondi 1993 *Lolium multiflorum* variant	8
			Conyzetum albido-canadensis Baldoni & Biondi 1993	46, 101
			Conyzo canadensis-Oenotheretum biennis Biondi, Brugiapaglia, Allegrezza & Ballelli 1992	24
			Xanthio italici-Daturetum stramoni Fanelli 2002	46
			Amaranthus deflexus and *Polycarpon tetraphyllon* community	91
			Datura stramonium community	21
	39b.2 *THERO-BROMETALIA* (Rivas Goday & Rivas-Martínez ex Esteve 1973) O. Bolòs 1975			
		39b.2.1 **Echio plantaginei-Galactition tomentosae** O. Bolòs & Molinier 1969		
			Erigeron canadensis community	121
			Galactito-Isatidetum canescentis Brullo 1983	32
	39b.3 *SISYMBRIETALIA OFFICINALIS* J. Tüxen ex W. Matuszkiewicz 1962			
		39b.3.1 **Sisymbrion officinalis** Tüxen, Lohmeyer & Preising ex Von Rochow 1951		
			Artemisietum annuae Fijalcowski 1967	30
			Artemisietum annuae Fijalcowski 1967 *ambrosietosum* Siniscalco & Montacchini 1989	118, 119
			Conyzo-Lactucetum serriolae Lohmeyer in Oberdorfer 1957	3, 31, 104
			Datura stramonium and *Malva neglecta* community	67, 91
			Erigeron canadensis community	70, 86
		39b.3.2 **Hordeion leporini** Br.-Bl. in Br.-Bl., Gajewski, Wraber & Walas 1936 corr. O. Bolòs 1962		
			Bassia scoparia and *Chenopodium ambrosioides* community (**)	91
	39b.4 *URTICO-SCROPHULARIETALIA PEREGRINAE* Brullo ex Biondi, Blasi, Casavecchia & Gasparri in Biondi, Allegrezza, Casavecchia, Galdenzi, Gasparri, Pesaresi, Vagge & Blasi 2014			
			Oxalis pes-caprae community	70
		39b.4.1 **Veronico-Urticion urentis** Brullo in Brullo & Marcenò 1985		
			Bromo-Brassicetum sylvestris Brullo & Marcenò 1985	34
40 GALIO APARINES-URTICETEA DIOICAE Passarge ex Kopecký 1969				
			Artemisia verlotiorum community	30
	40.1 *GALIO APARINES-ALLIARIETALIA PETIOLATAE* Oberdorfer ex Görs & Müller 1969			
			Robinia pseudoacacia community	39
		40.1.1 **Petasition officinalis** Sill. 1933 em. Kopecký 1969		
			Robinia pseudoacacia community	5
		40.1.2 **Geo-Alliarion** Lohmeyer & Oberdorfer ex Görs & Müller 1969		
			Solidago canadensis community	5, 89
		40.1.5 **Allion triquetri** O. Bolòs 1967		
			Acantho-Smyrnietum olusatri Brullo & Marcenò 1985	34, 70
			Acanthus mollis community	70, 117

Class	Order	Alliance	Association/Phytocoenon	Reference number in the specific bibliographical list of Supplement 1
41 FILIPENDULO ULMARIAE-CONVOLVULETEA SEPIUM Géhu & Géhu-Franck 1987				
	41.1 *CALYSTEGIETALIA SEPIUM* Tüxen ex Mucina 1993 nom. mut. propos. Rivas-Martínez, T.E. Díaz, Fernandez-Gonzales, Izco, Loidi, Lousã & Penas 2002			
			Reynoutria japonica community	31
			Helianthus tuberosus community	31
			Solidago canadensis and *Erigeron annuus* community	31
			Erigeron annuus community	31
		41.1.1 **Calystegion sepium** Tüxen ex Oberdorfer 1957 nom. mut. propos. Rivas-Martínez, T.E. Díaz, Fernandez-Gonzales, Izco, Loidi, Lousã & Penas 2002		
			Amorpha fruticosa community	81
			Artemisia verlotiorum community	127
			Arundini-Convolvuletum sepium (Tüxen & Oberdorfer) O. Bolòs 1962 *Artemisia verolotiorum* variant	72
			Arundini-Convolvuletum sepium (Tüxen & Oberdorfer 1958) O. Bolòs 1962	11, 15, 34, 40, 46, 80, 99, 101
			Arundo donax community	43
			Calystegio sylvaticae-Arundinetum donacis Brullo, Scelsi & Spampinato 2001	35, 38, 73, 84, 85, 87
			Calystegio-Asteretum lanceolati (Holzner et al. 1978) Passarge 1993	63
			Helianthus tuberosus community	15, 63, 71, 127
			Humulus scandens communtity	39
			Rubus caesius and *Amorpha fruticosa* community	89
			Solidago canadensis community	81, 83
			Solidago gigantea community	39, 63, 127
50 TUBERARIETEA GUTTATAE (Br.-Bl. in Br.-Bl., Roussine & Nègre 1952) Rivas Goday & Rivas-Martínez 1963 nom. mut. propos. Rivas-Martínez, T.E. Díaz, Fernández-González, Izco, Loidi, Lousa & Penas 2002				
	50.2 *MALCOLMIETALIA* Rivas Goday 1958			
		50.3.2 **Laguro ovati-Vulpion fasciculatae** Géhu & Biondi 1994		
			Ambrosio coronopifoliae-Lophochloetum pubescentis Biondi, Brugiapaglia, Allegrezza & Ballelli 1992	95, 99, 102
			Sileno coloratae-Vulpietum membranaceae (Pignatti 1953) Géhu & Scoppola 1984 *ambrosietosum coronopifoliae* Pirone 2005	97
55 LYGEO SPARTI-STIPETEA TENACISSIMAE Rivas-Martínez 1978 nom. conserv. propos. Rivas-Martínez, T.E. Díaz, Fernández-González, Izco, Loidi, Lousa & Penas 2002				
	55.2 *HYPARRHENIETALIA HIRTAE* Rivas-Martínez 1978			
		55.2.1 **Hyparrhenion hirtae** Br.-Bl., P. Silva & Rozeira 1956		
			Penniseto setacei-Hyparrhenietum hirtae Gianguzzi, Ilardi & Raimondo 1996	36, 52
56 MOLINIO-ARRHENATHERETEA Tüxen 1937				
	56.4 *HOLOSCHOENETALIA VULGARIS* Br.-Bl. ex Tchou 1948			
		56.4.4 **Paspalo distichi-Agrostion semiverticillatae** Br.-Bl. in Br.-Bl., Roussine & Nègre 1952		
			Aster squamatus and *Inula viscosa* community	94
			Loto tenuis-Paspaletum paspaloidis Biondi, Casavecchia & Radetic 2002	25, 68
			Paspalo distichi-Polypogonetum viridis Br.-Bl. in Br.-Bl., Gajewski, Wraber & Walas 1936 nom. mut. propos. Rivas-Martínez et al. 2002 (= *Paspalo distichi-Agrostidetum verticillati* Br.-Bl. in Br.-Bl., Roussine & Nègre 1952)	15, 41, 46, 60, 61, 63, 68, 70, 76, 93, 94, 95, 99, 101, 115

Class	Order	Alliance	Association/Phytocoenon	Reference number in the specific bibliographical list of Supplement 1
			Paspalo distichi-Polypogonetum viridis Br.-Bl. in Br.-Bl., Gajewski, Wraber & Walas 1936 nom. mut. propos. Rivas-Martínez et al. 2002 facies with *Cyperus eragrostis*	63
			Paspalum distichum (= *paspaloides*) community	19, 81, 103
	56.5 *PLANTAGINETALIA MAJORIS* Tüxen ex Von Rochow 1951			
		56.5.1 **Lolio perennis-Plantaginion majoris** Sissingh 1969		
			Juncetum macri (Diemont et al. 1940) Tüxen 1950	78
			Eleusine indica community	91
61 CISTO CRETICI-MICROMERIETEA JULIANAE Oberdorfer ex Horvatić 1958				
	61.1 *CISTO CRETICI-ERICETALIA MANIPULIFLORAE* Horvatić 1958			
		61.1.1 **Cisto cretici-Ericion manipuliflorae** Horvatić 1958		
			Opuntia ficus-indica community	69, 85
64 RHAMNO CATHARTICAE-PRUNETEA SPINOSAE Rivas Goday & Borja ex Tüxen 1962				
	64.1 *PRUNETALIA SPINOSAE* Tüxen 1952			
			Robinia pseudoacacia and *Rubus ulmifolius* community	6
			Robinia pseudoacacia and *Sambucus nigra* community	70
		64.1.1 **Berberidion vulgaris** Br.-Bl. 1950		
			"*Corno sanguineae-Ligustretum vulgaris*" sensu Biondi et al. 1999 non Horvat 1956 *amorphetosum fruticosae* Biondi, Vagge, Baldoni & Taffetani 1999	27
		64.1.2 **Cytision sessilifolii** Biondi in Biondi, Allegrezza & Guitian 1988		
			Cercido siliquastri-Rhoetum coriariae Biondi, Allegrezza & Guitian 1988	22
		64.3.1 **Pruno-Rubion ulmifolii** O. Bolòs 1954		
			Clematido vitalbae-Arundinetum donacis Biondi & Allegrezza 2004	18
65 ALNETEA GLUTINOSAE Br.-Bl. & Tüxen ex Westhoff, Dijk & Passchier 1946				
	65.1 *SALICETALIA AURITAE* Doing ex Westhoff in Westhoff & Den Held 1969			
		65.1.1 **Salicion cinereae** Müller & Görs 1958		
			Salicetum cinereae Zolyomi 1931 *Amorpha fruticosa* variant	65
68 SALICI PURPUREAE-POPULETEA NIGRAE Rivas-Martínez & Cantó ex Rivas-Martínez, Báscones, T.E. Díaz, Fernández-González & Loidi 2001				
	68.1 *POPULETALIA ALBAE* Br.-Bl. ex Tchou 1948			
			Robinia pseudoacacia community	122
		68.1.1 **Populion albae** Br.-Bl. ex Tchou 1948		
			Acer negundo community	46
			Ailanthus altissima and *Robinia pseudoacacia* community	6
69 SALICETEA PURPUREAE Moor 1958				
	69.1 *SALICETALIA PURPUREAE* Moor 1958			
		69.1.1 **Salicion albae** Soó 1930		
			Amorpho fruticosae-Salicetum albae Poldini, Vidali, Bracco, Assini & Villani in Poldini, Vidali & Ganis 2011	13, 27, 48, 71, 107
			Sicyos angulatus community	40, 112
		69.1.2 **Salicion triandrae** Müller & Görs 1958		
			Salicetum triandrae (Malcuit 1929) Noirfalise 1955 *Amorpha fruticosa* variant	27

Class	Order	Alliance	Association/Phytocoenon	Reference number in the specific bibliographical list of Supplement 1
		69.1.4 **Salicion incanae** Aichinger 1933		
			Salicetum incano-purpureae Sillinger 1933 Amorpha fruticosa variant	27, 62
70 QUERCETEA ILICIS Br.-Bl. in Br.-Bl., Roussine & Nègre 1952				
			Sequoia sempervirens community	49
	70.1 *QUERCETALIA ILICIS* Br.-Bl. ex Molinier 1934			
		70.2.2 **Oleo sylvestris-Ceratonion siliquae** Br.-Bl. ex Guinochet & Drouineau 1944		
			Asparago acutifolii-Oleetum sylvestris Bacchetta et al. 2003 *Opuntia ficus-indica* variant	117
71 QUERCO ROBORIS-FAGETEA SYLVATICAE Br.-Bl. & Vlieger in Vlieger 1937				
			Acacia melanoxylon community	49
			Euonymus europaeus and *Robinia pseudoacacia* community	77
			Festuca heterophylla and *Robinia pseudoacacia* community *Arrhenatherum elatius* variant	77
			Festuca heterophylla and *Robinia pseudoacacia* community *Rubus macrophyllus* variant	77
			Pinus canariensis community	49
			Pinus radiata community	49
			Robinia pseudoacacia community	50
			Robinia pseudoacacia and *Prunus serotina* community	113
			Sambucus nigra and *Robinia pseudoacacia* community *Chelidonium majus* variant	77
			Sambucus nigra and *Robinia pseudoacacia* community *Poa trivialis* variant	77
			Sambucus nigra and *Robinia pseudoacacia* community *Rubus* gr. *discolores* variant	77
	71.1 *FAGETALIA SYLVATICAE* Pawłowski in Pawłowski, Sokołowski & Wallisch 1928			
		71.1.4 **Tilio platyphylli-Acerion pseudoplatani** Klika 1955		
			Robinia pseudoacacia community	50
		71.1.6 **Carpinion betuli** Issler 1931		
			Prunus serotina community	113
		71.1.10 **Alnion incanae** Pawlowski in Pawlowski, Sokolowski & Wallisch 1928		
			Amorpha fruticosa community	40
			Populus nigra and *Robinia pseudoacacia* community	26
			Robinia pseudoacacia and *Rubus ulmifolius* community	55
	71.2 *QUERCETALIA ROBORIS* Tüxen 1931			
			Buddleja davidii community	74
		71.2.1 **Quercion roboris** Malcuit 1929		
			Robinia pseudoacacia community	50
	71.3 *QUERCETALIA PUBESCENTI-PETRAEAE* Klika 1933			
		71.3.3 **Crataego laevigatae-Quercion cerridis** Arrigoni 1997		
			Sambuco nigrae-Robinietum pseudacaciae Arrigoni 1997	10
75 ROBINIETEA Jurko ex Hadac & Sofron 1980				
	75.1 *CHELIDONIO-ROBINIETALIA* Jurko ex Hadac & Sofron 1980			

Class	Order	Alliance	Association/Phytocoenon	Reference number in the specific bibliographical list of Supplement 1
		75.1.1	**Balloto nigrae-Robinion** Jurko ex Hadac & Sofron 1980	
			Ailanthus altissima community	88
		75.1.2	**Bryonio-Robinion** Ubaldi, Melloni & Cappelletti in Ubaldi 2003	
			Ailanthus altissima community	46
			Bryonio-Robinietum Ubaldi, Melloni & Cappelletti in Ubaldi 2003	124
			Robinia pseudoacacia community	46, 98, 128, 130
		75.1.3	**Lauro nobilis-Robinion pseudoacaciae** Allegrezza, Montecchiari, Ottaviani, Pelliccia & Tesei 2019	
			Melisso altissimae-Robinietum pseudoacaciae Allegrezza, Montecchiari, Ottaviani, Pelliccia & Tesei 2019	2
			Rubio peregrinae-Robinietum pseudoacaciae Allegrezza, Montecchiari, Ottaviani, Pelliccia & Tesei 2019	2
BRYOPHYTE COMMUNITIES				
CERATODONTO PURPUREI-POLYTRICHETEA PILIFERI Mohan 1978				
	POLYTRICHETALIA PILIFERI von Hübschmann 1975			
		Campylopodion polytrichoidis Giacomini 1951		
			Campylopus introflexus community	108, 111

(*) In Poldini et al. (1998) the associations *Panico-Polygonetum persicariae* Pignatti 1953 and *Oxalido-Chenopodietum polyspermi* (Br.-Bl. 1921) Sissingh (1942) 1946 are considered syntaxonomic synonyms of *Echinochloo-Setarietum pumilae* Felföldy 1942 corr. Mucina 1993. The authors reached this result by elaborating the synthetic tables of only a part of the works published at national level with the name *Panico-Polygonetum* and *Oxalido-Chenopodietum*. Beside this, in Poldini et al. (1988) the numbers of tables and relevés taken into account for the analysis were not indicated. These authors did not also consider any subassociations and variants described. For these reasons, we prefer to report the names of the associations as they were indicated in the original works, without including them as synonyms in the name *Echinochloo-Setarietum*.

(**) This association was described for the north-Adriatic Italian coasts, published by Pignatti (1952-53) as " nom. prov.", therefore not validly, according to ICPN (Art. 3b, Weber et al., 2000). It cannot be attributed to *Atriplicion littoralis* sensu Nordhagen 1940, as already highlighted by Mucina et al. (2016, p. 137), according to whom it must be referred to ruderal communities of *Atriplicion Passarge* 1978 (*Sisymbrietalia*). After examining the original table in Pignatti (1952-53), we agree with the comments of Mucina et al. (2016). Anyway, in the Italian Vegetation Prodrome, the alliance *Atriplicion* Passarge 1978 is not reported, so we provisionally prefer to attribute this association to *Hordeion leporini*, the most similar alliance from the eco-coenological point of view present in the Italian Vegetation Prodrome.

Soon after the development and data analysis of this article, Pellizzari (2020) hypothesized a reinterpretation of *Cyperus glomeratus*, currently considered alien species in Italy, as a probable native. We are currently sticking to the consolidated position of Galasso et al. (2018), pending a reassessment of the chorology of this species.

Appendix II – Specific bibliographical list with reference numbers for all the syntaxa quoted in the checklist of Appendix I

N.	References
1	Acosta A., Carranza M.L., Ciaschetti G., Conti F., Di Martino L., D'Orazio G., Frattaroli A., Izzi C.F., Pirone G. & Stanisci A., 2007. Specie vegetali esotiche negli ambienti costieri sabbiosi di alcune regioni dell'Italia Centrale. Webbia 62: 77-87.
2	Allegrezza M., Montecchiari S., Ottaviani C., Pelliccia V. & Tesei G., 2019. Syntaxonomy of the *Robinia pseudoacacia* communities in the central periadriatic sector of the Italian peninsula. Plant Biosystems 153 (4): 616–623.
3	Andreucci F., 2006. Flora e vegetazione spontanea della città di Alessandria (Piemonte-Italia). Fitosociologia 43 (2): 77-95.
4	Andreucci F. & Castelli M., 2006. Alcuni aspetti di vegetazione erbacea nelle aree golenali del torrente Scrivia (Piemonte, Italia settentrionale). Arch. Geobot. 8 (1-2) (2002): 49-68.

5	Andreucci F. & Castelli M., 2008. Stadi evolutivi nel processo di colonizzazione di *Robinia pseudoacacia* L. in ex coltivi del Piemonte meridionale (Italia). Arch. Geobot. 11 (1-2) (2005): 1-14.
6	Angiolini C., Chiarucci A., De Dominicis V., Gabellini A., Morrocchi D. & Selvi F., 2002. Lineamenti vegetazionali dell'Area Naturale Protetta del Fiume Elsa. Atti Accademia dei Fisiocritici Siena Ser. 15, 18 (1999): 101-122.
7	Angiolini C., Landi M., Boddi M. & Frignani F., 2006. La vegetazione dell'alveo fluviale del sito d'importanza regionale torrente Trasubbie (Grosseto, Toscana meridionale). Atti Soc. tosc. Sci. nat., Mem., Ser. B, 112 (2005): 127-151.
8	Apruzzese A., Gigante D. & Venanzoni R., 2001. La ricolonizzazione di ex-coltivi in ambiente perilacuale: modalità di recupero della vegetazione semi-naturale e strategie di miglioramento. Riv. Idrobiol. 40 (2-3): 335-366.
9	Arrigoni P. V., 1990. Flora e vegetazione della Macchia lucchese di Viareggio (Toscana). Webbia 44 (1): 1-62.
10	Arrigoni P.V., 1997. Documenti per la carta della vegetazione delle Cerbaie (Toscana settentrionale). Parlatorea 2: 39-71.
11	Arrigoni P.V. & Papini P., 2003. La vegetazione del sistema fluviale Lima - Serchio (Toscana meridionale). Parlatorea 6: 95-129.
12	Arrigoni P.V., Nardi E. & Raffaelli M., 1985. La vegetazione del Parco Naturale della Maremma (Toscana). (con carta in scala 1:25.000). Univ. degli Studi di Firenze Dip. Biol. Veg. 39 pp.
13	Assini S., 2004. The alluvial vegetation of the Po River in the central-west Padana Plain (Po Plain - Northern Italy). Coll. Phytosoc. 28: 333-360.
14	Baldoni M., 1995. Vegetazione infestante le colture erbacee delle Marche e dei piani carsici dell'Appennino Umbro-Marchigiano (Italia centrale) e serie di vegetazione. Coll. Phytosoc. 24: 787-812.
15	Baldoni M. & Biondi E., 1993. La vegetazione del medio e basso corso del fiume Esino (Marche - Italia centrale). Studia Botanica 11: 209-257.
16	Barberis G. & Mariotti M., 1981. Ricerche geobotaniche sulle zone umide del Gruppo di Voltri (Appennino ligure-piemontese). Archivio Bot. Biogeogr. Ital. 57: 50-91.
17	Bertacchi A., Lombardi T. & Bocci G., 2009. Il paesaggio vegetale dell'ambiente dunale di Calambrone nel litorale pisano (Toscana settentrionale). Inform. Bot. Ital. 41 (2): 281-292.
18	Biondi E. & Allegrezza M., 2004. Lettura e modellizzazione sinfitosociologica del paesaggio vegetale del Bacino del Fosso della Selva. In: Biondi E. & Allegrezza M. (Eds.), L'ambiente della Selva di Galliano. I Quaderni della Selva 2: 36-57.
19	Biondi E. & Bagella S., 2005. Vegetazione e paesaggio vegetale dell'arcipelago di La Maddalena (Sardegna nord-orientale). Fitosociologia 42 (2) suppl. 1: 3-99.
20	Biondi E. & Baldoni M., 1994. La vegetazione del fiume Marecchia (Italia Centrale). Biogeographia n.s. 17 (1993): 51-87.
21	Biondi E., Allegrezza M. & Filigheddu R.S., 1990. Su alcune associazioni di vegetazione nitrofila della Sardegna settentrionale. Boll. Soc. Sarda Sci. Nat. 27: 221-236.
22	Biondi E., Allegrezza M. & Guitian J., 1988. Mantelli di vegetazione nel piano collinare dell'Appennino centrale. Doc. Phytosoc. n.s. 11: 479-490.
23	Biondi E., Blasi C., Brugiapaglia E., Fogu M.C. & Mossa E.L., 1994. Nitrofilous vegetation of the town of Cagliari (Sardegna). Allionia 32: 303-323.
24	Biondi E., Brugiapaglia E., Allegrezza M. & Ballelli S., 1992. La vegetazione del litorale marchigiano (Adriatico centro-settentrionale). Coll. Phytosoc. 19: 429-460.
25	Biondi E., Casavecchia S. & Radetic Z., 2002. La vegetazione dei "guazzi" e il paesaggio vegetale della pianura alluvionale del tratto terminale del Fiume Musone (Italia centrale). Fitosociologia 30 (1): 45-70.
26	Biondi E., Vagge I., Baldoni M. & Taffetani F., 1997. La vegetazione del Parco fluviale regionale del Taro (Emilia-Romagna). Fitosociologia 34: 69-110.
27	Biondi E., Vagge I., Baldoni M. & Taffetani F., 1999. La vegetazione del Parco Fluviale Regionale dello Stirone (Emilia-Romagna). Fitosociologia 36 (1): 67-93.
28	Bolpagni R., 2013. Macrophyte richness and aquatic vegetation coplexity of the lake Idro (Northern Italy). Ann. Bot. (Roma) 3: 35-43.
29	Bracco F., Sartori F. & Terzo V., 1984. Indagine geobotanica per la valutazione di un'area della Bassa Padania occidentale. Atti Ist. Bot. Lab. Critt. Univ. Pavia 7 (3): 5-50.
30	Brandes D., 1987. Zur Kenntnis der Ruderalvegetation des Alpensüdrandes. Tuexenia 7: 121-138.
31	Brandes D. & Brandes E., 1981. Ruderal- und Saumgesellschaften des Etschtals zwischen Bozen und Rovereto. Tuexenia 1: 99-133.
32	Brullo S., 1983. Le associazioni subnitrofile dell'*Echio-Galactition tomentosae* in Sicilia. Boll. Acc. Gioenia Sci. Nat. Catania 15: 405-452.
33	Brullo S., 1984. L' Alleanza *Bromo-Oryzopsion miliaceae* in Sicilia. Boll. Acc. Gioenia Sci. Nat. 17: 239-258.

34	Brullo S. & Marcenò C., 1985. Contributo alla conoscenza della vegetazione nitrofila della Sicilia. Coll. Phytosoc. 12: 23-148.
35	Brullo S. & Sciandrello S., 2006. La vegetazione del bacino lacustre “Biviere di Gela” (Sicilia meridionale). Fitosociologia 43 (2): 21-40.
36	Brullo C., Brullo S., Giusso Del Galdo G., Guarino R., Minissale P., Scuderi L., Siracusa G., Sciandrello S. & Spampinato G., 2010. The *Lygeo-Stipetea* class in Sicily. Ann. Bot. (Roma) 10: 57-84.
37	Brullo S., Giusso Del Galdo G., Guarino R., Minissale P., Sciandrello S. & Spampinato G., 2012. Syntaxonomic survey of the class *Pegano harmalae-Salsoletea vermiculatae* Br.-Bl. & O. Bolos 1958 in Italy. Plant Biosystems 147 (2): 472-492.
38	Brullo S., Scelsi F. & Spampinato G., 2001. La vegetazione dell’Aspromonte. Studio Fitosociologico. Laruffa Editore, Reggio Calabria.
39	Brusa G., Castiglioni L. & Cerabolini B., 2006. La vegetazione dell’istituenda Riserva naturale Oasi di Lacchiarella (Parco agricolo sud Milano). Pianura 20: 5-41.
40	Ceschin S. & Salerno G., 2008. La vegetazione del basso corso del Fiume Tevere e dei suoi affluenti (Lazio, Italia). Fitosociologia 45 (1): 39-74.
41	Ceschin S., Cutini M. & Caneva G., 2006. Contributo alla conoscenza della vegetazione ruderale delle aree archeologiche romane (Roma). Fitosociologia 43(1): 97-139.
42	Corbetta F. & Lorenzoni G.G., 1976. La vegetazione degli stagni del golfo di Oristano (Sardegna). Ricerche di Biologia della Selvaggina 7 (Suppl. Scritti in memoria di Augusto Toschi): 271-319.
43	Crisanti M. A. & Taffetani F., 2015. Diachronic analysis of variations induced on the flora and vegetation of river ecosystems by actions taken to reduce the risk of flooding. Case study of the River Chienti (central Adriatic, Italy). Plant Sociology 52 (1): 41-64.
44	D’Auria G. & Zavagno F., 1995. La vegetazione alveale del fiume Brembo, alla confluenza con l’Adda, in relazione a morfologia e substrato. Pianura 7: 5-38.
45	Di Franco C., Salerno G., Carranza M.L. & Stanisci A., 2012. Ambienti umidi salmastri in Molise: biodiversità e vulnerabilità. Territori 7: 47-53.
46	Fanelli G., 2002. Analisi fitosociologica dell’area metropolitana di Roma. Braun-Blanquetia 27: 1-276.
47	Fascetti S. & Veri L., 1983. Alcuni aspetti della vegetazione sinantropica della città dell’Aquila e dei dintorni (Abruzzo-Italia centrale). Coll. Phytosoc. 12: 429-447.
48	Francescato C., 2012. Paesaggi vegetali, biodiversità cenotica e funzionalità fluviale. Il caso del fiume Tagliamento. Tesi di dottorato, XXIV ciclo Metodologie di biomonitoraggio dell’alterazione ambientale, Università degli Studi di Trieste. http://hdl.handle.net/10077/8598
49	Gentile A., 1996. Esempi di integrazione di specie forestali esotiche in contesti vegetazionali mediterranei italiani. Coll. Phytosoc. 24 (1995): 123-130.
50	Gentile S., 1996. *Robinia pseudoacacia* L. in formazioni forestali miste dell’Italia Nord-occidentale. Coll. Phytosoc. 24 (1995): 11-18.
51	Gerdol R. & Piccoli F., 1979. Considerazioni sulla sinsistematica della vegetazione infestante delle colture sarchiate del Ferrarese. Arch. Bot. Biogeogr. Ital. 55 (4): 113-123.
52	Gianguzzi L., Ilardi V. & Raimondo F. M., 1996. La vegetazione del promontorio di Monte Pellegrino (Palermo). Quad. Biol. Amb. Appl. 4: 79-137.
53	Gigante D. & Venanzoni R., 2004. Flora e Vegetazione. In: AA. VV., Relazione sullo stato dell’Ambiente in Umbria. ARPA, Regione dell’Umbria, pp. 305-334, Perugia.
54	Kumbaric A., Ceschin S., Zuccarello V. & Caneva G., 2012. Main ecological parameters conditioning the colonization of higher plants in the biodeterioration of stone embankments of Lungotevere (Rome). Int. Biodeter. Biodegr. 72: 31-41.
55	Landi M., Angiolini C. & De Dominicis V., 2002. Analisi fitosociologica dei fiumi della Toscana meridionale: il tratto medio-basso del Merse (Italia centrale). Studia Botanica 21: 37-88.
56	Landucci F., Gigante D. & Venanzoni R., 2011. An application of the Cocktail method for the classification of the hydrophytic vegetation at Lake Trasimeno (Central Italy). Fitosociologia 48 (2): 3-22.
57	Lastrucci L. & Becattini R., 2009. La vegetazione delle aree umide presso Bosco ai Frati (Firenze, Toscana). Atti Soc. Tosc. Sci. Nat. mem. Ser. B 115 (2008): 57-67.
58	Lastrucci L., Bonari G, Angiolini C., Casini F., Giallonardo T., Gigante D., Landi M., Landucci F., Venanzoni R. & Viciani D., 2014. Vegetation of Lakes Chiusi and Montepulciano (Siena, central Italy): updated knowledge and new discoveries. Plant Sociology 51(2): 29-55.
59	Lastrucci L., Ferretti G., Mantarano N. & Foggi B., 2019. Vegetation and habitat of conservation interest of the lake Acquato (Grosseto – Central Italy). Plant Sociology 56(1): 19-30.

60	Lastrucci L., Foggi B., Selvi F. & Becattini R., 2007. Contributo alla conoscenza della vegetazione e della flora delle aree umide nel comprensorio di Capalbio (provincia di Grosseto, Italia Centrale). Arch. Geobot. 10 (1-2)(2004): 1-30.
61	Lastrucci L., Landi M. & Angiolini C., 2010. Vegetation analysis on wetlands in a Tuscan agricultural landscape (central Italy). Biologia 65 (1): 54-68.
62	Lastrucci L., Landucci F., Gonnelli V., Barocco R., Foggi B. & Venanzoni R., 2012. The vegetation of the upper and middle River Tiber (Central Italy). Plant Sociology 49(2): 29-48.
63	Lastrucci L., Paci F. & Raffaelli M., 2010. The wetland vegetation of the Natural Reserves and neighbouring stretches of the Arno river in the Arezzo province (Tuscany, Central Italy). Fitosociologia 47 (1): 29-59.
64	Lastrucci L., Valentini E., Dell'Olmo L., Vietina B. & Foggi B., 2015. Hygrophilous vegetation and habitats of conservation interest in the area of the Lake Porta (Tuscany, Central Italy). Atti Soc. Tosc. Sci. Nat., Mem., Serie B 122: 131-146.
65	Lastrucci L., Viciani D., Nuccio C. & Melillo C., 2008. Indagine vegetazionale su alcuni laghi di origine artificiale limitrofi alla Padule di Fucecchio (Toscana, Italia centrale). Ann. Mus. Civ. Rovereto 23 (2007): 169-203.
66	Lorenzoni G.G., 1963. La vegetazione infestante del mais nel Friuli nel Veneto e in Lombardia. Maydica 2: 5-55.
67	Lorenzoni G.G., 1964. Vegetazioni infestanti e ruderali della provincia di Vicenza. Lav. Bot. Ist. Bot. Univ. Padova 27: 1-46.
68	Maiorca G., Crisafulli A., Cameriere P. & Spampinato G., 2007. Flora vascolare e vegetazione della Riserva Naturale Regionale "Foce del Fiume Crati" (Calabria, Italia meridionale). Webbia 62 (2): 121-174.
69	Margani I., Poli Marchese E., Di Benedetto L., Grilo M., & Razzara S., 1999. Valutazione della naturalità su basi vegetazionali del territorio di Castel di Judica (Sicilia orientale). Arch. Geobot. 5 (1-2): 157-193.
70	Mariotti M.G., 1995. Osservazioni sulla vegetazione della Liguria. Atti dei Convegni Lincei 115: 189-227.
71	Martini F. & Poldini L., 1980. Il paesaggio vegetale del fiume Noncello nell'area urbana di Pordenone. Gortania 2: 123-156.
72	Mereu L., Lastrucci L. & Viciani D., 2012. Contributo alla conoscenza della vegetazione del fiume Pesa (Toscana, Italia centrale). Stud. Bot. 29 (2010): 105-143.
73	Minissale P., Sciandrello S. & Spampinato G., 2007. Analisi della biodiversità vegetale e relativa cartografia della Riserva Naturale Orientata "Pantalica, Valle dell'Anapo e Torrente Cava Grande" (Sicilia sudorientale). Quad. Bot. Amb. Appl. 18: 241-303.
74	Mondino G.P. & Scotta M., 1988. L'evoluzione della vegetazione nelle discariche di cava della Valle Ossola. Riv. Piem. St. Nat. 9: 69-76.
75	Montanari C., 1988. Note illustrative della carta della vegetazione dell'alta Val di Vara. Atti Ist. Bot. Lab. Critt. Univ. Pavia, serie 7, 6 (suppl.): 1-59.
76	Montanari C., 1988. Aspetti di vegetazione erbacea nei corsi d'acqua dell'Appennino Ligure. Boll. Mus. St. Nat. Lunigiana 6-7: 103-107.
77	Parolo G., 2000. La dinamica delle comunità a *Robinia pseudoacacia* L. in Valtellina. Arch. Geobot. 6 (2): 133-154.
78	Pedrotti F., 2004. Ricerche geobotaniche al Laghestel di Piné (1967- 2001). Braun-Blanquetia 35: 1-54.
79	Pedrotti F., 2010. Neofitismo e associazioni vegetali. Braun-Blanquetia 46: 345-349.
80	Pellizzari M., 2006. Studio della vegetazione e valutazione degli habitat dell'Idrovia Ferrarese. Ann. Mus. Civ. St. nat. Ferrara 7: 53-64.
81	Pellizzari M., 2009. La vegetazione del Po Ferrarese da Porporana all'Isola Bianca. Quad. Staz. Ecol. civ. Mus. St. nat. Ferrara 19: 49-80.
82	Pellizzari M. & Piccoli F., 2001. La vegetazione dei corpi idrici del Bosco della Mesola (Delta del Po). Quad. Staz. Ecol. civ. Mus. St. nat. Ferrara 13: 7-24.
83	Pellizzari M., Piubello F. & Fogli S. 2005. Aspetti vegetazionali del biotopo Brusà - Vallette (Cerea - Verona) e proposte per la conservazione degli habitat. Quad. Staz. Ecol. civ. Mus. St. nat. Ferrara 15: 23-51.
84	Perrino E.V., 2006. Vegetazione del Gargano (fasce costiera e collinare). Tesi di Dottorato in Scienze Ambientali I (Fitogeografia dei territori mediterranei).
85	Perrino E.V. & Calabrese G., 2014. Vascular flora of ancient olive groves of Apulia (southern Italy). Natura Croatica 23 (1): 189-218.
86	Perrino E.V., Ladisa G. & Calabrese G., 2014. Flora and plant genetic resources of ancient olive groves of Apulia (southern Italy). Genet. Resour. Crop Ev. 61 (1): 23-53.
87	Perrino E.V., Signorile G. & Marvulli M., 2013. A first checklist of the vascular flora of the Polignano a Mare coast (Apulia, southern Italy). Natura Croatica 22 (2): 295-318.
88	Perrino E.V., Tomaselli V., Costa R. & Pavone P., 2013. Conservation status of habitats (Directive 92/43 EEC) of coastal and low hill belts in a mediterranean biodiversity hot spot (Gargano - Italy). Plant Biosystems 147 (4): 1006-1028.

89	Petraglia A., Tomaselli M., Borghi M.L., Cavozzi C. & Bolpagni R., 2005. Flora e vegetazione della Riserva Naturale Orientata della Parma Morta (Italia settentrionale). Acta Naturalia de "L'Ateneo Parmense" 41 (1/2): 5-34.
90	Piccoli F. & Pellizzari M., 2003. Note ecologiche sulle comunità pleustofitiche a *Lemna minuta* H., B. & K. nel Parco Regionale del Delta del Po. Atti del Convegno Nazionale "Botanica delle zone umide" Vercelli - Albano Vercellese 10-11 novembre 2000. Mus. Reg. Sci. nat. Torino, pp. 221-230.
91	Pignatti S., 1952 - 1953. Introduzione allo studio fitosociologico della pianura veneta orientale con particolare riguardo alla vegetazione litoranea. Arch. Bot. 28 (4): 265-329 (1952), 29 (1): 1-25 (1953), 29 (2): 65-98 (1953), 29 (3): 129-174 (1953).
92	Pirola A. & Rossetti A., 1974. *Polygono-Xanthietum italici* ass. nova, vegetazione di greto del corso medio del Reno (Bologna). Not. Fitosoc. 8: 15-27.
93	Pirone G., 1983. La vegetazione del litorale pescarese (Abruzzo). Not. Fitosoc. 18: 37-62.
94	Pirone G., 1991. Flora e vegetazione del Fiume Saline (Abruzzo). Micol. Veget. Medit. 6 (1): 45-76.
95	Pirone G., 1997. La vegetazione del litorale di Martinsicuro nel contesto dell'ambiente costiero dell'Abruzzo: aspetti e problemi. In: Le dune di Martinsicuro nel sistema costiero dell'Abruzzo. Comune di Martinsicuro (TE), pp. 21-75.
96	Pirone G., 2001. Due nuove associazioni di margine stradale dell'Abruzzo (Italia centrale). Studia Geobotanica 20: 33-39.
97	Pirone G., 2005. Aspetti geobotanici del territorio di Roseto degli Abruzzi (Teramo, Italia Centrale) - 1. La vegetazione. Micol. e Veget. Medit. 20 (1): 67-96.
98	Pirone G., 2015. Alberi, arbusti e liane d'Abruzzo. Cogecstre Edizioni, Penne (PE).
99	Pirone G. & Ferretti C., 1999. Flora e vegetazione spontanee della città di Pescara (Abruzzo, Italia). Fitosociologia 36 (1): 111-155.
100	Pirone G., Ciaschetti G., Di Martino L., Cianfaglione K., Giallonardo T. & Frattaroli A.R., 2014. Contribution to the knowledge of the coastal vegetation of Abruzzo (central Adriatic). Plant Sociology 51 Suppl.1: 57-64.
101	Pirone G., Corbetta F. & Dragani G., 2006. La vegetazione urbica della città di Ortona (Abruzzo). Arch. Geobot. 9 (1-2) (2003): 25-56.
102	Pirone G., Corbetta F., Frattaroli A.R. & Ciaschetti G., 2001. Aspetti della vegetazione costiera dell'Abruzzo. Biogeographia 22: 171-191.
103	Pisanu S., Farris E., Caria M.C., Filigheddu R., Urbani M. & Bagella S., 2014. Vegetation and plant landscape of Asinara National Park. Plant Sociology 51 (1): 31-57.
104	Poldini L., 1989. La vegetazione del Carso isontino e triestino. Ed. Lint, Trieste, pp. 315.
105	Poldini L., Oriolo G. & Mazzolini G., 1998. The segetal vegetation of vineyards and crop fields in Friuli-Venezia Giulia (NE Italy). Studia Geobot. 16: 5-32.
106	Poldini L., Vidali M. & Fabiani M.L., 1999. La vegetazione del litorale sedimentario dell'Alto Adriatico con particolare riguardo al Friuli-Venezia Giulia (NE Italia). Studia Geobot. 17: 3-68.
107	Poldini L., Vidali M. & Ganis P., 2011. Riparian *Salix alba* Scrubs of the Po lowland (N-Italy) from an European perspective. Plant Biosystems 145 (Suppl. 1): 132-147.
108	Poponessi S., Aleffi M., Gigante D. & Venanzoni R., 2016. Updates on the bryophyte flora of the lowland woods and temporary ponds west of Lake Trasimeno (Central Italy). Fl. Medit. 26: 151-162.
109	Prisco I., Stanisci A. & Acosta A.T.R., 2016. Mediterranean dunes on the go: evidence from a short term study on coastal herbaceous vegetation. Estuarine, Coastal and Shelf Science 182: 40-46.
110	Prosser F. & Sarzo A., 2002. Flora e vegetazione dei fossi nel settore trentino del fondovalle dell'Adige (Trentino - Italia settentrionale). Ann. Mus. civ. Rovereto, Sez. Arch., St., Sc. Nat. 18: 89-144.
111	Puglisi M., Minissale P., Sciandrello S. & Privitera M., 2015. The bryophyte vegetation of the Mediterranean temporary ponds in Italy. Plant Sociology 52 (2): 69-78.
112	Salerno G., Ceschin S., Notamurzi C. & Iannuzzi E., 2006. Notulae floristica: *Sicyos angulatus* L. (*Cucurbitaceae*). Inform. Bot. Ital. 38 (1): 212.
113	Sartori F., 1988. *Prunus serotina* Ehrh. en Italie. Coll. Phytosoc. 14 (1985): 185-203.
114	Sartori F. & Bracco F., 1995. Flora e vegetazione del Po. Acc. Sc. Torino - Quaderni 1: 139-191.
115	Sburlino G. , M. Tomasella, G. Oriolo & L. Poldini, 2004. La vegetazione acquatica e palustre dell'Italia nord-orientale. 1 - La classe *Lemnetea* Tuxen ex O. Bolòs et Masclans 1955. Fitosociologia 41 (1) suppl. 1: 27-42.
116	Sburlino G., Tomasella M., Oriolo G., Poldini L. & Bracco F., 2008. La vegetazione acquatica e palustre dell'Italia nord-orientale. 2 – La classe *Potametea* Klika in Klika et V. Novák 1941. Fitosociologia, 45 (2): 3-40.
117	Sciandrello S., Minissale P. & Sturiale G., 2017. Plant communities supported by the geological setting: the case history of the Isole dei Ciclopi (east Sicily). Lazaroa 38 (1): 27-51.

118	Siniscalco C. & Barni E., 1994. L'incidenza delle specie esotiche nella flora e nella vegetazione della città di Torino. Allionia 32: 163-180.
119	Siniscalco C. & Montacchini F., 1989. Relation between ruderal and turfgrass vegetation in the city of Torino (Italy). Braun-Blanquetia 3: 127-136.
120	Siniscalco C., Minciardi M.R., Bari A., Potenza A., Zanini E. & Caramiello R., 1996. Historical-cartographic, vegetational and pedological study of Isolone del Ritano in the bed of the Dora Baltea River. Arch. Geobot. 2 (2): 97-112.
121	Taffetani F., Lancioni A. & Zitti S., 2011. Studio vegetazionale del bosco Fantine. I quaderni della selva "Il Bosco Fantine" 4: 46-81.
122	Tomaselli R. & Gentile S., 1971. La riserva naturale integrale "Bosco Siro Negri" dell'Università di Pavia. Atti. Ist. Bot. Lab. Critt. Univ. Pavia, serie 6, 7: 41-70.
123	Tomaselli V., Perrino E.V. & Cimmarusti G., 2008. Paludi Sfinale e Gusmay, due aree umide di rilevante interesse naturalistico nel Parco Nazionale del Gargano. Inform. Bot. Ital. 40 (2): 183-192.
124	Ubaldi D., 2003. Flora, fitocenosi e ambiente. Elementi di Geobotanica e Fitosociologia. Clueb, Bologna, 334 pp.
125	Vagge I., Corradi N., Ferrari M., Balduzzi I. & Mariotti L.M., 2007. Aspetti vegetazionali e morfo-sedimentologici dei campi dunari di Platamona-Marritza con particolare riguardo all'area di Marina di Sorso (Sardegna settentrionale). Fitosociologia 44 (1): 33-48.
126	Venanzoni R. & Gigante D., 2000. Contributo alla conoscenza della vegetazione degli ambienti umidi dell'Umbria (Italia). Fitosociologia 37 (2): 13-63.
127	Villani M., 2001. La vegetazione ripariale del fiume Adige. Tesi di dottorato in Geobotanica XII ciclo, Università degli Studi di Pavia.
128	Villani M., 2004. Carta delle vocazioni apistiche del territorio dei Colli Euganei. Unpublished technical report. Available on: https://www.izsvenezie.it/documenti/temi/api/aree-nettarifere/2003-2004-mappatura-colli-euganei.pdf
129	Wagensommer R.P., Perrino E.V. & Russo G., 2017. Senecio inaequidens DC. (Asteraceae) + PUG. Italian Botanist 3: 63-64.
130	Zavagno F. & Gaiara S., 1997. Boschi relitti tra Milano e il Ticino: vegetazione, fenologia e dinamica evolutiva. Pianura 9: 27-61.