

Plant Ecology and Evolution: contribution to biodiversity conservation

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With its focus on wild plants and their habitats, *Plant Ecology and Evolution* is a journal dealing with all areas of plant biology relating to ecology, evolution and systematics of all groups of plants (in the traditional sense, including algae, cyanobacteria, fungi, myxomycetes). It includes topical matters such as biodiversity, phylogenetic reconstruction, conservation and global change. *Plant Ecology and Evolution* occupies its own niche in being the only journal of its kind focusing on central Africa for more than a century.

The editorial team of *Plant Ecology and Evolution* is evidently concerned with the journal's impact, not only in terms of a calculated factor, but also with regard to its importance for the scientific community and the society in general. The classical impact of our journal lies in scholar advancement in the abovementioned fields. In particular, *Plant Ecology and Evolution* contributes to the consolidation of the scientific nomenclature of plants and the completion of the inventory of the plants of the world. Thousands of scientific names of plants, mainly from tropical Africa, have been published in our journal ever since its beginning in the nineteenth century. A first synthesis of these scholar results, the *Sylloge Florae Congolanae* (Durand & Durand 1909), was already given in the beginning of the 20th century, in the *Bulletin du Jardin botanique de l'État à Bruxelles*, a past journal title continued under the denomination *Plant Ecology and Evolution*. It remains amazing that the compilation of this *Sylloge* was made only a few decades after the beginning of the exploration of the Congo. The political impulse for this kind of scientific survey was important indeed.

Nowadays each issue publishes a list of taxonomic novelties to help indexing organizations to keep lists such as the *Index of Fungi* or the *International Plant Names Index* up to date. Linnaeus' aphorism "Nomina si nescis perit et cognitio rerum" (Linnaeus 1792: 158) remains a perfect summary for this role of our journal.

In these times of growing human impact on wild plants and their habitat, with climate change as an additional threat

to nature, plant journals such as ours certainly also get an increasing responsibility beyond serving the academic advancement of science. Their contribution to serve nature conservation is expanding. *Plant Ecology and Evolution* explicitly invites authors of taxonomic papers to provide Conservation Status proposals, which can be implemented in Red Lists. The journal designated a Conservation Status editor in order to take utmost editorial care for these paragraphs.

In the last decade, *Plant Ecology and Evolution* published an increasing number of papers oriented towards conservation spin-off. Some of these articles point to threats. Invasive alien (exotic) species are one of the most serious threats to the conservation of biodiversity on the planet. Expósito et al. (2018) provided the first comprehensive inventory of alien plant species in Anaga Rural Park (Tenerife, Canary Islands, Spain), a Natural Protected Area currently proposed as a UNESCO Biosphere Reserve. Anaga is also outstanding for including a relict Tertiary era laurel-forest ecosystem that hosts a large number of palaeoendemics. A large number of alien plant species (216) were shown to inhabit the Park, affecting all its ecosystems. This is largely the result of the human activities within it, and poses a risk to its conservation and the survival of numerous endemic taxa. A total of 21 invasive species needing specific control measures were identified. The Checklist paper category of our journal here proved to be an excellent format for the publication of this kind of results.

The outlook of other papers published in the journal is more towards conservation strategies. Examples thereof follow. Browsing through the journal's Contents on the website allows readers to find further similar contributions.

The journal in particular welcomed to publish a study on *Sempervivum funckii* var. *aqualiense*, the only endemic vascular plant taxon of its home country Belgium still existing in the wild, and threatened by urban development. Van Rossum et al. (2017) recommended conserving the rare genotypes of this *Sempervivum* to be done by preserving seeds

and as many rosettes as possible. The preservation of the only existing population in its entirety appears to be the best option for long-term sustainable conservation of *S. funckii* var. *aqualiense*, and any partial destruction of the population should be avoided.

Due to habitat fragmentation and degradation many plant species have been led to near extinction, remaining as a few small and isolated populations. A study (Van Geert et al. 2015) on such remnant populations of *Primula vulgaris* in The Netherlands demonstrated that a genetic rescue programme is needed through active reinforcements of the existing populations and creation of new populations. Seedlings used for rescue can be obtained from seeds collected in the field, but also from outcrosses between remnant populations, to maximize genetic diversity. The results of a paper on *Luronium natans* are just worrying and pointing to decline (Ronse et al. 2015); the species is a rare endemic plant of West- and Central-Europe and protected by the Habitats Directive of the European Union.

Salt marsh plant communities will be among the first to be exposed to the predicted increase in sea level and associated environmental changes. Meirland et al. (2015) evaluated the influence of three major environmental variables (elevation above sea level, distance from the sea, vegetation age) on vegetation diversity in salt marshes to predict vegetation changes in the year 2100. Although the mean local species richness would increase with time in the marsh, the total area of marsh remaining above the sea level would sharply decrease if sea level rise is not countered by accretion processes. A next step would be to build models including disturbances of sediment deposits, storm events, engineered buildings such as breakwaters, ditches and depolderisation projects.

Baumel et al. (2018) showed that the large ecological range of a Mediterranean tree is potentially an important evolutionary legacy for the conservation of genetic resources and seed sourcing for new uses such as restoration ecology. A study on Korean species of *Habenaria* (Chung et al. 2018) demonstrated that knowledge of genetic diversity of plant populations is essential for the development of conservation strategies. It showed that separate conservation plans for the two studied species should be employed, given that they have different ecological and demographic traits and harbour different levels of genetic diversity.

Two conservation-related papers regarding metallophytes from Katanga (R.D. Congo) were published in the same issue of our journal (Ilunga wa Ilunga et al. 2013, Godefroid et al. 2013). Throughout the world, the flora of metalliferous soils is threatened by human activity, in particular in Katanga. Conservation strategies or restoration actions to limit the impact of ongoing mining activities on Cu-enriched ecosystems were proposed. *Ex situ* seed banking of a number of Katanga metallophytes was shown to form a useful part of a more comprehensive conservation programme.

Ecological and floristic contributions may also help decision makers with regard to the creation or management of Reserves or National Parks. For example, a paper in the last issue of the previous year, augmenting the knowledge of the flora of Gabon (Lachenaud et al. 2018) focused on the

Lower Ogooué Ramsar site, the third largest delta of Africa, and adds evidence demonstrating the great importance of the site. Such results can be used for Environmental Impact Assessments, and in management plans of protected areas, or of forestry concessions based on FSC (Forest Stewardship Council) standards.

Gabon and its neighbour country Cameroon form the heart of the biodiversity-richest rain forest areas in tropical Africa, the so-called Lower Guinea subregion. A paper in the present issue (Droissart et al., pages 8–29) is a study conducted in the rain forest of Cameroon. It is another example of plant science for the promotion of urgently needed conservation. It is sorely needed to evidence the protection of one of the highest priority sites for plant conservation in tropical Africa. In view of the urgency to protect the Ngovayang Massif from destruction from mining, this paper was given high publication priority and is the opening article of issue 152(1). A second paper in this issue (Serna-González et al., pages 30–40) examines two endangered Andean *Magnolia* species from a pedological perspective, and demonstrate that mycorrhizal colonization plays a key role in their performance in forests. Aspects related to soil and rhizosphere ecology should be included in conservation projects.

By its focus on wild plants and their habitat, the role of *Plant Ecology and Evolution* for conservation will doubtless continue to grow. New submissions in line with the above-mentioned topics are under assessment by our associate editors and external reviewers. Many of our authors conduct research in the field and explore hotspots of biodiversity. Par excellence, they are the persons to inform on *in situ* conditions, describe threats, provide objective information to policy makers, and propose solutions or acts beneficial to both nature and mankind.

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