TAXONOMY AND PLANT CONSERVATION

The Cornerstone of the Conservation and the Sustainable Use of Plants

This book illustrates the key role played by taxonomy in the conservation and sustainable utilisation of plant biodiversity. Divided into four parts, the book opens with an overview of the place of taxonomy in science and in implementing the Convention on Biological Diversity. Part II outlines what taxonomy is, how it is done, its theoretical basis and why the results of taxonomy are a measure of diversity. The third part explains how taxonomy is used to establish priorities and to identify the necessary conservation action. The concluding part illustrates taxonomy in the practice and measurement of effective conservation action. The book contains authoritative contributions by taxonomists and users of taxonomy who have spent their working lives addressing these issues. These contributions together demonstrate the crucial importance of supporting the Global Taxonomy Initiative and the importance of taxonomy in implementing the targets in the Global Strategy for Plant Conservation.

The volume is a tribute to Professor Vernon Heywood who has done so much to highlight the importance of sound scholarship, training and collaboration for plant conservation. The chapters draw on and develop the unique and significant contribution that he has made to the field, resulting in a comprehensive overview of its present status, suitable for advanced students, researchers and conservation professionals.

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TAXONOMY AND PLANT CONSERVATION

The Cornerstone of the Conservation and the Sustainable Use of Plants

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This book is a tribute to the work of Vernon Hilton Heywood, following the occasion of his 75th birthday, 24th December 2002. Professor V. H. Heywood (born 1927) has made a unique contribution to plant taxonomy and the conservation of plants. This collection of papers builds on Professor Heywood’s seminal work, *Principles of Angiosperm Taxonomy* (Davis & Heywood, 1965) to his present work with the DIVERSITAS Programme. Professor Heywood was an inspiring teacher encompassing undergraduate, M.Sc. and Ph.D. students as well as post-doctoral research fellows from many countries. He has formally supervised, or helped to supervise over 60 doctoral theses. He has left a wonderful trained legacy. His alumni have been given a deep respect for rigorous science and thought, plus the fundamental importance of communication and cooperation between all sectors and at all levels. Papers were invited not only from Professor Heywood’s colleagues and former students but other international experts in the field.

Professor Crane’s paper under the title of ‘Science and the future of plant diversity’ was given at Reading University on 16th December, 2002 to celebrate Professor Heywood’s actual 75th birthday.
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The objective of the book is to demonstrate the critical importance of taxonomy for the conservation and sustainable use of plant biodiversity.

All conventions, initiatives, strategies and programmes for plant conservation highlight the need for taxonomy. These initiatives assume that everyone understands why taxonomy is important but this is not the case and the work of conservation biologists, biodiversity management agencies and users of biodiversity is often compromised through failure to ensure an adequate taxonomic basis. To some extent taxonomy is the victim of its own success; quite simply, scientists and the public take it for granted and think ‘it has been done’. This view leads some scientists to think that taxonomy has no value and is an unnecessary complication. Scientists are not always aware of its rigorous and painstaking base and do not fully understand that taxonomy is a continuous process of incorporating new information. Furthermore, taxonomists appear to work in isolation and are criticised for not collaborating more closely with conservation agencies or making their taxonomic work and expertise easily available for conservationists. This book attempts to bridge the gap between taxonomists and conservation practitioners.

Plants are universally recognised as a vital part of the world’s biological diversity and an essential resource for the planet. At present we do not have a complete inventory of the plants of the world, but estimates are in the order of 250,000 to 400,000 species. Of particular concern is the fact that many of these species are in danger of extinction, threatened by habitat transformation, over-exploitation, alien invasive species, pollution and climate change. According to the 1997 *IUCN Red List of Threatened Plants* nearly 34,000 plant species, or 12.5% of the world’s vascular flora, are threatened with extinction (Walter & Gillett, 1998). However, the reduction in abundance and range of many numerous and widespread species is also an expression of overall biodiversity loss. The disappearance of such vital and large amounts of biodiversity sets one of the greatest challenges for the world
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community: to halt the destruction of the plant diversity that is so essential to meet the present and future needs of humankind.

It was growing concern over the effects of biodiversity loss on progress towards sustainable development that led to the establishment of the Convention on Biological Diversity (CBD) in 1992 (UNEP, 1992). The identification of the ‘taxonomic impediment’ on our ability to manage and use our biological diversity led to the Global Taxonomy Initiative (GTI) to increase capacity in taxonomy (UNEP, 2002a). Concern that insufficient resources were being directed towards plant conservation led to the Global Strategy for Plant Conservation (GSPC) which has set targets that are to be met by 2010 with the object of halting ‘the current and continuing loss of plant diversity’ (UNEP, 2002b). Furthermore, it is thought that biodiversity loss, together with other forms of environmental degradation, has the potential to undermine progress towards the achievement of the Millennium Development Goals, to be achieved by 2015 (www.undp.org/mdg); in particular Goal 1 to eradicate poverty and hunger, Goals 4 and 5 to improve health and Goal 7 to ensure environmental sustainability. Biodiversity contributes to poverty reduction in five key areas: food security, health improvement, income generation, reduced vulnerability to unpredictable events (e.g. access to food and environmental risks) and ecosystem services (e.g. generation of water, prevention of erosion) (Koziell & McNeill, 2002). The CBD and thematic programmes of the CBD (GTI and GSPC) and the Millennium Development Goals show that it is more important than ever to identify and conserve biodiversity for the sustainable development of the planet.

This book addresses this issue by describing and illustrating the importance of taxonomy in conservation. The Introduction (Part I) provides an overview of the place of taxonomy in science and in implementing the CBD (UNEP, 1992); the introduction also outlines areas of taxonomy that will be of particular importance in the future. Part II describes taxonomy and the work of taxonomists, and shows how a taxonomist makes decisions and why their outputs are valuable. Part III shows how taxonomy is essential in measuring and analysing plant diversity to establish priorities and develop plans for conservation. Part IV demonstrates how taxonomy is used in the practice and measurement of effective conservation action. These chapters cover the problems of: island floras, critical vascular plants and reintroduction of plants into the wild; the sustainable development and use of plants; ex situ and in situ approaches; legislation and the importance of conservation networks.

This book endeavours to show that sound taxonomy underpins conservation and that there is an urgent need for taxonomists to work in partnership with the managers of diversity for the conservation and the sustainable use of plants.
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