



## Field Guides: Useful Tools in Environmental Planning and Management

*Field guides are useful tools for promoting conservation awareness and action, and are implicitly supported by at least five Articles of the Convention on Biological Diversity. They can be used directly as information sources for environmental assessments of development projects, and to support national biodiversity databases, land use planning through GIS applications, the production of red data books, and in other information systems. The usefulness of field guides in the fostering of biodiversity expertise is, however, not always fully appreciated, and as a result neither donors nor publishers have provided the necessary support. However, a number of funding mechanisms already in existence could be used to facilitate their production and dissemination.*

### Introduction

In recent years, the World Bank and other donors have been conspicuously active in the production and development of policies, strategies, management plans for protected areas, and action plans relating to biodiversity conservation. Many of these activities are severely constrained by an inadequate or inaccessible knowledge base. Such constraints can be reduced through the use of local language field guides. In Indonesia, for example, the local-language edition of the *Field Guide to the Birds of Java and Bali* became very popular with university students and spawned the country's first bird clubs. Members went out to observe birds and noted changes in species abundance as a result of development pressures. A constituency of concerned and knowledgeable individuals was thus formed, and many of these young professionals who are currently employed in Indonesia by organizations such as Wetlands International or BirdLife International, engaged in work for major donors, trace their careers from the use of that book. Similar instances have been seen with the publication of the Spanish editions of *A Guide to the Birds of Panama* and *A Guide to the Birds of Mexico*.

Field guides are illustrated books or electronic media, preferably in the language of the area they cover, which allow any interested person to identify biodiversity components (species or habitats) and to access information on their distribution, ecology, and other relevant information. Many such guides are often in English for wider international use. Field guides encompass printed keys, multi-access computer keys, multimedia CD-ROM productions, and conventional books with illustrations and descriptions of species and their habits. Interesting examples are shown in Box 1. They can be produced as translations of existing texts or as original publications covering a region, a country, a national park, or any other delimited area. The level of taxonomic resolution will vary among guides; some guides may facilitate the identification to species or even subspecies levels, but in many groups identification to genus or even family level may be a major step forward, and may be the only practical solution until more detailed taxonomic or field work is completed. Field guides need not be limited to enabling the identification of species; they can and often do include a great deal of other information relevant to

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environmental management, such as habitat requirements, cultural significance, economic and other values, best practice survey and collection methods, threats, threatened species, conservation needs, and assessment of environmental impacts.

Field guides are important in the implementation of at least five Articles of the Convention on Biological Diversity: 7 (Identification and Monitoring), 12 (Research and Training), 13 (Public Education and Awareness), 14 (Impact Assessment), and 17 (Exchange of Information); and although rarely singled out in strategic plans, there is an *implicit* requirement for field guides wherever there are calls for:

- local community participation and promoting indigenous knowledge,
- education and human resource development,
- development of biodiversity information/databases, or
- advocacy development.

Experience shows that access to information and an understanding of a single group—birds or mammals, trees or flowers, reptiles or land snails—stimulates interest in other groups and this general knowledge of natural history helps to develop an appreciation of broader environmental concerns. This is true for both institutions and individuals; for example, the Panama Audubon Society, Côte d'Ivoire Nature, East Africa Wildlife Society, and the Philippines

#### Box 1

#### Examples of Interesting Field Guides

Heymans, J.C. 1986. *Petit Guide des Mammifères du Nord-Bénin*.

- A simple guide to increase awareness and interest covering mainly the larger mammals with information on habitats, tracks, feces, skulls, and local names. The frontispiece exhorts the reader to *Know them better to protect them better, protect them better to use them better*.

Jarvie, J. 1996. *The Trees of Borneo/Pohon di Borneo*. A web site on <http://django.harvard.edu/users/jjarvie/borneo.htm>

- A ground-breaking, dual-language web site produced by the Arnold Arboretum of Harvard University, providing an interactive key to the tree genera, together with illustrations.

Richardson, C. 1995. *The Birds of the United Arab Emirates*. Hobby, Dubai.

- A very practical guide with detailed distribution and breeding maps, migration data, seasonal descriptions, habitat descriptions, and tips on good birding sites. Users are encouraged to communicate observations to a central database known as the Atlas of the Breeding Birds of Arabia.

Kottelat, M. et al. 1993. *Freshwater Fishes of Western Indonesia and Sulawesi*. Periplus Editions, Singapore.

- A dual-language book with color illustrations of over 900 species, keys to genera, and comprehensive background material on ecology, conservation, collecting methodologies, and guidance for those undertaking environmental assessments.

Li G.-Y. et al., 1995. [*The Colour Handbook of the Birds of Sichuan*]. Sichuan Forestry Department, Chengdu.

- A comprehensive guide to all the species known from the province intended to increase peoples' awareness, and "to meet the urgent needs of nature conservation, economic construction, cultural exchanges, scientific research, education and other government departments such as agriculture, forestry, animal husbandry, customs, transportation etc." A colorful book covering all species.

Libis, B. and Chalot R. 1985. *Oiseaux du Maroc and To Ppwtou Mou Bibliogia Ta Poulia*. ICBP (now BirdLife International), Cambridge.

- Guides to the common birds of Morocco and Greece demonstrating that in some cases the same material can be used, with minor modifications, for two or more countries.

Srikosamatarā, S. and Hansel, T. 1996. *Mammals of Khao Yai National Park*. WWF Thailand and Green World Foundation, Bangkok.

- A site specific guide covering mainly the larger mammals, giving information on where and how to see each species, habitats, suggested hikes, and a checklist. Intended for nonspecialists to increase understanding and interest.

Newman, M.F., Burgess, P.F. and Whitmore, T.C. 1996. *Manuals of Dipterocarps for Foresters: Sumatra light hardwoods*. Royal Botanic Gardens, Edinburgh, and Centre for International Forestry Research, Jakarta.

- One of a series of easy-to-use, PC-based, multi-access keys to an important group of timber trees. Although primarily intended for professional foresters, non-experts can use the keys to identify species using simple field characters. Information is also given on ecology and silviculture.

Haribon Foundation started as natural history groups but have become respected NGOs involved in environmental planning and management. With the growing concern for biodiversity conservation many specialists, previously confined to taxonomic work in museums, are anxious to make their specialist knowledge available to a wider audience in order to increase identification skills, understanding and to improve resource management and planning.

Given the global loss of biodiversity and the clear role that field guides can have in supporting conservation initiatives, the production of field guides should be recognized as an important element of in-country capacity building and be given adequate funding. Many field guides exist in manuscript form for want of funding. Conservation NGOs recognize the importance of field guides, and many of them have been involved in the production of local language editions. Most NGOs are, however, severely constrained in this activity by shortage of funds.

### **Operational Application**

*Experience to date in approved and pipeline Bank projects.* A World Bank/UNDP project to develop regional environmental study centers in Indonesian universities supported the production of English and Indonesian editions of a book on the ecology of Sumatra. The book has been used widely by students, consultants and others and remains the fundamental source of locally relevant information. The idea was later taken up by the Canadian International Development Agency, and other volumes now cover the entire country. On-going projects in which field guides have been supported include the Maharashtra Forestry Project in India, the GEF Biodiversity Collections project in Indonesia, and the GEF Conservation of the Dana and Azraq Protected Areas project in Jordan. A number of GEF-supported projects under preparation, such as the Coral Reef Rehabilitation and Management Project (Indonesia), Kerinci-Seblat Integrated Conservation and Development project (Indonesia), Ecodevelopment project (India), and

the Russian Biodiversity project also include the production of field guides to promote the understanding of biodiversity conservation and management.

*Project preparation and implementation.* In the context of the World Bank's efforts to mainstream biodiversity, it is increasingly the case that IBRD/IDA projects seek to engage biodiversity issues where they are relevant to project work either to 'avoid harm', such as where a project is likely to modify natural habitats, or to 'do good' such as in education projects. The environmental sustainability of a development project depends on many factors including the level of ownership and involvement among the various stakeholders, available funds, and perceptions of values. Local-language field guides can meet these challenges by engendering and maintaining interest in ecosystem components and their management, and can remain useful for many years. Experience suggests that the interest and knowledge so generated will spawn further information as needs evolve.

The evolution of environmental assessment has been marked by major advances in the prediction and management of environmental impacts with progressive refinements in sampling, modeling, and analyses. However, the 'greener' aspects have been given less attention and resources are required to improve the situation. If wise decisions are to be made on development projects where there are significant impacts on biodiversity, then the analyses of impacts on species and ecosystems need to be placed on a firmer footing. The production of local language field guides will help increase the quantity and quality of information gathered which, if fed into national and international databases and other information systems, will assist in sectoral and regional planning.

*Assisting capacity building.* A consistent problem in training personnel charged with conservation is the lack of field guides. They can be used to demonstrate ecological principles required for making decisions about land management. The usefulness of field guides has been noted in, for example, West Africa and eastern European countries to which field guides

and secondhand binoculars have been donated as part of training programs. Capacity is also important for the success of integrated conservation and development projects in which the participatory nature demands that the local stakeholders and others within an area or country are able to share in the information available to others. Given that the primary goal of such projects is the conservation of biodiversity, field guides can be a useful means of building capacity at the local level.

*Formal and informal education.* Increased awareness of local biodiversity issues is widely recognized as essential at all levels and types of education, and field guides are one of the most useful means of achieving this objective. There is enormous scope in formal education programs to use appropriate field guides to help shape the content of regional/provincial curricula for elementary and secondary schools. In informal education programs, these guides can help empower local people to learn about their flora and fauna and increase awareness and interest in biodiversity, as well as in its management. Wherever possible, field guides should seek to incorporate relevant local knowledge of species and their habitat requirements.

*Economic value.* In addition to producing the expertise and conservation benefits required for sound environmental management, field guides also encourage ecotourism. It is no accident that the countries with the most important ecotourism in their regions - Costa Rica, South Africa, and Malaysia - also have the best field guides.

*Monitoring and evaluation.* The monitoring and evaluation of biodiversity are important to the successful implementation of development projects. A fundamental form of monitoring requires the ability to accurately identify and survey organisms with a view to recording the relative abundance of individual or groups of species because these can be a useful indicator of project impact. It has proved erroneous to suppose that local people or even local scientists can necessarily perform this work without appropriate assistance, and in this context local-language field guides are essential and very useful tools. It is likely that, given adequate support, CD-ROMs will soon provide the means

by which field guides tailored for specific protected areas, forestry concessions, or other parts of a country or region relevant to a monitoring program could be produced from parent databases.

## Costs and Financing

The cost of producing field guides for Bank client countries vary, but much can be achieved with the allocation of as little as a few thousand dollars to enable, for example, the translations of existing English texts. Potential readership can be increased by lowering retail prices either by the pre-purchase of copies or direct subsidies. There are many potential sources of funds for the support of field guide production within a range of relevant Bank activities such as the Japanese Grant Facility, Project Preparation Facility, trust funds, Institutional Development Fund, Research Committee funds, Small Grants Program, Global Environment Facility, private sector partnerships, bilateral support, as well as IBRD loans and IDA credits.

## The Way Ahead

It is clear that field guides can provide considerable and long-lasting benefits at relatively low cost to the borrower and the Bank. While 'green' projects may support the production of field guides in a more routine manner, the main challenge is to make these tools available for the planning and development of more sustainable infrastructure and other mainstream development projects. Means also need to be found to bring the information gleaned through the use of field guides to a broader audience and into the planning, decision making, and implementation process, especially by integrating inventory and survey results into national and biodiversity centers with their databases and geographic information systems. Making field guides more accessible would also assist the development of special interest clubs and societies, the publication of journals/newsletters, and thus a greater and deeper concern for the values of biodiversity and its conservation.

