

# INTRODUCTION

## AIMS AND OBJECTIVES

A long-term goal for biodiversity conservation in Asia is to ensure that the most important areas of natural and semi-natural habitat are identified and conserved. BirdLife International is leading the way in the identification of important sites through its Important Bird Areas (IBA) Programme.

The IBA programme aims to identify, document and conserve a network of globally important areas for the conservation of birds and their habitats using standard, internationally-agreed criteria, through national and local level consultations involving NGOs, experts and government agencies. Since birds are excellent indicators of overall biodiversity, these areas will be important for other fauna and flora. The distribution of birds is comparatively well-known, such that important sites can be quickly and comprehensively identified compared with the identification of sites for other wildlife.

This agenda is not just important for biodiversity conservation. Important Bird Areas also provide vital environmental services, such as the provision of fresh water and forest products, and prevention of floods and other environmental disasters, and as such their conservation contributes to the broader agenda of environmental management, sustainable development, and poverty eradication.

The Asian IBA Programme has the following long-term objectives:

1. To provide a basis for the development of national conservation strategies and protected areas programmes;
2. To highlight areas which should be safeguarded through wise land-use planning, national policies and regulations, and the grant-giving and lending programmes of international banks and development agencies;
3. To provide a focus for the conservation efforts of civil society including national and regional NGO networks;
4. To highlight sites which are threatened or inadequately protected so that urgent remedial measures can be taken;
5. To guide the implementation of global conservation conventions and migratory bird agreements

This directory presents data on IBAs in Asia, compiled by the BirdLife International Partnership since 1996, in a standardised and clear format.

## THE ASIA REGION

The Asia region as defined by BirdLife International extends from Pakistan to Indonesia (excluding Irian Jaya), and northwards to China, Mongolia and Russia east of the Yenisey River. It includes a great diversity of climates and habitats, and hence is extremely rich in birds and other biodiversity. Vast expanses of Arctic tundra, boreal forest and steppe grassland in the north of the region support huge numbers of birds which disperse widely both within and outside the region in the northern winter. The forests and alpine grasslands in the Himalayas and other mountain ranges have many characteristic montane bird species. South Asia has deserts and semi-arid scrublands and grasslands, biomes which each support specialised communities of birds. Moist tropical forests, the most biodiverse biome on earth, were the original vegetation type in parts of South Asia and most of South-East Asia. The tropical archipelagos of Indonesia and the Philippines are particularly rich in species, because many islands and island groups within them have assemblages of endemic species. In total, the Asia region supports about 2,700 bird species, more than one-quarter of the world's total.

Many Asian countries are currently experiencing dynamic economic growth, and half of the world's people live in the region. The combination of rapid development and increasing human population is putting unprecedented pressure on Asia's natural environment and biodiversity. A recent analysis by the BirdLife Asia Partnership (BirdLife International 2001) found that 323 (or about 12%) of the bird species in the Asia region were globally threatened with extinction. The primary cause of endangerment of these birds was found to be habitat loss or degradation, caused by conversion to agriculture and plantations, logging and cutting of timber, development (urban, industrial and infrastructural) and other economic activities. Despite these pressures, areas of natural habitat rich in birds and other biodiversity survive throughout the Asia region, even in the most densely populated and highly developed places. These areas are the focus of the current project.

## THE BIRDLIFE ASIA NETWORK

BirdLife International is a global network of non-governmental conservation organisations with a special focus on birds, which is currently present in over 100 countries and territories worldwide. In Asia, the BirdLife Partnership comprises 13 Partner, Partner Designate and Affiliate organisations (Table 1), with programme activities in Cambodia, Laos, Myanmar and Vietnam). The regional office of the BirdLife Secretariat in Asia is in Tokyo, Japan, with operational centres in Vietnam, Cambodia, Philippines and Indonesia. The BirdLife Asia Partnership maintains contacts in all countries and territories in the Asia region where there is currently no Partner or Affiliate organisation.

The BirdLife Partnership works together on shared priorities, policies and programmes of conservation action. The Asia Partnership has many on-going projects with a focus on the region's globally threatened birds and their key sites and habitats, and recently completed *Threatened Birds of Asia: the BirdLife International Red Data Book* (BirdLife International 2001). The proposals for conservation action from the Red Data Book were synthesised and further developed in *Saving Asia's threatened birds: a guide for government and civil society* (BirdLife International 2003).

**Table 1.** The BirdLife International Partnership in Asia.

Country/Territory	Organisation name	Status in BirdLife network
Hong Kong	Hong Kong Bird Watching Society	Affiliate
India	Bombay Natural History Society	Partner Designate
Indonesia	BirdLife Indonesia	Affiliate
Japan	Wild Bird Society of Japan	Partner
Malaysia	Malaysian Nature Society	Partner
Nepal	Bird Conservation Nepal	Affiliate
Pakistan	Ornithological Society of Pakistan	Affiliate
Philippines	Haribon Foundation	Partner
Russia	Russian Bird Conservation Union	Partner Designate
Singapore	The Nature Society (Singapore)	Partner
Sri Lanka	Field Ornithology Group of Sri Lanka	Affiliate
Taiwan	Wild Bird Federation Taiwan	Partner
Thailand	Bird Conservation Society of Thailand	Partner

**Table 2.** Important Bird Area directories published in the Asia region.

Country/ Territory	Citation
Cambodia	Seng Kim Hout, Pech Bunnat, Poole, C. M., Tordoff, A. W., Davidson, P. and Delattre, E. (2003) <i>Directory of Important Bird Areas in Cambodia: key sites for conservation</i> . Phnom Penh: Department of Forestry and Wildlife, Department of Nature Conservation and Protection, BirdLife International in Indochina and the Wildlife Conservation Society Cambodia Programme.
India	Islam, M. Z. and Rahmani, A. R. (2004) <i>Important Bird Areas in India: priority sites for conservation</i> . Indian Bird Conservation Network, Bombay Natural History Society (India) and BirdLife International (UK).
Indonesia	Rombang, W. M. and Rudyanto (1999) <i>Daerah Penting bagi Burung di Jawa dan Bali</i> . Bogor, Indonesia: PKA/BirdLife International Indonesia Programme. (In Indonesian) Holmes, D. and Rombang, W. M. (2001) <i>Daerah Penting bagi Burung: Sumatera</i> . Bogor, Indonesia: PKA/BirdLife International Indonesia Programme. (In Indonesian) Holmes, D., Rombang, W. M. and Octaviani, D. (2001) <i>Daerah Penting bagi Burung di Kalimantan</i> . Bogor, Indonesia: PKA/BirdLife International Indonesia Programme. (In Indonesian) Rombang, W. M., Trainor, C. and Lesmana, D. (2002) <i>Daerah Penting bagi Burung: Nusa Tenggara</i> . Bogor, Indonesia: PKA/BirdLife Indonesia. (In Indonesian)
Laos	Ounekham, K. and Inthapatha, S. (2003) <i>Directory of Important Bird Areas in Lao P.D.R.</i> . Vientiane: Forest Inventory and Planning Division, the Division of Forest Resource Conservation, BirdLife International in Indochina and the Wildlife Conservation Society Lao Program.
Philippines	Mallari, N. A. D., Tabaranza, B. R. and Crosby, M. J. (2001) <i>Key conservation sites in the Philippines: a Haribon Foundation and BirdLife International directory of Important Bird Areas</i> . Manila: Bookmark, Inc.
Taiwan	Wild Bird Federation Taiwan (2001) <i>Important Bird Areas in Taiwan</i> . Taipei: Wild Bird Federation Taiwan.
Thailand	Bird Conservation Society of Thailand (2004) <i>Directory of Important Bird Areas in Thailand: key sites for conservation</i> . Bangkok: Bird Conservation Society of Thailand and BirdLife International.
Vietnam	Tordoff, A. W. ed. (2002) <i>Directory of Important Bird Areas in Vietnam: key sites for conservation</i> . Hanoi: BirdLife International in Indochina and the Institute of Ecology and Biological Resources.

## THE IBA PROGRAMME IN THE ASIA REGION

Since the mid-1980s, BirdLife International (formerly known as the International Council for Bird Preservation, or ICBP) has been developing its IBA programme. It has proved to be a very cost-effective and flexible way of identifying and promoting coherent and organised action for priority sites for birds and biodiversity, at the regional, national and local levels. Regional directories of IBAs have been published for Europe (1989 and 2000), the Middle East (1994) and Africa (2001), and projects to identify IBAs are now underway in all other regions of the world. By 2004, directories of IBAs had been published in 46 countries and territories.

Within the Asia region, there are variations in the progress of the work to identify and document IBAs. Eight countries and territories have already published IBA directories (Table 2) and two more have published preliminary directories (Sri Lanka and Timor-Leste). Several other countries and territories have compiled

detailed data on their IBAs, and plan to publish directories in the near future, but for the remainder the summary data presented here represents the first attempt to collate IBA material. Even where IBA directories have been published, it is likely that new sites that meet the global criteria will be discovered (particularly in those countries and territories that have not yet been adequately surveyed). The information published in national and regional directories will, therefore, need to be periodically updated.

## REFERENCES

- BIRDLIFE INTERNATIONAL (2001) *Threatened Birds of Asia: the BirdLife International Red Data Book*. Cambridge, U.K.: BirdLife International.  
BIRDLIFE INTERNATIONAL (2003) *Saving Asia's threatened birds: a guide for government and civil society*. Cambridge, U.K.: BirdLife International.

# ■ JUSTIFICATION FOR THE ASIAN IBA PROGRAMME

## THE PROBLEM DEFINED

As Asia's economy develops and its human population expands, greater demands are being placed on the region's natural ecosystems. Throughout the region, forests are being lost to clear felling and conversion to agriculture, infrastructure and other land uses, and degraded by timber extraction, livestock grazing, shifting cultivation and over-exploitation of non-timber forest products. Similarly, grasslands are being converted into agriculture and other land-uses, and degraded by over-grazing, over-harvesting of grass, and inappropriate fire management. Finally, wetland habitats are being lost through afforestation, reclamation and infrastructure development, and degraded by over-exploitation of wetland resources.

Even where natural habitats are relatively well protected from degradation and loss, wildlife populations are under pressure from over-exploitation. For many Asian ecosystems, there is a long history of human use of natural resources. However, commercial demand is now contributing to ever-higher pressure on natural resources, and this trend, coupled with dwindling areas of natural habitat, is resulting in over-exploitation of plant and animal populations.

The root causes of biodiversity loss in Asia are entrenched and complex. At their heart are human population growth, economic development and rising levels of consumption, both in the region and beyond. These forces are compounded by under-valuation of ecosystem products and services, inappropriate land tenure systems, external and internal pressure to pursue export-led growth, and capacity limitations among government agencies mandated to conserve biodiversity. Furthermore, climate change threatens to have significant, if as yet uncertain, impacts on the region's biodiversity.

Efforts to stem the accelerating loss of Asia's biodiversity have centred on development of national systems of protected areas. While considerable resources have been invested in this area and significant success has been achieved, there are severe weaknesses in management, and many important areas remain outside the network. Moreover, there has been limited progress in mainstreaming biodiversity into broader socio-political agendas. As a result, on-the-ground conservation action continues to be undermined by incompatible programmes and policies of governments and donors, such as commercial logging, expansion of cash crop plantations, agricultural intensification, land reclamation and aquacultural development.

As natural ecosystems are degraded, natural resources depleted and biodiversity lost, the capacity of natural ecosystems to support human livelihoods and contribute to the wider socio-economic development of the region is being diminished. A recent study estimated the irreplaceable value of wild nature globally at around about \$20 trillion per year (Balmford *et al.* 2002), while a separate study estimated the combined global value of 17 ecosystem services, including climate regulation, water supply and food production, at between US\$16 and 54 trillion per year (Costanza *et al.* 1997).

If the contribution of Asia's natural ecosystems to human livelihoods is to be maintained, and the full diversity of the region's habitats, communities and species is to be conserved, it is essential that the principle of environmentally sustainable development is adopted in all countries and throughout all sectors of society. A key aspect of environmentally sustainable development is avoiding development inconsistent with the conservation of the most biologically important sites, and ensuring that conservation action is targeted at the highest priority sites. The Asian IBA Programme is a contribution to this end.

## RATIONALE FOR THE IBA APPROACH

### ■ Sites are an effective unit for conservation action

Sites are discrete areas of habitat that can be delineated and, at least potentially, managed for conservation. Effective protection of sites can address habitat loss and over-exploitation, two of the major causes of biodiversity loss. Protection of a network of sites can represent a cost-effective approach to conservation, because a relatively small network can support a large proportion of the species, communities and/or habitats within any given region of analysis. In addition, protection of a network of sites is consistent with sustainable development and poverty alleviation agendas, because it allows a significant degree of human use of landscapes. For these reasons, sites are a major focus of conservation investment by government, donors and civil society. In particular, they form the basis of most protected area networks.

### ■ Birds are a good basis for site networks

The Asian IBA Programme uses birds as the basis for a region-wide site network. As a group, birds have several features that make them good indicators:

- They contain high numbers of globally threatened and restricted-range species.
- They have well understood distributions and habitat requirements.
- They are relatively easy to record and identify in the field.
- They are good indicators of habitat condition and human disturbance.
- They can act as flagships for conservation.

A greater amount of information is available on the status and distribution of birds in Asia than on any other major taxonomic group. Studies in other regions have shown that birds can be a highly effective means of setting geographical priorities for conservation in the absence of detailed data on other taxa (Howard *et al.* 1998, Burgess *et al.* 2002). Consequently, conservation of the IBA network can be expected to make a major contribution to the conservation of taxonomic groups other than birds, and identification of IBAs can contribute to the identification of a network of globally important sites for species conservation, termed "key biodiversity areas" (Box 1).

Birds are also an important conservation focus in their own right. They perform ecological roles essential to the function of ecosystems, such as seed-dispersal and pollination, and they have

#### Box 1. Key biodiversity areas.

The IBA criteria can be generalised to other taxonomic groups to identify key biodiversity areas, places of international importance for the conservation of biodiversity (Eken *et al.* 2004). All IBAs are key biodiversity areas, but some key biodiversity areas are not IBAs; they are significant for the conservation of other taxa but not birds.

Data on species status and distribution are still very scanty for most taxonomic groups, apart from birds. Fortunately, studies suggest that the network of IBAs is an excellent first approximation to the overall network of key biodiversity areas. IBAs capture the bulk of diversity in other groups, as well as the most significant sites for threatened and restricted-range species (Brooks *et al.* 2001, Nature Kenya and Wildlife Conservation Society of Tanzania 2003, Pain *et al.* in press, Tushabe *et al.* in press). The IBA network can thus be used with confidence, right away, to guide conservation planning and action, with any gaps being filled later as information becomes available.

economic values, particularly as a basis for ecotourism, a growing industry in many parts of Asia. Moreover, birds have high significance in many Asian cultures, and, like all elements of biodiversity, should be conserved for the richness and diversity they contribute to human experience (Collar 2003).

Because of the intrinsic values of birds and their utility as an indicator for biodiversity in general, many individuals and organisations are interested and motivated to conserve them. As a result, there is a growing constituency for bird conservation in Asia, which forms a strong foundation for efforts to conserve the IBA network.

#### ■ IBAs contribute to socio-economic development

IBAs are not only important for birds and biodiversity but also for socio-economic development at the local and national levels. The ecosystem goods and services provided by IBAs often contribute significantly to human livelihoods. For example, coastal IBAs may be a source of marine products for fishing communities, while forest IBAs may be a source of non-timber forest products, such as fuelwood and medicinal plants, for rural communities. In addition, conservation of the Asian IBA network would bring significant benefits to national economies, because many IBAs provide high-value ecosystem services, such as catchment protection and flood control. Consequently, provided that the socio-economic benefits of IBAs can be equitably shared, and their biological values simultaneously maintained, IBA conservation should be an objective shared by conservationists, local communities and governments alike.

#### ■ Sites can help to address gaps in protected areas systems

In the region to date, the majority of investment in site-based conservation by national governments and donor agencies has been in the development of protected areas systems. However, protected areas systems are rarely developed systematically. Globally, there are major gaps in existing systems with regard to critical habitat types, biomes and threatened species<sup>1</sup>, and the most urgent priorities for expansion are disproportionately concentrated in Asia (Rodrigues *et al.* 2003). Because IBAs are identified according to objective, scientific criteria, irrespective of current protection status, many of them lie outside of existing national protected areas systems. Therefore, the IBA network can be used as a tool to review existing national protected areas systems, identify gaps in coverage, and identify candidate sites for expansion or designation of protected areas to address these gaps.

#### ■ There is a need to develop non-formal approaches to site protection

In most Asian countries, it is not feasible to designate every IBA as a formal protected area, due to such factors as resource limitations, conflicting land ownership, and high opportunity costs in productive landscapes, such as lowland forests and coastal zones. Moreover, formal protected area designation may not necessarily be the most effective approach to site-based protection, especially where an IBA supports a large resident human population and/or high levels of human use. Indeed, in some circumstances, formal protected area designation could be counter-productive to conservation objectives, particularly where protected area regulations restrict traditional land- and natural-resource-use practices that are compatible with or contribute to the biological value of a site.

Therefore, there is a need to develop alternative approaches to site-based protection of IBAs, in addition to formal protected areas, such as community-managed conservation areas, private protected areas and voluntary agreements with land-owners. In many cases, these approaches may be more cost-effective and/or engage support from non-traditional sources. Moreover, these approaches may provide greater opportunities for sustainable human use of natural resources, and therefore, make a greater contribution to poverty alleviation among people for whom natural resources form a critical component of their livelihood strategies.

#### ■ IBAs can be building blocks of networks

While protecting individual sites can be an effective approach to conservation for many species, at least in the medium term, the long-term conservation of all species requires the protection of inter-connected networks of sites. This is particularly important for species with wide home ranges, low natural densities and/or migratory behaviour, for which individual sites cannot support long-term viable populations. In addition, protection of inter-connected networks is essential for the maintenance of broad-scale ecological and evolutionary processes (Schwartz 1999). Furthermore, inter-connected networks may be less susceptible to the impacts of global climate change, as species are better able to “track” changes in habitat distribution. Therefore, site-level approaches to conservation must be complemented by landscape-level approaches, which maintain or establish habitat connectivity among individual sites.

There are a number of examples of landscape-level conservation initiatives in Asia and other parts of the world. Such approaches typically involve the identification and integration into broader socio-political agendas of inter-connected networks of core areas, linked by habitat corridors, protected by buffer zones and, in some cases, further developed by restoration areas. In most parts of the region, the IBA network represents the most comprehensive assessment of internationally important sites for conservation. Thus, IBAs could be adopted as core areas for such networks, with additional core areas being identified for other taxonomic groups as available data permit.

#### ■ IBAs are a tool to mainstream biodiversity into other policy sectors

Incompatible land-use and development schemes are among the major threats to biodiversity in Asia, for example land reclamation and mangrove afforestation in the case of coastal ecosystems, or commercial logging and conversion to plantations in the case of forest ecosystems. These threats typically arise from insufficient integration of biodiversity conservation objectives into the plans and policies of other sectors, leading to site-based conservation efforts being undermined by incompatible development projects and patterns of land use. Consequently, there is a need to “mainstream” biodiversity into other policy sectors, particularly agriculture, forestry, fisheries, mining, transport, energy and tourism.

In order to mainstream biodiversity into other policy sectors, it is essential that accurate, up-to-date information on the conservation importance of sites is made available to decision makers in government and donor agencies. It is also essential that such information is based on clear, objective and universally accepted criteria. Consequently, IBAs represent a valuable tool for integrating biodiversity into policy and planning.

One area where IBAs can help to mainstream biodiversity is in implementation of environmental safeguard policies. Governments and donor agencies have introduced a number of policies that can be used to safeguard important sites for biodiversity conservation from incompatible development and land-use, most notably national Environmental Impact Assessment (EIA) legislation and donor environmental safeguard policies (see Section on Relevance of IBAs to Donor Safeguard Policies, pages 7–8). However, there remain a number of obstacles to the effective implementation of these policies, including a lack of consensus on what constitutes a site of high conservation importance. Because they are based on objective, scientific criteria, IBAs can assist the clear and consistent implementation of government and donor environmental safeguard policies.

#### ■ IBAs support national commitments under multilateral environmental agreements

Conservation of the Asian IBA network will assist national governments and donor agencies to meet their commitments under multilateral environmental agreements. These agreements include the Convention on Biological Diversity (CBD), the Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar Convention), the Convention on Migratory

<sup>1</sup> The Seventh Conference of the Parties (COP-7) to the CDB decision on protected areas recognises that “existing systems of protected areas are neither representative of the world’s ecosystems, nor do they adequately address conservation of critical habitat types, biomes and threatened species, and, with marine areas particularly under-represented, actions need to be taken to fill these gaps.”



Species (CMS), and the Asia-Pacific Migratory Waterbird Conservation Strategy (see Section on Relevance of IBAs to Multilateral Environmental Agreements and other Mechanisms, pages 5–7).

Because of the strong similarities between the criteria for identifying important sites for conservation under multilateral environmental agreements and the IBA criteria, many IBAs meet the criteria for designation under these agreements. Consequently, one way in which IBAs can support national commitments under multilateral environmental agreements is by identifying candidate sites for designation.

## RELEVANCE OF IBAs TO MULTILATERAL ENVIRONMENTAL AGREEMENTS AND OTHER MECHANISMS

National governments in Asia are party to a number of multilateral environmental agreements, established to promote biodiversity conservation and sustainable use of natural resources, as are several multilateral development banks (see Table 1). In addition, there are a number of other mechanisms that promote international cooperation for the conservation of biodiversity and natural resources. This section briefly describes each agreement and mechanism, and highlights the main ways in which conservation of the Asian IBA network would assist national governments and donors to meet their commitments under them.

**Table 1.** Participation in multilateral environmental agreements and other mechanisms by countries in the Asia Region.

Country	Agreement/mechanism						
	CBD	Ramsar	CITES	CMS	WHC	UNCCD	MAB
Bangladesh	CP-P	CP(2)	CP		CP(3)	CP	NC
Bhutan	CP-C		CP		CP	CP	
Brunei			CP			CP	
Cambodia	CP-C	CP(3)	CP		CP(1)	CP	NC(1)
China	CP-C	CP(21)	CP		CP(30)	CP	NC(24)
India	CP-P	CP(19)	CP	CP	CP(26)	CP	NC(3)
Indonesia	CP-C	CP(2)	CP		CP(7)	CP	NC(6)
Japan	CP-C	CP(13)	CP		CP(12)	CP	NC(4)
North Korea	CP				CP(1)	CP	NC(1)
South Korea	CP-C	CP(2)	CP		CP(7)	CP	NC(2)
Laos	CP-C		CP		CP(2)	CP	
Malaysia	CP-C	CP(4)	CP		CP(2)	CP	NC
Maldives	CP-C				CP	CP	NC
Mongolia	CP-C	CP(11)	CP	CP	CP(2)	CP	NC(4)
Myanmar	CP		CP		CP	CP	NC
Nepal	CP-C	CP(4)	CP		CP(4)	CP	NC
Pakistan	CP-C	CP(19)	CP	CP	CP(6)	CP	NC(1)
Philippines	CP-C	CP(4)	CP	CP	CP(5)	CP	NC(2)
Russia <sup>1</sup>	CP-C	CP(14)	CP		CP(5)	CP	NC
Singapore	CP-C		CP			CP	
Sri Lanka	CP-C	CP(3)	CP	CP	CP(7)	CP	NC(2)
Thailand	CP	CP(10)	CP		CP(4)	CP	NC(4)
Timor-Leste						CP	
Vietnam	CP-C	CP(1)	CP		CP(5)	CP	NC(2)

Key: CDB: Convention on Biological Diversity (CP = Contracting Party; CP-C = Contracting Party, NBSAP completed; CP-P = Contracting Party, NBSAP under preparation); Ramsar: Convention on Wetlands of International Importance (CP = Contracting Party; figures in brackets are the number of Ramsar Sites at September 2004); CITES: Convention on International Trade in Endangered Species (CP = Contracting Party); CMS: Convention on Migratory Species (CP = Contracting Party); WHC: World Heritage Convention (CP = Contracting Party; figures in brackets are the number of World Heritage Sites at August 2004); UNCCD: United Nations Convention to Combat Desertification (CP = Contracting Party); MAB: Man and the Biosphere Programme (NC = National Committee established; figures in brackets are the number of Biosphere Reserves at August 2004).

Note: 1 = the numbers of Ramsar Sites and World Heritage Sites given for Russia only include those in the Asia region, as defined in this directory.

## Convention on Biological Diversity (CBD)

The CBD was adopted in 1992 and came into force in 1993. As of May 2004, the convention had 188 contracting parties, including 22 in the Asia region (as defined in this directory). The convention's objectives are the conservation of biological diversity, the sustainable use of its components, and the fair and equitable sharing of the benefits arising out of the utilisation of genetic resources. The convention has a focus on *in situ* conservation, and Article 8(a) commits national governments to establish "a system of protected areas or areas where special measures need to be taken to conserve biological diversity".

At the global level, conservation of the IBA network could be adopted as a conservation target under the CBD. A precedent has been set by the Global Strategy for Plant Conservation, adopted by the contracting parties to the CBD in 2002, which includes a target to protect 50% of the most important areas for plant diversity globally by 2010.

At the national level, implementation of the CBD is guided by National Biodiversity Strategies and Action Plans (NBSAPs), which set out priorities for biodiversity conservation. These documents are used, in part, to guide investment from the Global Environment Facility and other funding sources. NBSAPs have been completed for 17 Asian countries, and are under preparation for two more. NBSAPs present an opportunity for official recognition of national IBA networks within national conservation plans.

The Seventh Conference of the Parties of the CBD, held in Kuala Lumpur in 2004, adopted a Decision on Protected Areas, which sets goals to establish and strengthen regional networks of protected areas, and ensure that scientific knowledge contributes to their establishment and effectiveness. The Asian IBA network provides an objective scientific basis for the review and expansion of protected areas networks in the region, and their integration into broader socio-political agendas.

## Ramsar Convention

The Ramsar Convention, officially known as the Convention on Wetlands of International Importance especially as Waterfowl Habitat, was adopted in 1971 and came into force in 1975. As of September 2004, the convention had 141 parties, including 16 in the Asia region (as defined in this directory). The convention provides a framework for international cooperation for the conservation and wise use of wetlands, and parties have a commitment to promote the wise-use of all wetlands in their territory, to designate suitable sites for inclusion on the List of Wetlands of International Importance (Ramsar Sites), and to promote their conservation.

As of September 2004, the parties had designated 1,387 Ramsar Sites globally, including 132 in the Asia region. As several of the IBA criteria are shared with those used to identify Ramsar Sites, IBAs meeting these criteria could be adopted as candidates for designation as Ramsar Sites by their respective national governments. Other ways in which information on IBAs could assist parties to deliver on their commitments under the Ramsar Convention could be their inclusion in national wetland policies, or their use as a basis for national wetland monitoring programmes.

## Convention on Migratory Species of Wild Animals (CMS)

The CMS, also known as the Bonn Convention, was adopted in 1979 and came into force in 1983. As of June 2004, the CMS had 86 parties. Only five Asian countries are party to the convention (India, Mongolia, Pakistan, Philippines and Sri Lanka), although a number of others participate in CMS Agreements. The aim of the convention is to protect migratory species that cross international borders.

The CMS has two appendices: Appendix I and Appendix II. Parties have a commitment to prohibit the taking of species listed on Appendix I, and to endeavour to conserve and restore important habitats for them. Information on IBAs can assist parties to meet this commitment by identifying important habitats for migratory bird species in need of conservation.

Parties also have a commitment to conclude international agreements with other range states for the conservation and management of species listed on Appendix II. These agreements should provide for a network of suitable areas of habitat along

each species's migration routes. Again, information on IBAs can assist parties to meet this commitment by identifying suitable areas of habitat for each bird species covered by international agreements.

**World Heritage Convention (WHC)**

The WHC was adopted in 1972 and came into force in 1975. As of July 2004, the convention had 177 parties globally, including 21 in the Asia region (as defined in this directory). The aim of the convention is to identify and conserve cultural and natural monuments and sites of outstanding universal value. Parties to the WHC have a commitment to nominate suitable sites for recognition by the United Nations Educational, Scientific and Cultural Organisation (UNESCO) as World Heritage Sites. As of July 2004, a total of 788 World Heritage Sites had been designated worldwide, including 129 in Asia.

To date, the majority of World Heritage Sites have been nominated for their cultural values. In order to redress this imbalance, the WHC wishes to see more natural monuments of outstanding value nominated. As a significant number of Asia's IBAs have outstanding biological and other natural values, information on IBAs can be used to assist parties to identify candidate sites for nomination as World Heritage Sites.

**Convention on International Trade in Endangered Species of Fauna and Flora (CITES)**

CITES was adopted in 1973 and came into force in 1975. As of August 2004, the convention had 166 parties globally, including 21 in the Asia region (as defined in this directory). The aim of CITES is to regulate international trade in wildlife and wildlife products through international cooperation, while recognising national sovereignty over wildlife resources. CITES has two appendices: Appendix I, which lists species that cannot be traded commercially; and Appendix II, which lists species that can only enter international trade under specific controlled circumstances. Parties are expected to have trade management regulations in place to ensure that export of any species listed on Appendix II will not be detrimental to the survival of that species. Of over 300 globally threatened bird species in Asia, 124 are included on CITES Appendix I or II (BirdLife International 2003), and many of these species occur in important populations at IBAs.

The Asian IBA network can provide a focus for the efforts of national governments to implement CITES, for example by identifying sites with significant populations of bird species threatened by the wildlife trade, which may require strengthened enforcement, public awareness raising, and other targeted conservation actions.

**United Nations Convention to Combat Desertification (UNCCD)**

The UNCCD was adopted in 1994, came into force in 1996, and, as of July 2004, had 191 parties globally. The UNCCD is the only multilateral environmental agreement to which every country in the Asia region is party. The objectives of the convention are to combat desertification and to mitigate the effects of drought.

Implementation of the UNCCD is guided by the development of regional and national action programmes. There exist opportunities to incorporate IBAs into these action programmes, thereby assisting them to more fully address biodiversity conservation of threatened species and sites. In addition, integration of IBAs into regional and national action programmes could help to ensure that activities to combat desertification and mitigate the effects of drought, such as afforestation and irrigation, do not have negative impacts on important sites for biodiversity conservation.

**Millennium Development Goals**

The Millennium Development Goals are a series of time-bound and measurable goals and targets for combating poverty, hunger, disease, illiteracy, environmental degradation and discrimination against women, set at the United Nations Millennium Summit in 2000. The conservation of the Asian IBA network would assist national governments to meet Millennium Development Goal No. 7: Ensure Environmental Sustainability, which sets a target for the international community to “integrate the principles of sustainable development into country policies and programmes and reverse the loss of environmental resources” by 2015 (Target No. 9). The

IBA network provides a very useful tool for monitoring progress towards this target, especially as it is relevant to two of its indicators: “proportion of land area covered by forest” (Indicator No. 25) and “ratio of area protected to maintain biological diversity to surface area” (Indicator No.26).

**Man and the Biosphere Programme (MAB)**

The MAB Programme was initiated in 1971 by UNESCO. The programme aims to develop a basis for the conservation and sustainable use of biological diversity, and for the improvement of the relationship between people and their environment. The programme operates through a network of National Committees and Focal Points among UNESCO member countries. As of June 2004, National MAB Committees had been established in 19 Asian countries.

Countries participating in the MAB Programme are expected to designate one or more Biosphere Reserves, which are examples of terrestrial and coastal ecosystems where solutions are promoted to reconcile biodiversity conservation with its sustainable use. As of June 2004, 440 Biosphere Reserves had been designated globally, including 56 in the Asia region (as defined in this directory). Information on IBAs can assist National MAB Committees to identify candidate sites for designation as Biosphere Reserves.

**Asia-Pacific Migratory Waterbird Conservation Strategy**

The Asia-Pacific Migratory Waterbird Conservation Strategy is coordinated by Wetlands International with support from the governments of Japan and Australia, and aims to promote the conservation of migratory waterbirds and wetlands in the Asia-Pacific region. The first Asia-Pacific Migratory Waterbird Conservation Strategy covered the period from 1996 to 2000; the current strategy covers the period from 2001 to 2005.

Under the Asia-Pacific Migratory Waterbird Conservation Strategy, regional action plans have been developed for Anatidae, shorebirds and cranes. Each of these action plans provides for the establishment of a network of sites of international importance for the group of waterbirds concerned: the East Asian Anatidae Site Network, the East Asian-Australasian Shorebird Site Network and the North East Asian Crane Site Network. The three networks include 68 sites in 10 Asian countries (as defined in this directory). Information on IBAs can assist the implementation of the strategy by identifying important sites for Anatidae, shorebirds and cranes for inclusion within the three site networks.

**Bilateral migratory bird agreements/treaties**

Ten bilateral migratory bird agreements/treaties involving territories in the Asia region have already been established (Table 2), and others are under discussion. These agreements provide mechanisms for the promotion of bilateral and international actions for the conservation of migratory birds. Information on IBAs can assist with the implementation of these agreements by identifying the key sites for migratory birds in the relevant territories, and thereby providing a focus for international action programmes developed under the bilateral agreements.

**Table 2.** Bilateral agreements/treaties on the conservation of migratory birds in the Asia-Pacific region.

	Australia	China	India	Japan	North Korea	South Korea	Russia	U.S.A.
Australia								
China	Yes							
India								
Japan	Yes	Yes						
North Korea								
South Korea								
Russia			Yes	Yes	Yes	Yes		
U.S.A.		Yes		Yes			Yes	

Table reproduced from the Asia-Pacific Migratory Waterbird Conservation Strategy: 2001–2005.

### ■ Conservation of Arctic Fauna and Flora (CAFF)

CAFF is a working group of the Arctic Council, of which one Asian country, Russia, is a member. The objectives of CAFF are to conserve Arctic biodiversity and ensure that use of Arctic living resources is sustainable. CAFF developed the Circumpolar Protected Areas Network Strategy and Action Plan, which was adopted by the Arctic Countries in 1996. The strategy and action plan aim to develop a comprehensive circumpolar protected areas network. Information on IBAs can assist the Arctic Countries to meet this aim, by identifying gaps in the circumpolar protected areas network in the part of Arctic Russia within the Asia region.

### ■ ASEAN Agreement on the Conservation of Nature and Natural Resources

The Association of South-East Asian Nations (ASEAN) Agreement on the Conservation of Nature and Natural Resources was adopted in 1985, although it has not yet entered into force, as it has only been signed by five of the 10 ASEAN member countries. Conservation of the Asian IBA network would assist ASEAN member countries to fulfil several of their commitments under this agreement. First, the IBA network could serve as a tool for integrating the conservation and management of natural resources into development planning at all levels (Articles 2 and 14), and for integrating natural resource conservation into the land-use planning process (Article 12). Second, the IBA network could provide a basis for establishing a co-ordinated network of protected areas to conserve natural habitats and fauna and flora species, particularly endangered and endemic species (Articles 3 and 13). Third, the IBA network could provide a focus for activities to promote the conservation of natural areas by private owners, communities or local authorities (Article 13).

## RELEVANCE OF IBAs TO DONOR SAFEGUARD POLICIES

Many multilateral and bilateral development banks have introduced environmental safeguard policies, to ensure that appropriate measures are taken to mitigate potential negative impacts of their financing operations. These policies provide a basis for safeguarding important sites for biodiversity conservation, including IBAs, from incompatible development. Adoption of IBAs as a tool to guide implementation of donor safeguard policies has great potential to assist their effective implementation, through: (i) generating greater coherence and clarity about the implementation of safeguard policies between donor agencies and borrowers; (ii) ensuring increased consistency and transparency of safeguard policies, and promoting greater public trust in donor agencies; and (iii) assisting standardisation and comparability among safeguard policies, thereby reducing opportunities for borrowers to “shop around” for donors with less stringent safeguard requirements<sup>1</sup>. This section briefly reviews the environmental safeguard policies of several major multilateral and bilateral donors operating in the region, and highlights ways in which adoption of the Asian IBA network as a standard source of information on important sites for biodiversity conservation could support their implementation.

### ■ The World Bank

The principle environmental safeguard policy of the World Bank is the Operational Policy (OP)/Bank Procedure (BP) 4.01 on Environmental Assessment. Environmental assessments are conducted for each investment loan, to determine the extent and type of EIA to be conducted, and whether the project triggers any other safeguard policy. Of these other safeguard policies, the Asian IBA network is most relevant to OP/BP 4.04 on Natural Habitats and OP/BP 4.36 on Forests.

Responsibility for undertaking the assessments required by the World Bank’s safeguard policies lies with the borrower government,

while the World Bank is responsible for overall compliance with the policies.

OP/BP 4.04 on Natural Habitats prohibits World Bank support for projects that would lead to the significant loss or degradation of any Critical Natural Habitats, which comprise natural habitats that are either:

- legally protected;
- officially proposed for protection; or
- unprotected but of known high conservation value<sup>2</sup>.

In most Asian countries, lists of legally protected sites and sites officially proposed for protection are available from government departments responsible for development and management of national protected areas systems. However, adoption of the Asian IBA network as a standard source of information could support the implementation of OP/BP 4.04<sup>3</sup>, by providing a standard list of Critical Natural Habitats that are unprotected but of known high conservation value; information that is typically not otherwise available in an agreed, standardised format.

OP/BP 4.36 on Forests prohibits World Bank support for projects that would involve significant conversion or degradation of Critical Forest Areas or related Critical Natural Habitats. Critical Forest Areas are forest areas that qualify as Critical Natural Habitats under OP/BP 4.04. Consequently, adoption of the Asian IBA network as a standard source of information for OP/BP 4.36 could support its implementation in a similar way to OP/BP 4.04.

### ■ International Finance Corporation (IFC)

The safeguard policies currently in use by IFC are based on those of the World Bank, with adaptations to reflect the private sector focus of IFC’s investments. Like the World Bank, IFC has safeguard policies on Environmental Assessment, Natural Habitats and Forests. IFC recently undertook a comprehensive review of its safeguard policies (CAO 2002). Among other things, this review identified lack of clarity about what constitutes a Natural Habitat to be a major source of disagreements between IFC and national governments. By promoting coherence and clarity, adoption of the Asian IBA network as a standard source of information for the application of relevant safeguard policies could make a significant contribution to addressing this issue.

### ■ Asian Development Bank (ADB)

ADB has undergone a gradual process of incorporating environmental considerations into its operations, including adoption of a systemised procedure for environmental review of proposed loan projects. Despite the progress that has been made, ADB recognised a need to continue to strengthen the integration of environmental considerations across all its operations. To this end, in November 2002, ADB adopted an Environment Policy (ADB 2002) for the first time.

ADB requires an EIA of all its loans and private sector investments. As with the World Bank and IFC, the borrower is responsible for conducting the assessment, in accordance with ADB’s environmental assessment requirements, while ADB is responsible for ensuring compliance, and monitoring agreed mitigation measures by the borrower.

Environmental classification of projects is undertaken during the project screening process, to evaluate the potential significance of environmental impacts and determine whether an EIA should be conducted. In 2003, ADB implemented new guidelines for environmental assessment, with a more transparent procedure for environmental classification (ADB 2003). Specifically, these guidelines aim to improve analysis and documentation leading to the environmental categorisation of projects at the concept stage, through the use of rapid environmental assessment checklists.

Incorporation of the Asian IBA network into the environmental classification process could increase its consistency and

<sup>1</sup> “aid recipients cite differences in donor operational policies and procedures as the single most important impediment to the effectiveness of external development assistance.” Source: *Harmonization of operational policies, procedures, and practices: experience to date* (SecM2001-158). Unpublished report to the Development Committee, 8 March 2001.

<sup>2</sup> According to Annex A of World Bank OP 4.04, “such sites may include areas recognised by traditional local communities (e.g., sacred groves); areas with known high suitability for bio-diversity conservation; and sites that are critical for rare, vulnerable, migratory, or endangered species”.

<sup>3</sup> Site networks can be incorporated into OP 4.04 by being included “on supplementary lists prepared by the [World] Bank or an authoritative source determined by the Regional Environment Sector Unit (RESU)”.



transparency. In particular, it could assist the application of the rapid environmental assessment checklists, by determining whether projects are sited adjacent to or within environmentally sensitive areas<sup>4</sup>.

### ■ Japan Bank for International Cooperation (JBIC)

In October 2003, JBIC implemented a new set of environmental guidelines (JBIC 2002), which unified and updated two previous sets. Following these guidelines, JBIC conducts screening and environmental reviews of projects before it makes decisions on funding.

At the screening stage, proposed projects are classified according to the potential severity of their environmental impacts, in order to determine the scope of environmental review that is required. Projects that are likely to have significant adverse impacts on the environment are classified as Category A. Category A projects include those located in or near Sensitive Areas, which include:

- nationally designated protected areas;
- habitats with important ecological values; and
- habitats of rare species requiring protection under domestic legislation or international treaties.

Category A projects are subjected to environmental reviews with the greatest scope. These reviews examine potential negative and positive environmental impacts of projects, and evaluate measures necessary to mitigate negative impacts and promote positive impacts. In addition, borrowers must submit EIA reports, in line with the environmental laws and standards of the host governments concerned.

Incorporation of the Asian IBA network into JBIC's safeguard policies could assist the application of its environmental guidelines. In the first place, it could lend consistency and clarity to the screening stage, particularly by providing standard lists of Sensitive Areas. In the second place, it could support the environmental review process, by highlighting potential negative environmental impacts of projects.

## REFERENCES

ADB (2002) *Environment policy of the Asian Development Bank*. Manila: Asian Development Bank.

ADB (2003) *Environmental assessment guidelines*. Manila: Asian Development Bank.

BALMFORD, A., BRUNER, A., COOPER, P., COSTANZA, R., FARNER, S., GREEN, R. E., JENKINS, M., JEFFERIES, P., JESSAMY, V., MADDEN, J., MUNRO, K., MYERS, N., NAEEM, S., PAAVOLA, J., RAYMENT, M., ROSENDO, S., ROUGHGARDEN, J., TRUMPER, K. AND TURNER, K. R. (2002) Economic reasons for conserving wild nature. *Science* 297: 950–953.

BIRDLIFE INTERNATIONAL (2003) *Saving Asia's threatened birds: a guide for government and civil society*. Cambridge, U.K.: BirdLife International.

BROOKS, T., BALMFORD, A., BURGESS, N., HANSEN, L. A., MOORE, J., RAHBK, C., WILLIAMS, P., BENNUN, L. A., BYARUHANGA, A., KASOMA, P., NJOROGI, P., POMEROY, D. AND WONDAFRASH, M. (2001) Conservation priorities for birds and biodiversity: do East African Important Bird Areas represent species diversity in other terrestrial vertebrate groups? Pp. 3–12 in *Ostrich Supplement No.15, Proceedings of the Tenth Pan-African Ornithological Congress, Kampala, Uganda, 3–8 September 2000*.

BURGESS, N. D., RAHBK, C., LARSEN, F. W., WILLIAMS, P. AND BALMFORD, A. (2002) How much of the vertebrate diversity of sub-Saharan Africa is catered for by recent conservation proposals? *Biological Conservation* 107: 327–339.

CAO (2002) *Review of IFC's safeguard policies: draft for comment*. Office of the Compliance Advisor/Ombudsman.

COLLAR, N. J. (2003) Beyond value: biodiversity and the freedom of the mind. *Global Ecology & Biogeography* 12: 265–269.

COSTANZA, R., D'ARGE, R., DE GROOT, R., FARBER, S., GRASSO, M., HANNON, B., LIMBURG, K., NAEEM, S., O'NEILL, R. V., PARUELO, J., RASKIN, R. G., SUTTON, P. AND VAN DEN BELT, M. (1997) The value of the world's ecosystem services and natural capital. *Nature* 387: 253–260.

EKEN, G., BENNUN, L. AND BOYD, C. (2004) Protected areas design and systems planning: key requirements for successful planning, site selection and establishment of protected areas. Pp. 37–44 in SCBD (ed.) *Biodiversity issues for consideration in the planning, establishment and management of protected area sites and networks*. Montreal: Secretariat of the Convention on Biological Diversity.

HOWARD, P. C., VISKANIC, P., DAVENPORT, T. R. B., KIGENYI, F. W., BALTZER, M., DICKINSON, C. J., LWANGA, J. S., MATTHEWS, R. A. AND BALMFORD, A. (1998) Complimentarity and the use of indicator groups for reserve selection in Uganda. *Nature* 396: 472–475.

JBIC (2002) *Japan Bank for International Cooperation guidelines for confirmation of environmental and social considerations*. Tokyo: Japan Bank for International Cooperation.

NATURE KENYA AND WILDLIFE CONSERVATION SOCIETY OF TANZANIA (2003) Eastern Arc mountains and coastal forests of Kenya and Tanzania biodiversity hotspot: species and sites conservation targets. Unpublished report.

PAIN, D. J., FISHPOOL, L. D. C., BYARUHANGA, A., ARINAITWE, J. AND BALMFORD, A. (in press) Biodiversity representation and biological prioritisation of Uganda's forest IBAs. *Biological Conservation*.

RODRIGUES, A. S. L., ANDELMAN, S. J., BAKARR, M. I., BOITANI, L., BROOKS, T. M., COWLING, R. M., FISHPOOL, L. D. C., DA FONSECA, G. A. B., GASTON, K. J., HOFFMANN, M., LONG, J. S., MARQUET, P. A., PILGRIM, J. D., PRESSEY, R. L., SCHIPPER, J., SECHREST, W., STUART, S. N., UNDERHILL, L. G., WALLER, R. W., WATTS, M. E. J. AND YAN, X. (2003) *Global Gap Analysis: towards a representative network of protected areas*. Advances in Applied Biodiversity Science 5. Washington D.C.: Conservation International.

SCHWARTZ, M. W. (1999) Choosing the appropriate scale of reserves for conservation. *Annual Review of Ecology and Systematics* 30: 83–108.

TUSHABE, H., KALEMA, J., BYARUHANGA, A., ASASIRA, J., SSEGAWA, P., BALMFORD, A., DAVENPORT, T., FJELDSÅ, J., FRIIS, I., PAIN, D. J., POMEROY, D., WILLIAMS, P. AND WILLIAMS, C. (in press) How Important are Important Bird Areas? A nationwide assessment of the biodiversity value of Uganda's IBA network. *Conservation Biology*.

<sup>4</sup> Environmentally sensitive areas are defined as cultural heritage sites, protected areas, protected area buffer zones, wetlands, mangroves, estuaries, and special areas for protecting biodiversity.



# METHODOLOGY

## THE IBA CRITERIA

The aim of the IBA programme is to identify and protect a network of sites critical for the long-term viability of naturally occurring bird populations, across the ranges of bird species for which a site-based approach is appropriate. The selection of IBAs is achieved through the application of standard, internationally recognised criteria, as far as possible based upon accurate, up-to-date knowledge of bird species distributions and populations. The use of standard criteria worldwide means that IBAs are a “common currency”, with sites consistent and comparable at the national, regional and global levels.

The criteria used to select IBAs in the Asia region derive from those initially used in the first European IBA inventory (Grimmett and Jones 1989), which in turn took account of IBA criteria developed earlier for use in the European Community (Osieck and Mörzer Bruyns 1981, Grimmett and Gammell 1989). The 1989 IBA criteria had, however, been developed specifically for application in Europe. When the IBA programme was expanded to cover other regions of the world, these criteria had to be adapted, first for the Middle East IBA programme (Evans 1994), and subsequently, following extensive consultation within the BirdLife International Partnership and beyond, further developed and standardised for application worldwide (Fishpool *et al.* 1998, Fishpool and Evans 2001).

These standardised criteria (Table 1) are designed to identify IBAs of global significance, and thus permit meaningful comparison between sites within and between regions of the world. In Europe and parts of Africa, additional criteria have been devised to identify sites at the regional and/or sub-regional levels. At this stage, the Asian IBA programme has focused purely on the identification and documentation of the many sites of global significance in the region. However, it is recognised that in the future there may be a need in Asia to develop criteria for the identification of sites at the regional or sub-regional levels.

Using the global criteria, IBAs are selected based on the presence of:

- Globally threatened bird species;
- Restricted-range bird species;
- Assemblages of biome-restricted bird species;
- Globally important congregations of birds.

### Category A1 – Globally threatened species

**Criterion:** *The site is known or thought regularly to hold significant numbers of a globally threatened species.*

Sites are identified under this category for those species most threatened with global extinction and therefore most in need of conservation action. This includes species classified as “Critical”, “Endangered” and “Vulnerable” under the global Red List criteria developed by IUCN (2001). Species designated as “Data Deficient” and “Near Threatened” are not globally threatened but may be considered to be of global conservation concern, and some of these species have therefore been used to identify IBAs under this category in some regions of the world, e.g. Europe (Heath and Evans 2000) and Africa (Fishpool and Evans 2001). However, there are many more globally threatened species in the Asia region than in Europe, the Middle East or Africa, and prior to the publication of BirdLife International (2000, 2001) there was considerable uncertainty about the classification of “Data Deficient” and “Near Threatened” species in the Asia region. The Asian IBA programme has therefore, to date, considered only globally threatened species, although it is likely that “Data Deficient” and “Near Threatened” will be considered in Asia in the future to be consistent with other regions.

The list of globally threatened species from *Birds to Watch 2* (Collar *et al.* 1994) was initially used in the Asian IBA programme. However, the BirdLife Asia Partnership completed *Threatened birds of Asia: the BirdLife International Red Data Book* (BirdLife International 2001) during the course of the IBA Programme, and the threatened species list was updated to follow this new publication. More recently still, the IBA programme adopted the small number of further changes made to the threatened species list by BirdLife

**Table 1.** Important Bird Areas: summary of global categories and criteria.

Category	Criterion	Application in the Asia region
<b>A1 – Globally threatened species</b>	The site regularly holds significant numbers of a globally threatened species, or other species of global conservation concern.	The site qualifies if it is known, estimated or thought to hold a population of a species categorised as Critical, Endangered or Vulnerable (Near threatened and Data Deficient species were not covered under this category in the present analysis).
<b>A2 – Restricted-range species</b>	The site is known or thought to hold a significant component of the restricted-range species whose breeding distributions define an Endemic Bird Area (EBA) or Secondary Area (SA).	The site has to form one of a set selected to ensure that, as far as possible, all restricted-range species of an EBA or SA are present in significant numbers in at least one site in the set or, preferably, more.
<b>A3 – Biome-restricted assemblages</b>	The site is known or thought to hold a significant component of the group of species whose breeding distributions are largely or wholly confined to one biome.	The site has to form one of a set selected to ensure that, as far as possible, all species and habitats characteristic of a biome are adequately represented.
<b>A4 – Globally important congregations</b>	(i) The site is known or thought to hold, on a regular basis, ≥1% of a biogeographic population of a congregatory waterbird species.	This applies to waterfowl species as defined by Wetlands International (2002). Thresholds for each species were set regionally, by estimating 1% of biogeographic populations.
	Or	
	(ii) The site is known or thought to hold, on a regular basis, ≥1% of the global population of a congregatory seabird or terrestrial species.	This includes those seabird species not covered by Wetlands International (2002). Thresholds for each species are set regionally or inter-regionally, by estimating 1% of the global population.
	Or	
	(iii) The site is known or thought to hold, on a regular basis, ≥20,000 waterbirds or ≥10,000 pairs of seabirds of one or more species.	For waterbirds, this is the same as Ramsar Convention criteria category 5.
	Or	
	(iv) The site is known or thought to exceed thresholds set for migratory species at bottleneck sites.	A threshold of ≥20,000 migrating individuals of all raptor and/or crane species was set regionally.

International (2004), which therefore became the primary list followed in this inventory and is given in Appendix 1. The Red List categories from Collar *et al.* (1994) and BirdLife International (2001) are also given in Appendix 1 where they differ from those in BirdLife International (2004); this Appendix therefore documents the changes in category of threatened species (e.g. from “Near Threatened” to “Vulnerable”) that have taken place over the course of this project.

The words “regular” and “significant” in the definition of this criterion are intended to exclude sites where one or more threatened species have occurred, but which are judged to be unimportant for the survival of any of them, e.g. where the species only occurs as a vagrant. Sites may qualify as IBAs if the threatened species is only present seasonally, or even if it only occurs at longer intervals (for example, if suitable conditions themselves only occur at extended intervals, such as temporary wetlands). In some cases, recent information was not available on the presence or numbers of threatened (and other) species at a site, and inference was used, on the basis of the current extent and quality of suitable habitat for the relevant threatened species, to decide whether the site should qualify under this category.

### Category A2 – Restricted-range species

**Criterion:** *The site is known or thought to hold a significant component of a group of species whose breeding distributions define an Endemic Bird Area (EBA) or a Secondary Area (SA).*

Sites are identified under this category for restricted-range bird species in Endemic Bird Areas (EBAs) and Secondary Areas (SAs) (as defined in ICBP 1992, Stattersfield *et al.* 1998; also Sujatnika *et al.* 1995). The EBAs and SAs cover a relatively small proportion of the world’s land area but support a major part of the global avifauna and other terrestrial biodiversity, and they are therefore priorities for conservation action. Restricted-range species have a total global breeding range (throughout historical times, i.e. post-1800, in the period since ornithological recording began) estimated to be less than 50,000 km<sup>2</sup> (slightly smaller than Sri Lanka, or half the land area of South Korea). EBAs are defined as places with the breeding ranges of two or more restricted-range bird species entirely confined to them. SAs are defined as places that support one or more restricted-range species, but do not qualify as EBAs because fewer than two species are entirely confined them; typical SAs support single restricted-range species which do not overlap in distribution with any other such species, or are places where there are widely disjunct records of one or more restricted-range species which are clearly geographically separate from any of the EBAs.

The 49 EBAs and 41 SAs in the Asia region (out of global totals of 218 and 138 respectively) are listed in Appendix 2, together with the restricted-range species that occur in them. In each EBA and SA, a network of IBAs was selected to include populations of all restricted-range species occurring there. These networks of IBAs were designed to cover the geographical extent of the EBAs and SAs, to include adequate areas of all key habitats required by the restricted-range species, and, for those areas that span two or more countries, to include adequate sites in each country. The “significant component” term in the category definition was intended to avoid selecting sites solely on the presence of one or more restricted-range species that are common and adaptable within the EBA or SA and, therefore, occur at other chosen sites.

### Category A3 – Biome-restricted assemblages

**Criterion:** *The site is known or thought to hold a significant component of the group of species whose distributions are largely or wholly confined to one biome.*

A biome is defined as a major regional ecological community characterised by distinctive animal and plant species. The groups of biome-restricted species considered under this category are those with largely shared distributions whose entire (global) breeding distributions lie entirely or mostly within the defined boundaries of particular biomes, and are therefore of global importance. The inclusion of these species and their key habitats in IBA networks is

essential to ensure the long-term viability of all naturally occurring bird populations for which a site-based approach is appropriate. No single system of biome classification has been found that provides a suitable basis for generating lists of biome-restricted species globally, meaning that a biome classification and species lists had to be prepared specifically for the Asia region.

In addition, there was no system of biome classification available for the entire Asia region that could be adopted by the Asian IBA programme, so one had to be compiled from a wide variety of sources. Fifteen terrestrial biomes were identified using the global classification of Udvardy (1975), together with the national and sub-regional analyses of Champion and Seth (1968), Whitmore (1984), Sharma (1986), Rodgers and Panwar (1988) and Devilliers and Devilliers-Terschuren (1996). Account was also taken of the biome classifications being used by the IBA programmes in the Middle East, Europe and Africa. The oceanic islands of the Philippines and eastern Indonesia were excluded from the biome analysis, because almost all of these islands are included in EBAs and SAs and are therefore fully covered under Category A2. The lists of biome-restricted species were compiled from national and sub-regional handbooks and field guides (Ali and Ripley 1968–1998, Cheng Tso-hsin 1987, Dickinson *et al.* 1991, Flint *et al.* 1984, Grimmett *et al.* 1998, Inskipp and Inskipp 1991, King *et al.* 1975, Lekagul and Round 1991, Ripley 1982, Roberts 1991–1992, Smythies 1986, WBSJ 1982, Wells 1985). Lists of bird species restricted to the 15 biomes in the Asia region are given in Appendix 3.

As with Category A2, a network of IBAs was selected in each biome to include populations of all of the biome-restricted species together with representative areas of all key habitats for these birds. Sites were chosen, as far as possible, throughout the geographical extent of the biome, and to represent all species and their habitats in each of the countries and territories spanned by the biome. The number of sites (and their total area) selected per country or territory took into account the relative extent of the biome within the territory. Wherever possible, a few large sites with relatively intact natural habitats were selected under this category, but not too large to be impractical for conservation. The “significant component” term in the category definition is intended to avoid selecting sites solely on the presence of one or a few biome-restricted species that are common, widespread and adaptable within the biome and, therefore, occur at other chosen sites.

### Category A4 – Globally important congregations

**A site may qualify as an IBA under any one or more of the four criteria listed below:**

- i. The site is known or thought to hold, on a regular basis, 1% or more of a biogeographic population of a congregatory waterbird species.*
- ii. The site is known or thought to hold, on a regular basis, 1% or more of the global population of a congregatory seabird or terrestrial species.*
- iii. The site is known or thought to hold, on a regular basis, at least 20,000 waterbirds, or at least 10,000 pairs of seabird, of one or more species.*
- iv. The site is known or thought to be a “bottleneck site” where at least 20,000 raptors (Accipitriformes and Falconiformes) and/or cranes (Gruidae) pass regularly during spring and/or autumn migration.*

This category is applied to those species that are (perceived to be) vulnerable by virtue of their congregatory behaviour at any stage of their life-cycles, meaning that they could be seriously affected by habitat loss, exploitation and other threats at their key sites.

In the global IBA programme, the term “waterbird” is used in the same sense as that used for “waterfowl” under the Ramsar Convention, and covers (in Asia) all bird species in the following families (see Wetlands International 2002): Gaviidae (divers), Podicipedidae (grebes), Pelecanidae (pelicans), Phalacrocoracidae (cormorants), Anhingidae (darters), Ardeidae (herons), Ciconiidae (storks), Threskiornithidae (ibises, spoonbills), Phoenicopteridae (flamingos), Anatidae (swans, geese and ducks), Gruidae (cranes), Rallidae (rails), Heliornithidae (finfoots), Jacanidae (jacanas), Rostratulidae (painted-snipes), Dromadidae (crab plover),

Haematopodidae (oystercatchers), Ibidorhynchidae (Ibisbill), Recurvirostridae (avocets, stilts), Burhinidae (stone-curlews), Glareolidae (couriers, pratincoles), Charadriidae (plovers), Scolopacidae (sandpipers, snipe, woodcock), Laridae (gulls, terns) and Rynchopidae (skimmers). By this definition waterbirds include, for example, cormorants, gulls and terns, that have more traditionally been considered as seabirds. It also includes species such as coursers which are birds of arid habitats, as well as species, for example many rallids, that are never congregatory. The term “seabird” here covers (in Asia) species in the following families: Diomedidae (albatrosses), Procellariidae (fulmars, petrels, shearwaters), Hydrobatidae (storm-petrels), Phaethontidae (tropicbirds), Sulidae (gannets, boobies), Fregatidae (frigatebirds), Alcidae (auks) and Stercorariidae (skuas).

The term “biogeographic” in the A4i criterion is used in the sense of a zoogeographic realm. At the start of the Asian IBA Programme, 1% waterbird population thresholds were set for the entire Asia region, using the numerical data in Rose and Scott (1997) and del Hoyo *et al.* (1992, 1996). However, given the large size of the Asia region, and its clear division into two separate flyways, new 1% thresholds were set during 2003 for both the Central Asia–South Asia and East Asia flyways, using the population estimates in Wetlands International (2002). The principle sources of numerical data for seabirds were del Hoyo *et al.* (1992, 1996). Account was also taken of the thresholds being used by IBA programmes in other regions of the world, and additional information supplied by waterbird and seabird experts.

The lists of congregatory waterbird species for which the A4i category has been applied in the Asia region, together with their 1% population thresholds, are given in Appendix 4a. The new 1% thresholds for Central Asia–South Asia and East Asia have been used in many Asian countries and territories and will be used in all future IBA analyses in the Asia region. The earlier list of 1% thresholds for the entire Asia region will now be disregarded, but is included in Appendix 4a for reference. The list of congregatory seabirds for which the A4ii category has been applied, together with their 1% numerical population thresholds, is given in Appendix 4b. Although the A4ii criterion allows IBAs to be identified for congregatory terrestrial species, suitable population data were not available to set 1% thresholds for these species in the Asia region. It should be noted that IBA criteria A4i and A4iii are very similar to two of the criteria (Ramsar criteria 6 and 5 respectively) used under the Ramsar Convention on Wetlands to identify wetlands of international importance (Ramsar Sites).

There might appear to be a logical inconsistency between the A4i criterion for waterbirds (1% or more of the biogeographic

population) and the A4ii criterion for seabirds (1% or more of the global population) of seabirds. It was felt, however, that the alternative of using 1% of the global population for waterbirds would, as well as departing further from the criteria used by the Ramsar Convention, would have insufficient biological justification because of the way many migratory waterbird species are distributed and split into well-defined, discrete flyway populations. Using a threshold of 1% of global population would also have the effect of over-emphasising regional waterbird endemics since, over much of their range, many of the more widely distributed species may rarely occur together in numbers exceeding 1% of the global population. For those species which are regional endemics, the biogeographic and global populations are, of course, the same.

The A4iv criterion covers sites over which flying migrants congregate, e.g. at narrow sea-crossings, along mountain ranges or through mountain passes. Although it is the airspace that is important at these sites, conservation of the land beneath may be necessary to protect the site and its birds from threats such as hunting and the construction of lethal obstacles such as powerlines and high radio-masts. Also included here are migration stop-over sites and nocturnal roosts which may not hold 20,000 or more raptors or cranes at any one time, but which do so over a relatively short period due to the rapid turnover of birds on passage.

## SITE SELECTION AND DOCUMENTATION

The Asian IBA Programme was officially launched at the BirdLife Asia Conference in Coimbatore, India, in November 1996. Since the launch, an extensive network of ornithologists and conservation experts has become involved in the collation of data on the sites included in this inventory. A series of regional and national workshops and meetings (Table 2) led to the development of teams of IBA compilers in almost all countries and territories in the Asia region. The IBA Programme has been coordinated by the regional team responsible for the compilation of this inventory, with guidance from the BirdLife Asia Council.

The Asian IBA programme has benefited greatly from several earlier projects completed by BirdLife International and others (Box 1), particularly the comprehensive data on threatened species gathered during the compilation of *Threatened Birds of Asia: the BirdLife International Red Data Book*. Almost all countries and territories in the Asia region have important populations of globally threatened species. The information gathered for the *Threatened Birds of Asia* was therefore ideal for the identification of the candidate lists of IBAs in many countries and territories. Compilers

**Table 2.** Asia Important Bird Areas Programme—key meetings and workshops.

Year	Scope	Location and details
1996	Regional	IBA Programme planning workshop, WBSJ, Tokyo, Japan
1996	Regional	IBA Programme launch, BirdLife Asia Council meeting, Coimbatore, India
1997	Regional	Regional training workshop, WBSJ, Tokyo, Japan
1997	National	Philippines workshop, Mt Makiling, Luzon
1998	Sub-regional / National	South-East Asia and Malaysia workshops, Genting Highlands, Malaysia
1998	National	Russia workshop, Irkutsk
1998	National	Philippines workshop, Davao city, Mindanao
1998	Sub-regional	South-East Asia workshop, Bogor, Indonesia
1998	National	Taiwan workshop, Changhwa
1998	Sub-regional / National	Thailand and South-East Asia workshop, Bangkok
1998	National	Mainland China and Hong Kong workshop, Beijing
1999	National	South Korea workshop, Seoul
1999	Regional	IBA meeting at BirdLife World Conference, Genting Highlands, Malaysia
1999	National	Mongolia workshop, Ulaanbaatar
2000	Regional	IBA meeting at BirdLife Asia Council meeting, Colombo, Sri Lanka
2001	Regional	IBA meeting at BirdLife Asia Council meeting, Kathmandu, Nepal
2001	National	Myanmar workshop, Yangon
2003	Regional	IBA meeting at BirdLife Asia Council meeting, Bogor, Indonesia
2004	Regional	IBA meeting at BirdLife World Conference, Durban, South Africa



The regional training workshop in Tokyo in 1997, one of a series of meetings held over the course of the Asian IBA Programme.  
(PHOTO: SIMBA CHAN)



were encouraged to create a matrix of threatened species against candidate IBAs, to help assess whether their selection of sites adequately covered all threatened species in their country or territory.

Many globally threatened species have restricted ranges, are biome-restricted or are congregatory, meaning that many of the IBAs identified for threatened species under Category A1 will also qualify under one or more of the other three categories. In parts of Asia with many threatened species, the IBAs identified under Category A1 often cover adequately the restricted-range (A2) and biome-restricted (A3) species and their habitats, as well as some or all key sites for congregatory (A4) birds. It was therefore recommended that candidate IBAs were initially identified under

category A1, and that additional sites were added to the list (and matrix) when required to complete coverage of the restricted-range, biome-restricted and congregatory species.

The *Threatened Birds of Asia* analysis showed that there are many gaps in knowledge of the distributions and populations of the region's globally threatened birds. The more remote areas, where information on birds is usually incomplete or out-of-date, often support the most extensive and unspoiled areas of natural habitat. In some countries, for example the Philippines, forest cover maps (produced by satellite imagery and aerial surveys) were used to locate poorly-known areas of forest as candidate IBAs, and interviews were then conducted with local officials to confirm whether these sites contain sufficient high quality habitat to support significant populations of threatened and restricted-range species. Even in the less remote parts of Asia, information on the status of bird species at candidate IBAs is often incomplete or out-of-date. Inference based upon both the available bird data and the extent of suitable habitat had to be used to judge whether sites were likely to support important populations of birds and thereby qualify as IBAs.

#### Box 1. Major sources of IBA data.

The Asian IBA project has built upon past and on-going research by BirdLife and others, in particular:

- *Threatened Birds of Asia: the BirdLife International Red Data Book* (BirdLife International 2001), which was compiled by the BirdLife Asia Partnership over a six-year period. This huge work (two volumes totalling over 3,000 pages) includes detailed accounts on 323 globally threatened species which occur in the Asia region (but note that the total for the region has now increased to 332; see Appendix 1). For more than 300 of these, distribution maps show all localities where they have been recorded. A total of c.10,400 localities throughout the Asia region were traced and mapped, which provided the basis for the identification of IBAs for threatened species. The Red Data Book (RDB) also includes information about conservation issues at many important sites for these birds, and the reference list (which includes over 7,000 citations) includes many publications with information about particular IBAs.
- *Saving Asia's threatened birds: a guide for government and civil society* (BirdLife International 2003), a synopsis of the conservation recommendations from the RDB which highlights the most outstanding IBAs for threatened birds in Asia.
- The BirdLife Biodiversity Project, summary results of which appeared in *Putting biodiversity on the map* (ICBP 1992) and full details in *Endemic Bird Areas of the world* (Stattersfield *et al.* 1998) and *Conserving Indonesian biodiversity: the EBA approach* (Sujatnika *et al.* 1995). This project identified Endemic Bird Areas (EBAs) and Secondary Areas (SAs), and provided lists of the restricted-range bird species which were used to identify IBAs under Category A2 (see above and Appendix 2).
- Wetlands International has published estimates of the population sizes of waterbirds in Asia (Rose and Scott 1997, Wetlands International 2002), which were used to develop 1% regional population estimates for waterbirds (see Section 2.1.4). The Asian Waterfowl Census (see, e.g., Lopez and Mundkur 1997, Li and Mundkur 2004) other Wetlands International programmes and projects have provided a wealth of information on waterbird numbers at sites throughout Asia.

#### ■ Defining the boundaries of an IBA

An Important Bird Area is defined so that, as far as possible, it:

- i. is different in character or habitat or ornithological importance from the surrounding area;
- ii. exists as an actual or potential protected area, with or without buffer zones, or is an area which can be managed in some way for nature conservation;
- iii. is, alone or with other sites, a self-sufficient area which provides all the requirements of the birds, when present, for which it is important.

- Where extensive tracts of continuous habitat occur which are important for birds, only characteristics ii and iii apply.
- Practical considerations on how best the site may be conserved are the foremost consideration.
- Features such as watersheds, ridge-lines and hilltops can be used to delimit site margins in places where there are no obvious discontinuities in habitat (transitions of vegetation or substrate). Boundaries of land ownership are also relevant, while simple, conspicuous boundaries such as roads can be used in the absence of other features.
- There is no fixed maximum or minimum size for IBAs—the biologically sensible has to be balanced with what is practical for conservation. Neither is there a clear-cut answer about how to treat cases where a number of small sites lie next to each other. Whether these are best considered as a series of separate IBAs, or as one larger site containing areas of low ornithological significance, depends upon the local situation with regard to conservation and management.



## REFERENCES

- ALI, S. AND RIPLEY, S. D. (1968–1998) *Handbook of the birds of India and Pakistan*. Bombay: Oxford University Press.
- BIRDLIFE INTERNATIONAL (2000) *Threatened birds of the world*. Barcelona, Spain/Cambridge, UK: Lynx Edicions/BirdLife International.
- BIRDLIFE INTERNATIONAL (2001) *Threatened Birds of Asia: the BirdLife International Red Data Book*. Cambridge, U.K.: BirdLife International.
- BIRDLIFE INTERNATIONAL (2003) *Saving Asia's threatened birds: a guide for government and civil society*. Cambridge, U.K.: BirdLife International.
- BIRDLIFE INTERNATIONAL (2004) *Threatened birds of the world 2004 CD-ROM*. Cambridge, U.K.: BirdLife International.
- CHAMPION AND SETH (1968) *A revised survey of the forest types of India*. Delhi: Manager of Publications.
- CHENG TSO-HSIN (1987) *A synopsis of the avifauna of China*. Beijing: Science Press.
- COLLAR, N. J., CROSBY, M. J. AND STATTERSFIELD, A. J. (1994) *Birds to Watch 2*. Cambridge, U.K.: BirdLife International (BirdLife Conservation Series No. 4).
- DEVILLERS, P. AND DEVILLERS-TERSCHUREN, J. (1996) *A classification of Palaearctic habitats*. Strasbourg: Council of Europe (Nature and environment, No. 78).
- DICKINSON, E. C., KENNEDY, R. S. AND PARKES, K. C. (1991) *The birds of the Philippines: an annotated check-list*. Tring, UK: British Ornithologists' Union (Check-list 12).
- EVANS, M. I., ED (1994) *Important Bird Areas in the Middle East*. Cambridge, UK: BirdLife International (BirdLife Conservation Series 2).
- FISHPOOL, L. D. C. AND EVANS, M. I., EDS (2001) *Important Bird Areas in Africa and associated islands: priority sites for conservation*. Newbury and Cambridge, UK: Pisces Publications and BirdLife International.
- FISHPOOL, L. D. C., HEATH, M. F., WALICZKY, Z., WEGE, D. C. AND CROSBY, M. J. (1998) Important bird areas—criteria for selecting sites of global conservation significance. In N. J. Adams and R. H. Slotow, eds. Proc. 22 Int. Ornithol. Congr., Durban. *Ostrich* 69: 428.
- FLINT, V. E., BOEHME, R. L., KOSTIN, Y. V. AND KUZNETSOV, A. A. (1984) *A field guide to the birds of the USSR*. New Jersey: Princeton University Press.
- GRIMMETT, R. F. A. AND GAMMELL, A. B. (1989) Inventory of Important Bird Areas in the European Community. (Unpubl. report prepared for the Directorate-General of the Environment, Consumer Protection and Nuclear Safety of the European Community, study contract B6610-54-88.) Cambridge, UK: International Council for Bird Preservation.
- GRIMMETT, R. F. A. AND JONES, T. A. (1989) *Important Bird Areas in Europe*. Cambridge, UK: International Council for Bird Preservation (Techn. Publ. 9).
- GRIMMETT, R., INSKIPP, C. AND INSKIPP, T. (1998) *Birds of the Indian subcontinent*. London: A. & C. Black/Christopher Helm.
- HEATH, M. F. AND EVANS, M. I., EDS (2000) *Important Bird Areas in Europe: priority sites for conservation*. Cambridge, UK: BirdLife International (Conservation Series 8).
- DEL HOYO, J., ELLIOTT, A. AND SARGATAL, J. (1992, 1996) *Handbook of the birds of the world*. Volumes 1 and 3. Lynx Editions, Barcelona.
- ICBP (1992) *Putting biodiversity on the map: priority areas for global conservation*. Cambridge, U.K.: International Council for Bird Preservation.
- INSKIPP, C. AND INSKIPP, T. P. (1991) *A guide to the birds of Nepal*. London: A. & C. Black/Christopher Helm and Washington: Smithsonian Institution Press.
- IUCN (2001). *IUCN Red List Categories and Criteria: Version 3.1*. Gland, Switzerland and Cambridge, U.K.: IUCN Species Survival Commission.
- KING, B. F., DICKINSON, E. C. AND WOODCOCK, M. W. (1975) *A field guide to the birds of South-East Asia*. London: Collins.
- LEKAGUL, B. AND ROUND, P. D. (1991) *A guide to the birds of Thailand*. Bangkok: Saha Karn Bhaet.
- LI, Z. W. D. AND MUNDKUR, T. (2004) *Numbers and distribution of waterbirds and wetlands in the Asia-Pacific region. Results of the Asian Waterbird Census: 1997–2001*. Kuala Lumpur, Malaysia: Wetlands International.
- LOPEZ, A. AND MUNDKUR, T. (1997) *The Asian waterfowl census 1994–1996. Results of the coordinated waterbird census and an overview of the status of wetlands in Asia*. Kuala Lumpur, Malaysia: Wetlands International.
- OSIECK, E. R. AND MÖRZER BRUYNIS, M. F. (1981) *Important bird areas in the European community*. Cambridge, UK: International Council for Bird Preservation.
- RIPLEY, S. D. (1982) *A synopsis of the birds of India and Pakistan; together with those of Nepal, Sikkim, Bhutan and Sri Lanka*. Second edition. Bombay: Bombay Natural History Society.
- ROBERTS, T. J. (1991–1992) *The birds of Pakistan*. Karachi: Oxford University Press.
- RODGERS, W. A. AND PANWAR, H. S. (1988) Planning a wildlife protected area network in India. Vol. 2. Dehra Dun: Wildlife Institute of India.
- ROSE, P. M. AND SCOTT, D. A. (1997) *Waterfowl Population Estimates*. Slimbridge, U.K.: International Waterfowl and Wetlands Research Bureau (IWRB Special Publication).
- SHARMA (1986) *Eco-floristic zone and vegetation maps of continental Asia*. Unpublished report to the World Conservation Monitoring Centre, Cambridge, U.K.
- SMYTHIES, B. E. (1986) *The birds of Burma*. Third edition. Liss, UK: Nimrod Press, and Pickering, Ontario: Silvio Mattachione and Co.
- STATTERSFIELD, A. J., CROSBY, M. J., LONG, A. J. AND WEGE, D. C. (1998) *Endemic Bird Areas of the world: priorities for biodiversity conservation*. Cambridge, U.K.: BirdLife International.
- SUJATNIKA, JEPSON, P., SOEHARTONO, T. R., CROSBY, M. J. AND MARDIASTUTI, A. (1995) *Conserving Indonesian biodiversity: the Endemic Bird Area approach*. Bogor, Indonesia: BirdLife International Indonesia Programme.
- UDVARDY, M. D. F. (1975) *A Classification of the Biogeographical Provinces of the World*. IUCN Occasional Paper 18. Morges (now Gland), Switzerland.
- WBSJ (= WILD BIRD SOCIETY OF JAPAN) (1982) *A field guide to the birds of Japan*. Tokyo: Wild Bird Society of Japan.
- WELLS, D. R. (1985) The forest avifauna of western Malesia and its conservation, in *Conservation of tropical forest birds*. ICBP (Techn. Publ. 4).
- WETLANDS INTERNATIONAL (2002) *Waterbird Population Estimates – Third edition. Wetlands International Global Series No. 12*. Wageningen, Netherlands.
- WHITMORE (1984) *Tropical rain forests of the Far East*. Second edition. Oxford: Clarendon Press.

# OVERVIEW OF RESULTS

## IBA COVERAGE BY TERRITORY

This directory documents a total of 2,293 Important Bird Areas (IBAs) in the 28 countries and territories in the Asia region<sup>1</sup> (Figure 1). These IBAs cover a total area of 2,331,560 km<sup>2</sup>, equivalent to 7.6% of the region's land area. The proportion of Asia's land area within the IBA network is comparable to that of other regions of the world where IBA analyses have been undertaken: Africa (7%); Europe (7%)<sup>2</sup>; and the Middle East (5%).

The network of IBAs documented in Asia to date does not yet represent a fully comprehensive list of sites of international importance for bird conservation in the region. The IBA Programme is at different stages in the different countries and territories (hereafter both referred to as territories) of the region, with inventories published for seven territories, plus parts of Indonesia

(see Table 2 in the Introduction section, page 2), and inventories underway for a further nine territories, plus other parts of Indonesia (Table 1). In the remaining 11 territories in the Asia region, initial lists of IBAs have been prepared *in lieu* of inventories. Preparation of IBA inventories remains a high priority in each of these territories, however, because of the need to involve local experts in IBA identification and build national and local-level constituencies for IBA conservation.

The number of IBAs identified per territory varies from one in each of Macao and the Maldives to 465 in India, while the total area of the IBA network in each territory ranges from 1 km<sup>2</sup> in Macao to over 1,100,000 km<sup>2</sup> in mainland China<sup>3</sup> (Table 1). The number and area of IBAs in each territory are broadly correlated with land area. The four largest territories by area in the Asia region, India, Indonesia, mainland China and eastern Russia also contain the

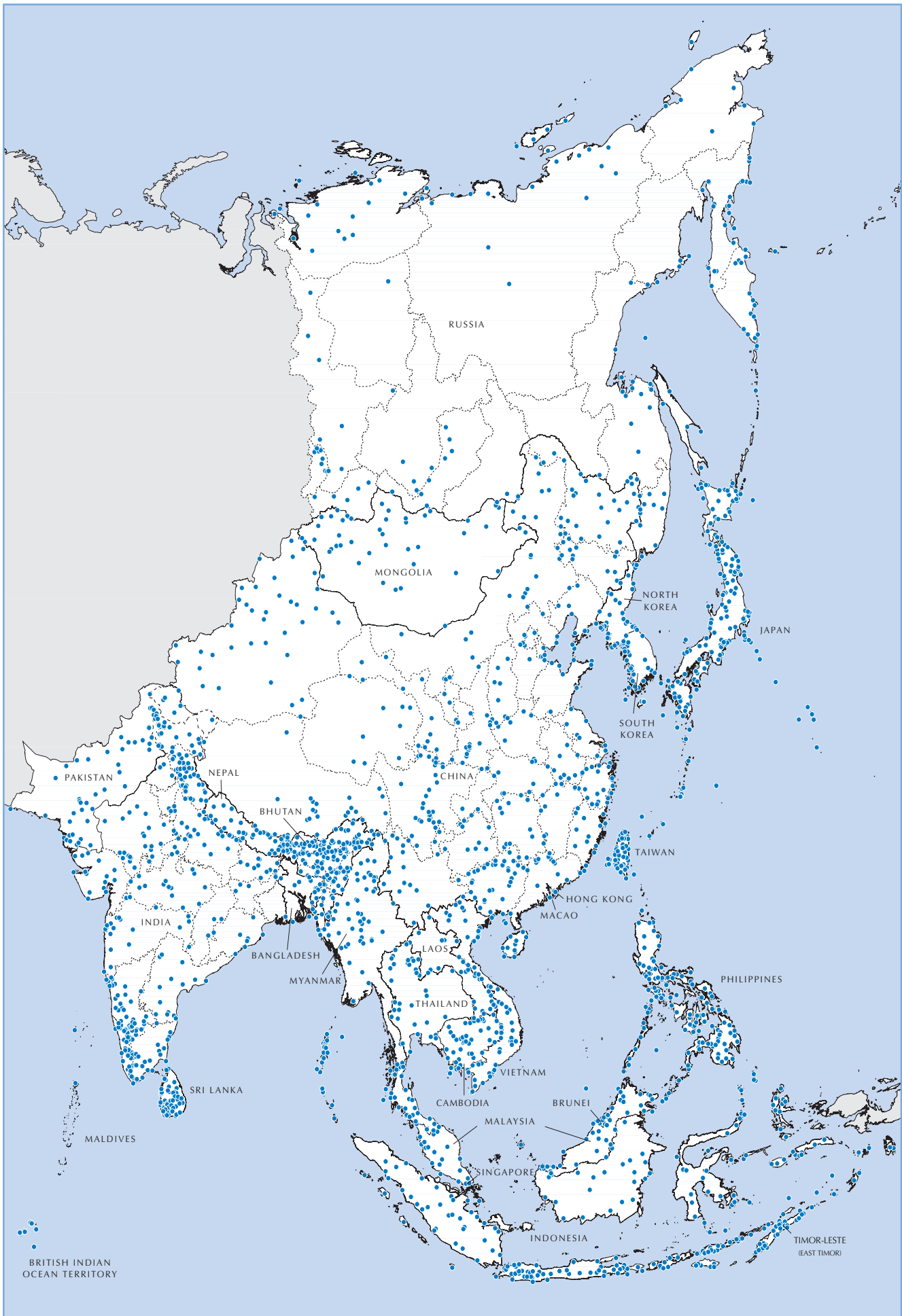
- 1 In this directory, the Asia region is taken to comprise the following countries and territories: Bangladesh; Bhutan; British Indian Ocean Territory; Brunei; Cambodia; Hong Kong; India; Indonesia (Sumatra, Kalimantan, Java and Bali, Nusa Tenggara, Sulawesi and Maluku only); Japan; Laos; Macao; Mainland China; Malaysia; Maldives; Mongolia; Myanmar; Nepal; North Korea; Pakistan; Philippines; Russia (east of the Yenisey River only); Singapore; South Korea; Sri Lanka; Taiwan; Thailand; Timor-Leste; and Vietnam.
- 2 The figure for Europe includes over 1,600 IBAs that meet regional but not global IBA criteria.
- 3 A single IBA, Changtang Plateau (IBA 136), comprises 30% of the total area of the IBA network in Mainland China.

**Table 1.** The number and total area of IBAs, the number of IBAs qualifying under each category, and the progress of IBA inventories by territory.

Territory	Number of IBAs	Total area of IBAs (km <sup>2</sup> )	Percentage of land area within IBA network	Number of IBAs qualifying under category <sup>2</sup>				Progress of IBA inventory
				Globally threatened species (A1)	Restricted-range species (A2)	Biome-restricted assemblages (A3)	Congregations (A4)	
<b>North-East Asia</b>								
Hong Kong	2	65	6.0	2	0	1	1	Underway
Japan	167	40,257	10.7	61	27	41	115	Underway
Macao	1	1	3.7	1	0	0	1	Initial list
Mainland China	445	1,134,546	11.9	400	162	280	162	Initial list
Mongolia	41	16,584	1.1	40	4	25	38	Underway
North Korea	33	2,531	2.1	29	0	8	20	Initial list
Russia (Eastern)	169	345,000	3.3 <sup>1</sup>	114	4	87	153	Underway
South Korea	40	1,371	1.4	39	0	1	35	Initial list
Taiwan	53	6,806	18.8	30	17	16	30	Published
<b>South Asia</b>								
Bangladesh	19	5,396	3.6	11	0	10	9	Initial list
Bhutan	23	12,133	31.6	23	12	15	4	Initial list
British Indian Ocean Territory	10	9	15.0	0	0	0	10	Initial list
India	465	164,118	5.2	435	208	123	141	Published
Maldives	1	60	20.1	0	0	0	1	Initial list
Nepal	27	26,119	17.1	24	13	23	9	Underway
Pakistan	55	46,701	5.9	36	16	28	30	Initial list
Sri Lanka	70	3,933	6.0	47	56	46	26	Underway
<b>South-East Asia</b>								
Brunei	7	1,388	24.1	7	1	4	2	Initial list
Cambodia	40	44,170	24.4	38	10	19	25	Published
Indonesia	227	255,571	17.1 <sup>1</sup>	198	184	81	21	Underway
Laos	27	23,850	10.1	19	16	19	9	Published
Malaysia	55	50,994	15.5	50	31	42	14	Underway
Myanmar	55	54,364	8.0	43	13	27	25	Underway
Philippines	117	32,302	10.8	115	106	0	16	Published
Singapore	3	114	17.3	3	0	3	2	Initial list
Thailand	62	44,426	8.7	50	6	35	19	Published
Timor-Leste	16	1,852	12.7	14	15	0	1	Underway
Vietnam	63	16,899	5.1	56	32	40	18	Published
<b>Total</b>	<b>2,293</b>	<b>2,331,560</b>	<b>7.6</b>	<b>1,882</b>	<b>932</b>	<b>974</b>	<b>939</b>	

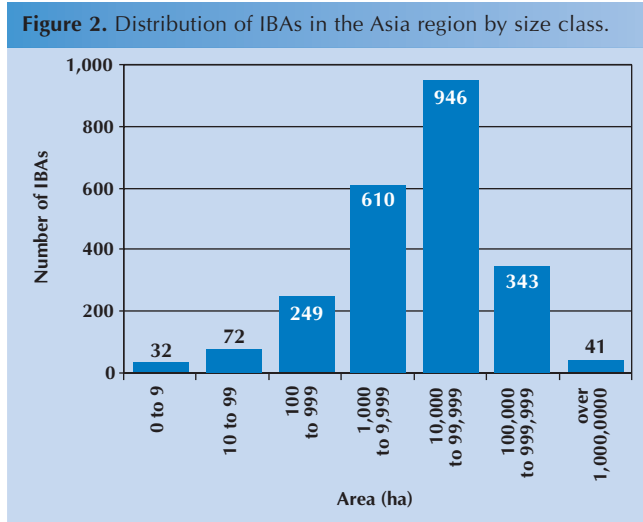
Notes: 1 = The percentages given for Indonesia and Russia are for the parts of these territories within the Asia region only; 2 = IBAs often qualify under more than one category.

Figure 1. The location of Important Bird Areas in the Asia region.



largest number of IBAs and the greatest total area of IBAs (Table 1). Together, these four territories contain 57% of the total number and 81% of the total area of IBAs in the Asia region.

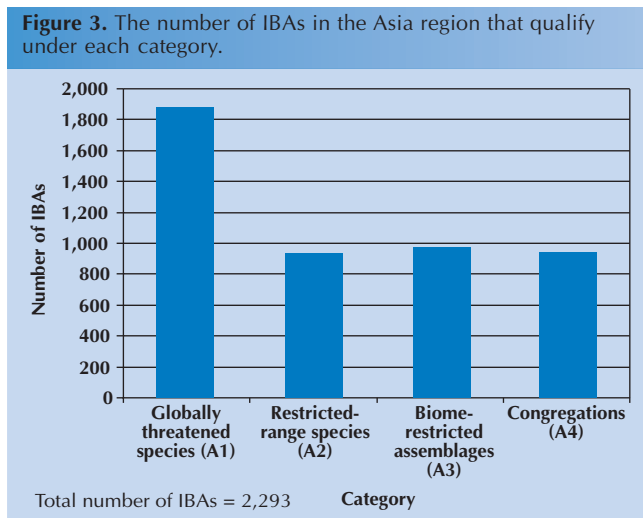
There is significant variation among territories in the Asia region with respect to the proportion of land area included within the IBA network. Territories with a high proportion of land area within the IBA network comprise ones with extensive remaining natural habitats (Bhutan, 31.6%; Cambodia, 24.4%; Taiwan, 18.8%), as well as very small territories (Brunei, 24.1%; the Maldives, 20.1%; Singapore 17.3%).



Asia’s IBAs range in size from less than 1 to 33,792,000 ha, although over two thirds are between 1,000 and 99,999 ha in size (Figure 2). The median IBA size is 14,852 ha, although the mean IBA size is 101,682 ha, reflecting the disproportionate contribution made by a few very large IBAs to the overall total; Changtang Plateau IBA, in mainland China (a remote wilderness that encompasses most of northern Tibet), alone comprises 14% of the total area of the Asian IBA network. Although there are a few very large IBAs (41 IBAs are larger than 1 million ha), most are of moderate size, comparable to most protected areas in the region. This reflects the criterion for IBA boundary definition that an IBA should exist as an actual or potential protected area, or be an area that can be managed in some way for nature conservation.

### IBA COVERAGE BY CATEGORY AND SPECIES

Through the rigorous application of quantitative criteria, all 2,293 IBAs documented in the Asia region are of global importance for bird conservation. Over four fifths of Asia’s IBAs qualify under category A1, with 1,882 IBAs (82% of the total) supporting globally threatened species. Around two fifths of IBAs qualify under each



of the other three categories, with 932 IBAs (41%) supporting restricted range species (category A2), 974 IBAs (42%) supporting biome-restricted assemblages (category A3) and 939 IBAs (41%) supporting congregations (category A4) (Figure 3, Table 1). The proportion of IBAs qualifying under category A3 is influenced by the fact that biome-restricted assemblages were not used in the selection of IBAs on oceanic islands<sup>4</sup>, which account for around 11% of the total number of IBAs in the region.

### Globally threatened species

A total of 332 globally threatened bird species occur in the Asia region (BirdLife International 2004; see Appendix 1). When vagrants and species marginal to the region are excluded from this total, 309 species remain, comprising 42 Critical, 64 Endangered and 203 Vulnerable species. Of these species, 302, equivalent to 98% of the total, are thought to occur within the Asian IBA network, comprising 37 Critical, 64 Endangered and 201 Vulnerable species. Only a single IBA has been identified for 31 globally threatened species; it is likely that further IBAs will be identified for a few of these birds (e.g. Sumba Buttonquail *Turnix everetti*, Invisible Rail *Habroptila wallacii* and Malaysian Whistling-thrush *Myophonus robinsoni*), but the other species have highly restricted ranges (mostly small-island endemics) and are only thought to occur at a single IBA (Table 2). The IBAs they occur at should be considered particular priorities for the conservation of globally threatened species, as there may exist no other options for site-based conservation of these species. IBAs thought to hold the entire global population of a Critical or Endangered species qualify as Alliance for Zero Extinction (AZE) Sites<sup>5</sup>. AZE sites represent the “tip of the iceberg” for site conservation: the most globally irreplaceable sites for the most highly threatened species. At least 16 IBAs, comprising 10 in Indonesia, two each in the Philippines and Japan, and one each in India and Myanmar, qualify as AZE sites for birds based on current knowledge (Table 2).

Excluding species marginal to the region, seven globally threatened bird species are not known to occur within the Asian IBA network, while a further eight species are listed at IBAs on the basis of historical records and/or recent unconfirmed reports (Table

4 The A3 criterion (biome-restricted assemblages) was not applied on oceanic islands, including British Indian Ocean Territory, eastern Indonesia (Maluku, Nusa Tenggara and Sulawesi), the Maldives, the Philippines and Timor-Leste.  
5 The AZE is a partnership of conservation organisations to identify and conserve all sites holding the entire population of a globally Critical or Endangered species. AZE sites defined for birds are a subset of IBAs, however many AZE sites are defined for other taxonomic groups. To date, over 350 sites have been identified globally, including nearly 100 in Asia.

Lesser Florican *Sypheotides indica* is one of more than 300 globally threatened bird species that occur within the IBA network in the Asia region. (PHOTO: ASAD RAHMANI)





Important Bird Areas in Asia – Overview of results

**Table 2.** Globally threatened bird species in the Asia region for which only one IBA has been identified.

Species		IUCN Status	IBA	Territory
Aceh Pheasant	<i>Lophura hoogerwerfi</i>	VU	Gunung Leuser	Indonesia
Himalayan Quail	<i>Ophrysia superciliosa</i>	CR	<b>Binog Sanctuary-Bhadraj-Jharipani<sup>1</sup></b>	India
Sumba Buttonquail	<i>Turnix everetti</i>	VU	Manupeu-Tanadaru	Indonesia
Okinawa Rail	<i>Gallirallus okinawae</i>	EN	<b>Yambaru, Northern Okinawa forest</b>	Japan
Talaud Rail	<i>Gymnocrex talaudensis</i>	EN	<b>Karakelang</b>	Indonesia
Invisible Rail	<i>Habroptila wallacii</i>	VU	Rawa Sagu Ake Jailolo	Indonesia
Moluccan Woodcock	<i>Scolopax rochussenii</i>	EN	<b>Pulau Obi</b>	Indonesia
Sulu Bleeding-heart	<i>Gallicolumba menagei</i>	CR	<b>Tawi-tawi Island<sup>1</sup></b>	Philippines
Tawitawi Brown-dove	<i>Phapitreron cinereiceps</i>	CR	<b>Tawi-tawi Island</b>	Philippines
Carunculated Fruit-dove	<i>Ptilinopus granuliifrons</i>	VU	Pulau Obi	Indonesia
Negros Fruit-dove	<i>Ptilinopus arcanus</i>	CR	<b>Mount Canlaon National Park<sup>1</sup></b>	Philippines
Blue-fronted Lorikeet	<i>Charmosyna toxopei</i>	CR	<b>Danau Rana</b>	Indonesia
Black-lored Parrot	<i>Tanygnathus gramineus</i>	VU	Gunung Kapalat Mada	Indonesia
Taliabu Masked-owl	<i>Tyto nigrobrunnea</i>	EN	<b>Taliabu</b>	Indonesia
Siau Scops-owl	<i>Otus siaoensis</i>	CR	<b>Siau<sup>1</sup></b>	Indonesia
Narcondam Hornbill	<i>Aceros narcondami</i>	VU	Narcondam Island Wildlife Sanctuary	India
Okinawa Woodpecker	<i>Sapheopipo noguchii</i>	CR	<b>Yambaru, Northern Okinawa forest</b>	Japan
Nicobar Bulbul	<i>Hypsipetes nicobariensis</i>	VU	Tilangchong, Camorta, Katchal, Nancowry, Trinkat	India
Malaysian Whistling-thrush	<i>Myophonus robinsoni</i>	VU	Central Titiwangsa Range	Malaysia
Amami Thrush	<i>Zoothera major</i>	CR	<b>Amami Islands</b>	Japan
Damar Flycatcher	<i>Ficedula henrici</i>	VU	Pulau Damar	Indonesia
Caerulean Paradise-flycatcher	<i>Eutrichomyias rowleyi</i>	CR	<b>Gunung Sahendaruman</b>	Indonesia
White-tipped Monarch	<i>Monarcha everetti</i>	EN	<b>Tanah Jamea</b>	Indonesia
Black-chinned Monarch	<i>Monarcha boanensis</i>	CR	<b>Pulau Boano</b>	Indonesia
Sangihe Shrike-thrush	<i>Colluricincla sanghirensis</i>	CR	<b>Gunung Sahendaruman</b>	Indonesia
White-browed Nuthatch	<i>Sitta victoriae</i>	EN	<b>Natmataung National Park (Mount Victoria)</b>	Myanmar
Bonin White-eye	<i>Apalopteron familiare</i>	VU	Hahajima Islands	Japan
Sangihe White-eye	<i>Zosterops nehrkorni</i>	CR	<b>Gunung Sahendaruman</b>	Indonesia
Bali Starling	<i>Leucopsar rothschildi</i>	CR	<b>Bali Barat</b>	Indonesia
Amami Jay	<i>Garrulus lidthi</i>	VU	Amami Islands	Japan
Banggai Crow	<i>Corvus unicolor</i>	EN	<b>Peleng-Banggai<sup>1</sup></b>	Indonesia

Notes: 1 = Himalayan Quail, Sulu Bleeding-heart, Negros Fruit-dove, Siau Scops-owl and Banggai Crow are all listed as occurring at a single IBA based on historical records and/or recent unconfirmed reports. The continued survival of these species remains unconfirmed.  
IBAs that qualify as AZE sites are shown in **bold**.

**Table 3.** Asia's "lost bird species": globally threatened species with no recent confirmed records.

Species		IUCN Status	Last confirmed record	Areas to survey
Crested Shelduck	<i>Tadorna cristata</i>	CR	1964	Wetlands in eastern <b>Russia</b> , <b>North Korea</b> and, probably, north-eastern <b>China</b> , including forested rivers in mountains
Pink-headed Duck	<i>Rhodonessa caryophyllacea</i>	CR	1949	Wetlands in northern <b>India</b> , especially in Assam and Bihar, and northern <b>Myanmar</b>
Nicobar Sparrowhawk	<i>Accipiter butleri</i>	VU	1901	Nicobar islands in <b>India</b> , including investigating continued occurrence at Car Nicobar and Tilangchong, Camorta, Katchal, Nancowry, Trinkat IBAs
Manipur Bush-quail	<i>Perdica manipurensis</i>	VU	1932	Grasslands of north-eastern <b>India</b> and <b>Bangladesh</b> , including investigating continued occurrence at Buxa Tiger Reserve and Dibru-Saikhowa Complex IBAs
Himalayan Quail	<i>Ophrysia superciliosa</i>	CR	1876	Mountain grasslands and forest in the western Himalayas in <b>India</b> , including investigating continued occurrence at Binog Sanctuary-Bhadraj-Jharipani IBA
Javanese Lapwing	<i>Vanellus macropterus</i>	CR	1940	Coastal grasslands and wetlands on Java and possibly elsewhere in <b>Indonesia</b>
Silvery Wood-pigeon	<i>Columba argentina</i>	CR	1931	Small islands off Sumatra and other Greater Sunda islands and the coasts of larger islands in <b>Malaysia</b> and <b>Indonesia</b> , including investigating continued occurrence at Berbak, Gunung Leuser, Kepulauan Lingga, Pulau Natuna, Pulau Simeulue, Sembilang and Sadong-Saribas Coast IBAs
Sulu Bleeding-heart	<i>Gallicolumba menagei</i>	CR	1891	Forest on islands in the Sulu archipelago in the <b>Philippines</b> , including investigating continued occurrence at Tawi-tawi Island IBA
Negros Fruit-dove	<i>Ptilinopus arcanus</i>	CR	1953	Forest on Negros and Panay in the <b>Philippines</b> , including investigating continued occurrence at Mount Canlaon National Park IBA
Siau Scops-owl	<i>Otus siaoensis</i>	CR	1866	Forest on small islands off northern Sulawesi, <b>Indonesia</b> , including investigating continued occurrence at Siau IBA
White-eyed River-martin	<i>Eurochelidon sirintarae</i>	CR	1978	Riverine habitats in <b>Thailand</b> and elsewhere in South-East Asia
Black-browed Babbler	<i>Malacocincla perspicillata</i>	VU	1840s	Forest on Kalimantan, <b>Indonesia</b>
Rusty-throated Wren-babbler	<i>Spelaeornis badeigularis</i>	VU	1947	Forest in the eastern Himalayas of <b>India</b> and, probably, northern <b>Myanmar</b>
Rueck's Blue-flycatcher	<i>Cyornis ruckii</i>	CR	1918	Lowland forest in northern Sumatra, <b>Indonesia</b> , and possibly elsewhere in the Sundaic region
Banggai Crow	<i>Corvus unicolor</i>	EN	1880s	Islands in the Banggai and Sula island groups, <b>Indonesia</b> , including investigating continued occurrence at Peleng-Banggai IBA

3). Some of these species may already be extinct but many, if not most, probably still survive. These species are high priorities for further surveys, to confirm their continued occurrence at IBAs for which they are listed and/or identify key sites for their conservation.

In addition to the species listed in Table 3, four other globally threatened species are not listed under any IBA in this directory, all of which are recent additions to the IUCN Red List, after completion of the data collation phase of the IBA programme. Each species is, however, thought to occur at several IBAs in the Asia Region: Laysan Albatross *Phoebastria immutabilis* (mainly a pelagic non-breeding visitor to the region but also nests in small numbers in Japan); Saker Falcon *Falco cherrug* (a Palearctic species that, in the Asia region, breeds in China, Mongolia and Russia, and winters in India, Nepal and Pakistan); Kittlitz's Murrelet *Brachyramphus brevirostris* (breeds at a few localities in eastern Russia and is also

a casual visitor to Japan); and Black-bibbed Cicadabird *Coracina mindanensis* (an endemic resident in the Philippines).

#### ■ Restricted-range species

Around 41% of the IBAs in the Asia region meet the A2 criterion (Table 1, Figure 3), supporting a significant component of the restricted-range species whose breeding ranges define an Endemic Bird Area (EBA) or Secondary Area (SA). Stattersfield *et al.* (1998) defined 49 EBAs in the Asia region, plus 41 SAs (Appendix 2). At least one IBA has been identified for each EBA, with the number of IBAs meeting the A2 criterion per EBA ranging from one (for EBA 159: Enggano) to 89 (for EBA 130: Eastern Himalayas). Only five EBAs (10% of the total) have more than two thirds of their area included within IBAs; all these EBAs are small islands or island groups. A further 10 EBAs (20%) have between one and two thirds

**Table 4.** The coverage of Endemic Bird Areas by IBAs in the Asia region, under the A2 criterion.

EBA code	EBA name	No. of RRS in EBA <sup>1</sup>	No. of RRS confined to EBA	No. of IBAs meeting the A2 criterion	Total area of IBAs meeting the A2 criterion (km <sup>2</sup> )	Percentage of EBA within IBA network <sup>2</sup>
123	Western Ghats	16	16	66	17,895	29
124	Sri Lanka	23	23	56	3,584	5
125	Andaman Islands	12	8	16	2,316	28
126	Nicobar Islands	8	5	3	879	49
127	Taklimakan Desert	2	2	10	23,979	40
128	Western Himalayas	11	11	51	27,525	21
129	Central Himalayas	3	2	8	13,536	24
130	Eastern Himalayas	22	19	89	88,520	40
131	Assam Plains	3	3	17	5,458	4
132	Irrawaddy Plains	2	2	5	2,658	2
133	Southern Tibet	2	2	8	1,882	3
134	Eastern Tibet	2	2	3	28,700	44
135	Qinghai Mountains	2	2	8	91,145	40
136	Shanxi Mountains	2	2	8	1,159	1
137	Central Sichuan Mountains	11	10	24	21,847	16
138	West Sichuan Mountains	2	2	24	73,629	41
139	Yunnan Mountains	3	3	7	5,467	3
140	Chinese Subtropical Forests	5	5	18	15,726	10
141	South-east Chinese Mountains	5	4	69	16,736	3
142	Hainan	4	2	7	344	3
143	Annamese Lowlands	7	3	16	10,573	21
144	South Vietnamese Lowlands	3	2	4	957	3
145	Dalat Plateau	8	3	6	1,539	26
146	Izu Islands	3	2	8	291	97
147	Ogasawara Islands	1	1	3	71	97
148	Nansei Shoto	10	7	8	3,111	69
149	Taiwan	15	14	16	5,990	17
150	Mindoro	10	5	9	1,868	19
151	Luzon	40	24	29	7,320	7
152	Negros and Panay	17	10	7	1,372	5
153	Cebu	5	2	3	21	<1
154	Mindanao and the Eastern Visayas	51	38	40	15,735	13
155	Sulu Archipelago	9	4	4	316	21
156	Palawan	20	17	10	2,553	18
157	Bornean Mountains	29	24	29	69,722	54
158	Sumatra and Peninsular Malaysia	38	21	19	55,762	63
159	Enggano	2	2	1	500	100
160	Java and Bali Forests	34	21	43	9,476	53
161	Javan Coastal Zone	3	1	8	1,591	14
162	Northern Nusa Tenggara	29	17	25	4,938	13
163	Sumba	12	7	6	1,673	15
164	Timor and Wetar	35	23	24	2,272	7
165	Banda Sea Islands	40	17	10	4,841	68
166	Sulawesi	54	42	21	27,207	14
167	Sangihe and Talaud	10	5	6	461	27
168	Banggai and Sula Islands	16	8	3	3,298	46
169	Buru	28	10	3	1,551	19
170	Seram	30	14	7	2,960	16
171	Northern Maluku	43	26	11	3,667	14

Notes: 1 = See Appendix 2 for the full list of restricted-range species (RRS) in each EBA; 2 = The figures for the coverage of each EBA within the IBA network were calculated by dividing the total area of IBAs meeting the A2 criterion by the total area of the EBA, taken from Stattersfield *et al.* (1998); as many IBAs only partly overlap with an EBA, with some meeting the A2 criterion for more than one EBA, the percentages calculated for some EBAs will be over-estimates.

Twenty-four IBAs have been identified in the Timor and Wetar Endemic Bird Area, which together cover about 7% of the land area of the EBA (Table 4).  
(PHOTO: COLIN TRAINOR)



of their area included within IBAs, most of which are located on the Greater Sundas or continental Asia. The remaining 34 EBAs (69%) have less than one third of their area included within IBAs, with EBA 153: Cebu having the smallest coverage (>1%), reflecting the tiny amount of natural habitat remaining within this EBA (Table 4). The coverage of EBAs within the IBA network is likely to increase in those territories for which only initial lists of IBAs are currently available.

#### ■ Biome-restricted assemblages

Around 42% of Asia’s IBAs meet the A3 criterion (Table 1, Figure 3), supporting a significant component of the group of bird species whose global ranges are largely or wholly confined to one biome. For the Asian IBA Programme, 15 biomes were defined to facilitate the application of the A3 criterion, although the biome coverage did not extend to oceanic islands (Appendix 3). At least 30 IBAs have been documented for every biome in Asia, apart from two biomes with marginal distributions in the region: AS06: Irano-Turanian Mountains (distributed across Central Asia and the Middle East but extending into Pakistan); and AS13: Saharo-Sindian Desert (distributed across the Middle East and North Africa but extending into India and Pakistan). For many biomes, policy-level actions are required, in addition to site-based actions, to address conservation issues at the landscape scale, such as logging, infrastructure development and land conversion (BirdLife International 2003; see Conservation Strategy section, pages 26–32).

**Table 5.** The coverage of biomes by IBAs in the Asia region, under the A3 criterion.

Biome code	Biome name	No. of IBAs meeting the A3 criterion	Total area of IBAs meeting the A3 criterion (km <sup>2</sup> ) <sup>1</sup>
AS01	Arctic Tundra	49	183,798
AS02	Boreal Forest (Taiga)	40	69,183
AS03	North-East Asian Temperate Forest	94	88,568
AS04	Eurasian Steppe and Desert	79	173,500
AS05	Eurasian High Montane (Alpine and Tibetan) <sup>2</sup>	126	824,423
AS06	Irano-Turanian Mountains	8	9,227
AS07	Sino-Himalayan Temperate Forest	226	395,270
AS08	Sino-Himalayan Subtropical Forest	294	203,268
AS09	Indochinese Tropical Moist Forest	97	93,383
AS10	Indian Peninsula Tropical Moist Forest	77	12,628
AS11	Indo-Malayan Tropical Dry Zone	100	89,840
AS12	Indo-Gangetic Plains	33	20,356
AS13	Saharo-Sindian Desert	11	27,816
AS14	Sundaic Lowland Forest	120	231,866
AS15	Sundaic Montane Forest	71	132,524

Notes: 1 = The total area of IBAs will be over-estimated for most biomes, because many IBAs only partially overlap with the biome, with some IBAs meeting the A3 criterion for more than one biome; 2 = A single IBA, Changtang Plateau in mainland China, comprises 337,920 km<sup>2</sup> (or 41%) of the total area of IBAs meeting the A3 criterion for Biome AS05.

The interface between the “Eurasian high montane” (AS05) and “Sino-Himalayan temperate forest” (AS07) biomes in the mountains of south-west China.  
(PHOTO: MIKE CROSBY/BIRDLIFE)





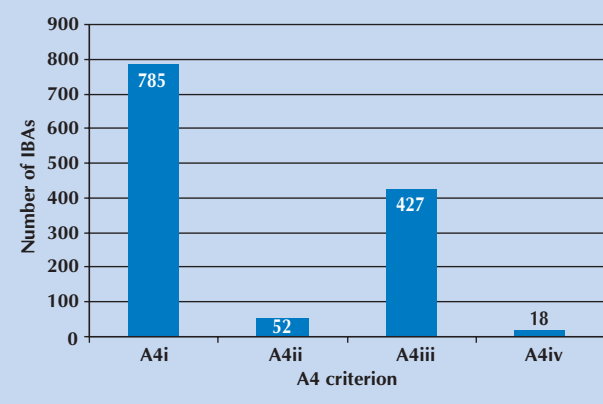
## Congregations

A total of 939 Asia’s IBAs (41% of the total) qualify under category A4 (Table 1, Figure 3), supporting important congregations of bird species. Of the four criteria in category A4, more than four fifths of these IBAs meet the A4i criterion, holding, on a regular basis,  $\geq 1\%$  of a biogeographic population of a waterbird species. Nearly one half of the IBAs qualifying under category A4 meet the A4iii criterion, holding, on a regular basis,  $\geq 20,000$  waterbirds or  $\geq 10,000$  pairs of seabird of one or more species. Comparatively few IBAs meet the A4ii criterion, holding, on a regular basis,  $\geq 1\%$  of the global population of a seabird species, while only 18 IBAs meet the A4iv criterion, being migratory bottlenecks for raptors and/or cranes (Figure 4).

All territories in the Asia region contain at least one IBA that qualifies under category A4. The territories with the greatest number of IBAs important for congregations are mainland China (with 162), eastern Russia (with 153) and India (with 141). Despite its long coastline and large size relative to other territories in the region, Indonesia contains relatively few IBAs important for congregatory birds, with 21, while Japan contains a relatively large number, with 115 (Table 1).

Of the 284 congregatory waterbird species in Asia that could potentially trigger the A4i criterion (Appendix 4a), IBAs have been identified for 203 species (71% of the total). An average of 10 IBAs have been identified for each congregatory waterbird species under the A4i criterion. Regarding seabirds, of the 39 species in Asia that could potentially trigger the A4ii criterion (Appendix 4b), IBAs have been identified for 29 species (74% of the total). An average of three IBAs have been identified for each seabird species under the A4ii criterion, with a maximum of seven IBAs per species (for both Japanese Murrelet *Synthliboramphus wumizusume* and Streaked Shearwater *Calonectris leucomelas*). Most congregatory

**Figure 4.** The total number of IBAs in the Asia region meeting each A4 criterion.



species are migratory or nomadic, and, in many cases, the networks of IBAs identified for these species under category A4 can meet the needs of these species through their life-cycles and throughout their geographic ranges.

## SIGNIFICANCE OF THE ASIAN IBA NETWORK FOR OTHER TAXA

Birds have many features that make them good indicators of overall biodiversity. Studies in other regions have shown that birds can be effective indicators of biodiversity in other taxonomic groups, especially when used to define geographical priorities for

Siberian Crane *Grus leucogeranus*, Swan Goose *Anser cygnoides* and other waterbirds congregate in large numbers in the Poyang Hu wetlands IBA in south-east China. (PHOTO: PETER LOS)



### Box 1. Coverage of other taxonomic groups within the Thai IBA network.

In addition to birds, 148 non-marine globally threatened species occur in Thailand. During the compilation of the national IBA inventory for Thailand, data on the distribution of each of these species among sites were collated, through literature review and consultation with experts. Based on this analysis, the Thai IBA network was found to support 126 globally threatened species (85% of the total). This analysis indicates a significant degree of congruence between IBAs and important sites for the conservation of other globally threatened species.

Taxonomic group	Number of GTS <sup>1</sup> in Thailand <sup>2</sup>	Number of GTS in IBA network	Percentage (%)
Mammals	33	28	85
Reptiles	14	12	86
Amphibians	6	5	83
Freshwater fish	18	13	72
Plants	77	68	88
<b>Total</b>	<b>148</b>	<b>126</b>	<b>85</b>

Notes: 1 = No. of globally threatened species (GTS) follows IUCN (2002) and IUCN-SSC and CI-CABS (2003); 2 = Figures exclude 10 globally threatened species for which no recent, confirmed data about their distribution among sites were available.

Source: Bird Conservation Society of Thailand (2004)



In addition to birds, the Thai IBA network supports globally threatened mammals such as Banteng *Bos javanicus*. (PHOTO: BIRDLIFE)



conservation (Howard *et al.* 1998, Burgess *et al.* 2002). In the Asia region to date, there has yet to be a comprehensive assessment of the coverage of the IBA network with regard to other taxonomic groups. However, the results of individual national analyses indicate that the IBA network is a very good basis for setting conservation priorities for taxa other than birds (Box 1). Conservation of the Asian IBA network would, therefore, be an excellent first step towards development of an overall network of key biodiversity areas for the region.

### IBA COVERAGE BY HABITAT

Forest is the habitat class most widely represented within the Asian IBA network, being present in nearly two thirds of the region’s IBAs (Table 6). A high proportion of Asia’s bird species are confined to forests, particularly tropical forests, including many of the region’s globally threatened and restricted-range bird species. Forests also support other biodiversity and provide essential ecosystem products and services for the region’s human population. Protection and management of the Asian IBA network would make a major contribution to conservation of the region’s forests.

Wetlands (both inland and coastal) and grasslands are well represented within the Asian IBA network (Table 6). The groups of birds specialised to these habitats also include a significant proportion of the region’s globally threatened species. As with forests, these habitats are important for other biodiversity, as well as human livelihoods. Artificial landscapes, such as agricultural land, are widely represented within the Asian IBA network, and are important for a number of bird species, including globally threatened species, such as certain cranes and storks. Despite their anthropogenic nature, the value of many artificial landscapes for birds is being diminished by changing agricultural practices, urbanisation and other trends.

**Table 6.** The number of IBAs containing each habitat class.

Habitat class	No. of IBAs <sup>1</sup>	% of total IBAs
Forests	1,465	64
Wetlands (inland)	965	42
Artificial landscapes	505	22
Grassland	426	19
Shrubland	298	13
Coastline	196	9
Desert	49	2
Sea	33	1
Savanna	18	<1
Rocky areas	17	<1
Other	16	<1

Note: 1 = Many IBAs contain more than one habitat class.

### IBA COVERAGE BY HOTSPOT

Nearly half of Asia’s IBAs lie within the global biodiversity Hotspots defined by Conservation International (Mittermeier *et al.* 1999) (Table 7). The Indo-Burma Hotspot, the largest in the Asia region, contains the greatest number of IBAs. Given the importance of IBAs for birds and other biodiversity, protection of the Asian IBA network would make a major contribution to conservation of biodiversity within the region’s Hotspots.

**Table 7.** Distribution of IBAs in the Asia region by Hotspot.

Hotspot	No. of IBAs
Indo-Burma	451
Sundaland	184
Western Ghats and Sri Lanka	149
Wallacea	125
Philippines	117
South-central China mountains	47
Total	1,073

### THREATS AT IBAs

Although a comprehensive analysis has yet to be carried out for the Asia region, the results of individual national analyses provide an indication that the major threats to the biodiversity values of the Asian IBA network are habitat loss, over-exploitation and invasive species. Table 8 presents the results of analyses of the most widespread threats to biodiversity within the national IBA networks of India (Islam and Rahmani 2004), Laos (Ounekham and Inthapatha 2003), the Philippines (Mallari *et al.* 2001), Thailand (Bird Conservation Society of Thailand 2004) and Vietnam (Tordoff *et al.* 2002).

Unsustainable exploitation (hunting and trapping) was ranked as the most widespread threat within three national IBA networks and as the second most widespread in a fourth (Table 8). Hunting is a particularly severe threat to large-bodied, congregatory bird species, such as hornbills, pigeons and large waterbirds but also represents a significant threat to ground-dwelling birds that are susceptible to snaring, such as pheasants and partridges, particularly at IBAs where natural habitats have been degraded or fragmented. Trapping of birds for the wild bird trade is a particular threat at many IBAs in Indonesia, the Philippines and certain other parts of the region.

Agricultural intensification and expansion was ranked as the most widespread threat within two national IBA networks and as the second most widespread in two more (Table 8). Agricultural intensification and expansion take various forms, but the most prevalent within the Asian IBA network include: small-scale encroachment of subsistence agriculture and cash-cropping into forest; conversion of forest and grassland for plantation crops, such as rubber, tea, coffee, oil palm and teak; and large-scale conversion of natural habitats into irrigated rice agriculture.

Other widespread threats to biodiversity at IBAs in the five territories where analyses have been conducted include selective logging/cutting of timber, over-exploitation of non-timber forest products (including fuelwood) and burning of vegetation (Table 8). Of these, selective logging/cutting is a particularly significant threat at many IBAs in the Asia region. Although most Asian territories have regulations and programmes designed to control unsustainable logging, demand for timber, pulp and paper is likely to remain high, and selective logging/cutting of timber, including illegal logging, is likely to be a major threat at forest IBAs in eastern Russia and South-East Asia well into the Twenty-first Century.

The analyses presented in Table 8, indicate that infrastructure development is another widespread threat to biodiversity within

**Table 8.** The most widespread threats at IBAs in five Asian territories.

Threat	Territory <sup>1</sup>				
	India	Laos <sup>2</sup>	Philippines	Thailand	Vietnam
Afforestation of inter-tidal habitats				10	10
Agricultural intensification and expansion	1	2	1	2	3
Aquaculture/fisheries		6	10	8	8
Burning of vegetation		3	8	4	7
Disturbance to birds	9				6
Encroachment for human settlement	4		5		
Industrialisation/urbanisation (including pollution)	10			9	
Infrastructure development		5	7	7	4
Invasive species	8				
Mining			6		
Over-exploitation of non-timber forest products (including fuelwood)	5	4	4	6	5
Overgrazing	3	7			
Recreation, tourism	7		9	3	9
Selective logging/cutting of timber	6		2	5	2
Unsustainable exploitation (hunting and trapping)	2	1	3	1	1

Notes: 1 = Figures represent the top 10 ranked threats at IBAs in each territory, with “1” denoting the threat faced at the greatest number of IBAs; 2 = In the national IBA inventory for Laos, threats are classified into seven categories only.



Threats to the biodiversity values of the Asian IBA network: (A) Large areas of forest in Sumatra and elsewhere in tropical Asia are being clear-felled by the pulp and paper industry to provide wood fibre and for the establishment of pulp wood plantations (PHOTO: MARCO LAMBERTINI/BIRDLIFE); (B) Many sites are under pressure from industrial, urban and infrastructural development throughout the Asia region, for example for the construction of a golf course in Japan (PHOTO: AKEMI OGAWA); (C) Unsustainable hunting and trapping is depleting the biodiversity in many IBAs, particularly where habitats have been degraded or fragmented (PHOTO: PAUL JEPSON/BIRDLIFE); (D) Agricultural intensification and expansion, including conversion of forest to plantation crops such as oil palm, was found to be one of the most widespread threats to IBAs in five territories where detailed analyses have been completed (PHOTO: MARCO LAMBERTINI/BIRDLIFE).

the Asian IBA network, linked to rapid economic growth in many parts of the region. New roads, dams and other developments are opening up previously inaccessible areas to habitat degradation, clearance and over-exploitation of wildlife populations, thereby undermining site-level conservation efforts at IBAs. The IBA network does, however, provide a useful tool for mitigating the impacts of infrastructure development, by mainstreaming biodiversity into other policy sectors (see Conservation Strategy section, pages 26–32).

## PROTECTION OF THE IBA NETWORK

### ■ Protected areas

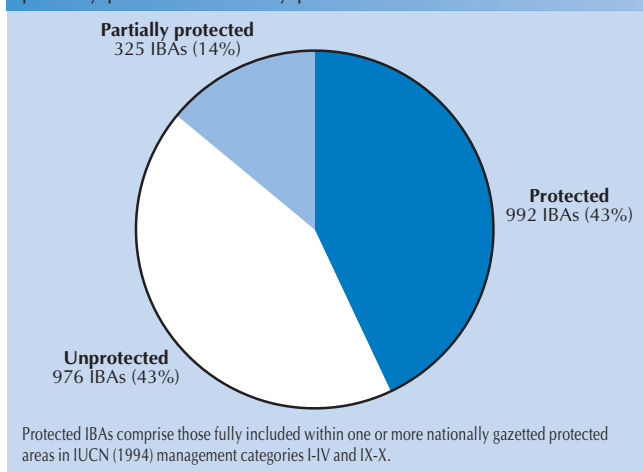
A region-wide analysis of the coverage of the Asian IBA network within national protected area systems is constrained by several factors, including lack of consistency in availability of data on protected areas, and variation among Asian territories with regard to protected area management categories. Based on the information collated during the compilation of this directory, however, 43% of

Just over half of the IBAs in the Asia region are fully or partially included within formal protected areas, and effective management of protected IBAs such as Sri Lankamalleswara Wildlife Sanctuary in India is therefore central to efforts to protect the region's IBA network. (PHOTO: CHRIS BOWDEN)





**Figure 5.** Proportion of IBAs in the Asia region protected, partially protected and fully protected.



IBAs are fully included within one or more protected areas, and a further 14% are partially included within protected areas (Table 9, Figure 5). Consequently, effective management of formal protected areas will be central to efforts to protect the Asian IBA network; to this end, there is a need to strengthen protected area management in many parts of the region.

The remaining 43% of Asia's IBAs remain wholly outside protected area networks, although many are under non-formal protection, such as community management, or under land-use

designations consistent with biodiversity conservation, such as reserve forest. Apart from Hong Kong, Macao and Singapore, at least 20% of the IBAs in every territory in the Asia region are unprotected (Table 9). Consequently, throughout the Asia region, there is a need to review and, where appropriate and feasible, expand national protected area systems to address gaps in coverage of the IBA network. At the same time, there is also a need to develop non-formal approaches to site-based protection of IBAs, to complement formal protected area systems.

#### International recognition

National governments in Asia are party to various multilateral environmental agreements and other mechanisms, established to promote biodiversity conservation and sustainable use of natural resources. Several of these agreements and mechanisms present opportunities for international recognition of sites of international importance for biodiversity conservation, such as IBAs.

Parties to the Ramsar Convention on Wetlands of International Importance have commitments to: promote the wise-use of all wetlands in their territory; designate suitable sites for inclusion on the List of Wetlands of International Importance (Ramsar Sites); and promote their conservation. As of September 2004, 132 Ramsar Sites had been designated in the Asia Region, of which 106 (80% of the total) overlap with one or more IBA (Figure 6). Most of the Ramsar Sites that do not overlap with IBAs are important for elements of wetland biodiversity other than birds.

Parties to the World Heritage Convention have a commitment to nominate suitable sites for recognition as World Heritage Sites. As of July 2004, a total of 129 World Heritage Sites had been designated in the Asia region, of which 39 (30%) overlap with one

**Table 9.** Number and percentage of IBAs in the Asia region protected, partially protected and unprotected by territory.

Country/territory	Number of IBAs	Number of IBAs			Percentage of IBAs		
		Protected	Partially protected	Unprotected	Protected	Partially protected	Unprotected
<b>North-East Asia</b>							
Hong Kong	2	1	1	0	50	50	0
Japan	167	71	63	33	43	38	20
Macao	1	0	1	0	0	100	0
Mainland China	445	247	64	134	56	14	30
Mongolia	41	12	4	25	29	10	61
North Korea	33	13	12	8	39	36	24
Russia (Eastern)	169	41	29	99	24	17	59
South Korea	40	11	14	15	28	35	38
Taiwan	53	11	17	25	21	32	47
<b>South Asia</b>							
Bangladesh	19	11	2	6	58	11	32
Bhutan	23	8	0	15	35	0	65
British Indian Ocean Territory	10	0	0	10	0	0	100
India <sup>1</sup>	465	266	0	199	57	0	43
Maldives	1	0	0	1	0	0	100
Nepal	27	12	2	13	44	7	48
Pakistan	55	33	9	13	60	16	24
Sri Lanka <sup>1</sup>	70	18	0	52	26	0	74
<b>South-East Asia</b>							
Brunei	7	1	2	4	14	29	57
Cambodia	40	3	11	26	8	28	65
Indonesia	227	58	42	127	26	19	56
Laos	27	15	4	8	56	15	30
Malaysia	55	21	8	26	38	15	47
Myanmar	55	16	3	36	29	5	65
Philippines	117	47	23	47	40	20	40
Singapore	3	0	3	0	0	100	0
Thailand	62	40	7	15	65	11	24
Timor-Leste	16	11	0	5	69	0	31
Vietnam	63	25	4	34	40	6	54
<b>Total</b>	<b>2,293</b>	<b>992</b>	<b>325</b>	<b>976</b>	<b>43</b>	<b>14</b>	<b>43</b>

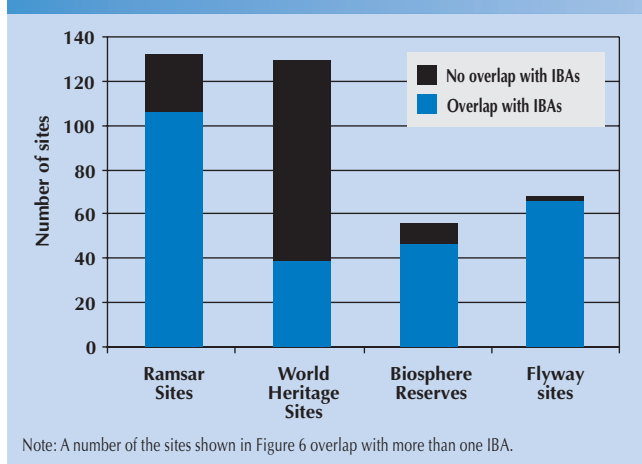
Note: 1 = All IBAs in India and Sri Lanka were classified as either "protected" or "unprotected", the category "partially protected" was not used.



Na Muang Krabi in peninsular Thailand, one of more than 100 IBAs in the Asia region that have been designated as Ramsar Sites. (PHOTO: MARK EDWARDS/BIRDLIFE)



**Figure 6.** Number of Ramsar Sites, World Heritage Sites, Biosphere Reserves and flyway sites in the Asia region that overlap with one or more IBA.



but have not yet been designated. Several hundred IBAs that qualify under category A4 (or A1 for threatened waterbirds) are likely to qualify under the Ramsar criteria. Following the publication of this directory, the data included herein will be used to prepare a shadow list of Ramsar Sites in the Asia region. The data could also be used in a similar way to identify candidate sites for designation as World Heritage Sites, Biosphere Reserves or flyway sites.

The aim of the World Heritage Convention is to identify and conserve sites of outstanding cultural and natural value, such as Emei Shan in China, a sacred mountain which attracts large numbers of tourists and an IBA which supports a wide range of Sino-Himalayan bird species. (PHOTO: MIKE CROSBY/BIRDLIFE)



or more IBA (Figure 6). Most of the World Heritage Sites that do not overlap with IBAs have been nominated for their cultural values, or for natural values other than biodiversity.

Territories participating in UNESCO’s Man and the Biosphere (MAB) Programme are expected to designate at least one suitable site as Biosphere Reserves. As of June 2004, UNESCO listed 56 Biosphere Reserves in the Asia Region, of which 47 (84%) overlap with one or more IBA (Figure 6). Most of the Biosphere Reserves that do not overlap with IBAs were designated on the basis of biodiversity values other than birds.

The Asia-Pacific Migratory Waterbird Conservation Strategy aims to promote the conservation of migratory waterbirds and wetlands in the Asia-Pacific region. Under this strategy, regional action plans have been developed, which provide for the establishment of networks of sites of international importance for Anatidae, shorebirds and cranes. As of October 2004, these three networks included 67 sites in 10 territories in the Asia region, of which 66 (99%) include one or more IBA (Figure 6).

As a significant number of Asia’s IBAs have outstanding biodiversity and other natural values, information on IBAs can be used to assist national governments identify sites for designation under multilateral environmental agreements and other mechanisms. In Europe and Africa, for example, analyses of IBA data to generate “shadow” lists of Ramsar Sites have demonstrated the utility of IBAs in identifying sites that meet the Ramsar criteria

## REFERENCES

- BIRD CONSERVATION SOCIETY OF THAILAND (2004) *Directory of Important Bird Areas in the Kingdom of Thailand: Key Sites for Conservation*. Bangkok: Bird Conservation Society of Thailand and BirdLife International.
- BIRDLIFE INTERNATIONAL (2003) *Saving Asia's threatened birds: a guide for government and civil society*. Cambridge, U.K.: BirdLife International.
- BIRDLIFE INTERNATIONAL (2004) *Threatened birds of the world 2004 CD-ROM*. Cambridge, UK: BirdLife International.
- BURGESS, N. D., RAHBK, C., LARSEN, F. W., WILLIAMS, P. AND BALMFORD, A. (2002) How much of the vertebrate diversity of sub-Saharan Africa is catered for by recent conservation proposals?. *Biological Conservation* 107: 327-339.
- HOWARD, P. C., VISKANIC, P., DAVENPORT, T. R. B., KIGENYI, F. W., BALTZER, M., DICKINSON, C. J., LWANGA, J. S., MATTHEWS, R. A. AND BALMFORD, A. (1998) Complimentarity and the use of indicator groups for reserve selection in Uganda. *Nature* 396: 472-475.
- ISLAM, M. Z. AND RAHMANI, A. R. (2004) *Important Bird Areas in India: priority sites for conservation*. Indian Bird Conservation Network, Bombay Natural History Society (India) and BirdLife International (UK).
- IUCN (2002) *The IUCN red list of threatened species*. Downloaded from the IUCN website on 22 November 2002.
- IUCN (1994) *Guidelines for protected area management categories*. IUCN: Gland and Cambridge.
- IUCN-SSC AND CI-CABS (2003) *Global amphibian assessment*. Gland: IUCN; and Washington DC: Conservation International.
- MALLARI, N. A. D., TABARANZA, B. R. AND CROSBY, M. J. (2001) *Key conservation sites in the Philippines: a Haribon Foundation and BirdLife International directory of Important Bird Areas*. Manila: Bookmark, Inc.
- MITTERMEIER, R. A., MYERS, N. AND MITTERMEIER, C. G. EDS. (1999) *Hotspots: Earth's biologically richest and most endangered terrestrial ecoregions*. Mexico City: Sierra Madre.
- OUNEKHAM, K. AND INTHAPATHA, S. (2003) *Directory of Important Bird Areas in Lao P.D.R.*. Vientiane: Forest Inventory and Planning Division, the Division of Forest Resource Conservation, BirdLife International in Indochina and the Wildlife Conservation Society Lao Program.
- STATTFIELD, A. J., CROSBY, M. J., LONG, A. J. AND WEGE, D. C. (1998) *Endemic Bird Areas of the World: priorities for biodiversity conservation*. Cambridge, UK: BirdLife International.
- TORDOFF, A. W., ED. (2002) *Directory of Important Bird Areas in Vietnam: key sites for conservation*. Hanoi: BirdLife International in Indochina and the Institute of Ecology and Biological Resources.

# A CONSERVATION STRATEGY FOR IBAs IN ASIA

Given the scale of threats faced by IBAs in Asia, and, in particular, the fact that 43% of the region's IBAs lie wholly outside of formal protected areas, there is a need for a comprehensive, region-wide programme of coordinated conservation action by governments, donors, civil society and the corporate sector. This section proposes the aim and targets of such a programme, and outlines the priority actions that must be taken to attain them. The conservation strategy for Asia's IBAs proposed here builds on *Saving Asia's Threatened Birds*, a guide for government and civil society prepared by the BirdLife Asia Partnership in 2003 (BirdLife International 2003), which presents detailed analyses of the conservation issues facing the key habitats for Asia's threatened birds, and formulates strategic solutions.

Despite the many challenges to biodiversity conservation in Asia, many of the conditions for successful implementation of a conservation strategy for the region's IBAs are already in place:

- There is solid foundation of accurate, up-to-date information on IBAs, and an objective, scientific basis for their identification.
- Existing conservation policies and protected area networks, including plans to address gaps in these networks, provide a good basis for IBA conservation.
- Government and donor commitments under multilateral environmental agreements provide a framework for the development and conservation of the IBA network.
- EIA legislation and donor environmental safeguard policies provide a framework for mainstreaming IBA conservation into other policy sectors.
- Traditional land-use and natural resource management practices of indigenous communities often provide a sound basis for community-based approaches to IBA conservation.
- There are a growing number of examples from within Asia and other regions of approaches to IBA conservation that work.
- There is growing civil society engagement in conservation in most countries in the region, increasing coverage of conservation issues in the region's media, and a burgeoning interest in birdwatching among the general public.

**OVERALL AIM: The conservation of all IBAs in Asia, as a contribution to the conservation of global biodiversity**

Attaining the overall aim will make a major contribution to the conservation of birds and biodiversity across the region. To this end, a coordinated programme of conservation action will be required. The necessary actions can be grouped under seven targets:

1. The IBA network formally recognised under multilateral environmental agreements, and by national governments, donors, civil society and the corporate sector.
2. Appropriate and effective site-based protection in place at every IBA.
3. The IBA network integrated into broader socio-political agendas by mainstreaming biodiversity into other policy sectors.
4. A constituency for IBA conservation built among a broad spectrum of stakeholders.
5. A cost-effective, stakeholder-based monitoring system in place for the IBA network.
6. A strong foundation of scientific knowledge in place for the development and protection of the IBA network.
7. An adequate, diverse and sustainable funding base in place to support the long-term conservation of the IBA network.

**TARGET 1. The IBA network formally recognised under multilateral environmental agreements, and by national governments, donors, civil society and the corporate sector**

Many Asian IBAs already have some form of recognition as important sites for conservation, through inclusion within protected area networks or national conservation strategies, or designation under multilateral environmental agreements. However, a significant proportion of IBAs lack any form of official recognition, as a result of which they are less likely to be prioritised for conservation investment or safeguarded against incompatible development. There is, therefore, a need for formal recognition of the entire IBA network by key stakeholders and under multilateral environmental agreements, as a foundation for coordinated, region-wide action.

**ACTION 1.1 Formally recognise the contribution of the IBA network to the conservation of global biodiversity**

Many stakeholders, including national governments, donor agencies, civil society organisations and private businesses, are in a position to make positive contributions to IBA conservation in Asia. These stakeholders should formally recognise the IBA network, as an initial step towards integrating it into their plans, policies and programmes. In addition, the protection of the IBA network should be formally recognised as a conservation target under multilateral environmental agreements. There are precedents for such a move; for instance, in 2002, the Sixth Conference of the Parties (COP-6) to the Convention on Biological Diversity (CBD) adopted the Global Strategy for Plant Conservation, which includes a global target to protect 50% of the most important areas for plant diversity by 2010.

**ACTION 1.2 Where they meet the criteria, designate IBAs under multilateral environmental agreements and other mechanisms**

In addition to formal recognition of the IBA network as a whole, individual IBAs that meet the relevant criteria should be designated under multilateral environmental agreements and other mechanisms that promote the conservation of important sites. These include: the Ramsar Convention, which provides for the designation of Ramsar Sites; the World Heritage Convention, which provides for the nomination of World Heritage Sites; the UNESCO Man and the Biosphere Programme, which provides for the designation of Biosphere Reserves; the Association of South-East Asian Nations (ASEAN) Declaration on Heritage Parks and Reserves, which provides for the designation of ASEAN Heritage Parks and Reserves; the Asia-Pacific Migratory Waterbird Conservation Strategy, which provides for the designation of flyway sites for migratory shorebirds, cranes and Anatidae; and the Convention on Migratory Species (CMS), which requires parties to conclude international agreements for migratory species that provide for a network of suitable areas of habitat (see Section on Relevance of IBAs to Multilateral Environmental Agreements and other Mechanisms, pages 5–7).

A major obstacle to designation of IBAs under multilateral environmental agreements and other mechanisms is the incomplete participation in multilateral environmental agreements by countries



in Asia. Most notable in this regard is the CMS, to which only five Asian countries are contracting parties (India, Mongolia, Pakistan, the Philippines and Sri Lanka) but there are also significant gaps in the participation of Asian countries in the Ramsar Convention and the Man and the Biosphere Programme. Where they are not already parties, countries in the Asia region should accede to these multilateral environmental agreements.

### **ACTION 1.3 Incorporate IBAs into NBSAPs and other national conservation plans**

One of the commitments of national governments that are party to the CBD is the preparation of National Biodiversity Strategies and Action Plans (NBSAPs). These documents set out national priorities for biodiversity conservation, and are used to guide conservation investment at the national level, particularly funding from the Global Environment Facility (GEF), one of the largest sources of conservation investment in the region. However, a recent study of 36 NBSAPs worldwide by BirdLife International found that only 28% effectively address the conservation and sustainable use of IBAs (BirdLife International 2004). Incorporation of IBAs into NBSAPs would strengthen them technically, by ensuring that a network of sites of international conservation importance are identified as priorities for conservation action.

### **TARGET 2. Appropriate and effective site-based protection in place at every IBA**

Once the IBA network has been formally recognised, it can then be used as a tool for conservation planning, to ensure that appropriate and effective site-based protection is put in place at every IBA. At many IBAs, the most appropriate and effective form of site-based protection will be inclusion within a formal protected area. However, at IBAs where formal protected area approaches are inappropriate or unfeasible, they should be complemented by alternative approaches, including management by local communities and voluntary agreements with private land owners.

### **ACTION 2.1 Review and, where appropriate and feasible, expand national protected area systems to address gaps in coverage of the IBA network**

In most countries in the region, formal protected area systems are the principle focus of site-based conservation action. Formal protected areas have proven effectiveness at conserving biodiversity (Bruner *et al.* 2001), and they typically have a high level of support from governments, donors and civil society<sup>1</sup>. Nevertheless, significant gaps remain in national protected area systems with regard to coverage of IBAs; this study shows that 43% of Asia's IBAs are currently unprotected. Therefore, these systems should be reviewed and, where feasible and appropriate, expanded, in order to address gaps in coverage of the IBA network. Such expansion would assist governments to meet commitments under Article 8(a) of the CBD<sup>2</sup>, the COP-7 Decision on Protected Areas<sup>3</sup>, and Millennium Development Goal 7<sup>4</sup>.

### **ACTION 2.2 Strengthen management of formal protected areas that overlap with IBAs**

More than two fifths of IBAs in Asia (as defined in this directory) are fully included within formal protected areas, and, with the

expansion of national protected area systems, this proportion can be expected to increase. In many parts of the region, however, protected area status does not guarantee protection of an IBA. This is because weak protected area management often means that major direct threats to biodiversity are not effectively addressed, and, as a result, a significant proportion of Asia's protected areas are little more than "paper parks". The factors contributing to weak protected area management are well documented, and include:

- Limitations in capacity, training and equipment.
- Insufficient funding for operational management from government budgets.
- Limited political will to enforce management regulations.
- Unclear or inappropriate management regulations.
- Failure to effectively engage key stakeholders, particularly local communities, in management.
- Insufficient integration of protected areas into land-use and development planning.

Consequently, one of the priority actions for the Asian IBA network should be strengthening management of formal protected areas. Over recent decades, national governments, donors and conservation organisations have invested significant resources in this area, and many lessons have been learnt about the approaches that work and the circumstances they work under. While there exists great variation in the needs of protected areas, actions that could be taken to strengthen their management include:

- Recruitment and training of protected area staff.
- Development of management frameworks that engage local communities.
- Demarcation of boundaries with the consent and participation of local communities and other key stakeholders.
- Delineation and intensive management of strictly protected core areas.
- Improvement of coordination among enforcement bodies.
- Preparation of scientifically based management plans focused on biodiversity conservation objectives.
- Management of tourism and recreation to maximise benefits and minimise negative impacts.
- Awareness raising about the values of protected areas among decision makers and the general public.
- Integration of protected area objectives into land-use planning.

Moreover, if formal protected areas are to make a major contribution to reducing the rate of biodiversity loss in the region, there will need to be a massive increase in levels of financing, from both national and international sources (see Target 7).

### **ACTION 2.3 Where appropriate, develop non-formal approaches to site-based protection of IBAs**

In most countries in Asia, it is neither feasible nor appropriate to expand formal protected area systems to cover all IBAs. There is, therefore, a need to develop alternative approaches to site-based protection of IBAs, to complement formal protected area systems. Such approaches could include community-managed conservation areas, private protected areas and voluntary agreements with land-owners<sup>5</sup>. In some Asian countries, alternative approaches to formal protected areas have already been widely adopted, while, in other countries, there are examples of successful approaches that can be replicated. Although the most appropriate approach will vary from site to site, standardised methodologies and "toolkits" of possible approaches could be developed, to assist conservation practitioners to develop non-formal approaches to site protection.

1 Under Article 8, each contracting party to the CBD has a commitment to "establish a system of protected areas or areas where special measures need to be taken to conserve biological diversity".  
 2 Article 8(a) of the CBD commits governments to establish "a system of protected areas or areas where special measures need to be taken to conserve biological diversity".  
 3 The COP-7 Decision on Protected Areas sets a target for governments to establish "a global network of comprehensive, representative and effectively managed national and regional protected area systems".  
 4 One of the indicators for Millennium Development Goal 7 (ensure environmental sustainability) is "land area protected to maintain biological diversity".  
 5 Recognition and support for such approaches were called for by the Fifth World Parks Congress in its message to the CBD in 2003.

**TARGET 3. The IBA network integrated into broader socio-political agendas by mainstreaming biodiversity into other policy sectors**

At many Asian IBAs, site-based protection efforts are being undermined by incompatible development projects and patterns of land use, such as road construction, agricultural intensification, coastal reclamation and aquacultural expansion. Consequently, there is a need to integrate the IBA network into broader socio-political agendas, through “mainstreaming” biodiversity into other policy sectors, particularly agriculture, forestry, fisheries, mining, transport, energy and tourism<sup>6</sup>. By addressing threats to biodiversity at source rather than mitigating impacts, such an approach will complement and support site-based conservation action, and should prove relatively cost effective.

**ACTION 3.1 Integrate IBAs into safeguard policies of national governments and donors**

Several of the major threats to biodiversity at IBAs are related to government and donor policies and programmes. In many instances, these threats do not derive from these policies and programmes *per se* but from a failure to fully mitigate their impacts on biodiversity. Governments and donors have already introduced a number of policies that safeguard sites of high conservation importance from incompatible development, most notably national EIA legislation and donor environmental safeguard policies. However, there remain a number of obstacles to their effective implementation, including a lack of consensus on what constitutes a site of high conservation importance. To support their effective implementation, IBAs should be integrated into these safeguard policies, through, for example, adoption of the IBA network as a standard source of information on sites of high conservation value (see Section on Relevance of IBAs to Donor Safeguard Policies, pages 7–8). There is also a need for monitoring of the application of safeguard policies with regard to IBAs, to ensure that they are applied consistently.

**ACTION 3.2 Reduce subsidies, taxes and other incentives that promote natural resource and land-use practices incompatible with IBA conservation**

Another root cause of biodiversity loss at IBAs in Asia is subsidies, taxes, import duties and other financial incentives that promote natural resource and land-use practices incompatible with IBA conservation. For example, subsidies for the production and export of commodities can promote conversion of natural forest to plantations of oil palm, coffee, rubber and other cash crops. Similarly, subsidies for tree planting can promote conversion of natural habitat into monocultures of exotic tree species, or afforestation of inter-tidal mudflats with mangrove. Such incentives arise because of the inability of existing markets to capture the “true” value of natural resources (Pearce and Moran 1994). Incentives that promote natural resource and land-use practices incompatible with IBA conservation should be removed. In support of this, further research is needed on the impacts of particular incentives on biodiversity, and the development and promotion of appropriate policy responses based on the results.

**ACTION 3.3 Promote natural resource and land-use practices compatible with IBA conservation, through subsidies, incentive schemes, certification and other market mechanisms**

In addition to reducing natural resource and land-use practices incompatible with IBA conservation, there is a need to promote viable alternatives. A number of natural resource and land-use practices compatible with IBA conservation have already been introduced in parts of the region, for example sustainable forest management, agro-forestry, improved livestock management, aquacultural models based on natural productivity, and integrated

pest management. As well as being compatible with IBA conservation, such practices can deliver benefits to local communities and national economies. In order to promote such practices, subsidies, incentive schemes, certification schemes and other market mechanisms should be developed<sup>7</sup>. These mechanisms could include subsidies to upland farmers for maintaining forest cover above specified levels, certification schemes for seafood products from sustainable aquaculture, or low-interest loans to farmers wishing to invest in fewer, better quality livestock.

**ACTION 3.4 Strengthen the legal framework for IBA conservation**

Throughout the region, national legislation, including protected area, wildlife protection and environmental protection legislation, provides the legal framework for IBA conservation. Often, however, there are shortcomings in this legislation, not least the significantly lower protection typically afforded to important sites for conservation outside of formal protected areas. Consequently, the legal framework for IBA conservation should be strengthened<sup>8</sup>.

Within the European Union (EU), the EU Birds<sup>9</sup> and Habitats<sup>10</sup> Directives provide the legal framework for IBA conservation, by providing for the designation and protection of Special Protection Areas and Special Areas of Conservation. A similar framework could be developed in Asia, either at the national level, or by sub-regional inter-governmental organisations, such as ASEAN.

**ACTION 3.5 Use IBAs as anchors for landscape-level conservation**

While securing the integrity of individual IBAs would make a major contribution to the conservation of the IBA network as a whole, individual IBAs are not always sufficient to support long-term viable populations of the bird species they are important for. In addition, isolated IBAs may be more susceptible to the impacts of global climate change, if species are less able to “track” changes in habitat distribution. In many cases, therefore, habitat connectivity should be maintained or established among IBAs through landscape-level conservation. One option, which would make a major contribution to many of the objectives in the IBA conservation strategy, would be to adopt IBAs, along with other existing networks of internationally important sites for biodiversity conservation, as the basis for an Asian Ecological Network (see Box 1).

**TARGET 4. A constituency for IBA conservation built among a broad spectrum of stakeholders**

The entire Asian IBA network can be effectively conserved only with the support of stakeholders at all levels, including government agencies, donor agencies, civil society organisations, private businesses, local people and local authorities. Such support is essential to the success of site-based conservation action, and is also a prerequisite for the policy changes that are needed to address the root causes of biodiversity loss at IBAs.

6 Under Article 6, each contracting party to the CBD has a commitment to “integrate, as far as possible and as appropriate, the conservation and sustainable use of biological diversity into relevant sectoral or cross-sectoral plans, programmes and policies.”

7 Under Article 11, each contracting party to the CBD has a commitment to “adopt economically and socially sound measures that act as incentives for the conservation and sustainable use of components of biological diversity”.

8 Under Article 8, each contracting party to the CBD has a commitment to “develop or maintain necessary legislation and/or other regulatory provisions for the protection of threatened species and populations”.

9 Directive 79/409/EEC on the Conservation of Wild Birds, issued on 2 April 1979.

10 Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora, issued on 21 May 1992.

**Box 1. Towards an Asian Ecological Network.**

Ecological Networks provide a means of integrating sites into broader land- and seascapes in a way that enables the long-term maintenance of species populations and ecological and evolutionary processes, while reconciling biodiversity conservation with sustainable human use of landscapes. Ecological networks have been developed in several parts of the world (Bennett and Wit 2001), with the most advanced being in Europe, where the Pan-European Ecological Network and a number of national ecological networks are being developed.

There is currently no legislative or institutional basis for an Asian Ecological Network. However, one could be developed within the framework of a pan-regional strategy, which could be adopted by a wide range of parties, including national governments, sub-regional inter-governmental organisations, donor agencies, NGOs and private businesses. Such a strategy would not be a binding agreement but a set of agreed principles that could be adopted on a voluntary basis, with each party deciding how and to what extent they would incorporate the principles into their policies and programmes.

Following the adoption of a strategy, the development of the Asian Ecological Network could take place through a two-phase process. The first phase would involve the recognition and protection of a network of internationally important sites for biodiversity conservation. Initially, this network could comprise existing site networks, such as IBAs, sites in the Asian Wetland Inventory and flyway sites, but, later, it could be expanded by the identification of other internationally important sites for conservation, such as Important Plant Areas (Anderson 2002) or key biodiversity areas (Eken *et al.* in press). The second phase, which would take place over the longer term, would involve the establishment of an ecological network, anchored on the network of important sites for biodiversity conservation, through the definition of corridors, buffer zones and restoration areas. This network could begin as national plans, developed in consultation with stakeholders at all levels, which could gradually be converted into on-the-ground reality, as elements of the network were secured by formal protected area designation or through non-formal approaches to site protection.

**Box 2. The Site Support Group approach.**

“Site Support Group” (SSG) is a generic term used to describe groups of local stakeholders who share a common commitment to the conservation of an IBA. Typically, SSGs are networked together to promote exchange of experience and skills, and are supported by conservation NGOs. There are no strict criteria governing SSG membership but, in many cases, members are volunteers. Stakeholder motivation may be diverse: commitment of SSG members may derive from the economic, cultural, religious, recreational or livelihood-supporting values of the site and its resources. SSG activities vary according to local circumstances and priorities, but often include monitoring of biodiversity and threats, implementing education and awareness programmes, and developing ecotourism or other income-generating activities with benefits for local livelihoods and biodiversity.

SSGs can be established at IBAs regardless of their protection status. At formally protected IBAs, SSGs can complement the work of protected area management staff. Where appropriate, this relationship can be formalised, and include participation of the SSG in protected area management. At IBAs that are not designated as formal protected areas, SSGs can support local authorities, local people and/or private land owners to conserve biodiversity, or even take responsibility for site management themselves. In addition to supporting site management, SSGs are frequently well positioned to campaign against immediate threats to biodiversity or to lobby for change in policies that undermine IBA conservation.

SSGs can be an effective way of engaging stakeholders in IBA conservation at the site level but will not always be the only approach adopted nor, in some cases, the most appropriate (for instance, where the socio-political environment is not supportive of the establishment of grassroots organisations). Networking SSGs can also face many practical difficulties, and can require significant resources. However, by remaining flexible and embracing existing community-based natural resource management structures, the SSG approach has great potential for application in Asia.

**ACTION 4.1 Engage stakeholders in IBA conservation at the network and site levels**

Across Asia, governments are committed to mainstreaming biodiversity and environmental sustainability at all levels<sup>11</sup>. At the same time, local civil society is evolving, and taking an increasingly active role in biodiversity conservation. Moreover, the principles of environmental and social responsibility are being adopted by the corporate sector. There exist, therefore, great opportunities to engage a broad spectrum of stakeholders in IBA conservation, at both the network and site levels.

At the network level, there are many ways in which stakeholders could become engaged in IBA conservation, including through membership of national NGOs, participation in national bird conservation networks, or development of site conservation partnerships among government, civil society and private sector organisations. In particular, the IBA network presents an opportunity to increase awareness of and involvement in conservation among expanding urban populations in the region; a key factor in generating public support for conservation.

At the site level, individuals could become engaged in IBA conservation through membership of nature clubs, community-based organisations or local NGOs, while organisations could become engaged through corporate sponsorship of IBAs or NGO-protected area partnerships. One approach to engaging local stakeholders that has proven successful at IBAs in other regions, and has been piloted in parts of Asia, is the Site Support Group approach (see Box 2).

**ACTION 4.2 Establish and strengthen networks of stakeholders engaged in IBA conservation**

The diversity of threats facing the IBA network means that there is a need to pool resources and expertise in order to address them. At the same time, the diversity of approaches to IBA conservation currently being adopted means that there is also a need to document lessons learned, identify and replicate successful approaches, and

develop models of best practice. Consequently, networks of stakeholders engaged in IBA conservation should be established and strengthened.

Such networks could comprise a diversity of individuals and/or groups, including local NGOs, community-based organisations, SSGs, academics and protected area managers, with coordination provided by a national or international NGO or other appropriate organisation. The functions of these networks would depend upon the needs and capacities of their members but could potentially include exchange of information, technical expertise and experience within and between networks, development and replication of best practice approaches to IBA conservation, or coordinated action on campaigning or awareness raising. In addition, by including both grassroots organisations and organisations working at the national level, these networks would be able to feed information about the impacts of government and donor plans and policies at the site level into policy at the national level. One example of an existing IBA stakeholder network in Asia is the Indian Bird Conservation Network (see Box 3).

**Box 3. The Indian Bird Conservation Network (IBCN).**

The development of the IBCN has been coordinated by the Bombay Natural History Society, the BirdLife partner in India. The IBCN currently comprises 800 individual members (mostly academics and conservationists) and 75 NGO members, coordinated at the state and national levels. IBCN members were actively involved in the identification and documentation of the Indian IBAs included in this directory, and are increasingly engaged in local site monitoring and action. IBCN members receive periodic training in IBA survey and monitoring, and fundraising. In addition, small grants are made available to members, to support survey, research and conservation outreach projects. Exchange of experience and information among IBCN members takes place through various channels, including a regular newsletter, *Mistnet*.

<sup>11</sup> Under Article 10, each contracting party to the CBD has a commitment to “integrate consideration of the conservation and sustainable use of biological resources into national decision-making”.



### **ACTION 4.3 Strengthen capacity for IBA conservation at all levels**

In many parts of the region, government agencies mandated to conserve biodiversity and other stakeholders engaged in IBA conservation, such as local NGOs, local authorities, private businesses and community-based organisations, face limitations in their capacity to conserve sites. If the potential of these stakeholders to contribute to IBA conservation is to be fully realised, individual, institutional and systemic capacity for IBA conservation should be strengthened at local, national and regional levels. There are many areas in which capacity for IBA conservation could be strengthened, including site management, research, monitoring, communications, institutional development and fundraising. Capacity strengthening could be provided by national or international NGOs, government conservation agencies or other institutions with experience of effective approaches to IBA conservation from the Asia region or elsewhere.

### **ACTION 4.4 Develop approaches to IBA conservation that deliver significant socio-economic benefits to local communities**

IBAs are not only important for birds and biodiversity but are often also important for the livelihoods of local communities. However, local communities do not always enjoy the potential socio-economic benefits of IBAs, either because their natural resources are exploited by outsiders or because protected area management regimes prohibit potentially sustainable uses. In these cases, not only may the potential for IBAs to contribute to poverty alleviation not be realised but also opportunities to build local community support for their conservation may be lost.

Consequently, approaches to IBA conservation that deliver socio-economic benefits to local communities without compromising conservation objectives should be developed<sup>12</sup>. These approaches could include:

- Protected area regulations that allow sustainable uses of natural resources with low impacts on wildlife populations and natural habitats.
- Community forest management or joint forest management.
- Direct payment schemes that reward local communities for conservation action.
- Ecotourism initiatives that involve and deliver benefits to local communities
- Income generating schemes with direct linkages to reducing threats to biodiversity at IBAs.

### **ACTION 4.5 Raise awareness of the biological and socio-economic values of IBAs, and the threats that they face, among all sections of society**

Too often, decisions about use of a natural resource are based only on a narrow assessment of its cash value, without a full consideration of other values, such as dispersed ecosystem services and existence values. This applies as much to land-use and development planning decisions made by local and national governments as to natural resource use and land-use decisions made by local communities. There is, therefore, a need for a wider realisation of the biological and socio-economic values of IBAs, so that informed decisions can be made about their management<sup>13</sup>. In addition, raising awareness of the biological and socio-economic values of IBAs and the threats that they face is essential to building a constituency for their conservation among a broad spectrum of stakeholders.

At the site level, awareness of the biological and socio-economic values of IBAs could be raised through school-based education programmes, targeted awareness activities for local stakeholders, visitor interpretation centres or local media coverage. Where SSGs have been established, they will often be well positioned to initiate or support such activities. At the network level, appropriate activities could include national media coverage, awareness programmes for the general public, the corporate sector and/or key decision makers, or economic valuation of the ecosystem services performed by IBAs. Some of these activities could support actions aimed at integrating IBAs into policies and plans of governments and donors (see Target 3).

### **TARGET 5. A cost-effective, stakeholder-based monitoring system in place for the IBA network**

As an increasing amount of conservation action is taken for Asia's IBAs by a growing number of stakeholders, there is an increasing need to develop a monitoring system for the IBA network. Such a system could provide early warning of threats, enabling prompt conservation action to be taken in response. It could also provide a means of measuring conservation success, thereby supporting the development and replication of effective approaches to IBA conservation, and providing an objective measure of the impacts of conservation investment.

### **ACTION 5.1 Establish a region-wide IBA monitoring system, and link to policy, site management and site safeguard**

A prerequisite for effective conservation action for the IBA network is accurate, up-to-date data on the nature and severity of threats to biodiversity (pressure), the status of bird populations and habitats (state), and the type and effectiveness of conservation action (response) at IBAs. To this end, a region-wide monitoring system should be established, comprising site-based monitoring at individual IBAs, linked to national and regional mechanisms to manage data on the IBA network as a whole<sup>14</sup>. Such a system could generate information to guide policy development at the national and regional levels, as well as supporting site safeguard policies, by providing early warnings about threats to biodiversity at sites. Furthermore, an IBA monitoring system could facilitate adaptive management of individual IBAs, by identifying priority conservation actions and evaluating their effectiveness.

Given the scale of the IBA network and the finite resources available for its conservation, any monitoring system should be cost effective and engage as broad a spectrum of stakeholders as possible. The growing site-based constituency for IBA conservation presents an opportunity to develop cost-effective approaches to IBA monitoring involving local stakeholders, such as protected area managers, SSGs, local NGOs or community-based organisations (see Target 4). Moreover, IBA monitoring approaches on-going in Africa (Bennun *et al.* in press) and under development for Europe present opportunities to learn from experience elsewhere and replicate best practice.

### **ACTION 5.2 Develop and adopt indicators of conservation success based on IBAs**

Currently, there exist few recognised global indicators of conservation success, as a result of which, it is very difficult to measure progress towards attaining conservation goals, such as the CBD target, endorsed by the World Summit on Sustainable Development, of reducing the current rate of biodiversity loss by

<sup>12</sup> Under Article 10, each contracting party to the CBD has a commitment to “protect and encourage customary use of biological resources in accordance with traditional cultural practices that are compatible with conservation or sustainable use requirements”.

<sup>13</sup> Under Article 13, each contracting party to the CBD has a commitment to “promote and encourage understanding of the importance of, and the measures required for, the conservation of biological diversity, as well as its propagation through media, and the inclusion of these topics in educational programmes”.

<sup>14</sup> A framework for national and regional mechanisms to manage data on the Asian IBA network already exists in the form of the BirdLife World Bird Database, which has been adopted as a standard throughout much of the region.

2010, or Millennium Development Goal 7 of ensuring environmental sustainability by 2015. Indicators of conservation success can also help guide policy and conservation investment, by identifying approaches to conservation that work.

It is widely recognised that, as a group, birds have many features that make them good indicators of overall biodiversity (Burgess *et al.* 2002). Similarly, IBAs can be used to monitor trends in biodiversity at global, regional and national levels. Therefore, IBA-based indicators relevant to targets set by multilateral environmental agreements should be developed and adopted.

#### **TARGET 6. A strong foundation of scientific knowledge in place for the development and protection of the IBA network**

If the utility of the IBA network as a guide to conservation action is to be maximised, it must be based on a strong foundation of scientific knowledge. In particular, it must continue accurately to reflect site-based conservation priorities in the region, and be based upon standard, internationally recognised criteria and credible data. Moreover, it is important to maximise national and local ownership of IBA networks, through increased involvement of national and local researchers and conservationists in their development. The data presented within this directory represent a good starting point of scientific knowledge on IBAs but must be kept up to date and supplemented, in order to increase both the quality and the depth of the information base for IBA conservation<sup>15</sup>.

#### **ACTION 6.1 Conduct surveys to fill gaps in coverage of the IBA network and keep the network up to date**

As described in Overview of Results section (pages 14–25), there remain a number of gaps in the coverage of the Asian IBA network. In order to fill these gaps, the first step should be identification of additional IBAs in those parts of Asia where coverage of the existing network is incomplete. In addition to surveys to fill gaps in coverage of the IBA network, periodic surveys should also be undertaken to keep the network up to date. In particular, surveys should focus on providing additional information on bird diversity, and recording changes in habitats, bird populations and threats at IBAs.

#### **ACTION 6.2 Conduct detailed ecological and socio-economic studies at IBAs**

Evaluation of a site against the IBA criteria only represents the first level of information required to guide site-based conservation action. For IBAs where they are not already available, detailed, site-specific data are required on the ecology and distribution of key bird species, the extent and condition of key bird habitats, the impacts and root causes of threats to biodiversity, and other issues of direct relevance to site protection. At such IBAs, detailed ecological and socio-economic studies should be conducted, and the results should be used to guide site management.

#### **TARGET 7. An adequate, diverse and sustainable funding base in place to support the long-term conservation of the IBA network**

Many of the approaches to IBA conservation proposed in this strategy are cost-effective, because they:

- Engage a diverse spectrum of stakeholders.
- Build upon existing conservation investments, such as protected area systems.
- Address threats to biodiversity at source not only mitigate impacts.
- Empower local stakeholders to develop low-cost, locally appropriate solutions to conservation problems.

However, given the scale of the IBA network in Asia, the funding required for its conservation is significantly greater than that currently committed. Consequently, the development and protection of the IBA network will require an adequate and sustainable funding base, drawn from a greater diversity of sources than at present.

#### **ACTION 7.1 Use IBAs to guide allocation of existing conservation resources**

As existing conservation resources are limited, it is vital that they are allocated in the most effective manner possible. The IBA network provides an excellent tool for ensuring that resources for site-based protection are focused on sites of international importance for biodiversity conservation. The IBA network can be used to guide donor investment priorities or allocation of resources within national protected area systems. For example, qualification as an IBA is one of the criteria used to prioritise Vietnamese protected areas for support from the Vietnam Conservation Fund.

#### **ACTION 7.2 Expand and develop conservation financing mechanisms**

National governments, both within and outside of the Asia region, have commitments to finance biodiversity conservation under the CBD<sup>16</sup>, and these are reiterated in NBSAPs and other national policy documents. While a number of new conservation financing mechanisms have been developed since the CBD was adopted, including the GEF, the Global Conservation Fund (GCF) and the Critical Ecosystem Partnership Fund (CEPF), the need for conservation funding in most countries outstrips supply, often by one or more orders of magnitude. For example, the Fifth World Parks Congress recently estimated that the existing global protected areas system has an estimated annual budget shortfall of US\$25 billion. Consequently, there is a pressing need to expand existing conservation financing mechanisms and, where appropriate, establish new ones. Given the scale of funding required, the principle source will need to be governments (Balmford and Whitten 2003, RSPB 2004). However, civil society, donor agencies and the corporate sector are also in a position to make significant contributions to such mechanisms.

New conservation financing mechanisms that could be developed in the Asia region include trust funds, through which donors make lasting contributions to conservation of a site or in a country with a single investment, for example the Bhutan Trust Fund for Environmental Conservation. New mechanisms could also include debt-for-nature swaps, whereby a country's debts are cancelled in return for the commitment of domestic resources to environmental protection. Conservation taxes are another mechanism with potential application in Asia. Such taxes have been introduced in a number of countries in other regions of the world, including Costa Rica, where taxes on fuel and ecosystem services are invested in the protection of natural forests. New conservation financing mechanisms could also include ecosystem services payments, whereby those who benefit from the dispersed ecosystem services of natural habitats, for example carbon sequestration or water catchment protection, pay for their maintenance. One example with potential application in Asia is the system of carbon offset payments proposed under the Kyoto Protocol.

The main obstacles to expanding existing conservation financing mechanisms and developing new ones are political. These political obstacles are linked to disparities between the financial costs and benefits of exploitation of natural resources, with the stakeholders in the strongest position to fund conservation (governments, the

<sup>15</sup> Under Article 12, each contracting party to the CBD has a commitment to “promote and encourage research which contributes to the conservation and sustainable use of biological diversity, particularly in developing countries”.

<sup>16</sup> Under Article 20 of the CBD, developed country parties undertook to “provide new and additional financial resources to enable developing country parties to meet the agreed full incremental costs to them of implementing measures which fulfil the obligations of this convention”.

corporate sector and citizens of developed countries) also being the principle beneficiaries of exploitation. Therefore, efforts to expand and develop conservation financing mechanisms for IBA conservation should be linked to actions to raise awareness of the full biological and socio-economic value of IBAs, including economic valuation (see Action 4.5).

#### **ACTION 7.3 Resource IBA conservation via government and donor programmes in the natural resources sector**

While, in many Asian countries, investment in biodiversity conservation is limited, governments and donors are often investing heavily in the natural resources sector, to address other objectives, including poverty alleviation, water catchment protection or flood mitigation. These investments include the Return Slope Farmland to Forests Programme of the government of China, which compensates farmers for releasing farmland for conversion into forest and subsidises tree planting, and the Five Million Hectares Reforestation Programme of the government of Vietnam, which aims to restore forest cover to 1945 levels by 2010. Such programmes present opportunities for providing significant resources for IBA conservation. For instance funds could be directed towards activities that restore habitat at IBAs, establish habitat connectivity between IBAs, or alleviate pressure on the natural resources of IBAs by providing alternative sources of income for local communities.

#### **ACTION 7.4 Secure corporate support for IBA conservation**

The reputation of the corporate sector with regard to environmental protection is often poor, as many businesses are viewed as pursuing short-term financial gains at the expense of the environment. However, there is a growing realisation among the corporate sector of the business case for paying attention to environmental sustainability. As a result, an increasing number of businesses are developing social and environmental responsibility policies, which provide an increasing number of opportunities to secure corporate support for IBA conservation.

One form of corporate support for IBA conservation could be sponsorship of an IBA by a private company; for instance, where an IBA is linked in some way to a company's business operations,

or where protection of an IBA could be a mitigation measure for the environmental impacts of a corporate investment, such as a mine. Alternatively, corporate support for IBA conservation could take the form of adoption of environmentally sustainable business practices, through, for example, the development of best practice guidelines or voluntary codes of conduct in such sectors as forestry, fisheries, agriculture and tourism. Furthermore, environmentally sensitive investments could be adopted by private financial institutions, or new markets for environmentally friendly products could be developed.

#### **REFERENCES**

- ANDERSON, S. (2002) *Identifying Important Plant Areas*. London: Plantlife International
- BALMFORD, A. AND WHITTEN, T. (2003) Who should pay for tropical conservation, and how could the costs be met? *Oryx* 37: 238-250.
- BENNETT, G. AND WIT, P. (2001) *The development and application of ecological networks: a review of proposals, plans and programmes*. AIDEnvironment and IUCN.
- BENNUN, L., MATIKU, P., MULWA, R., MWANGI, S. AND BUCKLEY P. (in press) Monitoring Important Bird Areas in Africa: towards a sustainable and scaleable system. *Biodiversity and Conservation*.
- BIRDLIFE INTERNATIONAL (2003) *Saving Asia's threatened birds: a guide for government and civil society*. Cambridge, UK: BirdLife International.
- BIRDLIFE INTERNATIONAL (2004) *State of the world's birds 2004: indicators for our changing world*. Cambridge, UK: BirdLife International.
- BRUNER, A. G., GULLISON, R. E., RICE, R. AND DE FONSECA, G. A. B. (2001) Effectiveness of parks in protecting tropical biodiversity. *Science* 291: 125-128.
- BURGESS, N. D., RAHBEK, C., LARSEN, F. W., WILLIAMS, P. AND BALMFORD, A. (2002) How much of the vertebrate diversity of sub-Saharan Africa is catered for by recent conservation proposals? *Biological Conservation* 107: 327-339.
- EKEN, G., BENNUN, L., BROOKS, T., DARWALL, W., FISHPOOL, L., FOSTER, M., KNOX, D., LANGHAMMER, P., MATIKU, P., RADFORD, E., SALAMAN, P., SECHREST, W., SMITH, M. L., SPECTOR, S. AND TORDOFF, A. (in press) Key Biodiversity Areas as site conservation targets. *BioScience*.
- PEARCE, D. AND MORAN, D. (1994) *The economic value of biodiversity*. London: Earthscan Publications.
- RSPB (2004) *Financial resources under the Convention on Biological Diversity (CBD) and protected areas*. Position statement for the Seventh Conference of the Parties to the CBD, 9-20 February 2004, Kuala Lumpur, Malaysia.



# DATA PRESENTATION

The country and territory inventories which form the major part of this book have been prepared in a standardised format, consisting of the sections that are explained and illustrated below, with maps to show the location and relative size of the IBAs. One or more photographs are used to illustrate the chapters, selected to show sites that are typical of the country or territory, or of particular interest or importance to conservation.

## HEADER

Each country and territory account has a header which gives statistics on: land area; human population (with density per km<sup>2</sup>); number of IBAs; total area of IBAs; and the numbers of IBAs officially protected, partially protected and unprotected.

## KEY HABITATS AND BIRDS

This section highlights those species and groups of species for which the country or territory is particularly important and which trigger IBA-selection criteria (see Methodology). Details are given on globally threatened bird species (see Appendix 1), Endemic Bird Areas (EBAs) and Secondary Areas (SAs) (see Appendix 2), and the distribution of biomes (see Appendix 3) within the country or territory.

## CONSERVATION INFRASTRUCTURE AND PROTECTED AREAS SYSTEM

An outline of the most important nature-conservation legislation in the country or territory, particularly laws or programmes relevant to site protection and management, together with the names of the ministries responsible for their implementation. Information is given on the protected areas system within the country or territory, including how much of the land area is officially protected.

## OVERVIEW OF THE INVENTORY

An outline of the IBA network in the country or territory, that gives information of the total area covered by the IBAs (also given as a percentage of national land area) and the numbers of IBAs that qualify under the various criteria. Details are given on the coverage afforded by the IBAs to globally threatened species, restricted-range species in EBAs and SAs, biome-restricted assemblages and congregatory species.

## CONSERVATION ISSUES

This section includes a summary of the main threats to IBAs in the country or territory, with details of any major conservation issues that are relevant to particular sites. In some cases conservation measures are proposed here to address specific threats, but general measures relevant to site protection and management throughout the Asia region are covered in the Conservation Strategy section. The coverage afforded to the IBA network by the protected areas system in the country or territory is evaluated, with proposals for new protected areas to address any significant gaps.

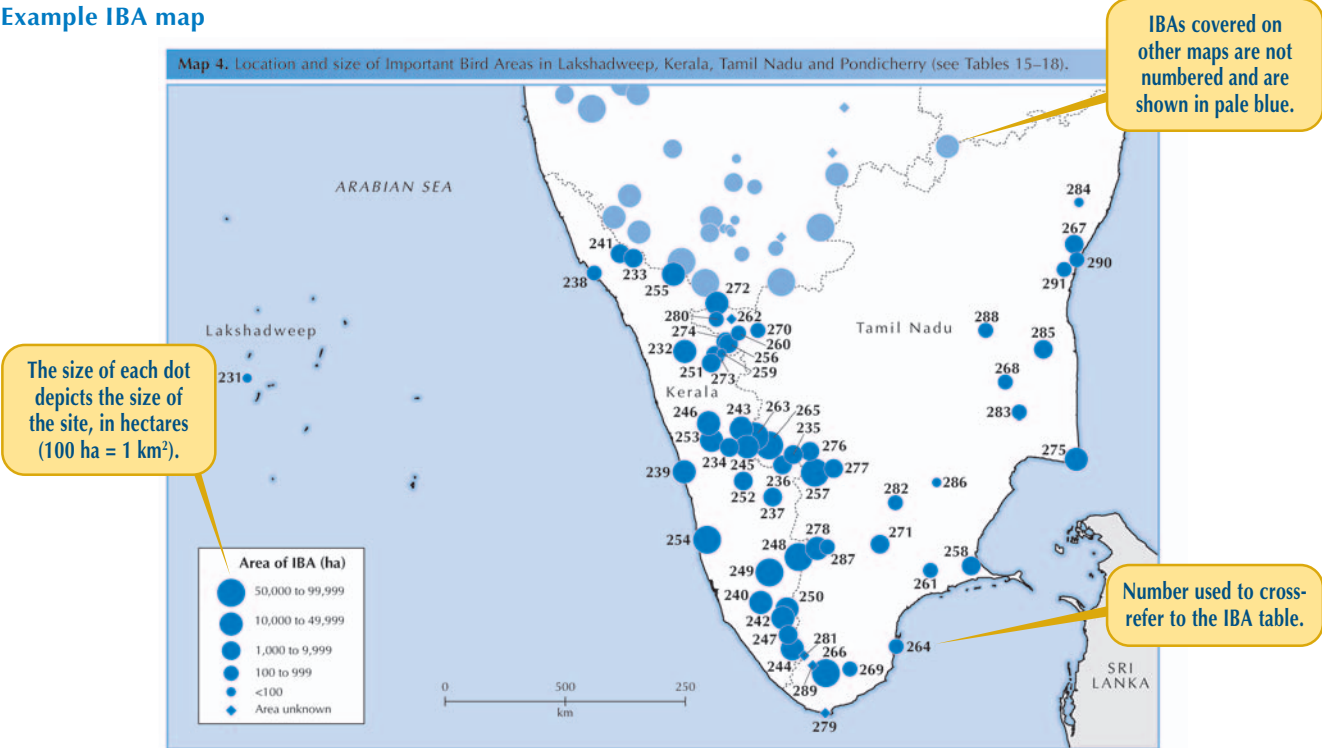
## SOURCES OF IBA DATA

The sources of the information presented in the country or territory chapter are given, including the principal national compilers and data contributors and any IBA publications.

## REFERENCES

Citations are listed of any publications used in the compilation of the introductory sections outlined above.

### Example IBA map



**Example IBA table**

Summary data on every IBA is given in a table, or, in the case of larger countries, in separate tables for each province.

Number used to cross-refer to the IBA map.	Name of the site, as used internationally.	Central coordinates of the site.	Altitudinal range of the IBA, in metres above sea level.	Area of the site in hectares (100 ha = 1 km <sup>2</sup> ).	The main habitat classes present in the IBA.
Table 16 ... continued. Important Bird Areas in Kerala (see Map 4).					
246	Peechi – Vazhani Wildlife Sanctuary	Coordinates 10°37'N 76°24'E	Altitude 186–922 m	Area 12,500 ha	Habitats Forest
	Admin region Thrissur				
	Threatened species <i>Brachypteryx major</i> , <i>Schoenicola platyura</i>				
	Endemic Bird Areas 123: Western Ghats				
	Biomes AS10: Indian peninsula tropical moist forest				
247	Peppara Wildlife Sanctuary	Coordinates 8°46'N 77°9'E	Altitude 90–1,717 m	Area 5,300 ha	Habitats Forest; Grassland
	Admin region Thiruvananthapuram				
	Threatened species <i>Columba elphinstonii</i>				
	Endemic Bird Areas 123: Western Ghats				
	Biomes AS10: Indian peninsula tropical moist forest				
248	Periyar Wildlife Sanctuary	Coordinates 9°27'N 77°15'E	Altitude 150–2,019 m	Area 77,700 ha	Habitats Forest; Wetlands
	Admin region Idukki				
	Threatened species <i>Gyps bengalensis</i> , <i>Gyps indicus</i> , <i>Aquila clanga</i> , <i>Gallinago nemoricola</i> , <i>Columba elphinstonii</i> , <i>Brachypteryx major</i> , <i>Schoenicola platyura</i>				
	Endemic Bird Areas 123: Western Ghats				
	Biomes AS10: Indian peninsula tropical moist forest				
249	Ranni Reserve Forest	Coordinates 9°19'N 76°59'E	Altitude 46–1,920 m	Area 87,738 ha	Habitats Forest; Grassland
	Admin region Quilon				
	Threatened species <i>Columba elphinstonii</i>				
	Endemic Bird Areas 123: Western Ghats				
	Biomes AS10: Indian peninsula tropical moist forest				
250	Shendurney Wildlife Sanctuary	Coordinates 8°59'N 77°8'E	Altitude 200–1,500 m	Area 10,032 ha	Habitats Forest
	Admin region Quilon				
	Threatened species <i>Falco naumanni</i> , <i>Gallinago nemoricola</i> , <i>Columba elphinstonii</i>				
	Endemic Bird Areas 123: Western Ghats				
	Biomes AS10: Indian peninsula tropical moist forest				
251	Silent Valley National Park	Coordinates 11°8'N 76°26'E	Altitude 658–2,383 m	Area 8,952 ha	Habitats Forest
	Admin region Palakkad				
	Threatened species <i>Columba elphinstonii</i> , <i>Brachypteryx major</i> , <i>Garrulax cachinnans</i> , <i>Schoenicola platyura</i>				
	Endemic Bird Areas 123: Western Ghats				
	Biomes AS10: Indian peninsula tropical moist forest				
252	Thattakkad Wildlife Sanctuary	Coordinates 10°7'N 76°44'E	Altitude 35–523 m	Area 2,516 ha	Habitats Forest
	Admin region Idukki				
	Threatened species <i>Columba elphinstonii</i> , <i>Brachypteryx major</i> , <i>Schoenicola platyura</i>				
	Endemic Bird Areas 123: Western Ghats				
	Biomes AS10: Indian peninsula tropical moist forest				
253	Vazhachal Forest Division	Coordinates 10°28'N 76°26'E	Altitude 200–1,300 m	Area 41,300 ha	Habitats Forest
	Admin region Ernakulam; Thrissur				
	Threatened species <i>Columba elphinstonii</i>				
	Endemic Bird Areas 123: Western Ghats				
	Biomes AS10: Indian peninsula tropical moist forest				
254	Vembanad Lake	Coordinates 9°36'N 76°23'E	Altitude Unknown	Area 79,400 ha	Habitats Coastline; Forest; Grassland; Wetlands
	Admin region Alappuzha; Ernakulam; Kottayam; Pathanamthitta				
	Congregatory waterbirds <i>Phalacrocorax niger</i> , <i>Anas querquedula</i> , <i>Chlidonias hybrida</i>				
255	Waynaad Wildlife Sanctuary	Coordinates 11°54'N 76°5'E	Altitude 640–1,158 m	Area 34,444 ha	Habitats Forest
	Admin region Wayanad				
	Threatened species <i>Gyps bengalensis</i> , <i>Gyps indicus</i> , <i>Falco naumanni</i> , <i>Gallinago nemoricola</i> , <i>Columba elphinstonii</i> , <i>Garrulax cachinnans</i> , <i>Schoenicola platyura</i> , <i>Parus nuchalis</i>				
	Endemic Bird Areas 123: Western Ghats				
	Biomes AS10: Indian peninsula tropical moist forest				

The criteria by which a site qualifies as an IBA (A1 = globally threatened species; A2 = restricted-range species; A3 = biome-restricted assemblages; A4 = globally important congregations of birds; see Methodology for definitions of these criteria).

Scientific names of congregatory waterbird or seabird species are given, in taxonomic order, if the site meets A4i or A4ii respectively (lists of congregatory waterbirds and seabirds that occur in the Asia region are given in Appendices 4a and 4b).

Scientific names of threatened species are given, in taxonomic order, if the site meets A1 (the globally threatened species that occur in the Asia region are listed in Appendix 1).

Name(s) of Endemic Bird Areas or Secondary Areas are given if the site meets A2 (details on Asian EBAs and SAs and lists of restricted-range species are given in Appendix 2).

Protected area status of the IBA. Where the site has one or more international designations (e.g. Ramsar Site), these are also given (using codes).

Name(s) of biomes are given if the site meets A3 (details on Asian biomes and lists of biome-restricted species are given in Appendix 3).