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[1] (Figure 1). These IBAs cover a total area of 2,331,560 km^2, 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%)[2]; 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^2 in Macao to over 1,100,000 km^2 in mainland China[3] (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

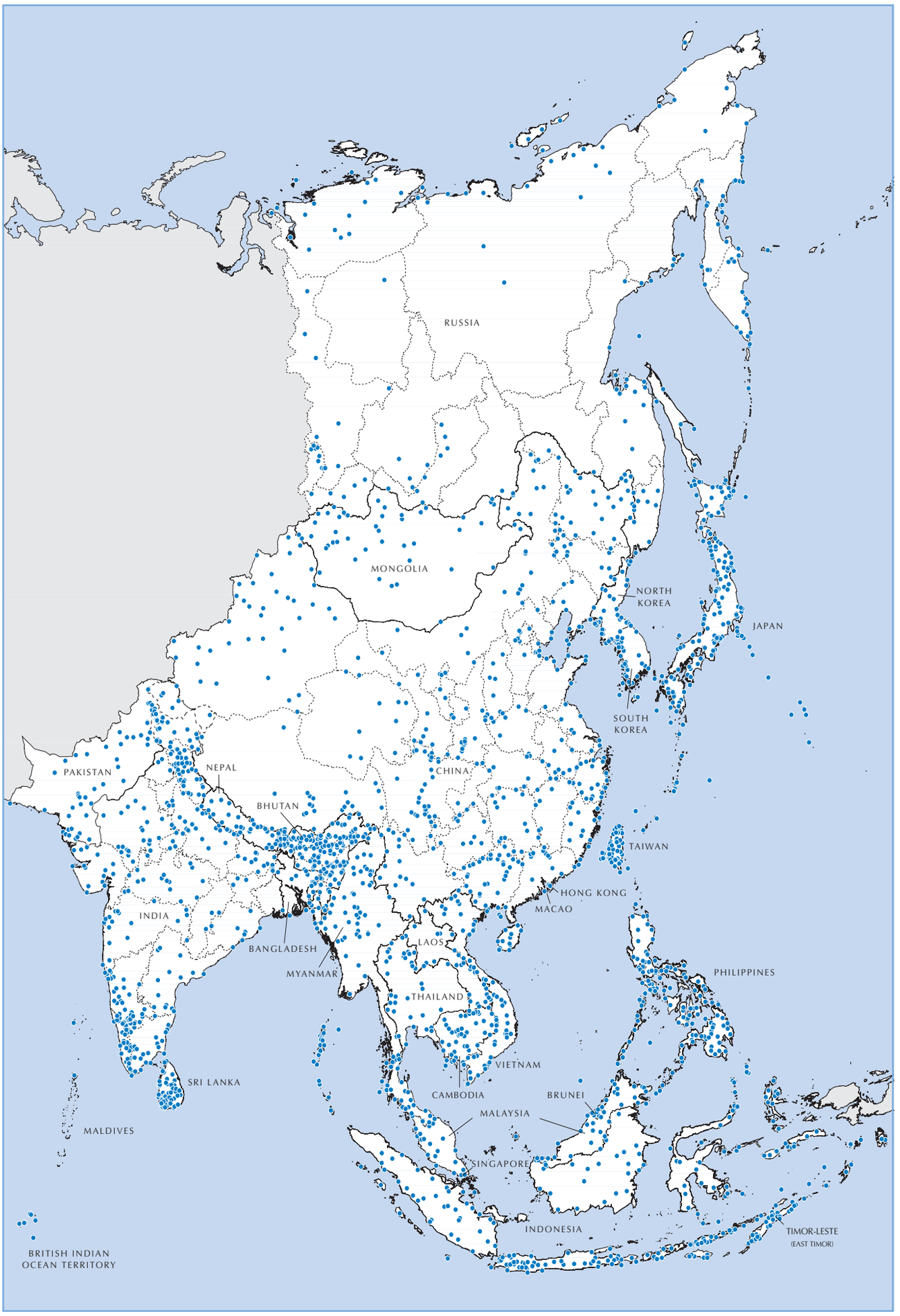
1 In this directory, the Asia region is taken to comprise the following countries and territories: Bangladesh; Bhutan; British Indian Ocean Territory; Brunei; Cambodia; Hong Kong; India; Indonesia (Sumatra, Kalimantan, Java and Bali, Nusa Tenggara, Sulawesi and Maluku only); Japan; Laos; Macao; Mainland 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^2)	Percentage of land area within IBA network	Number of IBAs qualifying under category[2]: Globally threatened species (A1)	Restricted-range species (A2)	Biome-restricted assemblages (A3)	Congregations (A4)	Progress of IBA inventory
North-East Asia								
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[1]	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
South Asia								
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
South-East Asia								
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[1]	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
Total	**2,293**	**2,331,560**	**7.6**	**1,882**	**932**	**974**	**939**	

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.

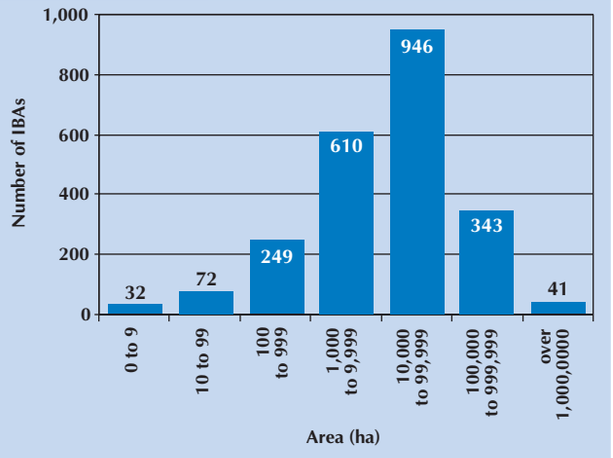
Figure 1. The location of Important Bird Areas in the Asia region.



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%).

Figure 2. Distribution of IBAs in the Asia region by size class.

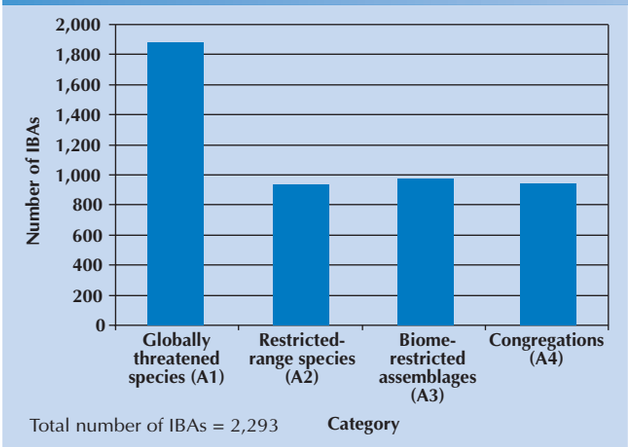


Asia's IBAs range in size from less than 1 to 33,792,000 ha, although over two thirds are between 1,000 and 99,999 ha in size (Figure 2). The median IBA size is 14,852 ha, although the mean IBA size is 101,682 ha, reflecting the disproportionate contribution made by a few very large IBAs to the overall 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[4], which account for around 11% of the total number of IBAs in the region.

Figure 3. The number of IBAs in the Asia region that qualify under each category.



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[5]. 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 currrent 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)

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	*Lophura hoogerwerfi*	VU	Gunung Leuser	Indonesia
Himalayan Quail	*Ophrysia superciliosa*	CR	**Binog Sanctuary-Bhadraj-Jharipani**[1]	India
Sumba Buttonquail	*Turnix everetti*	VU	Manupeu-Tanadaru	Indonesia
Okinawa Rail	*Gallirallus okinawae*	EN	**Yambaru, Northern Okinawa forest**	Japan
Talaud Rail	*Gymnocrex talaudensis*	EN	**Karakelang**	Indonesia
Invisible Rail	*Habroptila wallacii*	VU	Rawa Sagu Ake Jailolo	Indonesia
Moluccan Woodcock	*Scolopax rochussenii*	EN	**Pulau Obi**	Indonesia
Sulu Bleeding-heart	*Gallicolumba menagei*	CR	**Tawi-tawi Island**[1]	Philippines
Tawitawi Brown-dove	*Phapitreron cinereiceps*	CR	**Tawi-tawi Island**	Philippines
Carunculated Fruit-dove	*Ptilinopus granulifrons*	VU	Pulau Obi	Indonesia
Negros Fruit-dove	*Ptilinopus arcanus*	CR	**Mount Canlaon National Park**[1]	Philippines
Blue-fronted Lorikeet	*Charmosyna toxopei*	CR	**Danau Rana**	Indonesia
Black-lored Parrot	*Tanygnathus gramineus*	VU	Gunung Kapalat Mada	Indonesia
Taliabu Masked-owl	*Tyto nigrobrunnea*	EN	**Taliabu**	Indonesia
Siau Scops-owl	*Otus siaoensis*	CR	**Siau**[1]	Indonesia
Narcondam Hornbill	*Aceros narcondami*	VU	Narcondam Island Wildlife Sanctuary	India
Okinawa Woodpecker	*Sapheopipo noguchii*	CR	**Yambaru, Northern Okinawa forest**	Japan
Nicobar Bulbul	*Hypsipetes nicobariensis*	VU	Tilangchong, Camorta, Katchal, Nancowry, Trinkat	India
Malaysian Whistling-thrush	*Myophonus robinsoni*	VU	Central Titiwangsa Range	Malaysia
Amami Thrush	*Zoothera major*	CR	**Amami Islands**	Japan
Damar Flycatcher	*Ficedula henrici*	VU	Pulau Damar	Indonesia
Caerulean Paradise-flycatcher	*Eutrichomyias rowleyi*	CR	**Gunung Sahendaruman**	Indonesia
White-tipped Monarch	*Monarcha everetti*	EN	**Tanah Jampea**	Indonesia
Black-chinned Monarch	*Monarcha boanensis*	CR	**Pulau Boano**	Indonesia
Sangihe Shrike-thrush	*Colluricincla sanghirensis*	CR	**Gunung Sahendaruman**	Indonesia
White-browed Nuthatch	*Sitta victoriae*	EN	**Natmataung National Park (Mount Victoria)**	Myanmar
Bonin White-eye	*Apalopteron familiare*	VU	Hahajima Islands	Japan
Sangihe White-eye	*Zosterops nehrkorni*	CR	**Gunung Sahendaruman**	Indonesia
Bali Starling	*Leucopsar rothschildi*	CR	**Bali Barat**	Indonesia
Amami Jay	*Garrulus lidthi*	VU	Amami Islands	Japan
Banggai Crow	*Corvus unicolor*	EN	**Peleng-Banggai**[1]	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	*Tadorna cristata*	CR	1964	Wetlands in eastern **Russia**, **North Korea** and, probably, north-eastern **China**, including forested rivers in mountains
Pink-headed Duck	*Rhodonessa caryophyllacea*	CR	1949	Wetlands in northern **India**, especially in Assam and Bihar, and northern **Myanmar**
Nicobar Sparrowhawk	*Accipiter butleri*	VU	1901	Nicobar islands in **India**, including investigating continued occurrence at Car Nicobar and Tilangchong, Camorta, Katchal, Nancowry, Trinkat IBAs
Manipur Bush-quail	*Perdicula manipurensis*	VU	1932	Grasslands of north-eastern **India** and **Bangladesh**, including investigating continued occurrence at Buxa Tiger Reserve and Dibru-Saikhowa Complex IBAs
Himalayan Quail	*Ophrysia superciliosa*	CR	1876	Mountain grasslands and forest in the western Himalayas in **India**, including investigating continued occurrence at Binog Sanctuary-Bhadraj-Jharipani IBA
Javanese Lapwing	*Vanellus macropterus*	CR	1940	Coastal grasslands and wetlands on Java and possibly elsewhere in **Indonesia**
Silvery Wood-pigeon	*Columba argentina*	CR	1931	Small islands off Sumatra and other Greater Sunda islands and the coasts of larger islands in **Malaysia** and **Indonesia**, including investigating continued occurrence at Berbak, Gunung Leuser, Kepulauan Lingga, Pulau Natuna, Pulau Simeulue, Sembilang and Sadong-Saribas Coast IBAs
Sulu Bleeding-heart	*Gallicolumba menagei*	CR	1891	Forest on islands in the Sulu archipelago in the **Philippines**, including investigating continued occurrence at Tawi-tawi Island IBA
Negros Fruit-dove	*Ptilinopus arcanus*	CR	1953	Forest on Negros and Panay in the **Philippines**, including investigating continued occurrence at Mount Canlaon National Park IBA
Siau Scops-owl	*Otus siaoensis*	CR	1866	Forest on small islands off northern Sulawesi, **Indonesia**, including investigating continued occurrence at Siau IBA
White-eyed River-martin	*Eurochelidon sirintarae*	CR	1978	Riverine habitats in **Thailand** and elsewhere in South-East Asia
Black-browed Babbler	*Malacocincla perspicillata*	VU	1840s	Forest on Kalimantan, **Indonesia**
Rusty-throated Wren-babbler	*Spelaeornis badeigularis*	VU	1947	Forest in the eastern Himalayas of **India** and, probably, northern **Myanmar**
Rueck's Blue-flycatcher	*Cyornis ruckii*	CR	1918	Lowland forest in northern Sumatra, **Indonesia**, and possibly elsewhere in the Sundaic region
Banggai Crow	*Corvus unicolor*	EN	1880s	Islands in the Banggai and Sula island groups, **Indonesia**, 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[1]	No. of RRS confined to EBA	No. of IBAs meeting the A2 criterion	Total area of IBAs meeting the A2 criterion (km²)	Percentage of EBA within IBA network[2]
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 Himlayas	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 (km²)[1]
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)[2]	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 km² (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)

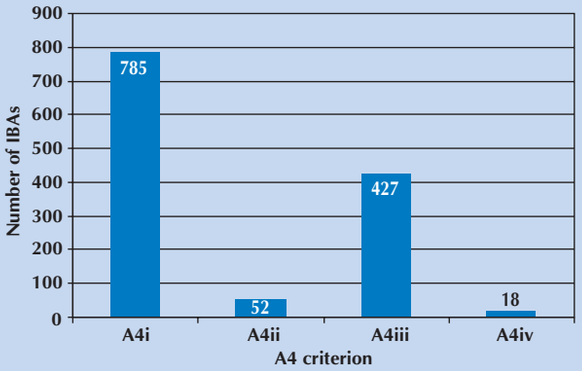
Congregations

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, ≥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, ≥20,000 waterbirds or ≥10,000 pairs of seabird of one or more species. Comparatively few IBAs meet the A4ii criterion, holding, on a regular basis, ≥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 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.

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



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[1] in Thailand[2]	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
Total	148	126	85

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[1]	% 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.

	Territory[1]				
Threat	India	Laos[2]	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).

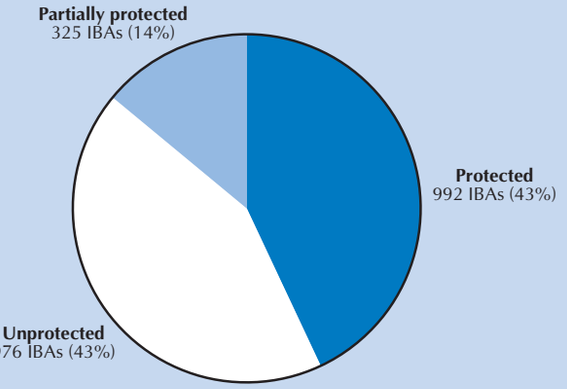
PROTECTION OF THE IBA NETWORK

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.



Protected IBAs comprise those fully included within one or more nationally gazetted protected areas in IUCN (1994) management categories I-IV and IX-X.

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

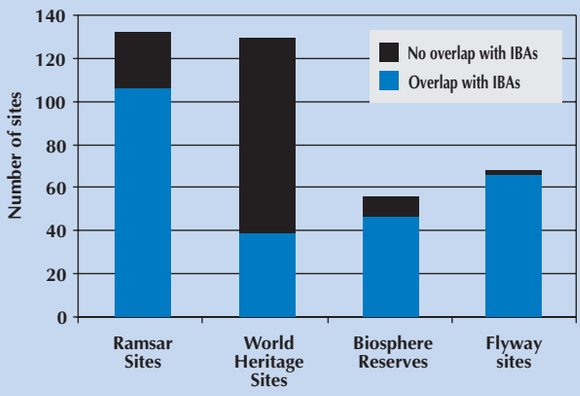
Table 9. Number and percentage of IBAs in the Asia region protected, partially protected and unprotected by territory.

		Number of IBAs			Percentage of IBAs		
Country/territory	Number of IBAs	Protected	Partially protected	Unprotected	Protected	Partially protected	Unprotected
North-East Asia							
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
South Asia							
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[1]	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[1]	70	18	0	52	26	0	74
South-East Asia							
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
Total	**2,293**	**992**	**325**	**976**	**43**	**14**	**43**

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.



Note: A number of the sites shown in Figure 6 overlap with more than one IBA.

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 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)

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