

LOWER MEKONG BASIN



THE plains of the lower Mekong still retain some areas of near-primary habitat, with mosaics of open deciduous dipterocarp forest, seasonally inundated wetlands and grasslands, and riverine habitats. The region supports the entire world population of Giant Ibis, together with a high proportion of the global population of White-shouldered Ibis and large numbers of several other threatened birds. The swamp forests around Tonle Sap, the world's largest floodplain lake, have the most important waterbird colonies remaining in mainland South-East Asia, with globally significant breeding populations of Spot-billed Pelican, Lesser Adjutant and Greater Adjutant. The seasonally inundated grasslands around the lake are probably the global stronghold for Bengal Florican, and grasslands in the Mekong floodplain and delta support several hundred pairs of Sarus Crane. In addition to the waterbirds, this region has important populations of White-rumped and Slender-billed Vultures (particularly given their rapid declines in South Asia: see G03) and several threatened birds found in forests and associated wetlands (White-winged Duck, Masked Finfoot and Green Peafowl: see F06).

- **Key habitats** Freshwater wetlands on riverine plains, seasonally inundated grassland, open deciduous forest, swamp forest.
- **Countries and territories** Laos; Cambodia; Vietnam.

	Threatened species			Total
	CR	EN	VU	
●	4	2	4	10
✈	—	—	—	—
🦆	—	—	1	1
Total	4	2	5	11

Key: ● = breeding in this wetland region.
✈ = passage migrant.
🦆 = non-breeding visitor.

The Lower Mekong basin region is within Conservation International's Indo-Burma Hotspot (see pp.20–21).

The Mekong flood-plain was originally a mosaic of open forest, small seasonal pools and wet grasslands. PHOTO: ELEANOR BRIGGS



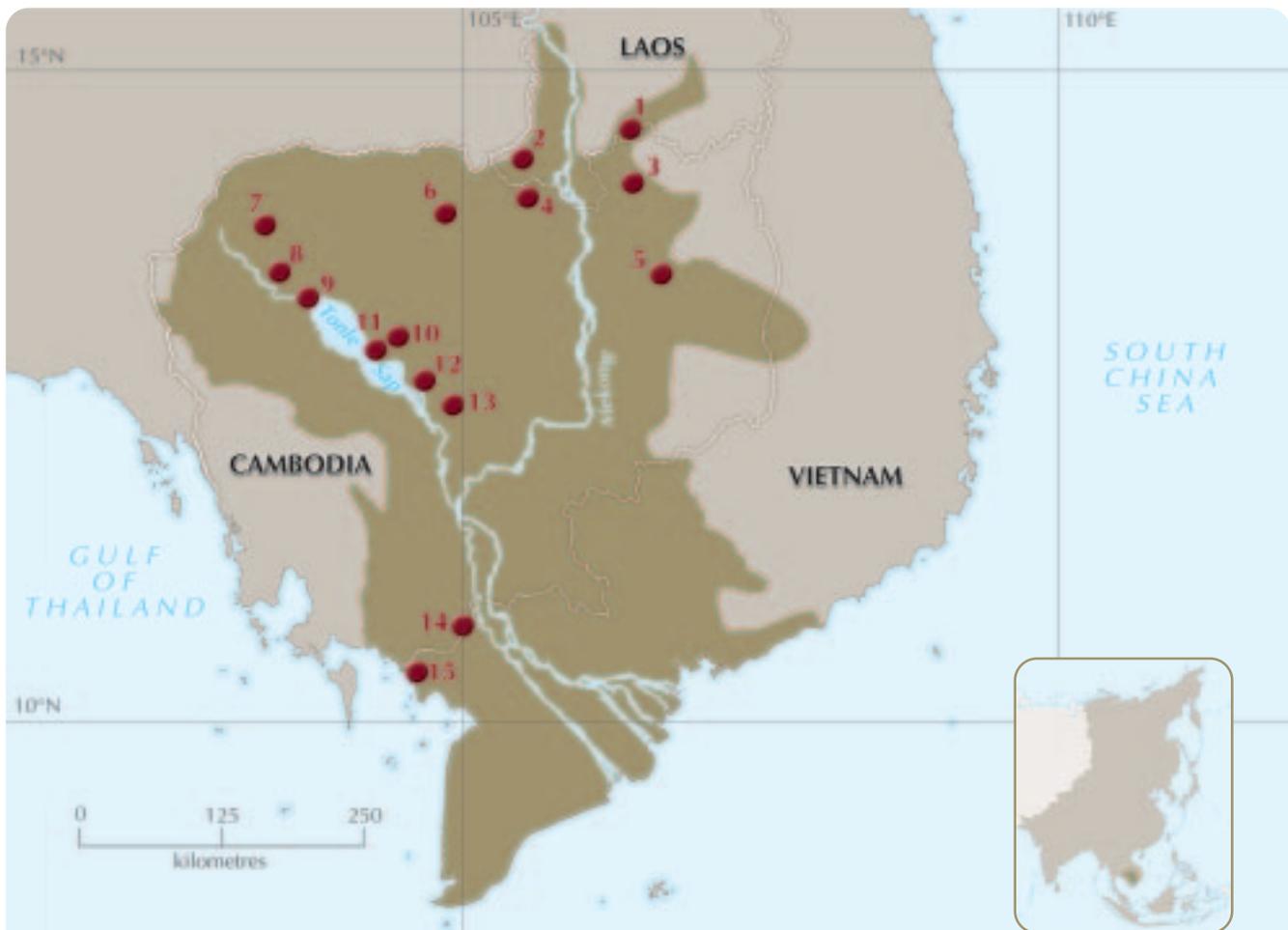


Table 1. Outstanding Important Bird Areas in the lower Mekong basin.

IBA name	Status	Territory	Threatened species
1 Xe Kong plains ^{F06}	(PA)	Laos	Lesser Adjutant, White-shouldered Ibis, Giant Ibis and Sarus Crane occur in small numbers
2 Dong Khanthung ^{F06}	—	Laos	Large population of Lesser Adjutant, small numbers of Giant Ibis, Sarus Crane and Manchurian Reed-warbler
3 Western Siem Pang ^{F06}	—	Cambodia	Lesser Adjutant, White-shouldered Ibis, Giant Ibis, Sarus Crane and White-rumped Vulture
4 Chhep ^{F06}	(PA)	Cambodia	A stronghold for Giant Ibis, also Lesser Adjutant, Greater Adjutant, White-rumped and Slender-billed Vultures, Sarus Crane and Manchurian Reed-warbler
5 Lomphat ^{F06}	(PA)	Cambodia	Important for Lesser Adjutant, White-rumped and Slender-billed Vultures and Sarus Crane, also White-shouldered Ibis, Giant Ibis and Greater Adjutant
6 Upper Stung Sen catchment ^{F06}	(PA)	Cambodia	Breeding Sarus Crane, also Lesser Adjutant, Greater Adjutant, White-shouldered Ibis and Giant Ibis
7 Ang Tropeang Thmor	PA	Cambodia	Non-breeding Sarus Crane, also Spot-billed Pelican, Milky Stork, Lesser Adjutant, Greater Adjutant, White-shouldered Ibis and Bengal Florican
8 Preah Net Preah / Kra Lanh / Pourk	—	Cambodia	Important for Bengal Florican, also Spot-billed Pelican and Sarus Crane
9 Prek Toal ^{F06}	PA ^{BR}	Cambodia	Most important site in mainland South-East Asia for breeding large waterbirds, including Spot-billed Pelican, Milky Stork, Lesser Adjutant and Greater Adjutant
10 Stung / Chi Kreng / Kampong Svay	—	Cambodia	Important for Bengal Florican, also Lesser Adjutant, Sarus Crane and Manchurian Reed-warbler
11 Boeung Chhmar / Moat Khla ^{F06}	(PA) ^{BR,R}	Cambodia	Large numbers of Spot-billed Pelican and Greater Adjutant, also Lesser Adjutant
12 Veal Srongae	— ^{BR}	Cambodia	Large numbers of Lesser Adjutant, and Bengal Florican, also Greater Adjutant, White-shouldered Ibis and Manchurian Reed-warbler
13 Stung Sen / Santuk / Baray	— ^{BR}	Cambodia	Large numbers of Bengal Florican and Manchurian Reed-warbler, also Milky Stork, Lesser Adjutant, Greater Adjutant, White-shouldered Ibis and Sarus Crane
14 Boeung Prek Lapouv	—	Cambodia	Important non-breeding population of Sarus Crane, also Bengal Florican
15 Ha Tien plain	—	Vietnam	Important non-breeding population of Sarus Crane, very small numbers of White-shouldered Ibis and Bengal Florican

Some of the waterbirds of this region occur in IBAs listed for region F06, Yok Don NP (Lesser Adjutant, Giant Ibis and White-rumped Vulture) and Cat Tien NP (Lesser Adjutant and White-shouldered Ibis).

Note that more IBAs in this region will be included in the *Important Bird Areas in Asia*, due to be published in early 2004.

Key Status: PA = IBA is a protected area; (PA) = IBA partially protected; — = unprotected; BR = IBA is wholly or partially inside Tonle Sap Biosphere Reserve (see pp.34–35); R = IBA is wholly or partially a Ramsar Site (see pp.31–32); F06 = also supports threatened forest birds of region F06.

OUTSTANDING IBAs FOR THREATENED BIRDS (see Table 1)

This region supports by far the largest waterbird populations remaining in South-East Asia, and a total of fifteen IBAs have been selected, chiefly for their importance to Spot-billed Pelican, Lesser Adjutant, Greater Adjutant, White-shouldered Ibis, Giant Ibis, White-rumped Vulture, Slender-billed Vulture and Bengal Florican.

CURRENT STATUS OF HABITATS AND THREATENED SPECIES

The lower Mekong and its major feeder rivers, the Sesan, Sekong and Srepok, retain the most intact riverine floodplain habitats in the Asia region. There are still

The large undeveloped tracts of flood-plain habitats in northern and eastern Cambodia are the last stronghold for Giant Ibis.



PHOTO: ALLAN MICHAUD

extensive areas of open deciduous forest studded with small seasonal pools (*trapaengs*) and seasonally wet meadows (*veals*), most notably on the plains of northern and eastern Cambodia, which are the last stronghold for Giant Ibis and breeding grounds for White-shouldered Ibis and Sarus Crane. In comparison to the plains of Myanmar (W16) and Thailand (W17), human population density in most of the lower Mekong basin is low, but the region's wetlands have nevertheless been subject to professional hunting and seasonal subsistence fishing over a long period, and these pressures are growing. The Mekong and its tributaries support the only remaining examples of near-intact riverine habitats and bird communities in South-East Asia.

However, islands in these rivers are used increasingly by itinerant fishermen and their families for camps, and there is regular motorised boat traffic, which may account for the apparent extinction of the Mekong's Indian Skimmer population. Various proposed hydropower schemes in the Mekong catchment threaten river flow rates and seasonal water levels (see below). In Vietnam and parts of southern Cambodia, the Mekong floodplain and delta has been almost totally converted to rice paddy, while much of the remainder is intensively used. Large areas of mangrove and *Melaleuca* wetlands in the delta were destroyed during the Vietnam War, then replanted, but later cleared for aquaculture. The inundation zone of Tonle Sap lake still has extensive tracts of swamp forest, and grasslands which are subject to a complex and ancient Khmer agricultural ecology. The swamp forests support the only remaining large colonies of communally nesting waterbirds in South-East Asia, and the traditionally managed grasslands have a high proportion of the global population of Bengal Florican.

CONSERVATION ISSUES AND STRATEGIC SOLUTIONS (summarised in Table 3)

Habitat loss and degradation

■ CONVERSION TO AGRICULTURE

Wetlands and grasslands in this region are threatened by the large-scale intensification of agriculture, in particular the

Table 2. Threatened birds of the lower Mekong basin.

Species			Distribution and population
Spot-billed Pelican <i>Pelecanus philippensis</i>	○	VU	Large breeding population in the swamp forest around Tonle Sap lake
Milky Stork <i>Mycteria cinerea</i>	○	VU	Very small numbers breed in the swamp forest around Tonle Sap lake
Lesser Adjutant <i>Leptoptilos javanicus</i>	○	VU	Significant numbers breed at Tonle Sap lake, and at lower densities throughout the forested plains
Greater Adjutant <i>Leptoptilos dubius</i>	○	EN	Significant numbers breed in the swamp forest around Tonle Sap lake
White-shouldered Ibis <i>Pseudibis davisoni</i>	●	CR	Significant numbers breed in Cambodia; close to extinction in Laos and southern Vietnam
Giant Ibis <i>Thaumatibis gigantea</i>	●	CR	Entire global population now confined to this region, mainly in northern and eastern Cambodia, but also very small numbers in adjacent parts of Laos and Vietnam
White-rumped Vulture <i>Gyps bengalensis</i>	⊙	CR	Widely distributed on the plains, in deciduous forest and open habitats
Slender-billed Vulture <i>Gyps tenuirostris</i>	⊙	CR	Widely distributed on the plains, in deciduous forest and open habitats
Sarus Crane <i>Grus antigone</i>	○	VU	Several hundred pairs breed in northern Cambodia and southern Laos; outside breeding season moves to north-western and southern Cambodia and the upper Mekong delta in Vietnam
Bengal Florican <i>Houbaropsis bengalensis</i>	●?	EN	Significant population around Tonle Sap lake, dispersing to adjacent areas in the wet season; close to extinction in the Mekong delta in Vietnam
Manchurian Reed-warbler <i>Acrocephalus tangorum</i>	⌘	VU	Recently found wintering in damp grasslands in Cambodia

Other threatened waterbirds recorded from this region as rare (or perhaps extinct) visitors are: Black-faced Spoonbill *Platalea minor*, Pallas's Fish-eagle *Haliaeetus leucoryphus* and Indian Skimmer *Rynchops albicollis*. In addition to the waterbirds, Greater Spotted Eagle *Aquila clanga* (VU; see F01) and Imperial Eagle *A. heliaca* (VU; see G01) occur in winter. Note that three species which occur in forests and forested wetlands in the lower Mekong basin, White-winged Duck *Cairina scutulata*, Masked Finfoot *Heliopais personata* and Green Peafowl *Pavo muticus*, are also covered in region F06.

● = region estimated to support >90% of global breeding population, ● = 50–90%, ○ = 10–50%; ○ = <10%, ⊙ = proportion of global breeding population unknown; ⌘ = region's proportion of global non-breeding population unknown

expansion of irrigated wet rice cultivation. This continuing conversion of seasonally inundated grassland to cultivation causes loss of natural habitat, falling water levels, acidification of soils and increased disturbance. Even in the undeveloped tracts of northern and eastern Cambodia (the last hope for species such as Giant Ibis), seasonally flooded meadows and pools are the first places to be cultivated as villages gradually spread into unsettled areas. In many places, temporary settlements are occupied in the dry season along margins of rivers and wetlands, reducing habitat for large waterbirds. For example, in Kompong Thom province in Cambodia around 30% of wetlands were thought to be seasonally settled by people who plant

crops such as pulses, melons, maize and pumpkin. The spread of agriculture needs to be controlled by setting aside land in northern and eastern Cambodia and southern Laos as natural wetlands, involving the establishment of new protected areas, and by protecting a network of permanent pools and seasonal meadows as ‘safe havens’ (see *Protected areas* below). In the inundation zone of Tonle Sap lake, the traditional Khmer agricultural ecology should be promoted and any intensification of rice cultivation must be carefully managed, to leave short-grass areas suitable for breeding Bengal Florican. The remaining seasonally inundated grasslands in the Mekong Delta regions of Cambodia and Vietnam are extremely important for Sarus Crane and other waterbirds, and should be protected from conversion.

■ CONFLICT WITH FISHERIES

The conservation of Tonle Sap lake and the surrounding wetlands involves several complex issues, the entire area being a private fishing concession leased piecemeal to fishing businesses and cooperatives. Annual profits from fishing in ‘Lot 2’ alone (the area that contains the bulk of the waterbird colonies) run into hundreds of thousands of US dollars, and conservation interests have little chance of competing against such an important economic activity. Negotiations are needed to resolve current and potential conflicts between fishermen and conservationists, with the aim of continuing to manage the whole area as a low-impact fishery (which would maintain fish stocks and benefit wildlife), with conservation management in the areas around waterbird breeding and feeding sites.

Protected areas have been established at some key wetlands for threatened birds in Cambodia.



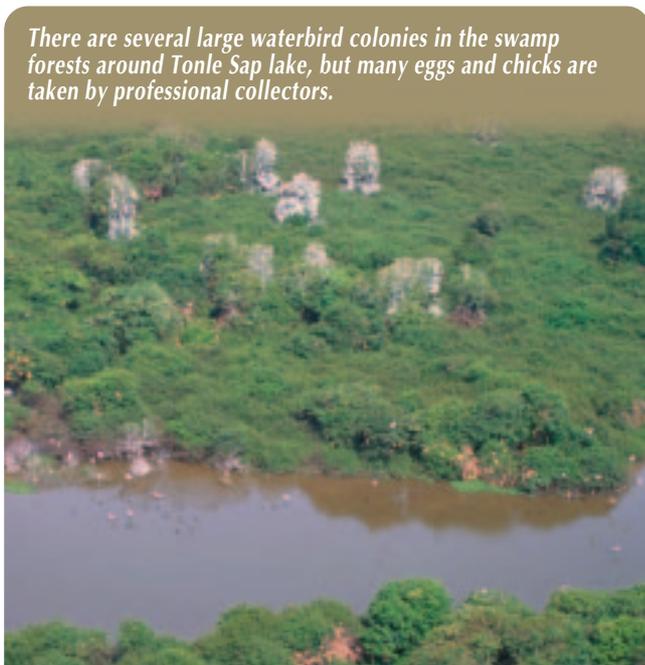
PHOTO: ELEANOR BRIGGS

Table 3. Conservation issues and strategic solutions for birds of the lower Mekong basin.

Conservation issues	Strategic solutions
Habitat loss and degradation	
<ul style="list-style-type: none"> ■ CONVERSION TO AGRICULTURE ■ CONFLICT WITH FISHERIES ■ CUTTING OF NESTING TREES ■ DEVELOPMENT (URBAN, INDUSTRIAL, ETC.) ■ REDUCED FOOD SUPPLY (FOR VULTURES) ■ DISTURBANCE ■ POLLUTION 	<ul style="list-style-type: none"> ➤ Promote the traditional Khmer agricultural ecology around Tonle Sap lake ➤ Manage any intensification of rice cultivation in the inundation zone of Tonle Sap lake to leave short-grass areas for breeding Bengal Floricans ➤ Prevent any further conversion of seasonally inundated grasslands in the Mekong Delta ➤ Continue to manage Tonle Sap as a low-impact fishery, to maintain fish stocks and protect threatened birds ➤ Manage the forests at Tonle Sap and other wetlands sustainably, and maintain patches of old growth to provide nesting habitat for waterbirds ➤ Critically review all dam projects in the Mekong watershed, to minimise their impact on ecological processes and the region's biodiversity ➤ Assess the environmental impact of development projects, with mitigation if they damage wetland habitats ➤ Maintain and restore vulture food supplies from traditional extensive livestock management, with supplementary feeding if required ➤ Introduce community conservation programmes to reduce disturbance in the inundation zone of Tonle Sap lake ➤ Ban the use of chemicals or dynamite for fishing ➤ Control the use of pesticides and herbicides, especially near key wetlands
Protected areas coverage and management	
<ul style="list-style-type: none"> ■ GAPS IN PROTECTED AREAS SYSTEM ■ WEAKNESSES IN RESERVE MANAGEMENT 	<ul style="list-style-type: none"> ➤ Establish new wetland protected areas, including ‘safe havens’ to prevent human disturbance at key waterbird sites in southern Laos and Cambodia ➤ Define and establish protected areas at Tonle Sap, seeking compromise between its management as a fishery and as a sanctuary for wildlife ➤ Develop zonation of large protected areas to minimise conflicts between biodiversity conservation and human usage ➤ Resolve problems with protected area legislation in Laos and Cambodia ➤ Strengthen reserve management through improved funding, infrastructure and staff training
Exploitation of birds	
<ul style="list-style-type: none"> ■ HUNTING ■ EGG AND CHICK COLLECTION 	<ul style="list-style-type: none"> ➤ Improve, publicise and enforce hunting laws, including through monitoring trade in threatened waterbirds at Cambodian food-stalls ➤ Control gun ownership, particularly near important wetlands ➤ Continue and expand the programme to control the exploitation of eggs and nestlings at Tonle Sap waterbird colonies
Gaps in knowledge	
<ul style="list-style-type: none"> ■ INADEQUATE DATA ON THREATENED BIRDS 	<ul style="list-style-type: none"> ➤ Survey White-shouldered Ibis, Giant Ibis and other large waterbirds in northern and eastern Cambodia ➤ Identify key non-breeding areas for Bengal Florican, and investigate the role of agricultural practices in maintaining its breeding habitat around Tonle Sap lake ➤ Study the ecology and monitor populations of threatened waterbirds, to help improve management of protected areas

There are several large waterbird colonies in the swamp forests around Tonle Sap lake, but many eggs and chicks are taken by professional collectors.

PHOTO: ELEANOR BRIGGS



■ CUTTING OF NESTING TREES

In many parts of Asia large waterbirds have lost potential breeding habitat through the felling of tall trees near wetlands. The swamp forests around Tonle Sap lake still provide habitat for several large colonies, although large tracts have apparently already been logged or converted to agriculture; forest clearance is currently proceeding at a slow rate there, but the pressure to exploit the remainder is likely to intensify as timber resources become depleted elsewhere. In the Mekong delta's *Melaleuca* swamp forests, forest fires are a constant risk owing to excessive use of ground-water, which is lowering the water table and drying out the underlying peat. The forests around Tonle Sap and other important wetlands need to be managed sustainably, with patches of old growth maintained near wetlands to provide sites for waterbird colonies.

■ DEVELOPMENT (URBAN, INDUSTRIAL, ETC.)

Various hydropower projects are proposed in the Mekong catchment, especially in Yunnan, Laos and Vietnam, and threaten its ecological balance. This is a particular threat to the Mekong's highly diverse (and often migratory) fish fauna that is so important as food for waterbirds and people. Near towns, waterbird foraging areas are being lost to increasing urban and industrial development. This places a demand on timber, which is collected from swamp forests and mangroves for domestic use and construction. Grasslands and wetlands at the Ang Tropeang Thmor Reserve are threatened by plans to develop a village. Proposals to dam the Mekong and its tributaries should be critically reviewed, to minimise damage to ecological processes and globally outstanding biodiversity; some individual projects may cause extreme ecological disruption, and their cancellation may be appropriate. Detailed environmental impact assessments should be mandatory for development proposals, and appropriate mitigation enforced (e.g. re-creation of habitats).

■ REDUCED FOOD SUPPLY (FOR VULTURES)

A key factor in vulture declines in South-East Asia appears to be the collapse in food supply, as a result of crashes of large ungulate populations and a transition from extensive to intensive livestock management in many areas (meaning

that many fewer livestock carcasses are left for the vultures). Supplementary feeding could be considered as a short-term measure to help the remaining vulture populations, but ultimately food supplies need to be restored through localised changes back to traditional livestock management, and ideally the protection and recovery of large ungulate populations.

■ DISTURBANCE

Throughout the Mekong basin human populations are gradually spreading along the rivers into the most remote regions. Local people consume large quantities of fish and other aquatic products, so most wetlands are badly affected by (e.g.) new or seasonal settlements (with ubiquitous dogs), buffalo grazing and trampling, and hunters and fishermen. Waterbirds are very wary of hunters, and easily flushed from their foraging sites or nests. A network of 'safe havens' (see *Protected areas* below) is required for large waterbirds, a scheme involving the exclusion of human activity around important nesting, foraging and roosting sites for storks, ibises and cranes (both within and outside protected areas), particularly in the dry season when habitat availability is most limited and birds most vulnerable to disturbance and hunting. As local people require wetlands for various purposes, zoning is needed, with a few important wetlands classed as strict no-entry zones for a few months during the dry season. This idea should be expanded to cover as many sites as possible in northern and eastern Cambodia and southern Laos, although enforcement in remote regions will be very difficult. Community conservation programmes could be introduced in the inundation zone of Tonle Sap lake, under which Bengal Florican nests would be marked to avoid accidental disturbance.

■ POLLUTION

Levels of agricultural or industrial pollution are currently relatively low, although some waterways are deliberately poisoned or dynamited to kill fish for eating: this destroys much aquatic fauna including birds. Large waterbirds and raptors are usually predators or scavengers, and thus vulnerable to build-up of toxic chemicals in the food chain. The use of chemicals or dynamite to kill fish should be banned. Existing and new laws should be enforced in all countries to control the use of pesticides (such as dieldrin and aldrin) and herbicides, especially near important wetlands.

Protected areas coverage and management

■ GAPS IN PROTECTED AREAS SYSTEM

Some of the most important wetlands in the lower Mekong basin are officially protected, but several new protected areas should be established, including Dong Khantung in Laos. In Vietnam, a nature reserve is needed for key habitats in the Ha Tien Plain, possibly established under national protected areas legislation, or a private reserve involving the corporate sector. In Cambodia, a national conservation area should be established at Boeung Prek Lapouv, and in western Siem Pang district a system of small seasonally closed sites, or 'safe havens', might be developed to prevent human activity around important nesting, foraging and roosting sites for storks, ibises and cranes. If successful, this model should be extended to elsewhere in northern and eastern Cambodia, and southern Laos. Alternatively, if government support were forthcoming, it may be more appropriate to extend protected area status to part of western Siem Pang district. The protected status of key waterbird sites at Tonle Sap lake needs to be more clearly

defined, with the aim of finding a compromise between its management as a fishery and as a sanctuary for wildlife (see *Conflict with fisheries* above). Further core areas should be designated within Tonle Sap Biosphere Reserve, to improve coverage of the swamp forest, including the remaining unprotected large waterbird colonies, and the seasonally inundated grasslands.

■ WEAKNESSES IN RESERVE MANAGEMENT

Many gazetted and proposed protected areas are large, for example many National Protected Areas in Laos, and require careful zonation to minimise conflicts between long-term conservation and legitimate human uses. Throughout the region, there are problems with the current protected areas legislation, as well as inadequate funding, equipment and manpower. A re-evaluation and redefinition of legal terms is therefore required, particularly those applying to protected sites and species in Laos and Cambodia, and increased funding and training is needed to strengthen governmental conservation and forestry departments.

Exploitation of birds

■ HUNTING

Hunting is a widespread practice for many cultural and economic reasons in Indochina. Wildlife is seen as a culinary delicacy and income earner, and populations of all large species of open habitats have declined as a result. Waterbirds are poisoned, shot, or caught on hooked lines. Until the recent establishment of a conservation area, the Sarus Cranes at Ang Tropeang Thmor were hunted for food, or captured for trade to Thailand. In the dry season, the problem intensifies as permanent wetlands attract concentrations of waterbirds that are especially susceptible to intense hunting pressure. Laws need to be strengthened in all countries, and then well publicised (including the environmental justification for this legislation) and enforced, especially at important wetlands. However, Laos, Cambodia and Vietnam have policies and active programmes to control gun ownership, and these may be a more effective and immediate way of reducing hunting pressure than legislation or new protected areas. This gun control should be continued in southern Laos and Vietnam, and if possible also implemented in northern Cambodia, particularly near key wetlands. Enforcement officials should routinely visit food stalls and markets throughout the region to monitor bird trade, confiscate endangered species and fine offenders.

■ EGG AND CHICK COLLECTION

Professional collectors work the waterbird colonies at Tonle Sap, taking many thousands of clutches of eggs and chicks from pelican and stork nests each year. Many of the young birds are reared and fattened before sale, often to middlemen who sell them for food in Battambang and Siem Reap. Surveillance by Wildlife Protection Office staff was thought to have improved the situation, but recent news indicates that the colonies are still poached from their unguarded landward sides. In northern Cambodia and southern Laos, the eggs and chicks of the ground-nesting Sarus Crane are easily accessible, and are taken annually from known nesting sites for food or sale.

An ongoing long-term conservation programme at Tonle Sap needs to be continued and expanded, involving the following components: (1) permanent presence of Wildlife Protection Office staff during the breeding season at colonies; (2) registration of egg and chick collectors and

monitoring of their activities; (3) a blanket ban on collection in designated core areas, these encompassing all or part of colonies; (4) guarding of lakeward and landward access to colonies to prevent smuggling of eggs and chicks; (5) development of alternative livelihoods for professional egg and chick collectors. Conservation awareness programmes are also required, targeted at officials, local people and schools around Tonle Sap, to emphasise the importance of protecting wetlands and large waterbirds, and old and new laws relating to activities at waterbird colonies. In the Upper Stung Sen catchment, a pilot Site Support Group (see p.21) has been established, which involves local stakeholders in the protection of nesting waterbirds; this could be a model for many other areas.

Gaps in knowledge

■ INADEQUATE DATA ON THREATENED BIRDS

Further surveys are needed to clarify the distribution, seasonal movements and ecology of large waterbirds and vultures in Cambodia, particularly White-shouldered Ibis and Giant Ibis, and to identify the most important sites for their conservation. Further research is also required to identify key non-breeding sites for Bengal Florican, and to investigate whether existing agricultural systems help in maintaining suitable breeding habitat. The establishment of new protected areas, and the improved management of existing reserves, requires research to determine the most appropriate boundaries and management regimes. For example, the measures required to maintain waterbird numbers at Prek Toal includes the following research elements: (1) evaluation and monitoring of threats (e.g. conversion of forest to farmland, exploitation of waterbirds) from nearby communities; (2) annual monitoring of waterbird numbers and levels of exploitation, with efforts to assess the impact on their populations and to evaluate the potential for sustainable management; (3) continued aerial surveys of the Prek Toal area to locate colonies and estimate waterbird populations; (4) research into the viability of alternative livelihoods and ecotourism.

Surveys are needed to clarify the distribution, seasonal movements and ecology of White-shouldered Ibis and other large waterbirds in Cambodia.



PHOTO: PETE MORRIS/BIRDQUEST