

# Indonesia

## Species Conservation Priorities in the Tropical Forests of Indonesia

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### Introduction

Indonesia (Fig. 1) is one of the world's treasure houses of species diversity. Made up of some 13,000 islands stretching 6000 km, the country covers a total land area of 1,919,443 km<sup>2</sup> and spans two major biogeographical regions, the Oriental and the Australasian. The human population is the fifth highest in the world, with more than 150,000,000 inhabitants, and some of the islands such as Java, Bali and Madura are quite densely populated. On the other hand, the large islands of Sumatra, Kalimantan and Irian Jaya, which constitute about 75% of the land area of the country, are still relatively sparsely populated.

Over 1500 species of birds, 500 mammals and several thousand tree species occur in Indonesia, and the country has within its borders perhaps the most unusual mix of faunal elements anywhere on earth. The islands of Sumatra, Kalimantan (the Indonesian part of Borneo), Java and Bali are known collectively as the Sunda Islands or Great Sunda because of their shared position on the shallow Sunda Continental Shelf, which is no more than 200 m in depth and connects them with the Asian mainland. This connection was above water during the last glacial age and consequently the fauna of these islands is largely Asiatic, consisting of monkeys, apes, rhinos, tigers and sambar deer. The climate is also hot and humid, with the original vegetation being mainly rain forest. To the east of Bali are the Lesser Sundas or Nusa Tenggara, which are under the influence of Australia, both in terms of fauna and flora and in climate. The first marsupials appear in Sulawesi and the Maluku, apes and big cats are absent, and birds such as lorries and cockatoos begin to replace the Asian species. The climate has a pronounced dry season and overall is generally drier than in the Greater Sundas (Veevers-Carter, 1978).

The survival of Indonesia's great species diversity is a matter of world as well as national concern, and with Indonesia's rapid population growth and speedy loss of forest and marine habitat, these valuable genetic resources, many of which are or could be used by man, are severely threatened.

The Government of Indonesia has recognized the need for conservation in order to promote the cultural and economic development of the Indonesian people in harmony with their natural environment. Government policy states that all forms of natural life and examples of all Indonesian ecosystems must be preserved for the benefit of future generations, with special emphasis on protection of the air, water, soil, plant, fish and animal resources upon which people depend (Sumardja, et al., 1984).

Conservation in Indonesia is under the jurisdiction of the Directorate of Nature Conservation and Wildlife Management (PPA), which was established within the Ministry of Agriculture in 1971 and is based in Bogor. Conservation has been achieved through the maintenance of a system of protection forests to protect water sources and soils on steep or high land, the maintenance of the system of strict nature reserves (*Cagar Alam*) and game reserves (*Suaka Margasatwa*), and the adoption of a number of laws and regulations controlling the exploitation of living resources including logging regulations, game laws, protected species laws and others (Sumardja, et al., 1984).

Faced with a multitude of conservation problems, and especially with the immediate need to preserve fuelwood and timber supplies and safeguard important river catchments, the Government of Indonesia has approved a major increase in conservation areas and protection forests. It is now planned that 30% of the land surface of Indonesia will be retained under permanent forest cover and that nearly half of this forest will be in nature reserves. Already the total area protected has risen dramatically from 4 million hectares in 1977 to a total of 11,267,540 hectares in 299 locations as of March, 1982 (Sumardja et al., 1984). Some of the most important protected areas in Indonesia are indicated in Fig. 1, and a more detailed look at protected areas on the island of Java is provided in Fig. 3.

### Species Conservation in Indonesia

Selection of new reserves is done with the intention of including viable large areas of all distinct habitat types in the country. Thus, species will be conserved *in situ* by protection of their habitat. Geographical distribution and habitat preference data have been compiled for all mammal and bird species occurring in Indonesia, and there is not a single species of bird or mammal which does not have a major reserve planned within its estimated distribution. The distribution ranges of plants are not so accurately known but it is thought that here too all species will be present in at least one reserve. Most species will be contained within more than one reserve. The needs for species specific management projects are in this way greatly reduced. Eventually when island biogeographical effects play their part in trimming down the number of species surviving in isolated reserves it will be necessary to monitor populations of indicator or extinction-prone species and where necessary introduce active management such as artificially maintaining high species immigration levels between neighbouring reserves. In the meantime, however, the priority is on getting the reserves declared and physically

established, paying attention at the species level only to those species which are not adequately protected by the protection of their habitat in reserves. These species include:

1. *Migrating species* who spend only part of their time in Indonesia and whose survival therefore depends on many factors both outside Indonesia and its reserves - e.g. migratory birds, whales, turtles etc.
2. *Resident but wide ranging species with large home ranges* - e.g. elephants, tigers, eagles, fruit bats, waterbirds who often cannot be contained or restricted within reserve boundaries.
3. *Rare species* which are represented at such low densities or which have such restricted distributions as to survive at dangerously low population levels.
4. *Species endangered by changed ecological conditions* particularly by newly introduced competitors, predators or pests.

5. *Species endangered by overexploitation* such as hunting or trade which could be exterminated despite protection of their habitat because of the impossibility of adequately guarding all the reserves.
6. *Riverine species* endangered by changes in water condition resulting from human development.

The scale of these species specific needs for attention is still quite large and the Indonesian Government has established a special Subdirectorate of Species Conservation in the Directorate of Nature Conservation to deal with these problems.

### Conservation Action Priorities

#### 1. Migrating Species

Migrating birds visiting Indonesia fall into 3 main categories.

- a. Montane passerines such as wagtails, warblers, thrushes

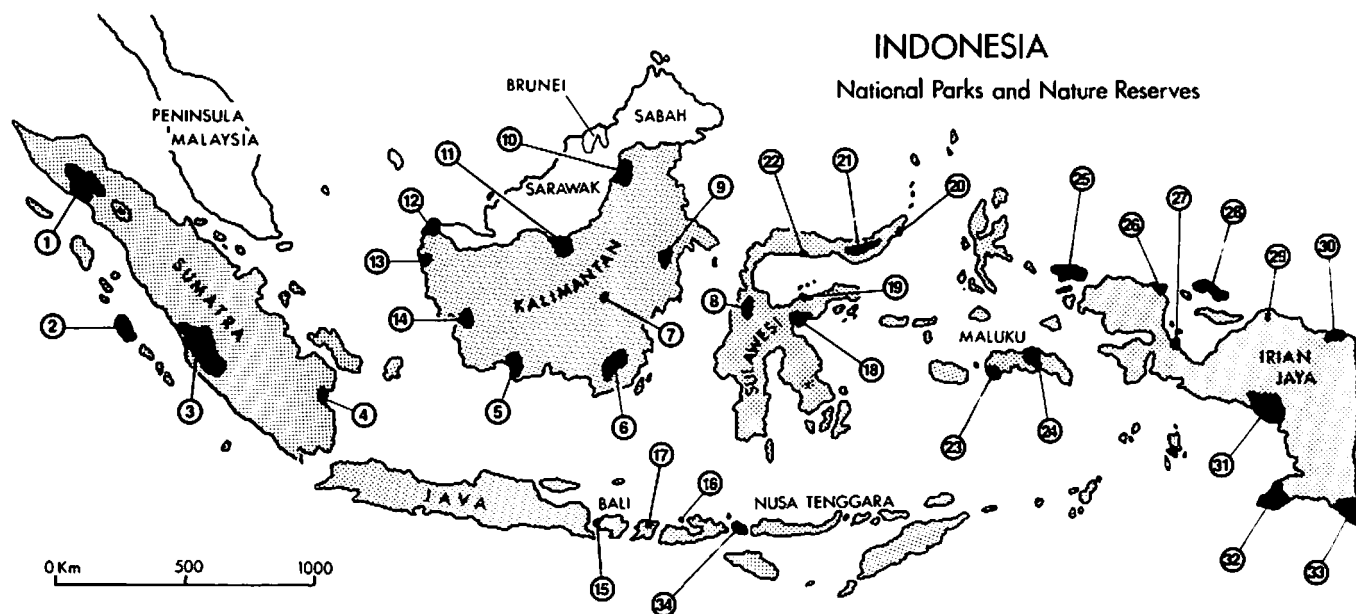


Figure 1: Map of Indonesia showing the location of national parks and nature reserves (modified from a publication by the Indonesian Directorate General of Tourism).

1. Gunung Leuser National Park
2. Siberut Reserves
3. Kerinci Seblat Reserve
4. Way Kambas Reserve
5. Tanjung Puting Reserve
6. Pleihari-Martapura Reserve
7. Padang-Luwai Reserve
8. Lore Lindu Reserve
9. Kutai Reserve
10. Hulu-Bahau-Sungai Malinau Reserve
11. Bukit Raya Reserve
12. Hutan Sambas Reserve
13. Mandor Reserve
14. Gunung Palung Reserve
15. Bali Barat Reserve and Marine Reserve
16. Pulo Moyo Reserve
17. Gn. Rinjani Reserve
18. Morowali Reserve
19. Tanjung Api Reserve
20. Tangkoko-Batuangus-Dua Saudara Reserves
21. Dumoga Bone Reserves
22. Panua-Tanjung Panjang Reserves
23. Palau Kasa — Palau Pombo Marine Reserves
24. Manusela Reserve
25. Raja Ampat Island Reserves
26. Gunung Meja Reserve
27. Peg. Wandiwoi/Wandamen Reserve and Cendarawasih Marine Reserve
28. Palau Biak — Superiori Reserves
29. Memberamo Pegunungan Foja Rouffaer Reserves
30. Cyclops Mountains Reserves
31. Lorentz Reserve
32. Palau Dolok Reserve
33. Rawa Biru — Wasur Reserve
34. Komodo National Park

etc. whose habitat needs in Indonesia are apparently adequate and no measures are being taken.

b. Waterbirds e.g. ducks, rails, pelicans etc. which are being heavily hunted in many riceland areas but for which some extensive water areas will be included in reserves and for which no other management is feasible beyond legal protected status for rare species e.g. pelicans.

c. Coastal waders for which some areas of coastline are being included in reserves but many important estuaries are outside reserves and face the possibility of pollution etc. No management is at present envisaged but it would be worthwhile to plot out the main migration routes and identify the most important stopping and feeding areas to try and get these protected where necessary.

## 2. Resident Species with Wide Ranges

There are several species that fall into this category but in most cases these are common species which are often serious pests coming out of forests and reserves to eat agricultural crops e.g. some parrot species, macaque monkeys, commensal rats, wild pigs, fruit bats etc. In these cases attention for control or discouragement of these animals from coming into agricultural areas is needed but they do not constitute a species survival problem. In the case of elephants and tigers however, they do.

In Sumatra, elephant and tiger conflicts with the expanding rural population are increasing in frequency and the matter has been greatly publicized in news media to the point that the Minister of Agriculture is calling for control projects. This is a very difficult and sensitive area of conservation and several drafted project proposals have failed to reach the necessary support or funding to be implemented, but it is an area of high government priority, and some projects to help reduce the friction between these large, dangerous but very important species and rural human population are urgently needed.

## 3. Rare Species

Indonesia has a number of rare species - local endemics with very small distributions, for example the Javan rhinoceros, Bali starling, Bawean deer, Sumatran hare, the Mentawai primates and widespread species which occur at low population density, for example the Sumatran rhinoceros, and orang-utan.

In some cases large reserves have been established that contain all or most of surviving populations e.g. Bali Barat Reserve for the Bali starling, Siberut reserve for the endemic primates, Kerinci-Seblat for the Sumatran hare, Ujung Kulon for the Javan rhinoceros, and Bawean island for the Bawean deer but in addition some attempts are being made to foster rare species by captive breeding *ex situ* e.g. Bawean deer, and Bali starling. Also the formation of additional wild populations is currently planned by ranching of Bawean deer on Madura island, the possible reintroduction of Javan rhinoceros into Sumatra, and the rehabilitation and translocation schemes for orang-utans.

## 4. Species Endangered by Changed Ecological Conditions

Indonesian examples are the endemic fish in many lakes where exotic species (e.g. *Tilapia*) have been introduced or where water hyacinths are changing local conditions.

Seed eating birds face competition from introduced munias and sparrows. The warty pig of Java faces artificially enhanced competition from the wild boar. Wildlife on all small islands are threatened by rats and cats which have been introduced.

Such problems are often extremely difficult to tackle. It is not

usually possible to remove the exotic species which is causing problems and the classic conservation method for such situations is to release the endangered species on a 'clean' island as a refuge and/or captive breeding. The Javan warty pig project currently in operation will be a good test case to see what can be done in such instances in Indonesia.

## 5. Species Endangered by Over-Utilization

There are several Indonesian species endangered by overhunting or trade such as rhinoceros, wild cats, the babirusa, the anoa, crowned pigeons, birds of paradise, megapodes, some parrot species, marine turtles, crocodiles, giant clams, butterflies and many species of trees and orchids. All these endangered species are already or could be put on the protected species lists, but law enforcement in Indonesia is so difficult that this is itself no guarantee of actual protection.

Improvements to the protected species lists, improvements to control, improvements to reserve guarding, improvements of game legislation, implementation of CITES, ratification of the migrating species convention etc., all play a part in tackling these problems as does conservation education and extension work. Some management or breeding projects can be effective and in many cases the development of wildlife based industries undertaken on a sustained yield basis can in fact help to save species by giving them a value and giving people a long-term interest in their survival. Thus plans are underway to promote primate ranching, crocodile rearing, butterfly farming and parrot breeding projects which will help satisfy demands for such products as well as provide badly needed income sources to rural peoples without placing undue strain on wild populations.

## 6. Riverine Species

It is extremely difficult to protect whole rivers in nature reserves as they are so heavily used as arteries of communication, sources of irrigation, fishing areas etc. by local people. Almost no attention has been paid so far to the plight freshwater species in Indonesia but there are undoubtedly many endangered reptiles, fish, molluscs and crustaceans in the river and lake systems. Pollution and dangerous fishing methods such as the use of poisons and explosives have decimated fish population in many rivers. As fresh water rivers have high levels of local endemism many species may be lost. There are few obvious solutions to these problems but it is as well to draw more attention to the problems of this neglected group of species. It would be worthwhile to collect more information on the distribution of fresh water species so that those with very limited distribution can be identified and at the same time monitor the levels of biotic degradation in the different waterways so that the scale of this threat can be assessed.

A number of conservation action projects are currently underway, planned or already completed in Indonesia, and these are summarized in the following list:

### A. General Programs of Sub-Directorate of Species Conservation

- |   |            |
|---|------------|
| 1. Inventorization of species distribution and status | continuing |
| 2. Field monitoring of species status                 | continuing |
| 3. Revisions to protected species lists               | continuing |
| 4. Establishment of new reserves for rare species     | continuing |

### B. In Situ Management Activities

- |  |   |            |
|--|---|------------|
| 5. Maintenance of artificial grazing areas | Ujung Kulon, Meru Betiri, Pangandaran and Baluran | continuing |
|--|---|------------|

6. Cutting <i>Arenga</i> palms to promote tree sapling regeneration for rhinoceros	Ujung Kulon	planned
7. Thinning of teak forests for Bawean deer	Bawean Island	continuing
8. Clearing of brush from maleo nesting areas	Sulawesi	experiments completed
9. Control of egg predators at turtle nesting beaches	various	occasional
<b>C. Rehabilitation and Captive Breeding for release into Wild</b>		
10. Orang-utans	Ketambi (completed), Bohorok, Kutai, Tanjung Puting	ongoing
11. Gibbons	Pangandaran, Tanjung Puting	occasional
12. Bawean deer	Madura	ongoing
13. Bali mynah	Bali Barat	ongoing
14. False ghavials	Sekundur	started
<b>D. Translocation Projects</b>		
15. Sumatran tigers	Sumatra	planned
16. Elephants	Way Kambas, Sumatra	ongoing
17. Javan rhinoceros	Sumatra	feasibility study started
18. Orang-utans	Matapura Pleihari	planned
<b>E. Captive Breeding/Rearing for Sustained Yield Harvest</b>		
19. Crocodiles	Irian Jaya	started
20. Marine turtles	Bali/Sukamade	started
21. Macaque monkeys	Jakarta	started
22. Maleo birds	N. Sulawesi	feasibility study completed
23. Birdswing butterflies	Irian Jaya	planned
24. Cockatoos	Ambon	planned
25. Orchids	Bogor	started
<b>F. Conservation-Oriented Research Projects on the Ecology of Rare Species</b>		
26. Orang-utan	Ranun, Ketambe, Tanjung Puting	1971 ongoing
27. Javan rhinoceros	Ujung Kulon	1967 ongoing
28. Sumatran rhinoceros	Gn. Leuser	1977 ongoing
29. Bawean deer	Bawean Island	1977-79
30. Marine turtles	various	ongoing
31. Crocodiles	Irian Jaya	1979-80
32. Javan gibbons	Ujung Kulon	1977-79
33. Sulawesi endemic fauna	Tangkoko-Batuangus	1977-79
34. Banteng	Ujung Kulon, Pangandaran, Baluran	various
35. Mentawai primates	Siberut island	various
36. Proboscis monkeys	Kalimantan	various
37. Rafflesia flowers	Sumatra, Java	occasional
38. Komodo lizards	Komodo	1970-71
<b>G. Field Monitoring of Species Status</b>		
39. Bali tiger	Bali Barat	1978
40. Sumatran tiger	Sumatra	1977
41. Javan rhinoceros	Ujung Kulon	annual
42. Crocodiles	Irian Jaya	1979-80
43. Javan gibbon	W. Java	1978
44. Proboscis monkeys	Kalimantan	occasional
45. Rafflesia flowers	Java/Sumatra	1981
46. Fresh water dolphins	Mahakam	c. 1980
47. Fresh water sawfish	Irian Jaya	1980
48. Sumatran rhinoceros	Sumatra	various
49. Bali starling	Bali Barat	regular
50. Timor monitor lizard	Timor	1981
51. Kelasa fish	Sumatra	c. 1981
52. Marine turtles	various	various

53. Banteng	Ujung Kulon	occasional
54. Javan warty pigs	Java	ongoing
55. Kangean leopards	Kangean	1982
56. Bandasea birds	Banda Sea	1981

### Literature Cited

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- Sumardja, E. A., Hardsono, and J. Mackinnon 1984. Indonesia's network of protected areas. Pp. 214-223 in: National Parks, Conservation and Development: the Role of Protected Areas in Sustaining Society (J. McNeely and K. Miller, eds.).
- Veevers-Carter, W. 1978. Nature Conservation in Indonesia. 86 pp., PT INTERMASA, Jakarta, Indonesia.

## SEBAGIAN SATWALIAH YANG DILINDUNGI DI INDONESIA

### 1. MAMALIA DARAT



- |                                       |                                       |  |
|---------------------------------------|---------------------------------------|--|
| 1. NUSADAR - Proboscis monkey         | 10. BERLANGU MADU - Honey bear        | 21. DARIPUSA - Mentawai gibbon         |
| 2. RUSIA - Gnomes                     | 11. MUSANG SULAWESI - Macaque         | 22. MUSA BAWEAN - Bawean deer          |
| 3. LANGURUPHON - Proboscis monkey     | 12. BANTURUNG - Proboscis monkey      | 23. SAMPAN - Gnomes                    |
| 4. PUPUNG - Proboscis monkey          | 13. HAR MAU - Proboscis monkey        | 24. RUSA - Gnomes                      |
| 5. TRENDSILING - Proboscis monkey     | 14. MACAN TULU - Tiger                | 25. KIDANG - Muntjac                   |
| 6. KALINGG SUMATRA - Proboscis monkey | 15. MACAN DAHAN - Tiger               | 26. RANGKIL - Proboscis monkey         |
| 7. BALING TERERANG - Proboscis monkey | 16. RUCING DONGKON - Proboscis monkey | 27. ANOK - Proboscis monkey            |
| 8. GUPBO - Proboscis monkey           | 17. RUCING BATU - Proboscis monkey    | 28. RAMEING SUMATRA - Proboscis monkey |
| 9. JELANGANG - Proboscis monkey       | 18. GAJAH - Elephant                  | 29. BANTENG - Banteng                  |
| 10. LONDAR - Proboscis monkey         | 19. TAPIR - Proboscis monkey          | 30. BAWEAN - Bawean deer               |
| 11. AJAG - Proboscis monkey           | 20. BADAJ JAWA - Proboscis monkey     | 31. BADAJ SUMATRA - Proboscis monkey   |

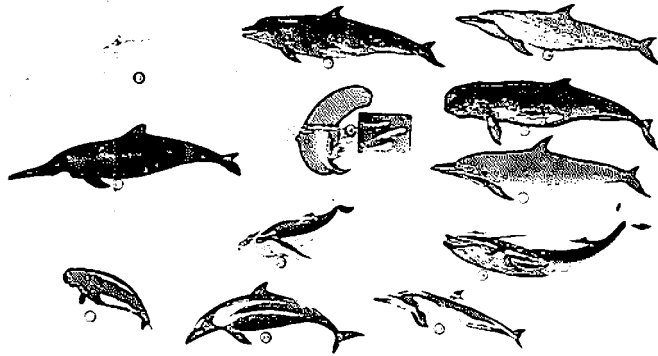
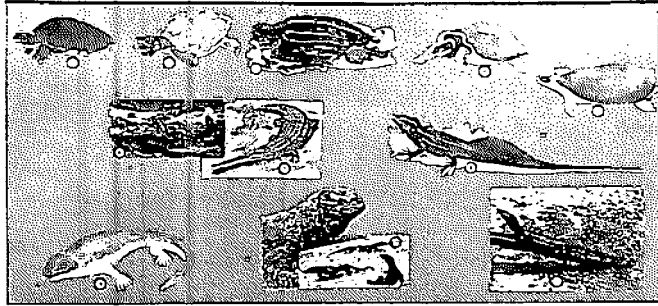
a.

Figure 2: A series of five posters depicting protected species of Indonesian wildlife. These posters also give a good impression of Indonesia's tremendous wildlife diversity. Included in the series as the following:

- Land mammals
- Reptiles and marine mammals
- Land birds
- Water birds
- Primates

# SEBAGIAN SATWALIAH YANG DILINDUNGI DI INDONESIA

## II. MAMALIA AIR & REPTILIA

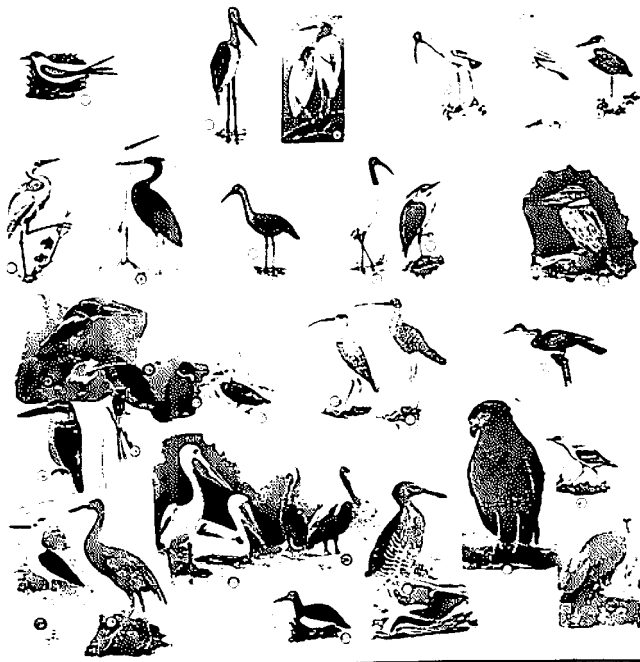


- |  |  |   |
|--|--|---|
| 1. TUNA (Thunnus)                        | 8. PUALANANA (Dugesi)                            | 17. LUMBA LUMBA HITAM (Phocoena phocaena) |
| 2. MAMBAUSA GADONG (Cetorhinus maximus)  | 9. BAWAN KODONG (Mammalia)                       | 18. PUSU (Cetorhinus maximus)             |
| 3. PINTO BEL MANG (Cetorhinus maximus)   | 10. BAWAN MALLA (Mammalia)                       | 19. PAUS BEL MANG (Cetorhinus maximus)    |
| 4. MAMBAUSA JAWA (Cetorhinus maximus)    | 11. LUMBA LUMBA SIALANTIAN (Stenella sialantian) | 20. PAUS BONGGONG (Cetorhinus maximus)    |
| 5. LAMALAM BARAS (Lamna nasus)           | 12. LUMBA LUMBA SIALANTIAN (Stenella sialantian) | 21. LUTANG (Cetorhinus maximus)           |
| 6. BAWAN SIALANTIAN (Cetorhinus maximus) | 13. LUMBA LUMBA SIALANTIAN (Stenella sialantian) | 22. LUMBA LUMBA (Cetorhinus maximus)      |
| 7. SENGUJONG (Cetorhinus maximus)        | 14. LUMBA LUMBA RABAH (Cetorhinus maximus)       | 23. LUMBA LUMBA (Cetorhinus maximus)      |
| 8. BAWAN SIALANTIAN (Cetorhinus maximus) | 15. LUMBA LUMBA INDONESIA (Cetorhinus maximus)   |   |

b.

# SEBAGIAN SATWALIAH YANG DILINDUNGI DI INDONESIA

## IV. BERKUNG AIR



- |                            |                            |                           |
|----------------------------|----------------------------|---------------------------|
| 1. GARA LAUT (Scolopax)    | 11. KOWAR MERAH (Scolopax) | 21. PECUK LAR (Scolopax)  |
| 2. WAFAR (Scolopax)        | 12. BAWA UDANG (Scolopax)  | 22. GANSA LAR (Scolopax)  |
| 3. KANTOR REBAU (Scolopax) | 13. BAWA UDANG (Scolopax)  | 23. GANSA LAR (Scolopax)  |
| 4. ELUDON (Scolopax)       | 14. BAWA UDANG (Scolopax)  | 24. BAWA UDANG (Scolopax) |
| 5. BAWA UDANG (Scolopax)   | 15. BAWA UDANG (Scolopax)  | 25. BAWA UDANG (Scolopax) |
| 6. BAWA UDANG (Scolopax)   | 16. BAWA UDANG (Scolopax)  | 26. BAWA UDANG (Scolopax) |
| 7. BAWA UDANG (Scolopax)   | 17. BAWA UDANG (Scolopax)  | 27. BAWA UDANG (Scolopax) |
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| 9. BAWA UDANG (Scolopax)   | 19. BAWA UDANG (Scolopax)  | 29. BAWA UDANG (Scolopax) |
| 10. BAWA UDANG (Scolopax)  | 20. BAWA UDANG (Scolopax)  | 30. BAWA UDANG (Scolopax) |

d.

# SEBAGIAN SATWALIAH YANG DILINDUNGI DI INDONESIA

## III. BERKUNG DARAT



- |         |         |         |
|---------|---------|---------|
| 1. ...  | 11. ... | 21. ... |
| 2. ...  | 12. ... | 22. ... |
| 3. ...  | 13. ... | 23. ... |
| 4. ...  | 14. ... | 24. ... |
| 5. ...  | 15. ... | 25. ... |
| 6. ...  | 16. ... | 26. ... |
| 7. ...  | 17. ... | 27. ... |
| 8. ...  | 18. ... | 28. ... |
| 9. ...  | 19. ... | 29. ... |
| 10. ... | 20. ... | 30. ... |

c.

# SEBAGIAN SATWALIAH YANG DILINDUNGI DI INDONESIA

## V. PAHAMA



- |         |         |         |
|---------|---------|---------|
| 1. ...  | 11. ... | 21. ... |
| 2. ...  | 12. ... | 22. ... |
| 3. ...  | 13. ... | 23. ... |
| 4. ...  | 14. ... | 24. ... |
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| 9. ...  | 19. ... | 29. ... |
| 10. ... | 20. ... | 30. ... |

e.

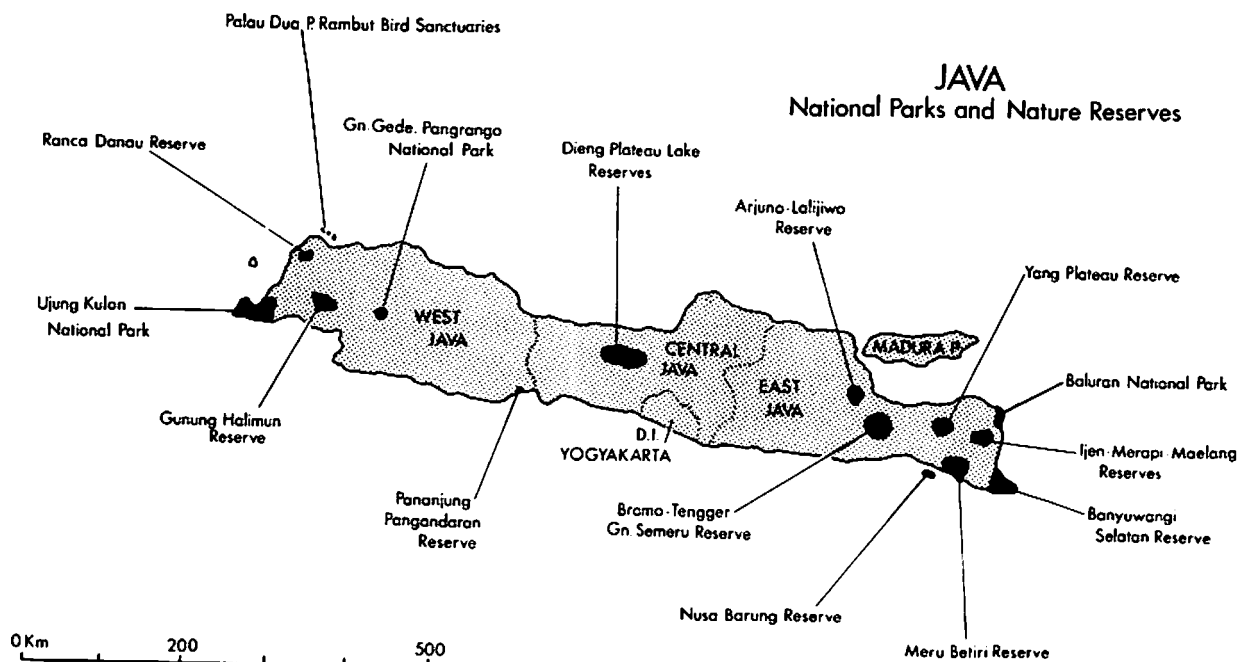


Figure 3: Map of the island of Java showing the location of national parks and reserves (modified from a publication by the Indonesian Directorate General of Tourism).



a.



b.



c.

Figure 4: Several endangered species from Java.

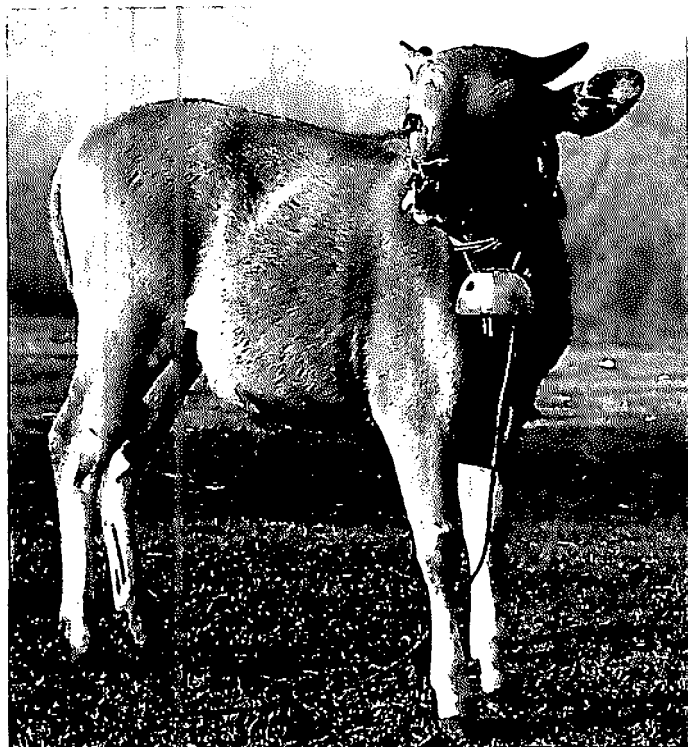
- a. The Javan gibbon (*Hylobates moloch*), a Javan endemic that is probably the rarest of all gibbons (photo by R. A. Mittermeier).
- b. The Javan leaf monkey (*Presbytis aygula*), another primate species found only on Java (photo by R.A. Mittermeier).
- c. Adult male Javan rhino (*Rhinoceros sondaicus*) from Ujung Kulon National Park at the extreme western tip of Java. Once found over a large area of southeast Asia, this species now occurs with certainty only in this one park (photo by M. Kappeler).



a.



b.



c.



d.

Figure 5: Animals from Bali.

- a. & b. The wide-ranging crab-eating or long-tailed macaque (*Macaca fascicularis*) is common on the island of Bali, and is often found in close proximity to human habitations. Temple monkeys are a tourist attraction on the island (photos by R.A. Mittermeier).
- c. A domesticated banteng (*Bos javanicus*) from Bali. This species is native to southeast Asia, and wild populations still occur in a number of countries (photo by R.A. Mittermeier).
- d. Green turtle (*Chelonia mydas*) being carried to a holding pen on Bali. This species is sought after for its meat (photo by R.A. Mittermeier).

# LINDUNGI KAMI



**MENTAWAI ADALAH SATU-SATUNYA  
TEMPAT DI DUNIA DIMANA KAMI BERADA.  
JADI, SAYANGILAH KAMI  
DENGAN MEMBANTU USAHA P. P. A.**



a.

Figure 6: Primates from the Mentawai Islands off the west coast of Sumatra. The Four Mentawai primate species are endemic to these islands, and all are listed in the IUCN *Red Data Book*.

a. Poster produced by the Indonesian Directorate of Nature Conservation (PPA) and WWF depicting the four Mentawai primates: the *joja* (*Presbytis potenziani*), and *bokkoi* (*Macaca pagensis*), the *bilou* (*Hylobates klossii*), and the *simakobu* (*Simias concolor*).

b. The Mentawai Islands leaf monkey (*Presbytis potenziani*). Plate from the original description of the subspecies *Presbytis potenziani siberu* by Chasen and Kloss (*Proc. Zool. Soc. London*, 1927).

c. The pig-tailed langur or *simakobu* (*Simias concolor*), a genus endemic to the Mentawai Islands. This unusual species is most closely related to the proboscis monkey of Borneo, and is perhaps the most endangered Mentawai primate. Plate from the original description of the subspecies *Simias concolor siberu* by Chasen and Kloss (*Proc. Zool. Soc. London*, 1927).

d. Juvenile pig-tailed langur (*Simias concolor*) (photo by A. Mitchell).

e. Juvenile *bokkoi* or Mentawai macaque (*Macaca pagensis*) (photo by A. Mitchell).





b.



c.



d.



e.



a.



b.



c.



d.

**Figure 7: Wildlife of Sulawesi, an island with a unique mix of Oriental and Australasian faunal elements.**

**a. The anoa (*Bubalus depressicornis*), a species of wild cattle endemic to Sulawesi (photo by R.A. Mittermeier).**

**b. Limestone cliffs near Ujungpandang in southeastern Sulawesi, habitat of the moor macaque (*Macaca maura*), one of seven macaques endemic of Sulawesi (photo by R.A. Mittermeier).**

**c. The crested macaque or "Celebes black ape" (*Macaca nigra*), from northeastern Sulawesi. This is the best known of the Sulawesi macaques and is often kept in captivity (photo by R.A. Mittermeier).**

**d. Juvenile *Macaca tonkeana*, another Sulawesi macaque species (photo by R.A. Mittermeier).**

**e. Poster produced by the Indonesian Directorate of Nature Conservation and WWF depicting the unique fauna of Sulawesi.**





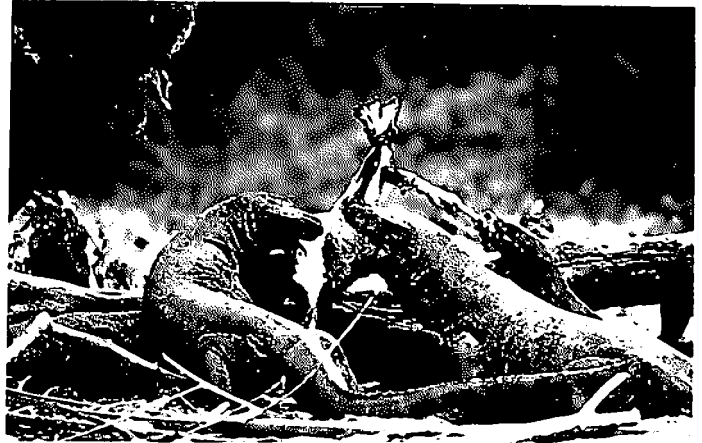
a.



b.



c.



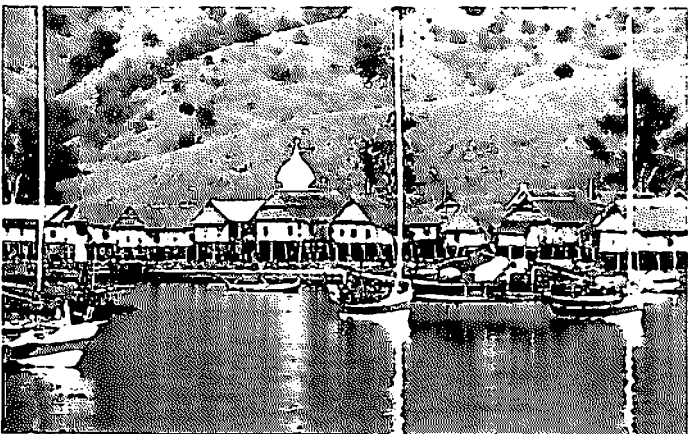
d.



e.



f.



g.



h.

**Figure 8: The Komodo monitor (*Varanus komodoensis*), world's largest living lizard. This species is found only on the islands of Komodo, Rintja, Padar, western Flores and a handful of tiny islands in the vicinity, and is protected in Komodo National Park (photos by R.A. Mittermeier).**

- a, b & c. Komodo monitors in the wild on the island of Komodo.**
- d. Komodo monitors feeding on a goat used to attract the lizards for tourist viewing.**
- e. View of Komodo monitor habitat on the island of Komodo.**
- f. View of Komodo at sunset showing the mountainous nature of the terrain.**
- g. The village of Komodo, part of the Komodo Biosphere Reserve.**
- h. Tourists climbing up from Komodo village in search of the giant lizards.**