WORLD HERITAGE NOMINATION - IUCN SUMMARY

609: KOMODO NATIONAL PARK (INDONESIA)

Summary prepared by WCMC / IUCN (April 1991) based on the original nomination submitted by the Government of Indonesia. This original and all documents presented in support of this nomination will be available for consultation at the meetings of the Bureau and the Committee.

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1. LOCATION

The national park is located in the Lesser Sundas. It comprises a coastal section of western Flores and the islands of Komodo, Padar, Rinca and Gili Motong and the surrounding waters of the Sape Straights. 219,322ha.

2. JURIDICAL DATA

Komodo was declared a national park in 1980 and extended to 219,322ha in 1984 to include an expanded marine area and a section of mainland Flores. Komodo was accepted as a biosphere reserve under the Unesco Man and Biosphere Programme in January 1977.

3. IDENTIFICATION

The generally rugged topography reflects the position of the park within the active volcanic 'shatter belt' between Australia and the Sunda shelf. Komodo, the largest island, has a topography dominated by a range of rounded hills oriented along a north-south axis. To the east is Padar, a small, rugged island, the topography of which rises steeply from the surrounding sea to between 200m and 300m. The second largest island in the park, Rinca, is dominated by the 667m Doro Ora massif, while to the north the steep-sided peaks of Gunung Tumbah and Doro Raja rise to 187m and 351m, respectively. The coastline of all three islands is generally rugged and rocky although sandy beaches are found in some sheltered bays. The mainland components of the park lie in the rugged coastal areas of western Flores, where surface fresh water is more abundant than on the offshore islands. Fringing and patch coral reefs are extensive and best developed on the north-east coast of Komodo and the south-west coast of Rinca and Padar.

The predominant vegetation types are open grass-woodland savannah, mainly of anthropogenic origin and covering some 70% of the park, and tropical deciduous (monsoon) forest along the bases of hills and on valley bottoms. Other vegetation types include cloud forest above 500m on pinnacles and ridges and mangrove forest in sheltered bays off Komodo, Padar and Rinca. Extensive sea grass beds occur to the north of Rinca Island.

(iii) **Superlative natural features** The park's landscape is regarded as among the most dramatic in Indonesia, with the rugged hillsides of dry savanna and pockets of thorny green vegetation contrasting starkly with the brilliant white sandy beaches and blue waters surging over coral.

(iv) **Habitat of threatened species** The park is virtually the only place in the world where the Komodo monitor exists in the wild. Being an island and relatively isolated, it is one of the best locations in which to ensure the long-term survival of the species.

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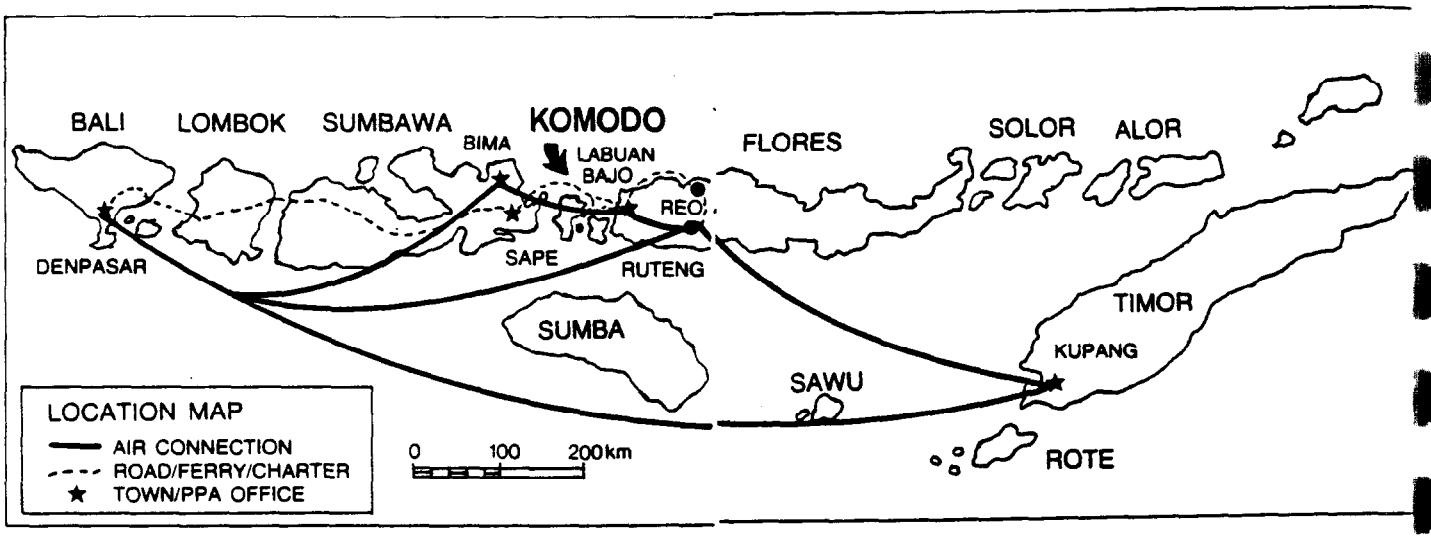
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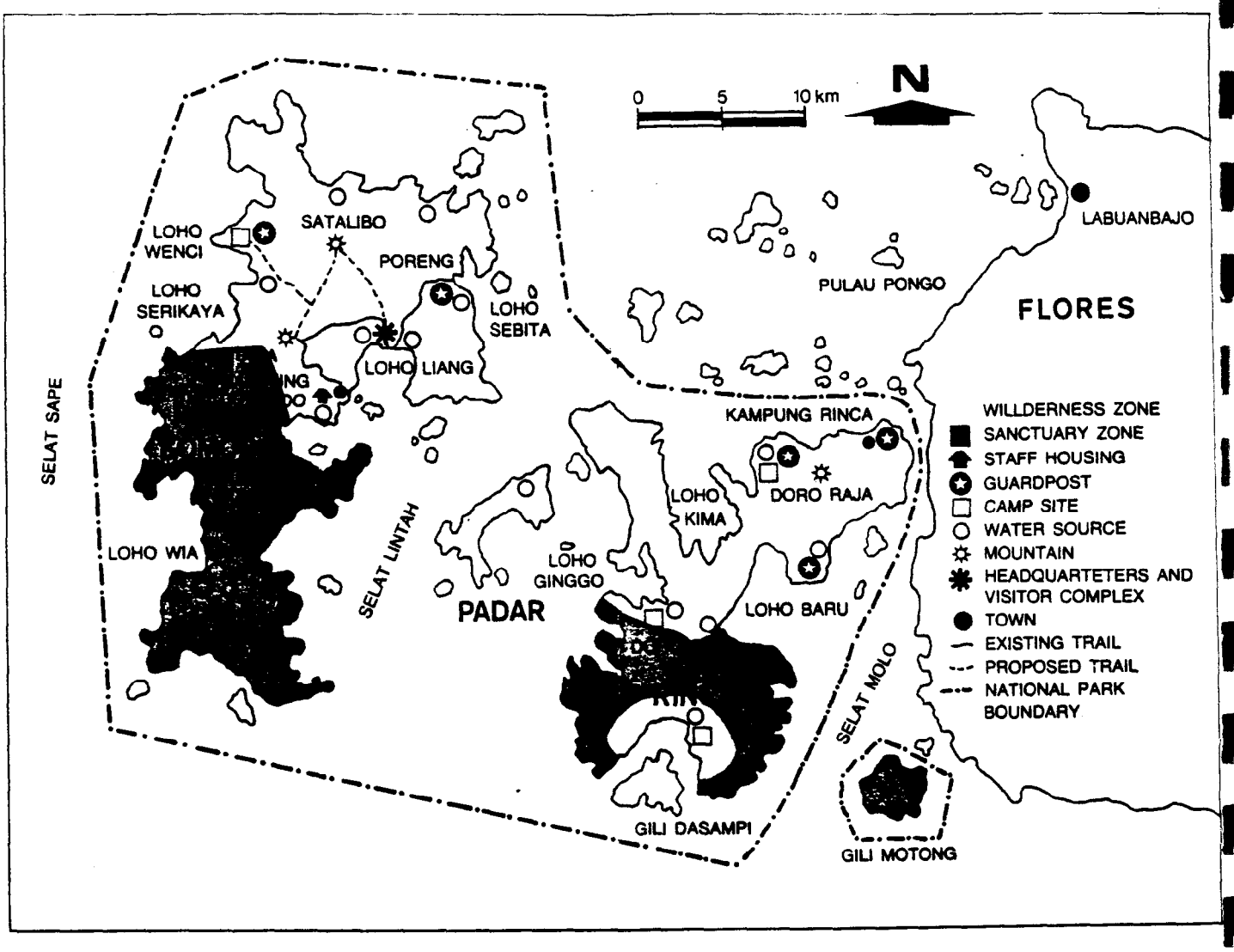
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LOHO GINGGO
PADAR
LOHO BARU
SELAT MOLO
GILI DASAMPI
GILI MOTONG
WILLDERNESS ZONE
SANCTUARY ZONE
STAFF HOUSING
GUARDPOST
CAMP SITE
WATER SOURCE
MOUNTAIN
HEADQUARTETERS AND VISITOR COMPLEX
TOWN
EXISTING TRAIL
PROPOSED TRAIL
NATIONAL PARK BOUNDARY

WORLD HERITAGE NOMINATION - IUCN TECHNICAL EVALUATION

609: KOMODO NATIONAL PARK (INDONESIA)

1. DOCUMENTATION

i) IUCN Data Sheet

ii) Additional Literature Consulted: None.

iii) Consultations: Indonesian Government Officials, R. Salm, R. Petocz, A. Robinson, K. MacKinnon.

iv) Field Visit: April, 1990, Jim Thorsell.

2. COMPARISON WITH OTHER AREAS

Indonesia is a complex of thousands of islands, although there are only a few dozen of substantial size. Komodo (discounting the presence of the Komodo monitor) is physiographically quite typical of the small, low-rising dry islands in the Eastern Lesser Sundas, and also quite similar to the lower elevations of the larger adjacent islands in the chain (eg. Sumbawa and Flores). Its terrestrial species richness is moderate because it lacks extensive rain forest (though remnants of moist forest of earlier eras are interesting and diverse). But what it may lack in diversity it makes up for in special characteristics as a Wallacean transition biota. In general it is a good representative of these eastern islands, and of Wallacea, but of course very distinctive from the larger, higher, wetter and therefore (at least originally) heavily forested Greater Sundas to the west, Kalimantan and Sulewesi to the north and Irian/Papua New Guinea to the east. What sets it immediately apart from the majority of Indonesian islands is that by comparison it is virtually uninhabited, with only about 600-700 people living on each of the two major islands of the group, in essentially only two strictly defined locations, whose livelihoods are almost exclusively oriented towards marine resources, not terrestrial ones.

The major distinguishing feature of Komodo that sets it apart from all others is the existence there of the Komodo monitor lizard. This, the world's largest lizard, has a very restricted distribution centred on the park and along the northern position of the adjoining main island of Flores.

3. INTEGRITY

The main concern over Komodo has been the lack of adequate protective legislation. Although the history of protection goes back to 1938 and the area was declared a national park in 1980 by Ministerial Decree, there was no legislative authority for its existence. In 1990, however, a major new comprehensive conservation law was passed which will provide, when combined with implementing regulations, a solid legal basis. All Indonesian national parks, including Komodo, which currently owe their existence to only a (reversible) ministerial decree, are in the process of being redeclared on the basis of the national law, elevating the legislative mandate to the parliamentary and presidential level. Although the specific implementing regulations have yet to be finalised, there is momentum for them and a high potential for getting good, specific regulations which will replace the confusing series of edicts, designations, decrees which date from early Dutch colonial times. This process is expected to be completed for Komodo by the end of 1991.

Although the management plan for Komodo was proposed in 1979, it is quite specific and adequate to guide current decisions. A revision would be warranted soon, particularly in the light of the fifteen-fold growth in tourism since it was prepared.

The boundaries of the park encompass the main features and are considered adequate. The two reserves on Flores Island, both of which harbour some Komodo dragons are, however, best left out of the property. Both these areas, Mbeliling Nggorang and Way Wuul, are not under any management regime at present and are only attached to the Komodo office for administrative ease. Occasional capture of dragons for zoo purposes takes place and the long-term survival of the species on Flores is not assured even though these two isolates may have a role in providing genetic variety.

There is an extensive marine buffer zone to the park, in which park staff have authority to regulate the type of fishing permitted and to some extent even the presence of outsider fishermen. This authority over a large buffer zone has a great deal to do with gains in anti-poaching (of deer, a monitor prey species). In general the buffer is a very progressive management arrangement which (as it becomes better and better patrolled) can become very significant in long term protection of the park.

In terms of management at the local operational level, Komodo ranks as one of the best in Indonesia. Morale seems high despite chronic low salary problems and motivation and work habits of staff are good. The current park director has aggressively pursued unorthodox ways of insuring small portions of tourist revenues are recycled into park maintenance. He also aggressively continues the tradition of close cooperation with police and military officials to address

patrol issues and especially the poaching of deer and damaging fishing practices. The growing popularity of Komodo National Park as a destination for adventure travel has focused PHPA's attention on this park, and has had a major influence on keeping good staffing and routine budgets.

A minor problem is the existence of a pearling station on Rinca Island. This activity may not be damaging but the permanent structures built to operate it are obtrusive and in violation of park regulations.

The major management issue, as suggested above, is the increasing tourism and a singular focus on the Komodo dragons. The challenge will be to broaden the interest of visitors to other natural attractions (particularly the marine environment) through interpretive programmes and appropriate facilities (eg. nature trails). There are a number of maintenance requirements and equipment needs (eg. boats) as most facilities were provided in 1982 and are in need of repair or replacement.

4. ADDITIONAL COMMENTS None.

5. EVALUATION

The central concern over the nomination of Komodo has been the singular focus of the park on one species - the Komodo monitor. There are thousands of islands in different parts of the world that are home to endemic species of plants (eg. New Caledonia with 2474), or animals such as birds (Solomon Islands have 14). Other islands are exceptional for their geological features, coral reefs or scenery. The challenge with Komodo is to determine its particular importance to science and to conservation in the global context of other islands.

Certainly, the most dramatic argument for Komodo's importance to science is the presence of a very impressive and remarkable animal - Varanus komodoensis - which occurs almost nowhere else. Evolutionary influences such as isolation, lack of competitors or predators, a harsh environment, rising and falling sea levels, climatic change, volcanism impacts and others have all acted in various ways, both subtle and obvious, to shape the Komodo monitor's current morphology and ecological status. As a laboratory for studying such changes, Komodo National Park ranks highly among a few similar areas already recognized for their unique evolutionary history, the Galapagos and Hawaiian archipelagoes being the best examples. The monitor itself is only the most obvious element of the fauna; it seems likely that ultimately other very important questions will be addressed in this ecosystem, including how the presence of a unique top carnivore has affected the evolutionary and ecological history of other elements, and how the environment itself has changed over the extremely long period (millions of years) this sort of Varanid has existed.

Obviously, continued effective management of the area as a reserve or park is crucial to eventual scientific study of these issues.

The size, appearance and behaviour of the Komodo Monitor itself is truly impressive both in the technical and scientific sense as well as its impact on visitors. Although much exaggeration of the lizard's aggressiveness and threat to humans has been spread, and its linkage to dragon mythology exploited, the fact remains that V. komodoensis is unique among the world's lizards in its large size, predatory habits and behaviour characteristics. Scientists and zoo keepers who have studied the species also consider it one of the most intelligent reptiles in the world.

The importance of Komodo National Park to conservation is a subjective judgement, since it can be argued that loss of smaller, almost unnoticed species can be just as important a loss of more dramatic ones. And it may be suggested that focusing effort on large tracts of Indonesia's least disturbed lands of high species diversity will have a greater payback in numbers of rare forms protected or genetic diversity maintained. Both points are valid but there is still substantial conservation awareness value (both within Indonesia and overseas) to relatively modest projects which concentrate on the dramatic or symbolic lifeforms for which Indonesians already have considerable pride and sympathy. The Komodo monitor is one such species (as is the Javan rhino at Ujung Kulon, another World Heritage nomination).

Aside from the monitor's uniqueness there is the whole complex of flora and fauna of the Komodo group which is an excellent representation of the evolutionary richness of this region. Although Alfred Russell Wallace never visited Komodo, nor were the Komodo monitors known to science in his day, it could be speculated that had he known the story he would have had even more convincing evidence of the factors governing natural selection. In any case, Komodo has, in addition to the dragon, a number of other natural features including its marine environment, its flora, and intact natural scenery which combine to make it a park of memorable quality.

The conclusion is that Komodo National Park thus meets criteria (iii) (superlative natural features) and (iv) habitats for animals of outstanding universal value. The conditions of integrity for both are met.

6. RECOMMENDATION

Komodo National Park should be inscribed on the World Heritage List. The boundaries should encompass the offshore island groups and not the buffer zone or the reserves on Flores Island. The Indonesian authorities should be encouraged to complete the gazettement process and report back on progress by the December meeting of the Committee.

INDONESIA - Lesser Sunda Islands

NAME Taman Nasional Komodo (Komodo National Park) including Suaka Margasatwa Komodo (Komodo Game Reserve), Cagar Alam Pulau Rinca (Rinca Island Nature Reserve), Cagar Alam Pulau Padar (Padar Island Nature Reserve), Hutan Lindung Mbeliling Nggorang (Mbeliling and Nggorang Protection Forest), Suaka Margasatwa Wae Wuul and Mburak (Wae Wuul and Mburak Game Reserve) and surrounding marine areas

IUCN MANAGEMENT CATEGORY

Komodo National Park	II	(National Park)
and		
	IX	(Biosphere Reserve)
Komodo Game Reserve	IV	(Managed Game Reserve)
Padar Island Nature Reserve	I	(Strict Nature Reserve)
Rinca Island Nature Reserve	I	(Strict Nature Reserve)
Mbeliling and Nggorang Protection Forest	VI	(Resource Reserve)
Wae Wuul and Mburak Game Reserve	IV	(Managed Game Reserve)

BIOGEOGRAPHICAL PROVINCE 4.23.13 (Lesser Sunda Islands)

GEOGRAPHICAL LOCATION Lies in East Nusa Tenggara province in the Sape Straits between Flores and Sumbawa. Access to Komodo village is by boat from Labuan Bajo on the north-western tip of Flores or from Sape on the east coast of Sumbawa. 8º24'-8º50'S, 119º21'-119º49'E

DATE AND HISTORY OF ESTABLISHMENT The islands of Komodo, Padar, Rinca and Gili Motong and the surrounding waters were declared a 75,000ha national park on 6 March 1980 (MOF, 1990). This was extended to 219,322ha in 1984 under Ministerial Decree 46/kpts/VI-Sek/1984 to include an expanded marine area and a section of mainland Flores. The island of Padar and part of Rinca were first protected in 1938 when they were established as nature reserves (Auffenburg, 1981) and extended in 1965 when Komodo Island was gazetted under Ministerial Decree No. 66. Komodo was accepted as a biosphere reserve under the Unesco Man and Biosphere Programme in January 1977.

AREA Total area of the national park is 219,322ha comprising Komodo Game Reserve (33,987ha), Rinca Island Nature Reserve (19,625ha), Padar Island Nature Reserve (1,533ha), Mbeliling and Nggorang Protection Forest (31,000ha), Wae Wuul and Mburak Game Reserve (3,000ha) and surrounding marine areas (130,177ha).

Komodo Biosphere Reserve (30,000ha) represents the area of Komodo Island excluding the enclave.

LAND TENURE State

ALTITUDE Ranges from below sea level to 735m at the summit of Gunung Satalibo.

PHYSICAL FEATURES The generally steep and rugged topography reflects the position of the national park within the active volcanic 'shatter belt' between Australia and the Sunda shelf (Sumardja, 1981). Komodo, the largest island, has a topography dominated by a range of rounded hills oriented along a north-south axis at an elevation of 500 to 600m. Relief is steepest toward the north-east, notably the peak of Gunung Toda Klea which is precipitous and crowned by deep, rocky and dry gullies. The coastline is irregular and characterised by numerous bays, beaches and inlets separated by headlands, often with sheer cliffs falling vertically into the sea. To the east, Padar is a small, narrow island the topography of which rises steeply from the surrounding plains to between 200m and 300m. Further east, the second largest island in the park, Rinca, is separated from Flores by a narrow strait a few kilometres wide. The topography of the southern part of the island is dominated by the 667m Doro Ora massif, while to the north the steep-sided peaks of Gunung Tumbah and Doro Raja rise to 187m and 351m, respectively. As with Komodo and Padar, the coastline is generally rugged and rocky although sandy beaches are found in sheltered bays. The mainland components of the park lie in the rugged coastal areas of western Flores, where surface fresh water is more abundant than on the islands of Komodo, Rinca and Padar. Geology reflects regional vulcanism, with Pleistocene and Holocene deposits forming the principal geological units. Deposits are generally resistant volcanics, volcanic ash, conglomerates and raised coral formations (Sumardja, 1981; MOF, 1990).

According to Kvalvagnaes and Halim (1979), the seas around the islands are reported to be among the most productive in the world due to upwelling and a high degree of oxygenation resulting from strong tidal currents which flow through the Sape Straits. Fringing and patch coral reefs are extensive and best developed in the west and north facing areas, the most intact being on the north-east coast of Komodo and the south-west coast of Rinca and Padar.

CLIMATE The park lies within one of the driest regions of Indonesia with an annual rainfall of between 800m and 1000mm. Heaviest rainfall, higher humidity and lower temperatures are recorded during the monsoon between November and April. This pattern is reversed during the dry season from May to October, when mean daily temperatures are around 40ºC (MOF, 1990).

VEGETATION The predominant vegetation type is open grass-woodland savannah, mainly of anthropogenic origin, which covers some 70% of the park. The dominant savannah tree is lontar palm Borassus flabellifer, which occurs individually or in scattered stands. Grasses include Eulalia leschenaultiana, Setaria adhaerens, Chloris barbata, Heteropogon contortus and, in the higher areas, Themeda spp. including T. frondosa and T. triandra. Alang-alang Imperata cylindrica is conspicuous by its rarity (Sumardja, 1981). Tropical deciduous (monsoon) forest occurs along the bases of hills and on valley bottoms, characterised by tree species such as Sterculia foedita, Oroxylum indicum, Tamarindus indica, Zizyphus horsfeldi, Schleichera oleosa, Cassia javanica, Murraya paniculata, Diospyros javanica, Harrisonia brownii and Piliostigma malabaricum. The forest is notable, lacking the predominance of Australian derived tree flora found further to the east on Timor (Auffenburg, 1980; Sumardja, 1981). A quasi cloud forest occurs above 500m on pinnacles and ridges (Auffenburg, 1980). Although covering only small areas on Komodo Island, it harbours a relict flora of many endemic species. Floristically, it is characterised by moss-covered rocks, rattan, bamboo groves and many tree species generally absent at lower elevations. These include Terminalia zollingeri, Podocarpus neriifolius, Uvaria rufa, Ficus drupacea, Callophyllum spectabile, Mischocarpus sundaicus, Colona kostermansiana and Glycosmis pentaphylla. Coastal vegetation includes mangrove forest, which occurs in sheltered bays on Komodo, Padar and Rinca. Dominant tree species include Rhizophora stylosa, R. mangle and Bruguiera sp., with Avicennia marina frequently occurring in large stands on the landward side (Kvalvagnaes and Halim, 1979; Sumardja, 1981; MOF, 1990). Other terrestrial vegetation types include pioneering beach vegetation, dominated by Ipomoea pescaprae (Sumardja, 1981). Plant species diversity is relatively low, with some 102 recorded (PHPA, n.d.). Extensive sea grass beds occur to the north end of Rinca Island (Kvalvagnaes and Halim, 1979).

FAUNA The park is best known for the Komodo monitor Varanus komodoensis (R), the world's largest living lizard. The population, which is estimated at around 5,700 individuals, is distributed across the islands of Komodo (2,900), Rinca (900), Gili Motong (fewer than 100) and in certain coastal regions of western and northern Flores. The species is probably extinct on Padar, where it was last seen in 1975 (Kvalvagnaes and Halim, 1979). Favoured habitat is tropical deciduous forest, and, to a lesser extent, open savannah (Auffenburg, 1981). Herpetofauna of the cloud forest includes Sphenomorphus schlegeli, S. striolatus and the frog Oreophryne jeffersoniana, while savannah areas harbour such species as Emoia similis, Viperia russelli and the frog Kaloula baleata. Tropical deciduous forest supports such reptiles as Sphenomorphus florensis, Trimeresurus albolabris, Dendrelaphis pictus and Lycodon aulicus. Common cobra Naja naja

occurs in areas of disturbed agricultural land (Auffenburg, 1980).

The mammalian fauna is characteristic of the Wallacean zoogeographic zone, with seven terrestrial species recorded including the endemic rat Rattus rintjanus. Other mammals include primates such as crab-eating macaque Macaca fascicularis. Introduced species, such as rusa deer Cervus timorensis and wild boar Sus scrofa, as well as feral domestic animals including horses and water buffalo, form important prey species for the Komodo monitor. Some 72 species of birds have been recorded, including yellow-crested cockatoo Cacatua sulphurea (V), noisy friar bird Philemon buceroides and common scrubhen Megapodius freycinet.

Upwelling of nutrient-rich water from deeper areas of the archipelago is responsible for the rich reef ecosystem of which only isolated patches remain due to anthropogenic disturbance (Kvalvagnaes and Halim, 1979). Dominant coral species on most reefs are Acropora spp., particularly table top coral Acropora symmetrica, as well as Millepora spp. and Porites spp. Fungia spp. are present on reef slopes. In areas of strong currents, the reef substrate consists of an avalanche of coral fragments, with only encrusting or low branching species, such as Seriatopora caliendrum and Stylophora pistillata, being able to withstand the rapid water flow. More protected reef slopes, for example in Slawi bay, are dominated by species of the genus Heteropsammia and Heterocyathus. Reefs off the north-east of Komodo have a high species diversity including branching Acropora sp., Hydnophora sp., Seriatopora sp. and Caulastrea sp., as well as massive Porites sp., plate-like Echinophyllia sp., Merulina sp., Pachyseris sp. and numerous Fungiidae. The reefs off Gili Lawa Laut are variable, ranging from the sheltered southern bay with its large stands of Pachyseris sp., Echinopora sp., Mycedium sp., Echinophyllia sp. and Montipora sp., interspersed with thickets of Acropora spp., to the more exposed northern reefs which have a spur and groove structure dominated by Porites sp., Seriatopora sp. and Acropora sp. (UNEP/IUCN, 1988).

Notable marine mammals include blue whale Balaenoptera musculus (E) and sperm whale Physeter catodon, which are occasionally observed, as well as 10 species of dolphin and dugong Dugong dugon (V). Marine reptiles include five species of turtle (Kvalvagnaes and Halim, 1979).

CULTURAL HERITAGE It is thought that the islands have long been settled due to their strategic importance and the existence of sheltered anchorages and supplies of fresh water on Komodo and Rinca. The evidence of early settlement is further supported by the recent discovery of Neolithic graves, artefacts and megaliths on Komodo Island. The age of present settlements suggests that the inhabitants of Komodo village may have settled during the

past 150 years, having been banished from Sumbawa by the Sultan of Bima (MOF, 1990). Local languages are unique, with that of Komodo having its origins on eastern Sumbawa, and that of Rinca originating from western Flores (PHPA, n.d.).

LOCAL HUMAN POPULATION According to a 1990 census, a growing population of approximately 1,500 people lives on the islands of Komodo and Rinca, an increase of 50% over the past decade. Of these, some 568 are located in the village of Kampung Rinca, 769 in the village of Kampung Komodo and 205 in Kerora (J.W. Thorsell, pers. comm., 1991). Several small seasonal fishing settlements lie on the east side of Rinca Island. The villagers subsist almost entirely by fishing, low rainfall having prevented extensive agricultural development (MOF, 1990). Some collection of marine resources, such as molluscs and algae for agar production, also takes place (Kvalvagnaes and Halim, 1979).

VISITORS AND VISITOR FACILITIES Annual visitor numbers have increased rapidly during the 1980s, rising from 100 in 1980 to 15,000 in 1990 (MOF, 1990). Of these, some 90% are foreign nationals who visit during the dry season between June and September (J.W. Thorsell, pers. comm., 1991). A visitor centre and accommodation facilities are located at Loho Liang on Komodo and an information centre in Labuan Bajo on Flores. Limited losman (guest house) accommodation is available at Labuan Bajo on Flores and Sape on Sumbawa. The nearest hotel accommodation and airport facilities are located at Bima on Sumbawa.

SCIENTIFIC RESEARCH AND FACILITIES Auffenberg (1981) has carried out ecological research on the Komodo monitor and cites numerous earlier studies including de Jong (1929), Hoogerwerf (1955), Darevsky (1963) and Kern (1968). In addition, Robinson and Supriadi (1981) have studied the Flores monitor population and Kvalvagnaes and Halim (1979) have conducted marine surveys (Robinson and Bari, 1982). A field laboratory was completed in 1984 (J.W. Thorsell, pers. comm., 1991).

CONSERVATION VALUE The park is of special importance for the conservation of most of the world population of the Komodo monitor. The location of the islands between two distinct zoogeographical zones, and the presence of a number of important cultural relicts, further underscores the site's scientific interest. The rich marine environment, particularly coral reefs, provides the basis for the local fishing industry and enhances the park's potential for tourism.

CONSERVATION MANAGEMENT Management is primarily directed toward conserving the Komodo monitor, which has been protected by legislation since 1915. According to the 1977 management plan, the park is split into intensive use zones (intended to contain developments such as village enclaves and tourist and administrative facilities), wilderness zones (which provide for

limited tourism, such as trails and camps) and sanctuary zones (which are strictly protected with access being restricted to authorised PHPA and research personnel)(FAO, 1977). Management activities have focused on enforcement and provision of tourist facilities, including stations for viewing the Komodo monitor, which are baited twice a week at Loho Liang. Park headquarters are located at Labuan Bajo and there are six permanently staffed guard posts within the park. Sumardja (1981) makes a number of management recommendations including the development of buffer zones to provide resources for the village enclaves, and the expansion of regional and local development and conservation awareness programmes. Robinson and Bari (1982) have recommended that emphasis on viewing the Komodo monitor from baiting stations be reduced and a more balanced programme of nature walks be developed. Robinson et al. (1982) recommend a number of strategies to control deer poaching, including closing markets on Sumbawa and Flores by cooperating with the local government, as well as strengthening PHPA enforcement capability in Sape. It is further recommended that the intensive use zone be extended seawards by 1,000m to allow passage and anchorage of boats. There is an extensive marine buffer zone to the park, within which park authorities may regulate the type of fishing permitted and to some extent, even the presence of outside fishermen (J.W. Thorsell, pers. comm., 1991).

MANAGEMENT CONSTRAINTS The principal management problem is depletion of Komodo monitor prey stocks, such as rusa deer and wild boar, through predation by feral dogs and poaching. An associated problem is the burning of grassland which is most serious on the rarely patrolled western side of Komodo (J.W. Thorsell, pers. comm., 1991). Threats to the marine environment include dynamite fishing of coral reefs by itinerant fishermen from surrounding islands, and siltation of coastal waters due to erosion of fired grasslands. According to Robinson et al. (1982), the continued baiting of Komodo monitor for viewing by tourists may disrupt natural prey/predator relationships and also lead to loss of the fear of humans, possibly with fatal consequences (Robinson and Bari, 1982).

STAFF A total of 90 in 1991 including 60 guards and 30 administrative staff

BUDGET Rp 160,000.000 (US$ 84,210) in 1990

LOCAL ADDRESSES
SBKSDA (Sub Balai Konservasi Sumber Daya Alam) Komodo, Jl. Jenderal, Sudirman No. 87, Labuan Bajo, Flores, East Nusa Tenggara

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DATE December 1981, reviewed March 1991

DOCUMENT 0241V

DESIGNATION POUR LA LISTE DU PATRIMOINE MONDIAL - RESUME PREPARE PAR L'UICN

609: PARC NATIONAL DE KOMODO (INDONESIE)

Résumé préparé par le CMSC/UICN (avril 1991) d'après la désignation d'origine soumise par le gouvernement de l'Indonésie. L'original et tous les documents présentés à l'appui de cette désignation seront disponibles pour consultation aux réunions du Bureau et du Comité.

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1. SITUATION

Situé dans les Petites Sunda. Comprend une portion côtière de l'ouest de l'île de Florès, ainsi que les îles de Komodo, Padar, Rinca et Gili Montong, et les eaux entourant le détroit de Sape. Superficie: 219 322ha.

2. DONNEES JURIDIQUES

Komodo a été officiellement déclaré parc national en 1980 et, en 1984, avec l'adjonction d'une aire marine élargie et d'une portion de l'île de Florès, sa superficie est passée à 219 322ha. En janvier 1977, Komodo a été accepté en tant que réserve de la biosphère par le Programme de l'UNESCO sur l'homme et la biosphère.

3. IDENTIFICATION

La topographie généralement accidentée du parc reflète sa position à l'intérieur de la ceinture volcanique active, entre l'Australie et le plateau de la Sonde. Komodo, l'île principale, a une topographie dominée par une série de collines arrondies, orientées nord-sud. A l'est se trouve Padar, petite île accidentée, dont le terrain s'élève abruptement de 200 à 300m au-dessus du niveau de la mer. La deuxième île du parc, Rinca, est dominée par le massif de Doro Ora, culminant à 667m, alors qu'au nord, les crêtes accidentées de Gunung Tumbah et Doro Raja culminent respectivement à 187m et 351m. Le littoral de trois îles est généralement accidenté et rocheux, avec quelques plages de sable dans des baies abritées. Dans la partie du parc qui contient les zones côtières accidentées de l'ouest de Florès, l'eau douce de surface est plus abondante que sur les îles plus au large. Les récifs coralliens frangeants et mosaïques récifales sont étendus; les plus développés se trouvent sur la côte nord-est de Komodo et la côte sud-ouest de Rinca et Padar.

Les types végétaux prédominants sont la savane herbeuse-arborisée, principalement d'origine anthropogénique, couvrant près de 70% du parc, et la forêt tropicale décidue (de mousson) au pied des collines et sur le fond des vallées. Parmi les autres types de végétation, il faut citer la forêt de

brouillard, au-dessus de 500m, sur les cimes et les crêtes et la forêt de mangrove, dans les baies abritées de Komodo, Padar et Rinca. On trouve de vastes herbiers marins au nord de l'île de Rinca.

Le parc est surtout connu pour le dragon de Komodo (R), le plus grand varan vivant du monde, avec une population totale estimée à quelque 5700 individus. Les mammifères sont caractéristiques de la zone zoogéographique de Wallace, avec des espèces terrestres comprenant des primates, des ongulés et différents animaux domestiques redevenus sauvages, dont certains sont les proies du dragon de Komodo. En outre, 72 espèces d'oiseaux ont été répertoriées dans le parc.

4. ETAT DE PRESERVATION / CONSERVATION

Le parc abrite le vaste habitat aux limites de la prairie et de la forêt, prisé par le dragon de Komodo et ses proies, malgré des menaces telles que le brûlage anarchique des herbages, la coupe illégale des arbres et l'action prédatrice des chiens redevenus sauvages sur les proies du dragon de Komodo. Il convient en priorité de protéger et gérer les populations de dragon de Komodo, ainsi que l'habitat et les proies de l'espèce, en instaurant des mesures contraignantes et un systèmes de trois zones de gestion. Parmi celles-ci, les zones sanctuaire prévoient la protection intégrale, avec accès limité aux personnel autorisé du PHPA et aux chercheurs, alors que les zones de nature sauvage et les zones d'utilisation intensive prévoient respectivement un développement touristique accru et des enclaves villageoises. Les activités de gestion comprend actuellement des patrouilles régulières de lutte contre le braconnage du sambar, et le développement d'activités touristiques telles que des postes où l'on appâte les dragons de Komodo pour les observer. Les recommandations de gestion prévoient le contrôle des populations de chiens redevenus sauvages, la lutte contre le braconnage des cervidés et un tourisme moins axé sur l'observation du dragon de Komodo aux postes où on les appâte et par ailleurs plus équilibré.

De vastes zones de récifs coralliens ont été endommagées par la pêche à la dynamite et par l'envasement dû à l'érosion des pâturages brûlés saisonnièrement et seuls quelques récifs isolés demeurent intacts. Les recommandations de gestion marine incluent l'élargissement de la zone d'utilisation intensive de 1000m vers le large, pour permettre le passage et l'ancrage des bateaux se rendant à Komodo.

5. RAISONS JUSTIFIANT LA DESIGNATION POUR LA LISTE DU PATRIMOINE MONDIAL

D) Bien naturel

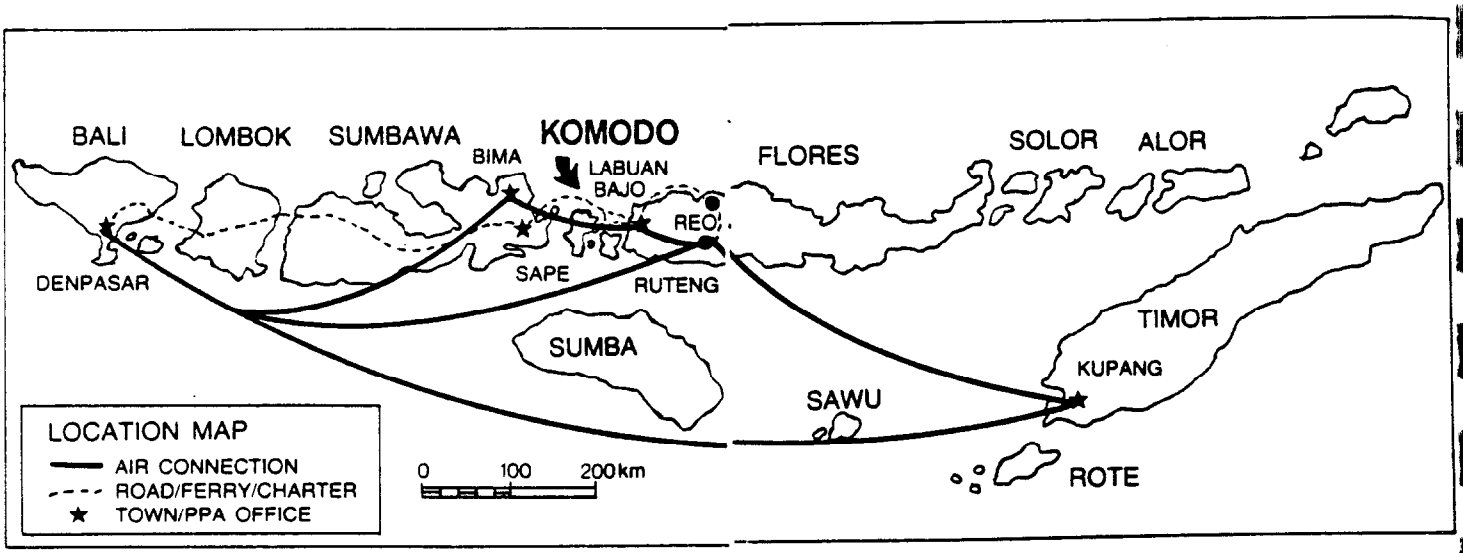
(i) **Exemples éminnement représentatifs des grands stades de la l'histoire de l'évolution de la terre.** Komodo est situé à la jonction des plaques tectoniques australienne et asiatique et a eu une histoire géologique fort mouvementée.

(ii) **Exemples éminemment représentatifs de l'évolution biologique et de l'intéraction entre l'homme et son environnement naturel.** Le dragon de Komodo et l'environnement isolé dans lequel il a évolué constituent un exemple exceptionnel d'évolution biologique.

Des vestiges archéologiques préhistoriques, notamment des menhirs particulièrement rares et grands se trouvent dans le parc, mais leur importance n'est pas encore pleinement comprise.

(iii) **Contient des phénomènes, formations ou particularités naturels uniques, rares ou éminemment remarquables ou de beauté exceptionnelle.** Le paysage du parc est considéré comme l'un des plus spectaculaires de l'Indonésie, avec ses collines accidentées de savane sèche et ses poches de végétation verte et épineuses contrastant abruptement avec les plages de sable blanc et les eaux houleuses et bleues entourant les coraux.

(iv) **Habitats naturels les plus importants et les plus représentatifs où survivent des espèces de plantes et d'animaux menacées.** Le parc est pratiquement le seul endroit au monde où le dragon de Komodo vit à l'état sauvage. Etant une île et, de surcroît, relativement isolé, c'est un lieu idéal pour garantir la survie à long terme de cette espèce.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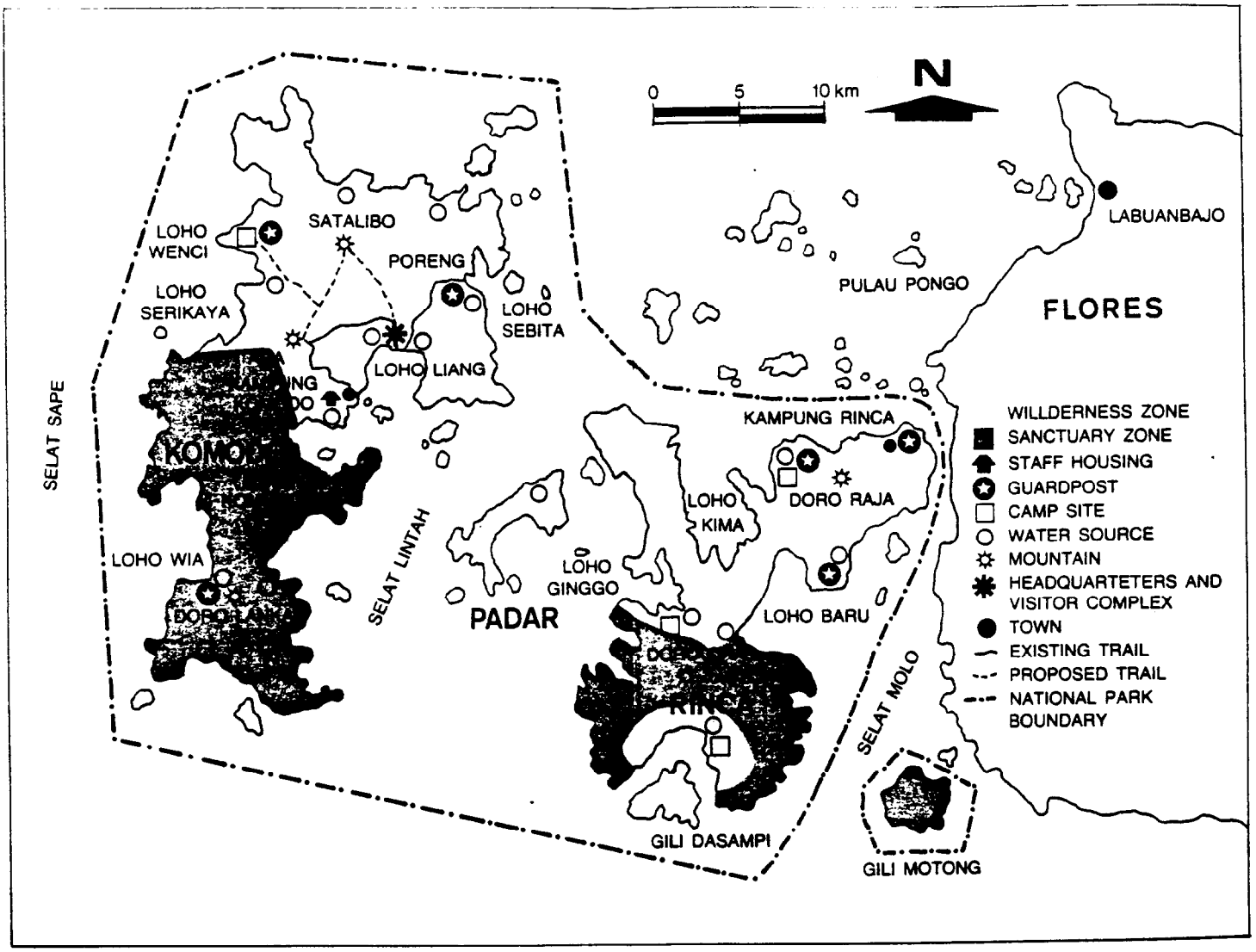
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KOMODO
LOHO WIA
SELAT LINTAH
PADAR
LOHO GINGGO
KAMPUNG RINCA
LOHO KIMA
DORO RAJA
LOHO BARU
SELAT MOLO
GILI DASAMPI
GILI MOTONG
WILLDERNESS ZONE
SANCTUARY ZONE
STAFF HOUSING
GUARDPOST
CAMP SITE
WATER SOURCE
MOUNTAIN
HEADQUARTETERS AND VISITOR COMPLEX
TOWN
EXISTING TRAIL
PROPOSED TRAIL
NATIONAL PARK BOUNDARY

DESIGNATION POUR LE PATRIMOINE MONDIAL -- EVALUATION TECHNIQUE DE L'UICN

609: PARC NATIONAL DE KOMODO (INDONESIE)

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1. DOCUMENTATION

i) Fiches de données de l'UICN

ii) Littérature consultée: Aucune

iii) Consultations: Représentants officiels du Gouvernement indonésien, R. Salm, R. Petocz, A. Robinson, K. MacKinnon

iv) Visite du site: Avril 1990, Jim Thorsell

2. COMPARAISON AVEC D'AUTRES AIRES

L'Indonésie est un archipel comprenant plus de 3000 îles, dont une douzaine à peine sont de taille substantielle. Komodo (hormis la présence du dragon de Komodo) est physiographiquement assez typique des îles de petite taille, sèches et peu élevées des Petites Sunda orientales; ce site est également assez semblable aux parties plus basses des grandes îles adjacentes de la chaîne (comme Sumbawa et Flores). La richesse de ses espèces terrestres est modérée, Komodo n'ayant plus de grande forêt ombrophile (ses vestiges de forêt humide plus ancienne sont néanmoins intéressants et divers). Mais ce qui lui manque peut-être sur le plan de la diversité est compensé par ses particularités, dues à une faune et une flore wallacéennes de transition. On peut dire de manière générale que Komodo est représentatif de ces îles orientales et du domaine wallacéen tout en étant, évidemment, très différent des Grandes Sunda à l'ouest, de Kalimantan et des Célèbes au nord et de l'Irian et de la Papouasie-Nouvelle-Guinée à l'est, plus vastes, plus élevées, plus humides et, de ce fait (du moins à l'origine) densément boisées. Ce qui distingue immédiatement l'île de Komodo de la majorité des autres îles indonésiennes est le fait qu'elle soit pratiquement inhabitée, avec 600 à 700 habitants seulement, établis sur les deux îles principales du groupe, concentrés dans deux endroits strictement définis et vivant presque exclusivement des ressources marines.

Le principal trait qui distingue Komodo de toutes les autres îles est la présence du dragon de Komodo. Il s'agit en effet du plus grand varan du monde, avec une distribution très limitée, centrée sur le parc et au nord de l'île principale de Flores, proche de Komodo.

3. INTEGRITE

Le principal problème qui ressort de la désignation de Komodo est l'inadéquation de sa législation de protection. Bien que la protection de ce site date de 1938 et qu'il ait été déclaré parc national en 1980, par décret ministériel, il n'avait aucune existence juridique. En 1990, une loi de conservation importante et détaillée a cependant été adoptée, qui constituera une base juridique solide lorsqu'elle aura été complétée par des dispositions d'application. Tous les parcs nationaux d'Indonésie, y compris Komodo, qui doivent leur existence à un seul décret ministériel (réversible), sont en train d'être reclassés conformément au droit national, qui élève le mandat législatif au niveau parlementaire et présidentiel. Les dispositions d'application doivent encore être arrêtées; il y a cependant toutes les chances pour qu'une règlementation spécifique satisfaisante vienne remplacer toute une série d'édits, de désignations et de décrets confus, datant du début de la colonisation néerlandaise. Ce processus devrait s'achever vèrs la fin de l'année pour Komodo.

Bien que le plan de gestion de Komodo ait été proposé en 1979, il est suffisamment spécifique pour orienter les décisions actuelles. Une révision se justifierait cependant à brève échéance, notamment en tenant compte de l'essor des activités touristiques, qui se sont multipliées par quinze depuis la préparation du plan.

Les limites du parc englobent les caractéristiques principales et sont considérées comme satisfaisantes. Il vaudrait mieux que les deux réserves de l'île de Flores, abritant quelques spécimens du dragon de Komodo, soient exclues du bien. Aucun de ces sites (Mbeliling Nggorang et Way Wuul) n'est soumis à un régime de gestion et ils ne sont rattachés au bureau de Komodo que pour faciliter l'administration. Des dragons de Komodo sont capturés occasionnellement pour des parcs zoologiques et sur l'île de Flores, la survie de l'espèce n'est pas assurée à long terme, même si ces deux isolats jouent peut-être un rôle dans la diversité génétique.

Il existe une vaste zone tampon marine autour du parc, à l'intérieur de laquelle le personnel du parc est autorisé à réglementer la pêche et même, dans une certaine mesure, la présence des pêcheurs venant de l'extérieur. Cette autorité sur une zone tampon aussi vaste, explique en grande partie les succès de la lutte contre le braconnage (du sambar, proie du dragon de Komodo). On peut dire de façon générale que la zone tampon est un système de gestion très progressiste qui (avec l'amélioration des patrouilles), peut apporter une grande contribution à la protection du parc à long terme.

Pour ce qui est de la gestion, au niveau du fonctionnement local, Komodo figure parmi les meilleurs parcs d'Indonésie. Malgré des problèmes chroniques de salaire, son personnel est motivé et fait du bon travail Le directeur actuel du parc s'est efforcé avec ténacité de trouver des moyens originaux de garantir qu'une petite portion des recettes touristiques soient affectées à l'entretien du parc. Il perpétue tout aussi résolument la tradition de coopération étroite avec les autorités militaires et la police, pour résoudre les problèmes de patrouille et, surtout, pour lutter contre le braconnage du sambar et les méthodes de pêche destructrices. La popularité

croissante du Parc national de Komodo, qui est devenu une destination privilégiée du tourisme d'aventure, a attiré l'attention du PHPA et considérablement influencé la décision d'y maintenir un personnel et un budget ordinaire suffisants.

Un problème mineur est posé par la présence d'une station perlière sur l'île de Rinca. Cette activité n'est pas forcément nuisible mais les structures permanentes construites à cet effet sont trop visibles et violent le réglement du parc.

Comme suggéré plus haut, le principal problème de gestion est posé par le développement touristique axé uniquement sur le dragon de Komodo. Le défi à relever consistera à intéresser les visiteurs à d'autres éléments naturels (comme le milieu marin), par des programmes d'interprétation et des aménagements appropriés (p. ex. sentiers-nature). Des besoins existent tant en matière d'entretien que d'équipement (p. ex. bateaux), car le matériel date en grande partie de 1982 et devrait être réparé ou remplacé.

4. COMMENTAIRES ADDITIONNELS Aucun

5. EVALUATION

Le problème majeur posé par la désignation de Komodo est dû au fait que ce parc met l'accent sur une seule espèce - le dragon de Komodo. Il existe des milliers d'îles aux quatre coin du monde, abritant des espèces endémiques végétales (Nouvelle-Calédonie, 2474), ou animales, comme les oiseaux (îles Salomon, 14). D'autres îles sont exceptionnelles de par leurs caractéristiques géologiques, leurs récifs coralliens ou leur paysage. A Komodo, le défi à relever consiste à déterminer son importance particulière pour la science et la conservation, dans le contexte des autres îles du monde.

L'argument le plus frappant en faveur de l'importance scientifique de Komodo est certainement la présence d'un animal remarquable et très impressionnant - Varanus komodoensis - qui n'existe pratiquement nulle part ailleurs. Les influences de l'évolution telles qu'isolement, absence de concurrents ou de prédateurs, hostilité du milieu naturel, fluctuations du niveau de la mer, variations du climat et impact volcanique, ont contribué de différentes manières, subtiles ou évidentes, à façonner la morphologie et le statut écologique actuels du dragon de Komodo. En tant que laboratoire vivant pour l'étude de tels changements, le Parc national de Komodo figure en tête de liste des quelques régions similaires déjà reconnues pour leur évolution unique, et dont les meilleurs exemples sont les archipels des Galapagos et d'Hawaï. Le dragon de Komodo n'est que l'élément le plus spectaculaire de la faune; il est probable qu'un jour, d'autres questions très importantes trouveront une réponse dans cet écosystème, par exemple: comment la présence d'un seul carnivore supérieur a affecté l'histoire de l'évolution et de l'écologie d'autres éléments, ou comment le milieu naturel a évolué depuis que cette espèce de varanidé existe (plusieurs millions d'années).

Il est évident qu'une gestion efficace du site, en tant que réserve ou parc, est essentielle pour l'étude scientifique de ces problèmes.

La taille, l'apparence et le comportement du dragon de Komodo sont réellement impressionnants du point de vue tant technique que scientifique et font grand effet sur les visiteurs en général. Bien que l'agressivité de ce varan et la menace qu'il constitue pour l'homme donnent lieu à beaucoup d'exagération, et que son lien avec le dragon mythologique soit exploité, il n'en demeure pas moins que V. komodoensis est un varan unique au monde par sa taille, ses habitudes prédatrices et son comportement. Les scientifiques et les conservateurs de parcs zoologiques qui ont étudié l'espèce la considèrent aussi comme l'un des reptiles les plus intelligents du monde.

L'importance du Parc national de Komodo pour la conservation est un jugement subjectif car on peut faire valoir que la disparition d'espèces de plus petite taille, passée presque inaperçue, est peut-être tout aussi importante que celle d'espèces plus spectaculaires. On peut aussi soutenir qu'un effort concentré sur de vastes régions, parmi les moins perturbées d'Indonésie et contenant une diversité d'espèces importante sera peut-être plus payant car il permettra de protéger davantage de formes biologiques rares ou de maintenir la diversité génétique. Les deux points de vue sont valables mais il est certain que les projets relativement modestes, mettant l'accent sur des formes biologiques spectaculaires ou symboliques, pour lesquelles les Indonésiens ont déjà beaucoup de fierté et de sympathie, ont une valeur non négligeable pour la sensibilisation du public à la conservation, en Indonésie aussi bien que dans le monde entier. Le dragon de Komodo figure parmi ces espèces, tout comme le rhinocéros de Java, à Ujung Kulon, autre site faisant l'objet d'une désignation. Outre le dragon de Komodo, unique au monde, le complexe de faune et de flore du groupe de Komodo constitue un excellent exemple de la richesse de l'évolution dans cette région. Alfred Russel Wallace n'a jamais visité Komodo et le dragon de Komodo n'était pas encore connu de la science à son époque mais rien ne nous empêche d'imaginer que, s'il en avait entendu parler, il aurait eu une preuve encore plus convaincante des facteurs qui régissent la sélection naturelle. Quoi qu'il en soit, Komodo possède, à part son varan, plusieurs autres caractéristiques naturelles, notamment son milieu marin, sa flore et son paysage naturel intact, qui concourent à faire de ce site un parc de qualité exceptionnelle.

En conclusion, le Parc national de Komodo satisfait aux critères (iii) (phénomènes naturels uniques) et (iv) (habitats naturels d'espèces animales de valeur universelle exceptionnelle). Les conditions d'intégrité sont remplies pour les deux critères.

6. RECOMMENDATIONS

Le Parc national de Komodo devrait être inscrit sur la Liste du patrimoine mondial. Ses limites devraient englober les groupes d'îles au large, à l'exclusion de la zone tampon et des réserves de l'île Flores. Les autorités indonésiennes devraient être encouragées à mener à bien la procédure de classement de ces sites et faire rapport sur les progrès accomplis à la réunion du comité en décembre 1991.