



Primary lowland rain forest occurs on the Gunung Payung and Gunung Honje massifs and on Pulau Panaitan. Secondary forest, dominated by palms, occurs on the Telanca Plateau, along with dense stands of bamboo and Zingiberaceae. Other vegetation types include a seasonally inundated freshwater swamp forest along the northern promontory of Ujung Kulon, as well as mangrove forest which occurs in a broad belt along the northern side of the isthmus. In addition, a number of artificially created grasslands totalling 64ha are maintained as grazing grounds for ungulates.

Krakatau Nature Reserve lies on the edge of the tectonically active Sunda Shelf, and comprises the central island of Anak Krakatau and the peripheral islands of Rakata, Payang and Sertung with their surrounding coral reefs.

Vegetation of the Krakatau group is characterised by a number of different stages of succession. Sertung, to the north-west, is maintained in a state of early biotic succession by active geological processes of erosion and accretion, while Rakata is characterised by extensive moss forest which extends from the summit down to approximately 650m.

The terrestrial fauna of Ujung Kulon includes a number of large mammals, the most notable of which is the Javan rhinoceros (E), for which the national park provides the last remaining viable natural refuge. Other notable fauna include several large carnivores, ungulates and two endemic primate species. Over 259 species of birds have been recorded from the Ujung Kulon peninsula and surrounding islands, and 40 species from the Krakatau group. The coral reefs of the Ujung Kulon coast and Krakatau group are dominated by a small number of coral species and support some of the richest fish fauna in the Indonesian archipelago.

#### 4. STATE OR PRESERVATION/CONSERVATION

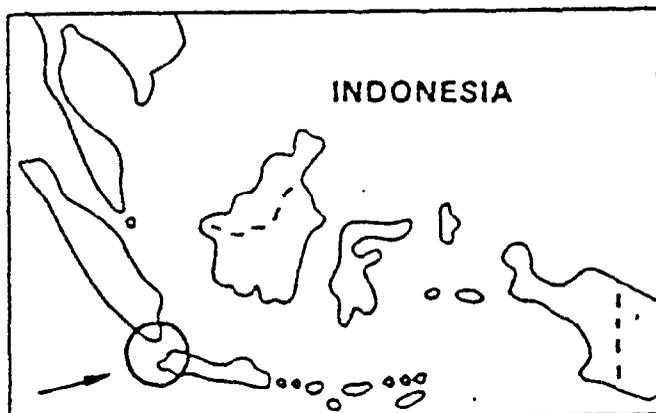
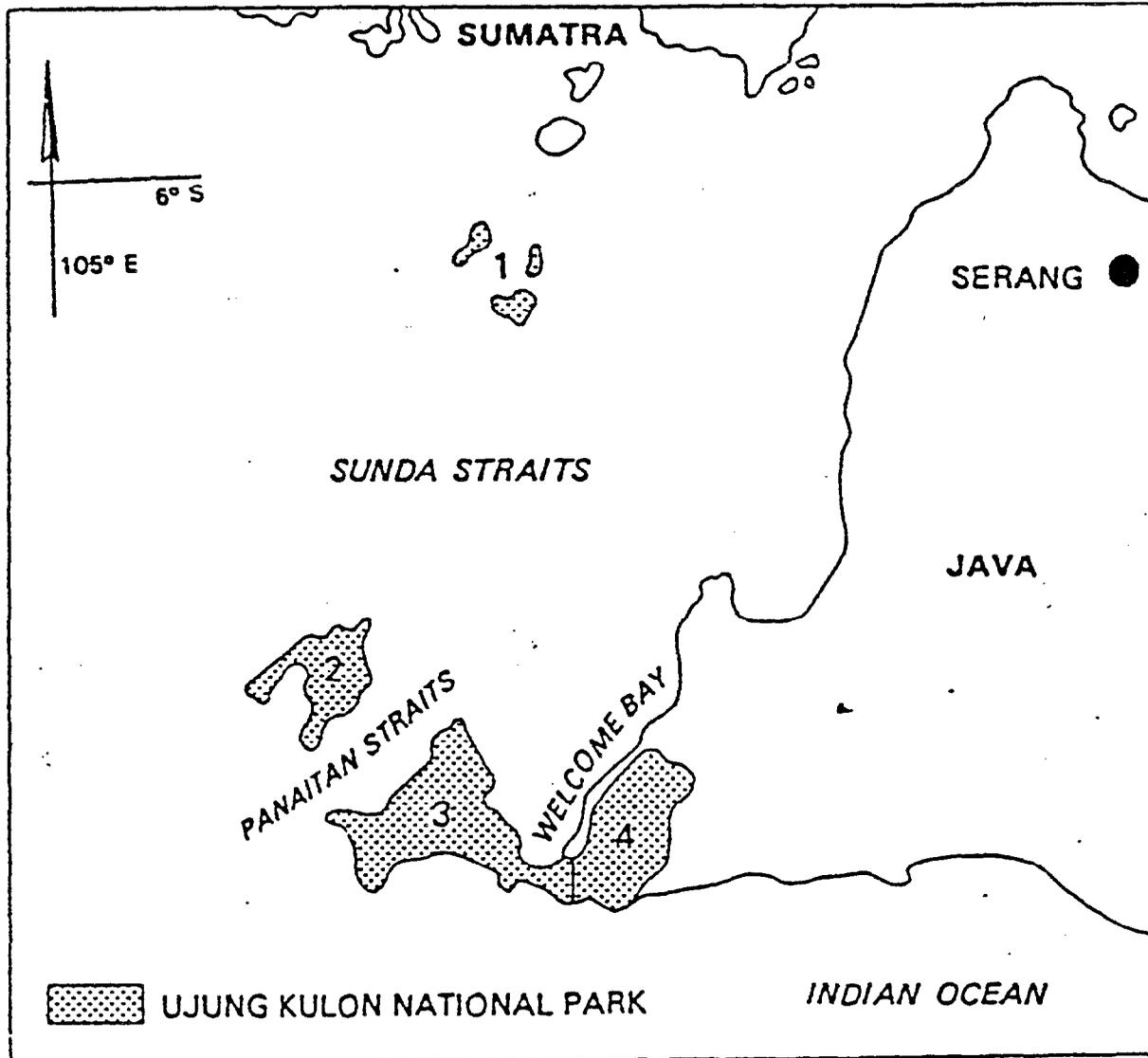
The park is generally well-preserved, with encroachment pressures being confined to the eastern boundary on the mainland. Management priorities are to ensure the long-term survival of the Javan rhinoceros and other endangered species by regular enforcement measures within four types of management zones. These include development zones (tourist accommodation and development), wilderness zones (limited tourism and management activities) and sanctuary zones (strictly protected, with limited access by authorised PHPA and research personnel only). External buffer zones have been proposed in degraded areas along the western, northern and eastern boundaries of Gunung Honje. Current management activities include regular patrols to prevent poaching, encroachment, illegal logging, and fuelwood collection. A recent and controversial proposal concerns the capture and captive breeding of Javan rhinoceros for future translocation.

The marine environment of both Ujung Kulon and Krakatau is generally well-preserved, except for an area of coral reef around Selamat Datang Bay off Ujung Kulon, that is seriously silted from deforestation of Gunung Honje.

5. JUSTIFICATION FOR INCLUSION ON THE WORLD HERITAGE LIST

D) Natural property

- (i) **Earth's evolutionary history** In the Pleiocene, Ujung Kulon and Gunung Honje were separated from Java and probably joined to Sumatra as a southern extension of the Barisan Mountains, becoming separated during the Pleistocene when the arched Sunda Straits dome collapsed.
- (ii) **Geological processes, biological evolution and man's interaction with his natural environment** Krakatau Nature Reserve provides one of the world's best-known examples of recent island vulcanism. Its previous activities and most dramatic eruption in 1883 profoundly affected ecological processes in the adjacent Ujung Kulon Peninsula. The Krakatau islands themselves provide an unique opportunity to study colonisation and succession on a tropical island.
- (iv) **Habitat of threatened species** The peninsula of Ujung Kulon contains the most extensive remaining stand of lowland rain forest on Java. Several threatened plant and animal species are present, notably the Javan rhinoceros for which Ujung Kulon is thought to be the last viable natural population.



- 1 KRAKATAU
- 2 PULAU PANAITAN
- 3 UJUNG KULON
- 4 GUNUNG HONJE

FIGURE 1 Location map of Ujung Kulon

WORLD HERITAGE NOMINATION - IUCN TECHNICAL EVALUATION

608: UJUNG KULON NATIONAL PARK (INDONESIA)

1. DOCUMENTATION

- i) IUCN Data Sheet
- ii) Additional Literature Consulted: IUCN. 1989. Asian Rhinos - An Action Plan for their Conservation.
- iii) Consultations: Indonesian Government Officials, J. Blower, J. Wind, C. Santiapillai, K. Mackinnon, A. Fernhout, A. van der Zon, M. Clarbrough.
- iv) Field Visit: March 1991, Jim Thorsell.

2. COMPARISONS WITH OTHER AREAS

The island of Java, despite being one of the most intensively inhabited island in the world, has 6 national parks and 22 nature reserves entered on the 1990 UN List of Protected Areas.

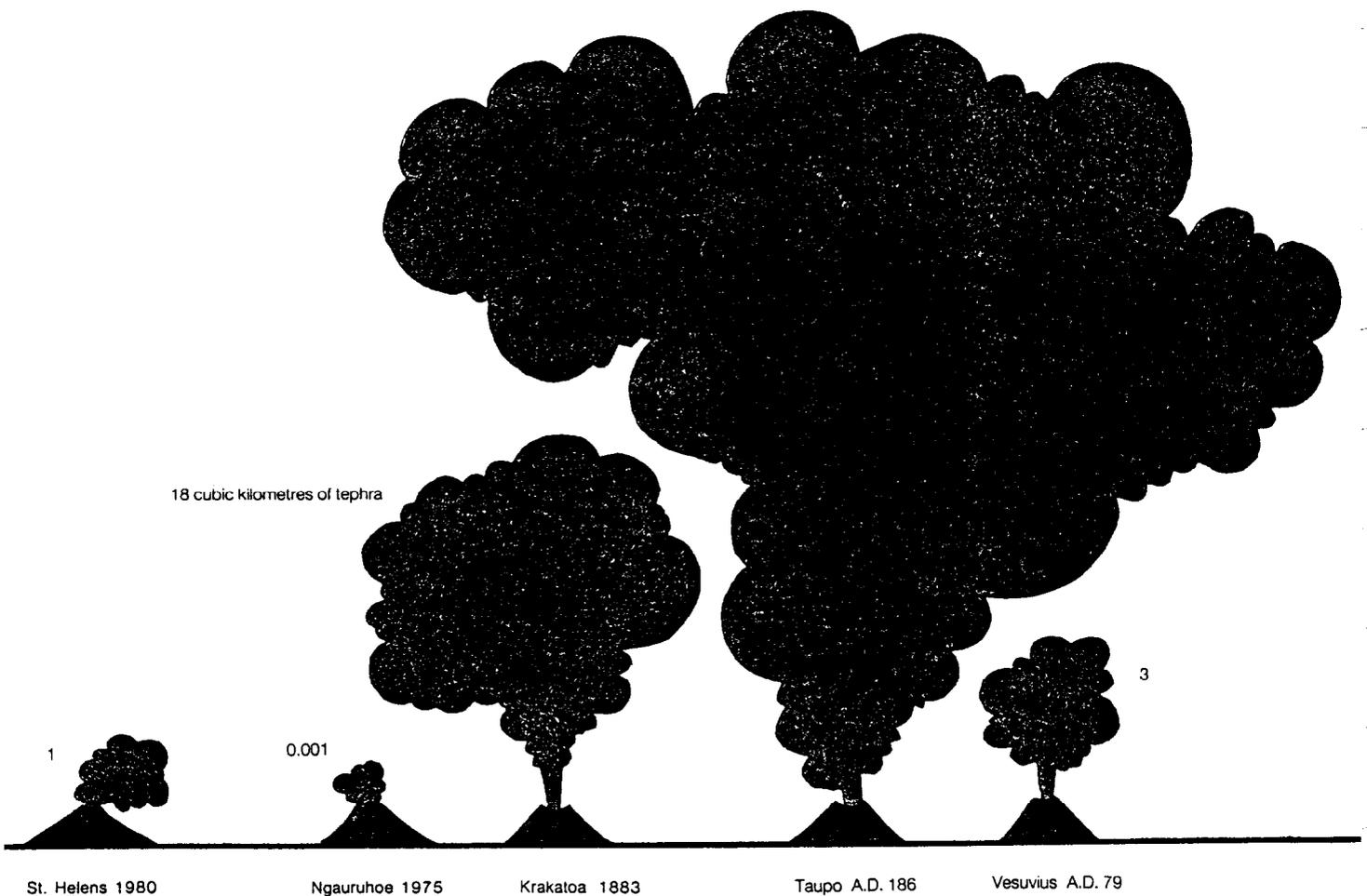
Ujung Kulon is the largest and oldest of all of these and is also situated in the west of Java which is the most biologically rich part of the island. Ujung Kulon is given the highest conservation "score" of all the reserves on Java in the IUCN/UNEP System Review. The park also contains a good representation of coastal habitats and lowland forest which, along with its offshore islands give it the greatest variety of any reserve in Java (26 landscape types occur).

Ujung Kulon National Park has two attractions that are particularly outstanding: it is the home of the last viable population of the Javan or lesser one-horned rhinoceros, and it includes the famous volcano of Krakatau.

The Javan rhino is one of three species of rhino in Asia, which have all been reduced to small remnant populations. The greater one-horned rhino is now the least threatened (1700 remaining) with viable populations found in three World Heritage sites (Manas, Kaziranga and Royal Chitwan). The Sumatran rhino occurs in a number of scattered locations and may number close to 1000. The Javan species is the most threatened, and with less than 70 remaining, has the distinction of being the rarest large mammal in the world. Ujung Kulon National Park is the only stronghold of the species left as the only other known occurrence of a dozen individuals in Vietnam has an uncertain future.

The second unique attraction in Ujung Kulon is the Krakatau volcano. This is one of many hundreds of volcanoes in the Pacific "ring of fire" that extends virtually around the Pacific ocean. It is also one of some 600 active volcanoes worldwide (77 of these in Indonesia). Krakatau, however, is one of the most known and studied of the modern volcanic eruptions due to the devastating effects (36,000 people killed) that were registered throughout the northern hemisphere. The explosion of the nearby Gunung Tambora volcano in 1815 was even larger (by four times) and deadlier to human life (92,000 lives lost). A comparative view of the volume of other eruptions is demonstrated in the diagram below

60-100 cubic kilometres of tephra



Like other recent volcanic eruptions (Mt St Helens, Katmai, Jorullo and Surtsey), Krakatau illustrates a unique natural experiment in recolonisation. Within 14 years of its eruption in 1883 which

destroyed all existing vegetation, the devastated island was already colonised by 132 species of birds and insects and 61 species of plants. Apart from the interest it has generated from scientists and the particular local effects its eruption caused, Krakatau does not provide any particular unusual feature for an active tropical volcano.

### 3. INTEGRITY

As with the evaluation of Komodo National Park the main concern with Ujung Kulon is the lack of a solid legal basis. The discussion of this in the Komodo evaluation is not repeated except to note that the final stage in gazettelement is expected late in 1991.

It should be noted that Ujung Kulon has a long history of conservation dating back to 1921 and was one of the first field projects of WWF who have provided \$600,000 in support since 1966.

There is one permanent settlement in the park at Legan Makis but half of the 120 families have been re-located with the remainder to follow in the next few years. Artisinal fishing by local villagers is allowed in park waters for subsistence use only.

A buffer zone exists around the Honje area and activities in this zone (under control of the provincial authority with advice from PHPA) are being given increasing attention. Proposals include the introduction of cash crops such as bamboo and cotton. A project to provide educational benefits is also underway with support from New Zealand Development Assistance.

Poaching of the rhino has always been the main management issue in Ujung Kulon with the population as low as 25 animals in 1967. Management has been strengthened since then and the population has now risen to about 57 individuals. The situation is still considered as an emergency by IUCN's Asian Rhino Specialist Group who are contributing advice on a recovery plan. A final recovery plan has not yet been agreed but the highest priority is clearly in situ conservation efforts to allow population levels to increase to carrying capacity. The role of captive breeding and re-introduction to secure sites on Sumatra is still being evaluated.

Finally, it should be noted that Ujung Kulon lost its top predator, the Javan Tiger as recently as 20 years ago. The final disappearance of this sub-species was rapid and deliberate and the implications on the functioning of the ecosystem have not been determined.

### 4. ADDITIONAL COMMENTS

The management plan for Ujung Kulon for the period 1989-94 is available in Indonesian only and could not be reviewed.

## 5. EVALUATION

The conservation importance of Ujung Kulon National Park cannot be disputed. The park contains a sample of the richest remaining lowland forest on Java. It is vital for the survival of its flagship species, the Javan rhino and of its 29 species of mammals, fully 9 are on the IUCN Red List, including 3 in the endangered category. The marine environment and the avifauna are also impressive and there are also 57 species of rare plants.

As Hoogerwerf (1970) noted in his classic book Ujung Kulon: The Land of the Last Javan Rhinoceros; "When Ujung Kulon was made a nature reserve, it was first and foremost the intention to protect the Javan rhino against extermination in a Java that was rapidly becoming overpopulated, it soon became clear that in the near future this area would be one of the very few places where various other big mammals could be preserved as well, among which are some species that are in danger of extermination too."

Ujung Kulon thus meets criteria (iv) as a habitat for rare and endangered species of plants and animals. It also meets the condition of integrity attached to this criteria in that it is no longer possible to increase its size but its peninsular location provides managers with an ideal geographic unit.

Ujung Kulon is becoming a last refuge on Java and like other protected areas located in highly populated areas, it will be prone to disturbances from outside its boundaries. With 2 million people a year being added to Java's population every year the park will need even more intensive and cooperative management in future.

The park also meets criteria (iii) as an area with superlative natural phenomena and exceptional natural beauty. Krakatau is one of the world's best-known examples of recent island volcanism and the park with its forests, coastline and islands is a natural landscape of high scenic attraction.

## 6. RECOMMENDATION

Ujung Kulon National Park should be added to the World Heritage List. The Indonesian authorities should be encouraged to complete the gazettelement process and report back on progress by the December meeting of the Committee.

