DISTRIBUTION, CONSERVATION STATUS, AND CAUSES OF POPULATION DECLINE

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DISTRIBUTION

The current and historical geographical range of the orangutan is limited to areas of primary rainforest on the islands of Borneo and Sumatra However, substantial fossil evidence from the Pleistocene indicates that orangutans first evolved on the Asian mainland and were once widely distributed throughout the Indo-China region, as well as the Malay peninsula and the island of Java. Their arrival on the islands of the Malay archipelago occurred as a result of the formation of landbridges created by the drop in sea level that accompanied periods of glaciation of the Pleistocene. This drop in sea level effectively joined Sumatra, Java, and Borneo and much of the Sunda Shelf to the mainland. The subsequent rise in sea levels in the region following the melting of the polar ice caps at the end of the Pleistocene again isolated these land masses from the mainland as well as from each other. The eventual disappearance of orangutans from Java and from the Asian mainland during the Pleistocene is believed to coincide with and be directly related to the first widespread appearance of *Homo erectus* in these areas (MacKinnon 1974).

Taxonomists currently recognize two subspecies of *Pongo pygmaeus*: the Bornean orangutan *pygmaeus*, and the Sumatran orangutan *abelii*.

The Bornean subspecies is widespread on Borneo, occurring in the East Malayan states of Sabah and Sarawak in the northern and northwestern part of the island, and the Indonesian province of Kalimantan, which covers approximately two thirds of the island They are absent from Brunei Darussalam.

Bornean orangutans are known to inhabit several forest types within their range, including lowland swamp and dipterocarp forests near coastal regions, as well as forests at much higher elevations. There is evidence that population densities in Borneo are highest in lowland habitats and tend to decrease with altitude (Payne 1987). Payne found evidence of 2-3 individuals per square kilometer in the Segama Valley, Sabah, while populations in montane forest ranging in altitude from 150m to 500m at Barito Ulu, Kalimantan, may be less than 0.06 individuals per square kilometer (Bodmer et al1991).

The inaccessibility and difficulty of travel through much of the interior of the island, especially in Kalimantan, continues to hinder efforts to define the precise limits of the subspecies' distribution. For the same reason, accurate estimates of population densities and total numbers are difficult to obtain.

In 1993, participants in an Orangutan Population and Habitat Viability Analysis Workshop, using estimates of square kilometers of various habitat types, arrived at population numbers of between 10,830-15,546 Bornean orangutans surviving in the wild (Rijksen et al1993).

A survey undertaken in Sabah (Davies 1986) found the species to be widespread in the state. Densest populations occurred in the primary forest of the Segama River Valley in the eastern lowlands, while animals were found to be scarce in the western highland areas of the state.

Sabah's orangutans occur in varying densities in several forest reserves, wildlife reserves, conservation areas, and national parks. These areas include the Sepilok Forest Reserve, the Kulamba Wildlife Reserve, the Tabin Wildlife Reserve, the Malua Forest Reserve, Kinabalu National Park, and the Danum Valley Conservation Area. The degree of protection, long term security, and viability of the populations within these areas varies greatly (Payne 1987).

Orangutans are also widely distributed in Sarawak but are concentrated in two main population centers. The first is in the lowland swamp forests between the Sadong and Lupar Rivers. The second (and largest) population occurs in and around the Lanjak Entimau Wildlife Sanctuary adjacent to the Indonesian border. Scattered individuals in the interior of the state are not believed to constitute long term viable populations (Bennett et al1987).

Bornean orangutans are widely distributed in the Indonesian province of Kalimantan with the exception of the southeast region and occur in several protected areas within the province. The most significant protected populations are found in the Kutai National Park and adjacent areas in East Kalimantan (1,200-2,100 individuals), Gunung Palung Nature Reserve and National Park in western Kalimantan with about 3,750 orangutans in and around the park, and Tanjung Puting National Park in Central Kalimantan with an estimated population of between 1,080 and 1,800 orangutans (Rijksen et al1993).

Other protected areas containing smaller populations of orangutans in Kalimantan include the adjacent Bukit Raya and Bukit Baka Nature Reserves, Gunung Bentuang and Karimun Nature Reserve, Muara Kendawangan Nature Reserve, Sangkulirang Nature Reserve, and

Gunung Nyuit (Rijksen et al1993).

In addition to populations occurring in these protected areas in Kalimantan, several thousand other individuals occurring in areas outside of these reserves are currently unprotected.

Sumatran subspecies *abelii* is restricted to the northern part of Sumatra. The great majority of the subspecies' range lies to the north of Lake Toba. There are historical as well as more recent accounts of individuals to the south and southeast of Lake Toba but numbers today are believed to be very small (van Schaik et al1993). The historical range of the subspecies was estimated to have shrunk by 20-30% between 1938 to 1978 (Rijksen 1978), and has undoubtedly diminished further since then.

The most important population of Sumatran orangutans is centered in and around the 900,000 haGunung Leuser National Park, which supports a minimum of 5,800 orangutans. Two separate populations within the park are parts of much larger populations of animals whose ranges extend to the west and south of the park. Together, these populations are minimally estimated at 9,200 animals (van Schaik et al1993).

CAUSES OF DECLINE IN THE WILD

Pongo has the smallest current geographical range of the great ape genera (Wolfheim 1983); the orangutan is classified as endangered (International Union for the Conservation of Nature 1976). Populations in the wild may have declined by as much as 30-50% between 1983 and 1993. Habitat destruction and conversion for timber, plantations and agriculture, as well as hunting and capture for the pet trade have all contributed to this decline (Tilson et al1993). As many as 1,000 to 3,000 young orangutans may have been smuggled by boat from Indonesia to Taiwan in the late 1980's and early 1990's to be sold as pets (Eudey 1991). Infants in the pet trade are frequently wild-caught and obtained by killing their mothers (IUCN 1976). The relatively low densities of wild populations per square kilometer, coupled with relatively low reproductive rates make populations within a given area particularly vulnerable to hunting pressures. Offspring may be dependent on their mothers for as long as six years before establishing independent ranges (Horr 1977), while inter-birth intervals may average up to eight years (Leighton et al1993). As a result, populations that have been decimated by hunting are slow to recover.

A variety of factors contribute to the destruction and degradation of habitat Road construction through primary forest often becomes an

avenue for extensive clearing along edges, leading to fragmentation and isolation of formerly continuous orangutan populations. Changes in status of rainforest from protected to unprotected has in some cases led to logging of areas inhabited by orangutans. Lowland rainforest, which is critical habitat for orangutans, is frequently exploited for timber production because it is most accessible and most profitable for exportation of timber due to its close proximity to coastal areas. Encroachment by agriculture and from human settlements also contribute to loss of forest (van Schaik et al1993).

Forest fires pose less of a threat to Sumatran orangutan populations but extensive damage to the Kutai Reserve in Kalimantan occurred as a result of a huge forest fire in 1982-83.

The populations of orangutans centered in and around Gunung Leueser National Park on Sumatra, as well as several of the larger populations within protected areas on Borneo are viable.

The long term survival of these populations will ultimately depend on continued protection and preservation of the forests in which they occur. The survival of the species as a whole will depend on a strong international commitment to its preservation through a variety of means, including support for *in situ* educational and conservation programs, continued long-term field studies, cooperation in enforcement of laws conforming to the Convention for International Trade of Endangered Species (CITES), sound management and husbandry of captive populations, and cooperative breeding programs such as the Species Survival Plan (SSP).

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