Orangutan (*Pongo*)

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Orangutans are the only Asian Great Apes. Two species are found today in Southeast Asia: *Pongo abelii* in Sumatra and *Pongo pygmaeus* in Borneo. They are considered the largest living arboreal animals. Their especially elongated feet and hands make them particularly well suited to life in the trees, although they can also be found on the ground. Both species are semisolitary (more so in Borneo than in Sumatra), but complex social networks of loose relationships are maintained between members of the same community. Males tend to disperse further than females at maturity. Female orangutans are generally characterized by long periods of maternal investment in a single offspring at a time, with wild interbirth intervals usually of six to nine years (Wich et al. 2009). Orangutan diet mostly consists of fruits, complemented by leaves and young shoots, bark (inner cambium), flowers from more than 1,500 plant species (Wich et al. 2009), and insects (and even small vertebrates in Sumatra). Fruit availability directly impacts all aspects of their life, including ranging patterns, seasonal movements, health status, and social and reproductive behavior.

An unusual characteristic of the orangutan is the presence of two different forms of sexually mature adult males (a phenomenon called "bimaturism"). Large dominant flanged males are twice the size of the females; they possess a facial disk of fibrous tissue on either cheek known as a "cheek pad" or" flange" and an elongated throat sac used for territorial "long calls." Flanged males also often have a "cape" of long hair on their arms and their back. Flanged males are rather intolerant and aggressive towards other adult males. Unflanged males on the contrary do not possess these secondary sexual characteristics; they are about the same size as an adult female, do not have flanges or elongated throat sacs, and do not emit long calls. Unflanged males also do not appear to defend any territory. They tend to avoid encounters with flanged males but are often tolerant of other unflanged males. Genetic studies have revealed that both types of males do sire offspring. Transition from the unflanged to the large flanged form appears to be by social determinism: it depends on the local social structure of the population where the animals live.

On both islands, wild orangutan numbers are declining fast. This decline is primarily due to hunting pressure, which has worsened since firearms were introduced in the region (Meijaard et al. 2010). In the Malaysian state of Sabah (Borneo), genetic studies estimated that more than 90 percent of the original orangutan population was lost in the past 200 years alone (Goossens et al. 2006). Borneo-wide, between 2,000 and 4,000 individuals are killed every year, mostly for the bushmeat trade, the pet trade, or to mitigate conflicts with agriculture (Meijaard et al. 2011).

Such a death toll is well above what the species can sustain, and is incompatible with the long-term viability of the species on both islands. We estimate today that not more than 80,000 and 20,000 orangutans are found on Borneo and Sumatra, respectively. The latest comprehensive study of orangutan distribution in Kalimantan (the Indonesian part of Borneo or 73 percent of the island) shows that approximately half of their current range falls within forest areas earmarked to be converted to agriculture or other types of land-use, such as mining, oil-palm agriculture, or industrial tree plantations (Wich et al. 2012). These insights foreshadow the fact that many orangutan populations will go extinct within a human generation time if killing and habitat destruction continue at the current rate. Under the current scenario, only populations that are living in well-managed protected areas or that occur in areas where orangutans are not hunted have a chance of long-term survival.

Another major threat to orangutan survival is habitat loss. For example, half of the original Bornean forest has been converted to other types of land-use (mostly large-scale monoculture

The International Encyclopedia of Primatology. Edited by Agustín Fuentes.

DOI: 10.1002/9781119179313.wbprim0243

agribusiness) since the 1970s. While orangutans require diverse forested lands for survival, recent studies show that they are more resilient to habitat changes and degradation than expected. New findings have established that sustainable logging practices may be compatible with orangutan survival as long as they involve diligent planning, proper implementation of reduced-impact practices, and strict enforcement of a zero-hunting policy of wildlife.

Other studies report orangutan presence in a mosaic of mixed agriculture and forests in Sumatra (Campbell-Smith et al. 2011), in mature agro-industrial plantations of oil palm (Ancrenaz et al. 2015), or in acacia (pulp and paper) plantations. Orangutan presence in these highly transformed habitats brings hope in the struggle to balance human development in rural areas and species survival. While current information suggests that these agro-industrial monoculture plantations cannot sustain viable orangutan populations (Ancrenaz et al. 2015), these agricultural landscapes at least appear to provide essential connectivity between areas of natural forest. Thus the future of orangutans depends on the economic and political choices that are currently made by the governments of Indonesia and Malaysia. This situation also indicates that adequate conservation planning for the species cannot restrict itself to the network of fragmented protected forests, but also needs to include the highly modified human-transformed areas adjacent to natural forests as part of the overall landscape needed to support survival of wild orangutan populations (Hockings et al. 2015).

SEE ALSO: Anthropogenic Landscapes; Ape Field Studies; Habitat Fragmentation

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