

Javan rhinoceros



Name and species

- Common name: Javan rhino
- Synonym: Lesser one-horned rhino
- Scientific name: *Rhinoceros sondaicus*; from the Greek “rhino”, meaning “nose” and “ceros” meaning “horn”. Sondaicus derives from “Sunda,” the name for the western part of Java, but the word is also used to indicate the main chain of Indonesian islands, the “Sunda islands”

Physical characteristics

- Javan rhinos have a grey or grey-brown skin, almost black when wet, with pink colouring in the folds. As for the other Asian rhinos, there are two folds in the skin circling the body behind the front legs and before the hind legs, and horizontal folds at the base of the legs. The neck folds are less massive than in the greater one-horned rhino, but two folds continue over the back of the neck, forming a characteristic “saddle” on the neck-shoulder. The skin is covered with a mosaic pattern, giving a scale-like appearance
- The Javan rhino is a smaller and lighter relative of the greater one-horned rhino
- Javan rhinos are comparable in size to the African black rhino, though only a few animals have actually been weighed. They typically range between 900 and 2,300 kg, and are 1.4-1.7 metres tall at the shoulder. The few Javan rhinos surviving in Vietnam are very small, no more than 1.2 metres at the shoulder, and probably of the same weight as a Sumatran rhino (less than 800 kg)
- Javan rhinos have a single horn, grey or brownish in colour, never very long or massive, and usually less than 20 cm long. Males have the larger horns and many females, especially in Ujung Kulon, lack the horn or just have a small knob on the nose. The longest horn ever recorded is only about 27 cm long and is now in the British Museum in London. Rhino horn has the same horn structure as the hooves of horses and re-grows if broken off. It is not used for fighting, but for scraping mud from the sides of wallows, pulling down food plants, and for protection of the head and nose when breaking through dense vegetation
- There is not much difference in size between the males and females, and from information gathered in Ujung Kulon and from museum skeletons, there is a possibility that females are slightly bigger
- Javan rhinos have long pointed upper lip, which assists in grasping their food. Such prehensile lips are found in all browsing species, the African black rhino, and the Greater one-horned and Sumatran rhinos

- Javan rhinos, like all Asian rhinos, have long dagger-shaped lower incisor teeth. They are very sharp and are used in fighting and can inflict deep wounds. These teeth are lacking in African rhinos
- To masticate the large quantities of coarse food, rhinos have two rows of six strong, broad and low-crowned molars on each side. The teeth are fitted with strong ridges of enamel, which cut the woody parts in characteristic 1-2 cm-long bits. Over the years, the teeth wear down by several centimetres to become shallow dish-like structures, and old animals may have problems masticating their food, lose condition, and may eventually die of under-nourishment
- All rhinos are hind-gut fermenters (they use micro organisms in the last part of the intestine to break down indigestible parts of the food) and have a large cavernous caecum and colon
- Javan rhinos are estimated to live an average of 30-45 years in the wild; while the longevity record for the few animals in captivity is just over 20 years
- Javan rhinos have a good sense of smelling and hear very well, but are rather short sighted. Attacks on humans are not uncommon when the Javan rhino is met in the forest
- Very few Javan rhinos have ever been exhibited in zoos, and the last one died in Adelaide Zoo, Australia, in 1907. During its life it was exhibited as a greater one-horned rhino

Location and habitat

- Javan rhinos used to live in a variety of tropical landscapes, both lowland and highland, from the mangroves of the Sunderbans in India and Bangladesh, the mountains of southern China, to the sub-montane shrubs on the highest volcanoes of Java. The Javan rhino probably had a wider ecological range than both its larger relative, the greater one-horned rhino, or its compatriot, the Sumatran rhino
- But by the time the first naturalists ventured into the Southeast Asian forests, the Javan rhino was already very rare, and not much is known about its behaviour and ecology outside the single remaining viable population in Ujung Kulon, which may not be ideal or typical habitat
- Javan rhinos were once rather common over a large part of Southeast Asia, from near Calcutta in India, throughout Bangladesh, southern China, Laos, Vietnam Cambodia, Myanmar, Thailand, Peninsular Malaysia, the Large island of Sumatra, and the western half of Java. About 12,000 years ago they also occurred in Borneo and till about 2,000 years ago through large parts of China
- The Javan rhino showed the most dramatic decline of all three Asian rhino species, and by about 1930 the Javan rhinos was restricted to Ujung Kulon, a small peninsula on the westernmost tip of Java and a few small isolated populations in Vietnam and possible Laos and Cambodia
- Now only two populations remain. The largest one in Ujung Kulon, Java, recovered quite well from less than 30 in 1967 up to about 50-60 in 1980, but has been stagnant or even slowly declining ever since



- The only other population is in the Cat Loc part of the Cat Tien National Park in Vietnam, where a handful survives in about 4,000 hectares of reserved, but severely degraded habitat. No reproduction has been observed there since 1998
- The Javan rhino's diet is characterized by high species diversity. Hundreds of food plant species have been recorded, but about 40% of the quantity of food eaten comes from a few preferred and common plant species. The rhinos eat mostly leaves, young shoots and twigs. Most of the plants eaten by rhinos grow in unshaded locations, in vegetation types without tall trees, gaps created by fallen trees, and shrubland without trees. These unshaded places have a better average quality of foodplants. Rhinos rarely feed in vegetation types in which the quantity of available food was small
- In spite of their preference for feeding in vegetation types without tall trees, Javan rhinos are probably dependent upon the occurrence of forest in their environment. Forest provides protection against solar radiation, water supply is subject to smaller fluctuations inside forest than outside, and forest trees are the source of many saplings eaten by rhinos. The optimal habitat of the Javan rhino, with regard to vegetation types, therefore appears to be a mosaic of glades interspersed with patches of forest. This kind of habitat is widely distributed in Ujung Kulon
- Javan rhinos spend up a large part of the day wallowing in mud holes. They may use temporary pools and puddles, which they deepen with the feet and horn. The access to mud wallows is essential for thermo-regulation, skin condition and to get rid of ectoparasites and biting insects

Social behaviour and breeding

- Javan rhinos are usually solitary, except for females with small calves, or during a short period of courtship around the time a female is in oestrous. Occasionally young animals may form pairs or small groups for some time. Males in Ujung Kulon have larger territories (12-20 km²), only marginally overlapping with other males territories. There is no indication that these territories are actually defended by territorial fights as happens in other rhino species, but they are marked along the main trails by urine, faeces, scrapes and twisted saplings. The ranges of the females in Ujung Kulon are much smaller (3-14 km²) and overlap each other considerably
- Salt-licks, which are so dominant in the ecology of the Sumatran rhino, are unknown in Ujung Kulon, but occasionally Javan rhinos are known to drink seawater. It is likely that in other parts of the former range, salt-licks were also used by Javan rhinos
- Javan rhinos are not very vocal, much less than Sumatran rhinos, and only few vocalisations have been recorded. As with other rhino species, indirect communication through dung, urine and scrapes scented with the secretions of the foot glands play a more prominent role
- Dung heaps serve as a communication point, though the large latrines common in the greater one-horned rhino do not occur, probably because of the much lower natural density of these animals.

- Unlike Sumatran rhinos, Javan rhinos do not scratch their hind feet in the dung and kick it around in the bushes. They drag a hind foot, sometimes for several metres, to mark the scratch with the secretions of the foot glands. The visual marks made by the Sumatran rhinos in the form of twisted saplings are also unknown in Javan rhinos
- Gestation period is estimated to be between 16 and 19 months, but Javan rhinos have never been born in captivity

Under threat

- The biggest threat for the Javan rhino is poaching for their horn and the very small size of the remaining populations. This leads to inbreeding and loss of genetic variability and vitality. The two habitats where Javan rhinos occur are secure, but much too small for long-term survival of the species. The horn is used in Asia as a medicine against fever and pain
- With continued strict protection, both of the remaining rhinos and their habitat, and with active translocation and establishment of new populations in suitable and secure habitats, over the next 150 years the populations ought eventually to be able to recover to at least 2,000-2,500 individuals; the number determined by population biologists as a minimum requirement for long-term survival of the species
- Apart from poaching, habitat destruction and loss for agriculture and development are further threats to the rhino populations. Though officially all rhino habitats are strictly protected by legislation, in practice many areas are subject to large-scale encroachment by poor and landless masses, while the park management usually does not have the means and the political support to counter this pillage. Habitat is still not a limiting factor overall, but none of the two remaining habitats are large enough to allow significant growth of the rhino population, now or in the future. Therefore re-establishment of Javan rhinos in areas where they have been exterminated is a vital component of the conservation strategy for this species

Nico van Strien