

3557

## ON THE DIFFERENCE IN THE FOOTPRINTS OF THE JAVAN AND THE SUMATRAN RHINOCEROS

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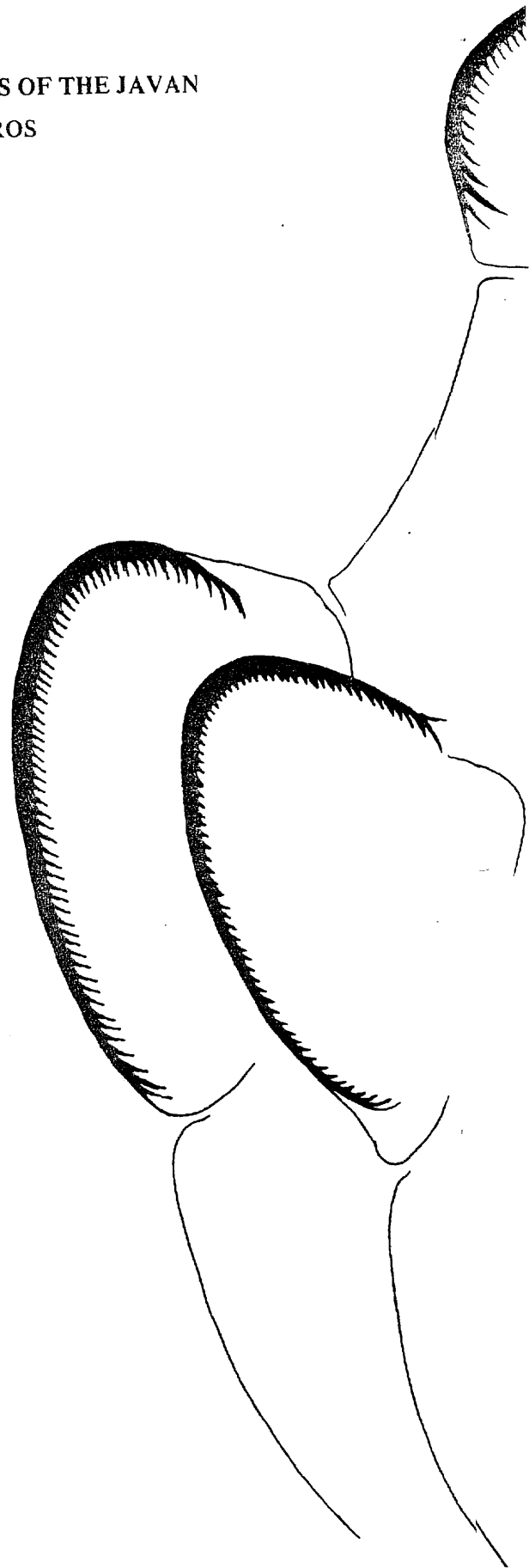
In historic times two species of rhinoceros, the Javan rhino (*Rhinoceros sondaicus*) and the Sumatran rhino (*Dicerorhinus sumatrensis*) inhabited most of the Southeast Asiatic region, from the greater Sunda islands to the Brahmaputra valley and southern China. Now only a small number remain, living in small and isolated groups in a few reserves and some remote places, and both species are among the rarest and most threatened mammals.

The distribution of both species overlapped throughout most of their range and, although some ecological differentiation between the species exists—the Javan species is more confined to lower, flatter and opener country than the Sumatran species—both species could occur in the same area. Both lived in the forest or in dense growth and were seldom seen. The best evidence for their occurrence were the tracks, left behind on suitable places. Distinguishing between the two species was difficult even on sight in the dim light of forest, and many reports referred only to 'rhino', leaving the species an open question.

Nowadays the chances of coming across the tracks of a Javan rhino outside their last known refuge — Ujung Kulon on Java — are extremely small. The Sumatran rhino has a much wider distribution and most of the recent reports refer to this species. But now and then the Javan species is also mentioned, and there is a chance that a few have escaped the massacre in Sumatra, Thailand or Laos. On the other hand, the evidence brought forward with regard to the identification of the species is generally unsatisfactory and there remains much doubt as to the accuracy of such sightings.

Differences do exist between the tracks of the Javan and the Sumatran species and in order to increase the accuracy of the reports on 'rhino' sightings this article will discuss how to distinguish between the tracks of the two species.

Rhino's have feet with a characteristic flat, circular sole and three large nails or hoofs: a half round hoof in front and a more pointed hoof to the left and right of the sole. These features are clearly visible in the prints, especially in soft soil. The only animal who





*Real size rhinoceros footprints. The bottom part of the drawing had to be cut off, it is printed on page 18.*



Plastercasts of rhinoceros footprints. At the left the Sumatran rhino and at the right the Javan rhino. (van Strien).

makes tracks similar to the rhino is the tapir. A tapir generally leaves a three-toed print, but the hoofs, about the size of rhino hoofs, are sharper and the sole is much smaller than that of a rhino. The total width of the print is smaller (14-17 cm.), but they can be mistaken for the tracks of a very small Sumatran rhino at first sight.

One of the most apparent differences between the prints of the rhino species is their size. The width of the print, measured between the tips of the side hoofs, is commonly used to distinguish between both species. These measurements are normally taken on the print of the hindfoot, which is one or two cm. smaller than the forefoot. The print of the hindfoot is usually superimposed on the forefoot print and therefore the latter is not clearly visible or cannot be measured with accuracy.

Prints of the hindfoot of the adult Javan rhino are between 24 and 29 cm. wide, and the prints of the

adult Sumatran rhino between 17 and 25 cm. Prints of immature animals are naturally smaller, but usually if that is the case the prints of the cow will also be found close by. There is a slight overlap in size, for the two species and in a number of cases the width of the prints will not be conclusive. When tracks are found with a width ranging from 23 to 27 cm. one should look for other characteristics, such as the form of the sole and the hoofs.

To be able to see the difference in the form of the print, rather good prints are needed, preferably made in soft soil and not distorted too much by rain. Extremely clear imprints can be very hard to find, even on a fresh track, but generally one will find a few usable prints while following the track for some distance.

The differences in form can be clearly seen in the accompanying figures. The photograph shows two



plastercasts; to the left a plastercast of a footprint of the Sumatran rhino, made in the Gunung Leuser Reserve on Sumatra, and to the right a plastercast of a print of the Javan rhinoceros, made in the Ujung Kulon Reserve on Java, both on the same scale. The life-size drawings were made after the same casts, which are good averages in size and shape.

The sole of the Javan rhino is very flat and almost circular, whereas the Sumatran rhino has a more arched sole, especially between the nails, forming something like a 'middle finger'. The fronthoof of the Javan rhino is much wider in relation to its height, being about twice as wide as it is high. The width of the fronthoof of the Sumatran rhino is about the same or slightly more than its height, and its imprint is much more pronounced than in the Javan species, as can be seen on the photograph. The same applies to the sidehoofs, which are much sharper and stick out more clearly from the plane of the sole.

Most striking about the Javan rhino is the large flat imprint of the sole, and for the Sumatran rhino, the deep and sharp imprints of the hoofs.

One has to exercise great care while studying animal tracks, since they not only reflect the shape of the foot that made the track, but also the type of movement of the animal. The condition of the soil and the gradient, the weather, etc. influence the final result. Prints can become altered in many ways, with very misleading results, and one should not rely on only one print, but study a series. Generally prints of these big animals are partially filled with earth and leaves loosened by the walking animal. To get a clear view these should first be removed very carefully with a twig or a pair of tweezers.

By far the best way to study animal tracks, is to make a plastercast. This is not only the most complete and precise way of recording the finds, but a cast of a print shows us the characteristics much more clearly than the print itself. Our eye is more used to the convex forms of a plastercast than to the concave forms of an animal print, and the interpretation of a cast is therefore easier. A good plastercast of an animal's footprint is often as much proof of its identity as is a photograph, and is much easier to make.

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## INSONA

We have, very recently, established the Indian Society of Naturalists (INSONA), with its headquarters in Baroda, to advocate the cause of environmental conservation for improving the general quality of life.

INSONA will co-operate with other Institutions and Societies, having similar objectives, and will seek affiliation to national and international bodies to promote advancement of study and research in natural and applied sciences.

INSONA will provide opportunities for field observations and research to younger generation and create an awareness about appreciation of Nature and its conservation.

INSONA is to endeavour to bring together the common man and the scientists from various disciplines for better understanding of our biosphere.

We have destroyed already our excellent environment which we need for our survival. We, therefore, need your real help in our efforts to conserve healthy, natural environment.

The situation, we face, today is just grave. We shall have to endeavour to prevent the extinction of threatened plants, animals and desecration of natural ecosystems. That the common man and the scientist should work together to regulate disturbed environment is a cry of time. If we achieve this, it will contribute significantly for the lasting welfare of mankind.

Membership of INSONA is open to any member of the society interested in its aims and objectives. Interested persons may please contact Dr. G. M. Oza, F.L.S., Hon. General Secretary INSONA, "Oza Building", Salatwada, Baroda-390 001 (India).

Fatesinghrao P.Gaekwad, President of INSONA