

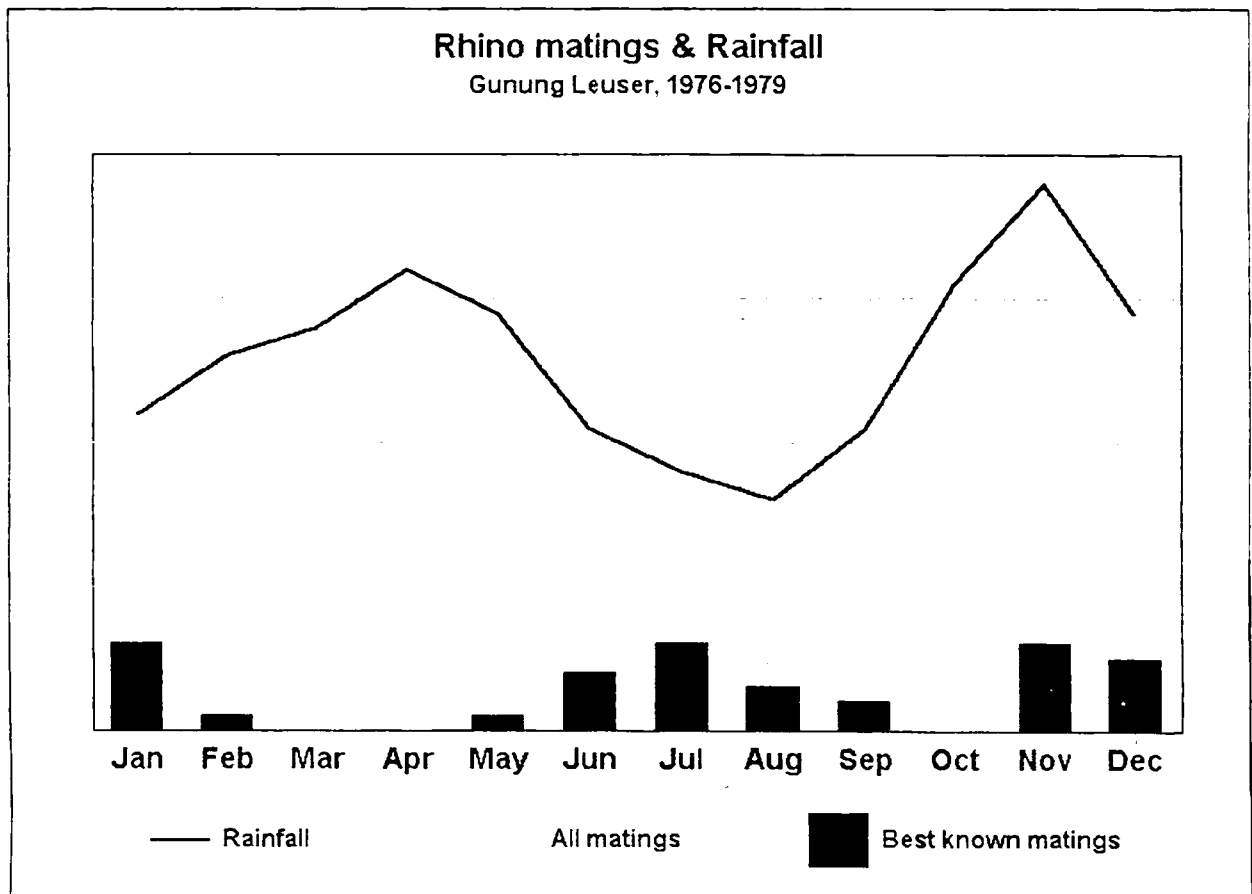
SEASONALITY IN BREEDING IN SUMATRAN RHINO?

During my study on the distribution and ecology of the Sumatran rhino in the Gunung Leuser National Park, Sumatra, from 1975 till 1981 a total of twelve calves were recorded to have been born in the rhino population in the study area in the Upper Mamas valley. Based on the growth curve of the footprint of the calves the approximate period of birth could be established (See figure 4.1 and figure 6.1 in Nico J. van Strien. The Sumatran rhinoceros - *Dicerorhinus sumatrensis* (Fischer, 1814) - in the Gunung Leuser National Park, Sumatra, Indonesia: Its distribution, ecology and conservation. Doorn, 1985).

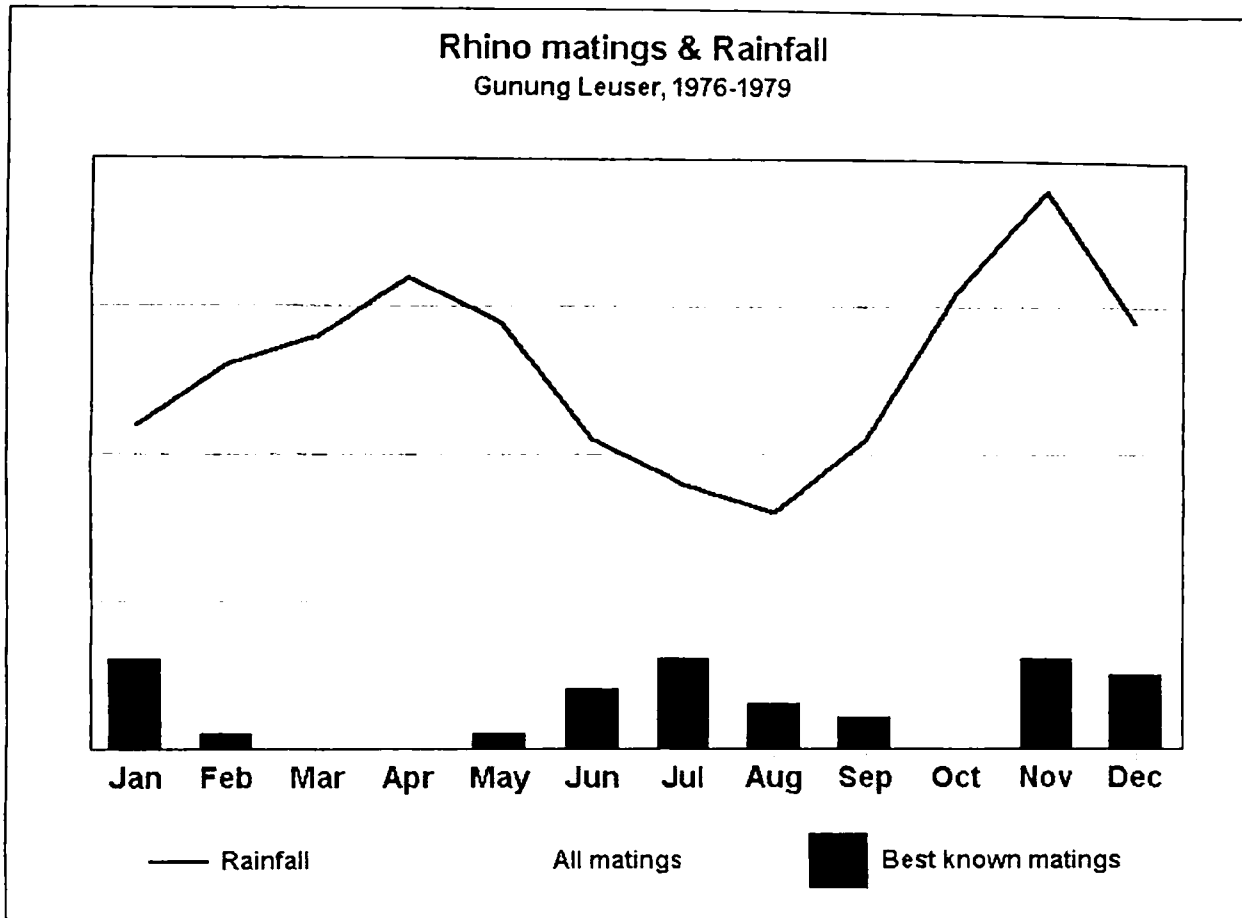
Six calves were born in 1976, two in 1977, two in 1978 or 1979, and two in 1979. From six calves the footprints were found when they were still very young or for a longer period and of these calves the birth period could be estimated to an accuracy of less than three months. From the other six calves the data series are limited and it was only possible to estimate the period of birth within an interval of 3 to 6 months.

The results are summarised in the table attached, modified from figure 6.1 in van Strien, 1985. The estimated period of birth is indicated by the dark rectangles, each representing a period of 1/4 month. Below total periods marked per month are given as an approximation of the probability of birth taking place in each month. Also the average monthly rainfall at Ketambe Station (1972-1980), the nearest location with rainfall data, is given.

The total periods marked per month for the 'best known births' (calves no 130-400, shown in the upper block of the table), 'all births' and the average monthly rainfall are shown in the graph below.



From the graph there seems a good correlation between rainfall and birth, with more calves being born during the periods of high rainfall. In the Leuser area there are two rainy seasons, the 'small rains' from



March to May and the 'big rains' from September to December. Of the six 'best known' births three occurred between March and May and three between September and January. The birth in the first half of January could be determined very accurately because the footprint of the calf when first found was very small and older tracks of the female without a calf were found nearby.

The gestation period of the Sumatran rhino is approximately 16 months, as is indicated by the birth of a calf in Malaysia almost 16 months after the female was captured when pregnant. For a rhino calf to be born in January the mating must have occurred 16 months prior in the month of September. The graph below showing the relation between mating and rainfall is produced by moving the birth data 4 months to the left.

The 'matings' graph seems to indicate that mating of Sumatran rhino occurs predominantly in the dry period, in particular in the 'long dry' period from June to September. The correlation with the 'short dry' period in January and February is less clear.

The only other reference found in literature concerning seasonality in breeding of the Sumatran rhino is by J. C. Brassier, in his book on big game hunting in Indonesia (*Jacht op groot wild in N.O.Indie*, Thieme, Zutphen, 1926), stating that August is in the middle of the 'rutting season' of the rhino. Brassier's view seems to have been correct and confirmed by the data from Gunung Leuser.

Nico van Strien

Bogor, 23 November 1999

Periods during which Sumatran rhino calves were born in Gunung Leuser National Park, extrapolated from growth curves of the foot (N.J. van Strien, 1985)

Rhino calf Number & year	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul
Calves for which the period of birth could be extrapolated with an accuracy of three months or less												
130 1976			■	■	■	■	■	■				
200 1976				■	■	■	■	■	■			
100 1979						■	■					
410 1976								■	■	■	■	
445 1976								■	■	■	■	■
400 1976										■	■	■
Total periods marked per month		1	4	6	3	2		6	5	6	1	
Calves for which the period of birth could NOT be extrapolated with an accuracy of three months or less												
800 1977												
138 1976												
134 1978												
135 1979												
148 1977												
105 1979												
Total periods marked per month		9	15	16	16	12	12	12	7	4	4	1
Average Rainfall (Ketambe)												
(mm)	160	210	310	380	290	220	260	280	320	290	210	180