

ECOLOGY AND BEHAVIOUR
OF THE
ONE-HORNED RHINOCEROS

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Introduction

The first half of the monsoon season was spent in Chitawan. Floods were the worst for many years. There was three feet of water flowing through my house on 28th July. During the second half of the monsoon a two month trip was made to S.E. Asia to collect information on the two S.E. Asian species of rhinoceros. This was followed by a period terminating the project in Nepal and a quick visit to West Bengal and Assam in the first half of December.

Chitawan June 16th to August 14th and October 22nd to November 17th

More data was collected on social behaviour and some fascinating interactions were seen at the wallows. Taped recorded fights played back near wallows attracted adult males - not to the loudspeaker but to the nearest wallow regardless of the exact position of the loudspeaker.

An 18 month old female calf wallowed in physical contact with an adult male. The calf's mother repeatedly tried to approach her calf but was attacked each time and driven off by the male. The calf took no notice of her mother's calls. Only after 30 minutes did the mother manage to circle round behind and collect her calf.

More photographic height measuring was carried out and a grass collection completed.

Five births and two deaths were recorded. A new born calf disappeared soon after birth and a bull died of old age just inside the park boundary having spent his last night lying in a rice field.

West Bengal

I visited the Jaldapara and the Goru Mara Reserves for the first time. Between them they shelter the last remaining rhinos in West Bengal.

After a period of heavy poaching between 1971 and 1973 during which 29 rhinos were killed the protection of both reserves has been improved. Armed guards of the National Volunteer Force are now stationed at the reserves in addition to the regular forest guards. Forest Dept. estimates for the rhino population are 30-40 for Jaldapara and 5-7 for Goru Mara.

Jaldapara (40 sq.mi.) is shaped like a pair of trousers enclosing two southward flowing river valleys. It is mixed tall grassland and riverine forest very similar to parts of Chitawan. A big problem, however, which is absent in Chitawan is the recent plague of the native creeper, Mikania. Within the last ten years Mikania has increased enormously in range and abundance and is destroying large areas of grassland and forest. Tea Estate managers are having to spray against it for the first time in both Bengal and Assam. Grassland is reduced eventually to a flat carpet of Mikania. Forest is typically transformed to open glades with a few Mikania festooned stumps. Deer and rhino eat the young shoots but only to a small extent so that loss of browse and grazing is disastrous.

To combat this invasion the Forest Dept. in Jaldapara and Goru Mara have ploughed up three plots of 25, 15, and 10 hectares and planted maize, millet, mustard, wheat and Napier grass (Pennisetum pedicellatum). Rhinos, deer and wild boar feed on these plots heavily. This is not a satisfactory answer to the problem. It is difficult to deal with both in Jaldapara and in Khasi in Assam where it is also gaining a foothold.

Goru Mara, 50 miles west of Jaldapara is only 1.5 sq.mi. in area at the junction of the Jalacca and Barti rivers. It is riverbed grassland surrounded by commercial sal forest. Rhinos originally travelled between Goru Mara and Chattramari Reserve to the north but a new road now restricts them to the southern reserve. During the monsoon the whole reserve is flooded and the animals retreat south into the sal forest.

Kasiranga 8th- 14th December

More observations were made on the rhinos and other species. The grassland is still very wet at this time of year and most species are grazing in more than 6 inches of water.

Records of 375 deaths of rhinos kept by the Forest Dept for the past 11 years were examined. They vary as to detail and accuracy but yielded some interesting information. 23% of all deaths were of calves and 60% of sexed calves were male. Tiger predation accounted for 17% of the total mortality, poaching for 20%, intraspecific fighting for 7% and drowning in the monsoon floods for 4%.

South-East Asia 15th August to 20th October

I visited Thailand, West Malaysia, Sumatra and Java. By asking people and making field trips I attempted to get an idea of the present distribution of Dicerorhinus sumatrensis and Rhinoceros sondaicus, and to compare their behaviour and habitat with that of R. unicornis.

I was helped by Dr. Boonsong Lekagul and Jeffrey McNeely in Thailand, Bangun Hulia, Niko van Strien and Markus Borner in Sumatra, Mohammed Khan, Robert Olivier and Rodney Flynn in

Malaysia and Messrs Widodo and Irijono in Java.

(i) Sumatra 18th August to 16th September

I visited with Dr. C. McDougal three of the four areas where rhinos remain in any numbers - the Gunung Leuser/Langkat Reserve in Aceh, the Torgamba Forest on the northern border of Riau and the Kerinci area in Jambi. Rhinos also occur in the Liwa area of Lampung.

We found evidence of D. sumatrensis only: all hindfoot tracks were less than 25cms wide. Borner in three years has found no evidence of D.s in Sumatra despite a report by Kurt (1971) that considerable numbers exist in the Gunung Leuser.

Our visit to Torgamba produced evidence of a higher population of D.s than had previously been estimated for the area. We were able to go to a region as yet unexplored by Borner and on one day found fresh tracks and feeding signs of three different rhinos. They are very difficult to see in the thick forest. Borner has seen one in three years.

Poaching still continues in the Leuser area - mainly by trapping. Timber concessions and shifting cultivators threaten most of the wildlife areas apart from Leuser. Borner estimates the rhino population of Sumatra to be about 50.

(b) Malaysia 16th September to 7th October

I visited the Taman Negara in Pahang with R. Olivier and the Endau-Rompin area in Johore with R. Flynn who is studying D.s there. D.s also occur in the Selama Ulu (Perak) and Gunseil Durian (Selangor).

We found no tracks in Taman Negara but it is a huge (16000 sq mi) National Park and impossible to thoroughly explore. Olivier, has

on previous field trips, seen well used tracks and fresh feeding sign, wallows and dung and suspects a higher population than the official Game Dept estimate of 5-6.

In Endau-Rompin we found many tracks - all in the 17-21cm range whereas the Sumatran tracks were all in the 21-24cm range. As in Pahang the rhinos live high up away from the rubber and oilpalm estates on the plains. There may be 15-20 R.s in the area. Flynn has recorded 7 different individuals from their tracks passing through his 30 sq. mi. study area. There is one cow-calf pair in the area.

(c) Java 8th-20th October

I spent seven days in the Ujung Kulon Reserve in western Java. This is the last stronghold of the Javan rhino in Java and Schenkel who carried out a census there in August estimated the population at 40-52 individuals including 4 calves still with their mothers.

I found sign of rhino in all parts of the reserve from the mangroves on the east coast to the highland forest in the west. The rhinos move around a lot like R.s and most sign is old. I followed trails unsuccessfully for four days before catching up with two sub-adult R.s. They had been travelling together since the night before with little sign of feeding until they reached a natural clearing in the forest where they had spent the night and circled around feeding on 7 spp of shrubs and trees and one monocot and making wide paths through the vegetation. At 0945hrs I came within 20 yards of them unobserved and in thick cover. They caught my scent and charged towards me blowing out and making a 'Whhee Whhee' noise completely different from any I have heard from rh. They stopped, blew, turned and ran, stopped again,

turned, blow, charged back again, turned and ran, stopped, turned, blow and finally ran off together up a steep hillside. They kept going fast through all kind of obstacles for more than two miles inland using old rhino tracks along ridges and stream beds. I never saw or heard them again.

Below the tall trees of the Ujung Kulon forests there is typically a thick light excluding layer of palms (Arenga spp) which prevent any growth beneath them of shrubs or saplings. In scattered clearings caused by fallen trees, land slips etc young saplings, wild ginger, rotten and salak palms and various shrubs predominate. It is in these clearings that R.s prefers to feed. Large short grass plains artificially cleared and maintained by the Reserve staff attract banteng and wild boar but are not used by the rhinos. This is very unlike the behaviour one would expect from R.u which utilize such short grass areas heavily. An experimental plot has been set up near one of the 'plains' where the palms have been removed and some of the tall trees and the growth of shrubs or saplings encouraged. This plot is now browsed more frequently by rhinos.

There seems to be a controversy in the literature about the habitat preferences of R.s. Börner, working in Sumatra maintaining that they avoid manmade or natural secondary forest in general. Most other authors regard the species as one of the forest margin attracted to manmade secondary growth. I found signs of rhino in thick unaltered forest in Sumatra and also saw signs of feeding in natural clearings^{and} abandoned forestry roads and tracks near present forestry operations. We met one man who had hit one with his lorry while driving at night. There are some

recent cases in Malaysia of D.s coming onto rubber estates and wallowing in pools near human habitation but most individuals are afraid of humans and avoid contact. Flynn finds tracks next his camp every time he returns from a week's absence but never sees a fresh track within two miles when he is there.

D.s are found from sea level to 6000' AMSL. Their preferred foodplants which are mostly typical of secondary growth occur throughout this range but are more abundant at lower altitudes. Lowland animals have been reached more heavily but Torgamba and Sungai Bucu are examples of two lowlying areas where D.s still lives. A wandering animal, it probably travelled up and down over a wide altitudinal range at one time but is now restricted in its movements - in most regions to mountainous country.

Both D.s and R.s feed by bending over or breaking plants with the mouth or by walking over them and browsing from the tops. They move around to make use of sparsely scattered foodplants and on a return visit to an area will feed again on new sprouts from previously bent over saplings. R.u do the same with some species of trees.

R.s commonly make dung piles like those of R.u but I saw none made by D.s and they are more rarely reported in the literature. I found no drag marks like those made by R.u and no-one I spoke to had seen any. In Johore I saw one instance of a D.s having scraped earth backwards with its hindfeet at the side of a path. The paths of both species are generally well used for short sections only. River courses are commonly used as paths in shallow, affluent country. Wallows are often found in river valleys and are usually small - about 10'x8'.

Highland S.E. Asia

In the 19th century all three rhino species occurred as far west as Jalapora in West Bengal and R.u. occurred as far east as northern Burma. Recently, conservation in Burma has suffered because the northern areas are out of the control of the Govt. and the status of the rhinos and other wildlife is unknown. There are probably some of both R.s. and D.s. in the Tennesserim Range on the Thailand border and in Northern Burma. Boonsong found evidence of both species in the Tennesserim Range in 1962.

R.s. has been reported from all the Indo-Chinese countries and it is possible that small populations still exist. The most likely areas are the Cardamom Mts in Cambodia, NV Laos and the Bolovens Plateau region in southern Laos and parts of South Vietnam near Da Lat. There is one recent record - a track - from Chantaburi in S.E. Thailand (McNeely 1974). Villagers on the Thailand - Malaysia border in Ranong and Krabi maintain that both R.s. and D.s. are present there.

D.s. is reported from Cam Ranh in South Vietnam (Groves 1967) but that was a historical report. McNeely found tracks and evidence of three in Thu Kho, Chaiyaphum in Thailand in 1972 and Hoese reports two rhinos of unknown species in S.E. Laos 1975.

It is certain that the war in Indo China has destroyed countless numbers of wildlife. Perhaps if a few areas have been left unharmed enough individuals remain to build up numbers again.

Borneo

D.s. still occurs - mainly in Kalimantan and Sabah in the F.E. but very little is known about their numbers.