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# Reproductive woes spell need for more viable females in Sumatran rhino program

by **Basten Gokkon** on 10 April 2020

- *A captive-breeding program for Sumatran rhinos should focus on trapping fertile females from the wild, scientists say in a new paper.*
- *The study looked at the high prevalence of reproductive diseases among captured female rhinos and determined that those in the wild were also susceptible to these conditions.*
- *The recommendation is markedly different from the Indonesian government's current focus on capturing so-called doomed rhinos — those defined as living alone or in groups too small to sustain natural breeding in the wild.*
- *Even if more fertile females are captured, there's no guarantee that they will go on to produce calves, according to the scientist who pioneered the captive-breeding process for the species.*

JAKARTA — More fertile female Sumatran rhinos should be captured from the wild for breeding programs to save the species, scientists say, citing the prevalence of reproductive problems.

Working specifically to capture healthy, reproductively viable rhinos would be a marked shift from the current conservation policy, which has focused on capturing and trying to breed “doomed” rhinos — those defined as living alone or in groups too small to sustain natural breeding in the wild.

In a [recently published paper](#), researchers analyzed reproductive diseases found in 22 of 32 female Sumatran rhinos (*Dicerorhinus sumatrensis*) captured or poached from various sites in Indonesia and Malaysia between 1984 and 2018.

“Fertility problems have been pervasive in these ‘rescued’ females,” said lead author Nan Schaffer, the founder of SOS Rhino and a veterinary expert on Sumatran rhinos.

The researchers found that uterine cysts and tumors were the most frequently documented reproductive problems. They also identified other reproductive failures

such as early embryo deaths and an enlarged uterus. While some of the observed rhinos had symptoms of a single reproductive problem, others were found to show a mix of related diseases. None of the captive animals showed signs of infections in their reproductive organs.

The authors noted that reproductive problems prevalent in small, isolated, inbred populations of captive rhinos were also evident in animals in the wild. They cited findings of reproductive problems observed immediately in female rhinos that were captured from the wild, notably rhinos captured from doomed populations from 2001 onward.

“A high rate of infertility is inherent in small inbred populations with isolated females, and it continues to interfere with the growth of captive and wild populations,” Schaffer wrote.

Indonesia is the last refuge for the Sumatran rhino. Seven captive individuals live in a sanctuary in Sumatra’s Way Kambas National Park, and a lone female is kept at the Kelian sanctuary in Indonesian Borneo. The wild population is estimated to be no more than 80 individuals living in small, fragmented habitats in Sumatra and Borneo.

The researchers suggest that, among the wild population, “only a small number of reproductively viable animals may be left.”

“In light of these facts, building a new productive captive population by starting immediately with capturing viable, productive animals from the onset and optimizing their production is essential,” the paper says.



A female Sumatran rhino with her calf in Way Kambas, Sumatra, Indonesia. Image by Rhett A. Butler/Mongabay.

The researchers said that, based on analysis of camera-trap photos, the rhino populations with known breeding females are located in Way Kambas, in southern Sumatra, and in the Leuser ecosystem in northern Sumatra.

“They are the first focus areas for capturing viable females, before they, too, are lost,” the researchers wrote.

The wild rhino population in Way Kambas is estimated at 30 individuals. Conservation experts and officials are already planning to [capture some of them](#) to add to the seven rhinos held in the park’s captive-breeding sanctuary. The Indonesian government is also working to [build another sanctuary](#) for the species in the Leuser ecosystem.

However, Indonesian officials have taken a cautious approach to the program, citing the potential risks from removing fertile animals from the wild — namely, compromising the viability of the few populations that are still breeding naturally, and the hazards of trapping and translocating the captured animals.

“For the capture effort in Way Kambas, [we] must be sure about the population number and sex ratio of the remaining wild rhinos so that the sex ratio in the wild

won't be disrupted," Indra Exploitasia, the environment ministry's director for biodiversity conservation director, told Mongabay.

While many rhino experts support capturing fertile female rhinos for the managed breeding program in captivity, some have called for a more nuanced approach to the strategy.

"My reason for not being 'all in' on the idea of capturing *all* the Sumatran rhinos is that even with the detailed knowledge we now have on the reproductive physiology of this species and the science-based template we have for breeding them that has proven successful repeatedly, the species remains extremely difficult to breed in managed programs because individual rhino behavior is complex and difficult for humans to understand," said Terri Roth, the head of CREW, a research facility at Cincinnati Zoo and the scientist who pioneered the process of breeding the species in captivity.

The Indonesian experts at the Way Kambas sanctuary have experience in the process, having overseen the successful births of two calves there, but also say it is a [particularly challenging task](#) and that much about the animal remains a mystery.

"A team with less experience will find the task even more daunting," Roth said.

"However, I certainly support the plan to capture one or two females that have been seen with calves within the past five years, but only if we are sure they will go to a team that knows how to breed this species," she added.

"We can't capture another fertile animal and then fail to breed her for ten years as we have done in the past. If that is going to happen, her odds of contributing to her species are better if left in the forests," Roth said.



Pahu was captured from a forest in Indonesian Borneo by conservationists for a captive-breeding program aimed at staving off the extinction of the critically endangered species. Image courtesy of Sugeng Hendratmo/Sumatran Rhino Rescue.

The Indonesian government's capture program has long targeted so-called doomed animals in populations too small to survive in the long term. Such populations are found in Sumatra's Aceh province and Bukit Barisan Selatan National Park, and in East Kalimantan province in Borneo.

"All of the doomed rhinos will be rescued and placed in the sanctuaries in the three regions," Indra said.

Roth agreed that there was a need to rescue these rhinos, given that there are fewer than 80 Sumatran rhinos left in the world.

"The isolated rhinos that are slated for capture may not be fertile, but if the decline of these populations was rapid and calves were still being born 5-8 years ago, then

there is a chance a female rhino captured from such populations will still be fertile,” she said.

“You just hate to give up on any of them when there are so few in the world.”

### Citation:

- Schaffer, N. E., Agil, M., & Zainuddin, Z. Z. (2020). Ramifications of reproductive diseases on the recovery of the Sumatran Rhinoceros *Dicerorhinus sumatrensis* (Mammalia: Perissodactyla: Rhinocerotidae). *Journal of Threatened Taxa*, 12(3), 15279-15288. <https://doi.org/10.11609/jott.5390.12.3.15279-15288>
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- John Brian Payne  
12 April, 2020

Did no-one in position of authority or advisory capacity (all USA based, BTW) not read and understand what Dr Schaffer is saying here? And that she is the pioneering expert on Sumatran rhino reproductive pathology, and that she has been saying this since year 2000? I fear that, by the apparent decision to do nothing, extinction of this ancient genus is now confirmed by Government of Indonesia and Terri Roth (and by implication the Nat Geo convened Sumatran Rhino Rescue initiative). The only breeding Sumatran rhinos left now are wild, in a small part of one area of Aceh. Sumatran rhinos were left in situ in Taman Negara, Belum, Endau-Rompin, Tabin, Danum, Kerinci-Seblat and Bukit Barisan Selatan, over the past 40 years. Result : every single population extinct and, in summary, Allee effect is the reason. After years of fabricated data to keep managers and donors happy, the Way Kambas wild rhinos will soon be gone too. The Kalimantan rhinos are needed, but only good to supply their living genomes as part of the necessary (but still non-existent) single programme, whereby every individual Sumatran rhino will contribute its genome to making babies.

Reply

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- GreyCactus  
6 May, 2020

any one done a study on the stress levels of a free animal in captivity?

Reply

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- Torgamba  
19 April, 2020

Pathologies caused by the Allee's effect, well documented in Mongabay's masterly video, and the horns' insatiable quest by poachers, have brought the Sumatran rhinoceros on the verge of extinction and are consuming rapidly the short time available to rescue the last representatives of an exceptional genus. In situ protection has proven insufficient, as a result human intervention has become of the essence. Despite almost every party involved in Sumatran rhinoceros conservation agreed, since a number of years, on the ex situ choice, the program is still in need of an ad hoc executive team and it is sturdily influenced by political and bureaucratic interference, not to mention the financial aspects. Nico van Strien took six years of hard work to survey a core area within Gunung Leuser National Park in the 1970s and found out both numbers and sex ratio of a thriving population. Today a similar task would be looking for needles in a haystack. This scenario is what under present circumstances represents the search for Sumatran rhinos, mostly dispersed in human disturbed areas. A Sumatran rhino, if located, has to be captured and transferred into ex situ safe areas, giving the last individuals a chance of breeding. We owe a chance of life to the last rhinoceros, before cancers as Nan Shaffer has thoroughly and pertinently demonstrated in her 2020' paper and poachers accomplish their task to kill them all.

Reply

- o Torgamba

Torgamba

20 April, 2020

It is the time of taking tangible responsibilities; each party has to decide now, with just a handful of years available to accomplish a mission closer to the impossible. In such a tragic scenario ex situ management has now to play the foremost role, accordingly as many rhinos as possible ought to be captured and moved to modern, new facilities immediately (see my 2019' paper). The time of meetings, surveys and PVAs is over, simply because there is not any of it left. The outcomes are convincing that Way Kambas is the first choice for well planned and organized capture and managed breeding operations. That Park possibly has still few healthy individuals and it is mostly flat, a condition that will favour tracking and captures. There is no reason to indulge, merely because too few are the rhinos at SRS and in Way Kambas, while, determination and promptness are vital. For Way Kambas to become a safe place for Sumatran rhinos it is a reality, but action and new concept facilities are fundamental. Francesco Nardelli

## Reply

- John Brian Payne  
12 April, 2020

I do hope that everyone reading this fine article will watch the short video on Allee effect embedded above. I thought even an average school student could then understand why keeping the last Sumatran rhinos in the forest will be the kiss of death for the genus? Seems many experts cannot understand that.

Frankly, the argumentation that we see here from Drh Indra and Dr Roth were what I heard in 1984 at the IUCN convened meeting to decide how prevent the genus extinction. Caution leading to fudge, leading to failure. Obfuscation, fabricating data and caution have been the hallmark of the disjointed efforts to make more baby Sumatran rhinos over the past 40 years. Now is not the time to be cautious.