

# Environment

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Published: Monday June 2, 2014 MYT 12:00:00 AM

Updated: Monday June 2, 2014 MYT 6:05:19 PM

## Raising hope for baby rhinos

BY LIM CHIA YING

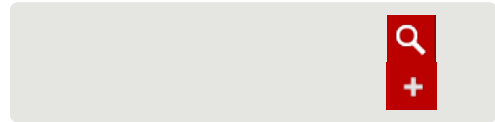


Averting extinction: Iman, trapped in March, is unable to breed naturally owing to tumours in her womb. Her egg cells, however, can be extracted to produce embryos in the lab. —LIM CHIA YING/The Star

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**Last-ditch effort: Advanced reproductive technology offers hope for the Sumatran rhino's survival.**

Lying chest-down in a quiet, dignified manner, Iman slowly shuts her eyes. She's taking a rest, says her caretaker, but cutting a forlorn figure, it's possible that she



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is trying to contain the discomfort from the pain inside her. A bunch of tumours are growing inside the female rhino's womb, causing her to bleed.

Some 20 minutes later, she awakens and inches her way to the front of her enclosure to get her feed of leaves and fruits. She appears to have forgotten her pain, and happily gnaws at her food.

Here at the Borneo Rhino Sanctuary (BRS) located in Tabin Wildlife Reserve near Sabah's east coast town of Lahad Datu, I watch Iman going about her daily routine with a mixture of delight and heartbreak – delight in noting that she continues to eat like a healthy rhino, and heartbreak from the fact that she may never recover from the ailment she has been inflicted with.

The sanctuary is what she calls home now, together with two other rhinos, a male called Tam and a female named Puntung. All were captured from the wild and transferred to the sanctuary where proper care is rendered to ensure their well-being and survival.



Rhinos wallow in the mud to cool off and to obtain vital minerals which help them de-worm and heal wounds. – Yayasan Sime Darby

The Sumatran rhino is critically endangered; some would say they are on the verge of extinction. Less than 100 are believed to exist in Borneo (Sabah in Malaysia and East Kalimantan in Indonesia) and Sumatra.

Since 2009, Yayasan Sime Darby has put in RM11.4mil for operational expenses and running of the BRS programme. The facility was built by the Sabah Wildlife Department while non-governmental organisation Borneo Rhino Alliance (Bora), led by its executive director Datuk Dr John Payne and veterinarian Dr Zainal Zahari Zainuddin, manages the husbandry and breeding efforts.

Much excitement abounded when Iman was captured on March 10 in one of two traps laid out for her in the Danum Valley Conservation Area. Hopes were high that she would conceive and bear babies, but that soon dissipated after she was

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found with eight non-malignant tumours in her reproductive tract. In Puntung, her uterus has cysts, making it impossible for her to become pregnant or sustain an embryo.

Iman is being treated to flush out pus as well as halt blood loss and further enlargement of her tumours. Payne reckons that her condition is under control, though the tumours can drain her energy.

“It’s unfortunate that female rhinos have a tendency of being infected by tumours and cysts if they do not produce babies once becoming sexually mature,” he says. “In the case of Puntung, it’s likely that she suffered a failed pregnancy in the past while Iman’s condition implies that she had been sick for a long time.

“Both may be young but their reproductive defects mean it’s highly unlikely they can breed naturally. Our best bet now is to harvest their eggs and sperm from our mature bull Tam for in-vitro fertilisation attempts later on. Now is the time for us to keep trying. There’s no giving up on this final salvation with our last batch of Sumatran rhinos.”



Tam, the male Sumatran rhino, gets fed by Borneo Rhino Alliance veterinarian Dr Zainal Zahari Zainuddin, executive director Datuk Dr John Payne and Yayasan Sime Darby CEO Yatela Zainal Abidin. –Yayasan Sime Darby

He says Bora has embarked on advanced reproductive biotechnology in partnership with the Leibniz Institute for Zoo and Wildlife Research (IZW) in Berlin, Germany.

“We are engaging IZW to assist us with lab breeding of the embryos as the institute specialises in reproductive problems of mammals in captivity. On May 9, we had IZW’s Dr Thomas Hildebrandt and his veterinary team in Malaysia to remove two oocytes (immature egg cells) from Iman. They are stored in a buffer solution at rhino body temperature, as the idea is to mature them in the lab.

“I’m cautiously optimistic of mixing the oocytes and sperm, which can be done

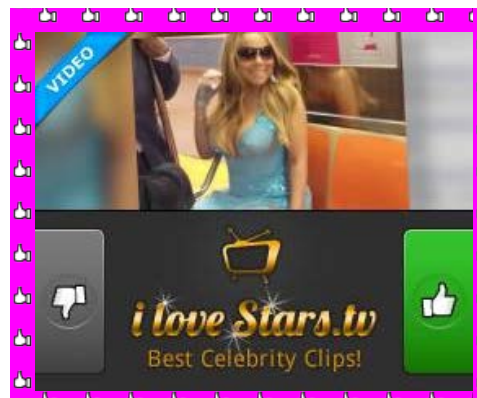
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either through in-vitro fertilisation if there are plenty of sperms, or the intracellular sperm injection technique, which is to inject single, individual sperms into the egg,” says Payne.

IZW has had success with in-vitro fertilisation with the black rhinoceros, though the fetus died eventually. While such fertilisation attempts have yet to be tried on critically endangered species, Payne says the method has been successful with the European bison (numbers at one point were down to 50 before they were captive-bred and saved from extinction in the 1920s and 30s) and the Arabian oryx (numbers rebounded following release of captive-bred animals into the wild from the 60s to 80s.)

“It will be good for the Malaysian government to be made aware that advanced reproductive biotechnology is the way forward to produce baby rhinos to ensure the species’ continuity through generations to come. When a species becomes scarce, the only option is to keep them in captivity and carry out breeding, assisted or otherwise,” says Payne.



Tam, the only male rhino in captivity in Sabah, in his paddock.

He says the technique includes preserving rhino genomes through the freezing of cells.

“We are also looking to synchronise the oestrous cycle (period of sexual receptivity) of Puntung and Iman through use of hormones so that both can produce eggs on a date that can be predicted. This is done to enable more extraction of oocytes when the IZW team return to harvest the second batch.”

Tam will contribute his sperm in more frequent sessions of the electro-ejaculation procedure, regarded as a safe collection of semen samples performed under general anaesthesia.

Payne says if the assisted reproductive attempts succeed, the next step is to seek surrogate rhino mothers for the embryos to grow.

“We have the option of either using two the fertile female rhinos in captivity in Indonesia, or other rhino species available in zoos, which would be the last resort.

“There have been interactions between the Malaysian and Indonesian governments, and we are open to any moves from Indonesia to collaborate. I think it is fair to say that Indonesia, though having few Sumatran rhinos themselves but a lot more than us, will play the key nation role to save the species from extinction,” he says.

The Sumatran Rhino Crisis Summit held in Singapore last April had acknowledged the importance of an alliance and had proposed for governmental collaboration.

Payne says he wishes to clarify the general perception that Sumatran rhinos are dying out from problems related to deforestation, habitat loss and poaching – factors which he says are not true.

“Their deaths have nothing to do too with the oil palm industry, that’s just a misguided (perception). Rather, it is more linked to the biology of the species. It must be said that even during the 1930s, Sumatran rhinos were already very rare,” he says.

Giving a low-down on the animal’s ancient existence, he says the Sumatran rhino, the world’s smallest rhino, is a prehistoric relic dating back 20 million years when they roamed the lowlands. They survived and evolved along the different periods when other species were wiped out, and until about 1,000 years ago, the Sumatran rhino was hunted for its horn after it was widely presumed to contain anti-inflammatory and cooling properties. This depressed the population size from a long time ago, says Payne.

The Sabah government had, last March, decided to trap all remaining wild rhinos rather than leave them in the forest where chances of meeting a mate and breeding are low.

“This is why we will continue looking rigorously for more wild rhinos and the focus is on Danum Valley this year, where we believe there are still a few more out there,” says Payne.

Yayasan Sime Darby chief executive officer Yatela Zainal Abidin says a new facility will be ready in Danum Valley in July to house new rhinos caught there. The RM1.4mil centre is funded by Sabah Forestry while Yayasan contributed RM250,000.

“The scenario seems bleak and desperate, but we are not giving up. We are hopeful that the scientific approach can boost birth of babies and save these rhinos from vanishing,” says Yatela.

Yayasan’s commitment to the rhino project spans six years through 2015, after which it will be reviewed for future extensions.

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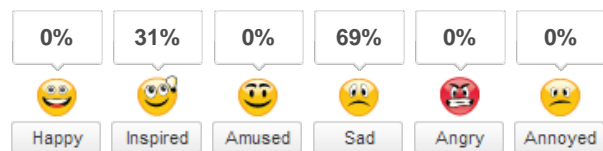
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