

# Horseshoe crab population in Sabah down sharply | Daily Express Newspaper Online, Sabah, Malaysia.

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**Kota Kinabalu:** The horseshoe crab population in Sabah is down sharply due to the loss of mangrove habitats.

It could be due unequal sex ratio – males outnumber the females, thus disrupting mating behaviour.

Field researcher Rolando Robert from Universiti Malaysia Sabah's Borneo Marine Research Institute links the imbalance ratio to human- related activities. He says decades of mangrove clearing and extensive beach reclamation in Kota Kinabalu have brought about these losses.

The *Carcinoscorpius rotundicauda* species is the focus of his research though Malaysia has two other horseshoe crab species ( out of four in the world), the *Tachypleus gigas* and *Tachypleus tridentatus*. He says previous assessments failed to provide an estimate of the population of the horseshoe crabs.

"We have tried locating their foraging and spawning habitats but with no luck. We have also tried the capture-recapture method but found it very difficult to re- capture them. They are elusive and information on their population dynamics is lacking at the moment," Robert says in an e- mail interview.

He is certain of one thing though: their occurrence at two study sites have declined dramatically, as supported by interviews conducted with local residents.

The first study site is Menggatal River where clams and other shellfish are harvested by local communities. The second site, the Kota Kinabalu Wetlands, is a research, education, and conservation centre for mangroves and fisheries is not allowed there.

"Both are breeding sites for horseshoe crabs. Fishermen and wetland authorities informed us that there are mating individuals and juveniles there, indicating that spawning activities have taken place," explains Robert.

He says monitoring work was conducted over four months – two nights during the full moon and new moon of each month, as that is the time when the horseshoe crabs venture into mangrove areas to spawn.

From the sampling, Robert and his research colleague Muhammad Ali Syed Hussein found the imbalance sex ratio. At Kota Kinabalu Wetlands, males outnumber the females by 2.58 to one, while at Menggatal River, the ratio is 5.5 males to one female.

The low number of females is a result of them being trapped in fishing nets since they have larger body sizes than the males.

Tests were also conducted in a controlled environment to determine mating behaviour: between one and four males were put into three separate tanks, with one female. Within a 30- day period, it was observed that mating occur most successfully in the tank which contained an equal number of males and females.

With fewer females, there is less chance of mating, and subsequently loss of new generation.

"The decline or disappearance of horseshoe crabs is almost always linked to habitat loss. In the natural environment, they lack predators and are generalists in terms of feeding preference, relying mostly on shelled animals, polychaete worms, and even detritus for sustenance. Hypothetically, if you take human intervention out of the equation, they will most certainly flourish," says Robert.

Muhammad Ali says what compounds the problem is renewed interest in horseshoe crabs as a delicacy. "While they have always been collected for their eggs, the crabs are now collected commercially ( especially in Peninsular Malaysia) for restaurants and for export to Thailand. Horseshoe crabs take a long time to reach maturity. The loss of breeding adults is highly detrimental to the population."

Robert says the spawning population of horseshoe crabs remains unknown as there are no published records in Sabah so far.

The males can only be identified when they reach sexual maturity ( roughly 10 years). The sexual organs in females develop much earlier but identifying it will require powerful microscopes. "This explains the difficulty in determining the gender ratios of juveniles," says Robert.

He says the presence or absence of horseshoe crabs indicates the health of the habitat, be it the beach, estuary or mangroves.

Horseshoe crabs are valued for a compound in their blood that can be used to detect the presence of bacterial contaminants in drugs and medical apparatus. Two years ago, the Sabah Government provided funds to a university to conduct a population assessment of horseshoe crabs and assess the feasibility of setting up an endotoxin detection kit manufacturing industry.

Muhammad Ali adds that horseshoe crab eggs are an important form of nourishment for shorebirds which arrive in Sabah's coastlines after long- distance migration.

At present, horseshoe crabs are not protected locally or regionally. A global network of horseshoe crab specialists is collecting more data to determine the status of the species in the Indo- Pacific region.

"I believe the best way to conserve horseshoe crabs in Sabah is by protecting of their spawning and feeding habitats. It is important that they are able to reproduce continuously because affected populations may take decades to rebound to their undisturbed state. Captive breeding will not be effective as wild- caught horseshoe crabs do not fare well in a man- made setting," he says.

Robert says despite their menacing appearance, horseshoe crabs are harmless towards humans, and have a lineage that goes back over 400 million years ago, appearing before dinosaurs did, and outliving them.