Saving the last groups of wild Sumatran rhinoceros

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Infrared-triggered camera-trap photograph of wild Sumatran rhinoceros from Gunung Leuser National Park, Indonesia. Sumatran rhinos are very elusive and these pictures are among the first to document them in the wild population there, says lead author Wulan Pusparini. Credit: Leuser International Foundation and Gunung Leuser National Park

Researchers from the University of Massachusetts Amherst and the Wildlife Conservation Society's (WCS) Indonesia Program carried out

an island-wide survey of the last wild population of Sumatran rhinoceros, and now recommend that wildlife conservation managers consolidate the small population, provide strong protection for the animals, determine the percent of breeding females remaining and "recognize the cost of doing nothing."

Lead author Wulan Pusparini, a UMass Amherst environmental conservation doctoral student who also works for the WCS, says the new study provides vital data to support a final attempt to prevent the Sumatran rhino's extinction. She notes, "Sumatran rhinos can still be saved in the wild, but we must secure these protection zones, which would require significant investments in additional law enforcement personnel."

The study for the first time identifies priority forest protection zones "irreplaceable for saving the critically endangered species," the authors say, and identifies small and scattered populations that should be consolidated if they are to become viable. Details appear in the current issue of *PLOS ONE*.

Bambang Dahono Adji, director of biodiversity conservation at the Indonesian Ministry of Environmental and Forestry and chair of the country's Joint Rhino Conservation Secretariat, says, "We welcome these important new results in supporting Indonesia's ongoing endeavors to fully implement its Sumatran Rhinoceros Action Plan."

Using rhino sign data and probabilities of site occupancy collected in three areas where the animals were presumed to live, the researchers developed a habitat model which predicted that rhinos now only occupy 13 percent of the surveyed area. They identified five specific areas that are critical to saving the animals but report only a general overall estimate of occupancy and location to reduce the risk of poaching.

Pusparini says, "With so many unknowns on how to manage Sumatran rhinos, in the wild or captivity, our study definitely shows where we must protect them at source."

Overall, she and colleagues recommend that Indonesia formally establish five "Intensive Protection Zones" identified in this study to ensure zero poaching by "significantly scaling-up law enforcement efforts." They also recommend that new roads planned in two of the protection zones not be built. Further, the researchers urge that all remaining small populations and scattered individuals of healthy rhinos should be consolidated and finally, that governments recognize that the "Sumatran rhino is likely to go extinct if no actions are taken, as happened with the last Javan Rhino in Vietnam in 2010."

In the 200 years since the Sumatran rhinoceros was first described in 1814, its range has contracted from a broad portion of Southeast Asia to three areas on the island of Sumatra and one in Kalimantan, Indonesia, say Pusparini and colleagues. "Assessing population and spatial distribution of this very rare species is challenging because of their elusiveness and very low population number."

Worldwide, the Sumatran rhino population is critically endangered, having decreased from 600 animals in 1985 to less than 100 in 2013. Today estimates put the number between 87 to179, with sub-populations from 2 to 50 rhinos. The demand for rhino horn in traditional Chinese medicine has reduced their numbers; now there are no viable populations outside Sumatra.

WCS says that this study "provides urgently needed information on where the remaining rhinos are distributed." Joe Walston, WCS's vice president for global programs, says, "For the first time we have a clear idea of where the priority rhino's sites are, we have the tools and techniques to protect them, and now must ensure a concerted effort by

all agencies to bring the Sumatran rhino back from the brink of extinction."

Provided by University of Massachusetts Amherst