

Prerequisites to prevent extinction of the genus *Dicerorhinus*

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Dicerorhinus sumatrensis represents an equatorial rainforest form of an ancient and critically endangered mammalian genus. Popular media tend to lump all extant rhino species as a single group. Yet the prevailing situations for African rhinos and *Dicerorhinus* are as different as are those for gorillas and orang-utans. Work to save *Dicerorhinus* has become mired in cognitive bias. Some reasonable assumptions can be made: (1) fewer than 100 *Dicerorhinus* are alive today, (2) at best, only one wild concentration is potentially viable if left in situ, (3) the key threat is extreme Allee effect, rather than poaching or habitat loss, (4) the genus will drift to total extinction in the absence of a single program with the goal to boost rhino births. Relevant to a single program are the following facts: (1) captive husbandry of *Dicerorhinus* has advanced far beyond the disasters that occurred from 1980s to 2003, (2) *Dicerorhinus* have been bred successfully in captivity, (3) proven methods exist to safely capture and translocate wild *Dicerorhinus*, (4) female reproductive pathology is significant in some areas, (5) apart from keeping rhinos alive, the big need is to bring *Dicerorhinus* gametes together to boost potential for pregnancies, (6) profit motive has led to established systems that produce thousands of embryos annually from three mammalian families, (7) advanced reproductive technology work is underway on the rhino genus *Ceratotherium*. Key elements of the necessary *Dicerorhinus* rescue program are: (1) one meta-population, (2) capture of more rhinos and husbandry in excellent managed facilities, (3) increase births through natural breeding, (4) rapid experimentation and development of in vitro fertilization, embryo transfer and other advanced reproductive technology for *Dicerorhinus*, so that gametes are not wasted and can be transferred easily between facilities. Current constraints that need to be ameliorated in order to launch the necessary program to boost *Dicerorhinus* births include: (1) factions, at and between national, sub-national and institutional levels, which occasionally meet but do not budge from entrenched positions, (2) lack of leadership and support from international nature conservation organizations, (3) national decision-making in Indonesia is centered on a conservative forestry view, rather than a customized species view, (4) worries over lack of funding get in the way of focusing on making necessary policy decisions, (5) information on *Dicerorhinus* available in the media consists of misleading incidents and anecdotes that ignore the big picture, (6) unnecessary worries such as funding competition with other projects, “stakeholder” views, and availability of future habitat interfere with sensible debate.

Lessons learned from the decline of the Sumatran rhino (*Dicerorhinus sumatrensis harrissoni*) in Sabah

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Effective conservation of endangered species requires a thorough understanding of the population size, its ecological needs as well as the factors responsible for its decline. Yet, this information is still lacking for a variety of endangered species and the question arises of how to use these limited and uncertain data to