

OVERVIEW OF THE AAZPA SPECIES SURVIVAL PLANS
FOR LARGE CATS AND RHINOS

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As Bill Conway has discussed elsewhere in these Proceedings, there are two biological functions of the SSP Program:

1. Strategic selection of taxa.
2. Management of these taxa as biological populations.

The ensuing papers in this session will consider both of these aspects of the SSP Programs.

Strategic selection of taxa is necessary because the capacity of our captive facilities is currently so limited in relation (1) to the number of species and subspecies in need of sanctuary and (2) to the size of populations that will have to be maintained for genetic viability. These limitations can be well illustrated for both larger felids and rhinos.

For larger felids, the analyses in Table 1 clearly indicates that there are more extant and endangered species and subspecies than our facilities could currently accommodate in viable numbers. In this analysis, the population currently maintained in the ISIS institutions (i.e. the column "ISIS Population") is being used as a crude estimate of the capacity of captive facilities for each category of cat distinguished. Then the number of subspecies that could be accommodated for each category is computed for three population sizes that might be maintained: 100, 250, or 500. Thus, for tigers (*Panthera tigris*) there is estimated to be space and resources for about 450 animals. If equally divided into populations of 100 each, about 4 to 5 subspecies could be sustained. If a population of 250 of each type designated were maintained, then only 2 subspecies could be accommodated.

According to the best advice population genetics can provide, a population of 100 of each taxa designated for an SSP program seems inadequate for long-term preservation. A population of 250 seems much more viable; 500 may ultimately be necessary. (Figure 1). Thus, there will have to be hard decisions as to which taxa we could and should attempt to preserve in captivity.

Concentrating on just lions and tigers, it seems that the capacity of North American zoos may be about 1000 animals. If a population of 250 is necessary for each taxa selected, it would further seem the SSP could viably develop programs for four types of lions and tigers. Two have already been designated and are discussed by the Species Coordinators in papers in this session: Siberian tiger (*Panthera tigris altaica*) and Asian lion (*Panthera leo persica*). Selection of the other two are already suggested: An, or the, African lion (*P. leo*) and a tropical tiger (*P. t. tigris*, *P. t. sumatrae*, an amalgam of all tropical tigers?).

The situation with rhinos is much the same although perhaps not quite as complex because there simply are fewer taxa extant. Rhinos represent one of the most endangered families of vertebrates on our planet and hence are receiving the highest priority for the SSP Program. All five of the extant species are in some degree of endangerment (Table 2). Only the southern subspecies of the white (Ceratotherium simum) seems secure and reports on its status in the wild and in captivity (IUDZG Rhino Symposium) clearly indicate there is no justification for complacency about even this form.

Part of the problem for the rhinos is depicted in Figure 2. Even where rhinos do and will survive in natural habitats, populations may be so small and fragmented as to be genetically unviable. Survival of the rhinos (and many other groups) is almost certainly going to be dependant upon an interactive system of both wild and captive populations (Figure 3). Consequently, the SSP is attempting to develop a strategic approach to the entire family Rhinocerotidae.

What then is the capacity of our facilities for rhinos? Again, predicated estimates of capacity on numbers currently maintained (Table 3), there appears to be captive habitat for approximately 300 rhinos in North America. With expected enlargement of capacity by expansion of facilities in existing zoos and development of cooperative programs with ranches, this number could be increased to 400 or perhaps more. It seems essential that North American zoos should maintain a minimum population of 100 animals for each type of rhino that is designated for an SSP program. (Figure 1). By itself, a population of this size will not be sufficient to preserve a taxa of rhino in captivity indefinitely. However, it is presumed that other regional programs like the SSP will develop in Europe and elsewhere to maintain populations of similar size. These captive populations together with the wild remnants can then be managed interactively for preservation of the rhinos.

Within these constraints, the SSP has designated four taxa of rhinos for programs: Indian (Rhinoceros unicornis); black (Diceros bicornis); white (Ceratotherium simum); and Sumatran (Dicerorhinus sumatrensis). An important consideration in these selections has been to include a representative of each of the four genera of rhinos in an endeavor to preserve some of the ecological and phylogenetic diversity of the family.

The programs for Indian and black rhino seem well justified by all SSP criteria. White rhinos have been included for several reasons.

1. Because they are presently the most populous species in captivity, a coordinated strategy cannot be developed without considering them.
2. The species does represent a unique form of rhino.
3. Its status, even as represented by the southern subspecies, is not secure in either the wild or captivity.
4. There is desperate need for captive efforts to assist in attempt to preserve the northern subspecies (C. s. cottoni) which, according to research by Ollie Ryder and colleagues at the San Diego Zoo, may be more different from C. s. simum than formerly believed.

The SSP program for the Sumatran or more properly Asian two-horned rhino is more ambitious. Presently, there are no specimens of this form in captivity. In the wild, there are three modest populations (one each in Sumatra, Sabah, and West Malaysia) that perhaps can be preserved in situ. However, there are an equal number of animals fragmentally distributed over the rest of the species range in remnants of one to five animals. These fragments have little or not prospect for survival biologically or politically. Consequently, the SSP has designated this species in order to explore formally the possibility that these remnants could be collected for a captive population and program. This project would be a formidable undertaking for the SSP but may be vital if the Sumatran rhino is to survive.

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