Mr. Grenville Lucas
Chairman SSC
The Herbarium
Royal Botanic Gardens
Kew, Richmond
Sureey TW9 3AE
ENGLAND

20 december 1984

Dear Gren,

I have read with great interest the SSC reports on the agreements reached at Singapore for conservation of the Sumatran rhino, and on the contingent endorsement of them by IUCN's Species Survival Commission at Madrid.

I agree that the proposed collaborative programme may very well prove to be a pioneering model in the effort to conserve biological diversity. I am pleased, therefore, to express also my endorsement of the Singapore Proposals on behalf of IUCN, contingent on future actions continuing to be in accord with both the spirit and letter of the agreements.

Yours sincerely,

[illegible]

Kenton R. Miller
Director General

M E M O R A N D U M

To: Kenton R. Miller, Director General/IUCN

From: Robert F. Scott, Executive Officer, Species Survival Commission

Copies: See Distribution

Date: 19 December 1984

Subject: Sumatran Rhino Conservation - SSC Endorsement of Singapore Proposals

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In its Madrid meeting of 1 November 1984, the Steering Committee of the Species Survival Commission (SSC) considered the reports of the ad hoc meeting on Sumatran rhino conservation held in Singapore on 3 and 4 October 1984. On behalf of SSC Chairman, Gren Lucas, I am pleased to report that, subject to the caveats described below, the SSC has accepted and endorses the unanimous findings and recommendations of the meeting (attached herewith as Annex 1, and referred to henceforth as "the Singapore Proposals"). A copy of this memorandum is being sent to the CITES Secretariat and the appropriate CITES Authorities in Indonesia, Malaysia, the UK and the USA, as well as to the other interested parties.

The purpose of the Singapore meeting was to determine whether a consensus and agreement could be reached on an integrated and coordinated approach to Sumatran rhino conservation that would comprehensively accomodate in situ conservation needs as well as captive breeding measures in both the countries of origin and in North America and the U.K. Such an agreement had been established by SSC as a prerequisite before it would consider endorsing any proposals. All of the interested parties had also announced their wish that any proposal going forward would do so only with the endorsement of SSC/IUCN.

The Singapore meeting was convened at the request of SSC by Dr. U. Seal, chairman of SSC's Captive Breeding Specialist Group. The 20 invited participants represented the Governments of Indonesia and Malaysia (including Sabah) as well as the American Association of Zoological Parks and Aquariums (AAZPA) in North America, and the Howletts and Port Lympne Foundation in the U.K., together with the Chairman of the SSC Asian Rhino Specialist Group and other SSC/IUCN representatives.

The meeting was highly successful, largely due to the exceptionally constructive efforts of each of the participants, even though they may initially have differed on points of both substance and interpretation.

It was also noteworthy and may very well serve as a model in another sense; this may have been the first time that such an integrated, comprehensive action approach has been taken in seeking to meet the conservation needs of a species. Factors considered included: taxonomy, genetic diversity and biology of the animal; ecology, status and dynamics of rhino populations; advances in technology and the role of captive breeding; translocations and reintroductions; intensive management options in the field; and the adequacy of both protected area systems and the management of individual protected areas. The proposals not only reflect all of the above considerations but provide for both actors and actions to cope with this broad array of concerns.

In endorsing the Singapore Proposals, SSC was convinced that the planned actions would, first and foremost, act to perpetuate both the species and the genetic diversity it represents as a component of natural ecosystems. It was also recognized that, in addition to a genuine altruistic concern for the future of a unique threatened species, the motivations of participants included a variety of self interests. This was viewed as a strength rather than a weakness of the proposals, but SSC's endorsement is contingent on the actions taken continuing to be demonstrably in the best interests of long term Sumatran rhino conservation.

The Singapore Proposals endorsed by SSC may be summarized as follows:

1. The primary goal is long term survival of the Sumatran rhino as a species and as a component of natural ecosystems.

2. A comprehensive masterplan for conservation of the species will be developed, which will be collaborative and multinational in nature and which will identify and integrate all of the actions necessary to achieve the primary goal.

3. Development and oversight of the masterplan will be the responsibility of a full-time, paid "coordinator" with the advice and participation of the SSC Asian Rhino Specialist Group and an advisory board composed of representatives of the interested parties. IUCN is able to hire the coordinator on a consultancy contract with funds provided by the parties, and with terms of reference agreeable to the parties. Implementation of various segments of the masterplan will be accomplished by various of the parties as mutually agreed and specified.

4. The conservation programme will include the following three fundamental activities:

   a) Provide primary support for a program of conservation of the Sumatran rhinoceros as viable populations in sufficiently large areas of protected native habitat.

   b) Develop an educational program to enhance public awareness and support for the Sumatran rhinoceros.

   c) Establish a captive propagation program for the preservation of the genetic diversity of the Sumatran rhinoceros in the countries of origin and in North America and Europe, using animals with no hope of survival in the wild.

The parties are committed to contribute to each of these in each country as mutually agreed, with details subsequently recorded in a bilateral memorandum of understanding or similar document.

5. The following principles and actions are to be observed in the captive propogation programme:

   a) Animals selected for capture in the wild are to be "doomed" individuals or come from "doomed" populations or habitats; that is, those whose future long term viability or contribution to the survival of the species is determined to be unsatisfactory as measured by objective criteria subject to continuing refinement.

b) Currently presumed subspecies stocks will not be mixed, either in captive breeding or in wild translocations, until further work is done on their taxonomy.

c) The zoo communities will provide support and technical assistance in field capture and transfer operations.

d) Bilateral agreements will provide for captive breeding programmes in the countries of origin as well as in the US and UK.

e) Animals sent abroad will be on breeding loan from the countries of origin, or under some similarly equitable ownership agreement of sufficient time span to protect all interests.

f) All animals placed in captivity and their future progeny will be managed cooperatively as part of a "world population" in the light of the primary overall goal of the programme. Decisions will be taken by consultation among the owners and interested parties, with oversight by the coordinator and advisory groups.

g) Bilateral agreements will provide for appropriate support, training and technical assistance in captive breeding in the countries of origin.

In endorsing the above programme, SSC is aware that many complexities must be dealt with during its execution. Except for details spelled out in bilateral agreements, it is general in scope and fundamentally voluntary in nature except for those aspects over which CITES or Governments have some control. Special problems may arise in many different areas.

For this reason, SSC wished it carefully stated that its endorsement was contingent on future actions continuing to be in accord with the spirit as well as the letter of the proposals. However SSC hopes that the exciting feeling of cooperation that emerged from the Singapore meeting will persist, and that the proposals will indeed be successfully carried out as a model effort to preserve the earth's biological diversity.

Attachment

cc Distribution:

Singapore Meeting Participants
CITES Authorities
Secretariat (Lausanne)
USA (Jackowski)
UK (Hepworth)
W.Malaysia (Mhd Khan)
Sabah (Andau)
Indonesia (Rubini)
NCC, UK (Ford)
Dept. of State, US (Furness)
WWF (Kramer)
CMC
CDC
G. Lucas
J. McNeely
A. Fernhout
G. Rabb

J. Payne

American Association of Zoological Parks and Aquariums

EXECUTIVE OFFICE AT OGLEBAY PARK, WHEELING, WV 26003-1698 (304) 242-2160

DATE: 6 December 1984

REPLY TO: Thomas J. Foose, Ph.D.
AAZPA Conservation Coordinator
AAZPA Conservation Office
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(612) 432-9010, Ext. 255

Mohd. Khan b. Momin Khan
Director-General
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Kuala Lumpur, MALAYSIA

Dear Chief:

Congratulations on your appointment as Chairman of the IUCN SSC Asian Rhino Specialist Group. This position will provide you with an exceptional opportunity to advance conservation not only of Sumatran but other species of Asian rhino. If there is any way my office can assist, don't hesitate to contact me.

There is one situation which I want to mention if you are not already aware. Both the AAZPA and Howletts have received information that an animal dealer, G. Van der Brink, has been negotiating to "be trapping some Sumatran rhino soon for the Burmese government for placing in breeding reserves in Burma; if Van der Brink gets this job, he will be paid with rhinos."

Both the AAZPA and Howletts are most concerned that any such activity be consistent with the Singapore agreement and strategy. Hence, we encourage and support you to investigate and assume appropriate action to place this situation in accord with the Singapore strategy and best interests of the species.

Best regards,

Thomas J. Foose, Ph.D.
AAZPA Conservation Coordinator

TJF/slp

cc: G. Lucas, R. Scott, W. Thomas, U. Seal, C. Carr
Participants in Singapore Meeting,
Other members of AAZPA Sumatran Rhino Trust

J. Payne

UNION INTERNATIONALE POUR LA CONSERVATION DE LA NATURE ET DES SES RESSOURCES
INTERNATIONAL UNION FOR CONSERVATION OF NATURE AND NATURAL RESOURCES

28 November 1984

MOHD. KHAN BIN MOMIN KHAN
Director General
Department of Wildlife and National Parks
Peninsular Malaysia

Dear Mohd Khan:

Thank you for your rapid response and comments on the draft minutes of the meeting in Singapore.

It is useful for me to review my understanding of fundamental agreements arrived at during the Singapore meeting as a framework for the following comments

First, all agreed that the long term survival of the Sumatran Rhinoceros as a species is the first priority and the primary concern of all present. Ideally, this would occur primarily in natural habitats.

Second, was the agreement that the management programs would not, at this time, mix animals of the 2 subspecies either in wild or captive breeding programs.

Third was the recognition and clear concern that many of the surviving rhinos are scattered in isolated small groups of a few (less than 10) animals. The fate of these groups and the question of defining a viable group or population were a matter of intense and extended discussion during the 2 days of the meeting. The suggestions of Dr. Schenkel, which you quote, were an important initial part of this discussion which helped focus attention on the need for satisfactory, numerically explicit criteria for a long term (more than 10 generations) "viable" population based upon practical guidelines derived from population genetics and demography.

There was a general agreement that the numbers suggested by N. van Strien (70 animals in 700 sq. km) represented a good estimate of the size and composition of a population necessary for long term viability as a single unit. Knowledge of the approximate habitat area required for a rhino allowed evaluation of the parks and reserves. Six reserves appeared likely to provide adequate scope of habitat.

Thus in Peninsular Malaysia there are 2 reserves of sufficient area to support such viable populations. Since, as you noted, the current number of animals in these areas

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is much smaller, high priority would be placed upon allowing and assisting expansion of the indigenous populations up to the limit of these habitats. The remaining animals outside these areas are all in need of careful review for their likely contribution to the populations that will provide the next generations of Sumatran rhinoceros. These animals might become part of your gene pool reserve program, the captive program at Malacca, or placed in sections of the 2 reserves that are not occupied by rhinos at present. The effort is to retain as much genetic diversity as possible and to protect against the uncertainties of individual habitats (disease, storms, volcanos, flooding, loss of food supplies, further human development).

In Sabah, there appears to be one reserve of sufficient size. According to the reports at the meeting there are a number of animals in scattered isolates whose habitats have a short future and who are vulnerable to poaching. Since these rhinos are of a different subspecies, they are not suitable for translocation to Peninsular Malaysia. They are particularly appropriate for a captive breeding program to provide support for the genetic diversity of this subspecies and for the species.

In this context, management of smaller units will require continuing human input if they are to contribute to the survival of the species. These activities might range from measures to allow population expansion to habitat capacity, protective patrols, return of wandering animals, fencing, protection from predation, supplemental food to maintain higher than normal densities, veterinary care in response to local disease, retrieval of rejected or lost young, exchange of animals between areas to prevent inbreeding, and restocking of newly protected areas areas that have lost their populations. These activities merge almost imperceptibly into captive management and can make use of these skills.

It is my perception that wild life departments world-wide will utilize captive breeding as one more tool for management of endangered species for survival. Indeed, they have available resources of land and people far greater than those available in zoos. This strategy simply has not been a traditional part of our training as wildlife biologists. However, as this strategy is developed by each country, it is to the benefit of the many endangered species to utilize the protected and intensive resources and experience some groups of zoos have to offer as an additional and all too frequently the only means of ensuring species survival.

Now to address the 3 criteria suggested by Dr. Schenkel as listed in your letter.

The first criterion requires definition of the size breeding group, the size of population that might be sustained in that habitat, and the likely future of that habitat patch. If it is to be retained as a natural unit then it would need to be included in a masterplan for management in relation to the other populations as a reservoir of genetic material for scheduled exchange with other populations. Groups of 10 to 25 breeding animals might be suitable as a beginning, for evaluation as a small breeding group, with recognition that they are not long-term viable units unless carefully managed as part of a larger population. Smaller units, within habitats that will not allow expansion of numbers to 25 or more animals, are at very high risk of extinction even if human encroachment is not a concern.

The second and third criteria can be evaluated in light of the above explicit criteria for a small breeding group. Thus evidence for breeding in a population of 2 - 9 animals is simply not adequate to reject the need for intense management, possible removal, or possible use for a captive breeding program. This is especially true if the size of the habitat is not adequate for expansion of the population and if the likely future of the habitat has not been secured. The same concerns apply to criterion 3. The population by definition has survived for a long time if it is present. Our concern is projections for its future based upon population biology and concern for survival of the species. Thus a population of fewer than 10 animals in a limited habitat, which is not likely to be expanded, has no realistic future as participants in the future of the species if it is not made a part of the active management plan. They become wasted genetic and demographic potential.

The use of translocation is a legitimate option that needs careful application and monitoring. Again, small populations (< 10 animals in a small area) have little to gain from the addition of another animal unless it is contemplated to manage them as a high density population. Also it will be highly desirable to follow transplanted animals with radiotelemetry since much past experience indicates that transplanted animals frequently have poor survival and do not incorporate readily into the social structure of an indigenous population. They are then simply wasted in terms of species survival.

Precise formulation of these criteria and their application to each individual case are clearly the responsibility of the IUCN committee, as you indicated, with the understanding that the ultimate responsibility is in the countries of origin. I see "neutral studies" as implying that the evaluation of each group of animals will be made in terms of its contribution to the future of the species. This would mean evaluation of the field data in relation to criteria derived from population biology (population genetics and demography) to provide the biological basis for judgement. It may then be necessary to modify that judgement for historical, political, social, emotional, or economic reasons. However, this would represent an explicit choice or trade-off not then to be justified as biologically sound.

Perhaps formal Decision Analysis might be used for incorporation of biological and other considerations in the evaluations of the IUCN committee as means of achieving objective formulation of the decision making process. Decision analysis provides a set of procedures for incorporating into the decision making process available quantitative data, costs, and judgements of involved parties concerning consequences of alternative actions. It is useful when the precise consequences of possible alternatives are unknown, when there are conflicting consequences, and when decisions are complex or involve many uncertainties. It has been widely used in business and is just beginning to be applied to complex conservation and wildlife issues.

My apologies for the length of this discussion, but as you know, my interests rest in the use of all knowledge and capabilities available to us for conservation of species. It is difficult to be brief when we have so few opportunities for conversations. I am sending under separate cover 3 recent books which have been of great value to me in developing and applying the ideas of population biology to practical problems of managing small wild and captive populations of endangered species. They may serve as indication of some of the biology that has shaped my thinking on these problems.

I have a tremendous respect for the scope and success of your responsibilities for wildlife in Malaysia and look forward to further exchanges as we try to work through a complex set of new relationships.

I would suggest that your letter and this commentary be appended to the minutes to provide full detail. The summary sheet might be modified to indicate that formulation of numerically explicit biological criteria for evaluation of individual populations will be a necessary part of the masterplan preparation and responsibility of the IUCN committee. (Incidentally, I did not receive in my envelope from you a copy of the suggested changes to the summary mentioned in your letter). I have included a suggested modification.

My best wishes and congratulations to you as new Chairman of the Asian Rhino Specialist Group.

With best personal wishes,

U. S. Seal, Chairman
Captive Breeding Specialist Group, IUCN/SSC
V A Medical Center
54th St. & 48th Ave. South
Minneapolis, MN 55417 USA

cc: Participants in Singapore meeting.

SUGGESTED MODIFICATION TO SUMMARY
(To be inserted as paragraph #5)

Criteria for evaluation and management of all known populations or groups of Sumatran rhinos will be developed by the IUCN Oversight Committee as part of its masterplan. These criteria will be based upon the attempt to insure that all animals will contribute to the genetic diversity and continued survival of the species. Primary emphasis will be placed on principles of conservation biology and will consider such factors as population size and composition, habitat size and suitability, likely future of the habitat and the security of animals. Options may include active "in situ" or "ex situ" management.

UNION INTERNATIONALE POUR LA CONSERVATION DE LA NATURE ET DES SES RESSOURCES
INTERNATIONAL UNION FOR CONSERVATION OF NATURE AND NATURAL RESOURCES

12 October 1984

To: Participants in ad hoc Sumatran Rhinoceros Meeting convened 3-4 October 1984 by the SSC/IUCN in Singapore.

Subject: Draft minutes and supporting documents.

The enclosed draft mminutes are for your review and revision. If you do have changes please communicate to me by 15 November or I will assume you have no changes.

I have forwarded a copy to Robert Scott and Gren Lucas for their information and to assist in the endorsement process of the IUCN.

My apologies for the impersonal form of this memo but this format is faster.

My best regards and thanks to each of you.

U. S. Seal
Chairman, Captive Breeding Specialist Group IUCN/SSC
V A Medical Center
54th St. & 48th Ave. South
Minneapolis, Minnesota 55417
USA

UNION INTERNATIONALE POUR LA CONSERVATION DE LA NATURE ET DES SES RESSOURCES
INTERNATIONAL UNION FOR CONSERVATION OF NATURE AND NATURAL RESOURCES

AD HOC SUMATRAN RHINO MEETING

SINGAPORE 3 & 4 OCTOBER 1984
SUMMARY REPORT

The meeting was convened at the request of the SSC/IUCN, by U.S.Seal Chairman of the Captive Breeding Specialist Group, for the purpose of resolving issues concerning strategies for the conservation of the Sumatran Rhinoceros in its native habitat and to consider proposals for removal of animals for establishment of a captive breeding program. Invited participants included representatives of the wildlife departments of West Malaysia, Sabah, and Indonesia; the Asian Rhino Specialist Group; and representatives of Howlett's and of the AAZPA Sumatran Rhino Trust who have made proposals for captive breeding programs. The meeting was chaired and minutes prepared by U.S.Seal. Consensus was reached on all of the major points contained in this summary report.

OUTLINE SUMMARY

(1) The fundamental tenets of a conservation program for the Sumatran Rhinoceros include: (A) Primary support for a program of conservation of the Sumatran rhinoceros as viable populations in sufficiently large areas of protected native habitat. (B) Develop an educational program to enhance public awareness and support for the Sumatran rhinoceros, and (C) Establish a captive propagation program for the preservation of the genetic diversity of the Sumatran rhinoceros in the countries of origin and in North America and Europe using animals with no hope of survival in the wild.

(3) Current situation of the Sumatran rhinoceros in the countries of origin was summarized in detail by members of the game departments. Further information was provided by N. van Strien.

(4) A concept of "viable population" emerged in terms of (A) number of breeding males and females in the population [50 for short-term up to 500 for long-term survival], (B) starting numbers in the population, (C) can expansion of numbers occur?, (D) available area with carrying capacity approximated at 1 Sumatran rhinoceros per 1000 hectares. Thus a minimum of 700 sq km or 70,000 hectares is necessary for a viable population of 70 animals including adults and young. Six reserves were identified which meet this requirement.

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(5) There are 3 nominate subspecies of the Sumatran rhinoceros. It was agreed that any captive breeding or translocation program should not mix these subspecies until further work was done on their taxonomy.

(6) Proposals were presented by Dr. T. Foose (Conservation Coordinator of the AAZPA) and representatives of the AAZPA Sumatran Rhino Trust and by J. Aspinall and F. Nardelli of Howlett's, UK. These presentations served as the basis for detailed discussions between (1) the AAZPA and the Malaysian and Sabah game department officials and (2) Howlett's and the Indonesia game department officials. Copies of the joint proposals are attached. These were were reviewed in detail and approved by the full committee before the final formulation presented here.

(7) The need for an oversight and coordination structure was stressed many times. Dr. van Bree suggested a foundation structure which would have as members of its board representatives from the Malaysian and Indonesian Game Departments, from the AAZPA and Howlett's, and from the SSC Asian Rhino SG. Suggested terms of reference are given below. A coordinator would need to be hired who would be responsible for construction of a masterplan for conservation of the Sumatran rhinoceros which would include captive propagation and selection of animals from the wild for this purpose.

(8) It is intended that this summary, the attached documents, and the detailed minutes to follow would provide the necessary information to obtain SSC/IUCN approval and endorsement of the captive propagation project as part of a conservation plan.

(9) It was agreed by the committee that U.S. Seal would serve as temporary coordinator of the group during this interim phase until a formal organization is created. He will be the contact person for R. Scott and the representatives of the various parties involved.

SUMATRAN RHINOCEROS CONSERVATION FOUNDATION

Terms of Reference

Coordinate and oversee the implementation of a multinational collaborative comprehensive conservation masterplan for the Sumatran Rhinoceros which includes (1) conservation and protection of the species in viable populations in its native habitat, (2) education and enhancement of public interest in the species, and (3) the establishment of a captive propagation program as a means of preserving the genetic diversity of the species.

PROPOSAL FOR A COOPERATIVE PROJECT

BETWEEN MALAYSIA AND THE AAZPA SUMATRAN RHINO TRUST

FOR CONSERVATION OF THE SUMATRAN RHINO

As part of a global masterplan for conservation of the Sumatran rhino, the Wildlife Departments of West Malaysia and Sabah and the AAZPA Sumatran Rhino Trust propose a cooperative project that will incorporate attempts at both (1) improved protection of natural populations and habitat and (2) captive propagation through two approaches.

Specifics of the project include:
(1) Technical and financial assistance from AAZPA Sumatran Rhino Trust to enable reinforced protection of viable natural populations and sanctuaries. The highest priority in this regard will be accorded to the Silabukan (Tabin) Wildlife Reserve in Sabah.

(2) An attempt to develop the "gene pool" as described in the proposal by Mohd. Khan and Louis Ratnam. Such a gene pool will entail enclosure of a reasonably large area of natural habitat inside a fence. The purpose will be to create a situation where animals can propagate in a more controlled yet still semi-natural environment. The area where the gene pool will be tried will be selected in West Malaysia by the Wildlife Department. One possible location that has been discussed is in the Sungai Dusun area.

(3) Captive propagation programs will be developed in West Malaysia, Sabah, and North America.

(A) Field operations to collect appropriate rhinos will be simultaneously initiated in West Malaysia and Sabah. Tony Parkinson will coordinate and facilitate these efforts.

(B) In West Malaysia, there will be immediate attempts to capture rhinos to establish a breeding nucleus of 3 to 4 females and at least 2 males at the Malacca Zoo. The Wildlife Department will identify which animals are candidates for capture using the criteria for "doomed" animals formulated by the SSC sponsored masterplan.

(C) In Sabah, much initial activity will be devoted to locate animals for capture. Rhinos outside the Silabukan (Tabin) Wildlife Reserve will be considered appropriate candidates. There may be attempts to immediately capture a few known animals believed to be in imminent danger.
Of the animals captured:

(a) the first pair will be placed in a captive facility to be developed with AAZPA Sumatran Rhino Trust assistance at Sepilok.

(b) Subsequent rhinos captured will be moved to captive facilities in North America. These animals will be on breeding loan to the AAZPA zoos.

(D) AAZPA will provide various technical assistance as determined appropriate through consultation with the Malaysia Wildlife officials. Among the items identified so far:

(a) qualified keepers and veterinarians on a continuous basis for several years at the captive facility to be developed at Sepilok.

(b) veterinary support for actual capture operations.

(c) curatorial and veterinary assistance as needed for the captive facility at Malacca.

(d) training both in Malaysia and at appropriate AAZPA zoos for Malaysian curators, keepers, and veterinarians.

(4) All animals placed in captivity will be managed cooperatively as part of a "world population" under coordination of the Sumatran Rhino Advisory and Oversight Panel developed under IUCN SSC auspices.

(5) This proposal can be amended by mutual agreement only of the Malaysian Wildlife Departments and the AAZPA Sumatran Rhino Trust to adjust to changing situations.

HOWLETTS AND INDONESIAN GAME DEPARTMENT PROPOSALS

1) That the IUCN should through a separately constructed panel overlook and advise the whole S.E. Asian Sumatran Rhino enterprise.

2) That Howlett's and Port Lympne Foundation should provide funds to protect the Sumatran Rhino in its wild state within Indonesia. Current thinking of Messers Manan and Widodo is that the Barisan Selatan reserve would best qualify for support though they are taking other areas into consideration.

3) Advice from experts like Raleigh Blouch and others will be taken and a survey made as to which area outside the parks can be considered as 'doomed' and thus eligible for the extrication of Rhino. A strong candidate at the moment is the Gunung Patah area though other areas will also be considered. Howlett's and Port Lympne Foundation will rest on the Indonesian Game Department decisions on the assignation of these areas.

UNION INTERNATIONALE POUR LA CONSERVATION DE LA NATURE ET DES SES RESSOURCES
INTERNATIONAL UNION FOR CONSERVATION OF NATURE AND NATURAL RESOURCES

AGENDA
SSC AD HOC MEETING ON SUMATRAN RHINO
SINGAPORE - 3 & 4 OCTOBER 1984

General Objectives:

(1) Consider critically and comprehensively various possibilities, proposals, and problems for captive propagation of Sumatran rhino.

(2) Attempt to formulate and hopefully finalize an acceptable plan for a captive propagation project as part of an overall strategy for conservation of the Sumatran rhino. Aspects to consider:

  (A) Relation of captive propagation to conservation of wild populations.

  (B) Criteria to identify animals as possible candidates for capture.

  (C) Specifics of number of animals to be captured and of where they are to be placed in captivity (S.E. Asia, North America, United Kingdom).

(3) Develop coordination and oversight through some IUCN SSC committee for implementation of any plan or plans approved.

Presentations

(1) General discussion of fundamental issues in captive propagation as a part of conservation strategies and its application and merits for the Sumatran rhino. (Seal)

(2) The AAZPA proposal. (Foose et al.)

(3) The Howletts initiative. (Nardelli and Aspinall)

(4) Current activities, strategies, and status of SSC Asian Rhino Specialist Group. (Schenkel)

(5) The situation in West Malaysia. (Khan et al.)

(6) The situation in Sabah. (Andau et al.)

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(7) The situation in Indonesia. (Syafii and Widodo)

(8) Comments from other SSC members. (Scott, Van Bree, Van Strien et al.)

(9) Technical aspects of capture. (Parkinson)

(10) General discussion and negotiation of objectives, proposals, strategies, questions.

LIST OF ATTENDEES

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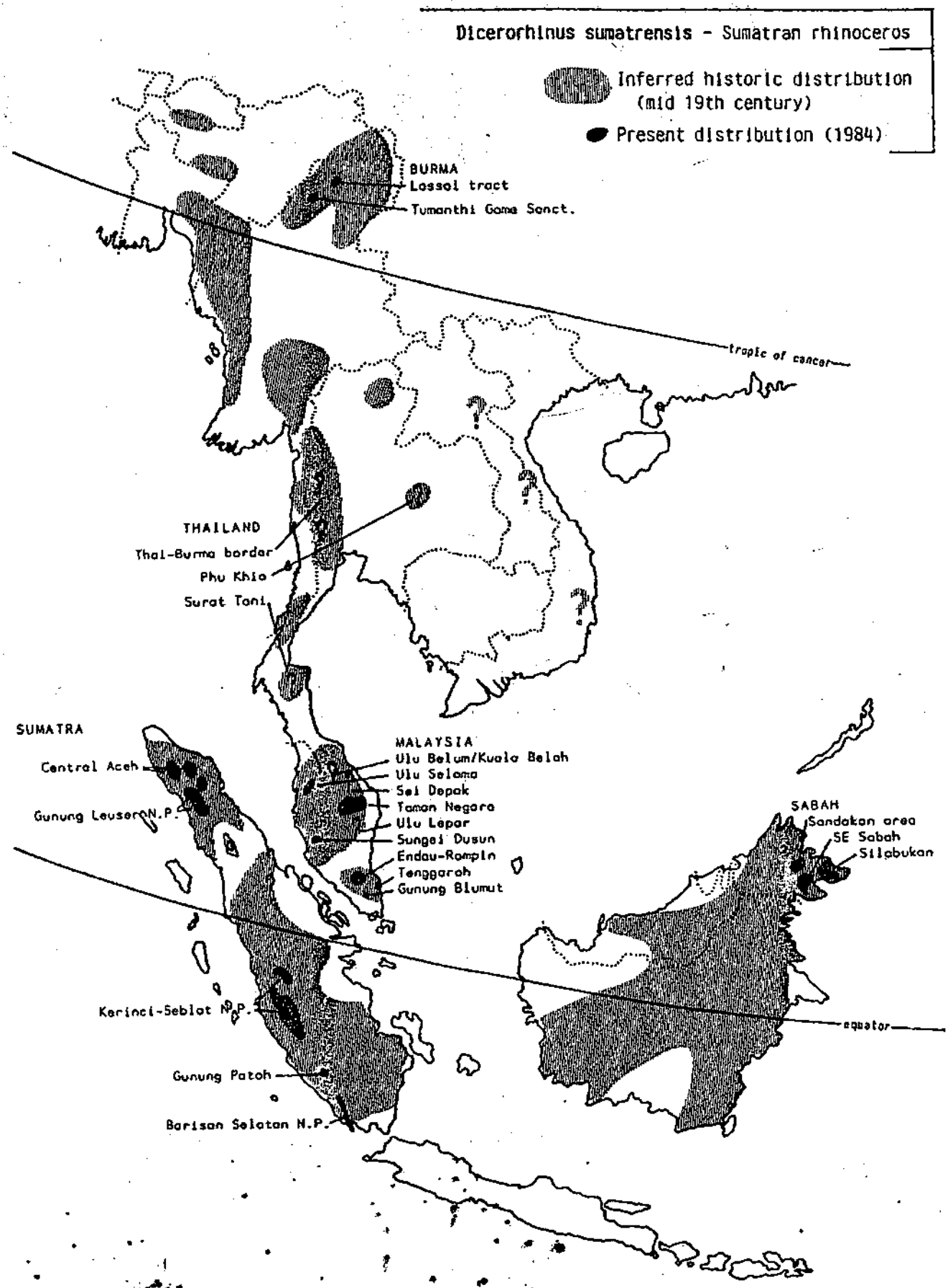
VAN STRIEN MAP OF RHINO DISTRIBUTION



VAN STRIEN SUMMARY OF SUMATRAN RHINO NUMBERS BY AREA

Table N: Summary of the present status of the Sumatran rhino.

Sumatra (Summary of chapter 2)	
Kerinci-Seblat	Probably the largest contiguous population. Inperfectly known, but estimated at between 250 and 500 individuals.
Gunung Leuser	The best known population. Estimated at between 130 and 200.
Barisan Selatan	Rhino survives in at least two parts. Inperfectly known. Estimated at between 25 and 60 individuals.
Gunung Patah	Rhino surviving in unknown numbers
Gunung Abong-abong	Unknown. Rhino surviving in unknown numbers.
Lesten - Lukup	Unknown. Rhino surviving in unknown numbers.
Torgamba	Unknown. Probably a few surviving, but habitat threatened
Berbak	Last report 1976, now almost certainly extinct.
Total Sumatra	400 to 750 rhinos surviving in reserves and an unknown number in two or three other locations.
Borneo (Summary of chapter 3)	
Sarawak	Extinct many years ago.
Kalimantan	Extinct over most of the area. Probably some surviving in the Kalimantan - Sabah border area and scattered remnants here and there. Possibly a larger number on the Kalimantan - Sarawak border.
Sabah	15 to 30 individuals, mainly in the Silabukan area and in southeast Sabah.
Total Kalimantan	One viable population in the east of Sabah and possibly some in the centre of the island. Insignificant remnants elsewhere. Extinct over most of the area.
Malaysia (From Flynn & Abdullah, 1984 and Khairiah Mohd Shariff, 1983. Status and distribution of Sumatran rhinoceros (Dicerorhinus sumatrensis) in Peninsular Malaysia. The journal of wildlife and parks, Kuala Lumpur, 2, 91-102)	
Endau-Rompin	Probably the largest population in Malaysia. Estimated at between 20 and 25, but could very well be more.
Taman Negara	Second largest population. Estimated 8 to 12, but might be more. Inperfectly known.
Sungei Dusun	Small population. 4 to 6 individuals. See also: Mohd Zuber bin Mohd Zain, 1983. A review of the status and approximate range of Sumatran rhinopopulation in Sg. Dusun game reserve and surrounding areas. The journal of wildlife and park 2, 1-35.
Mersing coast (Tenggaroh)	At least two left in an isolated patch of forest. One trapped in 1983 (pers. com. Mohd Khan)
Gunung Belumut	Latest report 1980. Small surviving population. Inperfectly known. Estimated 2 - 3.
Bukit Gebok	Latest report 1980. One or two animals in a small isolated patch of forest, that has since been cleared. Probably extinct now.
Sungei Lepar	Latest report 1979. Unknown, 3 to 5 may survive.
Ulu Selama	Latest report 1983. Unknown, 3 to 5 may survive.
Kuala Balah	Latest report 1977. Unknown, 3 to 4 may survive.
Sungai Depak	Latest report 1976. Unknown, 3 to 5 may survive.
Ulu Belum	Latest report 1972. Unknown, 3 to 5 may survive.
Krau Reserve	Latest report 1963. Unknown, probably extinct now.
Kedah Border	Entirely unknown. A few might survive.
Thailand (From McNeely, J.A. & A. Laurie, 1977. Rhinos in Thailand. Oryx 13(5), 486-489)	
Phu Khio	Latest report 1976. Unknown. McNeely & Laurie found tracks at four different places in four days in the field. This could indicate that more than a few survive.
Khao Soi Dao	Latest report 1974. Species uncertain. Unknown.
Surat Tani province	Unconfirmed reports.
Thai-Burma border	Some may survive (pers. com. Pong Leng-Ee, 1979).
Burma (From Tun Yin, U, 1980. Present status of the Asian two-horned rhinoceros in the socialist republic of the union of Burma. Hornbill, Bombay, 1980(3), 13)	
Shwe-u-daung game sanctuary	Probably extinct
Tumanthi game sanctuary	4 may survive
Lassai tract	6-7 may survive
Indochina (From Rookmaaker, L.C., 1980. The distribution of the rhinoceros in eastern India, Bangladesh, China, and the Indo-chinese region. Zoologischer anzeiger 205(3/4), 253-268)	
	The presence of the Sumatran rhino in the Indochinese region cannot be confirmed and the few animals that might survive (e.g. south Laos) are most likely Rhinoceros sondaicus.

UNION INTERNATIONALE POUR LA CONSERVATION DE LA NATURE ET DES SES RESSOURCES
INTERNATIONAL UNION FOR CONSERVATION OF NATURE AND NATURAL RESOURCES

DRAFT

AD HOC MEETING ON SUMATRAN RHINOCEROS

SINGAPORE 3-4 OCTOBER 1984

MINUTES

The meeting was opened at 9 AM by US Seal the chairman of the Captive Breeding Specialist Group IUCN/SSC.

A list of those in attendance with their addresses is attached. Each person introduced themselves.

The agenda was opened for comment and additions.

SCHENKEL (written summary): Three parties are involved: (1) the governments of Indonesia and Malaysia who "own" Sumatran rhinos. (2) AAZPA who wants to acquire and breed these rhinos. (3) IUCN who is acknowledged by the governments involved as an institution to give competent advice as to the conservation issues. AAZPA takes the standpoint that its projects are serving nature conservation, that they are even essential to save the Species. They expect IUCN/SSC to back this position. This situation calls for a modification of the agenda proposed by the chairman: -1- to point out the ultimate aims of nature conservation. -2- to present the alternative pathways meant to lead to those aims in the case of the sum. rhino. -3- to discuss and eventually evaluate these pathways.

GENERAL: There was concurrence by several people on these points.

VAN BREE: stated that situation or habitat is of primary importance for preservation. Again seconded and amplified by several people.

SCOTT (written summary): On behalf of IUCN, SSC asked U. S. Seal Chairman of its CBSG to organize this meeting. The meeting was also requested by the Chairman of its other concerned group, the Asian Rhino Specialist Group. This was the result of SSC being asked to endorse proposals for captive breeding of Sumatran rhino. If we were not asked to do so, IUCN would eventually be forced to pass judgement on the proposals by request of its members, etc. after reports appeared in the public media, as they invariably do.

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SCOTT contin.
The question of objectives has been raised. IUCN is guided by the World Conservation Strategy, whose 3 objectives are (paraphrasing):
1. To conserve life support systems--ecosystems.
2. To preserve biological and genetic diversity.
3. To foster sustainable use of living resources.

These are not controversial because they are so general. It is in the application to specific situations that controversy arises. Many different points of view are represented in this room. IUCN agrees, individually, with each and all of them. But where conflicting views are in question over the Sumatran rhino, it will be up to this meeting to hammer out a consensus and devise compromises where necessary for the good of the species and in the public interest. We at IUCN consider this a most important ocassion, where precedents may be set for other species and other regions of the world.

The SSC position is that it will not endorse any proposals unless they are part of a coordinated approach to the conservation of the species. That is the challenge to this meeting, and we wish you every success.

IUCN is not here to tell this group what to do; rather, it is here to be told by a group consensus what should be done.

PARKINSON: Seconded Scott on the importance of this meeting on issues of use of captive propagation for preservation of species.

KHAN: Agreed with Scott that IUCN is an important body for guidance on wildlife issues. Association with IUCN has been enlightening and helpful. Concerns about extensive publicity on the Sumatran Rhino issues. Emphasized that the Sumatran Rhino is located in SE Asian countries and that the countries of origin are responsible for the final decisions on the management of this species.

MANAN: Stated that Indonesia uses the World Conservation Strategy as guidance for wildlife conservation and this has a high priority. Noted that in Sumatra there are many problems associated with a country in the process of rapid development. There is also a shortage of data on the population size, distribution, and ecology of the Sumatran rhinoceros. Sanctuaries have been established for the Sumatran rhinoceros but land use problems are pressing. The final responsibility for Sumatran rhinoceros conservation matters rests with the countries of origin.

SCHENKEL (written summary): Addendum to aim 1 as defined by Bob Scott (Preservation of ecosystems): Every species is the result of evolution. This evolutionary process is co-evolution of the species together with all the components forming the ecosystem as a self regulating system. Isolated from the ecosystem the species loses the functional connections which have shaped it and loses its "meaning" and "dignity".

SCHENKEL: Stated that natural ecosystems are self-regulating and can regenerate given the support of man. Genetic and biologic diversity are a product of evolving ecosystems and individual species lose many of their values when extracted from these natural systems. The human species must restrict its exploitation and impact on nature or we have no future ourselves. Agrees that the final responsibility rests in the countries of origin. The role of the IUCN and this committee is to provide advice.

FOOSE: Outlined the commitment of the AAZPA and its member institutions to conservation through management of captive populations. These populations can have a role in reenforcing the natural populations. Natural populations becoming fragmented and diminished in size with result that gene pools are becoming gene puddles - too small for survival. The commitment of the AAZPA to this family of mammals is indicated by the fact there are 4 SSP programs for rhinoceros species. Captive breeding is a necessary resource for conservation.

SEAL: Outlined responsibility of CBSG to bring together captive breeding experts to assist use of these resources for preservation of species. Selection depends on work of other Specialist Groups and their suggestions for priorities and on Red Data Books. Many suggestions have been received. This role for zoos is new and requires collaborative programs which are emerging rapidly.

VAN BREE: Suggested that this group needed to evaluate the need of the Sumatran rhinoceros for such a program based upon evaluation of its current population numbers status in relation to numbers necessary for survival.

ANDAU (written summary): Described situation in Sabah with emphasis that as part of Malaysia the positions of Western Malaysia and Sabah are the same. The status of the Sumatran rhinoceros in Sabah is serious with an estimated 28-38 animals surviving scattered in small groups. Breeding group in one area. Wrote IUCN in 1980 requesting advice and possible use of translocation, but no positive action materialized. Through the help of Mohd. Khan, WWF.

international provided 2 vehicles to assist in the fight against poachers. Currently it is estimated that at least 2/year are poached. Sabah Forest Department submitted a proposal to the government giving 3 options for isolated doomed rhinos: (1) translocation in Sabah, (2) captive project in Sabah, (3) establishment of captive breeding program with utilization of outside expertise and funding. Government may agree to project depending on outcome of this meeting.

THOMAS: As Species Coordinator for proposed AAZPA SSP on Sumatran rhinoceros summarized position of AAZPA. All present have same interest and are proceeding in the same direction for survival of endangered species. Primary concern is for the animal in its environment. Captive breeding not an end in itself but as a means to protect against loss of genetic diversity. The concern is to make use of fragmented remnants for this purpose and therefore no reason to capture animals in larger well protected populations. Concerns about use of translocation and its effectiveness. Noted that zoos actions as consumers and exploiters is past. Zoos do have a responsibility as exhibitors of wildlife and are working to use these resources for conservation of endangered species. Recognize and accept the responsibility of countries of origin for the species but AAZPA wishes to assist countries in their role when species decline in numbers and available habitat suitable for long term survival. All of the captive animals would be managed as a single biological population.

ASPINALL (written summary):
It is essential to comprehend fully the desperate plight of the Sumatran Rhino. This conference must come to the right decisions and advise the two relevant governments of what should be done. We must bear in mind the fate of the Kouprey, everyone's favorite to be the next on the extinction list. There were many conferences held since the animal was discovered in the '30s' attended by experts and zoologists of a similar kind to those we see here today. These meetings over the Kouprey all came to one conclusion that 'something must be done'. Nothing ever was. The Kouprey is now reduced to 10-20 and only a miracle can save it.

Rain forest is disappearing at the rate of 40 hectares a minute (Norman Myers). In Indonesia 400,000 hectares of forest are demolished per annum. More than are planted (Manan and Widodo Pers. Comm.) The population of Indonesia is 160 million and leaping upwards. The overspill from Java 100 million into Sumatra 25 million is inevitable. These awesome facts are recognized and feared by the government in Djakarta. Chain saws are now banned in Indonesia except

under permit but the people believe that even their permissions won't make much difference to forest destruction.

In view of this grim picture it is naturally obvious that the Sumatran Rhino should be given a 'second chance' of survival, or to borrow an expression from Dr Schenkel an 'alternative pathway'. In other words captive breeding.

The Mongolian Wild Horse--The European Bison--The Arabian Oryx--Pere David's deer--Mohrs Gazelle--all these have been saved from extinction by captive breeding alone, and two of these, the Arabian Oryx and the European Bison, have been returned to the wild state. Arrangements are going foreward now to negotiate with the Russians and Mongolians to return some wild horses to the Altair Plains of W. Mongolia (Robert Scott).

I do not hold with the opinion put so forcefully by Dr Schenkel that it would be 'impossible' to return woodland species. The European Bison is entirely a woodland species and I have little doubt that the Sumatran Rhino along with the Bongo and Okapi could be successfully rehabilitated at some future date to its natural habitat.

We believe that the extrication of several pair of Sumatran Rhino from certain 'doomed areas' is vital if we are to give this wonderful species a second chance. Such a course would be extremely difficult thanks to the nature of the terrain but possible with the use of a heavy duty helicopter and experienced animal catchers.

It goes without saying that in the event of such a operation being successful Howletts, Port Lympne, and Djakarta Zoo respectively will cooperate with the AAZPA group of Zoos concerning sex ratios and gene lines. We at H,PL have proved our willingness to cooperate in the past with our large colony of lowland Gorillas (8-16 over at H). We have swapped or loaned no less than six of our Gorillas with other zoos.

SIRIMANNE: Agreed with previous comments and Aspinall, but noted several corrections in numbers concerning population sizes and rate of growth. Remarked that all proposals talk of conserving in natural habitat but none address the specifics of this need. Disagrees with proposals to take the Sumatran rhinoceros out of the countries of origin for breeding and return. Need to preserve Sumatran rhinoceros in countries of origin.

VAN STRIEN: Noted that as soon as animal is removed from its native habitat then it has no special biological link to

its country of origin in terms of captive breeding. The question for captive breeding is political not biological.

RAMONO: Noted that animals do not recognize political boundaries and there is a need to protect the best areas remaining. Move outsiders into protected areas. Study of these animals in wild is difficult and study of captive animals can be an important contribution to their conservation and survival. The number of rhinos has increased from 22 to 57 in 10 years in the Ujung Kulon National Park in Indonesia.

SCHENKEL: Reemphasized 3 points. (1) First choice is to preserve the Sumatran rhinoceros in its native habitat wherever possible. (2) Captive breeding is not a simple tool but has many potential complications. (3) Some species cannot be bred in captivity and used for reintroduction into the wild because of complex behavioral requirements for living in highly diverse environments. Especially true of tropical living forest animals as opposed to grassland or steppe species. Does not believe reintroductions into wild possible for Sumatran rhinoceros and others such as tiger, lion, etc. Believes that logging activity in Sumatran rhinoceros areas compatible if refuges and protection for the animals are provided.

FOOSE (written summary): Reiterated that the major objective of captive propagation was to reinforce wild populations. Noted that AAZPA proposal emphasized captive propagation because this is zoos' primary area of expertise. Other experts (such as the Asian Rhino Specialist Group) have the expertise and responsibility to assist in matters of conservation in countries of origin. Further emphasized there is a need to apply scientific principles to evaluate which areas provide sanctuaries to support populations sufficiently large for survival of the species. In response to skepticism that captive-bred rhinos could ever be successfully returned to the wild, suggested that reintroduction of entire adult animals not only method for providing gene flow and augmentation between captive and wild populations. Possible to use artificial insemination and embryo transfer as a means of increasing genetic diversity.

SCHENKEL (written summary): Re: "Captive propagation will enforce conservation of wild populations". By (a). Reintroduction of animals bred in captivity into natural habitat. (b). Artificial insemination (donor captive bull, receptor wild female).
(a): is easily possible in some mammal species, especially social ungulates of open country--grass eaters--, adapted to great seasonal changes of habitat and to large migrations.

In contrast a solitary forest dweller as the sumatran rhino, which in the wild shows a permanently changing food preference, i.e. has probably to change his food plant species in order to have an balanced diet, is difficult to rehabilitate. In addition, each individual lives in a almost stable home range, into which's resources it has been introduced by its mother. (this however does not exclude individual exploration activity.) (b): In order to achieve artificial insemination so many prerequisites have to be covered that the method is technically out of consideration.

VAN STRIEN: Agrees that reintroduction of Sumatran rhinoceros not feasible rather preservation of wild areas necessary, but not always possible need to allow 5% of the country for wild animals and 95% for humans. Can not give up hope or will fail.

BREAK.

VAN STRIEN: Distributed map and list of areas (attached) with status of Sumatran rhinoceros populations. Reviewed each of the countries, reserves, and areas with known and suspected populations of the Sumatran rhinoceros. Provided his evaluation of status. Noted frequency of Sumatran rhinoceros in small separate patches because of fragmentation of habitat. Recommended: (1) Need to do an area by area analysis for population numbers and habitat availability. (2) Protect Sumatran rhinoceros in areas where numbers are adequate and can protect habitat and against poaching. (3) Small remnants can be defined in terms of size of population, size of current area, and planned future use of area in terms of land use and political intentions. Suggested actions would be to (1) Remote areas - protect and establish reserves, (2) Others - can let vanish or can take out and either translocate (does not favor this option) or put in a captive breeding program.

KHAN (written summary):
In Peninsular Malaysia we are very serious about conservation , particularly of the Sumatran rhinoceros and regard this species in the country as our very special responsibility. A brief look at the Department should serve to prove this. We have a number of teams whose sole responsibility is the protection and monitoring of sumatran rhinoceros populations. The size of these groups vary between three and eighteen rhinos depending upon size of population and area to be covered. One of these areas is the Sungai Dusun Game Reserve where we have a small ranger post. You have seen Jeram the young captive female in the Malacca Zoo. We have been aware of this animal from the time she was a calf and observed with some apprehension when she separated from her mother and took to wandering around.

She had given us some anxious moments when she was found in plantations far from the reserve where we had to mount special and intensive protection measures to see that she was not harmed and was allowed to return to the protected area. The area where she was captured was so far away from the reserve that we were taken by surprise. A sudden call minutes before another important meeting was received one morning from the P office station at Jeram on the Selanger coast saying that a rhino was in the area. I rushed to the place half expecting to find that was a tapir. To my utter shock I found a young female Sumatran rhinoceros tied to an oil palm tree surrounded by nearly 200 people. The animal was down, exhausted and bleeding from the nostrils. Then began the most desperate efforts to relieve the animal of its trauma and remove it to less stressful conditions--beginning with dispersing the crowd. Over the next week we worked practically around the clock to move the animal to Malacca and construct a small holding paddock. We worked without knowing the final outcome of our efforts and you can imagine our relief when Jeram got over her initial trauma and began to settle down to captivity in Malacca..

We are not in agreement with the view that translocation is not a good alternative and we wish to make a plea that this pathway be given a chance. Our experience with elephants may be cited as an example. Previously the method of reducing elephant damage was to drive problem herds and when this failed to begin culling the herds. We realized that this could not go on and that measures had to be adopted that did not involve killing the species. One method adopted with success was the elephant proof electric fence pioneered by the Departments research and today achieving more than 1,000 km of electric fence in the peninsula. Where such a preventive was not possible due to limitations of the habitat we have had to translocate animals which we have done with fair success. Another successful elephant translocation recently involved animals marooned on an island created by the rising waters of the Kenyi Dam in Trengganu. There animals were successfully taken off the island and released into the National Park. A further case of successful translocation involved a few deer that were taken to Kuala Tahan where they bred including with wild deer in the area until today there are more than 100 animals in the Kuala Tahan group. Therefore we are of the opinion that the alternative of translocating isolates and 'non viables' if Sumatran rhino should be kept open.

Our position in regard to the sumatran rhino is amply set out in the position paper circulated to this meeting. The primary efforts and energy available must be aimed at preserving, enhancing and protecting natural populations in natural habitats. Where it becomes necessary to remove

isolated or otherwise non-viables they should primarily be put into what we have loosely referred to as gene pool areas where the animals are kept in some semblance of their natural habitats from which they can be reintroduced into the wild far more easily than from typical zoo conditions. Captive breeding in zoos should be the final alternative only when the preceding two alternatives are not possible.

ANDAU: Summarized situation in Sabah. Noted (1) Limited resources and manpower are available (2) Lack of conservation consciousness in Sabah (3) Land development is necessary. There is one Wildlife Reserve in Sabah with a small breeding population: Tabin W.R. (122,00 ha.) - formerly known as Silabukan. There are existing committments to selective logging until 1986 in the Reserve, but this in itself is not considered a problem to rhino survival. Difficult to protect Sumatran rhinoceros against poachers. What is to be done for doomed animals? There is a lack of expertise and funds. Estimates 10-15 Sumatran rhinoceros will be lost if nothing done.

RAMONO (written summary): Remarks concerning conservation of Sumatran Rhino in Indonesia.

1. In Sumatra there are three National Parks harbouring Sumatran rhino namely: Gunung Leusor (1,100,000ha), Kerinci Seblat (1,400,000 ha) and Bukit Barisan Selatan (350,000 ha formerly Game reserve SS.One). Beside those three there is Gunnung Patah--Rajamendara protection-forest which also harbours some rhinos. Kerinci Seblat is newly declared as a National Park following one of the eight Indonesia Nature Conservation Programs. The National Park status gives better access to protect the rhino as well as its natural habitat.

2. There are various conditions and problems which are not in favour of the case of rhino conservation.
--Demands on land for agriculture. For the island of Sumatra it is decided that a total area of 10 million hectares will be and is on the way to be developed into cultivation in order to promote better food supply to the country. The area of Torgamba and Siak river (the former habitat of Sumatran rhino), at present becomes oil palm plantation and "nucleus small holder" estates.
--The lack of efficient safe guarding of the rhino due to not enough personnel, equipment and funds (not more than 300 personnel for the whole of Sumatra).
--Lack of expertise in this field.
--Evergrowing population of Sumatra due to a better access (mainly trans-Sumatran highway). It is already now 25 million people in Sumatra.

--The continuous demand for rhino horn, blood, etc. for special medicine.

3. Considering that co-evolution is the only natural way of species survival but it is so idealistic at the moment, some alternatives have to be thought about namely:
--Selecting a viable natural ecosystem and put it into a sound protection and into which translocated rhino can be put in (from scattered and non-viable places) to strengthen the natural population viability.
--Welcoming captive breeding method to save the scattered nonviable population originated from areas outside of conservation areas or National Parks, at the same time developing rhino natural habitat (as to candidate of this area the southern end of Bukit Barisan Selatan seems to be a possibility).
--promoting a careful study of captive bred animals in order to help the protection in natural habitat.

4. Considering the lack of expertise, equipment and funds, help in promoting conservation in protecting natural ecosystem is welcomed (Such as WWF project: Big mammal survey).

5. A continuous monitoring has to be conducted both of the protected natural ecosystems and the areas suspected of being occupied by Sumatran rhino.

NARDELLI: Emphasized different futures for animals outside vs inside parks and that Schenkel's ideas apply to animals inside protected areas. Reviewed possible strategies for these animals and useful contributions of captive breeding including: possible use of animals for reintroduction, doubling of numbers in 10 years. Learn more about biology and behavior of species, provide technical exchange useful for management of wild populations, assist in developing financial support for conservation of wild populations. Proposed capture of animals from scattered populations with specific areas named. Would not affect viable wild populations.

FOOSE (written summary): Slide presentation. Much of this material is in the document on the AAZPA Trust plan distributed prior to the meeting. Presented AAZPA proposal with its recommendations for a conservation strategy for the Sumatran rhinoceros. Emphasized the strategy consisted of two main components: (1) concentrate and intensify efforts to conserve the few natural populations and sanctuaries that are large and secure enough to be viable for the long term; (2) employ animals outside these populations and sanctuaries for captive propagation and perhaps careful translocation to reinforce conservation of the species in the wild. Presented

a table summarizing known distribution of Sumatran rhinoceros populations and location of small populations suitable for capture program. Reviewed genetic consequences of small population size in terms of inbreeding and drift and importance of maintaining genetic diversity for survival. Noted that population sizes of less than 50 to 100 animals are not viable in the long term. Thus relatively few areas are suitable for the long term without continuing genetic management. If outliers are not rounded up and used for a captive population then their genes will be lost to the future. Many available. The minimum desirable number for establishing a captive population is 5-10 pairs of breeding animals. Thus the AAZPA proposal recommends the attempted capture of 6 to 12 pairs of rhino for each subspecies that is to be maintained separately in a captive population. The AAZPA proposal also stongly suggests that animals be equally distributed between countries of origin, North America, and Europe - but managed as a single population. Finally, the AAZPA plan advocates continuing IUCN/SSC oversight of the program.

SEAL: Suggested need to provide definition of minimum viable population for this analysis.

LUNCH.

SEAL: Review of consensus on fundamental points given that conservation programs are long-term: (1) Need to identify populations (2) Need to identify areas and animals suitable for removal for captive propagation.

SCHENKEL: Emphasized importance of educating local populations and suggested the possible establishment of networks of interconnected small areas to conserve some of the small populations. People should adapt their behavior to accommodate the animals. Maintain breeding units in country of origin. Considers the genetic diversity discussion as "cosmetic".

VAN STRIEN: Delineation of concept of viable population: (1) Number of breeding males and females in population (50 for short-term, 500 for long-term), (2) Starting numbers in population (3) Can expansion of numbers occur? (4) How much available habitat now and in the future? The area requirement may be estimated at 1 Sumatran rhinoceros/10 sq km or 1 per 1,000 hectares. Thus an area of 700 sq km or 70,000 hectares is needed to support a minimum population of 70 animals (50 breeding animals and their young). Approximately 6 reserve areas meet these requirements.

SCOTT: Initiated a discussion of the term "viable" in terms of the genetic composition of the population. The effects

of inbreeding were noted in terms of possible extinction and bottlenecks. Importance of time scale and the need for genetic diversity if the species is to respond to changes in its environment by natural selection and survival is to occur.

GENERAL: This lead to consideration of the nominate subspecies of Sumatran rhinoceros and how they would need to be handled in a captive breeding program. The consensus was that they should be maintained separately and that any translocations should not mix animals of different subspecies.

Agreement was reached that Van Strien's proposed criteria for long-term survival were suitable guidelines for evaluation of suitability of Sumatran rhinoceros areas and populations as candidates for removal and captive propagation. Translocation as possible use for doomed animals was agreed as primarily suitable only for areas not containing a sufficient start up population. Wherever possible local population should be allowed to expand to fill available protected habitat.

PARKINSON: Noted multiple difficulties of translocation strategy. Much care and follow up necessary for this technique to be successful based on his experience with multiple species transfer from Africa to Philippines.

Several participants mentioned areas in their countries that might be suitable for translocation efforts. KHAN reviewed story on elephants in Malaysia and the use of translocation to conserve these animals. All agreed that this should be explored further in selected cases, but not sufficient to absorb all available animals. Care should be taken to establish size of local population, if any, and to assure protection of introduced animals. Avoid mixing of subspecies.

Additional work needs to be done on subspecies designations of Sumatran rhinoceros but they should be respected for the present in terms of translocation and captive breeding. Van Bree noted that mixed animals could be used for reintroduction to an area devoid of any Sumatran rhinoceros.

BREAK.

PARKINSON: And others commented on experiences with translocation of a number of species. Special note was made of the fact that animals tended to range long distances

unless constrained by barriers until acclimated and this might take several years.

GENERAL: General agreement that letting isolated animals simply die or be poached was not a suitable choice. An effort must be made to use for captive propagation to conserve the genetic diversity and contribute to our knowledge of the species.

ASPINALL: Noted that important not to simply propose another conference - there were 9 conferences on the kouprey to no avail for the species. Easy to lose sight of the species.

PARKINSON: Kouprey researched to death - literally.

SEAL: Noted that it was important to not follow the example of the California Condor and wait to the last possible minute to initiate action. Need to follow a safe-to-fail strategy which allows making many mistakes without losing the species. Establish captive populations now. State of art in the zoo community now that of breeding for captive propagation of species gene pools.

RECONVENED at 1600.

Presentation of proposals for captive breeding.

PARKINSON: A short presentation on translocation experiences to Philippines from Africa. For success, requires long-term commitment (1-4 years).

SCHENKEL (written summary): "Under what conditions might capturing and translocation be successful?"
Of no use: translocation into an area inhabited by a viable population! Possibly useful: Due to harassment by man a local population can become very small. It might be strengthened by careful introduction of additional individuals if combined with establishing efficient protection.

SEAL: Introduced safe-to-fail concept as guide for strategy for conservation of a species. Sufficient animals and resources should be available to allow repeated failures in establishing captive populations or in reintroduction or in managing small reserve programs. The examples of the California Condor, Whooping crane, Black-footed ferret, etc must not be repeated.

RATNAM (written summary):
The discussion on captive breeding so far has tended to consider this possibility from the point of view of captive breeding in typical zoos. As a result it has been proposed for genetic reasons that for success such a plan needs between five to ten pairs of animals and double that number if we wish to consider subspecies as the target for the effort. However the alternative that has been proposed in the Peninsula Malaysia paper referred to loosely as gene pools, does not labor under such a need. The concept calls for the fencing of and intense protection of large areas of more or less natural type habitat in which animals will be released and allowed to form a tight group but with sufficient space in that each individual can remain solitary and establish its own little niche but at the same time the increased contact should allow for enhanced breeding.

This alternative proposal has several advantages over captive breeding in zoos.
(1) Animals in such system can be kept in as natural a habitat situation as possible and as such will be far better candidates for reintroduction into the wild. This is particularly important because as strong opinion has already been expressed at this meeting that Sumatran rhino kept in zoo conditions may not be suitable for such reintroductions. As saving the species means doing so in its natural environment, then our efforts and decisions should be ultimately guided by such considerations. I would like to point out as an example that Sabah, where the situation is particularly critical is an excellent example where the gene pool alternative appears particularly appropriate. The present problem in this rapidly developing state is that the emphasis given to conservation is relatively low. However this situation is certain to change within the decade at the outside and probably within five years. This change will bring about an increase in the numbers of personnel and allow for adequate protection measures of the Sumatran rhino in the natural habitat. If at that time there exits one or more such gene pools these animals can then be used to reestablish wild populations in areas once known to harbor the species.
(2) With this proposal we do not start with a pre set condition as to the number of animals that have to be taken from the wild. Rather we remove only those animals that it becomes necessary to remove. Thus we are maximizing the number of animals left in protectable viable natural populations.
(3) This alternative is also feasible for animals in such pools can also be moved into zoos at a later date should circumstances so dictate.

THOMAS: Made a preliminary statement on the history of captive breeding in zoos and a delineation of its essential

role in the zoos of today. He noted that historically zoos depended upon wild caught animals for exhibit and that breeding was accidental rather than a continuing source of replenishment. He stressed that cooperation between zoos in the breeding of animals is the practise now. Animals from endangered species or in SSP plans are moved on the basis of a propagation plan for the species developed by a committee rather than sale or the decision of the zoo director. Captive management is not a precise science and time is required to learn with each species. We need to start now. Zoos have been successful with the white rhino, black rhino and now the Indian Rhino. There are 7 pregnant of 10 possible female Indian Rhinos in North America. Zoos are seeking to build a relationship of trust with those responsible for conservation of endangered species in the wild.

FOOSE: Showed a copy of the AAZPA SSP Booklet with an offer to distribute copies to those wanting one. He noted this program had now been initiated for 34 species. Stated that gene frequencies can be frozen by genetic management of captive population to preserve the genetic diversity present in the wild population. The need for new blood from the wild depends upon the number of animals in the starting population and then how they are managed. Indicated that interactive management of captive and wild populations would be feasible and probably necessary for many species.

SCHENKEL: Expressed concern about deterioration of animals as they adapt to captivity. Noted that the motivation for protection of its fauna was now high in SE Asia. Raised question of the scope of actually available reproductive technology for use in exotics.

ASPINALL: Agreed with remarks of Thomas. Pressures on animals in wild are severe. Zoos are breeding many species.

SCHENKEL (written summary): Re: "We wait to start captive breeding and investigate until the species has disappeared". We should not wait, but improve protection, make effort to gain understanding and support by the human population and maintain a monitoring system in order to know the trends of development.

Much discussion of possible limitations and applications of artificial insemination and embryo transfer. Possibilities of transfer of genetic material into a wild population without introducing an intact animal described. Seal noted our lack of knowledge on individual species is the limiting factor in application of these methods and suggested that this discussion could continue the next day with a

presentation from the Foose and the AAZPA group on ongoing work in several of their zoos. Agreed.

VAN BREE: Initiated discussion on selection of wild animals for capture and in particular how is a 'small' population to be defined?

FOOSE: Suggested carrying capacity of less than 50 was a criterion for evaluation of an area and its animals, as appropriate candidates to capture for captive propagation or possibly translocation whatever the current estimated population size.

Much discussion.

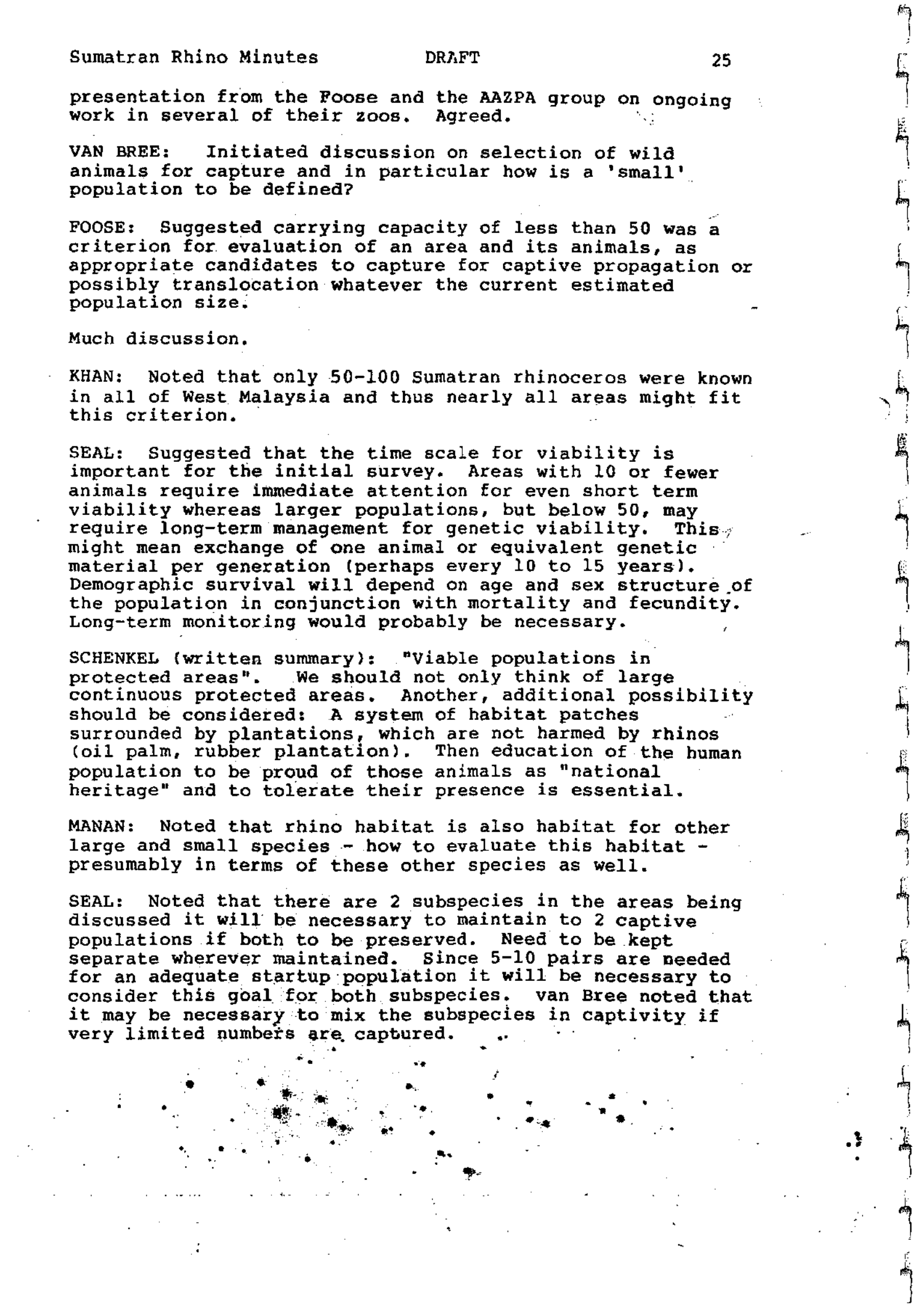
KHAN: Noted that only 50-100 Sumatran rhinoceros were known in all of West Malaysia and thus nearly all areas might fit this criterion.

SEAL: Suggested that the time scale for viability is important for the initial survey. Areas with 10 or fewer animals require immediate attention for even short term viability whereas larger populations, but below 50, may require long-term management for genetic viability. This might mean exchange of one animal or equivalent genetic material per generation (perhaps every 10 to 15 years). Demographic survival will depend on age and sex structure of the population in conjunction with mortality and fecundity. Long-term monitoring would probably be necessary.

SCHENKEL (written summary): "Viable populations in protected areas". We should not only think of large continuous protected areas. Another, additional possibility should be considered: A system of habitat patches surrounded by plantations, which are not harmed by rhinos (oil palm, rubber plantation). Then education of the human population to be proud of those animals as "national heritage" and to tolerate their presence is essential.

MANAN: Noted that rhino habitat is also habitat for other large and small species - how to evaluate this habitat - presumably in terms of these other species as well.

SEAL: Noted that there are 2 subspecies in the areas being discussed it will be necessary to maintain to 2 captive populations if both to be preserved. Need to be kept separate wherever maintained. Since 5-10 pairs are needed for an adequate startup population it will be necessary to consider this goal for both subspecies. van Bree noted that it may be necessary to mix the subspecies in captivity if very limited numbers are captured.



SCHENKEL: Stated that equal number of males and females not needed for a breeding group. Important to protect animals in the wild and use surplus for captive population. Use only 'doomed' animals for captive breeding at this time.

SCHENKEL (written summary): Re: "Genetic diversity and minimum numbers of individuals". When small population is able to breed and multiply, genetic diversity will increase (due to crossing over in meiosis and gene-mutation). Essential: the outside conditions enable the population nucleus to grow. Essential: size of suitable area.

FOOSE: Pointed out that equality of sex ratio was for most efficient and effective genetic management not for convenience of providing pairs to zoos. We cannot readily mimic natural selection process but must strive to maintain genetic diversity through management designed to minimize change in gene frequencies.
RATNAM: Suggested usefulness of 'gene pools' or large fenced areas for maintaining small groups of animals under near natural conditions. These animals would be more suitable for reintroductions since fewer captive changes imposed.

SEAL: Summarized the discussion and suggested that it was time to hear a overview presentation of the proposals for captive propagation from the principal parties.

THOMAS (AAZPA Sumatran Rhinoceros Propagation Trust): 4 major zoos have pooled resources and developed a broad plan for the conservation and captive propagation of the Sumatran rhinoceros with the intent of establishing captive groups within and outside of Malaysia in collaboration with the programs of Malaysia. Will provide assistance with fieldwork with wild populations and with establishment and maintenance of captive breeding groups.

KHAN (Chief, Wildlife Dept. Malaysia): Is concerned that there are not many animals in peninsular Malaysia, if the suggested criteria are followed. Carrying capacity is a problem in a number of areas and the number of animals are few. Captive breeding, if successful animals could be used for translocation and put into zoos also. Requests further information on why it is necessary to establish captive populations inside and outside of Malaysia?

ASPINALL (Howlett's & Lympne): As a results of time spent at Jakarta Zoo and the swapping of people between Jakarta and Howlett's for training and experience, it was suggested that a joint attempt be made to remove doomed Sumatran rhinoceros from the wild and start a captive breeding program. The animals would be jointly owned by Jakarta Zoo

and Howlett's. Some animals would go to both institutions. The operation would be financed by Howlett's. A donation would be made to Indonesia Wildlife Department for protection of preserves. One area with 5 or 6 doomed rhinos has been identified. The blessing of IUCN is needed to proceed. Details of plan later. Feels has good relationship with Indonesia.

MANAN (Indonesia Wildlife Dept.): Described background of Rhino conservation in Indonesia and the effects of continuing population growth and development. There are problem areas outside of the parks they wish to save all of these animals in areas of development. The requisite experience, personnel, and funds are short and would like to cooperate with those who can help the animals. In principle agrees with a captive breeding program for outlying animals. Final goal is conservation of the species.

Closing discussion on importance of focusing conservation efforts on the animal within Malaysia (Sirimanne) with strong emphasis on protecting the animals in the wild (Schenkel) and noting that captive breeding is a short term measure as alternative for animals doomed in the wild.

SCHENKEL (written summary): Re: "At present the rhino habitat is progressively destroyed and captivity the only way to save the species". Once the habitat is destroyed, there is no possibility of reintroduction. Large scale destruction of primary tropical forest is practically irreversible. Conclusion: Every possible effort should be made to preserve ecosystems, in this case self regulating primary forest areas. Development of the human population should not lead to complete destruction of natural ecosystems. We have to put limits to development not only in the interest of nature but also the future of mankind.

SEAL: Closed the day's session with thanks to the participants for their careful and succinct statements. Clear that all have the welfare of the Sumatran rhinoceros as their primary objective. Each person making a statement during the day was requested to provide a written summary or extract to assure full and accurate presentation of their views in the minutes of the meeting. Data are important. The first part of the next days agenda to be a presentation by Foose and the Sumatran rhinoceros Trust concerning details of reproductive technology research in North American zoos and the logic for dispersed captive populations including groups in NA and Europe.

4 OCTOBER 1984 DAY 2 SUMATRAN RHINOCEROS MEETING

SIRIMANNE: Opened the day with a statement expressing his concerns that the previous days discussions were more concerned with animals leaving the country rather than conservation of the Sumatran rhinoceros. A stock exchange. Concerned that animals leaving will never return nor contribute to the conservation of the species. Prefer to see captive born young used for export. Very interested in the expertise and sharing the knowledge available.

FOOSE: Noted in response to Sirimanne that the AAZPA is currently involved in 3 reintroduction projects (Golden Lion Tamarin - Brazil, Bali Myna - Indonesia, and Arabian Oryx - Oman) so return to wild is a goal and reality. Agrees that cooperative management of all Sumatran rhinoceros is necessary with IUCN/SSC oversight.

FOOSE (written summary): Made a presentation with slides describing 4 reasons for dispersed captive populations including some in North America. (1) It is risky to place all animals in one location because of risk of catastrophe [disease, weather, priorities]; (2) Zoos in North America and Europe have experience and expertise in the management and breeding of 3 Rhinoceros species, Indian, White, and Black Rhino. They have active research programs on exotic species in reproductive technology including artificial insemination, embryo transfer, and cryopreservation. Transfer of this technology is possible but will take time; (3) Self-interest of zoos in terms of tangible return on investment within a visible time period; (4) Wider recognition and support for the species by public exposure and education.

The discussion during this presentation included: (1) comments on dietary diversity in the wild vs captivity with the note that all of the species appear to do well on captive diets. FOOSE: Noted that diversification of diet by Sumatran rhino in wild is more to avoid secondary compounds (for the most part absent in captive foods) than to obtain balance of nutrients. Noted Jeram doing well on less diverse diet than in wild. (2) Specific illustrations of superovulation and embryo transfer techniques with a graphic illustration of a Bongo calf from an Eland surrogate mother. Noted application to rapid expansion of a population to carrying capacity possible with this technique if surrogates are available. Similar rhino work is being started. (3) Noted that it is possible to provide indefinite (>50 years) preservation of gametes and possibly embryos with low-temperature techniques.

THOMAS: Elaborated on reasons and realities why self-interest of zoos must be considered.

NARDELLI (written summary): Conservation of the sumatran Rhino in Sumatra--two different situations.
I. Viable populations living in areas protected with a large carrying capacity (e.g. Gunung Leuser-Kerinci-Seblat)
Conservation measures:
--Better supervision and protection by the guards.
--Periodical surveys of areas for census and study of the populations.
II. Not viable populations living in areas unprotected with small carrying capacity (e.g. Gunung Patah-Torgamba).
Conservation measures:
--Captive breeding as an "Holding Operation"
--Translocation into protected, larger areas.

--Captive Breeding give us more guarantees of success (constant supervision, veterinary care etc.) and helpful for the population in the wild.
--As there is lack of knowledge of this species captive breeding could be very beneficial for the wild population. (Study on the behavior, reproduction, diet can be easily carried on in captivity).
--A nucleus of animals (kept under the most natural conditions as possible) can be reintroduced one day where formally existed.
--Financial support from the Western Agencies to the local government for a better enforcement of the protection of the populations in the wild.
--Transfer of modern technology from the western agency to the local ones.

QUESTIONS AND DISCUSSION OF PROPOSALS:

VAN STRIEN: Queried Aspinall concerning time schedule for survey and capture operations. Aspinall indicated they are ready to begin immediately since they have reached agreement with Indonesia wildlife people on the areas to begin. Needs to hire a good trapper.

VAN STRIEN: Suggested that careful survey work will be necessary to evaluate other areas.

SCOTT: Stated that for IUCN to endorse they would need assurance of conservation effort for benefit of the species. IUCN wants no responsibility for management of the species but wants the mechanism in place.

TEA (1030-1055)

RATNAM: Thanked Thomas for frank exposition of position. Appreciates constraints that exist for zoos. The primary goal here is to search for best pathway for conservation of the species. Match other constraints later.

SCHENKEL: As Chairman of the Asian Rhino Specialist Group has primary interest in the whole strategy for conservation of the species. Single aspect such as captive breeding must serve whole. Concerned that doomed individuals be identified by 'unbiased' survey effort. (Aspinall: the choices were made by Indonesians not his bias). Schenkel reemphasized the importance of monitoring the populations, the need for surveys, education, and the need for the surveys to done independently of the parties wanting the animals. The removal of animals from the habitat is only a stop gap since can not put the whole ecosystem in a freezer. Species are a product of evolution and coevolution in a community of organisms. Need to avoid domestication. Question raised concerning imprinting with surrogate parents and possible effects on future species specific behavior. Doomed animals should not be wasted.

SCHENKEL (written summary): Re: "Selection and identification of individuals for capturing".
Criteria for short term decision: "Doomed individuals" i.e. individuals of areas where no evidence of breeding was observed for years. Individuals living in habitat patches which undoubtedly will be destroyed in the nearest future.
Long term decisions: are to be taken on the basis of the development of the local populations which have to be protected and monitored, and of the results of capturing doomed individuals and follow-up measures ie. translocation only under very special premises,, captive breeding either in agreement with proposal by M.Khan, or in accordance to AAZPA proposal in selected zoos. If protection measures result in population growth, individual rhinos might be caught in the wild in order to build up a captive population able to survive under the conditions of human management.

SCHENKEL: Emphasized that any remarks made here are meant as contributions to recommendations and advice from IUCN/SSC to the governments of Indonesia and Malaysia.

Several people reviewed evidence concerning imprinting in birds and mammals reared by surrogates. DOHERTY: Noted that the male Gaur from the Holstein surrogate dam has sired a Gaur calf naturally with a Gaur dam.

VAN BREE: Suggested masterplan for Sumatran rhinoceros is needed to bring together habitat preservation, reserves for gene pool, identification of doomed animals, and establishment of a captive propagation program.

FOOSE: Concurred and indicated the process should begin at this meeting. Noted that large mammals disappear before the habitat is destroyed, therefore it is possible to have an opportunity for reintroduction if habitat is stabilized.

HARRISON: Noted his role as neutral host. Understands zoos and wildlife conservation. Feels Trust and zoos have to prove their intent. Expertise is especially needed. Initial propagation needs to be in country of origin, but dispersal of captive-born young too long term for meeting zoo needs. Perhaps a board for the Sumatran rhinoceros should decide.

SEAL: Summarized and suggested that an independent coordinator position be developed perhaps through the IUCN to provide independence but with funding from the respective participants. Discussion followed with suggestion laid over until next afternoon session. Scott indicated no IUCN problem with the suggestion.

General agreement that the masterplan approach is sound and necessary. (Khan and Andau).

SEAL: Suggested that the general meeting adjourn until after lunch while the respective plans and proposals are worked out in detail in a smaller session (AAZPA-Malaysia; Howlett's-Indonesia) and the results brought back to the entire group in the afternoon meeting. AGREED.

WORKING SESSIONS and LUNCH (1145-1415)

1415 - Reconvened.

SEAL: Reports from the groups requested.

FOOSE (written report): Read the following proposal by the Malaysian Game Department and the AAZPA Sumatran Rhino Trust which has been agreed to by both parties.

As part of a global masterplan for conservation of the Sumatran rhino, the Wildlife Departments of West Malaysia and Sabah and the AAZPA Sumatran Rhino Trust propose a cooperative project that will incorporate attempts at both (1) improved protection of natural populations and habitat and (2) captive propagation through two approaches.

Specifics of the project include:
(1) Technical and financial assistance from AAZPA Sumatran Rhino Trust to enable reinforced protection of viable natural populations and sanctuaries. The highest

priority in this regard will be accorded to the Silabukan (Tabin) Wildlife Reserve in Sabah.
(2) An attempt to develop the "gene pool" as described in the proposal by Mohd. Khan and Louis Ratnam. Such a gene pool will entail enclosure of a reasonably large area of natural habitat inside a fence. The purpose will be to create a situation where animals can propagate in a more controlled yet still semi-natural environment. The area where the gene pool will be tried will be selected in West Malaysia by the Wildlife Department. One possible location that has been discussed is in the Sungai Dusun area.
(3) Captive propagation programs will be developed in West Malaysia, Sabah, and North America.
(A) Field operations to collect appropriate rhinos will be simultaneously initiated in West Malaysia and Sabah. Tony Parkinson will coordinate and facilitate these efforts.
(B) In West Malaysia, there will be immediate attempts to capture rhinos to establish a breeding nucleus of 3 to 4 females and at least 2 males at the Malacca Zoo. The Wildlife Department will identify which animals are candidates for capture using the criteria for "doomed" animals formulated by the SSC sponsored masterplan.
(C) In Sabah, much initial activity will be devoted to locate animals for capture. Rhinos outside the Silabukan (Tabin) Wildlife Reserve will be considered appropriate candidates. There may be attempts to immediately capture a few known animals believed to be in imminent danger.
Of the animals captured:
(a) the first pair will be placed in a captive facility to be developed with AAZPA Sumatran Rhino Trust assistance at Sepilok.
(b) Subsequent rhinos captured will be moved to captive facilities in North America. These animals will be on breeding loan to the AAZPA zoos.
(D) AAZPA will provide various technical assistance as determined appropriate through consultation with the Malaysia Wildlife officials. Among the items identified so far:
(a) qualified keepers and veterinarians on a continuous basis for several years at the captive facility to be developed at Sepilok.
(b) veterinary support for actual capture operations.
(c) curatorial and veterinary assistance as needed for the captive facility at Malacca.
(d) training both in Malaysia and at appropriate AAZPA zoos for Malaysian curators, keepers, and veterinarians.
(4) All animals placed in captivity will be managed cooperatively as part of a "world population" under

coordination of the Sumatran Rhino Advisory and Oversight Panel developed under IUCN SSC auspices.
(5) This proposal can be amended by mutual agreement only of the Malaysian Wildlife Departments and the AAZPA Sumatran Rhino Trust to adjust to changing situations.

KHAN (written summary):
Response to 1982 SSC Rhino Specialist Group meeting recommendations in respect to Peninsular Malaysia.

Endau Rompin
The population in the area continues to be protected/monitored and remains stable, and continues to show signs of breeding. Agreement has also been obtained from the states Pahang and Trangganu governments for the establishment of the Endau Rompin National Park.

Taman Negara
The Tembeling Hydroelectric as been shelved and for the present the inundation to the Ulu Tembeling valley including rhino habitat removed concerted survey efforts have revealed that Taman Negara has a very significant rhino population presently estimated at about 25 animals mostly in remote and seldom visited areas of the Park. This puts this population as second in importance to the Endau Rompir rhino population in the Peninsula. Farther work may reveal even farther animals here.

Sungei Dusun
This small reserve has been and its environs have been extensively investigated recently and two facts have emerged. Firstly that there is at least 5 to 6 animals in the overall area possibly more and that in the last seven years to 9 years this small group has produced at least 3 young. Jeram the young captive female comes from this group as does the abandoned baby male that died earlier this year.

Other areas
Ulu Selama has also been investigated and a sharp evidence of at least four animals. Some acceptable photographs of rhino were recently taken at one of the salt licks. At present the area remains a viable rhino habitat.

The department has also investigated the reports of a possible Javan rhino ain the Sungei Depah Kelantan. We are of the opinion that this 23 cm footprint animal is a Sumatran rhino. Investigations of this individual have revealed a further 3 animals in this area.

Two area have appeared to hold animals that may be considered doomed. The first was the merseeing coast at Tenggaroh In the second half of 1983 a trap was built and

actually caught and held a male rhino for 35 hours. The animal managed to break out through a weakness in the palisade. Since then the forest of the area has been cleared and the two known rhinos have moved north into a fairly large remnant of the Tenggaroh forest Reserve. These animals are still being monitored and protected. The other area with an isolate is Bukit Gebbot in Pahang which is also being monitored and protected.

ANDAU: Sabah review and plea for urgency

PAINE: Silibukan reserve history

ASPINALL (written report); The Howletts/Port Lympne Foundation and Indonesian Game Departments Proposals.

1. That the IUCN should through a separately constructed panel overlook and advise the whole SE Asian Sumatran Rhino enterprise.

2. That H&PL.F should provide funds to protect the Sumatran Rhino in its wild state within Indonesia. Current thinking of Messers Mannan and Widodo is that the Barisan Selatan reserve would best qualify for support though they are taking other areas into consideration.

3. Advice from experts like Raleigh Blouch and others will be taken and a survey made as to which areas outside the parks can be considered as 'doomed' and thus eligible for the extrication of Rhino. A strong candidate at the moment is the Gunung Patah area though other areas will also be considered. Howlett's/Port Lympne foundation will rest on the Indonesian Game Dept. decisions as to the assignation of these areas.

MANAN (written summary):
The base of Sumatran Rhinos in the island of Sumatra, Indonesia: Due to rapid increase of our population in Indonesia (160 millions in 1984), many once forested areas have to be converted into other land uses, such as agriculture, estates, settlements, etc. In Sumatra, with a population of almost 25 millions, a rapid change in land uses are taking place now.

However, the government of Indonesia is already setting aside large areas as protected forest and nature reserves along the Barisan Mountain Ranges. National Parks such as Gunnung Leuser, Kerici Seblat, Barisan Selatan, and Wai Kambas have been established. Sumatran big mammals such as elephant, tiger, tapir, rhino, bear, orangutan etc. are strictly protected in those areas.

On the other hand, especially in the lowland areas, large areas of land are now being logged and converted into agriculture and estate plantation such as oil palm, rubber trees and timber estates.

The base of wildlife in these areas are uncertain and in the future most of them will be doomed to extinction, including Sumatran Rhinos. Therefore, steps and measures should be taken to save those animals by way of translocation to sanctuaries and national parks. Other alternative is to catch them and study the possibility of captive breeding in zoos and later on release their offspring into the wild again.

Increased management and protection of our nature reserves and wildlife sanctuaries will require intensive effort including expertise, trained personnel, and adequate funds,--a long term undertaking.

RAMONO: Reviewed 1982 Asian Rhino SG Action plan activities in Indonesia.

VAN BREE: Proposed structure for single coordinating body for Sumatran rhinoceros project with representatives from each of the participants including Asian Rhino SG. Responsibilities to include hiring of a coordinator who would undertake preparation of masterplan and serve as an advisor. Funding for the position to come from the participants. Mechanism to receive endorsement of the SSC/IUCN.

Terms of reference?

Brief discussion followed on several questions of detail. The reports presented were accepted by the full committee and then discussion followed on time schedules for IUCN approval, obtaining concurrence of governing bodies, establishment of a coordinating body, and an interim coordination until a permanent structure is achieved.

SCOTT: Indicated that if a short summary high lighting essential points of the meeting and terms of reference for the coordinating body were provided then he would take them to the SSC for review and recommendation to the IUCN. He indicated this could be accomplished by mid-November. SEAL agreed to provide the synopsis with recommendations and the statement of terms prior to departure. This was done and these documents are appended.

Other participants indicated they could have concurrence of their governing bodies within 4-6 weeks.

TEA BREAK 1530-1625.

SEAL: Summarized main points of earlier discussion and noted there was a consensus that it was important there be continuity during the interim until a formal structure is established. Seal had been asked to serve for a few months as interim coordinator for communication between Scott and the participants in the proposals. He agreed. This was approved with no objections by the committee on a motion by Schenkel and second by van Bree.

SCOTT: Indicated his delight with the results of the meeting and offered congratulations to everyone for their work.

FINAL ADJOURNMENT AT 1635.

Respectfully submitted 12 October 1984,

U. S. Seal
Chairman, Ad hoc Sumatran Rhino Meeting IUCN/SSC

Chairman, Captive Breeding Specialist Group IUCN/SSC
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INTERNATIONAL UNION FOR CONSERVATION OF NATURE AND NATURAL RESOURCES

COMMISSION DE LA SAUVEGARDE DES ESPÈCES - SPECIES SURVIVAL COMMISSION

SSC/RFS/sn

Dr. Ulysses S. Seal
Veterans Administration Hospital
54th Street & 48th Avenue South
Minneapolis
Minnesot a 55417
UNITED STATES

18 October 1984

Dear Dr. Seal,

Preliminary Report of Singapore meeting on Sumatran rhino.

Enclosed is a copy of the Summary Report (very slightly modified) and supporting documents which you so efficiently provided before we left Singapore. I realize that the complete minutes will be forthcoming in due course, but wished to circulate this advance material to the many interested parties in the SSC/IUCN/WWF family. I am also sending copies to each of the participants, and placing the subject of endorsement on the Agenda of the SSC Steering Committee Meeting in Madrid on 1 and 2 November, 1984.

I am quite sure that SSC and IUCN will be pleased to endorse the plans for action as summarized in these documents and as reflecting the most impressive spirit of cooperation evidenced by all of the participants in the Singapore meetings. Once again, I would like to compliment each of them for being so constructive and concise throughout, and you for a superb performance as chairman.

Yours sincerely,

R.D. Scott

Robert F. Scott
Executive Officer
Species Survival Commission

Encl.

cc: All Participants

AD HOC MEETING ON CONSERVATION OF SUMATRAN RHINO

Singapore, 3 & 4 October, 1984

SUMMARY REPORT

The meeting was convened at the request of the SSC/IUCN, by U.S. Seal, Chairman of the SSC Captive Breeding Specialist Group, for the purpose of resolving issues concerning strategies for the conservation of the Sumatran Rhinoceros (SR) in its native habitat and to consider proposals for removal of animals for establishment of a captive breeding programme (see Annex 1). Invited participants included representatives of IUCN/SSC, the Wildlife Departments of West Malaysia, Sabah, and Indonesia; the SSC Asian Rhino Specialist Group; and representatives of Howlett's and of the AAZPA Sumatran Rhino Trust who have made proposals for captive breeding programmes (see Annex 2). The meeting was chaired and minutes prepared by U.S. Seal. Consensus was reached on all of the major points contained in this summary report.

OUTLINE SUMMARY

1. The fundamental tenets of a conservation programme for the Sumatran Rhinoceros include: a) Primary support for a programme of conservation of the SR as viable populations in sufficiently large areas of protected native habitat. b) Developing educational programmes to enhance public awareness and support for conservation of the SR, and c) Establishing a captive propagation programme for the preservation of the genetic diversity of the SR in the countries of origin using animals with no hope of survival in the wild.

2. Current situation of the SR in the countries of origin was summarized in detail by members of the Game Departments. Further information was provided by N. van Strien based on his recent studies of the species.

3. A concept of "viable population" emerged in terms of a) number of breeding males and females in the population (50 for short-term; up to 500 for long-term survival), b) starting numbers in the population, c) can expansion of numbers occur?, d) available area with carrying capacity approximated at 1 SR per 1000 hectares. Thus a minimum of about 70 sq km or 70,000 hectares is necessary for a viable population. Six reserves were identified which meet this requirement.

4. There are 3 nominate subspecies of the SR. It was agreed that any captive breeding or translocation programme should not mix these subspecies until further work was done on their taxonomy.

5. Proposals for establishment of a captive propagation programme were presented by Dr. T. Foose (Conservation Coordinator of the AAZPA) and representatives of the AAZPA Sumatran Rhino Trust, and by J. Aspinall and F. Nardelli of Howlett's, U.K. These presentations served as the basis for detailed discussions between a) the AAZPA and the Malaysian and Sabah Game Department officials and b) Howlett's and the Indonesia Game Department officials. Copies of the joint proppsals are attached as Annex 3 and 4. These were reviewed in detail and approved by the full committee before the final formulation presented here.

6. The need for an oversight and coordination structure was stressed many times. Dr. van Bree suggested a foundation structure (see Annex 5), which would include as members of its board representatives from the Malaysian and Indonesian Game Departments, from the AAZPA and Howlett's, and from IUCN (probably the SSC Asian Rhino Specialist Group). A coordinator would need to be hired who would be responsible for construction of a masterplan for conservation of the SR which would include captive propagation and selection of animals from the wild for this purpose.

7. It is intended that this summary, the attached documents, and the detailed minutes to follow would provide the necessary information to obtain SSC/IUCN approval and endorsement of the captive propagation project as part of a conservation plan.

8. It was agreed by the committee that U.S. Seal would serve as temporary coordinator of the group during this interim phase until a formal organisation is created. He will be the contact person for R. Scott representing IUCN, and the representatives of the various other parties involved.

Signed: U.S. Seal, Chairman
Singapore
5 October, 1984

0671j

Annex 1

UNION INTERNATIONALE POUR LA CONSERVATION DE LA NATURE ET DES SES RESSOURCES
INTERNATIONAL UNION FOR CONSERVATION OF NATURE AND NATURAL RESOURCES

AGENDA
SSC AD HOC MEETING ON SUMATRAN RHINO
SINGAPORE - 3 & 4 OCTOBER 1984

General Objectives:

(1) Consider critically and comprehensively various possibilities, proposals, and problems for captive propagation of Sumatran rhino.

(2) Attempt to formulate and hopefully finalize an acceptable plan for a captive propagation project as part of an overall strategy for conservation of the Sumatran rhino. Aspects to consider:

  (A) Relation of captive propagation to conservation of wild populations.

  (B) Criteria to identify animals as possible candidates for capture.

  (C) Specifics of number of animals to be captured and of where they are to be placed in captivity (S.E. Asia, North America, United Kingdom).

(3) Develop coordination and oversight through some IUCN SSC committee for implementation of any plan or plans approved.

Presentations

(1) General discussion of fundamental issues in captive propagation as a part of conservation strategies and its application and merits for the Sumatran rhino. (Seal)

(2) The AAZPA proposal. (Foose et al.)

(3) The Howletts initiative. (Nardelli and Aspinall)

(4) Current activities, strategies, and status of SSC Asian Rhino Specialist Group. (Schenkel)

(5) The situation in West Malaysia. (Khan et al.)

(6) The situation in Sabah. (Andau et al.)

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(7) The situation in Indonesia. (Syafii and Widodo)

(8) Comments from other SSC members. (Scott, Van Bree, Van Strien et al.)

(9) Technical aspects of capture. (Parkinson)

(10) General discussion and negotiation of objectives, proposals, strategies, questions.

Annex 3

PROPOSAL FOR A COOPERATIVE PROJECT BETWEEN MALAYSIA AND THE AAZPA SUMATRAN RHINO TRUST FOR CONSERVATION OF THE SUMATRAN RHINO

As part of a global masterplan for conservation of the Sumatran rhino, the Wildlife Departments of West Malaysia and Sabah and the AAZPA Sumatran Rhino Trust propose a cooperative project that will incorporate attempts at both 1) improved protection of natural populations and habitat and 2) captive propagation through two approaches.

Specifics of the project include:

1. Technical and financial assistance from AAZPA Sumatran Rhino Trust to enable reinforced protection of viable natural populations and sanctuaries. The highest priority in this regard will be accorded to the Silabukan (Taban) Wildlife Reserve in Sabah.

2. An attempt to develop the "gene pool" as described in the proposal by Mohd Khan and Louis Ratnam. Such a gene pool will entail enclosure of a reasonably large area of natural habitat inside a fence. The purpose will be to create a situation where animals can propagate in a more controlled yet still semi-natural environment. The area where the gene pool will be tried will be selected in West Malaysia by the Wildlife Department. One possible location that has been discussed is in the Sungai Dusun area.

3. Captive propagation programmes will be developed in West Malaysia, Sabah, and North America.

   A) Field operations to collect appropriate rhinos will be simultaneously initiated in West Malaysia and Sabah. Tony Parkinson will coordinate and facilitate these efforts.

   B) In West Malaysia, there will be immediate attempts to capture rhinos to establish a breeding nucleus of 3 to 4 females and at least 2 males at the Melaka Zoo. The Wildlife Department will identify which animals are candidates for capture using the criteria for "doomed" animals formulated by the SSC sponsored masterplan.

   C) In Sabah, much initial activity will be devoted to locate animals for capture. Rhinos outside the Silabukan (Taban) Wildlife Reserve will be considered appropriate candidates. There may be attempts to immediately capture a few known animals believed to be in imminent danger.

      Of the animals captured:
      a) the first pair will be placed in a captive facility to be developed with AAZPA Sumatran Rhino Trust assistance at Sepilok.
      b) Subsequent rhinos captured will be moved to captive facilities in North America. These animals will be on breeding loan to the AAZPA zoos.

D) AAZPA will provide various technical assistance as determined appropriate through consultation with the Malaysia Wildlife officials.

Among the items identified so far:
a) qualified keepers and veterinarians on a continuous basis for several years at the captive facility to be developed at Sepilok.
b) veterinary support for actual capture operations.
c) curatorial and veterinary assistance as needed for the captive facility at Melaka.
d) training both in Malaysia and at appropriate AAZPA zoos for Malaysian curators, keepers, and veterinarians.

4. All animals placed in captivity will be managed cooperatively as part of a "world population" under coordination of the Sumatran Rhino Advisory and Oversight Panel developed under IUCN/SSC auspices.

5. This proposal can be amended by mutual agreement only of the Malaysian Wildlife Departments and the AAZPA Sumatran rhino Trust to adjust to changing situations.

Annex 2

UNION INTERNATIONALE POUR LA CONSERVATION DE LA NATURE ET DES SES RESSOURCES
INTERNATIONAL UNION FOR CONSERVATION OF NATURE AND NATURAL RESOURCES

INVITEES TO SUMATRAN RHINO MEETING
SINGAPORE
2-4 OCTOBER 1984

Patrick M. Andau
Office of the Chief Game Warden
Jabatan Kehutanan
Peti Surat 311
Sandakan, Sabah
MALAYSIA

John Aspinall
Howletts & Port Lympne Estates
Port Lympne
Lympne, Kent CT21 4PD
ENGLAND

William G. Conway (Apologies)
General Director
New York Zoological Park
185th Street & Southern Blvd
Bronx, NY 10460, USA

James Doherty
General Curator
New York Zoological Park
185th Street & Southern Blvd
Bronx, NY 10460, USA

Thomas J. Foose, Ph.D.
AAZPA Conservation Coordinator
AAZPA Conservation Office
Minnesota Zoological Garden
Apple Valley, MN 55124, USA

Bernard Harrison
Director
Singapore Zoo
80 Mandai Lake Road
Singapore 2572
REPUBLIC OF SINGAPORE

Mohd. Khan b. Momin Khan
Director-General
Dept. of Wildlife & National
Parks of Malaysia
Block K-20/Jalan Duta
Kuala Lumpur
MALAYSIA

Edward J. Maruska
Director
Cincinnati Zoological Garden
3400 Vine Street
Cincinnati, OH 45220, USA

Francesco Nardelli
Howletts & Port Lympne Estates
Port Lympne
Lympne, Kent CT21 4PD
ENGLAND

Tony Parkinson
White House
San Roque, San Jose
Mindoro, Occidente
The PHILIPPINES

John Payne, Ph.D.
Wildlife Section
Forest Department
P.O. Box 311
Sandakan, Sabah
MALAYSIA

Louis Ratnam
Director of Research & Mgmt
Dept. of Wildlife & National
Parks of Malaysia
Block K-20/Jalan Duta
Kuala Lumpur, MALAYSIA

Prof. Dr. Rudolf Schenkel
Chairman, IUCN/SSC Asian
Rhino Specialist Group
Nadelberg 29
CH-4051 Basel
SWITZERLAND

Robert F. Scott
Executive Officer
IUCN Species Survival Commission
Avenue du Mont-Blanc
1196 Gland
SWITZERLAND

Ulysses S. Seal, Ph.D., Chairma
Captive Breeding Specialist Grp
IUCN/SSC
V.A. Medical Center
54th Street & 48th Avenue South
Minneapolis, MN 55417, USA

Dr. Roy Sirimanne
Veterinary Health Officer
Singapore Zoological Gardens
80 Mandai Lake Road
Singapore 2572
REPUBLIC OF SINGAPORE

Ir. Syafii Manan
Direktur Pelestarian Alam
Direktorat PHPA
Jl. Ir. H. Djuanda 9
Bogor, INDONESIA

Warren D. Thomas, DVM
Director
Los Angeles Zoo
5333 Zoo Drive
Los Angeles, CA 90027, USA

Dr. Peter Van Bree
SSC Steering Committee
Dept. of Mammals
Institute of Taxonomic Zoology
University of Amsterdam
36 Plantage Kerklaan
NL 1018 CZ Amsterdam
NETHERLANDS

Nico J. Van Strien, Ph.D.
Julianaweg 2
3941 DM Doorn
NETHERLANDS

Widodo S. Ramono
Indonesia Nature Conservation
Regional II
Jalan Hajimena 1-8
P.O. Box 30
Tanjung Karang
INDONESIA

Avenue du Mont-Blanc
1196 Gland

Telégrammes/Telegrams

Annex 4

HOWLETT'S AND PARK LYMPRE FOUNDATION AND INDONESIAN GAME DEPARTMENT PROPOSALS

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1. That the IUCN should through a separately constructed panel overlook and advise the whole S.E. Asian Sumatran Rhino enterprise.

2. That Howlett's and Park Lympre Foundation should provide funds to protect the Sumatran Rhino in its wild state within Indonesia. Current thinking of Messrs. Manan and Widodo is that the Barrison Selatan reserve would best qualify for support though they are taking other areas into consideration.

3. Advice from experts like Raleigh Blouch and others will be taken and a survey made as to which areas outside the parks can be considered as "doomed" and thus eligible for the extrication of Rhino. A strong candidate at the moment is the Gunnang Patah area though other areas will also be considered. Howlett's and Park Lympre will rest on the Indonesian Game Department decisions on the assignation of these areas.

Annex 5

SUMATRAN RHINOCEROS CONSERVATION FOUNDATION

TERMS OF REFERENCE

Coordinate and oversee the implementation of a multinational collaborative comprehensive conservation masterplan for the Sumatran Rhinoceros which includes 1) conservation and protection of the species in viable populations in its native habitat, 2) education and enhancement of public interest in the species, and 3) the establishment of a captive propagation programme as a means of preserving the genetic diversity of the species.

BOULEVARD HOTEL
SINGAPORE

To Mr. John Payne

Room Date 01/10.

Messages

An early morning call has been placed for you at 6.30 am on 2nd October 1984 and the coach for the Malacca zoo will be parting at 7.30 am sharp. Please remember to bring your passport.

From Time

Member of The Goodwood Group

World Express

World Express Pte Ltd
114 Middle Road #05-01
Singapore 0718 Tel 338 3877
Cable WXPRESS Telex RS 33372

September 25, 1984

RE: SUMATRAN RHINO MEETING

Dear Participant:

Selamat Datang.....Welcome to the "Garden City" of Singapore.

We are pleased to have been appointed to assist you with this inaugural meeting on the Sumatran Rhinoceros. Due to the varied cities which most of you hail from, we have to delineate some of the basics for a well-run meeting.

YOUR ACCOMMODATION

Your accommodation is provided at a very competitive rate of S$92.00 inclusive of government tax and service charge. This rate will apply for the duration of your stay. And as all bills will be on a personal basis, please indicate as early as possible to the front office your check out date together with your flight arrangements.

MEETINGS

Your meetings are scheduled for the 3 and 4 October and it will be held at the Jervois Room II, As of now, the room has been booked from 8.30 am to 5 pm. Lunch will be at the Jervois Room III whilst there will be the mandatory tea/coffee breaks twice a day.

...2/-

TECHNICAL VISIT 2ND OCT 84

The technical visit i.e. the very rationale for this meeting is a trip to Malacca. Due to the long journey we have scheduled the coach to depart at 8 am. It would be expedient that all participants adhere strictly to this timing as any delay would mean that you would be back in Singapore much later (incidently a one way drive to Malacca takes approximately 4½ hours).

CLOSING DINNER

This will be hosted by the Singapore Zoological Gardens at the Ming Court Hotel on the 4 October. We have tentatively made reservations at 7.30 pm for the dinner.

COORDINATOR

We will station one of our staff at the entrance to Jervois Room II from 8.30 am to 1 pm for the 3 and 4 October to assist with your flight reconfirmation and any other travel matters.

This is essentially a tentative program for the meeting. We would suggest that you check all timings with Thomas Foose who is the official coordinator for this seminar. In the meantime, we wish to assure you that we will be most ready to assist in whatever ways we can to make this a most fruitful meeting.

Cordially,

Woo Lu Hwang
Director of Operations

wlh/jk

UNION INTERNATIONALE POUR LA CONSERVATION DE LA NATURE ET DES SES RESSOURCES
INTERNATIONAL UNION FOR CONSERVATION OF NATURE AND NATURAL RESOURCES

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  (B) Criteria to identify animals as possible candidates for capture.

  (C) Specifics of number of animals to be captured and of where they are to be placed in captivity (S.E. Asia, North America, United Kingdom).

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(2) The AAZPA proposal. (Foose et al.)

(3) The Howletts initiative. (Nardelli and Aspinall)

(4) Current activities, strategies, and status of SSC Asian Rhino Specialist Group. (Schenkel)

(5) The situation in West Malaysia. (Khan et al.)

(6) The situation in Sabah. (Andau et al.)

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(7) The situation in Indonesia. (Syafii and Widodo)

(8) Comments from other SSC members. (Scott, Van Bree, Van Strien et al.)

(9) Technical aspects of capture. (Parkinson)

(10) General discussion and negotiation of objectives, proposals, strategies, questions.

TABLE 2

SURVEY OF SURVIVING ASIAN TWO-HORNED RHINOS

AREA OR COUNTRY	LOCATION	ESTIMATE OF RHINOS	HABITAT AVAILABILITY PRESENTLY (Km²)	HABITAT AVAILABILITY POTENTIALLY (Km²)	HABITAT STATUS	REFERENCE	POTENTIAL CARRYING CAPACITY*
Sabah	Silabukan Reserve**	20+	250-1000	1000	Perhaps protectable.	Andau & Payne 1982	50
	Kretam/Cent Peninsula	8	-1000	None	Being converted to agriculture.	Andau & Payne 1982	None
	Other Areas	10	-2000	2000	Perhaps protectable.	Andau & Payne 1982	None
	TOTAL	28-38					
West Malaysia (Peninsular Malaya)	Endau Rompin**	20-25	1600	1000-1600	1000 km² Reserve; Park proposed.	Flynn & Abdullah 1982	50-80
	Taman Negara**	8-12	4400	4400	National Park, but under pressure.	Flynn & Abdullah 1982	110-220
	Sungai Dusun	4-6	40+	140+	State Wildlife Reserve	Flynn & Abdullah 1982	20
	Gunung Belumut	2-3	230	230	Wildlife Reserve proposed.	Flynn & Abdullah 1982	16
	Mersing Coast	2	N.A.	Prob. None	Being deforested.	Khan (pers. comm.)	0
	Ulu Lepar	3-5	1000	1000	Unprotected and being deforested.	Flynn & Abdullah 1982	0
	Sungai Depak	3-5	N.A.	Prob. None	Being deforested.	Flynn & Abdullah 1982	0
	Kuala Balah	3-4	N.A.	Prob. None	Being deforested.	Flynn & Abdullah 1982	0
	Bukit Gebok	1-2	N.A.	None	Being deforested.	Flynn & Abdullah 1982	0
	Krau Reserve	0-1	500	500	Unstable.	Flynn & Abdullah 1982	24
	Ulu Selama	3-5	N.A.	N.A.	Unprotected.	Flynn & Abdullah 1982	?
	Ulu Belum	3-5	N.A.	N.A.	Unsecure area.	Flynn & Abdullah 1982	?
	Thai Border	0-1	N.A.	N.A.	Unsecure.	Flynn & Abdullah 1982	?
	TOTAL	52-76					
Sumatra	Gunung Leuser**	50-200	1400	8000	National Park but disturbance.	Van Strien/Widodo 1982	200-400
	Kerinci/Seblat**	15-20	2000	4000	Protection meager.	Borner 1979	100-200
	Torgamba	1-5	?	?	Being deforested.	Borner 1979	0
	Sumatera Selatan	2-5	500	?	Deforestation occurring.	Borner 1979	20
	Siak River Region	None	?	None	Being heavily developed.	Borner 1979	0
	TOTAL	68-230					
Kalimantan	Banumuda	0	N.A.	N.A.	Being deforested.	WWF Yearbook 81-82	0
Thailand	Phu Khio Reserve Tenasserim Range Khao Soi Dao Reserve	6-15	N.A.	N.A.	Unstable.	McNeely & Cronin 1972 McNeely & Laurie 1977 Asia Week 1982	0
Burma	Schwe U Daung Reserve	4	N.A.	N.A.	No information.	Borner 1979	?
	Elsewhere	?	N.A.	N.A.	No information.	None recent and reliable.	?
Indochina		?	N.A.	N.A.	Very unstable.	None recent and reliable.	0
TOTAL		158-363	~15000	~22000	None totally secure.		590-1030

* Predicated on maximum density of 1 rhino/20 km² suggested by studies of Flynn and Van Strien (pers. comm.)
** Populations probably preservable in wild if interactively managed and adequately protected.

TABLE 3

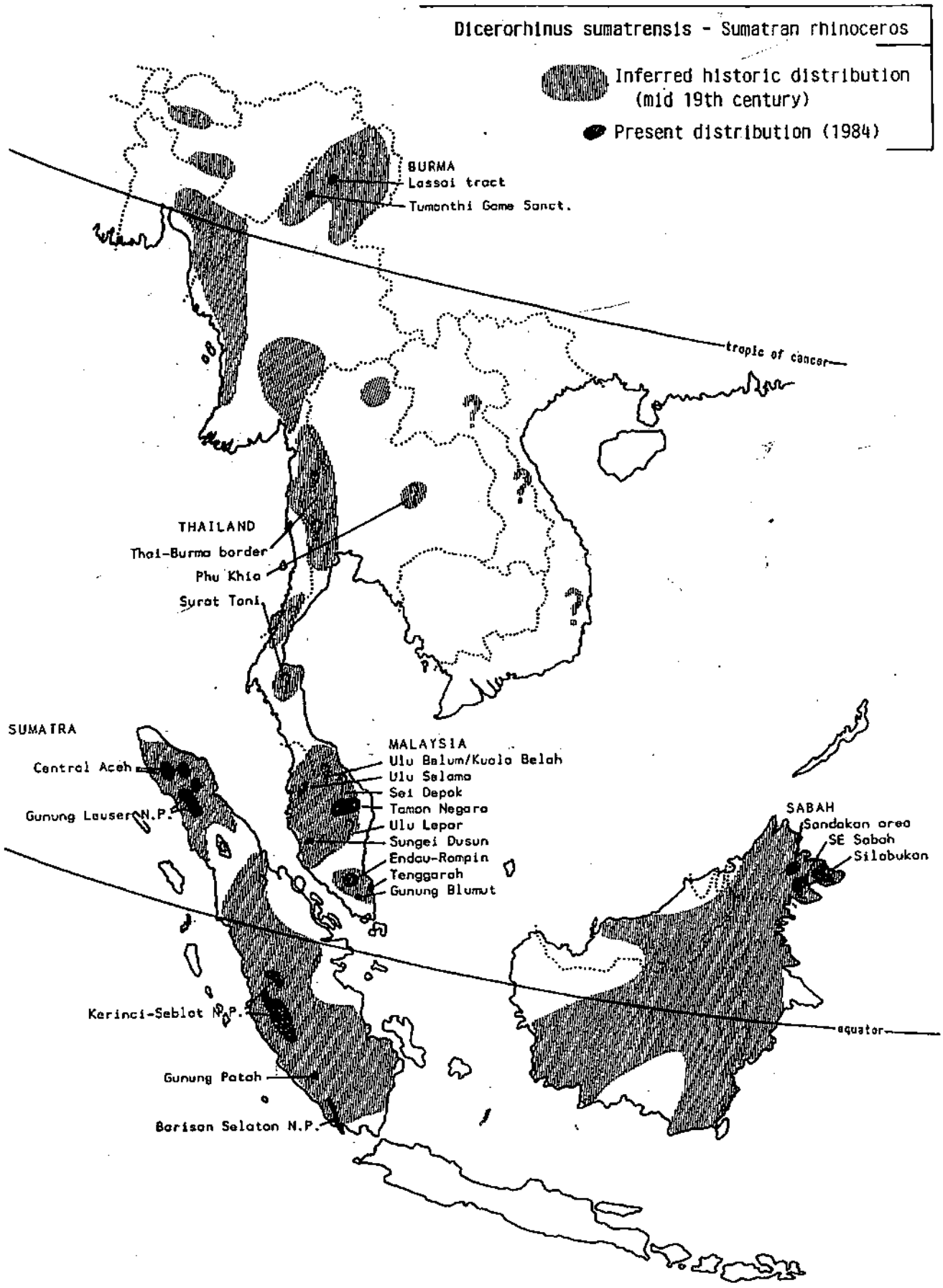
SUMMARY OF ASIAN TWO-HORNED RHINO POPULATIONS

AREA	TOTAL ESTIMATED POPULATION	TOTAL WITHIN PROBABLY PRESERVABLE POPULATIONS	TOTAL OUTSIDE PROBABLY PRESERVABLE POPULATIONS
Sabah	28-38	20+	8-18
West Malaysia (Peninsular Malaysia)	52-76	28-37	24-39
Sumatra	68-230	65-220	3-10 *
Kalimantan (Indonesian Borneo)	0	0	0
Thailand	6-15	?	?
Burma	4+	?	?
Indochina	?	?	?
TOTAL	158-363	113-277	45-86

*Probably more, but better survey needed.

Table N: Summary of the present status of the Sumatran rhino.

Sumatra (Summary of chapter 2)	
Kerinci-Seblat	Probably the largest contiguous population. Inperfectly known, but estimated at between 250 and 500 individuals.
Gunung Leuser	The best known population. Estimated at between 130 and 200.
Barisan Selatan	Rhino survives in at least two parts. Inperfectly known. Estimated at between 25 and 60 individuals.
Gunung Patah	Rhino surviving in unknown numbers
Gunung Abong-abong	Unknown. Rhino surviving in unknown numbers.
Lesten - Lukup	Unknown. Rhino surviving in unknown numbers.
Torgamba	Unknown. Probably a few surviving, but habitat threatened
Berbak	Last report 1976, now almost certainly extinct.
Total Sumatra	400 to 750 rhinos surviving in reserves and an unknown number in two or three other locations.
Borneo (Summary of chapter 3)	
Sarawak	Extinct many years ago.
Kalimantan	Extinct over most of the area. Probably some surviving in the Kalimantan - Sabah border area and scattered remnants here and there. Possibly a larger number on the Kalimantan - Sarawak border.
Sabah	15 to 30 individuals, mainly in the Silabukan area and in southeast Sabah.
Total Kalimantan	**One viable population in the east of Sabah and possibly some in the centre of the island. Insignificant remnants elsewhere. Extinct over most of the area.**
Malaysia (From Flynn & Abdullah, 1984 and Khairiah Mohd Shariff, 1983. Status and distribution of Sumatran rhinoceros (Dicerorhinus sumatrensis) in Peninsular Malaysia. The journal of wildlife and parks, Kuala Lumpur, 2, 91-102)	
Endau-Rompin	Probably the largest population in Malaysia. Estimated at between 20 and 25, but could very well be more.
Taman Negara	Second largest population. Estimated 8 to 12, but might be more. Inperfectly known.
Sungei Dusun	Small population. 4 to 6 individuals. See also: Mohd Zuber bin Mohd Zain, 1983. A review of the status and approximate range of Sumatran rhinopopulation in Sg. Dusun game reserve and surrounding areas. The journal of wildlife and park 2, 1-35.
Mersing coast (Tenggaroh)	At least two left in an isolated patch of forest. One trapped in 1983 (pers. com. Mohd Khan)
Gunung Belumut	Latest report 1980. Small surviving population. Inperfectly known. Estimated 2 - 3.
Bukit Gebok	Latest report 1980. One or two animals in a small isolated patch of forest, that has since been cleared. Probably extinct now.
Sungei Lepar	Latest report 1979. Unknown, 3 to 5 may survive.
Ulu Selama	Latest report 1983. Unknown, 3 to 5 may survive.
Kuala Balah	Latest report 1977. Unknown, 3 to 4 may survive.
Sungai Depak	Latest report 1976. Unknown, 3 to 5 may survive.
Ulu Belum	Latest report 1972. Unknown, 3 to 5 may survive.
Krau Reserve	Latest report 1963. Unknown, probably extinct now.
Kedah Border	Entirely unknown. A few might survive.
Thailand (From McNeely, J.A. & A. Laurie, 1977. Rhinos in Thailand. Oryx 13(5), 486-489)	
Phu Khio	Latest report 1976. Unknown. McNeely & Laurie found tracks at four different places in four days in the field. This could indicate that more than a few survive.
Khao Soi Dao	Latest report 1974. Species uncertain. Unknown.
Surat Tani province	Unconfirmed reports.
Thai-Burma border	Some may survive (pers. com. Pong Leng-Ee, 1979).
Burma (From Tun Yin, U, 1980. Present status of the Asian two-horned rhinoceros in the socialist republic of the union of Burma. Hornbill, Bombay, 1980(3), 13)	
Shwe-u-daung game sanctuary	Probably extinct
Tumanthi game sanctuary	4 may survive
Lassai tract	6-7 may survive
Indochina (From Rookmaaker, L.C., 1980. The distribution of the rhinoceros in eastern India, Bangladesh, China, and the Indo-chinese region. Zoologischer anzeiger 205(3/4), 253-268)	The presence of the Sumatran rhino in the Indochinese region cannot be confirmed and the few animals that might survive (e.g. south Laos) are most likely Rhinoceros sondaicus.


Dicerorhinus sumatrensis - Sumatran rhinoceros
Inferred historic distribution (mid 19th century)
Present distribution (1984)
BURMA
Lassoi tract
Tumonthi Game Sanct.
tropic of cancer
THAILAND
Thai-Burma border
Phu Khio
Surat Toni
SUMATRA
Central Aceh
Gunung Leuser N.P.
MALAYSIA
Ulu Balum/Kuala Belah
Ulu Selama
Sei Depok
Taman Negara
Ulu Lepar
Sungei Dusun
Endau-Rompin
Tenggaroh
Gunung Blumut
SABAH
Sandakan area
SE Sabah
Silabukan
Kerinci-Seblat N.P.
equator
Gunung Patah
Barisan Selatan N.P.

Forest Department,
P.O.Box 311,
Sandakan, Sabah,
Malaysia.

11 September 1984

Andrew Laurie,
c/o Tony Whitten,
lo Primrose Street,
Cambridge,
England.

Dear Andrew,

I have just received your telex of 9 May 1984. It was sent to Sabah from K.L. but evidently arrived on my desk after 10 July, when I left Sabah for England.

The reasons for your questions perhaps no longer apply, but I can give you replies and an update on the latest information in case it is still useful.

(1) The Silabukan/Tabin area is now a gazetted Wildlife Reserve, named Tabin (after the main river) and under the administration of the Sabah Forest Department. Total area is about 122,000 ha. I believe that the Tabin population has a reasonable chance of surviving if a small but active gurad force is maintained in that area.

(2) There are rhinos scattered through most parts of eastern Sabah, of which at least ten (and that is little more than a guess) are in logged forest sceduled for clearance for permanent agriculture. There are yet others in logged Forest reserve, which is likely to stay as permanent Forest Reserve, but where poachers are active - mostly Ibans from Sarawak, who sell the rhino parts to Chinese towkays in Sabah for export.

(3) It is difficult to define a protectable Reserve, but only Tabin is a gazetted Wildlife Reserve with a known breeding population. Our best estimate of Tabin's rhino population size is 18 adults.

(4) Your lat two questions (Is the AAZPA proposal going to help and would a local breeding station be better?) depend as much on personal opinion as on reasoned evaluation, and in any case, all major interested parties will be meeting in Singapore 3 - 4 October 1984, under the auspices of the IUCN/SSC Captive Breeding Specialist Group.

For Sabah (but not necessarily Peninsular Malaysia or Sumatra) I can make the following comenst with some confidence. The survival of a wild population cannot be fully guaranteed partly because poaching cannot be entirely prevented, whatever guarding is done, and partly because the remaining population is sparse and scattered. If Tabin is indeed the largest contiguous remaining population, and conservation biologists estimates for minimum viable population size are to be believed, then a captive population may be essential in the future to add to the wild one.
We have evidnce that on average, more than one rhino has been killed in Sabah each year for the past ten years; this rate is likely to increase with the current rate of forest clearance and road building.
To be specific regarding AAZPA, I believe that that organisation encompasses some of the best available resources to assist with a captive breeding programme, whatever form any programme may take.
In principle, a local forest breeding station would be ideal, but there are some factors against this. Firstly, Melaka Zoo (run by the Peninsular Malaysia's Department of Wildlife and National Parks) already has one captive female rhino and facilities for several more; it seems better to have a Malaysian breeding group there. Furthermore, I beleieve that the risk of poaching of captive rhinos may be significant in ~~Sabah. In summary,~~ a local forest breeding station.

In summary, I would say that captive breeding is timely (and overdue) taking a short-term view, since doomed rhinos are available; and advisable in the long-term, since the wild population may be too small to be self-sustaining. Placing of rhinos in at least two separate captive units is advisable to spread risks.

What are you doing nowadays? I was in U.K. for six weeks recently. I shall be in Sabah for the next two years, on a WWF Malaysia project with the Forest Department, to get Tabin and several other existing and proposed Reserves more firmly established. I am getting married in Sandakan some time next year.

Best wishes,

John Payne.

Forest Department,
P.O.Box 311,
Sandakan,
Sabah, S
Malaysia.

11 September 1984

U.S.Seal
Chairman, Captive Breeding Specialist Group IUCN/SSC,
V.A.Medical Center,
54th St. @ 48th Ave. South,
Minneapolis,
Minnesota 55417,
U.S.A.

Dear Dr Seal,

Re: Sumatran Rhino Meeting, Singapore
1 -4 October 1984

Thank you for your letter of 3o July 1984. I have only just returned to Sabah after a two month absence.

I appreciate your invitation and would like to attend the meeting. I would expect to arrive in Singapore at 15.35 hrs. on Monday 1 October, with Mr Patrick Andau direct from Sandakan in Sabah. However, I am not able to foot the bill myself and would like to apply for travel expenses, which would be one return flight, Sandakan - Singapore.

Yours sincerely,

John Payne

John Payne.

c.c. B. Harrison
" G. Lucas
" R. Scott

UNION INTERNATIONALE POUR LA CONSERVATION DE LA NATURE ET DES SES RESSOURCES
INTERNATIONAL UNION FOR CONSERVATION OF NATURE AND NATURAL RESOURCES

30 July 1984

John Payne, Ph.D.
Wildlife Section
Forest Department, P.O. Box 311
Sandakan, Sabah
MALAYSIA

Dear Dr. Payne:

As you know there is growing interest among conservationists in developing a captive propagation program for the Sumatran Rhinoceros. Such an undertaking is clearly complicated and must involve the participation and cooperation of many people and governments. It has and will continue to stimulate discussion and controversy on fundamental issues of captive propagation as well as its application and merits for the Sumatran Rhino.

In order to consider critically and comprehensively the various possibilities, proposals, and problems for such a program, the Species Survival Commission has requested (see enclosed letter from Scott) that as Chairman of the SSC Captive Breeding Specialist Group I organize an ad hoc meeting to discuss and resolve the many issues involved, preferably in a Southeast Asian venue.

Singapore seemed to be the most central and neutral location for such a meeting. Bernard Harrison, the Director of the Singapore Zoological Gardens and a member of the CBSG, has graciously agreed to serve as host. Based upon consultations with many of you, the most appropriate time seemed to be the first week in October, specifically on the 3rd and 4th.

The main purpose of the meeting will be to attempt to formulate and hopefully finalize an acceptable plan for a captive propagation project as part of the overall strategy for the conservation of the Sumatran Rhino. The American Association of Zoological Parks and Aquariums (AAZPA) has been cooperating with the Wildlife Departments of Malaysia to develop a project that would encompass both West Malaysia and Sabah. The Howlett's Zoological Park in England has been pursuing an initiative in Indonesia. Proposals for these projects have been rather widely circulated so I am assuming it will not be necessary to provide you with copies

Avenue du Mont Blanc
1196 Gland, Suisse/Switzerland
Télex/Telex: 22618 iucn
Tel/Tlf: (022) 64.32.96
Télégrammes/Telegrams: IUCNATURE GLAND

of the previous versions. Explorations of possibilities continue and the proposals are being steadily refined. The most current proposals can perhaps best be presented at the Singapore meeting itself.

The SSC is very anxious that any and all initiatives be evaluated in terms of their contribution to conservation of the Sumatran rhino and that any projects approved be coordinated and under the oversight of IUCN.

Other important details to be considered at the meeting are how captive propagation would relate to conservation of the natural populations, how to identify animals as possible candidates for captive propagation, specifics on the number of animals to be captured, where they are to be placed in captivity, and who is to administer the overall program and each of the regional projects.

As one of the parties very much concerned with or about the proposed captive propagation projects, you are invited to attend and participate in the Singapore meeting. A complete list of invited persons is attached.

The basic plan for the meeting is to conduct the formal session on October 3 and 4. I am requesting that Bernard Harrison arrange for an excursion on 2 October to the zoo in Melaka where the Department of Wildlife and National Parks of Peninsular Malaysia has a female Sumatran rhino in captivity. Visits to the Singapore Zoological Gardens and Jurong Bird Park are proposed for 5 October.

Please advise me as soon as possible if you will be able to attend, if you need travel support, and what your proposed itinerary would be. Since I will be travelling for much of August and September, could you also please provide a copy of your response, especially the itinerary, directly to Bernard Harrison who will be arranging local transport and hotel reservations. I would appreciate receiving your response no later than 1 September 1984.

Sincerely yours,

U. S. Seal
Chairman, Captive Breeding Specialist Group IUCN/SSC
V A Medical Center
54th St. & 48th Ave. South
Minneapolis, Minnesota 55417 USA

cc: G. Lucas, R. Scott.

UNION INTERNATIONALE POUR LA CONSERVATION DE LA NATURE ET DE SES RESSOURCES
INTERNATIONAL UNION FOR CONSERVATION OF NATURE AND NATURAL RESOURCES

COMMISSION DE LA SAUVEGARDE DES ESPÈCES - SPECIES SURVIVAL COMMISSION

Dr. Ulysses S. Seal
Chairman, IUCN/SSC Captive
Breeding Specialist Group
Veterans Administration Hospital
54th Street & 48th Avenue South
Minneapolis, Minnesota 55417
UNITED STATES

15 June 1984

Dear Ulie,

On behalf of the SSC Chairman, Gren Lucas, I should like to ask you to assume the responsibility for convening and organizing - for SSC - an ad hoc meeting in Singapore, probably during the first week in October, 1984, to bring together a small group of experts concerned with both pros and cons of proposals to bring Sumatran rhinos from various parts of Southeast Asia into a captive breeding scheme. The desirability of such a meeting has been endorsed by Asian Rhino Group Chairman RÜedi Schenkel.

I understand a member of your Group resident in Singapore may be able to serve as coordinator for local arrangements, and I believe you are up-to-date on the proposed objectives and participation for the meeting, along with potential sources of financial support. Please let me have your further suggestions, and I will be back in touch with you on my return to the office after 1 July.

Yours sincerely,

Robert F. Scott
Executive Officer
Species Survival Commission

cc: R. Schenkel
G. Lucas

UNION INTERNATIONALE POUR LA CONSERVATION DE LA NATURE ET DES SES RESSOURCES
INTERNATIONAL UNION FOR CONSERVATION OF NATURE AND NATURAL RESOURCES

INVITEES TO SUMATRAN RHINO MEETING
SINGAPORE
2-4 OCTOBER 1984

Patrick M. Andau
Office of the Chief Game Warden
Jabatan Kehutanan
Peti Surat 311
Sandakan, Sabah
MALAYSIA

John Aspinall
Howletts & Port Lympne Estates
Port Lympne
Lympne, Kent CT21 4PD
ENGLAND

William G. Conway
General Director
New York Zoological Park
185th Street & Southern Blvd
Bronx, NY 10460, USA

James Doherty
General Curator
New York Zoological Park
185th Street & Southern Blvd
Bronx, NY 10460, USA

Thomas J. Foose, Ph.D.
AAZPA Conservation Coordinator
AAZPA Conservation Office
Minnesota Zoological Garden
Apple Valley, MN 55124, USA

Bernard Harrison
Director
Singapore Zoo
80 Mandai Lake Road
Singapore 2572
REPUBLIC OF SINGAPORE

Mohd. Khan b. Momin Khan
Director-General
Dept. of Wildlife & National
Parks of Malaysia
Block K-20/Jalan Duta
Kuala Lumpur
MALAYSIA

Edward J. Maruska
Director
Cincinnati Zoological Garden
3400 Vine Street
Cincinnati, OH 45220, USA

Francesco Nardelli
Howletts & Port Lympne Estates
Port Lympne
Lympne, Kent CT21 4PD
ENGLAND

Tony Parkinson
White House
San Roque, San Jose
Mindoro, Occidente
The PHILIPPINES

John Payne, Ph.D.
Wildlife Section
Forest Department
P.O. Box 311
Sandakan, Sabah
MALAYSIA

Louis Ratnam
Director of Research & Mgmt
Dept. of Wildlife & National
Parks of Malaysia
Block K-20/Jalan Duta
Kuala Lumpur, MALAYSIA

Prof. Dr. Rudolf Schenkel
Nadelberg 29
CH-4051 Basel
SWITZERLAND

Robert F. Scott
Executive Officer
IUCN Species Survival Commission
Avenue du Mont-Blanc
1196 Gland
Suisse/SWITZERLAND

Ulysses S. Seal, Ph.D., Chairma
Captive Breeding Specialist Gr
IUCN/SSC
V.A. Medical Center
54th Street & 48th Avenue Sout
Minneapolis, MN 55417, USA

Dr. Roy Sirimanne
Veterinary Health Officer
Singapore Zoological Gardens
80 Mandai Lake Road
Singapore 2572
REPUBLIC OF SINGAPORE

Ir. Syafii Manan
Direktur Pelestarian Alam
Direktorat PHPA
Jl. Ir. H. Djuanda 9
Bogor, INDONESIA

Warren D. Thomas, DVM
Director
Los Angeles Zoo
5333 Zoo Drive
Los Angeles, CA 90027, USA

Dr. Peter Van Bree
Dept. of Mammals
Institute of Taxonomic Zoology
University of Amsterdam
36 Plantage Kerklaan
NL 1018 CZ Amsterdam
NETHERLANDS

Nico J. Van Strien, Ph.D.
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NETHERLANDS

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Regional II
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IUCNATURE Gland

THE SUMATRAN OR ASIAN TWO-HORNED RHINOCEROS
A PROPOSAL FOR CAPTIVE PROPOGATION OF RHINOS
ISOLATED OUTSIDE PROTECTED AREAS IN SABAH

BACKGROUND

The Asian two-horned rhinoceros is one of the most endangered species in the world. Probably less than 300 survive, scattered through South-east Asia. About one half live in relatively large groups within established sanctuaries. The others occur in fragmented groups of less than five animals. It is unlikely that these remnants can contribute to the survival of the species because:

(i) they are too small and isolated to be viable,

(ii) they occupy areas where their habitat will be developed for other purposes,

(iii) they are likely to be killed by hunters.

In Sabah, there are a number of rhinos (probably 10 or more) isolated in areas allocated for agriculture.

OPTIONS FOR COURSE OF ACTION

There are three basic options for saving these rhinos which would otherwise die from hunting or habitat loss.

First option - to capture and translocate the isolated rhinos into the larger populations within protected areas. Under ideal circumstances, this option would be preferred. However there are several problems associated with this option. Firstly, there are no ideal areas in Sabah. The proposed Silabukan Game Sanctuary is estimated to contain as many rhinos as it can accomodate, while Danum Valley has not been determined to be suitable habitat. Secondly, there must be adequate funding within Sabah to do the job properly; M$3 million may be needed (see appendix) with a commitment to more should this be inadequate. Thirdly, a translocation project would attract poachers and Game Branch has inadequate staff to deal with this. Fourthly, the rhinos may move out of the area to which they have been translocated.

Second option - to capture the rhinos and maintain them for captive propogation in Sabah. The estimated budget for the first three years is M$3,760,000 (see appendix) and there would need to be a commitment to maintain captive facilities indefinitely. Development of facilities and expertise would require considerable time, perhaps three years. Any delays would be very detrimental, as isolated rhinos are likely to die from hunting.

Third option - a cooperative project with experienced foreign zoos whereby captive propogation starts in those zoos until such time as facitilies are available in Sabah. The first and second options would require government funding, but if funding is not available the third option would be an inexpensive alternative.

A proposal that rhinos should be taken out of Sabah is likely to evoke strong sentiments from some quarters. Some would argue this on principle, others that if rhinos are going to die, it should happen in Sabah. But the aim of moving rhinos is/assist in saving the species. A live rhino removed / to from Sabah for breeding is not a rhino lost - whereas a dead rhino is lost forever. There are a number of advantages in obtaining assistance from foreign zoos in breeding rhinos. Firstly, the best technical assistance would be available. Secondly, facilities are available immediately. Thirdly, the foreign zoos would bear almost all of the expenses incurred and, additionally, be obliged to contribute various benefits to Sabah.

Discussions were held in Sabah in April 1983 with representatives of the American Association of Zoological Parks and Aquariums (AAZPA), a professional organisation linking all the major North American Zoos. The AAZPA expressed concern over the plight of Sabah's rhinos and great interest in developing a cooperative project with Sabah for captive propogation of our isolated rhinos. AAZPA is willing to provide all funds necessary for the capture and transportation of rhinos to captive facilities. Captive propogation facilities would be set up in Sabah but considering the considerable time and expense involved, and that the project should commence as soon as possible, any rhinos caught before facilities are available in Sabah would for practical purposes be kept in North American Zoos. All costs involved in captive propogation facilities in North American would be borne by AAZPA. Technical assistance and some funding would be provided by AAZPA for setting up captive facilities in Sabah. Any rhinos moved to North America would be on loan from Sabah and would remain under Sabahan ownership. It is proposed that any progency produced would be equally divided between Sabah and the AAZPA. The stock propogated in captivity will be used for two objectives;

(i) development of a self-sustaining population in captivity as an additional safeguard for survival of the species.

(ii) reintroduction into natural habitat when and where available.

The captive propogation project would be developed under the auspices of the appropriate internationally - recognised body, that is, the Species Survival Commission (SSC) of the International Union for Conservation of Nature (IUCN).

The AAZPA would provide assistance in developing various wildlife capabilities in Sabah. Forms of assistance offered are:

(1) Training in wildlife management, wildlife veterinary medicine and captive husbandry techniques.

(2) Degree programmes for Sabahan students in wildlife biology in conjunction with U.S. universities.

(3) Development of a zoo in Sabah.

(4) Promotion of tourist potential for wildlife.

(5) Participation in field research on wild rhinos in Sabah.

SCOPE AND TIMING OF CAPTURE OPERATIONS

The problems associated with catching wild rhinos will not become fully apparent until after capture attempts start. Therefore, it is not possible to estimate exactly how many rhinos would be caught. Ideally, several pairs would/taken into captivity to provide reasonable genetic diversity. Attempts /be would be made to catch as many as possible of the rhinos living outside Forest Reserves or other protected areas. No rhinos would be taken from the proposed Silabukan Game Sanctuary.

Isolated rhinos are under continuous and increasing threat. Whichever option is chosen, work should start in January 1984.

9 June 1983

Wildlife Section
Forest Department.

Appendix. Estimated budgets for translocation and captive breeding of rhinos

(Note: It is impossible to estimate the rate of capture of rhinos. The budget presented here is for three years' work. It is unlikely that less time will be adequate to catch sufficient rhinos, and probably considerably more time will be necessary).

(1) Capture and Transportation Phase

Salaries, allowances, fees etc.

Project Director	180,000
Personal Assistant	70,000
Rhino location group leader	180,000
Three location group team leaders	210,000
12 labourers (for 4 teams)	180,000
Capture team leader	200,000
8 labourers for capture team	120,000
Mechanic	55,000
Consultant's fees	30,000
Internal airfares	25,000
Medical Insurance	10,000
	M$1,260,000

Equipment, supplies etc.

3 long wheelbase landcruisers	130,000
Truck with hydraulic lift/winch	100,000
Camping equipment	10,000
Trapping materials/equipment	150,000
Food for field teams	100,000
Food, drugs, etc. for rhinos	10,000
Two-way radio system	10,000
Vehicle maintenance	100,000
	M$610,000

Equipment Hire

Helicopter (small, for survey etc.)	130,000
Helicopter (large, for rhino transportation)	110,000
	M$ 240,000
TOTAL:	M$2,110,000

(2) Translocation of rhinos to protected area within Sabah

Capture and transportation	M$ 2,110,000
Salaries for guard patrol team (10 men) in release area	216,000
Miscellaneous equipment	14,000
Follow-up radiotelemetry study (including purchase of light aircraft)	600,000

ESTIMATED BUDGET FOR 3 - YEAR TRANSLOCATION PROJECT M$ 2,940,000

(3) Captive propogation unit in Sabah

Capture and transportation	M$ 2,110,000
Rhino paddocks/facilities (excluding cost of land)	300,000
Staff quarters	300,000

Yearly recurrent expenses

Unit director (experienced rhino vet.) - Salary, allowances etc.	120,000
3 Assistants salaries	29,000
4 guards	29,000
Foodstuffs, medicines etc.	150,000
Miscellaneous equipment, costs.	22,000
Yearly total	350,000
Over 3 years	1,030,000

ESTIMATED BUDGET FOR FIRST THREE YEARS OF CAPTIVE PROPOGATION UNIT M$ 3,760,000

The Rhinoceros (Dicerorhinus sumatrensis) in Sabah

Introduction

Man was hunting rhinos in eastern Sabah at least 6000 years ago, and it is likely that horns have been exported to China for at least several hundreds of years. When Europeans started the exploration of what is now Sabah, during 1870's - 1890's, it was found that the human population was concentrated mainly in the hills and coastal plains in western and northern Sabah and along the large rivers on the eastern side. Conversely, rhinos were never reported from the west and north, but were commonly encountered, and invariably shot, throughout the east. The British and Dutch founded trading settlements and opened up land for plantations, encouraging settlers from China because of their reputation for hard work and trading abilities. Rhino hunting was presumably encouraged by the Chinese traders. Horns were constantly available in Sandakan town during the early 1900's at contemporary prices of about $50 per kilo (British North Borneo Herald, 1900 - 1915). Hunters, both immigrant and even native residents, apparently did not venture far from the coast or rivers.

In the early 1950's, licences to log large areas of forest for timber for export were for the first time given to several foreign entrepeneurs - previously , only one British - owned company was permitted to do this. A little later, local Chinese entrepeneurs were given licences, and several new large-scale agricultural plantations were established. Lacking adequate labour, Iban people from Sarawak were encouraged to come to eastern Sabah to work in these tough new enterprises. Ibans are renowned for endurance in tough conditions and for exceptional hunting abilities.

Contemporary reports in Forest Department files of the 1950's - 1960's indicate that it was recognised that rhinos were much less abundant than several decades previously and some of the entirely expatriate senior officers were genuinely concerned about the future for the species in Sabah. Many men who were junior staff in the Forest Department or workers in logging operations during that period recall seeing rhinos in logging areas. Certainly, it was not realised by senior administrators that rhinos were still present throughout much of eastern Sabah. They also did not appreciate that Chinese traders were supplied with horns mainly by Iban hunters who scoured eastern Sabah over the two decades between the early 1950's to early 1970's. Some Ibans apparently even walked from Sarawak and back on expeditions lasting many months. Even in the past decade, 1975-1984, with much fewer rhinos and fewer Ibans, there is evidence of [illegible] rhinos being killed annually

The past five years

In 1980, it was discovered that several rhinos were alive in one region, the middle of the Dent Peninsula in eastern Sabah, an area named Silabukan after the largest Forest Reserve in the region. This discovery stimulated renewed interest in the rhino in Sabah and cognisance of the necessity for better knowledge of the status of the rhino and for a plan for conserving the remaining population.

Surveys conducted since 1980 have revealed that:-

(1) The Silabukan population may include 18 adult rhinos (sex ratio unknown) and possibly more.

(2) There are other rhinos scattered over much of eastern Sabah; the number is unknown, but appears to be at least ten individuals. Some are isolated and probably the majority are not breeding.

(3) The rhinos can tolerate selective logging as practiced in Sabah and breed in logged forest; they cannot survive in non-forested areas, and much of eastern Sabah has been allocated for permanent agriculture.

(4) Poaching of rhinos continues and cannot be prevented.

In March, 1984, about 122,000 hectares of the Silabukan area were legally gazetted as Tabin Wildlife Reserve (see map). The threat of poaching is undoubtedly a significant and long-term problem, but we consider it important to try to maintain a population of wild rhinos. Any suggestion that rhinos be caught from Tabin W.R. will not be entertained. On the other hand, we do not consider it advisable at present to introduce rhinos into Tabin from elsewhere. There are two reasons for this. Firstly, we do not have adequate knowledge of the existing rhino population to assess whether introduction of new rhinos will in practice enhance its survival prospects. Secondly, the risk of poaching of new rhinos is high, probably to a greater degree than the risk for resident rhinos. There are several other conservation areas of large area and with rhino habitat in Sabah (see map). Kulamba Wildlife Reserve (20,682 ha) is too small to support a viable rhino population, since it is mostly swamp forest with patches of dry land. A few rhinos do exist in and around Kulamba, however. Tawau Hills Park has no rhinos and is rather small and isolated. Danum Valley and Gunung Lotung Conservation Areas, and the forest between and around these areas, does support some rhinos, but few, and the region is difficult to survey. There are no rhinos in the Crocker Range and none have been reported in Kinabalu Park for over 25 years. There are no Reserves suitable for translocation of rhinos from isolated [illegible] in agriculture

The Future

Our most important task in Sabah is to maintain Tabin Wildlife Reserve and its rhinos, in the face of constant poaching pressure, and in the longer term against an increasing human population and need for agricultural land. About half of Tabin is good, accessible land suitable for permanent agriculture. Based on available information, our best guess one year ago (October 1983) when the last major survey was done was that Tabin Wildlife Reserve and adjacent land already allocated for agriculture supported about 20 rhinos. Since that time, we believe that at least three of those rhinos have been killed. Despite this, we feel on principle that every effort should be made to conserve a wild population of rhinos in Borneo while the chance still remains. We also feel that a captive population of rhinos is an essential complement to the wild population, as a guarantee against failure of the wild population, and, in any case, as a source of new rhinos in the future to maintain adequate genetic diversity in the wild population. Fortunately, a potential source of rhinos for captive breeding is still available, in the form of scattered individuals in logged forest throughout eastern Sabah, most of which is allocated for agricutlure. We estimate that there are about fifteen such rhinos, although this is little more than a guess based on occasional sightings of rhinos or fresh tracks.

The general feeling in Sabah is that any rhinos caught should remain within Sabah. We appreciate that, for several reasons, this may not be feasible in the immediate future. Most urgent is to reach an amicable agreement on how best to make best of rhose rhinos which are still alive but doomed.

SINGAPORE ZOOLOGICAL GARDENS
80, MANDAI LAKE ROAD, SINGAPORE 2572. TEL: 2693411-5
CABLE: "ZOOGARDEN"

OUR REF:

OUR REF:
(Please quote in reply)

18 Sept 84

Dr John Payne, Ph.D.
Wildlife Section
Forest Department
P O Box 311
Sandakan, Sabah
Malaysia

Dear Dr Payne

SUMATRAN RHINOCEROS AD HOC MEETING 2 TO 4 OCT 84

As you know, the venue for the ad hoc meeting on the Sumatran Rhinoceros will be held in Singapore from 2 to 4 Oct 84. The meetings will be held at :-

Boulevard Hotel
40 Cuscaden Road
Singapore 1024
Telephone : 7372911
Cable : Boutel
Telex : Boutel/RS 21771

Oct 2. QB
evening: E
Ming Court Rd..

Individual rooms have been reserved for you in this hotel.

As delegates will be arriving at various times and on different dates, no transport has been arranged from the airport to the hotel. Hence please take a taxi to the hotel which will cost in the region of S$10.

I suggest you call me or Dr Roy Sirimanne, our Veterinary Health Officer, on arrival at the hotel. Our telephone numbers are as follows :-

Singapore Zoological Gardens	: 2693411
Bernard Harrison's Home	: 2697728/3684733
Dr Roy Sirimanne's Home	: 2697728

I look forward to seeing you in the near future.

Yours sincerely

Bernard Harrison
Director

BH:jy

BY AIR MAIL

AEROGRAMME

AIRLETTER

SINGAPORE 18.9.84

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POSTAGE H 266

Mr John Payne, Ph.D.
Wildlife Section
Forest Department
P O Box 311
Sandakan, Sabah
Malaysia

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SENDER'S NAME AND ADDRESS:—

SINGAPORE ZOOLOGICAL GARDENS

80, MANDAI LAKE ROAD.

SINGAPORE 2572.

An air letter should not contain any enclosure, otherwise it will be surcharged or sent by surface mail.

FORM APPROVED BY THE POSTMASTER-GENERAL
SINGAPORE NO. AL-14

John Payne Ph D.
C/O Mike Kavanagh,
7 Jalan Ridgeway,
Kuching,
Sarawak,
Malaysia.

White House,
San Roque,
San Jose,
Occidental Mindoro.

30th May 1984.

Dear John,

Following my letter of the 22nd May I am writing again in some haste to let you know that Steve Romo, the young man from the Cinncinati zoo, would like to join our field trip on the 25th June. I note you have kindly booked me a flight on flight No. MH 261 from Sandakan to Lahad Datu on the 25th June and a return flight to Sandakan on the 28th June. I hope you won't think it rude of me if I write to Patrick Andau asking him to reserve a booking for Steve Romo as well.

Tomorrow I leave for Kuala Lumpur and will meet up with Steve there, he is travelling via Singapore so that he can visit the Zoo as apparantly the zoo vet had something to do with the Sumatran Rhino that was caught. I understand that another animal has also beem caught, a young male, anyway I will hear the details tomorrow no doubt.

All the best,

D.A. PARKINSON.

John Payne Ph D.
C/O Mike Kavanagh,
7 Jalan Ridgeway,
Kuching,
Sarawak,
Malaysia.

White House,
San Roque,
San Jose,
Occidental Mindoro,
Philippines.

22nd May 1984.

Dear John,

Thank you for your very helpful and kind letter of the 7th May, I appreciate all your efforts and am sorry if we are taking too much of your time.

The schedule that you have indicated sounds great to me, and I am pleased that you will be able to spend a little time in the field with me. However, if at the time you find things in too much of a rush and can't make the trip please don't hesitate to say so and I will merely manage as best I can. In any event I confirm that I will arrive in Sandakan either on the morning of the 23rd June or 24th, and I will send Patrick Andau a cable giving my flight numbers etc. I have incidently taken your advice and written him a letter giving details of the trip.

I am most grateful for all the information in your letter and have taken note.

You will have heard that a Rhino was caught in West Malaysia; and I have now been asked by Dr. Foose to go there on the 29th of May. I'm now merely waiting to hear from the Director General, Mohamed Khan in Kuala Lumpur for his approval. I did talk to him on the telephone the other day, before I received the instructions to go to Kuala Lumpur and it appeared the animal was doing okay. Anyway the AAZPA are sending out a young man by the name of Steve Romo from the Cincinnati Zoo and he will accompany me and stay on to help look after the Rhino.

It appears that there is still some doubt about the Rhino project as Dr. Foose has said that after my visit to Sandakan, they are trying to have IUCN SSC Rhino group meet in Kuala Lumpur, if this does not work out they might then have the meeting in either July or October this year. By the time we meet I will no doubt have all the details.

Again many thanks for all your help, looking forward to seeing you.

Regards,

Sincerely,

D.A. PARKINSON.

JEROCO PLANTATION SDN. BHD.

(INCORPORATED IN MALAYSIA)
LOCKED BAG NO. 2, LAHAD DATU, SABAH, MALAYSIA.

TEL: 81122-5
CABLE ADD: "HAPSENG" LAHAD DATU
TELEX: MA83141

Our Ref: GM/XY/84/982

Dated : 21st May 1984

J. Payne Esq.,
Forest Department,
P. O. Box 311,
SANDAKAN.

Dear Mr. Payne,

Re : Visit to East Sabah - Mr. Tony Parkinson

We refer to your letter of 7th May, and would advise that we have accommodation available, should you require to spend the night on Jeroco, during your visit to this area in the latter part of June.

Yours faithfully,
for JEROCO PLANTATIONS SDN BHD

J A FOSTER
General Manager

JAF/aj

John / Please reply.
Cindy

↓ 0
↑ LEOBUR MA30423

↓ 817036 SCMU G

9.5.84

TO: JOHN PAYNE, WWF MALAYSIA

AM ASKED TO COMMENT ON AAZPA SUMATRAN RHINO CAPTIVE BREEDING PROPOSAL AND WOULD LIKE ACCURATE DATA ON PRESENT PROTECTION STATUS OF SILAHBUKAN TABIN AREA AND PROGNOSIS FOR RHINO POPULATION. ARE THE RHINOS OUTSIDE RESERVES COMPLETELY ISOLATED. HOW MANY RHINOS IN SABAH DO YOU ESTIMATE AS BEING DOOMED REMNANTS AND HOW MANY IN PROTECTABLE RESERVES? DO YOU THINK THE AAZPA PROPOSAL IS REALLY GOING TO HELP? WOULD A LOCAL FOREST BREEDING STATION BE BETTER?

BEST WISHES
ANDREW LAURIE

PLEASE REPLY VIA JANE THORNBACK

817036 SCMU G0
↑ LEOBUR MA30423

Forest Department,
P.O. Box 311,
Sandakan.

7 May 1984

Mr Peter Lee,
Agfordev Corporation,
Locked Bag No 9,
Lahad Datu.

Dear Peter,

I hope that you received my letter of last week, explaining why I left Lahad Datu so quickly and thanking you for you hospitality over the past two years.

I shall be in Sabah for a short time in late June. On one day, probably the 27th (a Wednesday) June, I shall be visiting the Kretam area and hope to stay for one night. The purpose of the visit will be to accompany a professional large animal trapper, Tony Parkinson, to see eastern Sabah, with a view to catching rhinos and possibly elephants. He is employed by the New York Zoo Society and will be here briefly.

We will be a group of myself, Tony, either one or two wildlife rangers and my fiancee. Is there any chance of putting up for one night at your Amalania camp? If there is any problem we can perhaps stay at Jeroco. I am about to write to Mr Foster saying that we may turn up.

I shall be out of Sabah (in Brunei and Sarawak) from tomorrow until 24 June.

Best wishes,

John Payne.

Forest Department,
P.O.Box 311,
Sandakan.

7 May 1984

General Manager,
Jeroco Estate,
Locked Mail Bag 2,
Lahad Datu.

attn. Mr J A Foster.

Dear Mr Foster,

We met in Lahad Datu last month in connection with electric fencing.

Towards the end of June, and probably on Wednesday 27, I shall be visiting the Kretam area and hope to stay for one night. The purpose of the visit will be to accompany a professional large mammal trapper, Mr Tony Parkinson, to see eastern Sabah with a view to trapping rhinoceros and possibly elephants (although, as I mentioned to you, trapping a few elephants won't go any way to solving your problems).

I wonder if there is any possibility of staying for that night on Jeroco. We dont need anything special - both Tony and I are accustomed to all sorts of sleeping place.

The group would probably be us two, my fiancee and two wildlife rangers (but no more than that).

I am writing simultaneously to Peter Lee, of Agfordev. for Amalania Cocoa, an old friend, with a similar request, incase one or other of Jeroco or Amalania cannot take us.

I shall be out of Sabah from tomorrow until 24 June.

With thanks for your attention,

John Payne.

Forest Department,
P.O.Box 311,
Sandakan,
Sabah,
Malaysia.

7 May 1984.

Tony Parkinson,
White House,
San Roque,
San Jose,
Occidental Mindoro,
Philippines.

Dear Tony,

Thanks for your letter (25 April 1984).

As I mentioned in my last letter, I have been and will continue to be very busy for some time to come. I fear that I shall not be able to spend much time with you during your Sabah visit.

My programme is:
9 May to approx. 6 June, in Brunei, c/O J D Marsden, Locked Bag No. 3, Bandar Seri Begawan, Brunei.
7 June to 24 June, c/o Mike Kavanagh, 7 Jalan Ridgeway, Kuching, Sarawak, Malaysia.
I expect to arrive in Sandakan on the afternoon of 24 June, and leave for Kuala Lumpur on 3 Or 4 July.
However, during that period of 10 days or so, I will be doing some WWF work and trying to take a break before returning to U.K. to write my mammals of Borneo book. Apart from the odd Sundays, I haven't had any time off since my visit to the Philippines in January 83. 29 june to 1 July, roughly, will be a public holiday, and I hope to be able to spend my first ever full day with my fiancee.
What I propose is:
meet you in Sandakan on 24 June. 25 June, you go to Lahad Datu with a Wildlife Ranger (I stay in Sandakan). You visit Tabin Wildlife Reserve (recently established; although this will not be a capture area, it is typical of much of what will be, and you will have a reasonable chance of seeing rhino tracks). On 27 June I join you in Lahad Datu town (this is the largest settlement and the only town within the region where most trapping would be done) and we go to the Kretam region. You are unlikely to see rhino signs here, but it is the region where trapping is most likely to start, since it does contain a small number, is fairly accessible, and is being opened up rapidly. On the afternoon of 28 June, we return together to Sandakan.
I will book (but not buy) flights for you (Lahad Datu is accessible, but by a bad, sometimes impassable road); these are:
Mon 25 June Sandakan to Lahad Datu Flight No. MH261 0655-0720 hrs. (M$38)
Thurs 28 June L. Datu to S'kan Flight No. 276 1600-1625 hrs.

Re. turtles. If you arrive around 22 June, as you suggest in your letter, and in any case, earlier than me, you could investigate this matter. I know very little. You should talk not only to Patrick, but also to Mr Stanley de Silva, Warden o' Parks on the east coast of Sabah, which includes the Turtles Park, off the Sandakan Peninsula. It may well be worth visi

the Islands. There is good accomodation on the largest of the isalnds. Ypu could write to: Warden, Turtle Islands Park, P.O.Box 768, Sandakan, Sabah, Malaysia asking to visit the place. There are no regular boat services. If a biggish group wants to go, people normally hire the Parks speed boat (I don't know the present rate - probably about M$300 for the round trip). In addition to wrting to the Warden, you could write to Patrick, and ask him to chase up on booking boat and accomodation. Although the Parks sometimes seem reticent on giving out information, the Warden should be able to give you more information than I or anyone else in Sabah. So that you might receive more help, you could also write to the Director, Sabah Parks, P.O.Box 626, Kota Kinabalu, Sabah; tell him what you want to do.

Unfortunately, as my contract ended recently, I am giving up my flat and will be staying with a friend during my June0-July visit to Sandakan. A convenient place to stay in Sandakan, at least initially, would be the Hsiang Garden Hotel (about M$100 per night; Sabah is about the most expensive place in South-east Asia). In the same block is the Resort Lodge Hotel, of about the same standard but a different atmosphere. The Parks office is nearby, but Forest Dept. is out of town. I enclose a map. Keep in touch with Patrick as much as possible, by post, otherwise everyone will forget your visit until the last day. If you send your E.T.A., someone should meet you from the Forest Dept., especially if you arrive on a working day (between 8 and 4.15, Mon to Fri; 8 to 12.45 on at). If you want a break in Kota Kinabalu, contact Clive Marsh.

Best wishes,

John Payne.

J. Rayn

American Association of Zoological Parks and Aquariums

EXECUTIVE OFFICE AT OGLEBAY PARK, WHEELING, WV 26003-1698 (304) 242-2160

DATE: 1 March 1984

REPLY TO: Thomas J. Foose, Ph.D.
AAZPA Conservation Coordinator
ISIS Office
Minnesota Zoological Garden
Apple Valley, MN 55124
(612) 432-9010, Ext. 255

Mohd. Khan b. Momin Khan
Director-General
Department of Wildlife & National Parks of Malaysia
Block K-20/Jalan Duta
Kuala Lumpur, WEST MALAYSIA

Dear Chief:

The photographs are absolutely fabulous. Bill and I can't express our appreciation for what are undoubtedly the best color photographs in existence of Sumatran rhino in the wild. I have also assumed the liberty of providing copies to several other zoo persons involved in our proposed project. Everyone is extremely impressed.

Indeed, I believe the photographs could and should be published. May I recommend you (and/or your staff who collected the photos) consider submitting them to some publication (preferably in color). Some possibilities would require text (e.g., Natural History or National Geographic) but with some it might be minimal (International Wildlife, perhaps even Life Magazine). Maybe Asiaweek is a possibility. (Unfortunately, I don't read this magazine often enough to know what their policy on color photos is.)

In any case, I believe these photographs should be published so they are accessible to a wide audience and so you and your staff receive credit (perhaps even some money that could be reinvested in your programs). Let me know if I could help.

The AAZPA institutions interested in the Sumatran rhino project conducted a meeting recently in an endeavor to organize better for their part of the project. Basically, the plan is to form a Sumatran Rhino Survival Trust. It was also decided the AAZPA would attempt to concentrate in Malaysia deferring any Indonesian activities for now. Tony Parkinson has been retained on contract and will be available for initial visits to Malaysia in the near future. Recent communication with Patrick Andau suggests that late March may be the earliest such a visit is feasible in Sabah because of the monsoons.

I'm hopeful we would be ready to proceed in earnest with the project by June. Toward this objective it seems ever more constructive to us that there be a meeting, as we have discussed in the past, of all parties to be involved in the project (you and your staff, Patrick Andau and his staff, AAZPA representatives, Tony Parkinson, Nico Van Strien, etc.) to finalize details and hopefully initiate the project on the ground. I would think this meeting might occur in June somewhere in Malaysia (Sandakan, Kuala Lumpur).

We had also discussed the possibility that this session to finalize organization of an actual project might occur in conjunction with a meeting of the Asian Rhino Specialist Group. I assume you received copies of the responses from Seal and Andau to Schenkel's letter and critique. I've received no further feedback although I am now an official member of the Asian Rhino Specialist Group as the enclosed correspondence indicates. Did you ever respond to Schenkel and/or have you received any notification of a meeting.

Let me know what you think about dates and location for a meeting. Regards to Louie and Khairiah.

Yours truly,

Thomas J. Foose, Ph.D.
AAZPA Conservation Coordinator

TJF/slp

Enclosures

J. Payne

American Association of Zoological Parks and Aquariums

EXECUTIVE OFFICE AT OGLEBAY PARK, WHEELING, WV 26003-1698 (304) 242-2160

DATE: 1 March 1984

REPLY TO: Thomas J. Foose, Ph.D.
AAZPA Conservation Coordinator
ISIS Office
Minnesota Zoological Garden
Apple Valley, MN 55124
(612) 432-9010, Ext. 255

Grenville Lucas
Herbarium
Royal Botanic Gardens
Kew, Richmond
Surrey TW9 3AB
London, ENGLAND

Dear Dr. Lucas:

Thank you for your letter of 26 January 1984 confirming my membership on the SSC Asian Rhino Specialist Group for the remainder of the current triennium. My interest in Asian rhinos is intense and I'm hopeful I can be of help in developing realistic strategies for conservation of these species that integrate both (1) preservation of populations in those natural sanctuaries that are sufficiently large and protectable to be viable over the long-term, (2) propagation in captivity as a means of reinforcing the field efforts. Hopefully there may be a meeting of the Group in the near future so the entire Group can explore various options.

Sincerely,

Tom

Thomas J. Foose, Ph.D.
AAZPA Conservation Coordinator

TJF/slp

cc: R. Schenkel, Chairman, SSC Asian Rhino Specialist Group
R. Wagner, Executive Director, AAZPA

UNION INTERNATIONALE POUR LA CONSERVATION DE LA NATURE ET DE SES RESSOURCES
INTERNATIONAL UNION FOR CONSERVATION OF NATURE AND NATURAL RESOURCES

COMMISSION DE LA SAUVEGARDE DES ESPÈCES - SPECIES SURVIVAL COMMISSION

Dr. Thomas Foose
AAZPA Conserv. Coordinator
ISIS Office
Minnesota Zoological Garden
Apple Valley, Minnesota 55124
UNITED STATES

26 January 1984

Dear Dr. Foose,

For the record, I should like to confirm your membership on the SSC Asian Rhino Specialist Group for the remainder of the current triennium, under the chairmanship of Prof. Dr. R. Schenkel.

As you may know, Group members are appointed for a period of three years between two General Assemblies of IUCN. Commissions and Specialist Groups will be dissolved in November 1984 at the time of the 16th General Assembly, however members may be reappointed when the Commission is reconstituted.

In common with all Specialist Groups of the SSC, group members are asked to advise the Commission, through their Group Chairman, on conservation matters relating to their field of competence and to gather information for the Red Data Books. Most of the work of the Group is carried out by correspondence, although it may be necessary to arrange a meeting from time to time.

The SSC Action Plan is built up on the advice of the Specialist Groups so your role within the Commission's organisation is absolutely vital for the success of IUCN's total conservation programme.

Wishing you every success in your conservation efforts,

Yours sincerely,

Gren Lucas
Chairman
Species Survival Commission

cc: RSchenkel

STERNA NATURE TOURS

Lot 2.36, 2nd Flr, Wisma Stephens, Jalan Raja Chulan, Kuala Lumpur.
Tel: 412416, 422801, 413288 Cable: STERNATOUR Telex: ~~HASENG MA30516 div 130~~

23rd February 1984

Dr John Payne
c/o Game Branch
Forest Dept.
P O Box 311
Sandakan
SABAH

Dear John,

Much appreciate the information re the rhino project in your note. Thank you.

Sad to learn that there is still no definite indication whether the project will run or not.

And since I can't hold off my tour commitments any longer to wait for a definite answer, I regret to advise that I have decided not to pursue the matter anymore.

So sorry but I think it is the best thing for me to do.

John, thanks for your kindness again. Best regards.

Sincerely,

Dennis

DENNIS YONG

P.S. Have written to Clive and told him of my decision. Am truly sorry to have to give up at this stage when I am all fired up to go.

NEWSCAN

Client: WWF

Date: 26 JAN 1984

Publication: SOUTH CHINA MORNING POST

Circulation: 50,000

Ambitious project to save Sumatran rhino

A MULTI-MILLION dollar project to round up the last wild survivors of a rare species of rhinoceros is being prepared by a group of American zoos.

They want to use specially designed traps, helicopters, and transport planes to catch the endangered Sumatran rhino — a solitary resident of Asian rain forests — to establish breeding herds in the US. At present, there are no Sumatran rhinos in captivity, the last zoo animal died 10 years ago.

Zoologists believe one million species could become extinct this century and that their only survival hopes exist in captivity.

"Zoos used to be local, parochial concerns. Now they find they have been given a global responsibility to save the world's wildlife," said Dr Tom Foose, conservation co-ordinator for the Association of American Zoological Parks and Aquariums.

His association has selected several animals for urgent attention — including species of gorillas, elephants and tigers.

Most are already kept in zoos.

Saving the Sumatran rhino would be a far more ambitious undertaking and is being viewed as a pilot for other rescues.

The Sumatran rhino, which has an unusual bedraggled woolly coat, was once common in Southeast Asia.

However, recent destruction of its forest homes, and hunting — for its hide and horn which have alleged medical and aphrodisiac properties — have led to a drastic decline.

At most there are only a few hundred left. Some are guarded in Malaysian and Indonesian reserves; the rest would be rounded up as part of the US project.

"Sumatran rhinos are now so rare, they have little chance of meeting and mating," said Dr Foose. "Even if they do, it happens in such isolated areas, there is great danger of inbreeding — from which they could die out."

The association will use professional trackers to find individual animals which will then be trapped and helicoptered to local centres.

Under agreements with Indonesian authorities, half the captured total will be kept in local zoos, the others will be kept in the United States.

There breeding research will be carried out in a bid to raise rhino numbers. Some would then be reintroduced to the wild — although this would be fraught with problems.

Scientists have had only one previous rescue success — with the Arabian oryx.

The last survivors were flown to Phoenix zoo, Arizona, where they successfully bred. Now there are more than 230 and some are being reintroduced to the wilds of Oman.

This procedure requires building temporary enclosures, radio tagging and ensuring the co-operation of tribesmen.

Doing the same for Sumatran rhinos, and other poorly understood animals, would be extremely difficult.

"One answer is to learn how to freeze rhino semen and embryos; catch animals in reserves; and then impregnate them," and Dr Foose.

Such a programme would take time to perfect, however — as pressure grows for action to save other animals.

by ROBIN MACKIE —London

Nevertheless, the Sumatran rhino project, which still has to be finalised with Indonesian authorities, is likely to be a model for future conservation.

Animals will be bred in zoos and used to keep up, or raise, numbers in reserves.

Even so, most of this century's threatened one million species — particularly the invertebrates, reptiles and insects — are unlikely to survive.

Only the large mammals have much hope, say zoologists.

And next century, the problem will get worse.

One leading conservationist, Paul Ehrlich, warned of a period of extinctions to rival those which wiped out dinosaurs 65 million years ago.

Hundreds of millions of square miles of wildland will be wiped out, along with two-thirds of the planet's different species, as a result of increased farming and urban spread.

"For the first time in geological history," said Mr Ehrlich, "a major extinction period will be caused by a single species — homo sapiens."

— LOS.

Payne

UNION INTERNATIONALE POUR LA CONSERVATION DE LA NATURE ET DES SES RESSOURCES
INTERNATIONAL UNION FOR CONSERVATION OF NATURE AND NATURAL RESOURCES

CAPTIVE BREEDING SPECIALIST GROUP

Prof. Dr. Rudolph Schenkel
Chairman, IUCN/SSC Asian Rhino Group
Nadelberg 20
CH-4051 Basel
Switzerland

18 January 1984

Dear Dr. Schenkel:

I appreciate receiving your letter of 5 January 1984 and the accompanying analysis of the AAZPA and Howlett's plans for capture and captive propagation of the Sumatran rhinoceros.

I am responding as Chairman of the IUCN/SSC Captive Breeding Specialist Group. This group is composed of about 20 members with representatives from Asia, South America, North America, Western and Eastern Europe, and Russia. This group was constituted by the SSC to provide expert advise to the IUCN on captive breeding programs as a part of the strategy for conservation of endangered animal species.

All members are deeply committed to the principle that the maintenance of natural free-ranging populations of all species, viable on an evolutionary time scale, is the primary goal of conservation. We are equally deeply committed to the principle that we use all of the resources available to us to assure the preservation of as much genetic diversity as possible for future choices. We believe that it is preferable to use captive breeding as a means of preservation rather than to allow species to become extinct.

We do not consider captive breeding to be a means of conserving natural ecosystems. Rather captive breeding is a means of preserving some species and a part of our heritage of genetic diversity on this planet for possible use in replacement or restocking or supportive maintenance of wild populations which you and other conservation groups can eventually secure through enduring public support.

However, we are keenly aware of the fact that many animal species have succumbed to the pressures of expanding human populations and that this process appears unrelenting as demonstrated by the extensive fragmentation of the Sumatran rhino population into many very small islands of a few individuals.

The historical fact that some species have survived only because of captive breeding and the necessity for maintaining species in captivity as self-sustaining populations have led to an intense interest in the biology of small populations including their genetics, demography and evolution. This has resulted in an expanding interest by the academic and professional wildlife community in these topics as reflected in 2 recent symposium volumes (Conservation Biology edited by Soule and Wilcox. Sinauer Assoc., Inc. Sunderland, Mass. USA 1980. 395 pp. & Genetics and Conservation edited by C. M. Schonewald-Cox et al. The Benjamin/Cummings Pub. Co., Inc. London or Sidney 1983. 722 pp). and the book by Frankel and Soule (Conservation and Evolution. Cambridge Univ. Press. 1981. 327 pp).

This theoretical, experimental, and analytical work and analyses of the history of captive populations of more than 25 species, for which extensive data are available from studbooks and the records of several captive breeding institutions, have combined to strongly demonstrate the high risk of extinction faced by a species when its effective population size falls below a critical size range. This appears to be the result of the loss of genetic variability by drift and the hazards of rapid inbreeding with a resultant loss of viability, decrease in fecundity, and the appearance of numerous defects.

The smaller the population size, the more rapidly the loss of genetic variability occurs.

The same hazards of small population size apply whether the species is maintained in captivity or exists in a free ranging population.

The determination of the population size necessary for viability becomes critical for making judgements concerning the necessity and urgency of a supporting captive breeding program for the survival of an endangered species.

Current analysis indicates that if the effective population size falls below 100 (about 140 to 180 individuals in a randomly breeding population with a stable age distribution) then the process of evolution is dominated entirely by genetic drift and loss of genetic variability rather than selection. An effective population size of about 500 (about 750 to 1000 individuals in a randomly breeding population with a stable age distribution) is required if evolution by selection and replenishment of genetic variability by new mutation are to occur.

The rate at which genetic variability is lost from small populations is also important for the time scale of our decision making process to initiate a captive breeding program, the numbers of animals required, the population size to sustain, and the breeding strategy to be employed.

All of these considerations, when applied to the circumstances of the Sumatran rhinoceros as documented by the data in the literature associated with the Asian Rhino Group Plan and the AAZPA plan, indicate this species is one of the most critically endangered mammals in the world. In particular the fragmentation of the wild population into multiple disjunct very small units indicates that there is not a single unit which is viable on an evolutionary time scale. Many of the units, composed of 1 to 10 individuals, are not viable even on a short time scale of 1 to 3 generations (because of poaching, habitat removal, accidents of age and sex distribution, disease, breeding failure) despite the occassional evidence of reproduction indicating that at least a pair may be present.

Projection of recent trends on the current status indicates that many of these animals will be lost to the species with no contribution to a surviving gene pool. These animals could easily make a major contribution to the preservation of the species through a captive breeding program without any effect on the survival of the larger units whose protection through conservation measures is so urgent.

The possibility of translocation of some animals for augmenting some of the units is appealing. However, reported experience with deer, wolves, and primates suggests that such a strategy may be difficult to accomplish because of harassment by indigenous animals in response to intrusion of strange animals. Also transplanted animals of many species undertake extensive migrations and many will move in the direction of their original range over distances of many kilometers. Similar experiences have been observed with translocated Indian rhinoceros. Therefore it will be essential that such efforts be carefully followed to evaluate effectiveness.

Experience with conservation programs for other large mammal species around the world indicates that a strongly publicized captive breeding program in conjunction with a protected reserves program can serve to generate national public support for a species and the necessity for protection of its habitat. Certainly, this species has not been exploited or used for exhibition purposes and there is no public awareness of its plight or its unique character.

If a meeting of the Asian Rhino Group is held to discuss these matters, then the Captive Breeding group needs to be represented (perhaps myself). The AAZPA (Dr. Foose) and and a representative of Howletts should also be invited. It would appear desirable that such a meeting occur in South East Asia so that as many of the involved local conservation officials as possible attend and participate.

Sincerely,

U. S. Seal
Chairman, Captive Breeding Specialist Group IUCN/SSC
V A Medical Center
54th St. & 48th Ave. South
Minneapolis, Minnesota 55417 USA

cc: CBSG
Asian Rhino Group
Foose
Howletts
Lucas
Scott

UNION INTERNATIONALE POUR LA CONSERVATION DE LA NATURE ET DES SES RESSOURCES
INTERNATIONAL UNION FOR CONSERVATION OF NATURE AND NATURAL RESOURCES

CAPTIVE BREEDING SPECIALIST GROUP

25 January 1984.

Dr. Rudolph Schenkel, Chairman
IUCN/SSC Asian Rhino Group
Nadelberg 20
CH-4051 Basel
Switzerland

Dear Dr. Schenkel:

The following comments on the 'expose' of the AAZPA plan are arranged in sequence by paragraph. They are intended to offer my understanding of the intent and proposed implementation the AAZPA Sumatran Rhino Plan. I heard the original presentation and discussion of the plan at the AAZPA meeting in Vancouver, BC, Canada in September 1983. I have also discussed the details of the proposal at length with Dr. Tom Foose, the Conservation Coordinator of the AAZPA and author of the plan. General comments reflecting my views on the role of captive breeding programs in conservation biology are treated in more detail in the accompanying letter.

Paragraph 1. We know of 3 approaches to IUCN for capture of Sumatran Rhinos. One is the current plan of the AAZPA, the second is the Howlett effort, and one was by Marcus Borner a former graduate student of Dr. Schenkel. We know of none recorded for the Javan Rhino.

Para 1. There is no intention in the AAZPA plan to place any of these animals on ranches. Howletts is proposing 4 pairs (not 1) with several proposed distributions.

P2. The AAZPA proposal emphasizes Malaysia not Indonesia as location for capture as well as local zoo populations.

P2. Wildlife departments and zoos in Malaysia and Indonesia have indicated support for the project based upon their belief that it will be beneficial for the Rhino.

P2. The AAZPA has made no proposals to remove animals from the main sanctuaries or 'viable' populations. They emphasize recruitment from the numerous small isolates that are clearly not viable and which are under continued threat.

P4 - P7 These paragraphs present important fundamental issues. These problems are amenable to explicit semi-quantitative analysis in terms of the evolutionary population biology of small populations. It is necessary to develop a population oriented strategy to determine when and why management is necessary and self-regulation is no longer possible? Interrelated problems are: area of reserve or

protected habitat available, population size necessary for conservation as a unit capable of evolution by natural selection, and extinction by loss of genetic variability by drift over the generations. Time scale must be evolutionary not just our lifetime. (See letter).

P8 - P11 The need for captive populations is a response to the clear lack of viable natural populations of the Sumatran Rhino. It is an effort to provide a stop-gap measure to ensure that you and others in the next generations will have animals to restore to natural populations. In the meantime cooperative management between zoo-captive populations and reserve-captive populations is emerging as an essential strategy. This project is not trying to supersede but to assist and supplement habitat and natural population conservation.

P8 The concern of the AAZPA for captive management reflects their expertise not their lack of concern for the wild populations. We hope that the Asian Rhino Group will develop a population oriented survival plan for the wild populations. The plan will need to be explicit and quantitative perhaps with the orientation of a recovery plan.

P12 - P15 Rhinos have and are disappearing from available rhino habitat. The strategy of wait and see allows of only one failure. When the failure is observed it is then too late to retrieve the population or species. A safe-to-fail strategy allowing of multiple failures without loss of the species is needed.

P17 The AAZPA is definitely not proposing that its plan be the sole program for preservation of the Sumatran Rhino. The AAZPA is offering it special resources and experts for the purpose of captive propagation as part of a larger plan to conserve the species. It is not the jurisdiction or desire of the AAZPA to compete in the wild habitat conservation domain. Zoos can serve as an important resource for public education as well. They have the potential to serve as a focus for developing a national and international consciousness for the conservation of large or keystone species unique to SE Asian countries.

P17 The need for a population biology definition of a viable population is central to this issue. Use of isolates for establishment of a captive population is a workable alternative to allowing these animals to perish with no contribution to the next generation.

P18 The use of pejorative argumentation does not serve the cause of species survival.

P21 - P22 The population survival oriented interaction of wild and captive populations would be by exchange of genetic material to reduce or minimize loss of genetic variability by genetic drift. The techniques chosen will be species and area dependent. I would anticipate that the opportunity to observe and study some of these animals in captivity will provide further insights into their behavior, genetics, and reproductive physiology that might be useful for choosing appropriate methods.

P23 The AAZPA plan proposes that a total of 12 to 24 animals be equally divided between the three areas (Sabah, West Malaysia, Sumatra) and the USA. Thus if 24 are captured it would mean 12 animals to the USA and 12 in SE Asian zoos.

P23 The number of animals currently in non-viable populations or unprotectable sanctuaries is between 45 and 85 (Table 3 AAZPA document). Thus less than 1/2 of the eligible animals are proposed for capture.

P24 The questions raised in this paragraph can not be answered since experience with this species is so limited. However the current status of the small remanants is such they will not contribute to a surviving viable wild population. Translocation poses at least as many hazards plus the uncertainty of its being genetically successful. Translocation attempts with the Indian and Black Rhino have been reported to be unsuccessful by people involved. This is a very worthwhile topic for a carefully planned study. It will probably need to be structured as a carefully designed field study with the use of radiotelemetry to track and follow the released animals.

P24 The techniques and experience that have been developed with other Rhino species indicate that appropriate professionals can accomplish the task with minimal losses.

P25 The projected 10% rate of increase mentioned here is for a reproducing population. It does not appear as such in the AAZPA document. The demographic techniques which we use for projection of population changes include survivorship or mortality as well as fecundity.

P26 With respect to experience it is appropriate to note that success has been achieved with other rhino species and other large forest mammals - tapirs, okapi, and orang-utan.

P27 The AAZPA proposal is only for the Sumatran Rhino. The risk of failure is with animals that are doomed. The payoff may be a surviving gene pool for use in conservation of the species.

P28 - P29 The data presented for Indian Rhino do not agree with the data available to me. The International Studbook was published 1981 and is incomplete for recent data. Eight Indian Rhino calves were born 1976-83 in North American zoos with no stillbirths. Three died shortly after birth. Five of these captive born animals are alive now. Two North American females are now pregnant. Note that the demography of this group is important to comparisons of success or failure since only 10 sexually mature animals were involved. The Basel reproductive data cover 27 years and the USA data represent 7 years of opportunity. Thus the reproductive rates are about equal.

Conclusions:
(a) I concur with the philosophy you expressed here. Captive breeding is intended to reenforce the wild populations and serve as preservation or a rescue operation for the species.
(b) The risk of failure of the Sumatran Rhino Plan of the AAZPA does not appear as high as implied here.

(c) Javan Rhino was not included in the AAZPA plan. The presence of captive animals locally generated through an international effort will provide the kind of visibility that will promote local efforts at protection. See Project Tiger - India. The local people rarely see the rhino and discount their presence. Animals in a zoo could generate more support than all of the conservation plans so far proposed. They are an improbable looking beast.

(d) The summary rejection of all plans for captive breeding is not a logical outcome of available data or our understanding of population biology. This stand constitutes a serious threat to the survival of this species.

Lifeboats have merit. There are enough sinking ships with all hands aboard.

Respectfully and sincerely,

U. S. Seal

U. S. Seal
Chairman, Captive Breeding Specialist Group IUCN/SSC
Bld 49 Rm 207
V A Medical Center
54th St. & 48th Ave So.
Minneapolis, Minnesota 55417 USA