RSG

RE-INTRODUCTION NEWS

Newsletter of the Re-introduction Specialist Group of IUCN's Species Survival Commission (SSC)

No. 15 : March 1998

Letter from the Chairman
MARK R. STANLEY PRICE

RSG has entered a new triennium (1997-2000) and is in the process of appointing members. There was a delay in membership recruitment due to SSC initiating a new membership database. This unfortunately resulted in a delay in sending out membership forms. This also delayed the production of the newsletter which could not be mailed until membership forms had been returned.

Annabel Falcon, the previous editor of the Re-introduction News left RSG last year and is now working with the International Gorilla Conservation Program in Uganda. The newsletter is now being edited by RSG's Technical Project Officer, Pritpal Soorae (Micky), in addition to his other roles.

The RSG was contacted by the Alliance of Marine Mammal Parks and Aquariums (AMMPA) in the US to peer-review Draft Guidelines for Small Cetaceans which were based on RSG's and AZA's existing guidelines. Once these guidelines are reviewed they will be provided to the Marine Mammal Commission and the National Marine Fisheries Service to help them over releases of cetaceans to the wild.

This new triennium has also seen some changes in RSG's organizational structure. Due to the increasing membership since RSG's inception it was decided to appoint new members for various sections of RSG. In this respect RSG's long-serving Vice-Chairman, Dr. Benjamin Beck, National Zoological Park, Smithsonian Institution has stepped down as Vice-Chair of the Re-introduction Specialist Group. He continues to serve as Chair of the Re-introduction Advisory Group of the American Zoo and Aquarium Association, and as Coordinator of Re-introduction for the Golden Lion Tamarin Conservation Program. Replacing Dr. Beck is Dr. Mike Maunder of the Royal Botanic Gardens, Kew, UK who also serves as the Plant Section Chair. Details of other changes are presented in the newsletter.

RSG's Technical Project Officer, Pritpal Soorae (Micky) attended the 11th. International Conference on Bear Research and Management in Graz, Austria during September 1997. An RSG paper titled "Successful re-introduction of large carnivores - what are the secrets?" was also presented at this conference. RSG presented a poster on the Spanish translation of the Re-introduction Guidelines and a paper titled "Confiscated Live Animals - what are their placement options?" at the 3rd. International Conference on Wildlife Management in Amazonia, Santa Cruz, Bolivia in December 1997.

The Re-introduction Guidelines which already exist in English were further translated into French, Spanish, Arabic, Chinese and Russian are now being produced into booklet form. These booklets are being printed in five versions: English/French, English/Spanish, English/Arabic, English/Chinese, English/Russian and English only. These booklets will be distributed widely by IUCN to ensure knowledge of these guidelines.

We are also proposing to set up an RSG e-mail discussion list and hopefully members will use this opportunity to keep in touch and provide a medium for discussion. We hope this will be a productive triennium and Micky and I look forward to working closely with both members and specialist chairs.

Mark Stanley Price

Organizational Structure for Current Triennium (1997 -2000):

Chairman, Vice-Chairman & Secretariat

Chairman: Mark R. Stanley Price, KENYA
MStanleyprice@awfke.org
Vice-Chairman: Mike Maunder, UK
mm15kg@lion.rbgkew.org.uk
Secretariat: Pritpal S. Soorae, KENYA
PSoorae@awfke.org

Section Chairs

Australasia/Marsupials Section Chair: Dr. Doug Armstrong, NEW ZEALAND. *D.P.Armstrong@massey.ac.nz*
Aquatic Mammal Section Chair: Robert Bonde, USA
bonde@nersp.nerdc.ufl.edu
Birds Section Chair: Philip Seddon, SAUDI ARABIA
NWRC@compuserve.com
Habitat Restoration Section Chair: Brad Griffith, USA
ffdbg@aurora.alsaka.edu
Invertebrate Section Chair : Andrew Pullin, UK
a.s.pullin@bham.ac.uk
Plant Section Chair: Mike Maunder, UK
mm15kg@lion.rbgkew.org.uk
Primate Section Chair : Devra G. Kleiman, USA
DKLEIMAN@NZP.SI.EDU
Reptile & Amphibian Section Chair: Pritpal S. Soorae, KENYA
PSoorae@awfke.org
Ungulate Section Chair: Mark R. Stanley Price, KENYA
MStanleyprice@awfke.org

RSG Members

The members listed here are those whose membership forms have been received prior to 26th March 1998. Newsletters are only being mailed to the members listed below and our regular mailing list. To date we have only received back a total of 170 membership forms from a total of 320 mailed in October 1997.

North America and the Caribbean

Galen RATHBUN, USA: *galen_rathbun@usgs.gov*
Benjamin BECK, USA: *bbeck@nzp.si.edu*
Brown WALTON, USA: *walton@cats.ucsc.edu*
Cyndi KUEHLER, USA: *HTSU21B@prodigy.com*
Susan M.HAIG, USA: *haigs@fsl.orst.edu*
Rosemarie GNAM, USA *ROSEMARIE_GNAM@FWS.GOV*
Nate FLESNESS, USA: *Nate@ISIS.WORLDZOO.ORG*
Richard WATSON, USA: *rwatson@peregrinefund.org*
Liz SLAUSON, USA: l*iz@ipxnet.com*
Steven MATTHEWS, USA
Richard P.READING, USA: *rreading@econet.org*
Alan LIEBERMAN, USA: *HTSUZLC@Prodigy.com*
Brian MILLER, USA: *zoconservation@denverzoo.org*
Raul A.PEREZ-RIVERA, USA
William WADDELL, USA: *wwaddell@pdza.org*
Tom CADE, USA: *tcade@peregrinefund.org*
David WINGATE, BERMUDA: *wingate@BBSR.EDU*
Edward O.GUERRANT, JR., USA:
edguerr@agora.rdrop.com
Tim CLARK, USA: *twc4@pantheon.yale.edu*
Andrew T.SMITH, USA: *a.smith@asu.edu*
Jonathan BALLOU, USA: *JBallou@nzp.si.edu*
Michael WOODFORD, USA: *dinton@aol.com*
Christopher SERVHEEN, USA: *grizz@sclway.umt.edu*
Stephen HERRERO, CANADA: *herrero@evds.ucalgary.ca*
Rurik LIST, MEXICO: *rurik@toluca.podernet.com.mx*
Mike PHILLIPS, USA: *TESF@MONTANA.COM*
Rainer H.BROCKE, USA
Bob JOHNSON, CANADA: *bjohnson@zoo.metrotor.on.ca*
Bruce PAVLIK, USA: *bruce@mills.edu*
Steve SHERROD, USA: *gmsarc@aol.com*
Steve OSOFSKY, USA: *sosofsy@usaid.gov*
Steven FRITTS, USA: *steve_fritts@mail.fws.gov*
Ludwig CARBYN, CANADA: *lu.carbyn@ec.gc.ca*
Geoff HOLROYD, CANADA: *geoffrey.olroyd@ec.gc.ca*
Stuart PIMM, USA: *STUARTPIMM@AOL.COM*
Astrid VARGAS, USA: *astrid_vargas@fws.gov*
Scott HEREFORD, USA: *scott_hereford@mail.fws.gov*
Douglas SMITH, USA: *Doug_Smith@nps.gov*
James Perran ROSS, USA: *prosscsg@flmnh.ufl.edu*
Peggy Olwell, USA: *peggy_olwell@nps.gov*

West Europe

Thomas LANGTON, UK: *TOM@TRITONHOUSE.DEMON.CO.UK*
John KNOWLES, UK: *director@marwell.org.uk*
Francois MOUTOU, FRANCE: *vaal12@calva.net*
Christopher LEVER, UK
Michael FAY, UK: *m.fay@rbgkew.org.uk*
Jose M. IRIONDO, SPAIN: *iriondo@ccupm.upm.es*
Anthony M. HUTSON, UK: *batcontrust@gn.apc.org*
Michael B. USHER, UK: *mbu@rasdsnh.demon.co.uk*
Roland WIRTH, GERMANY: *106317.3335@compuserve.com*
Nick LINDSAY, UK: *curatorwwap@gn.apc.org*
Simon CAPT, SWITZERLAND: *simon.capt@cscf.unine.ch*
Jean-Francois ASMODE', FRANCE
Werner D'OLEIRE-OLTMANNS, GERMANY:
100767.504@Compuserve.com
Jean-Claude MALAUSA, FRANCE: *malausa@antibes.inra.fr*
Tommy SMITH, BELGIUM: *tsmith@kbinirsnb.be*
Waltraut ZIMMERMANN, GERMANY:
zoo.koeln@uni-koeln.de
William TRAVERS, UK: *bornfree@pncl.co.uk*
Stewart K. ELTRINGHAM, UK: *SKE1000@cus.cam.ac.uk*
Eliezer FRANKENBERG, ISRAEL: *eliezerf@ums.huji.ac.il*
Koenraad DE SMET, BELGIUM:
koen.desmet@lin.vlaanderen.be
Luigi BOITANI, ITALY: *boitani@pan.bio.uniromal.it*
Thomas SJOASEN, SWEDEN: *maude-g@algonet.se*
Peter OLNEY, UK
John LINNELL, NORWAY: j*ohn.linell@spe.hihm.no*
Peter JACKSON, SWITZERLAND: *pjackson@iprolink.ch*
David WAUGH, SPAIN: *dwaugh@jet.es*
Rocca FRANCESCO, ITALY
Frank E. RIETKERK, NETHERLANDS:
nvdzoos@nvdzoos.nl
Chris MAGIN, UK
Juliet CLUTTON-BROCK, UK
Ian SWINGLAND, UK: *IanSwingland@compuserve.com*
Margaret RAMSAY, UK: *m.ramsay@rbgkew.org.uk*
Lynne Margaret COLLINS, UK:
CUMBRIAWT@cix.compulink.co.uk
David SALTZ, ISRAEL: *saltz@bgumail.bgu.ac.il*
Piero GENOVESI, ITALY: *infspapk@iperbole.bologna.it*
Angela GLATSTON, NETHERLANDS:
a.r.glatston@intes.nl.net
Frank LECHAT, FRANCE
John A. LOVE, UK
Miranda STEPHENSON, UK: *mirandast@msn.com*
Peter WYSE JACKSON, UK:
PWJ@BGCI.RBGKEW.ORG.UK
Koen BROUWER, NETHERLANDS: *king.koen@wxs.nl*
Martin WARREN, UK:
BUTTCON@COMPUSERVE.COM.UK
Simon DOWELL, UK: *S.D.Dowell@livjm.ac.uk*
Lee DURRELL, UK: *LDEXEC@JWPT.ORG*
Gustavo GANDINI, ITALY: *GUSTAVO.GANDINI@UNIMI.IT*
Heinrich MENDELSSOHN, ISRAEL: *zoology@ccsg.tav.ac.il*
Jean-Marc CUGNASSE, FRANCE
Angel BANARES BAUDET, SPAIN:
CONT10005@iedatos.es
Magdalena VICENS-FORNES, SPAIN
Lynne FARRELL, UK

Bert VAN DEN WOLLENBERG, NETHERLANDS: *L.J.W.vandenWoolenberg@botu.biol.ruu.nl*
Sandro LOVARI, ITALY: *lovari@unisi.it*
Giora ILANY, ISRAEL
Eladio FERNANDEZ-GALIANO, FRANCE: *ELADIO.GALIANO@DELA.COE.FR*
Trevor POOLE, UK: *tbpoole@dircon.co.uk*
William OLIVER, UK: *info@fauna-flora.org*
Peter J. GARSON, UK: *peter.garson@ncl.ac.uk*
Stefano ALLAVENA, ITALY
Paul GORIUP, UK: *pgoriup@naturebureau.co.uk*
Jean-Francois TERRASSE, FRANCE
Robert LLEWELLYN-SMITH, UK
Martine BIGAN, FRANCE
Francesco Maria ANGELICI, ITALY
Georgina M. MACE, UK: *g.mace@ucl.ac.uk*
Paul PEARCE-KELLY, UK: *iczsl@gn.apc.org*

Oceania

Kingsley DIXON, AUSTRAL IA: *kdixon@kpbg.wa.gov.au*
Melody SERENA, AUSTRALIA
Andrew BURBIDGE, AUSTRALIA: *andrewb@calm.wa.gov.au*
John ABERTON, AUSTRALIA: *jgabert@deakin.edu.au*
Ian SMALES, AUSTRALIA: *hsmcdond@acepia.net.au*
David TOWNS, NEW ZEALAND: *dtowns@doc.govt.nz*
Gregory H. SHERLEY, NEW ZEALAND: *gSherley@doc.govt.nz*
Brian BELL, NEW ZEALAND: *wmil@clear.net.nz*
Don MERTON, NEW ZEALAND: *dmerton@doc.govt.nz*
Peter MENKHORST, AUSTRALIA: *Peter.Menkhorst@nre.vic.gov.au*
John SEEBECK, AUSTRALIA: *j.seebeck@nre.vic.gov.au*
Brian D. BELL, NEW ZEALAND: *wmil@clear.net.nz*
Manfred JUSAITIS, AUSTRALIA: *manfredj@camtech.net.au*
Alan SAUNDERS, NEW ZEALAND: *asaunder@doc.govt.nz*
Philip G. SIMPSON, NEW ZEALAND: *phsimpson@doc.govt.nz*
David R. GIVEN, NEW ZEALAND: *givend@lincoln.ac.nz*
Barbara WILSON, AUSTRALIA: *barbara@deakin.ed.au*
Lim LEONG, AUSTRALIA: *ltlamc@magna.com.au*
Ken JOHNSON, AUSTRALIA: *kej@nmdl02.ncom.nt.gov.au*
Gerald KUCHLING, AUSTRALIA: *kuchling@cyllene.uwa.edu.au*
Peter MYRONUIK, AUSTRALIA: *myroniuk@zoo.org.au*
Timothy NEW, AUSTRALIA: *zootn@zoom.latrobe.edu.au*
Dick VEITCH, NEW ZEALAND: *dveitch@ns.planet.gen.nz*
Maurizio ROSSETTO, AUSTRALIA: *maurizio@kpbg.wa.gov.au*
Michael MAHONY, AUSTRALIA: *bimjm@cc.newcastle.edu.au*
Grant Spencer DUMBELL, NEW ZEALAND: *grant@applied.ecology.co.nz*

West Asia

Abdulaziz H. ABUZINADA, SAUDI ARABIA
Frederic LAUNAY, UAE: *narc@emirates.net.ae*
Ralph DALY, OMAN: *acedrc@gto.net.om*
Abdul R. KHOJA, SAUDI ARABIA: *nwrc@compuserve.com*
Philip SEDDON, SAUDI ARABIA: *nwrc@compuserve.com*
Stephane OSTROWSKI, SAUDI ARABIA: *nwrc@compuserve.com*
Stephen BREND, OMAN: *acedrc@gto.net.om*
Maher ABU JAFER, JORDAN:
Andrew SPALTON, OMAN: *acedrc@gto.net.om*
Hermanus GROBLER, OMAN
Kevin DUNHAM, SAUDI ARABIA: *kkwrc@kacst.edu.sa*

East Europe, North and Central Asia:

Jason BADRIDZE, GEORGIA: *jason@nacres.ge*

South and East Asia:

Govindasamy AGORAMOORTHY, TAIWAN: *MOORTHY@MAIL.NPUST.EDU.TW*
Satya Priya SINHA, INDIA: *wii@giasdl01.vsnl.net.in*
Vasantha NUGEGODA, SINGAPORE: *singzoo@pacific.net.sg*
Anslem DE SILVA, SRI LANKA: *anslem@med.pdn.ac.lk*
Indra K. SHARMA, INDIA
Charles SANTIAPILLAI, SRI LANKA: *csanti@slt.lk*
Ismu Sutanto SUWELO, INDONESIA
Hsiang-chien WU, TAIWAN
Cherukuri BABU RAGHAVENDRA, INDIA: *csec@doe.ernet.in*
John HENSHAW, THAILAND

Africa

John P. KLUGE, SOUTH AFRICA
Ernst J. VAN JAARSVELD, SOUTH AFRICA: *Ernst@fast.co.za*
Alison WILSON, ZIMBABWE
Brahim HADDANE, MOROCCO
Nina MARSHALL, KENYA: *nim@iucn.unon.org*
Peter LLOYD, SOUTH AFRICA
Holly DUBLIN, KENYA: *htdublin@form-net.com*
Michael (Gus) MILLS, SOUTH AFRICA: *gusm@parks-sa.co.za*
Mark LAWRENCE, MOROCCO: *ifcdw@marocnet.net.*

Meso and South America:

Marcia RICCI, CHILE
Marcelo PASSAMANI, BRAZIL: *PASAMANI@NPD.VFES.BR*

Re-introduction Practitioners Directory

The Re-introduction Practitioners Directory is a joint project between RSG and the National Commission for Wildlife Conservation and Development (NCWCD) in Saudi Arabia. The NCWCD provided RSG funding for the preparation of this directory and NCWCD will publish this directory.

The directory covers re-introduction practitioners for both animals and plants. Information was gathered from available literature, placing a request in the last newsletter and following up on known re-introduction projects. The directory is now in its final stages of production and will be published soon. Information on availability will be published in the next issue of the newsletter.

Contributed by Pritpal Soorae (Micky), RSG, Nairobi, Kenya.

RSG Plant Section Meeting held on 12th March 1998

This meeting was held at the RSG Secretariat offices at the African Wildlife Foundation in Nairobi, Kenya. The meeting was attended by RSG Vice-Chairman and Plant Section Chair, Mike Maunder; Peggy Olwell, Endangered Species Program Coordinator, National Parks Service, USA; Clare Hankamer and Colin Clubbe, Royal Botanic Gardens, Kew, UK, Perpetua Ipulet, Plant Conservation Program, East African Herbarium, Kenya; Philip Muruthi, AWF Species & Ecosystem Co-ordinator and

myself.

The following issues were discussed at the meeting: Increasing the RSG plant membership base and ensuring diversity of members and projects. A plant conservation techniques manual will also be produced from the plant techniques and conservation course that the Mike Maunder has been coordinating at the National Museums of Kenya. This manual will be relevant to tropical areas worldwide. It will have a section on plant re-introductions.

We decided that the plant section should plan on holding a meeting for RSG plant members at an international conference and take this opportunity to publish conference proceedings and recruit new members.

Contributed by Pritpal Soorae (Micky), RSG, Nairobi, Kenya.

MAMMALS

Giant panda re-introduction feasibility

Introduction

Giant pandas *Ailuropoda melanoleuca*, one of the world's most charismatic species, are critically endangered and their numbers continue to decline despite significant effort and resources expended on their behalf. Conservationists estimate that only about 1,000 wild pandas survive in 6 isolated mountain areas, which are further fragmented into over 20 forest patches in central China.

Panda conservation involves both field conservation and captive breeding. Field efforts include the creation, expansion, and improved management of panda reserves, anti-poaching activities, public relations campaigns, research into several aspects of panda ecology, and more. Captive breeding programs have been undertaken by both the Chinese Ministry of Construction through the Chinese Zoo Association and the Chinese Ministry of Forestry (MOF) through captive breeding centers. At a Giant Panda and Red Panda Conservation Workshop held in Washington, D.C. in 1991, researchers, conservationists, and managers evaluated the feasibility and desirability of re-introducing captive-bred giant pandas into the wild to facilitate conservation and recovery of the species. At that time, participants concluded that such actions would be inappropriate.

Improvements in captive breeding, especially at the Wolong Nature Reserve's Giant Panda Breeding Center, and the addition of animals obtained by a panda rescue program (in which wild pandas thought to be dying are brought into captivity) have resulted in a growing captive population at Wolong. Fear of future over-crowding at the Wolong facility precipitated researchers at the China Conservation and Research Center for Giant Pandas at Wolong to request support for the initiation of pilot re-introduction projects in the reserve. In response to this request, MOF and WWF-China decided to undertake a second evaluation of the Re-introduction Specialist Group's 'Re-introduction Guidelines' to assess the feasibility of re-introducing captive pandas back into the wild. We were invited by WWF-China and the MOF to participate in a giant panda re-introduction feasibility workshop and consult on this issue. One of us, Susan Mainka, was asked to act as workshop moderator.

Re-introduction Workshop

Re-introduction of giant pandas has been suggested as a potential conservation strategy in the National Conservation Plan for the Giant Panda and its Habitat. However, re-introductions are often complex, risky, and expensive ventures, especially for carnivores. Re-introductions often fail. Participants in the 1991 panda workshop recognized the significant challenges to successful re-introduction, the uncertainty of benefits to panda recovery, and the lack of important information to increase the probability of success. They therefore recommended against panda re-introduction or translocation at that time, but developed a number of criteria to facilitate re-introduction decision-making at that time. These criteria were revisited and expanded at a Re-introduction Feasibility Workshop held at Wolong Nature Reserve in Sichuan Province of the People's Republic of China during 25-29 September 1997 (Table 1, page 5).

The re-introduction workshop, jointly organized by the MOF and WWF-China Program, was attended by approximately 45 Chinese and 5 international experts on pandas or re-introduction. International participants included 3 of us, Rich Reading, Susan Mainka, Gus Mills, as well as Drs. Devra Kleiman, and George Schaller. Included among the many Chinese participants, were noted panda biologists Drs. Pan Wenshi, Hu Jinchu, and one of us Lu Zhi, and MOF officials Wang Fuxing, Peng Huangshi, Li Zhong, and Zhou Zhihua. Participants presented papers on re-introduction theory or panda biology and ecology during the first 3 days of the workshop. One day was spent visiting Wolong Nature Reserve and its panda propagation centre. During the final day of the workshop

participants engaged in a moderated discussion addressing the re-introduction criteria. Discussions were often lively and mostly productive; however, the workshop could have benefited from additional time dedicated to discussion.

Evaluation

The majority of the workshop was devoted to evaluating the current status of pandas and knowledge of panda biology, ecology, and re-introduction theory. A smaller amount of time was devoted to discussion of the degree to which non-biological considerations are understood and have been addressed. Table 1, Page 5 lists the major variables addressed at the workshop.

Workshop participants identified a number of important areas which required elucidation prior to more serious consideration of panda re-introduction. Importantly, although a National Conservation Plan for the Giant Panda and its Habitat has been developed, no specific recovery goals for panda populations have been determined. Conservationists want to increase panda numbers and the amount of panda habitat under protection, but have not determined more specific objectives for either. Conservationists have yet to assess the probable contribution of additional activities (such as re-introduction) to panda recovery or prioritized activities considered beneficial. Thus, it remains unclear if re-introduction is even

Table 1: Giant Pandas *Ailuropoda melanoleuca* **Re-introduction Feasibility *Re-introduction Criteria* (Some answers on a scale of 1 - 5, where a 5 = the best)**

CRITERIA	In 1991	In 1997
Condition of the Species:		
1. Is there a need to increase wild populations of pandas?	Yes	Yes?
2. Are there surplus animals that would be available for re-introduction and is the captive population self-sustaining?	No	No
3. Will there be danger to the wild population from a re-introduction program?	?	?
Environmental Conditions:		
4. Have the causes for decreases in wild panda populations been removed?	No	No
5. Is there sufficient protected habitat with low densities or without native animals?	No	?
6. Is there available habitat with low densities or without native animals?	No	?
BioPolitical Concerns:		
7. Will re-introduction programs have a negative impact on local people?	No?	No?
8. Is there local community support for a giant panda re-introduction?	2	2
9. Are governmental Organizations (GO) and non-governmental Organizations (NGO) supporting the re-introduction program?	Yes?	Yes?
10. Do re-introduction programs conform to all existing laws and regulations?	?	Yes
Biological Resources and Other Resources:		
11. Is there enough available information about how to conduct a successful re-introduction that we can use to plan for against panda re-introduction program?	1	2
12. Is there adequate knowledge on panda biology / ecology?	2.5	3
13. Do sufficient resources exist for the program?	No	No?
IS RE-INTRODUCTION RECOMMENDED?	**NO**	**NO**

desirable, let alone feasible. Nevertheless, workshop presentations indicated that significant progress toward understanding panda biology and ecology, increasing panda numbers in captivity, and enlarging and improving the panda reserve network have been realized.

Good data on panda populations and their habitat are available for a few study sites; however, in general the current status and trends of pandas and their habitat remain unclear. It has been over a decade since the last complete panda census and the amount of remaining panda habitat is unknown, especially in regions of China where pandas might be locally extinct. Workshop participants were unable to identify areas which would benefit from augmentation or re-introduction. If such areas are found to exist, participants urged consideration and assessment of translocating wild pandas between sites (rather than re-introduction from captivity) because of the higher probability of success. Potential source populations for translocations of wild pandas may exist (i.e., demes producing more young than available habitat can accommodate and without migration possibilities); however, few populations of pandas have been studied in sufficient detail. Chinese officials and conservationists have successfully reduced many of the causes of panda decline, but have not eliminated them completely. Further reducing the causes of panda mortality before considering re-introduction, may enable wild populations to expand into unoccupied habitat without the expense and risk associated with re-introduction or translocation.

Knowledge of panda biology and ecology has increased substantially, but is not sufficient to develop adequate re-introduction protocols. For example, optimal panda densities in the wild are unknown, as are mechanisms for behavioral learning, if captive bred animals are to be used. Current studies should continue and additional problem-orientated research initiated. Similarly, significant progress has been achieved in captive propagation, but the captive panda population continues to reproduce slowly and it remains unclear if the captive population is self-sustaining. The continuing development and improvement of assisted reproductive and rearing technologies promises to facilitate future captive propagation. Still, a growing captive population should not be the driving force behind re-introduction programs. Instead, an identified need for re-introduction should be demonstrated first. This need is not clear for giant pandas.

Finally, the social, political, and organizational aspects of panda conservation have improved, but are far from ideal. The panda conservation program receives substantial annual support; however, several participants argued that additional funding was crucial. Overall, non-biological issues received more limited review at the workshop; however their importance was noted by some participants. It remains unclear how a re-introduction operation might affect, and be affected by, these non-biological parameters. Additional attention and research in these areas was encouraged by participants, and indeed some social science research is currently in the developmental stages.

Recommendations

The workshop resulted in a number of specific recommendations under each of the re-introduction criteria. Although consensus was not reached on all points, general agreement was reached on the need for conducting additional research in several areas of biology, ecology, and social science, continuing to improve captive propagation, increasing the support of local people, reducing causes of panda mortality, improving organizational relations and communication, and maintaining a focus on habitat protection, at least in the near future. Overall, participants agreed on the desirability of delaying re-introduction at least until more information was obtained.

These findings led workshop participants to conclude that re-introduction of pandas can not be well justified at this time. A large number of recommended action steps were proposed. Among these, participants called for additional research in a variety of fields, including possible re-introduction pilot studies, involving captive bred pandas and continued focus on field conservation, especially the creation and improved management of panda reserves. A workbook will be produced and made available for a modest fee (to cover production and mailing costs) from WWF-China. The workbook will include most of the papers presented, as well as synopsis of workshop discussions and a list of recommended action items under each re-introduction criterion.

*****Adapted from: Kleiman, D. G., M. Stanley Price, and B. B. Beck. 1994. Criteria for re-introductions. Pp. 287-303, in *Creative conservation: Interactive management of wild and captive animals. P. J. S. Olney, G. M. Mace, and A. T. C. Feistner (eds.). Chapman and Hall, London, UK.*

Contributed by Richard P. Reading, Denver Zoological Foundation, Denver, CO, USA; Susan Mainka, IUCN/Species Survival Commission, Gland, Switzerland; Lu Zhi, Peking University & World Wide Fund for Nature - China Program, People's Republic of China and Gus Mills, South African National Parks & Endangered Wildlife Trust, Skukuza, South Africa.

Is population supplementation the only hope for Norwegian arctic foxes ?

At the southwestern edge of their holarctic distribution arctic foxes *Alopex lagopus* are found in the alpine habitats of the Scandinavian peninsula. This habitat is made up of a series of plateaux, separated from each other by forested valleys. Up until the end of the 19th century they were abundant and found in all alpine areas. However, by the early years of the 20th century overharvest for furs and bounties had driven the populations down to such low levels that by 1930 (when they were protected in Norway) noted naturalists at the time seriously questioned whether arctic foxes still existed in Scandinavia.

Happily they were not all gone, but by the 1970's and 1980's it was clear that arctic foxes had vanished from many alpine areas, and the populations that remained were at very low density. Monitoring and field studies began in 1988 in one mountain area, Dovrefjell, using radio-telemetry, and from the early 1990's arctic foxes were included in a nation-wide Terrestrial Monitoring Project. This latter program is based around monitoring former arctic fox dens during spring and summer for signs of individuals and reproduction. The Dovrefjell project included studies on survival, reproduction, diet, behavior, social organisation, dispersal, genetics and habitat use. The situation today is that in the southern half of Norway there have been only a handful of documented reproductions during the last 7 years. Only one northern area, Børgefjell, appears to support anything like a stable, reproducing population (about 30 individuals). Further north there are consistent observations of scattered individuals and occasional reproductions. Nowhere is there anything that even resembles the density expected from historical accounts. Most telling was that in 1994 during one of the highest lemming peaks in recent decades not one single reproduction was confirmed on the entire Hardangervidda plateau in southwestern Norway. Based on this monitoring, and genetic analysis of effective population size, we estimate the Norwegian population to be made up of about 100-150 animals, scattered across 2000 km (north to south) of naturally fragmented habitat. This can only be regarded as a critical situation. The Swedish situation appears to be very similar, except with a naturally truncated distribution in the south.

The main question is why has the population failed to recover following 67 years of protection ? Many possible explanations have been advanced in an attempt to explain this decline. However, there is little evidence that disease, pollution, inbreeding depression, climate change, illegal trapping, competition with red foxes *Vulpes vulpes*, or a possible reduced availability of reindeer carcasses following the extermination of wolves *Canis lupus* can explain why there is so much apparently suitable habitat which is unoccupied. Although all of these factors may increase mortality and decrease carrying capacity for arctic foxes to some extent, it seems very unlikely that any of them, or even the combined weight of them can explain the current situation, without there being some other underlying problem. The good survival of the radio-collared arctic foxes argues for the problem not being at the individual level, but at the population level.

Based on our field data and a modeling analysis of arctic fox population dynamics we have postulated the hypothesis that the problem lies in a break down in the spatial dynamics of the population. When reproduction is dependent on peak years in the 4-5 year lemming cycle, it is likely that some individuals will die during the lean years between peaks. These places should be filled by floaters or immigrants, especially if they can come from an area which is out of synchrony with respect to the lemming cycle. The historical over-harvest has resulted in an extremely fragmented and reduced density population. Therefore the numbers of floaters available to fill the vacancies is very limited. If this scenario is correct it implies that the historical over-harvest left the arctic fox in a series of small and isolated populations, which when denied the stabilizing influence of immigration, have been slowly declining. These small and isolated populations would also be more vulnerable to all of the other factors that we have listed above.

If we are correct in our hypothesis, anything which could rapidly increase the density and connectivity of populations would restore stability to the population cycles and therefore allow arctic foxes to persist. Because the arctic fox populations on the Scandinavian peninsula are all at very low levels, and are genetically distinct from other populations in western Russia and Svalbard (which also have rabies) it is not possible to translocate wild individuals into the populations. This implies that the only source of individuals would be from captive breeding. If such a plan is approved we believe that it would be possible to capture wild born pups from wherever reproduction occurs among the surviving relict populations. Captive breeding should be relatively easy considering the enormous amount of experience available from the fox farming industry in Norway. Large litter sizes and early maturity mean that production of

pups for release could happen relatively quickly.

We believe that this process of captive breeding and population supplementation is the only hope for arctic foxes in Norway, although researchers in Sweden favor the idea that supplementary feeding should be used to encourage greater reproduction and survival. Through co-operation it should be possible for us to each run our own conservation programs as experiments. For the sake of the arctic foxes we can only hope that at least one of our ideas works. If 67 years of protection has only resulted in further decline, it is unlikely that the population trend will suddenly change its course. The alternative to action is to sit back and watch another species die out from a portion of its range.

We are still in the process of collecting the available status data and writing a proposal for an action plan. Norway is in desperate need of a flagship species to attract attention to problems facing the alpine environment and carnivores in general. The arctic fox should be ideal for this role. Even if such an action plan failed to restore the population it would provide an ideal chance to test ecological theory and our hypothesis of the importance of spatial dynamics as a component of arctic fox life history. This knowledge will have implications far beyond the mountains of Norway.

Contributed by John D. C. Linnell & Olav Strand, Norwegian Institute for Nature Research, Norway.

Translocation of Rotschilds giraffes *Giraffa camelopardalis rothschildi* from Kenya to Uganda

Introduction

Between March and April 1997, 3 giraffes were captured from Lake Nakuru National Park in Kenya and translocated to Kidepo Valley National Park in Uganda a total distance of approximately 800 kilometers. The translocation was conducted because the population in Kidepo consists of only 1 female and 5 male giraffes. Therefore more females were needed to start to re-establish a viable breeding population. The numbers of giraffes in Kidepo dropped from 400 between 1967 & 1972 (Ross *et al.* 1976; Uganda National Parks 1971) to only three in 1992 (Reynolds 1993) because of intense poaching pressure and civil wars in the 1980s.

Other wildlife in the park suffered a similar fate, but were not as hard hit as the giraffes. However with increased protection and constant monitoring the giraffe population increased to five individuals in 1995 (Ministry of Tourism, Wildlife and Antiquities 1996) and six in 1997. Unfortunately the only female giraffe kept producing only male giraffes. Uganda Wildlife Authority felt that the park was ready to receive more giraffes to boost the numbers to establish a breeding population and prevent inbreeding. Lake Nakuru National Park in Kenya has many giraffes, and the browsing pressure was destroying trees. Negotiations were made between the Kenya and Uganda governments to translocate giraffes from Kenya.

The Kenyan authorities sold each giraffe at a token price of only $120 each to Uganda. The original intention was to capture five sub-adult females to increase the breeding pool. Younger giraffes were chosen because they would be more likely to mix with the existing group, than to form a group of their own, making it easier to protect them.

Giraffe capture

It was discovered that giraffes in Lake Nakuru National Park it were fewer than estimated. Young female giraffes were very difficult to find as it was the dry season and the giraffes had split up into smaller groups. This made it more difficult to identify and select young female giraffes. In the end four giraffes were captured over a period of two days. Three of these were females ranging from estimated ages of eight months to one year old and weighing 400 to 500 kilograms. The extra male was captured to boost the numbers as transportation catered for a total of five giraffes making the exercise more cost effective. Out of the four giraffes that were captured, one of them sustained injuries during capture because it was too large for the crate. The crate had damaged its spine and it had to be euthanised after two days.

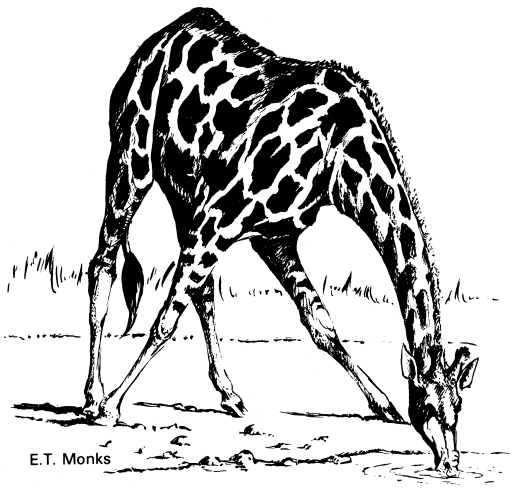
The juvenile giraffes were darted from a group of approximately 10 giraffes the majority of which were sub-adult. The drug used was Etorphine (M99) at a darting dose of 10 mgs. for each giraffe. All the giraffes were revived within 10 minutes using 25 to 30 mgs of diprenorphine (M5050) intravenously, which gave enough time to blind fold the giraffe and put ropes on the neck and pull it into the crate. Ropes were tied on the waist as brakes to stabilize the giraffe when walking it into the crate.

The giraffes stayed in a permanent boma in Lake Nakuru National Park for 30 days. They were fed on browse for the first week, and lucerne grass and horse cubes for the next 3 weeks. All captured giraffes started eating browse after 1 day in the boma. The boma was approximately 70 m^2 with a crush and walls

made of timber and wires.

Giraffe translocation.
The giraffes were translocated 30 days later using air transport in a military Hercules/C130 aircraft. The aircraft could only accomodate a giraffe up to 1 year old which is about 2.7 metres tall. Loading of the giraffes into the crates was done without any tranquilizer.

The giraffes were flown in the Hercules aircraft and were calm in the aircraft except during turbulence, take off and landing. The biggest giraffe adapted least to captivity and was very nervous through out the transportation, it arched its head up in a stereotypic fashion and kept collapsing due to its vigorous struggling. At Kidepo the giraffes were off loaded onto trucks and transported to the boma 2 kilometers away. The eldest giraffe collapsed and was helped up. The boma in Kidepo was temporary and much larger, of approximately 800 metres squared with *Acacia* trees and a water hole. The walls were made of a few strips of wood and electric wires holding up a black plastic



Giraffe
Credit: E. T. Monks

sheet. The giraffes recovered quickly from the stress of transportation and the oldest female stopped arching her head after a few days. They continued to be fed with horse cubes, and small quantities of faeces from resident Kidepo giraffes, to develop resident intestinal fauna. Rangers camped outside the boma to prevent predation of the giraffes by lions in the park.

Giraffe release
The giraffes were released 3 weeks later. A team of wardens and rangers drove the 6 Kidepo giraffes towards the Nakuru giraffes in the boma. The team formed an extended line of 3 kilometers which was curved at both ends, and they slowly drove the giraffes by walking 1 kilometer behind them. When the giraffes were within a kilometer of the boma, the wall of the boma was removed to enable the Nakuru giraffes to join the resident ones. They had to be forced out when the Kidepo giraffes were running past the boma after getting as close as 100 metres. The Kidepo giraffes stopped running when they realized that 3 other giraffes were following and after nuzzled them they accepted them into the group. For the next few weeks, the Nakuru and Kidepo giraffes moved together, occasionally the adult female giraffe would break up and stay with the youngest Kidepo male who was 9 months old and a sub-adult male. The three young Nakuru giraffes would stay with the three big males which is not a typical social structure of wild giraffes, where the young stay with the adult females in a nursery structure (Estes 1992). The giraffes were followed by rangers during the day to minimize predation by lions in the park.

Giraffe post-translocation update
Unfortunately 6 weeks after the release, the male Nakuru giraffe was predated upon by a lion. This was during the rainy season and the grass had grown tall making it more difficult to detect predators. It also happened at night after the rangers had retired. The young male giraffe had also adapted best to captivity and was the easiest to transport, and possibly lost more of the survival instinct in the wild. From this experience we can learn that a certain percentage of the giraffes brought into Kidepo will be predated upon and when capturing more giraffes in the future, an allowance will be made.

The predator pressure in the park is high, with 15 lions with not enough prey to eat. Young zebras are also being predated upon by lions and this has resulted in a poor survival rate. Research is going to be done to guide the park managers on the best way to reduce the predator pressure. The priority is to restock protected areas and translocate more prey species, like Uganda kobs which used to be in the park and are now reduced to low numbers.

Discussion
It was a successful exercise although only three giraffes were introduced to the park. This was a pilot project and resulted in the breeding population of giraffes in Kidepo Valley National Park, going up by 200% with an increase in females from 1 to 3. Although there was 50% mortality at both capture and release, the 25% mortality that was experienced at capture is the expected average with giraffe captures (Fowler & Boever 1986). The remaining 25% loss due to predation could not easily be avoided due to the

large predator pressure in the park. Predation risk was increased because the translocated giraffes were younger, but this decision was made because young giraffes are easier to capture and transport. Also because of the height limitation, only young giraffes can be transported by air, which became most appropriate because of the bad road conditions and sporadic insecurity on the road to Kidepo, and the distance by road would take 2 days as opposed to only 2 hours by air.

This was a learning experience. Giraffes were translocated from one country to another by a combined effort of the Uganda Wildlife Authority (UWA) and Kenya Wildlife Service (KWS) veterinary team, capture team and park wardens. In this process valuable knowledge was transferred from the Kenyan team to the Ugandan team, which had never translocated giraffes before and as a result received sound training. The UWA capture and translocation team consisted of 1 vet, 2 rangers, and 1 warden. The KWS team consisted of 2 vets, 10 rangers and 1 capture warden.

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Acknowledgments

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Special thanks goes to Peter Moeller, Warden Engineer, Kidepo Valley National Park and Anjelou Ajoka, Warden-In-Charge, Kidepo Valley National Park with whom I worked closely during the giraffe translocation.

Contributed by Gladys Kalema, BVetMed, MRCVS, Veterinary officer, Uganda Wildlife Authority.

Re-introducting the sand gazelle *Gazella subgutturosa* to Uruq Bani Ma'Arid Protected Area: Empty Quarter of Saudi Arabia

INTRODUCTION

In March 1995 the National Commission for Wildlife Conservation and Development (NCWCD), conducted a major simultaneous re-introduction of Arabian oryx *Oryx leucoryx* and sand gazelles *Gazella subgutturosa* to the Uruq Bani Ma'arid Protected Area, at the western margin of a huge parallel dune system stretching into the interior of the Empty Quarter. A report on the progress of the oryx population was supplied in the last Re-introduction News (Ostrowski RSG News 14). This report describes the Sand gazelle re-introduction. The gazelles were bred at the King Khalid Wildlife Research Centre, managed by the Zoological Society for London on behalf of NCWCD.

PLANNING AND OBJECTIVES

On the basis of bedouin information it was expected that sand gazelles would range widely into the dunes, but that they might withdraw to the western margins to some degree in the hot summer seasons. An area supporting patches of significant perennial vegetation, including *Acacia*, totals some 300km^2 within the western part of the protected area. A conservative assumption was therefore drawn that the gazelles would be wholly dependent on this area for at least part of the year. We also made the additionally conservative assumption that this should support at least three hundred sand gazelles with oryx also present (based on observed densities of sand gazelles in northern Saudi Arabia, where they share their range with large numbers of camels).

Hence we aimed to place a population of around 300 animals into Uruq Bani Ma'arid in a relatively short time frame of 1-2 years. This represents a 'safe' target platform to be created quickly by managed re-introduction, from which future population demography (always likely to be dynamic and unpredictable in this environment) could develop.

One hundred gazelles were released in 1995, 105 in spring 1996. In view of the polygamous mating system an overall sex ratio in the order

of 1:2 males to females was planned. In the event 73:132 were transported. On release movement beyond the limits of the protected area was expected and desired, but no prediction could be placed on what form this might take, or what proportion of the animals would be involved.

LOGISTICS

Management of large numbers of animals was facilitated by using five pre-release pens built at three separate sites spread over a 30km length of the Tuwaig Escarpment, (western boundary of the protected area). Separate smaller pens were used to place gazelles in social units which would minimize chances of fighting and stress This helps the general aim of rapid placement of a viable population into the region, in contrast to allowing a population to build up from a small initial nucleus, while catering for behavioral characteristics, at the same time.

The multiple release site design also creates a situation where gazelles from each site would encounter other gazelles as they expanded into the region. Subjectively it was anticipated that this might enhance 'confidence' of individuals as they encountered, first, natural signs and then the other groups. Collective geographical knowledge of the new environment would be accelerated in merged groups. Whilst these aspects could not be demonstrated directly, it could only occur

Arabian sand gazelle with radio collar
RSG photo library

if animals from the three sites did indeed merge and mix; the degree to which this occurred could be demonstrated by post-release monitoring.

A pre-release period of 3 weeks (or in later releases, less) was used. Gazelles were supplied with alfalfa and water in the pen. Supplies were continued for 2-4 weeks post release. The pens were of built in the same style and shape as the KKWRC breeding pens, but around 30% smaller. All released gazelles were made individually identifiable. Groups of gazelles destined for release together were assembled and kept together for several months at KKWRC prior to transport. The source population has been and still is subject to intensive genetic studies, has been extensively screened for TB and subjected to an annual vaccination protocol against “peste des petits ruminants” (PPR), foot and mouth disease and clostridial infections. Animals being released were given additional protection against brucella, while rabies and pasteurella vaccines were intended to assist them over the initial months on release. After tagging, gazelles were loaded into individual wooden crates for road transport. Crates were numbered and loaded so that the exact social groupings of the gazelles at the breeding centre were re-assembled in the pre-release pens. Transport was carried out in the cool of the night, with introduction to release pens in the morning.

Timing: The release was carried out in the winter-spring period. The weather is cooler and although rainfall is not predictable, tends to fall in spring if at all. In the event good rain fell over the heart of the protected area a month after the first releases in late April 1995. This resulted in unusually good vegetation growth over the greater part of the reporting period. All results should be considered in the context of a good, probably unusually good, year for herbivores in the first year.

Release of females in calf: This timing meant that the release process coincided with mid-term pregnancy in the normal breeding cycle sustained at KKWRC (itself based on the observed breeding cycle of wild Sand Gazelles in northern Saudi Arabia). After assessment of animal welfare issues, we decided for the first release to send some females with planned pregnancies by males, that were not to be released.

The advantages were that the first generation of calves born in the wild at Uruq Bani Ma'arid was brought forward in time and was born in the same season as the wild population calving season in northern Saudi Arabia. Additional advantages were that male representation in the founder population was enlarged, transport costs per founder were reduced and first born calves were not the offspring of the adult males of the re-introduced population.

Comparison of reproductive success and survival in 'in-calf' verses 'not in-calf' groups was made at the end of the first year. Breeding results in 1995 were excellent for both groups of females and all breeding age females were released potentially 'in-calf' by males still at KKWRC in 1996.

An initial schedule of monthly visits to conduct detailed ground monitoring has been supported

by approximately monthly aerial radio-tracking (coordinated with oryx monitoring). This is integrated with daily observations by permanent NCWCD Rangers.

PRELIMINARY RESULTS

Births: At the end of April 1997, a total of 205 newborn calves had been identified by association with their tagged dams. There were two major calving peaks each year, falling approximately 6 months apart. Twinning rates have run as high as 70% in some calving periods, and individuals are known to have calved up to four times in two years, producing between five and seven calves. Two years after the first releases of sand gazelles, the relative proportion of wild-born gazelles observed in the population was approximately 62%. Peri-natal mortality was 11.5% in the first calving season.

Mortality: Estimation of overall mortality rate is complicated by the great opportunity for long distance emigration. Seventeen deaths have been recorded for the whole operation (none in transport, two in pre-release). No particular trend is evident in the other deaths (3 collar problems, 3 human interference, 3 health problems, 3 >1 year post-release, 1 fell off cliff, 2 unknown).

Site fidelity and range development: Nearly two thirds of the 1995 released gazelles were still in the closely studied area (approximately 3000km^2) at the end of the second year. A similar pattern was seen in 1996. Of the 'missing' animals we also know that some have traveled long distances up to 300-400km or more. Hence a section of the new population remains largely unmonitored in the interior. Mean range size (minimum convex polygon) measured from radio-collared individuals is c.600km^2 for females and 700km^2 for males. The biggest individual range, 2100km^2 over two years, was recorded from an adult male, who sustained a broken leg 10 months after release and was fully recovered 7 months later. The smallest range over two years is 110km^2 from an adult female who has produced 7 live calves in that time.

Social integration: After the first six months 70% of groups totalling three or more animals contained individuals from at least two of the separate release sites. Six months after the second wave of releases in 1996, 30% of all groups encountered contained individuals from 1995 and 1996 releases (by when 60% of the observed population were wild born, see above).

CONCLUSION

The principle short-term goal of this re-introduction has been achieved. Whilst analysis does not as yet allow a formal population estimate, observed calf survival strongly suggests that the population at the end of two years was in excess of the target level of 300. It is also probable that the assumption of reliance on the area of perennial vegetation with *Acacia* was, as expected, unduly pessimistic.

However these observations apply to a period of above average rainfall in spring 1995 and 1996. Questions remain about reproduction and survival in drought years. Intensive monitoring will continue to match two years of data from the 1996 release group to the 1995 release group.

Contributed by Dr. Tim Wacher & Mr. Charlie Kichenside of King Khalid Wildlife Research Centre & Zoological Society of London

PLANTS

NMK-Darwin plant conservation techniques course for East Africa

The importance of an East African regional course on plant conservation has long been recognised. Stella Simiyu of the Plant Conservation Program, National Museums of Kenya (NMK), Nairobi, in conjunction with staff from the Royal Botanic Gardens, Kew, UK (RBG, Kew) proposed that a regional training course would be integral to the development of an East African plant conservation network (Maunder & Göhler, 1995). It was felt that this network would promote vital regional collaboration to identify botanical conservation priorities, including identification of target plant species for recovery programmes such as re-introduction.

The National Museums of Kenya - Darwin Plant Conservation Techniques Course for East Africa, funded by the Darwin Initiative for the Survival of Species of the British Government, is a collaborative project between NMK and RBG, Kew. It is funded for three years: April 1996-99.

The course is aimed at East African plant conservationists and focuses on regional issues. Fourteen participants from East Africa received training on the first course in November 1996. Sponsorship was provided by a number of international donors including: African Wildlife Foundation; British Council, Department for International Development, UK; East Usambara Catchment Forest Project,

Tanzania; Regional Soil Conservation Unit/ Swedish International Development Authority and the Royal Netherlands Embassy.

The course has two components: A four week taught component and a one week Conservation Assessment and Management Plan (CAMP) training workshop using the protocol established by the Conservation Breeding Specialist Group (CBSG) of the IUCN/SSC (Ellis & Seal, 1995). The taught component incorporates: species recovery planning, genetic basis of plant conservation, seed conservation, community approaches to conservation, reserve design and conservation of forest and wildlife resources. The majority of the subjects are taught by East African conservation specialists with the field training component led by staff from Royal Botanic Gardens, Kew in conjunction with a local specialist team. The Conservation Projects Development Unit, RBG, Kew (CPDU) has been involved in facilitating a number of plant CAMP workshops, in conjunction with CBSG, including one for the flora of St Helena, South Atlantic (Maunder *et al*., 1994).

The CAMP training workshop aims to equip participants with the tools to assess the status of plant species in the wild. It is an intensive and interactive information-collecting technique and an increasingly utilised means of assigning priorities for the management of threatened plant species. It identifies target taxa for intensive management and reintroduction.

The 1998 course was held at NMK from 1 February - 9 March, 1998. The CAMP Training Workshop (2 - 6 March) was held at Amani Botanic Garden, Amani Nature Reserve, East Usambara Mountains, Tanzania and was be hosted by the East Usambara Catchment Forest Project. Ten species were studied, including the Tanzanian populations of three species (*Cephalosphaera usambarensis* (Warb.) Warb., *Gigasiphon macrosiphon* (Harms) Brenan and *Ficus faulkneriana* C.C. Berg) covered in the last workshop. This allowed a reassessment of the Categories of Threat for these three species and has generated regional collaboration on the protection and management of the East African coastal flora.

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Contributed by Clare Hankamer, International Projects Co-ordinator, Conservation Projects Development Unit, Royal Botanic Gardens, Kew, Richmond, Surrey, UK and Perpetua Ipulet, Course Co-ordinator, c/o Plant Conservation Programme, East African Herbarium, National Museums of Kenya, Nairobi, KENYA.

BIRDS

Round Table Discussion on Bird Re-introductions, 22nd International Ornithological Congress, Durban 1998: First Announcement

Session on Bird Re-introductions: pre-release preparations, releases and post-release monitoring

Convenors:

Dr. Tom J. Cade, outgoing Chair IUCN/ SSC Re-introduction Specialist Group Bird Section; The Peregrine Fund, Boise ID 83709, USA

Dr. Philip Seddon, in-coming Chair IUCN/SSC RSG Bird Section; National Wildlife Research Center, P. 0. Box 1086, Taif, Saudi Arabia

A Round Table Discussion on Bird Re-introductions is to be held at the 22nd International Ornithological Congress, Durban, South Africa in August 1998. The RTD is being convened by Dr Tom Cade and Dr Philip Seddon, under the auspices of the IUCN Species Survival Commission's Re-introduction Specialist Group.

In line with the IOC Organizing Committee's guidelines, RTDs will not be mini-symposia; formal talks will not be given. The RTD on Bird Re-introductions is intended to be an informal gathering of those involved in the various aspects of bird breeding, translocation, release or monitoring, with discussions guided around a number of topics. The intention is to have a free

exchange of ideas and experiences, and to allow participants to make contact with the IUCN's Re-introduction Specialist Group and with people working on related topics. There will be opportunity to register projects for the RSG's Directory of Re-introduction Projects. A revised and extended abstract, based on the discussions, will be submitted for inclusion in the IOC's CD-ROM Proceedings. Copies of the abstract, along with a full list of RTD attendees, will be sent to each participant soon after the congress. Could you please indicate your interest in attending the RTD on Bird Re-introductions by contacting P. Seddon at the address given after the RTD abstract below, or by contacting Re-introduction News. Please also indicate if there are any specific topics you would like to have discussed; the form of the final discussions will be based on replies to this first announcement. Please pass on this information to any colleagues who may be interested in attending, and/or send their names, addresses and fax numbers with your reply. A second announcement giving more details of discussion topics will be sent in May 1998 to those who have indicated their interest.

Unfortunately this RTD has no independent funding so participants would need to make their own arrangements to attend the IOC. Details can be obtained from:

International Ornithological Congress, Durban, 1998, Turners Conferences & Conventions (Pty) Ltd. P. 0. Box 1935, Durban 4000, South Africa. Fax: +27-31-332-5709

RTD Abstract: The re-introduction of captive-bred birds into adequate areas of suitable habitat within their former range is becoming increasingly popular as a means of restoring populations of endangered species. The transition from captivity to the wild is seldom easy. Captive-bred birds must learn the necessary skills to find food and shelter and avoid predators, they must establish territories within the release site, and if newly established populations are to become self-sustaining, released birds must find mates and nest sites, lay eggs and raise chicks. Managers of re-introduction projects must attempt to prepare birds for release, release them in such a way as to enhance the likelihood of survival, and monitor closely the fate of the released populations. While many problems and solutions will be particular to a species, there is much to learn from the successes and failures of other projects. The IUCN/ SSC Reintroduction Specialist Group exists to facilitate contacts between the diversity of reintroduction projects. The 22nd IOC offers an opportunity for those involved in bird re-introductions, entailing the release of captive-bred stock or the translocation of wild individuals, to meet informally, to exchange experiences and to make contact with both the IUCN RSG and with other project managers and field workers. Three general topics of discussion are proposed.

1. Pre-release preparations: physiology of feeding and flight, behavior, avoidance of predation and other risks; site preparations and public awareness;

2. Release techniques and considerations: hard or soft or something in between; site preparation; predator control;

3. Post-release monitoring: what do we need to know; cost-effective and reliable technology for monitoring; telemetry experiences; assessment of success.

Potential participants are asked to contact P. Seddon at the following address:-
Dr. Philip Seddon (IOC RTD), NWRC, P. 0. Box 1086, Taif, Saudi Arabia Fax: (966) 2 7455176; Phone: (966) 2 7455188; Email: *nwrc@compuserve. com*

Please provide the following details:

Name / Fax / Phone / Email

- Any to topics you would like to see included in the discussions:
- Any people who are potential participants and should be added to the mailing list:

Contributed by Dr. Philip Seddon, RSG Bird Section Chair, NWRC, Taif, Saudi Arabia .

Comments on bird re-introductions by Australasia/ Marsupial Section Chair

During my Ph.D. in the late 1980s, I started to look for ways to get into the new and exciting field called "Conservation Biology" that seemed to spring up rapidly at that time. As a behavioral ecologist, I looked around for ways of applying behavior to conservation and decided that reintroductions were the way to go. Why? First, it seemed that reintroduced animals had some nasty behavioral problems to deal with (e.g., finding food and avoiding being eaten in a new place), which seemed more immediately important than - say - the long-term consequences of genetic drift (which was getting extensive attention in the literature at the time).

I also had the (somewhat naive in hindsight) view that the manipulative nature of

reintroductions meant that they would provide wonderful opportunities to do replicated controlled experiments that wouldn't otherwise be possible. Finally there was the reason that didn't go in the grant applications: that after 10 years of university study I could finally do what I really wanted to do -- i.e. play with endangered animals.

I got the opportunity through an NSERC postdoc (the proposal emphasizing the replicated controlled experiments bit...) which I took to New Zealand, the land of the reintroduction. In collaboration with John Craig from Auckland University (he came up with the idea, I did the work), I addressed the question of whether bird translocations would be more successful if founder groups were made up of individuals that were familiar with one another.

My grand vision of a replicated experiment was quickly reduced to a more practical one of translocating two species (toutouwai, or New Zealand robin, and tieke, or saddleback) to one new island each. This meant that to manipulate levels of familiarity, I needed to release "familiar" vs "unfamiliar" groups in different parts of the same island. This produced some reasonable data, all suggesting that prior relationships were irrelevant following translocation (see Reintroduction News 10 for a brief account, or Armstrong 1995; Armstrong & Craig 1995; Armstrong, Lovegrove, Allen & Craig 1995 for full details). However, there was a tricky problem that the birds tended to disperse immediately after translocation, mixing up our carefully planned groups. Clarke & Schedvin (1997) have recently reported the same thing in an experiment involving Australian noisy miners, and give a thoughtful discussion on the limitations on experimental manipulations of founder groups in translocations. One solution, of course, is to work with plants... (e.g., see the elegant experiment by Gordon 1996).

Despite the problem of intermixing birds, one of the biggest bees in my bonnet over the last few years has been to encourage reintroduction practitioners to test hypotheses, by experiments when possible (Armstrong, Soderquist & Southgate 1995; Armstrong & McLean 1995). While we will always be under huge constraints, we need to try to address the key questions facing us as powerfully as possible. The thing that really annoys me is when people use the term "experimental reintroduction" to mean "lets release some animals and see what happens", not to mean that they are actually doing an experiment...

In 1994 I got the opportunity to design an experiment to address a tricky reintroduction problem (Reintroduction News 10). While many New Zealand birds are rare or extinct on the mainland, most of these thrive when translocated to predator-free islands. In contrast, hihi (or stitchbird, an endemic honeyeater) do well on one island (Little Barrier) but have tended to dwindle away when translocated to other islands.

After 14 years, 9 translocations, and 279 birds, the main hypothesis for the poor performance of translocated populations was an inadequate supply of nectar and fruit. When hihi were translocated to another island, Mokoia, it seemed like a good idea to test whether any decline that occurred was caused by food shortage.

In collaboration with an MSc student John Perrott and postdoc Isabel Castro, I did two types of supplementation experiments. The first was conducted over the non-breeding season. We provided hihi with *ad libitum* supplementary food for 18 days out of every 28, and measured their weights when fed and unfed (using electronic scales and electronically triggered video cameras). The second was conducted over the breeding season. We provided nesting females over half the island with supplementary food, and compared reproductive success of females with food and females without food. The bottom line was that there were no clear evidence of food limitation (Armstrong *et al.* 1997).

There was no time when hihi lost weight when feeders were taken away, and they were actually slightly lighter on average when feeders were present. Females with feeders produced more young the first breeding season, but fewer in the second breeding season. A third year of data is still to be analyzed, but we suspect reproductive success is fairly similar for females with and without feeders. In addition, another hihi translocation has taken place -- to Tiritiri Matangi Island -- and Msc student John Ewen has repeated the same supplementation experiment during the non-breeding season (there are too few females to do the breeding season experiment). These data have yet to be analyzed.

While there is no evidence of food limitation on Mokoia, the hihi have had a high mortality rate. So far the reproduction and mortality rates are close to balancing one another, and the long-term prospects of the population are uncertain. The population parameters observed are consistent with the slow declines of other populations, and we now suspect these were unrelated to food supply. Consequently we are now starting to look at other factors.

Disease could account for the high mortality

rate -- several dead birds have been recovered, all with Aspergillosis. Nest mites may also be important, as they cause extensive mortality in chicks. The hihi mating system probably plays a role in population viability, given that they have extreme sperm competition with constant harassment of females for forced copulations. Isabel Castro has led a project testing whether the hihi mating system is affected by distribution of food and nest sites, and John Ewen has studied how the mating system is affected by sex ratio. Given the apparent stress of the mating system, it's possible that manipulation of this system could allow enough reduction in mortality to allow a viable population.

Having now worked on reintroductions for a few years, I think the key factors to be studied are those that affect the long-term dynamics of reintroduced populations. I think that the short-term consequences of translocation strategies (e.g., soft vs hard release, size & composition of founder groups) have tended to be overemphasized. This is partly because there has been a lot of data on how releases were done, and not much of the labour-intensive data needed to do understand dynamics of populations after release. It is great to see that several multi-year studies have recently been published on reintroduced populations (e.g., Green *et al.* 1996; Nolet & Baveco 1996; Dunham 1997; Wauters *et al.* 1997).

The issue I'm now starting to address is trying to understand how fragmentation has affected declines of native birds in mainland New Zealand, and to predict whether translocation could be used to reverse these. If a species becomes extinct from a patch by chance, and there is no longer a recolonisation source, then it could make sense to use translocation to compensate for the loss of dispersal. On the other hand, if the species became extinct because the habitat could no longer support the species, then translocation would be a waste of valuable animals. The approach we are planning is to collect data from multiple populations of patchily distributed species, then use metapopulation modeling to predict whether the distribution of the metapopulation is likely to be limited by dispersal.

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Contributed by Doug P. Armstrong, Australasia/Marsupial Section Chair, Department of Ecology, Massey University, New Zealand.

Bearded Vulture Re-introduction in Kenya

Introduction

The Bearded Vulture, or Lammergeyer *Gypaetus barbatus meridionalis* population in Kenya has declined from an estimated 20-30 pairs in 1979 (Brown, 1977) to approximately 5-10 pairs today. The species was previously found in Hell's Gate and Mt. Kenya National Parks, but are now extinct there.

In 1991 the warden of the Hell's Gate National Park asked the Peregrine Fund to assist in re-introducing a single pair to its former haunt. The cliffs were internationally famous because of the easily seen nesting pair of Bearded Vultures. The pair used a well known nest from at least 1914 to 1979, then remained in the area until 1984 before disappearing, The reason for their non breeding and disappearance was primarily due to rock climbing and other human disturbances at the nest. Poisoning by livestock owners against carnivores and scavengers, a proven cause of mortality to raptors within Hell's Gate, may have also contributed. The region has recently witnessed a dramatic habitat change with the establishment of large flower farms and urban development for the labour force. This species

is highly tolerant of densely populated human presence as is evident in Ethiopia, and therefore habitat change may not be so destructive to this species.

The establishment of a single pair of Bearded Vultures is not strictly a re-introduction, rather an augmentation. Initially we hoped to locate breeding Bearded Vultures in Kenya. Realizing the small population of Bearded Vultures available we sought to illuminate the impact upon the donor population by rescuing the sibling in two egg clutches. "Sibling rescue" of other raptors who normally lay two eggs but raise only one chick is a tried and proven technique.

The Peregrine Fund in association with the Ornithology Department, National Museums of Kenya, gained further affiliations with the East African Natural History Society, and Birdlife Kenya in order to facilitate, direct and raise funds for the project.

The project's aims were to raise awareness for raptors through hands-on management. Reintroduction requiring dramatic rescue of chicks from cliffs, lengthy hand rearing and fostering and then hacking back in their new location is publicly appealing. The activity in itself, which brings together many different people and professions, is unquestionably an excellent opportunity to promote the species. For the first time in East Africa, a raptor would be the centre of interest. The reintroduction of a single pair was admittedly unlikely to be of numerical benefit to the species. However established reintroduction criteria, and protocol were to be strictly adhered to despite the size of the project.

After five years of searching for Lammergeyers in Kenya to serve as donors, we became aware of their decline, rarity, and regional extinction. We re-examined the proposal and believe that there are justifiable grounds to re-introduce viable populations back to their former territories, to make an important contribution to the stability of the species in Kenya. In so doing we have to adequately answer the reasons for their decline, a difficult task particularly so because of the paucity of knowledge of the species. Individuals of the Mt Kenya population for instance, were seen to eat dead and dying Red Billed Quelea in the mid 1980's. These Quelea had been poisoned with an avicide and the operations were responsible for the deaths of entire raptor communities in the region, and may, or may not have destroyed the 5 pairs said to nest on the mountain.

The proposal now proposes the re-introduction of Bearded Vultures to Mt Kenya, and the establishment of at least two pairs in Hell's Gate and adjacent Longonot National Parks.
We have received constructive input and co-operation from Dr Hans Frey from the Foundation for the Conservation of the Bearded Vulture. The successful re-introduction of Bearded Vultures to the Alps is highly instructive to the success of the Kenya project.

Conforming with re-introduction criteria we wish to re-introduce birds not only of the same race, but from a source as close as possible. Ethiopia has a large and healthy population of Lammergeyers, and we have made a number of inquiries with the assistance of Kenya Wildlife Service (KWS) to take chicks from this source.

Unfortunately after nearly a year we have had no response from the authorities to our request. However we look forward to a mutual arrangement whereby both countries can benefit from participating in the re-introduction exercise. The project has expanded from a promotional exercise aimed at increasing awareness to a project hoping to re establish viable managed populations

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Contributed by Simon Thomsett, Project Manager, The Pereginre Fund, USA.

RE-INTRODUCTION BRIEFS

Grizzly Bears:
A Draft Environmental Impact Statement (DEIS) has been produced by the US Department of the Interior and the Fish and Wildlife Service. This DEIS proposes for the re-introduction of grizzly bears *Ursus arctos horribilis* into the Bitterroot Mountains of Idaho and Montana, USA.

Brown Bears:
After the translocation of two female brown bears *Ursus arctos* from Slovenia, last spring, to the Pyrenees, a male bear was also moved from the same Slovenian area to the same range of the Pyrenees on the first of May 1997. The translocated male is about 9 years old and weighed approximately 200 kg. The male initially spent some days with one of the females, along the Spanish border. Hopefully this may lead to the birth of offspring. There was another good surprise this spring, as one of the other females gave birth to three cubs. We were concerned earlier this year because there was a plan to

capture the two females to refuel their collar batteries, as there was a probablility that one of them could have been pregnant when she was translocated. Therefore no further action was taken and the collars are still functioning. There are no further translocations planned for 1998.

ANNOUNCEMENTS

Red Squirrel Conservation:
3rd National Provident Institution (NPI) Red Alert UK Forum for Red Squirrel Conservation, Cairndale Hotel, Dumfries, Thursday 21 - Friday 22 May 1998 to implement the UK Strategy for Red Squuirrel Conservation. Or further enquiries contact: NPI Red Alert UK Forum, Cumbria Wildlife Trust, Brockhole, Windermere Cumbria, LA23 IlJ, UK. Tel: 015934-48280, Fax: 015394-48281, E-mail: <cumbriawt@cix.compulink.co.uk>.

Veterinary Meetings:
The World Association of Wildlife Veterinarians (WAWV) is holding the following meetings: October 16th-22nd, 1998: A joint meeting between the WAWV, American Association of Zoo Veterinarians (AAZV) and the Canadian Association of Zoo and Wildlife Veterinarians (CAZWV) at the Holiday Convention Centre, Omaha, Nebraska. For further information contact: Dr. Wilbur Amand, Executive Director AAZV and President WAWV, 6 North Pennel Road (Lima), MEDIA PA 19063, USA and Dr. David Jessup, (Program Chair WAWV), 7405 Amalfi Way, Fair Oaks, CA 95628-5902, USA. September 20th-25th, 1999: The WAWV will hold a joint meeting with the European Section of the Wildlife Disease Association (EWDA) and the European Association of Zoos and Wildlife Veterinarians (EAZWV) at the World Veterinary Congress in Lyon, France. For further information contact: Dr. Marc Artois, CNEVA Nancy, Domaine de Pixercourt, BP 9, 54220 Malzeville, France and Dr. Francis Scullion, Secretary WAWV, 16 Cranlome Road, Ballynahaye, BALLYGAWLEY, County Tyronne BT 70 2HS, UK.

Crocodile Conference:
Conference on Crocodilian Biology and Evolution to be held on July 8th-10th, 1998. For further details and information contact: Crocodile Conference, Department of Zoology, University of Queensland, Brisbane QLD 4072 Australia. Tel: +61-7-3365-2471, Fax: +61-7-3365-1655 or E-mail: <crocodile@zoology.uq.edu.au>.

New Insect Journal:
A new journal has been launched which is edited by RSG's Invertebrate Section Chair, Dr. Andrew Pullin. The Journal of Insect Conservation is published in association with the British Butterfly Conservation Society. This journal will hopefully become a focus for insect re-introduction papers. To submit papers or find out more information contact in North and South America: Subscriptions Dept. RSP, Chapman & Hall, Suite 750, Philadelphia, PA 19106, USA. Tel: (+1)-215-574-2300, Fax: (+1)-215-2292, e-mail: <christine.allingham@itps.uk>. In the Rest of the World: Chapman & Hall, Subscriptions Dept. ITPS Ltd., Cheriton House, North Way, Andover, Hants, SP10 5BE, UK. Tel: (+44)-1264-342713, Fax: (+44)-1264-342807 or E-mail: <christine.allingham@itps.uk>.

Crocodile Specialist Group Meeting:
The 14th Working Meeting of the Crocodile Specialist Group will be hosted by the Singapore Reptile Skin Trade Association and will held in Singapore from the 14th-17th July 1998. For further details and information contact: Foreword Communications, 420 North bridge Road #06-29, North Bridge Centre, Singapore 188727, Republic of Singapore. Fax: 63-338-5917 or 65-339-4709 & E-mail: <foreword@singnet.com.sg>.

Centre for Field Research:
The Center for Field Research invites proposals for 1998-99 field grants funded by its affiliate Earthwatch. Earthwatch is an international, non-profit organization dedicated to sponsoring field research and promoting public education in the sciences and humanities. Past projects have been successfully fielded in, but are not limited to, the following disciplines: animal behavior, biodiversity, ecology, ornithology, endangered species, entomology, marine mammalogy, ichthyology, herpetology, marine ecology, and resource and wildlife management. Interdisciplinary projects are especially encouraged as is multinational collaboration. Information can be found at ~http://www.earthwatch.org/cfr/cfr.html, or you can contact: The Center for Field Research, 680 Mt. Auburn Street, Watertown, MA 02272. Telephone: (617) 926-8200, FAX: (617) 926-8532 or E-Mail: <cf~r@earthwatch.org>.

MSc Course in Wild Animal Health:
The Institute of Zoology (Zoological Society of London) and The Royal Veterinary College (The University of London) MSc in WILD

ANIMAL HEALTH is a twelve month course for European and overseas graduates in veterinary and relevant sciences making a career in wild animal health. The course includes practical and theoretical instruction in the husbandry and nutrition of wild animals, taxonomy, population biology, conservation genetics, welfare and ethical aspects, sustainable utilization of wildlife, epidemiology, immunology, infectious and non-infectious diseases, disease investigation, restraint, preventive medicine and surgery, together with an individual research project. Training will be given by staff at The Institute of Zoology and the Royal Veterinary College, as well as invited speakers from other veterinary and zoological centers. Applications are now invited for the 1998/99 and/or 1999/2000 courses starting in October 1998 and October 1999 respectively. Full particulars and an application form are available from the Registrar, The Royal Veterinary College, Royal College Street, London NW1 OTU, UK. Tel: 44 (0)171 468 5000 Fax: 44 (0)171 388 2342.

NEW LITERATURE

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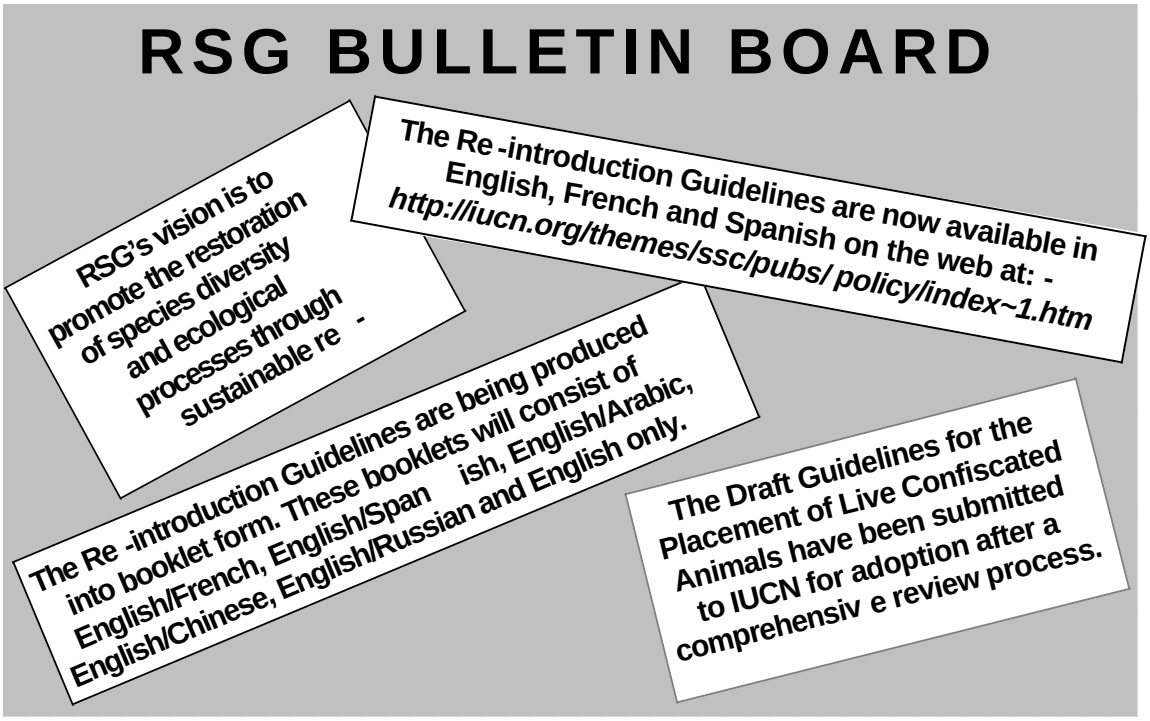
SUBMISSION OF ARTICLES FOR RE-INTRODUCTION NEWS:

We welcome contributions on any aspect of re-introductions. When submitting articles please ensure:-

a) The article should be in the range of 1000 - 1300 words.
b) Please also submit black and white photographs (clearly stating the credit), clear black and white maps of the study area and/or line drawings of the species on which the article is based.
c) The newsletter is published bi-annually (December and June): therefore please ensure that articles are submitted at least 3 - 4 months prior to the publication date.
d) Articles must be submitted in Word 6.0 format on floppy disk or via e-mail.
e) References for articles should be limited to a maximum of five.



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Chairman: Dr. Mark R. Stanley Price
Editor and Technical Project Officer: Pritpal S. Soorae (Micky)

We welcome comments and contributions. Please send them to:

RE-INTRODUCTION NEWS
IUCN/SSC RE-INTRODUCTION SPECIALIST GROUP
African Wildlife Foundation
P.O. Box 48177, Nairobi, KENYA
Tel: (+254-2) - 710367, Fax: (254-2) - 710372
e-mail: *PSoorae@awfke.org*

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