caprinae NEWS

SPECIALIST GROUP OF THE SPECIES SURVIVAL COMMISSION OF I.U.C.N.

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Editor's Preface

The triennium 1985-86-87 is over and the membership list of our Group has been partly modified. The few members who never participated in the activity of the Group have not been re-appointed, and several others have been asked to join us. These are Philip U. Alkon (Israel), Michael J.B. Green (Great Britain), Abdul Latif Rao (Pakistan), David Shackleton (Canada). The new membership list, with addresses, will be published in the next newsletter. It is hoped that there will be sound collaboration and active interactions, oriented towards conservation, between the Group members in the current triennium 1988-89-90. I.U.C.N. has appointed us for that and all of us did officially accept, thus committing ourselves to spare at least some of our time for it (... sorry to keep always harping on the same string!).

The main target of the current triennium will be producing a hopefully sound

ACTION PLAN, which can be used both as a guideline for interventions by setting priorities and to make the point as much as possible (which is unlikely to be that much expecially on Asiatic taxa!) on the status of the wild Caprins of the world.

Some months ago I sent around several forms containing instructions to potential contributors/informers who wish to have a part in the ACTION PLAN venture. In a number of cases only very few people have relevant key-information on the Caprins of some countries: their help is just crucial. Scientists may be aware that there is a feedback at work: no animals left means no research subjects, which means no "caprinologists" and, in turn, no experts may mean no sound conservation planning to preserve viable populations of animals!

In particular, please, be aware that (bits of) data on Asiatic Caprinae are precious: we know only very approximate and often anecdotal information on most of them. If you know something definite on any taxon in any country of Asia, do get in contact with me AS SOON AS POSSIBLE!

Information on argali, red goral, grey goral and takin is especially wanted.

I hope that all of you will attend the meeting I am organising in Camerino (MC) in September 1989, in connection with the International Theriological Congress (Rome): we shall have a full day devoted to the compilation/discussion of the ACTION PLAN. Efforts will be made to "import" key-people from developing countries, if sufficient funds are made available. See paragraph 3 (this newsletter) for information on the meeting.

1. Papers and Notes

WILD CAPRINS OF PAKISTAN. A REPORT

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Pakistan occupies a unique zoological position in Southwest Asia in that it supports more species of wild goats than any other country in the region. It is

second only to Iran in the number of subspecies of wild sheep found within its borders. It is particularly important as a reservoir of wild sheep and goat populations and hence in formulating conservation programmes and strategies relative to the survival of these ungulates. Also, it is the only country where urials currently can be hunted.

During my sojourn in Pakistan (February 15 - May 28, 1987), I conducted field observations on urials (Ovis orientalis), wild goats or pasang (Capra aegagrus) and the Chiltan markhor (Capra falconeri chialtanensis). I also briefly observed Himalayan ibex (Capra ibex) and traveled through flare-horned markhor (Capra falconeri megaceros) habitat. In Sind Province, I visited the Kirthar National Park (Karchat and Khat areas), which supports the largest populations of wild goats and urials in Pakistan. I accompanied two American hunters in their hunt for urials in the Doreji area (about 130 Km north of Karachi in Baluchistan Province); the two specimens obtained were weighed, measured, photoed, and a biopsy obtained to determine chromosome numbers. In Baluchistan Province, I also visited the Chiltan National Park. I visited the private wildlife preserve of the Maliks of Kalabagh where I observed the Punjab urial. In the Skardu region of Baltistan (northern Pakistan), I observed the Ladak urial and ibex habitats. I then visited the Khunjerab National Park, which supports populations of ibex, Marco Polo's sheep, and the bharal. I was unable to visit certain areas of Baluchistan (Khob area) and northern Pakistan (Mintaka Pass) due to travel restrictions on foreigners.

Prior to my survey in Pakistan, there were unresolved questions relative to the taxonomy of moufloniforms. Because of my field research in Iran (1971-75), I was able to help clarify the complex taxonomy of wild sheep in Iran. It was of particular interest to determine the relationships of wild sheep in Pakistan and thus clarify the taxonomy of moufloniforms throughout their distribution in Southwest Asia. Their status was particularly problematical in southern Pakistan (Sind and Baluchistan Provinces) where it was speculated that these populations represented a hybrid swarm similar to those in sourtheastern Iran.

Based on two sheep collected in southeastern Baluchistan and on field observations in the Kirthar National Park, I allocate sheep from southern Pakistan to

a separate subspecies, namely, Blanford's urial (O. o. blandfordi). This is a small (36-40 Kg; shoulder heights rarely more than 76 cm) desert urial. It exhibits a white bib and dark neck ruff and lacks a saddle patch. One specimen was karyotyped and possessed 58 chromosomes. The karyotype is indistinguishable from the karyotype of urials form northeastern Iran. It is thus a true urial and not a hybrid.

Hence there are four subspecies of urials in Pakistan: namely, Blandford's (Baluchistan and Sind pronvinces south of Quetta), Afghan (north of Quetta), Punjab (between Indus and Jhelum rivers) and the Ladak urial (Chitral, Gilgit Agency, and Baltistan). The Afghan urial is similar to Blandford's, but larger with a longer and fuller bib and neck ruff. The Punjab urial is distinguishable by its white saddle patch in the winter coat. The Ladak urial also possesses a white saddle patch but also exhibits a black patch in front of the white saddle patch.

Based on observations of wild goats in the Kirthar National Park, I do not recognize populations in Sind as constituting a separate subspecies based on its supposed smaller size, paler colour, and fewer knobs on the frontal horn keel. I observed over a hundred males and at least that many females and could not discern differences in colour from Iranian specimens. They are not smaller in size (a specimen weighing over 90 Kg has been recorded), and the knobs on the frontal keel are not fewer in number than those from other areas.

The Chiltan National Park, near Quetta, is inhabited by the only large population of Chiltan markhor, estimated at about 300. I proposed and the Baluchistan Forest Department agreed to capture in spring 1988 several newborn kids to establish a captive population. The Chiltan markhor is taxonomically controversial; it is considered to be either a markhor, a wild goat, or a hybrid of the two. Only by conducting detailed serological and chromosomal studies can this controversy be resolved. The captive individuals will be used for taxonomic studies as well as to provide a source for possible reestablishment programmes. The Chiltan markhor is for all practical purposes extinct outside of this small national park. Based on field observations, I opine that the Chiltan goat is a hybrid.

I observed the Lakak urial in a small preserve near the city of Skardu. The population consists of no more than 30 animals; however, it is probably the largest population in Pakistan. This population represents the only source from which animals can be captured and be used in reestablishment programmes. It is also the only populations which can be studied and from which life history data on Ladak urial can be readily obtained. Hence, it is imperative that it be protected and that the population prosper.

My visit to Khunjerab National Park was hampered by inclement weather. A late snow storm closed the higher elevations for several days. I was unable to observe Marco Polo's sheep during the few days I was there. Poaching remains a major problem on both the Pakistan and Chinese sides. The Karakoram International Highway makes the Khunjerab Pass readily accessible and has greatly disturbed the sheep population. Only a small number of Marco Polo sheep use the area (less than 30 animals), at least during the spring and summer. No detailed surveys have been conducted in the winter. Ibex inhabit the higher mountainous terrain and are relatively common.

Since I was close to China, I took advantage of an opportunity to visit Chinese Central Asia. Via bus, I traveled over the Khunjerab Pass (520 m a.s.l.) into China where I stayed one week. The road is primitive and currently being upgraded. Foreigners are not allowed to take sidetrips so I could only observe the country along the main road. I did not observe live argalis but I did observe a large military truck about 1/3 full of argali horns (no skulls). It is possible that argalis may still exist in fair number in certain isolated areas of this vast montane area. The valleys through which I traveled were sparsely inhabited and grazed by domestic yaks and camels. That the Chinese government does not enforce its game laws is evident in the number of snow leopard skins available for sale in the bazaars in the city of Kashgar.

Pakistan's natural resources are under great pressure due to its burgeoning human population (currently estimated at 100 million). The consequences have been environmental degradation on a grand scale. Wildlife has been one of the major casualties and of low priority in the government's programmes to conserve natural resources. One of the most deleterious factors impinging on wildlife has

been the large herds of domestic sheep and goats; large areas have been overgrazed resulting in greatly reduced forage for wildlife. I refer those wishing information on the environmental problems and possible solutions to Pakistan's natural resource crises to the following publication: Pakistan National Conservation Strategy, Phase I Report, published by the International Union for the Conservation of Nature and Natural Resources (1986). Relative to wildlife, the report recommends as follows:

> Half of Pakistan's indigenous wildlife species are either threatened or extinct. The network of parks and wildlife reserves should be expanded and policed more effectively and broad national programmes of public information concerning wildlife should be developed. The media should be used to encourage residents of Pakistan to cherish and protect wildlife resources. Private nature reserves should be encouraged and private wildlife breeding centres established. Areas of priority research should be identified. Wetlands and threatened habitats should be identified, mapped and protected.

The private sector will have to assume a major role if big game animals in Pakistan are to survive. The national government does not possess the monetary resources to support strong wildlife programmes or even the survival of wildlife within national parks. In some tribal areas, the central government has little control of local governments. Only by providing an economic incentive to the private sector and involving the rural population in wildlife management programmes will game survive. Fortunately, pockets of big game remain. For example, there are several areas in northern Pakistan where populations of Himalayan ibex could readily increase to huntable numbers once adequate protection and management programmes are implemented. Many populations of big game animals are greatly reduced due to indiscriminate subsistance hunting. The opportunity exists for foreign and native hunting/conservation organisations to sponsor wildlife management programmes. These programmes would have to involve the hiring of local game guards, allocate a small percentage of the harvestable animals to the local populace, and allocate part of the hunting fees to local village governments. The opportunity to establish game ranches also exists. This should be encouraged and breeding centers for Chinkara gazelle (Gazella gazella), blackbuck antelope (Antilope cervicapra), urials and wild goats should be established.

NUTRITIONAL ECOLOGY OF NUBIAN IBEX IN THE NEGEV DESERT HIGHLANDS

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Wild Caprins and many other ungulates exhibit substantial sexual dimorphism in body size, and often display spatial and habitat segregation between large males and other cohorts. Studies of ungulate populations have usually interpreted these differences in functional terms, emphasising the social behavioural adaptations of cohort segregation, e.g. avoiding competition, divergent roles of the sexes in reproduction, differential predation risk. There are often difficulties in constructing field tests of such functionally oriented hypothesis.

A more tractable approach is based on the growing awareness of the nutritional constraints that are imposed on the ecology and behaviour of ruminants, and the variability of such constraints according to differences in body size and nutritional demands. Accordingly, we have begun a field and experimental study of Nubian ibex (Capra ibex nubiana) that will test a nutritional (i.e. mechanistic) hypothesis of foraging behaviour, habitat selection, and social organisation. This project is funded by several agencies, notably the National Geographic Society and the U.S.-Israel Binational Science Foundation. The principal investigators are Montague (Tag) Demment of the Department of Agronomy and Range Sciences at University of California, Davis; John Gross, a doctoral student at U.C.-Davis; and myself. Several other scientists and students will also participate in the project.

Our study is of a Nubian ibex population in the Negev desert highlands of southern Israel that numbers about 200 animals. This is an arid region (rainfall averages about 100 mm annually) that is dominated by a Mediterranean climate of cool, wet winters and hot, dry summers. The topography of the study area is varied and includes a large river bed, steep canyons of tributary wadis, large plateaus and gentle hills. Permanent springs occur in several tributary wadis. The natural vegetation is generally dominated by semi-shrubs, but the plant communities are diverse, and primary production varies substantially in space

and time. Nubian ibex are the largest wild herbivores of the area. Other large vertebrates include Dorcas gazelles, wolves, striped hyaenas, leopards, caracals and crested porcupines. The study area also contains settlements and cultivated areas. Much of the area used by ibex comprised a Nature Reserve and a National Park.

We believe that our study area and population offer important advantages for a study of ibex behaviour and ecology:

- The ibex are protected and accustomed to humans. They are often observed at close range, and they can be captured and marked.
- There is a substantial variety of natural habitats and sharp seasonal contrasts in climate and plant phenology.
- There are marked cohort differences in dispersion patterns.
- The research is headquartered at the Sede Boqer Campus of Ben-Gurion University which is situated within the ibex range. We therefore have ready access to offices, laboratories, enclosures, and other important facilities.

The overall aim of our study is to determine the extent to which differing nutritional requirements, associated with sexual dimorphism in body size and with reproductive costs, account for cohort differences in feeding behaviour, activity patterns, and habitat use. Comparisons will be made between large, older breeding males (which weigh up to 85 Kg) and adult females (which may weigh up to 40 Kg); and between lactating and non-lactating adult females. The study will concentrate on seasonal periods of contrasting forage availability and reproductive stages.

The research programme is comprehensive and it encompasses the nutritional capabilities of ibex, the nutritional value of their forages, and their field behaviour. The major components include:

- Nutritional and metabolic studies. These will employ captive ibex in enclosures at Sede Boqer to estimate digestive capacities and metabolism of selected cohorts.
- Forage analyses. Chemical and in vitro analyses will be made at U.C.-Davis and Sede Boqer to determine nutrient concentrations of important forages and to estimate the general effects of secondary plant metabolites on dige-

stion.

- Field energetics. Energetic costs (and water fluxes) of free-ranging ibex will be measured by doubly labelled water technique.
- Forage preferences. Captive ibex will be used to estimate preferences and intake rates for important forages and to delineate plant properties that determine harvest rates.
- Habitat characterisation. Habitat types of the study area will be defined and forage availabilities will be estimated seasonally.
- Field behaviour. A sample of study area animals will be captured for marking and will be equipped with radiolocation transmitter collars. Field observations will emphasise: time-activity budgets; detailed feeding behaviour; habitat selection; and overall dispersion patterns of study cohorts.

We realize that the study is an ambitious undertaking, especially for the 3-year period of present funding. However our research is based on a commitment to a comprehensive depiction of ibex nutritional ecology and on an hierarchal approach which assumes that an understanding of lower-level mechanisms (e.g. digestive processes) can lead to realistic predictions of higher-level phaenomena (e.g. food choice). We will employ a dynamic simulation model (IBEX) at U.C.-Davis to integrate our findings and to generate predictions of the nutritional of behavioural choices made by free-ranging ibex.

In a broader sense, we hope that this project comprises the first stage of a long-term investigation of the ecology of Nubian ibex in the Negev highlands. Long-term studies of ungulate populations have proved extremely valuable in addressing important issues in contemporary ecology, but they have been very rarely achieved. Moreover, our findings should have direct relevance for management of Nubian ibex populations and habitats and thereby promote the conservation of these magnificent animals.

2. Miscellaneous

A Sudanese reliable source has provided I.U.C.N. with the following information relevant to the appalling slaughter of wild mammals, mainly Caprinae, in Northwest Sudan, in the mountain region east of the Nubian desert and bordering

on the Red Sea. For a number of years, from November to March, a hunt of all Artiodactyla species has been carried out by members of the royal family of Saudi-Arabia, accompanied by a virtual army of hundreds of people equipped with the most advanced technological gear, falcons to spot the wild animals and aircrafts/helicopters to transport the poachers to places otherwise inaccessible (and thus likely hiding places for game). Hundreds of animals are slaughtered each year. The locally rare Nubian ibex, Capra ibex nubiana, is wanted most. The second popular species is a so-called mountain sheep (a remnant Ammotragus lervia population?). In the foothills and adjoining desert three species of gazelles are hunted, too, but these are easier to reach and to shoot than mountain ungulates, therefore being considered less important targets. On the side, the poachers shoot any other animal they see. The meat is salted and flown to Arabia for later use in the royal diets. Saudi-Arabia's own poor game situation (to a large extent the result of past mis-management) and the fact that Northeast Sudan is so much like their own country are the apparent reasons for the Saudi's to hunt there. On the other hand, if this indiscriminate killing continues, it is likely that there will be no large animal left in the region in less than ten years time. Because of their royal ties, the hunting parties enjoy officially and unofficially considerable power and protection. (Name witheld by request).

At the Khunjerab area, in Pakistan, near the border with China, there are only 10-15 Marco Polo sheep, Ovis ammon poli, while those nearby on China side are probably gone; therefore it is now almost the end of this impressive sheep unless Pakistan protects that remnant. Planting trees and limiting livestock grazing is certainly useful, but these are secondary problems. The most serious problem is hunting. Enforcement of protection and management laws may not be difficult, but apparently no one has bothered to date. After 12 years since the park was established, not even a sign has been put up at Khunjerab to indicate that it is a park. The Chinese side has posted two guards to protect Marco Polo sheep (if any are left in the area). This is a small first step. Apparently local officials are not interested in doing anything unless they get a big government donation. An important conservation measure would be at least to con-

trol "tourists" at the border, so to prevent the last Marco Polo sheep from being shot. (Name witheld by request).

A paper in press in the American journal Quaternary Research (Masini F. & Lovari S. - "Systematics, phylogenetic relationships and dispersal of the chamois Rupicapra spp.") reviews the latest literature on the origin and evolution of the chamois, concluding that two species should be recognized: the Southwest chamois Rupicapra pyrenaica (Bonaparte, 1845), about 31,350 individuals, ranging in two or three subspecies from the Cantabrics to the central Apennines, and the Northeast (Alpine) chamois Rupicapra rupicapra (L., 1758), more than 492,000 head, distributed from the western Alps to the Caucasus and comprising six or seven subspecies. Till recently only one species had been accepted, Rupicapra rupicapra. However, several papers published in the last four years had provided behavioural, biometric, genetical, palaeontologic and morphologic clues indicating a deep separation of the two chamois groups at the level of species. (S. Lovari).

J. Pemberton, P. King, S. Lovari and V. Bauchau have a paper ("Genetic variation in the Alpine chamois, with special reference to the subspecies Rupicapra rupicapra cartusiana, Couturier 1938") in press in the Zeitschrift für Säugetierkunde evaluating the genetic identity, distance and variability in the Chartreuse subspecies of chamois, Rupicapra rupicapra cartusiana, and several neighbour populations of the Alpine Rupicapra rupicapra rupicapra. Surprisingly, in spite of the very narrow geographic distance between the Chartreuse massif and the French Alps - only separated by the valley of the Isére river - the statistical evaluation, based on 55 enzymes, has shown that R.r. cartusiana does group apart with a genetic distance of 0.0180 and a remarkably high degree of variability ($\bar{H}$ = 0.050). This chamois subspecies is the only one rated as "endangered" by I.U.C.N.: only about a hundred individuals are left. Threats to its survival include poaching, the likely competition with introduced mouflons, red and roe deer, as well as the introduction of the Alpine subspecies of chamois beyond the Isére river (i.e. in the perifery of the R.r. cartusiana range) for

hunting purposes.

The authors of the paper conclude that R.r. cartusiana is genetically different from R.r. rupicapra. Such differences are great enough to identify the Chartreuse population as a separate subspecies. Recommended protection measures are e.g. stopping hunting cartusiana for some time; preventing the spread of rupicapra into the cartusiana range; abandoning the existing project of further introductions of rupicapra. (S. Lovari).

3. Announced Conferences

5th World Conference on Breeding Endangered Species in Captivity

The 5th World Conference on Breeding Endangered Species in Captivity will be held in Cincinnati, Ohio, U.S.A. during October 9-12, 1988, and will be co-sponsored by the Cincinnati Zoo and Botanical Garden, Kings Island Wild Animal Habitat and the Fauna and Flora Preservation Society. The International Union for the Conservation of Nature and Natural Resources (IUCN) Captive Breeding Specialist Group meeting will be held just prior to the Conference on October 8, 1988. The programme will include a keynote address and invited papers in sessions that will detail the progress that has been achieved in the propagation of endagered animals and plants in captivity and will address needs that have yet to be met to ensure species preservation. Abstracts for the Poster Session are being accepted until August 1, 1988. Persons interested in attending or submitting an abstract should contact: Dr. Betsy L. Dresser, Conference Chairperson, Cincinnati Zoo and Botanical Garden, 3400 Vine Street, Cincinnati, OH 45220, U.S.A. (513/281-4701).

World Conference on Mountain Ungulates

Camerino (Macerata, Italy)

4-6.09.1989

The World Conference on Mountain Ungulates will be held under the aegis of the 5° International Theriological Congress (Rome, 22-27.08.1989). The conference will be concerned with the biology and management of wild sheep, goats and goat-antelopes. Sections on other Ungulate taxa occurring on mountains and on

feral Caprins will be included, if enough participants show an interest in them.

The third day of the conference will be devoted to the discussion of the I.U.C.N. WORLD ACTION PLAN (first draft) for wild Caprinae. The conference has been endorsed by the University of Camerino, I.U.C.N. and other international organisations. The wildlife magazine OASIS will give a prize of 2 million It. lire (1,450 U.S.$) to the oral or poster paper in which pure and applied (to conservation) research will be best blended.

Please, get in contact as soon as possible with the organiser for further information:

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EDITOR'S CLOSING REMARKS

The existence of this newsletter depends upon the members' answer to the call for material.

(Sandro Lovari)