INTERNATIONAL UNION FOR CONSERVATION OF NATURE AND NATURAL RESOURCES

SPECIES SURVIVAL COMMISSION

ANTELOPE SPECIALIST GROUP

GNUSLETTER

January, 1987

Edited by R. D. Estes, Chairman — 5 Granite St., Peterborough, NH 03458, USA

THE NEW GNUSLETTER

The Gnusletter's new look reflects the Editor's venture into (and adventure in) desktop publishing. Recently developed software makes it possible to design, layout, and typset on a personal computer documents including books comparable in appearance to professionally printed material. I have used Aldus PageMaker and Microsoft Word, with my new Macintosh Plus and ImageWriter II, to compose and print camera-ready copy that will be duplicated at and sent out from Gland as in the past. Next time I'll laser-print the original.

Institutional Subscribers

Transformation of the Gnusletter from a typescript (dutifully prepared by my wife up to now) into a printed periodical is an appropriate time to invite institutional subscribers to contribute, say $5.00 a year, toward the costs of publication.

Donations to the ASG

It is also possible now to contribute directly to the work of the ASG. The World Wildlife Fund - US has agreed to handle contributions. Checks should be made out to WWF-US, for the Antelope Specialist Group and sent to 1255 Twenty-Third St., NW, Washington, DC 20037. If substantial funds can be raised, at least token financial assistance may be given to antelope projects ASG members consider most deserving.

THE ANTELOPE SURVEY: A FLOOD OF INFORMATION

The hundreds of letters that Rod East has written in his quest for current information about the status of African antelopes are now yielding returns even from some of the continent's remotest countries. Within recent months reports have been received from or about Cameroon, Chad, Mauritania, Central African Republic, Mali, Sierra Leone, Guinea, and Zaire. A good many of the respondents have no connection with the ASG but are willing to contribute information they have gathered about antelopes while pursuing their own studies: e.g. anthropologists John Oates and A. W. Davies. In addition, new or revised reports have been received from Senegal, Mozambique, and South Africa.

So much information is pouring in that I am hard-pressed just to read the packets of correspondence and reports Rod sends week after week. Only a fraction of the information can be highlighted in the Gnusletter, which even so has taken me much longer to prepare than ever before.

In fact, the Antelope Survey is turning out to be not merely an important but a monumental effort. Just about everyone who has read the draft chapters that Rod has circulated for comment has been full of praise. However, Ian Parker, the guru of game-cropping and the ivory trade, has his own standards, which may be beyond mortal reach. His assessment of the draft antelope action plan for East and Northeast Africa that Rod was rash enough to send him was completely (and predictably) negative. A few of his choicer comments (*in lit.* 15 Aug 1986):

"I am not competent to comment on antelope numbers, but confess to considerable suspicion toward those you present. To me the majority smack of guesses."

"The issue at stake seems straightforward. You seek a practical action plan...a pragmatic policy. Then you must go beyond the theoretical that is the limit achieved by the AERSG (African Elephant and Rhino Specialist Group). And central to this is the real conservation status of each species. So far you have scavenged carrion in your assessments...

"Glancing at your assessments it is a little curious that the 'high' classification seems to coincide with the most visits by white people...interesting! Is this because white people only go where the conservation is good? Or it it that they, being your informants, don't know too much about the rest?

"Likewise, I take it that you must have some feel for the demographic pressures about each area; the political attitudes, the cases presented for de-gazetting sanctuaries...relative to each area. If not, your assessments are, for practical purposes, worthless...If you are going to make valid judgements of conservation status - you are going to put in one hell of a lot of hard work. And much of the analysis should be undertaken by politicians/sociologists, for it lies beyond the competence of biologists. All in all, I suspect that the Group is already out of its depth!"

In his reply (*in lit* 9 Nov 86), Rod was gracious enough to allow that Ian "raised several valid points." However, the part about hard work was too much to swallow. "I can assure you," he wrote with commendable restraint, "that compiling the Antelope Survey over the last 12-18 months has invoved me in 'one hell of a lot of hard work'! My role in the Antelope Survey has been to send out innumerable letters requesting information, compile the data sent in...., write the first drafts of all of the reports on individual countries plus the overview/action plan, prepare all of the figures, type all of the letters and reports myself, etc., etc. - all on a purely voluntary basis and entirely in my own time, i. e. evenings and weekends. (I work in insect pest management research at Ruakura, where I lead a Ministry of Agriculture and Fisheries team of 9 scientists and 18 technicians; my interest in African wildlife is purely a hobby).

"The reasons that I have put so much into the Antelope Survey are that I genuinely believe that Africa's rich diversity of large mammals is a precious global heritage. I am prepared to put a high proportion of my energies into doing what little I can to ensure its future, and there seemed to be a niche that I could usefully fill in taking on the task of compiler of the ASG's survey."

Apart from the differences in attitude, it is noteworthy that Ian Parker, as one of the first and best-known of Africa's wildlife consultants, normally charges for his services. In this case, at least Parker's comments were gratuitous - in every sense of the word.

CONSERVATION PRIORITIES: SPECIES VS. COMMUNITIES AND AREAS THE SUBSPECIES DEBATE

Among the comments solicited by Rod East on his draft Antelope Action Plan for East and Northeast Africa, are some of such general concern that I raise them here to give members of the ASG - and other SSC colleagues- food for thought.

Richard Schuster (now back at the University of Haifa) submitted a long and detailed critique *(in lit.* to Rod East 5 Dec 86). Although it goes far beyond the scope of the Antelope Survey and, if acted upon, would entail a very extensive revision and more delay, some of his points are of fundamental concern to the IUCN. Unfortunately his letter is too long to include in its entirety.

"My principal problem with the draft," writes Schuster, "was over the intended focus of conservation efforts - specifically whether on species (including subspecies) or areas...In reading the report, the areas approach seems to dominate since most of the analysis and data focus on 1) regions outside conservation areas (Table 5) and 2) biological importance of areas (Table 7). The contradiction arises because high biological importance can be attached to an area containing many species, even though none is endangered. One way out of this is to attach two biological ratings to each area, one reflecting species not seriously threatened and another reflecting species threatened. This would aid in determining priorities for conservation action which integrate area and species aproaches.

"I would also recommend that the exact same rating system used for Table 7 be extended to regions outside conservation areas (Table 5) so that the data in Tables 5 & 7 can be treated equivalently...This would be consistent with the goal of granting conservation status to important areas and considering all areas equivalently."

"I disagree to some extent with the classification of species by numbers and number of populations (Tables 1 & 6)...The conclusions from numbers and populations ignore important variation due to habitat requirements and social organization. An example is the white-eared kob. Some species cannot occur in more populations because their habitat requirements are specialized, e. g. flood-plain species. In my view, the most important criterion of status in such cases - and maybe more generally - ought not to be

number of populations but threat to an ecosystem. If hydroelectric development, for example, is destroying a floodplain, the species is endangered even if there might be one million animals, because they cannot survive elsewhere. Alternately, if the ecosystem is stable, there is no threat and the designation 'threatened' is unrealistic even though there might be only a single population. The factor of ecosystem survival is not emphasized sufficiently in the report."

"Similarly, small and dispersed populations might be normal for a species. I believe there are enough data on modal group sizes and social systems of most antelope species to be able to interpret the conservation significance of populations."

Speaking of the section on Solution: Multiple Resource Use, Schuster emphasizes the importance of combining conservation with development. "One point that I have learned to emphasize from experience in Zambia and Israel is the importance of integrating development and conservation in policy, administration and legislation. Isolation of policy and implementation in separate ministries tends to encourage confrontation and competition over funding and land, buttressed by mutually exclusive policies and philosophies. Ultimately, development and conservation need to be linked in developing countries because decisions have to be reached about land use, transportation and centers of population (less importantly because of tourism). "Related to the above, there is no mention in the Report of the rules governing interaction between man and animal, e. g. who fences, who is responsible for crop damage, what defensive measures can be undertaken legally. Policy linkage would automatically reduce conflict between conservation and local human populations by clarifying responsibility at the local level. I believe strongly that such mundane matters are an integral part of antelope conservation because antelopes are often seen as 'enemies' of local human populations because they compete with livestock for grazing and inflict heavy damage on crops.

"There is no mention of game ranching as a conservation strategy. I do not favor ranching, but it is being proposed (e.g. in Zambia on the Kafue and Bangweulu Flats as the only way to combat poaching and provide benefits to the local populations). I understand from V. Geist that ranching is also becoming an issue in North America. I therefore recommend that the issue be tackled openly and the pros and cons spelled out for the benefit of conservationists who seem to be confused about whether ranching qualifies as a conservation strategy.

"Related to the above is the issue of management which includes culling, population regulation, etc. I would recommend that the Report address itself to the pros and cons of active management vs. self-regulation of populations."

In an even longer and more detailed critique, **Chris Hillman**'s discussion (*in lit* to Rod East 13 Sept 1986) of whether species, communities or environments should receive highest conservation priority is of particular interest.

"3. Conservation priorities, single species...I feel that antelope communities will eventually attain dominance over single-species conservation. Antelope communities make a greater contribution to ecosystems of major importance; conservation of a community cf. single species is considerably cheaper considering the limited funds available; and more money can be made from a varied community, either through tourism, or utilisation.

"4. Conservation priorities, communities: Does the scoring system take account of the development attention and finance a priority area may have already received, or be receiving from international resources? There is considerable disenchantment here in Ethiopia with the attention East Africa has received already, while very little has been paid to this country. I realise politics come into it, also ' better the devil you know...etc.' I would like to see recomendations that conservation development finance be directed to areas that have previously received little attention, i. e. make lack of finance in the past a means to attract finance for the future."

"6. Antelope conservation cf. environmental conservation: I realize it is not easy at this stage to correlate antelope conservation, key antelope species and key antelope conservation areas with key habitats, and key areas that require conservation attention for other reasons, e. g. the presence of carnivores, significant topography, geology, hydrologiocal features, elephant presence, etc. It is important however to underline the fact that antelope can rarely be conserved alone, but that the significance of other related aspects of the ecosystem must be taken into account. I realise this is implicit in much of what you have said, however, my worry is its acceptance in isolation by the responsible government departments. Maybe section 5.3 could be expanded, such that antelope conservation is not seen as an end in itself, but as part of an overall environmental conservation plan."

"7. Antelope conservation through utilisation: ...A great deal of attention has gone into the utilisation of wildlife for meat, and antelope naturally come to mind, before most other wildlife groups. Antelope are not cattle, and should not

therefore be used like cattle. They have a natural adaptability to the environment in which they are found, which has evolved over millenia. This should be modified as little as necessary, and advantage taken of 'management points' - times in the species' life-cycle when advantage can be taken by man of the different species' natural productivity. Cropping of natural production is only one of these options. There is a whole gradient of utilisation options from cropping through to total management, or 'game ranching'. There are precedents elsewhere for these management and utilisation systems - reindeer in northern Europe, vicuna in South America, swans in England, crocodile utilisation in New Guinea, Ethiopia, Zimbabwe, etc. There have been several attempts to utilise antelope, mainly on a game-ranching basis. There are considerable problems of legal ownership of the land and the antelope, depending on the political system of the country...I feel there is a need for a more scientific and pragmatic review of successes to date, framed in a way which African government departments can understand and learn from.

"It is necessary to encourage utilisation systems that allow antelope species to live and breed wild in largely unmanaged ecosystems: management points then allow exploitation of an element of the population - selective cropping, juvenile capture and fattening pre-slaughter, etc. This is especially important in situations of locally high densities of certain species, which may be rare or endangered, but for which there is no room for conservation area expansion, e. g. Swayne's hartebeest at Senkelle in Ethiopia."

"8. Identify priorities or provide details: ...Antelope conservation is part of environmental conservation, and rarely can a country afford to pay attention to antelope conservation in isolation. I feel that the value of this document, therefore, is in identifying priorities with an antelope emphasis, to be correlated with the work of other specialist groups where possible, to enable fund-raisers and environmental managers to make the decisions neccessary to optimise use of the overall conservation effort...Any details we try to give of conservation action required can only be from an antelope point of view. In rare cases we could comment where survival of a species [or subspecies] is restricted to a limited area and requires species-specific action, e. g. Swayne's hartebeest in Senkelle Sanctuary...The only other antelope-specific conservation details we can comment on are those to do with antelope utilisation, as I have suggested above. Beyond this we should not comment, since to do so would focus attention on one aspect of the environment, possibly at the expense of the whole environment, thus defeating our own objectives. Most antelope have tunnel vision; we as wildlife managers and thinking beings, should exhibit some lateral vision - including due respect to the requirements of the people who have to find their very existence in the habitats and amongst the animals we are discussing."

- WHICH SUBSPECIES CAN/SHOULD BE CONSERVED

If the following comments from ASG members are representative, antelope specialists have a pretty practical standard for determining which subspecies should have a high conservation priority: those which are distinctively different from conspecifics.

Michael Keep (in lit. to R. East 2 Dec 86): I believe one should not go overboard regarding subspecies. Conservation of whole species is a big enough problem. Obvious subspecies should be conserved where practicable. It is difficult to know where to draw the line. Common sense must prevail!"

Peter Grubb (29 July 86): On subspecies I think it is important to take a common-sense attitude. If they are easily recognised in the field, have distinctive ecology or habitat preference, are geographically isolated and have distinctive vernacular names, then it s a mistake to sink them into obscurity. The five kinds of E. African *Alcelaphus* provide a good example. Where the picture is uncertain - as with supposed subspecies of gray duiker - then it would be misleading to claim that subspecies are clearly differentiated and well understood, and it is best to ignore them. Of course, what to include or exclude is a little arbitrary."

Jeremy Anderson (20 Oct 86): With regard to the inclusion of more or fewer subspecies, I have a problem. I think we cannot but help be subjective here and my own feelings are that we have to include more subspecies. The systematists themselves will be 'splitting' and 'lumping' when we are long gone, and if pelage differences justify bontebok and blesbok as being different species, then how about a *Kobus defassa* and a *Hippotragus variani*? Topi and tsessebe also differ more in appearance and habitat selection than bontbok and blesbok. I suggest that if we accept bontbok and blesbok, then we use similar criteria to decide on which subspecies to accept.

This would be that the known separation of the subspecies must have been at least x km apart, and that the physical differences in appearance must equal or exceed those of blesbok/bontbok, giant eland/common eland. I am working on a list of subspecies which I subjectively feel should be considered. I'll send a copy to Dick and perhaps leave it to you

chaps to resolve."

I don't neeed to wait for Jeremy's list to make a general comment on this subject. If bontebok (bontbok, Jeremy?) and blesbok were accepted as separate species, it would indeed confuse and generally mess up bovid classification. But who, pray, has proposed and - more important - who accepts the splitting of *Damaliscus dorcas*? Speaking of the giant sable, from the conservation standpoint it would be helpful if it were designated as a separate species. But unfortunately I don't see how it could be justified taxonomically. On the other hand, I accept that Lichtenstein's hartebeest (alone) is specifically distinct from *Alecaphus buselaphus*, although I wouldn't go so far as to make it a separate genus (*Sigmoceros*) as proposed by Vrba (1979. Phylogenetic analysis and classification of fossil and recent Alcelaphini Mammalia:Bovidae. Biol. J. Linn. Soc. 11:207-28). Yet when it comes to the Tragelaphini, I am loath to lump the elands (with two clearly separate species) and bongo in *Tragelaphus* merely because they have hybridized in captivity; but the checklist distributed by the Species Monitoring Centre has lumped them all in one genus. The fact that female eland and bongo are horned is different enough to justify the traditional generic distinction, and since the eland probably evolved from the greater kudu and the bongo from bushbuck there is little reason to make them congeneric either, at least in my pragmatic view.

But there are some species and even whole tribes in which the distinction between species and subspecies really is difficult and at the same time important to make. The gazelles have been called the most taxonomically difficult bovid tribe; some of the varying opinions about which subspecies of dama gazelle deserve recognition and conservation have been aired in the Gnusletter. But distinguishing species and subspecies of duikers may be hardest of all, which is why Vivian Wilson started his decade-long study of the Cephalophini. Some of his comments on the subject are given below, followed by the occasionally contradictory views of several other duiker experts.

V. J. Wilson (*in lit.* to Rod East 11 Dec 1986): "My only concern about the duiker data is the status of Weyn's duiker (*Cephalophus weynsi*). I still believe we should regard the classification of most of the red duikers...with caution. In this regard field work is essential as it is not always possible to look at dried museum skins which were collected 50-100 years ago with any degree of accuracy. I have recently has a look at duiker skins in the British Museum (NH)...., and found that most of them were so hard and dry that they could not be opened. I gave it up as a bad job. This is why I feel that it is important that in your East and North Eastern African section (Part I) you should indicate that the red duikers in particular need to be looked at more carefully."

Commenting on the duiker accounts in the draft chapter on Uganda, Viv says in reference to the black-fronted duiker, *C. nigrifrons*; "I'm delighted to see that at this stage *rubidus* is not regarded as a full species as suggested by Kingdon (1982). However things may change in the future and *C. rubidus* may well be a good species." And about Peter's duiker in Tanzania, which Rod called *C. weynsi*, "I am still one of those people who prefer to refer to this duiker as a subspecies of *C. callipygus*, and until such time that we have looked at fresh material (and not ancient museum specimens) I would not recognise *C. weynsi* as a full species."

According to **Peter Grubb** (*in lit.* to Rod East 29 July 1986), "There are three allopatric species of thick-horned red duikers, *C. weynsi*, *C. ogilbyi*, and *C. callipygus*. The first and last have often been grouped together as one species, under the name *C. callipygus*, this name having nomenclatural priority. These two have also often been quite wrongly associated with *C. natalensis*, *C. harveyi*, and *C. adersi*, which are only very superficially similar. Since *C. ogilbyi* is intermediate in appearance between *weynsi* and *callipygus*, it seems appropriate either to treat them as three separate species or to group them all together as a single species, *C. ogilbyi*. Since this latter move has not yet been proposed in print, my feeling is that it is best to keep *weynsi* separate from *callipygus* for the moment."

Roland Wirth, Chairman of the Mustelid and Viverrid Specialist Group, wants to see a subspecies of *weynsi* (= *callipygus*) *given protection*. "I suggest that one East African subspecies of Weyn's duiker, *C. w. lestradei*, should be considered for inclusion in the Action Plan...The subspecies is fully endemic to the region and occurs in two or three conservation areas in Rwanda and Burundi that have a low conservation status according to your plan. Lestrade's duiker occurs in the Nyungwe Forest Reserve of Rwanda, but I am not sure at the moment whether it occurs in both of Burundi's montane national parks. Being the only antelope endemic to these areas, a listing of *lestradei* in the Action Plan would further underline the importance of these conservation areas." I have seen several skins of this subspecies at the Tervueren Museum and can confirm Grubb's and Groves' statement that the subspecies has a highly distinct colouration if compared to the much lighter other subspecies."

And finally, **Alberto Simonetta** (*in litt.* 5 Sept

1986 to Rod East) calls attention to subspecies I had never even thought about before. "...I wish to point out that the two subspecies of gerenuk, *L. w. walleri* and *L.w. sclateri* are so different in their cranial measurement (apart from other features) and there seem to be no intermediates, that I wonder whether a better study of these animals would not upgrade them to full species status. The Southern gerenuk is certainly not endangered, though it has much suffered, but the Northern gerenuk is certainly vulnerable and probably endangered."

DISEASE

Anthrax Decontamination

It has recently been revealed that Great Britain actually produced an anthrax bomb during World War II, in the (mistaken) belief that Germany was developing one. In Newsletter No. 2 of the Veterinary Specialist Group (Sept. 1986), M. H. Woodford reports on efforts to decontaminate the testing site.

"In 1942, the British Ministry of Defence contaminated the 2090 hectare Island of Gruinard in Scotland, during a series of trials of an anthrax bomb it was developing. Since 1979 high concentrations of spores have been found on three sites close to where the bombs exploded, and more at 150 sites away from the bombing zones.

"Now the Ministry say they have the technology accurately to disperse formalin over the contaminated parts of the island. ACetate tubing lined with polyester, with thousands of precision-cut perforations will be used to give dispersion of the disinfectant with 'uniformly variable trajectories.' 2000 tonnes of seawater will be mixed with 283 tonnes of formalin and the aim is to avoid pools of the mixture building up and running into the sea. The ministry scientist says the treatment will not damage the ecology of the island because the mixture will bind to the organic material in the soil.

"This attempt to clean up an area contaminated by anthrax spores is of interest to wildlife managers and veterinarians who may be asked for advice on the decontamination of water holes and land infected by animals dead of anthrax. Further information can be obtained from the VSG office."

Mt. Gazelles Succumb to Foot and Mouth Disease

In the same newsletter is a story on a severe outbreak of FMD in the *Gazella g. gazella* population of Ramot Yissakhar Nature Reserve of NE Israel. Some 2000 animals, representing >60% of the population, died. Apparently "the exceptional mortality rate...was due to overpopulation, combined with very high susceptibility of the host, ...a phenomenon previously observed in various other species...The mountain gazelle population on Ramot Yissakhar had increased considerably during the last 30 years, after having reached the verge of extinction. The population increase was achieved by very efficient protection activities, motivated by the best intentions, leading to a density which, according to ecologists, was four- to fivefold the desirable one in the given area."

REGIONAL RUNDOWN

WEST AFRICA

Zaire

More information on Zaire has come in from three new sources: Wolfgang von Richter (of black wildebeest fame), who is heading up a project on Conservation de la Nature intégrée - Est Zaire under the Institut Zairois pour la Conservation de la Nature, based in Parc National de Kahuzi-Biega near Bukavu; John Hart, who is studying okapi in the Ituri Forest, centered at Epulu; and Francesco Germi, of the University of Rome, who is studying the zoological culture of the forest-dwelling Pygmies and Bantu.

Wolfgang filled out checklists for Kahuzi-Biega, Virunga-Zaire, and Maiko N. P. "From my knowledge," he writes (30 Nov 86), "none of the smaller antelopes mentioned in your questionnaire is endangered, vulnerable or rare in the sense of your definition. Some species may be locally rare due to limited habitat or human influence. It is particularly difficult to assess the status of the small forest-dwelling antelopes with any degree of certainty. In addition, identification presents problems and the local population confuses the names."

Dr. Germi has sent in all the records of antelopes recorded in his notebooks by himself and his colleague, Dr. G. M. Carpaneto, during three years of field work in N.E. Zaire, plus records from Garamba and Virunga N. P. and the Kivu region. "From this source," he writes, "I hope that you can have a general view of the faunistic situation concerning antelopes.

"Pygmies hunt by nets and catch all the antelope species occurring in their hunting range. So well [that] the number of specimens they are collecting can be an approximate measure of their relative abundance. For example, you can easily deduce that *Cephalophus monticola* is the most common...duiker in the Ituri Forest. Because of the absence of livestock in this area, all the increasing Bantu populations of the region survive by exploitation of game and the pygmies, active hunters, are the providers of meat for all the people who live inside the forest, along the roads. In the environs

of the most populated areas, the populations of antelopes show an alarming decrease, also because of the deforestation."

Cameroon

Francois Lamarque, Biology Professor at the Garoua Ecole de Faune (whose proposed Derby eland study was noted in the January, 1986 Gnusletter), has turned in a checklist of Cameroon antelopes, supplemented by notes about most of the species (*in lit* 16 Nov 86), which are summarized in Table 1. "There is a regrettable lack of data on the whole of the forest area," Dr. Lamarque notes as one reason for the absence of any quantitative estimates of antelope populations in Cameroon.

Malcolm Stark of Lethbridge Community College, Lethridge, Alberta, has also submitted checklists of antelopes of central Cameroon (including Benoue and Bouba njida N. P., Faro Reserve, and surrounding areas) and N. Cameroon (inc. Waza and Kalamaloue N. P. and surrounding areas), based on field work carried out in the late 1970's. Four of his papers are now in press in the Afr. J. Ecol. and Mammalia, one of which gives population estimates for 15 of the large herbivores in Benoue N. P.

Speaking of the present status of antelopes, Prof. Stark writes (21 Nov 86), "I am (optimistically) confident that their status today has not changed." In view of what Dr. Lamarque reports about development projects, the 1983 rinderpest epizootic, etc. (see Table 1), that may indeed by an optimistic assessment.

Ivory Coast

On the eve of taking up a new post in Malawi as SADCC Regional Programme Coordinator for Fisheries, Forestry and Wildlife, Harald Roth has submitted a summary of the work involving antelopes that he and numerous research students have done in Ivory Coast over the past decade.

Inventory Surveys of Areas

1976-78 Detailed survey of the three most important national parks: Comoe, Tai and Azagny (pub. 1979).

1979-81 Detailed survey of selected savanna areas with biomass estimation for possible game utilization (most important species *Kobus kob*)(pub. 1981).

1976-81 Comparative ecological research on *Kobus kob*(pub. 1983).

Conservation Activities

1981-86 Creation and management of a new Rain Forest National Park, Azagny, as a World Bank project. *Cephalophus maxwelli, dorsalis, niger* and *silvicultor* are common, apart from other more widespread antelopes.

1983 An unsuccessful attempt to build up a *C. dorsalis* population in the Azagny N. P. by introduction of captive animals. (Contrary to the present wild duikers, the tame ones could not resist the abundant pythons.

1978-81 Assessments of the importance of forest duikers as food for people of the humid forest zone and emphasis on the need to maintain this important resource through sustained use.

1978-81 Planning of a pilot game ranch, based on *Kobus kob* (with detailed costing of capture and farming expenses).

Species Surveys still Underway

In 1978 a status survey of large mammals was started, including a species-by-species survey of the antelopes, the final part of the survey. The results can be included in Part III of the Antelope Survey, provided funds can be found to complete the

Table 1. Antelopes of Cameroon

Species	Distribution	Remarks
Tragelaphus derbianus	Soudanian zone of N. Cameroon, especially in Benoue, Bouba ndjida & Faro N. P.	Habitat loss to cotton, livestock, other agricultural extension, and regional development projects. many died of rinderpest in 1983.
T. eurvceros	Probably found in the Equatorial zone, present in Dja N. P., Lake Lobeke Reserve, and very likely in Campo.	Threatened by forest exploitation (logging activities).
T. scriptus	Found in the whole of Cameroon.	Numerous
T. spekei	Found in S. Cameroon (Equatorial zone) particularly in Korup N. P., Dja and Campo Reserves.	No more data
Cephalophus callipygus	Certainly present in the Equatorial forest, but no data.	
C. nigrifrons	*Idem*	
C. dorsalis	*Idem* but present in Campo.	
C. leucogaster	*Idem* also present in Campo.	
C. maxwelli	*Idem* present in Korup N. P.	
C. mon ticola	*Idem* present in Dja and Campo Reserves.	
C. ogilbyi	*Idem* present in Korup N. P.	

C. rufilatus	Widely distributed in N. Cameroon (Soudanian zone) and clearings of the Equatorial forest. Easily seen in Bénoué Bouba ndjida, and Faro N. P., and in Campo Reserve.	Numerous but endangered in South by hunting and poaching.
C. silviculitor	Present in W. and S. forest zone, especially in Korup N. P., Dja and Campo Reserves.	
Sylvicapra grimmia	Widely represented in N. Cameroon from Lake Chad to Adamaoua massif.	Numerous
Kobus ellipsiprymnus (var. *unctuosus*)	N. Cameroon in the Sahelo-Soudanian and Soudanian zones.	Easily seen, seemingly not heavily poached and quite resistent to rinderpest.
K. kob	Widespread in N. Cameroon from Tchad to Adamaoua; numerous in Kalamaloué, Waza, Bénoué, Faro N. P.	Very major populations despite high mortality during 1983 rinderpest epizootic.
Redunca redunca	N. Cameroon in Sahelo-Soudanian and Soudanian zones, present in most national parks.	Very numerous in Boubandjida N.P.
R. fulvorufula	Recently discovered in Adamaoua (var. *adamauae*), said to be present in Mandara Mts. by natives.	Doesn't exist in protected areas; a lack of data about this species.
Hippotragus equinus	Widely distributed, Lake Chad to Adamoua; found in above parks plus Mozogo-Gokoro.	Numerous
Alcelaphus buselaphus	The whole of the Soudanian zone, especially in Bénoué, Bouba ndjida and Faro N. P.	Numerous
Damaliscus lunatus (var. *purpurescens*)	Essentially found in Waza N. P. but also seen rarely in Bouba ndjida; formerly comon in Kalamaloué but now driven away by poaching and drought.	Depleted by the drought and the 1983 rinderpest outbreak.
Neotragus batesi	Certainly present in S. Cameroon (Equatorial zone) but no data.	
Ourebia ourebi	Widely distributed in Soudanian zone.	Numerous
Gazella rufifrons	Sahelo-Soudanian zone of N. Cameroon, especially in Kalamaloué and Waza N. P.	May be threatened by poaching for their skins (handicrafts, carpets). Not very numerous but seems to form stable populations.

project. "Constant lack of funds has been hampering us all the time," writes Harald (*in litt.* to East 1 Nov 86), "and therefore the report on antelopes cannot be completed before the end of next year, if we find some money."

As an example of the kind of information yielded by these surveys, Roth mentions that "*C. jentinki* is much farther distributed than usually believed. We have noted each sighting by a researcher during the last 10 years and have extracted localities of seizure of poached specimens (easiliy identifiable by the color of the skin) from the official forest service reports for the last six years. There is also good information on the productivity of *C. maxwelli* from a distinct area in which they are being hunted excessively for meat."

"There are only two *Cephalophus* species which adapt well to agricultural change of the forest - all the others will disappear with the destruction of the forests!"

Sierra Leone

Information about the antelopes of Sierra Leone has been kindly provided by primatologists Geza Teleki, John Oates, and A. G. Davies. Teleki, who conducted a nation-wide primate survey in 1979-80, then served as Director of the newly gazetted Outamba-Kilimi N. P.), from 1981-84, writes 16 Dec 86):

My general impression was that nearly all antelopes in Sierra Leone, with the possible exception of the bushbuck..., are vulnerable or endangered, especially the forest duikers, but I have marked most species as indeterminate simply because I do not have detailed field survey information. There are so few intact wildlife habitats remaining in Sierra Leone,

however, and hunting-trapping levels have shot up in... recent years due to overall food shortages, that virtually all large mammal species are threatened with extinction in the near future."

Dr. Davies, who is associated with John Oates in the Anthropology Dept. of New York's Hunter College, sent a report on "Wildlife conservation and forest management in the Gola Forest Reserves, Sierra Leone", from which the following excerpts are taken:

"Forest patches, whether primary, logged or old secondary, need to be at least 5-10 km^2 in area to support viable populations of forest species."

Duikers

"The duikers are a group of small antelopes which have radiated to fill a variety of niches on the forest floor of the West African rain forest. Five species occur in the forest zone of Sierra Leone [*C. maxwelli, silvicultor, niger, zebra, and dorsalis*]. A sixth species, Jentink's duiker, has been reported from Gola North by experienced hunters, yet its distribution is centred in eastern Liberia...and there are no other records of it from Sierra Leone...This needs thorough investigation since this is the rarest duiker in the world. Ogilby's duiker has not been reported from Sierra Leone in the past...and it was not seen during these surveys, although it is reported from western Liberia and Teleki (1980) records it as present in the Gola Forests."

"Despite their abundance in the forest, duikers are seldom seen because they are small, stealthy, often night-active animals which rest in thickets, beneath fallen logs and between the buttresses of tree trunks during the day. Even efforts to see them at night using spotlights proved largely ineffective, so no population estimates were made."

"Duikers, like the primates, vary in their ability to adapt to forest disturbance. Two species appear wholly dependent on primary forest, in addition to Jentink's duiker, if it occurs, but others appear more adaptable [*maxwelli*, easily the commonest species, *niger*, and *silvicultor*].

"Duikers are highly favored foods and killed intensively as a result. Hunting is carried out using shotguns, either at night when spotlights are used to find the animals by their eye-shine and then dazzle them, or by day when whistles are used as lures to attract them. Large numbers of duikers can be eliminated from areas in a short time using these methods. Villagers, however, tend to set up fenced snare lines to catch small antelopes in the vicinity of villages and farms, and use firearms less often."

Dwarf Antelopes

Two dwarf antelopes are expected to occur in the Gola Forests, the royal antelope (*Neotragus pygmaeus*) and the water chevrotain (*Hyemoschus aquaticus*). A single royal antelope was killed in a snare in the logged forest at Gola West and several have been killed in the farm bush around Tiwai. Localfarmers say that they are common near coffee and cacao plantations, but none was seen in primary forest. No records of the water chevrotain were obtained."

"Much more detailed information is needed on species' ecology before comprehensive conservation plans can be drawn up, but areas of primary forest are clearly needed if the rarer species are to be preserved and hunting within these areas must be prevented."

Senegal and Mauritania

Both A. R. Dupuy, Director of National Parks and ASG member, and G. Sournia, the IUCN Regional Delegate in West Africa, have filled out checklists on the status of antelopes in Senegal. The following quotes (freely translated from French) from their covering letters give some idea of conditions in Senegal and neighboring Mauritania and Guinea. M. Sournia writes (*in lit* to R. East 20 Oct. 86):

"In general, the several areas outside the national parks and reserves that harbor wild animals are Casamance, eastern Senegal and the average river valley. Almost everywhere else large animals have disappeared.

"The principal causes of the disappearance...are...human pressure: poaching, pastoralism and to a lesser degree, drought.

All attempts at reintroduction of rare or vanished species (giraffe, lion, dama and dorcas gazelles) always fail, apparently because the problem has been poorly studied."

"In Mauritania, scimitar-horned oryx, korrigum (*Damaliscus korrigum*) and the dama gazelle have disappeared in recent years. Roan, kob (*Adenota kob kob*), and reedbuck (*Redunca redunca*) are seasonally present in the extreme southwest, on the Mali border. The following species are still present but endangered: red-fronted gazelle (*G. rufifrons*), dorcas gazelle and addax.

"The principal cause of the destruction of the large fauna of Mauritainia, notes M. Sournia, "is very intensive poaching without any control on the part of the Maures."

Speaking of Mauritania and Guinea, M. Dupuy (in litt. 17 Oct 86), says, "The administrative structure, being deficient or ineffective for several reasons, it must be remembered that the assemblage of wildlife is very much threatened.

"In Senegal, the structure of the wildlife is being maintained in a satisfactory manner in the East and South...(Sénégal-oriental and Casamance). Everywhere else it is found to be very much threatened by humanization and habitat transformation.

"As for the antelopes that have recently disappeared, *Damaliscus korrigum*, *Gazella dama* and *Gazella dorcas*, only the last two species are involved in the reintroduction program:...eight dama gazelles in Gueumbeul Park and 50 dorcas gazelles in Djoudj."

"In this picture hope exists in the fact that *Taurotragus derbianus*, thanks to good protection has increased in Niokolo-Koba and environs ...to around 1000 head. *Tragelaphus spekei* has always been very rare and very localized in Senegal and only a few survive in the vicinity of the middle Gambie River.

Cephalophus silvicultor has always been equally rare and only subsists in very small numbers in the country's last forests, notably in Basse Casamance N. P.

"In conclusion, the antelope situation in Senegal should be monitored. Demographic pressure is increasing but thanks to a system of parks and reserves, there is no immediate danger."

CENTRAL AFRICA

TCHAD

Jean-Paul Thomassey, resident in N'djamena (B.P. 898), has provided an authoritative and surprisingly optimistic report on the status of the antelopes and protected areas of Tchad. His information is summarized in Tables 2 & 3. The improvement of conditions within the country compared to the recent past may be judged by the following excerpt from M. Thomassey's report (again, freely translated):

"A systematic aerial survey of the fauna (coverage of ca. 5%) was made in May/June 1986, financed by [French aid] FED; it covered the greater part of Salamat Prefecture and the eastern part of Moyen-Chari Prefecture. The results of this inventory have not yet reached us.

"The wildlife of Tchad has been particularly threatened these last years by:

§ Drought, which extended throughout the country since 1972. However an amelioration of rainfall was noted in 1985 and especially 1986 which allows hope of improved pasture and consequently increased herbivore reproduction. In addition to these direct effects, the drought has also caused the wild animals to assemble around the rare permanent water sources during the dry season where they have been more vulnerable to poaching.

§ The poaching which developed between 1972 and 1982 has been partly the result of the proliferation of arms of war...and partly because of the disorganization of the wildlife protection agencies (vast regions were lost to central control during these years).

Progressively, since 1983, protection has been reinstated but the logististic supports are still very inadequate.

§ Competition with domestic animals. Direct competition for water and pasture but also deterioration of the habitat, including the practice of mutilating trees...

§ Rinderpest, of which the last epizootic (1982-83) decimated a great number of buffalos and Derby elands. This epizootic has very probably been propagated by herds of domestic stock, among which the vaccination campaigns were disrupted during the events that have occurred in Tchad.

Central African Republic

I have received impressive close-up color slides of a superb Derby eland bull through George Bates of Canton, Mass., who traveled to the C. A. R. last summer to see a daughter in the Peace Corps. There he met Mike Fay of the Missouri Botanical Gardens, who is engaged in a longterm study of the lowland gorilla. The photos were taken by his wife, Andrea, from a waterhole blind where a variety of wildlife may be seen at close quarters. "If Estes is in need of any other photos of unusual animals from Central Africa," Mike writes (Dec 86 letter to Bates), "don't hesitate to ask."

In a recent telephone conversation, Mike told me that conditions have greatly improved in the CAR and that there are many possibilities for antelope research on, e.g. Derby eland, an isolated kudu population, yellow-backed and other duikers. He is about to go back to renew observations of the gorilla group he has habituated. Comments in two letters he wrote George Bates give hints of what it is like to work and travel in the backcountry:

"Thanks for your information

Table 2. Current Status of Antelopes in Tchad.

SPECIES	STATUS	DISTRIBUTION
Tragelaphus derbianus	South Tchad (Moyen-Chari, Logone Oriental).	Quite frequent in these areas: density considerably diminished currently due to poaching, rinderpest epizootic of 1982-83 and probably the drought of the last years.
T. scriptus	South of 12° E & on banks of Chari & L. Tchad	This sp. apparently not presently threatened.
T. spekei	Rare and localized at L. Tchad where it lives in	

	the reeds and papyrus swamps of the E. & S. shores.	
T. strepsiceros	Lives in the mountains between Lat. 15° and the Central African Republic.	Quite common in Tchad before the war, has since suffered much from poaching; may recover if effectivel protected. Currently found mainly in Guera and Ouaddai Mts.
C. dorsalis	Reported in SW Tchad but presence not recently confirmed.	
C. rufilatus	Rare sp. restricted to gallery forests of SE Tchad.	
C. silvicultor	May occur in several of same habitats as *rufilatus* but not recently reported.	
Sylvicapra grimmia	Found generally S..of Lat. 13° and on shores of Lake Tchad.	Although not very abundant, apparently not threatened.
Kobus kob	Quite common along permanent watercourses down to S. shore of L. Tchad.	Has suffered, like all other wildlife, from poaching during the troubles but not currently threatened.
K. ellipsiprymnus	Quite common S. of Lat. 13° along watercourses or permanent ponds.	Same as kob, above.
Redunca redunca	L. Tchad shores and floodplains S. of Lat. 12°.	In no apparent danger at present.
Hippotragus equinus	Found mainly in S. Chari-Baguirmi Prefecture, from Guera and Ouaddai, and in Salamat and Moyen-chari Prefectures, S. of Lat. 12°. Likewise reported on S. shore of L. Chad.	
Oryx dammah	Again encountered quite often between Lat. 14° and 16°, in Kanem and Batha Prefectures to S. of Borkou/Ennedi/ Tibesti Prefecture.	Has suffered from the drought and poaching of the last years, **but if effective protective measures are taken, its existence does not appear threatened.**
Addax nasomaculatus	Herds recently reported between 15° and.	Same as for oryx.
Alcelaphus buselaphus	17° E. Increasingly common as one travels S. of Lat. 13°;	Not currently threatened, again encountered in important herds in Salamat.
Damaliscus korrigum	Found between the C.A.R. frontier and 15° E. Especially common in Salamat. Engages in major seasonal migrations.	"
Ourebia ourebi	Quite common S. of Lat. 11°.	"
Gazella dama	Found quite often between Lats. 14° and 16°.	Suffered from drought and poaching of last years but **apparently not threatened**.
G. dorcas	Subdesert and desert N. of Lat. 14°.	"
G. leptoceros	Has been reported in extreme north (Bardai region) but presence not recently confirmed.	
G. rufifrons	Common S. of Lat. 14° to the C.A.R. frontier.	Not threatened.

[1]Members of the Scimitar-Horned Oryx Propagation Group may be reassured by this latest news. In the Fall 1986 newsletter, Species Coordinator Dale Tuttle wrote under the heading Status in Wild Update, "Attached you will find a copy of John Newby's most recent report on the 'wild'. [This is the same letter that was quoted in the last Gnusletter.] As we are all aware, the fighting in Chad has been in the news again. Anyway you consider the situation, the likelihood that the scimitar still occurs in the wild is very doubtful."

Table 3. Parks and Other Protected Areas in Chad of Particular Present Interest (in order of importance)

PROTECTED AREA	BIOME AND MAIN SPECIES PROTECTED	CURRENT STATUS
Zakouma N. P.	Soudanian - roan, hartebeest, korrigum waterbuck, oribi, common duiker, bushbuck, red-fronted gazelle.	Despite inroads of poaching, 1975-82 and recent drought, all species again well-represented with good reproductive rates.
Ouadi Rime-Ouadi Achim Reserve	Subdesert/desert - created for addax and oryx.	All 4 spp. again reported in good proportion, inc. dama and dorcas gazelles, but a systematic census and effective protection urgently needed.
Siniaka Minia Faunal Reserve	Same species as St. Floris N. P. but at lower density (except more kudu).	
l'Abo Telfan Faunal Reserve	Created to protect kudu.	Although this species once reported quite often, it has suffered much from poaching during war.
Manda N. P.	A small park created mainly to protect Derby eland.	Invaded by farmers and pastoralists during the troubles, but the fauna should recover quickly if effectively protected.
Salamat Faunal Reserve	A buffer zone for Zakouma N. P. with the same species; kudu presence reported in 1986.	Lower densities than in the park.
LERE: Binder-Léré Faunal Reserve	Includes more of the Soudano-Guinean Zone than the other protected areas.	

on the tick collars. I only actually ended up using the thing for a couple of weeks because I discovered that I only got about one tick per day without the collar. In certain areas the ticks are very bad and the bite just might be worse than the medicine.

"Too bad you didn't get to see the gorillas. They are absolutely the most impressive mamals on earth. Good to hear that you did get to the see the elephants and that you actually had the opportunity to travel down to Bomandjoko. You saw it just in time: Slovenia Cats have 'reopened' that road.

"We ended up taking about a four-week trip down the Sangha R. to the very sourthern limit of the CAR. People down there consider themselves Congolese. The region is loaded with wildlife. I will be building my camp in that region next year, 40 km from the road."

Mike, who hopefully will soon be a member of the ASG, has promised to supply information for the Gnusletter and Antelope Survey.

NORTHEAST AND EAST AFRICA

Ethiopia

Apart from the detailed critique of Rod East's draft Action Plan for East and Northeast Africa (quoted above), Chris Hillman's letter of 13 Sept 1986 reports some very interesting results of his ongoing research.:

"...the last month has been very hectic, organizing an expedition to the south of the Bale Mountains N. P. ...On the antelope front, the expedition produced positive sighting of a 'red' duiker, but no specimens as yet! It was in the Harenna Forest which is the southern part of the Park. It will almost certainly be the same as the 'red' duiker of Somalia, that has invaded the area over time up the Juba and Genale valleys. This is the first record for a *Cephalophus* duiker from Ethiopia. We did get a specimen and sightings of Syke's monkey (*Cercopithecus albogularis*) - first for Ethiopia. This is the same as the species (subspecies?) from Somalia, and different to that on the west side of the Rift in Ethiopia (*C. mitis*), so provides evidence for the invasion of other species along such a route. We found in addition three totally new amphibians and a new rodent. The Bale Mts. as a centre of endemicity become more and more significant by the day."

Chris adds that a management plan for Bale Mountains N. P. "has been written and accepted by an international workshop and the Ethiopian Wildlife Conservation Organisation; it is now being acted on.

Chis has an article on the new park in Oryx (Vol. 20, p 89). It is 400 km SE of Addis, covers 2200 km^2, and includes Ethio-

pia's second highest peak. It will protect the largest area of Afro-alpine habitat on the continent, which is also the catchment area for three of Ethiopia's larger rivers. The optimum area for mountain nyala has been increased already by over 50% and is being made use of by the species. In addition, Bale contains 11 of Ethiopia's 21 endemic mammals, including the nyala, Simien fox, giant mole rat and seven other rodents, plus the endemic subspecies: Menelik's bushbuck and a rock hyrax.

Clearly Bale N. P. should be considered one of the most important conservation areas in Africa. "But despite the WWF Africa programme," Chris says, "no funds have yet been forthcoming from international sources for Park development."

SOUTH-CENTRAL AND SOUTHERN AFRICA

Botswana

A letter I just received from Delia and Mark Owens (22 Dec 86) contains the most encouraging conservation news about Botswana in years.

"We are pleased to report that the Botswana Ministry of Commerce and Industry has made a very favorable decision on the future of the Central Kalahari Game Reserve...The pressure from the cattle industry to dissolve the lower two-thirds of the reserve was considerable and the Botswana Government deserves congratulations for deciding in favor of wildlife, and the rural people who depend on it as a resource."

Included with their letter is Ministry of Commerce and Industry Circular No. 1 of July, [illegible] "Report of the Central K[illegible] Game Reserve Fact Find[illegible]sion". Here are a few of the decisions and recommen[illegible]

General L[illegible]

3.1 That th[illegible]aries and status of the...C[illegible]hould be maintained as at present;

3.3 That viable sites for economic and social development should be identified outside the Reserve and the residents of the Reserve encouraged - but not forced - to relocate at those sites;

Recommendations Fully Accepted

Government has fully accepted the following recommendations: -

4.1 The proposed Wildlife Management Areas...adjacent to the CKGR should be gazetted as soon as possible to secure seasonal access by migratory wild animals...

4.2 The Department of Wildlife take immediate steps to tap the tourism potential of the Reserve...

4.3 Wildlife policies be speedily implemented to facilitate faster realisation of the benefits from Wildlife...

4.4 An immediate and substantial increase in staff especially in the areas of senior management, enforcement and extension, with apropriate increase in logistic support be approved...

Part of the good news is that Mark and Delia's efforts to save the CKGR have finally been recognized and appreciated within Botswana. "Botswana officials have lifted our status of Prohibited Immigrant," they write, "and have accepted many of the recommendations which we originally made for the protection and development of the Central Kalahari Reserve. We are currently initiating a new project in North Luangwa National Park, Zambia."

South Africa

Newly appointed ASG members from the nature divisions of Transvaal, Orange Free State and Cape Province have already fulfilled their promises to submit detailed information on the status of antelopes within their jurisdictions.

Transvaal

Richard Carr, reporting on protected areas apart from Kruger N. P., writes in his covering letter (12 Nov 86 to Rod East): "The Transvaal Divison of Nature Conservation administers some 50 nature reserves throughout the Transvaal. Thirty of these protect antelope and other ungulates. The Division is also responisble for conserving wildlife on privately owned property throughout the Province." In addition to providing numerical estimates of antelope populations in each of the reserves and the three large private nature reserves (e.g. Timbavati) bordering Kruger, Richard has included notes on the status of all 26 species.

Orange Free State

Savvas Vrahimis has sent a table giving the population size and trend of the antelopes protected in OFS's seven reserves, with more information on antelopes outside the reserves promised when the results of a general survey of game species in the OFS that was due to be completed by December are totalled.

Cape Province

Of the two tables sent in by Peter Lloyd, one lists the antelopes in the 36 CP Nature Reserves and Conservation Stations, with population estimates of the larger, more visible species; the other indicates which species occur in the 73 Local Authority Nature Reserves.

Commenting on the absence of some species in the provincial nature reserves (*in litt* to Rod East, 14 Nov 1986), Peter explains, "...the fact that species such as blue wildebeest are not represented on provincial nature reserves simply reflects the fact that there are at present no provincial nature reserves in the Northern Cape Region. This is due to the the fact that this is a region where agricultural development is least rapid as opposed to other regions where land acquisition is a priority.

This lack of provincial nature reserves is partially compensated for by a number of provincially subsidized local authority nature reserves of medium size."

The need for some form of government control over the increasing trade in and translocation of game animals in the private sector was discussed at the ASG Regional Meeting last May (see May, 1986 Gnusletter). Peter Lloyd has done something about it:

"My department has prepared a translocation policy," he writes, "which we hope to have approved shortly, which specifies which species may or may not be translocated on private land, the areas involved in the case of those that may be translocated and proposals for remedying situations where undesirable precendents have already been set. This document includes the arguments against translocation, whether they be of a zoogeographic, genetic, economic or veterinary nature.

"In terms of provincial and local authority nature reserves, the matter is clear-cut and only those species which are known to have occurred in historic times (based on literary records or very Recent paleontological evidence) are allowed to be reestablished, and genetic conservation principles must at all times be upheld."

I put this paragraph in boldface because, in my opinion, it should be a fundamental policy of all national, state, and local agencies that are involved in wildlife conservation and management.

Natal

In a recent letter (13 Nov 1986), ASG member Michael Keep of the Natal Parks, Game and Fish Preservation Board lists the following Board-spon-sored research projects involving antelopes that are currently in progress in Natal.

1. "Movements of eland in the Natal Drakensberg and associated management problems." D. Melton, PhD. U. Natal.

2."Reassessment of waterbuck ecology in Umfolozi Game Reserve." D. Melton (follow-up of his previous studies).

3."Ecology of the blue and red duikers." A. Bowland, PhD. U. Natal.

4."Habitat utilisation of oribi in farmland areas of Natal." T. Brackenbury, U. Natal.

5."Utilization and calf recruitment of some blesbuck in Natal." A. N. Marchant, Natal Parks Board.

Another Natal antelope project was mentioned in the Jan 1985 Gnusletter: the suni study of David Lawson.