

MEDICAL MANAGEMENT AND PATHOLOGY OF CAPTIVE GERENUK (*Litocranius walleri*) AT AL WABRA WILDLIFE PRESERVATION (AWWP) FROM 2001 TO 2006

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Abstract

Gerenuks (*Litocranius walleri*) are antelopes from East Africa. The species is classified as a browser species (Hofmann, 1973), and is characterized by a long neck and a typical feeding stance reared on its hindlegs. They are exclusively browsers feeding on tall trees and shrubs, eating leaves and shoots but also inflorescences and fruits (Leuthold, 1970, 1978). Because gerenuks are rarely kept in captivity, and little is known about their medical management and the main causes of death, we evaluated the stocklist records, the medical and necropsy reports of the Al Wabra Wildlife Preservation (AWWP) gerenuk population from 2001-2006. At AWWP, gerenuks are kept in different groups and enclosures of various sizes. 5 smaller enclosures (1600-3200m²) each with 1 to 3 animals and 3 large enclosures (10000-12000m²) with 5 to 16 animals in family groups, in which they can hide between, and partially feed on, the natural vegetation.

They are maintained on a ration of browse species indigenous to Qatar and browser pellets (Browser Maintenance, Mazuri, Witham, Essex, England).

In the investigated period, a total of 85 animals had been kept at AWWP; in this time, the population had increased steadily from 15 animals in 2000 to 32 animals in 2004, and has since plateaued at between 31-33 animals - typical for a population approaching carrying capacity. The number of births varied between 2 in 2000 and 16 in 2004. The number of deaths showed a similar distribution, leading to a close correlation between the number of births and the number of deaths (Fig. 1a). A similar correlation was observed between the number of births and the proportion of newborns that did not reach more than 100 days of age (Fig. 1b), suggesting that population pressure might be an important effect on newborn mortality in this population.

Of a total of 72 newborns, 21 (29%) were hand-reared because the mother did not care for the young (6 cases), and for other reasons (disease, extremely cold weather) in the other cases. Five of the hand-reared fawns (24% of all hand-reared fawns) and 12 of the mother-reared fawns (24% all mother-reared fawns) died before reaching 10 days of age, indicating a similar rearing success between the two methods. Of the 15 fawns that were firstborns of their mothers, only one was hand-reared because the mother did not care; four others were hand-reared for other medical reasons; two of these fawns died before reaching 10 days of age.

Of the total of 53 animals that died during the investigation period, necropsy reports or information on the cause of death were available for 44 animals - of which 27 were juveniles (<1 year of age). In the whole dataset, trauma was a very important diagnosis - 14 animals (5 of which were juveniles); of these 14 cases, 10 were related to neck injuries due to jumping into fences, and only one was due to interspecific fighting.

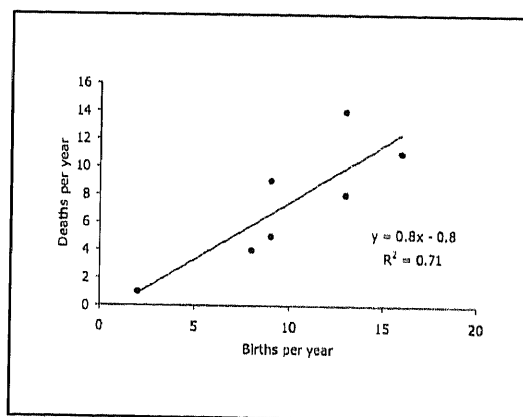
Of all the 85 animals kept at AWWP, diarrhea/enteritis was stated as a medical problem in 34 (40%); in 15 cases these episodes were described as acute, but 19 cases showed an intermittent occurrence. Compared to other antelopes kept at AWWP, this high incidence of diarrhea/enteritis is striking. In contrast, only 17 (20%) animals had a medical history of a respiratory problem (including 9 animals that died of it, of which 6 were juveniles). In two adults and 8 juveniles, diarrhea was considered the cause of death. As infectious agents involved in the problem, *E. coli* were identified in 11, *Coccidia* sp. in 5 and *Giardia* sp. in one case.

Another interesting infectious agent isolated in one gerenuk with a fibrinous pleuritis was *Mycoplasma capricolum capripneumonia* (Arif et al., 2007).

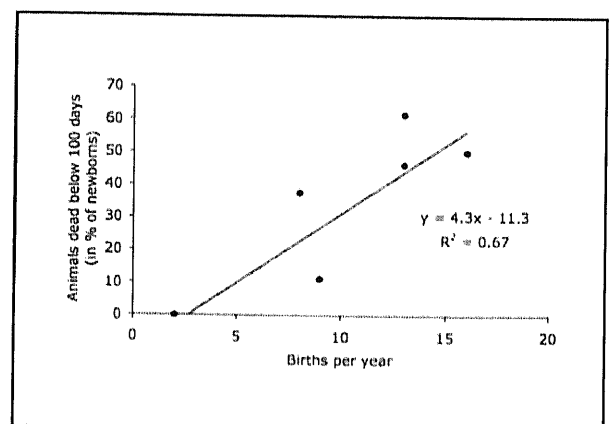
Other causes of death included a disseminated bacterial infection in one adult and two newborns, one case of suspected vitamin E deficiency with signs of white muscle disease, death during anesthesia, general weakness in five newborns and dystocia. At necropsy, parasites were hardly ever found, with the exception of the mentioned cases of coccidia and giardia.

The findings can be split into those regarding juvenile animals, and those for adults. Gerenuks are flighty and nervous animals. Their exceptionally long neck is a predilection site for trauma in captive animals that run into fences or walls, as reported by Houston et al. (1988) and confirmed for adults in this retrospective study. For the proper management of gerenuk, therefore, a soft (yielding) fencing material is recommended, with large enclosures that allow the animals fleeing movements without hitting borders; additionally, zoo personnel should be particularly careful when managing this species, avoiding startling movements or noises. Cover to reduce visibility from spectators is important. It could be suspected that due to the problem of offering these species adequate roughage, diseases of the gastrointestinal tract might be more important than in other antelope species kept at AWWP. Due to the feeding habit of gerenuks – these animals do not feed from the ground but from bushes, and are offered their additional food in elevated troughs or – in the case of leaves of lucerne - at AWWP, it can be suspected that exposure to faeces is minimal, and hence the observation of the low occurrence of helminth infestation in adult individuals appears plausible. This is in contrast to the report of Houston et al. (1988) where parasite overload played a more important role; this could be due to more confined spaces and other feeding practices.

The most important finding of this study was the correlation of number of births and the mortality of young animals. In contrast to two earlier reports (compared in Houston et al., 1988), the mortality pattern of newborns did not show a particular delay in the onset of mortality: While Houston et al. (1988) stated juvenile mortality was particularly low in the first week and evenly distributed between the first month and the first 180 days, deaths within the first week comprised 50%, and deaths within the first month 70 % of juvenile deaths. The correlation with the number of births, and the relevance of infectious diseases in juveniles in this population, suggest that an increase in the population led to a combination of factors – increased opportunity for disease transmission, and increased interspecific stress. In another antelope, the lesser kudu (*Tragelaphus imberbis*), a similar correlation between the number of births and juvenile mortality was found (Besselmann et al., 2008). Such findings emphasize the importance of planning ahead in breeding programmes – although an increase in animals is an important objective, a simultaneous increase in enclosure space, enclosure divisions and separating facilities is important to avoid reaching a population limit due to increased juvenile losses.



A



B

Figure 1: Correlation between the number of births of gerenuk per year at AWWP and a) the absolute number of deaths of this species per year and b) the percentage of neonate/juvenile deaths of this species per year.

Acknowledgments

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