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THE ETHNO-BIOLOGY OF THE !XO BUSHMEN.
KNOWLEDGE ON THE BEHAVIOUR
OF CLOVEN-HOOFED ANIMALS (ANTELOPES AND WARTHOG)

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ABSTRACT

This paper gives insight into the !xo's knowledge of the behaviour of cloven-hoofed animals, but the brief biologies of these animals, here rendered, also deal with their gestation periods, territoriality and parasites. Social relations, such as sex-, age-, and play groups and relations between parents and young are defined. The solitary bull and his position vis a vis, the herd, are discussed. Inter-herd- and inter-species relationships as well as the behaviour towards the ill, wounded or dead are described. Symbiotic associations and warning and flight sounds or signs are examined. Sexual behaviour is observed and masturbation, erotic play as well as inter-species matings are recognised. The various types of conflicts are illuminated, such as those among own kind, between females, attacks on humans and defence against predators (lion). The daily cycle of activity is analysed and sleep and slumber are differentiated. Similarly, the potential of the animals senses and responses to stimuli are assessed. Finally, the !xo's anthropomorphic concepts and attitudes towards the animated world are revealed. Instinctive behaviour is unrecognized by the Bushman. The animal always reacts rationally (only God Gu/e can make it act in a seemingly irrational manner), and all narratives and descriptions must be seen in this light. It is apparent, however, that the repertoire of knowledge of Bushmen far exceeds that which we would consider to be utilitarian necessity, and that the Bushman is not only a keen observer but is also capable of precise deductions.

INTRODUCTION

The very existence of hunter-gatherer peoples depends on an intimate knowledge of the animals on which they prey. This paper presents information collected from the !xo Bushmen on the behaviour of ungulates in the South-Central Kalahari. Though it deals essentially with pure zoology and ethology, the amount and depth of information obtained for this paper gives evidence of the !xo's ability to observe and deduce. It will be seen that analytical thought is ever evident. Much of what has been

recorded here goes far beyond the Bushman's need for survival. He names and classifies ungulates; he mentally records all aspects of their life cycles; he is capable of discussing comparatively numerous aspects of their life. It will become evident that he has set up norms of behaviour for each species and is aware of abnormal behaviour; that he does not fall into the pit of generalization, but explains apparent similarities which are in fact dissimilar, in a rational manner. Nowhere has he taken recourse to the supernatural when he made observations which he found difficult to explain other than to say 'God made it that way'. Either he may make deductions, i.e. that a fly can carry the 'smell' of a person on its feet to an animal. Or he may admit partial defeat by acknowledging that he is incapable of explaining the reason for a certain mode of behaviour.

The zoological significance of these recordings is beyond discussion. Here there is so much behaviouristic material that I consider it to be essential to separate the ethological section from the section on aspects of social behaviour. I intend to show in this section that the !xó is aware of many aspects of animal behaviour and can draw on his repertoire of knowledge to illustrate each of these. The zoologist will have to ask himself, after reading this paper: is this possible, and if so, is it scientifically factual. What is left for the ethnologist is equally significant.

This paper may help us to understand the exact role of the Bushmen in the ecosystem of his environment. Only after collecting as much biological information as becomes available, may we dare to probe into questions relating to the world view of the !xó. His world view is based on a mass of observations and on the deductions drawn from them. I stated above, he will not easily be drawn into mystic ramifications if they play havoc with his observations and deductions. Not until the depth and breadth of knowledge which he has of his animate and inanimate environment is known, not until the lacunae in knowledge are understood, not until the potential of his deductive ability is recognised can we hope to understand a Bushman's world view. It is then that we shall be able to see what role he believes he plays in this ecosystem and how this affects his physical and spiritual well-being. Then only will we begin to know from what sources he fears dangers and upon what these fears are based. A full acquaintance with his botanical, zoological and meteorological knowledge is, therefore, imperative to the understanding of a Bushman's thoughts.

The material is so comprehensive that I do not wish to clutter it by discussing the basis of classification nor by giving details of the role of the ungulates in the Bushmen's social, ceremonial, or even economic life. This will be dealt with very briefly. Much will appear elsewhere, HEINZ a. MARTINI (a), SILBERBAUER (1973) has also dealt with these aspects. I will, however, devote a short section on those concepts of animal life not already dealt with by HEINZ (1971) on the !xo's anatomical and physiological knowledge and by HEINZ and MARTINI (a) on the ornithological knowledge. Of interest, too, may be those concepts related to the botanical environment, HEINZ and MAGUIRE (1973).

METHOD

All the information in this paper was obtained by a) questioning the !xo Bushmen on predetermined subject, b) asking them to elaborate on observations made when I was in the field with Bushmen, or c) asking them to explain the conclusions they drew from animal tracks observed in the sand. No personal observations are included. The informants were generally with an impressive knowledge of field lore. Discussions were held regularly during the day or around the fire at night, when all Bushmen could be expected to participate. On previous occasions I had limited the length of interviews to avoid boredom and fatigue, but on the questions under discussion, this was quite unnecessary. Bushmen like to talk about hunting and animals. Not content to communicate their experiences to the writer alone, they related them simultaneously to one another, often provoking very lively discussions. At times such asides revealed facts which may otherwise have escaped my attention.

The !xo Bushmen do not lie or exaggerate about animals. If they were to spin yarns, as they well know, they would be easily found out. They gave me information in the belief that it was correct; actual errors should not be construed as deliberate falsifications. It may be that months are incorrectly identified as Bushmen speak of 'moons'; they do not have a calendar and must estimate.

In the following text the reader is tempted to attribute much of the text to the author rather than to the Bushmen informants. All text is based on empirical data. As this particular paper may be of interest to others than ethno-biologists or ethnologists,

I have rendered empirical information in a scientific zoological language, without resorting to word-correct translations of Bushmen texts.

CHECK LIST OF SPECIES AND NAMES IN !XO AND NHARO

Common Name	Scientific name	!xo name	Nharo name
Steenbok	<i>Raphicerus campestris</i>	/ki	!ay
Duiker	<i>Sylvicapra grimmia</i>	©an	/au
Springbok	<i>Antidorcas marsupialis</i>	//oa	xai/
Kudu	<i>Tragelaphus strepsiceros</i>	donka	xi
Hartebeest (Cape)	<i>Alcelaphus buselaphus</i>	n!ei	xama
Wildebeest (blue)	<i>Connochaetes taurinus</i>	/ali	/e h
Gemsbok	<i>Oryx gazella</i>	‡ xam	xoh
Eland	<i>Taurotragus oryx</i>	!um	!du
Warthog	<i>Phacochoerus aethiopicus</i>	//xu	

BIOLOGIES OF EACH SPECIES

In the southern Kalahari, where the !xo live, only eight species of antelope are found. Of these the rarest is the kudu, although the eland, too is not as common now as it was formerly. During more than 16 expeditions I have seen eland only on three occasions.

	Sex maturity		Gestation		No. of		Monog.		Factual comments on gestation	
	in months	N. of heats/year	period months	Age in month when drop-ping first calf	No. of young	vs	polygam.	Type of union	Tech. Comm. Nos Common-wealth Bureau Of Anim. Breed + Genetics Edinburgh	
Steenbok	1 - 2	2 - 3	2	3, 4, 6	6	1, rarely	M		210 days average	
Duiker	4	5	1	3	8	1	M	for life	120 days	
Springbok	5	7 - 8	1	7 - 8	8	1	P	for life	171 days	
Kudu	9	10	1	10	18	1	P		(210 has been recorded)	
Hartebeest	8	9	1	10	18	1	P	for life	210 days	(240 has been recorded)
Wildebeest	10	11	1	10	- 24	1	P		240 days	
Gemsbok	8	9	1	10	18	1	P		240 - 276	
Eland	+ 12	+ 12	1 or less	7 - 8		1			255 - 260	
Warthog	10	11	2	- 6		3 - 5			171 - 175	

STEENBOK

This is the smallest of the antelopes discussed here. It is a solitary animal and is seen in pairs only during the mating season. They have a strong feeling for territory. Territories are demarcated by the male who usually lives there with one female. Sometimes a male takes two or more females, who fight among themselves. Males chase and fight each other as well, but fights between the sexes are unknown. To put his mark upon a female, the male rubs her with his nose glands. The ewe leaves her mate when she is about to give birth. Care of the young is her concern and is hardly shared with the mate. When the ewe gives birth, she lies in the open at night or in the shade by day. Even in the day she does not go into a thicket. Like all other antelopes, steenbok lie down to give birth. After the lamb has been licked dry, it lies down in a thicket where the mother leaves it. Although it is already able to walk it lies there throughout the first day. The mother must teach her offspring to stay hidden on its own when she goes away. To do this she rests a while with it under a bush until it learns to stay there. Faced with danger, she will remain with her offspring and not run away. If she has left the lamb hidden, she will call it when the danger has passed with a sound that may be rendered as „pst, pst, pst”. The lamb first licks its white hooves until they are hard. At an early age, in addition to drinking milk, it begins to feed on sand and the dry leaves buried in it. Finally it takes to the same plant foods its mother eats.

Steenbok do no wallow, but they like to rub themselves against a small bush. They crawl into it, turn around in it and reenter it. They appear to play with the bush.

These antelopes are parasitized by a fly that looks like a housefly (tumbu fly *Cordylobia anthropophaga*) which bites the steenbok (and sometimes the duiker). It lays its eggs in the skin. (Details of the biology will be reported in a subsequent paper).

DUIKER

The duikers are solitary animals in their territory. The female seeks shelter under a dead tree and gives birth at night. Duikers only have one lamb. She removes the lamb from the birth place to a second place similar to the one where it was born. This is done to take the young away from the smell of blood. The lamb is left in its new

hideout for 10 days. It behaves very much like a young steenbok. To teach the lamb to hide or remain alone, the mother looks for a suitable place and stands for a while with the young to make it stay there. After this she grazes nearby in ever increasing circles, but always listening for any cry of alarm from the lamb. She calls it from its hiding place with a „peh, peh, peh” (emitted from the nose).

Males which are alone because their mates have been killed are very dangerous and aggressive and even attack man (GOCHOLU showed me where a male had completely pierced his arm muscle with its horn before he could kill it). The male marks his territory by rubbing his nose glands against a tree, but he also digs near the tree with his hooves. Neither male nor female duiker wallow but they „play” with a soft bush in similiar fashion to the steenbok. The duiker is also parasitized by the tummy fly (see Steenbok).

SPRINGBOK

The springbok are gregarious and form herds. Males keep their females around them by emitting a certain sound and going from one to the other to prod and smell them. Therefore ewes always stay near their mates. As with other antelopes, springbok give birth lying down. They always drop their lambs in the open veld, never in thickets or bush. While the mother grazes, the lamb is left in open grass. The lamb is called with a low „gah, gah, gah”. It is alone on the first day only. As early as the first night it follows others into the herd, but may be hidden in grass again during the daytime.

Though the herds wander, the males mark the territory by digging, defecating and urinating in certain places and rubbing their horns on certain bushes. They prefer rough, thorny bushes. Springbok do not wallow.

Their parasite is a small louse-fly, somewhat like that found on dogs.

KUDU

These antelopes are often together in small herds. The mother drops her calf in the bushes where it stays for three to four days. Unlike the young of other antelopes, the calf does not lick its hooves. The mother teaches it to lie hidden after she

suckles it. With a „hoch, hoch, hoch” she calls it from its hiding place. As the calves grow up, the male takes the female away from her offspring and the young stay together in a herd. Though a big old male be „boss” of several females, he may leave and walk alone with his son.

Kudu herds have large territories. When wounded a kudu will travel far, but will return to the same area after a few days. Only lion are able to force kudu to change their territories. The male demarcates the area by uprooting trees. But he also likes to rub himself against a special tree. That is the reason why old males hardly have any hair on their necks. Kudu do not wallow.

Red Hartebeest

Hartebeest are social animals and at times form large herds. A male collects „wives” and herds them together by prodding them. He identifies them by smelling their vaginae. In fact he continuously runs around them, bringing them back when they stray too far. He keeps his mates for life. During mating some males jump up onto the female, their hind legs leaving the ground entirely, but others chase and mount the cows like bulls. During intercourse the female often kicks the male. Afterwards she runs so as to entice the male to chase her and mount again. Her calf is born in the open veld. The calf is hidden for one day only before it joins the herd. When danger has passed the mother calls it with a „shew, shew, shew”. The hartebeest calf is very independent and can get up and follow its mother within in few moments of birth.

Though hartebeest wander far, the males dig holes to mark their territories. These animals like to wallow in the sand. The male makes a hole near a pan, on a hill, which he visits once every several days. He rolls and defecates like a gemsbok. Each male has his own place, and only one. The females have no holes. Hartebeest like to rub their necks in an especially selected soft bush turning it back and forth until the bush is completely braided.

Most hartebeest have large fly larvae in the upper part of their nose which come out and drop on the ground. After some time they come out of the ground as big flies (see Wildebeest parasite). Besides these, hartebeest are parasitized by a special dark red tick and a red louse-fly, smaller than those found on cattle.

WILDEBEEST

Wildebeest are social animals which live in herds within which males have many mates. The cows calve for the first time lying down somewhere in the open veld. The calf is not hidden because it follows the mother within a few moments of birth. The calf calls its mother with a „geh, geh, geh”, while she answers with a „bah, bah”.

Lone bulls dig holes under solitary camelthorn trees and sometimes also in the flats, as they wander about. Trekking bulls and cows never dig holes. Wildebeest rub themselves against straight trees except when they are migrating.

Many wildebeest are parasitized by a big blue parasitic fly with a red head which enters the nose to lay its eggs. Worms hatch from the eggs and travel upwards to a place near the horns. When fully grown, they come down, fall to the ground and enclose themselves in little black, round cocoons for the entire winter. When the rains wet this cocoon a fly comes out. During some years there are many while in other years there are few. The wildebeest is also parasitized by a special tick and a special louse-fly.

GEMSBOK

These animals are social and often in herds, which are made up of several grown males and females and some young males. Gemsbok males fight other males with intent to kill. Mating is much like that of hartebeest, the male either mounting the cow like a bull or jumping up with his hind legs off the ground. After intercourse the female chases the male to provoke a second mating. When any one of his „wives” is pregnant, the male takes her out of the herd until she has given birth, when he returns with her. Unlike other antelope, the gemsbok cow may stand to give birth but generally she lies down. For a place of birth she chooses a hideout in a thicket. She teaches the young to lie hidden there after sucking the first milk, but it remains there only one day, licking its hooves before it follows the mother. Mothers call their young like a cow with a „hah, hah, hah”.

Gemsbok do not migrate, nor do they mark out their territories in any way. As they do not have nasal glands, they scar trees with their horns. Males like to wallow in

holes made along their paths. Each male has its own hole to which he goes once every day or even every fourth day. Like the hartebeest, he rolls and defecates there. The female makes her own hole somewhere in the bushes on the flats. She returns to her wallow almost daily, but she does not defecate there. This is a means of differentiating these wallows. Like the hartebeest, gemsbok rub their necks back and forth in soft bushes.

Gemsbok have small ticks and a special type of louse-fly.

ELAND

This is the largest antelope. Mating takes place within the herd where a female may be mounted by a number of males. Eland behave in this as in many other respects like cattle. Males only develop a voice during their rut, while females never have one. To give birth the eland cow seeks thick bush but removes the calf the next day to a new place at least 300 feet away. Here it stays for four to five days. The cow goes off to graze in the morning but always returns in the evening. When the calf is ready to accompany the mother, she takes it along, always stopping to let her young rest when tired. Eland cows do not fight for their young (only the gemsbok female does this), so that these become easy prey especially for leopards, but also for hyaenas and wild dogs.

Both sexes have a clicking sound in the joint of their foreleg but that of the female is much softer than that of the male. At night the Bushmen can hear this sound for a considerable distance.

Eland have a wide range of food, because they dig for some, graze or even browse. They are clever at pulling down high branches with their horns.

WARTHOG

Warthogs are diurnal pigs. Sometimes they form troops from two to many pigs. They lie up under big trees or make holes to lie in. Although copulation was not observed, the informants thought it took place in summer. The litter of piglets is born in the hole of an antbear. The male always stays with the sow. The young are born in winter.

The males fight by bumping their heads but they do not use their teeth. Warthogs do not have territories. They wander far to feed on roots and grass, which they dig out with their noses while kneeling on their forelegs. They can put up a good fight against a dog, especially the older males, because they fight with the sharp, small teeth. The big teeth grind the little ones to keep them sharp. When caught they cry „see, see, seee”. They are preyed upon by leopard, lion and wild dog.

ANIMAL BEHAVIOUR RECOGNIZED AND ILLUSTRATED BY THE !XO

SOCIAL BEHAVIOUR OF ANTELOPES

Type of social system

The steenbok and duiker are solitary animals, found together only during the mating season in the summer. All migratory animals which are social have the matriarchal system. Among the eland an old cow grazes at one side and keeps watch. The males are not good sentries. In the winter old bulls go off on their own. One of the younger bulls sometimes stands guard. Among hartebeest there is no special animal on guard. The females take turn and bulls also watch. They do not have a strict matriarchal system although a cow leads the herd when it is on the move. Wildbeest have a matriarchal system; females and males keep watch, snorting when they smell danger. They can not see very well. A cow is the leader of a gemsbok herd, but when she is ready to mate she leaves her herd to go with the bull that fetches her, and returns later.

Age groups of males

Only among eland and gemsbok do bulls run together according to age groups. This usually starts at the age of two or three years. Such males stay together for life and do not return to the herd except when they are looking for cows. If two gemsbok bulls roaming together meet a third, they will chase and kill him. If they meet another pair of bulls intruding in their territory, there will be a spectacular fight. Kudu behave differently. A father will stay a while with his fully grown son to teach him to fend for himself. When the son is in rut, the father takes a cow out of the herd and gives it to his son, who thereafter is on his own.

Father's relationship with the young

Gemsbok bulls are very protective towards their calves, particularly when the young are in danger of being attacked. This behaviour also applies to male hartebeest, wildebeest and springbok. Eland cows leave the herd to give birth and return with their offspring when the latter are strong enough. Nevertheless, the !xo have seen a bull with a one-day-old calf. He showed no hostility towards the calf. When a calf is in danger the parents do not put up a good fight for the young. When winter comes all eland calves leave the herd for one and a half years and are led during this time by one cow. Duiker and steenbok males attack in blind rage when their offspring are in danger. Both male and female steenbok have been seen to run up to a Bushman crying and bleating for the release of a trapped lamb.

Relations between young and their play activity

Antelopes generally have only one calf or lamb so that there is no sibling relationship, but calves of different mothers play extensively. Wildebeest calves like to play „owner of the hole” by chasing each other out of a hole. Hartebeest calves play „owner of the hill” and try to push each other off as children do when playing „King of the castle”. Springbok lambs also look for a high place, but they do not chase each other off. They simply prance around on that place. Gemsbok calves do not play this game, they merely run up and down. They make no attempt to catch each other. When alone they also prance and run all over. Eland calves only chase each other, while kudu calves do not play. The solitary lambs of duiker and steenbok play alone by running up and down.

The solitary bull

The solitary bull need not be an old bull. He can be young. Whatever his age, he is morose. He eats, sleeps and walks without interest in the others of his species, even in the period of rut. Though he sees them he stays alone. He is usually fat. He may notice something suspicious, but he immediately forgets what drew his attention, and continues to graze. Conversely, a bull in the herd never forgets what he has seen. This solitary bull acts as if he were mentally abnormal. He is easy to shoot. Such males have been seen among wildebeest, gemsbok, eland, hartebeest, springbok and

kudu — among the latter always old bulls. Solitary bulls are very common among springbok and when hunted do not even make a proper attempt to run away, but behave in a silly manner.

The solitary bull's relations with the herd

Once a male is out of a herd he can never join another herd because each animal has its own herd smell. Not all solitary animals are abnormal. Among wildebeest, eland and hartebeest, wounded animals which were unable to continue with their herd and which have subsequently recovered, are also forced to wander on their own. If two such animals meet they stay and graze together but passing herds will not let them in. Such males are not allowed to take a female from passing herds. This type of behaviour does not apply to springbok, gemsbok and kudu.

The group's relations with another group

At times wildebeest, eland, hartebeest assemble in large herds but when they separate each animal goes with those of its own group. If mating occurs at such times the cows will be left to go with her herd while the bull joins his. They will never mix. They recognize the herd smell. Sometimes a herd is split while hunting, but the animals will rejoin by following each other's spoor and scent. When there is too much fighting between bulls, herds can split, each group of bulls taking its cows and calves.

Behaviour towards the sick and wounded

Herd animals such as wildebeest, eland and even gemsbok are very anxious not to leave wounded animals behind because they cannot join other herds. They return and try to fetch the wounded. This does not apply to hartebeest. The wounded make every effort to follow the spoor of the herd. It is common for one animal to be behind the sick one, prodding him to induce him to follow the others. If he lies down the herd will wait. If he does not get up, the herd remains grazing and tries to induce him to follow later. The others do not lick his wounds because they are afraid of blood. Sometimes they run away while the blood is still running, but come back later when it is dry. The sick or wounded are not fed even though there may be no grass

where they are lying. The herd continues to graze until the wounded animal is dead or can get up. The Bushmen knew of no case where the parents had tried to kill a young which was dying.

Reaction towards the dead

If an animal dies after it is shot, the others are frightened. The smell both of blood and arrow poison frightens them. An animal which dies a natural death lacks this smell and does not bother the others. If a gemsbok calf dies its mother will stay with it until the vultures have eaten it, trying all the time to chase them away. The calf may be decomposing and stinking, but the mother will continue to search all around the area for it, although she knows it is dead. The dead of other species do not frighten antelopes except when blood is present. If an antelope is killed, others in the herd will stay away until scavengers have eaten the entrails, but may return to eat the rumen contents. Ostriches also come for this food.

Inter-species relations

A number of antelopes mix readily. Wildebeest, hartebeest and springbok mix during the summer but not in winter except when they come to pans to lick salt. Neither do they mix during rains. Gemsbok sometimes mix with eland and often with wildebeest. Often, however, when they meet at a pan they stay on one side. Kudu do not mix with other antelopes except when they want something in common with them. Ostriches are readily accepted by antelope because they are good sentinels. However ostriches do not move with the game when eggs are laid or when chicks are around. Gemsbok, wildebeest, hartebeest and eland mix easily with cattle but not with goats and sheep. Springbok, on the other hand, will mix with all domestic stock.

Symbiotic animal associations

Antelope and other wild animals often depend on others for some service, notably that of warning. Birds are the most important of these (HEINZ and MARTINI (a)). In thickets the crested corhaan warns against hyaenas. The role of the ostrich has been discussed above. When various buck are grazing together springbok females and hartebeest of both sexes stand watch as they have the better vision.

Flight and warning noises

When danger is apparent to any animal, all others are warned to flee. Wildebeest give a deep grunt which is taken up by the cows with a high „mooo” and answered by the calves with a high „baaa”. They then run. Eland have a high note for their own kind and a low grunt for all other animals. Springbok only have a noise for their own kind, a low „gaaaa” or „ga – ga – ga”. Gemsbok have a „prrrr” for their own species and a low „aaaaaa” for other species.

ASPECTS OF SEXUAL BEHAVIOUR

Males in rut

Males in rut are easily recognized because their abdomens are empty and they do not eat. Among wildebeest and hartebeest, they mount again and again. When they get tired, they leave the herd and graze to one side, although not far away. They return after they have rested. The gemsbok male comes to the herd to take away one female. He does not stay with the herd. The two will be seen running on their own, the male chasing the female, completely oblivious of danger. The males of many antelope only develop a real voice during the mating season. The rest of the time they are silent. Females develop a voice when the calves are about five months old.

Masturbation

All buck masturbate. They mostly rub their horns against soft bush. Wildebeest prefer to rub their horns in holes. Ejaculation is rapid. Duiker scratch holes into which they ejaculate. They defecate into the same hole before leaving.

Erotic play

Erotic play between adult females is common. They jump onto each other, chase each other and prod each other with their horns. No form of erotic or other play was ever seen between males and females.

Mating of two different species

Duiker and steenbok are very aggressive during rut, especially when a male has lost his mate. Under such conditions he may mount, or „rape”, the ewe of the other species if she happens to be in his territory. Four old, reliable informants from four different areas were most emphatic that this occurs. The raped female produces a calf which can be recognized as a hybrid by its features. Sometimes it has the coat or body of one parent and the feet of the other.

CONFLICTS AND FIGHTS

Fight with own kind

Most male fights begin during rut when they join the females. The fight is a trial of strength and looks much worse than it really is. Wildebeest do not try to kill each other. The adversaries scratch the ground and throw sand into the air. Then they go for each other with their ears back. When they clash they beat each other between horns and ears. The loser retreats with the victor in pursuit for a while.

The eland male snorts and scratches the ground to challenge another male. He picks up a bush with his horns and spins it in the air. When another takes up the challenge, he behaves in the same way, until the two face each other with ears down. Now they push and beat each other with the horns. The object is to try to get a horn between the front legs so as to break the legs. Finally the weaker flees while the victor tries to ram him in the side.

Hartebeest begin a fight by scratching the ground with their hooves. The adversaries go to a bush, inserting their horns on opposite sides, all the while throwing up sand. Now they are ready to attack each other. Sometimes their horns interlock and both die. The winner tries to pick up the loser by placing his horns under the front leg of his opponent. When the loser has had enough the victor follows briefly and tries to stab him in the rear, but then he leaves the fleeing male.

Kudu males begin by scratching and cleaning their horns in a bush. Before actual combat they turn their heads to one side though looking at each other. They come together but still looking aside and smelling each other's tails. Now they jump around and clash head-on, standing or kneeling and hitting one another with their horns. When they get tired they stand staring at one another and then begin again. By now there is a regular depression in the ground. The loser jumps clear of this, and the winner chases him briefly before returning.

Springbok approach one another bawing. They turn their tails to one another though keeping the other in sight. When one turns, the other follows suit and they clash. They fight standing and beating each other with their horns. Sometimes as with hartebeest horns interlock and both die. The loser runs, but the stronger follows and tries to engage him again. Sometimes the loser gets the upper hand in the „return” match and in turn chases the original winner.

Gemsbok fights are bad because they try to kill each other. Males fight with ears up. During the main part of the combat they hit rather than stab with their horns. Fighting males first chase each other and then scratch the ground. One begins to fight with a bush and the other closes in. They push back and forth, beating with their horns. Finally they try to stab each other in the neck. When the weaker turns to run the other attempts to stab and pick him up from behind. If he succeeds, he throws the weaker down, jumps on him and tries to stab him to death.

Duiker clash with heads low. They try to get underneath to pick each other up. Though they try to stab each other in the stomach, they do not go out for the kill. The loser finally runs.

Steenbok fight like duiker except that they always keep a small bush between themselves so that only the heads are fighting.

Female fights

Among gemsbok, the lead cow establishes her rights and maintains them by hitting pretenders with her horns. She usually hits the opponent briefly and leaves her. The lead cow is „boss” and is followed by a calf who will one day take her place.

This position is therefore hereditary. If this calf is a male he will hand over leadership to one of his sisters. Eland cows bellow and hit each other before separating. They also have a lead cow who maintains her position against pretenders. Wildebeest do not have a lead cow; any female can lead. Females do not fight but merely chase each other. Hartebeest females also do not fight hard but just chase and butt each other with their heads. Kudu and springbok have no lead cow and behave similarly, they also butt each other with their horns.

Attack on humans

Imminent attack can be recognized by the behaviour of the antelope. When a wildebeest's legs are apart he is just standing, but when he closes his legs he is about to lower his head and charge. A hartebeest will not attack as he can be pulled down. Gemsbok and eland lay their horns and ears back when they are ready to attack. Wounded gemsbok are very dangerous. Even if their hind legs are paralyzed they still try to fight with their horns. Bushmen blind them by throwing sand into their eyes before killing them. My informants knew of one gemsbok which had chased a man and killed him by piercing neck and skull. Bushmen never eat a buck that has killed a man. One springbok almost killed one of the informants, beginning his attack by jumping up and down on his forelegs and throwing his head back. Kudu lower their horns to the ground and plough it up as they charge. Duiker on the point of attack raise the hair between their horns, while steenbok wriggle their noses up and down.

Most antelope only attack once and then run off. Gemsbok do the same unless followed. Wildebeest stand off after the attack to watch their victims but will readily mount further attacks, particularly in the case of old bulls.

Defence against lions

Only the large antelope will fight lions. Wildebeest and hartebeest have no defence, but they run far before stopping. Gemsbok try to catch a lion with their horns. They rely on this defence especially when lying down. The horns are kept low and raised as the lion springs. Kudu back into a bush and use their horns to keep the lion at bay. If the lion springs the kudu will attempt to throw him. Kudu are better fighters than

gemsbok because they also use their hooves to kick. Eland do not fight lion with their horns. They turn their backs and kick the lion in the chest as he springs. A kick in the head from an eland will kill a lion. Small buck have no defence against a lion.

CYCLE OF ACTIVITIES

Time of activities

Activity is greatest from late in the afternoon to about eight or nine p.m. Then hartebeest, wildebeest, eland and springbok go to sleep. Nonetheless eland and wildebeest sometimes move at night especially if there is moonlight. This does not apply to other buck. There is extensive activity during the rainy period (May–July). In great heat the animals, especially gemsbok, will seek a big tree and stand beneath it or go to thick bush. Wildebeest and hartebeest make large holes under bushes and trees and stay there. Springbok do not mind heat and even go to pans during the heat of the day. Generally, however, game is lazy in hot weather. If they run they will not go far. In cold weather fleeing animals cover great distances. Small buck lie under bushes and sleep until the morning star comes out.

It is best to hunt in the afternoon during winter because that is when animals graze. In the morning it is too cold for them to graze. During summer, hunting is best early in the morning because the animals like to graze on cool, wet grass. In the morning the grass is green and in the afternoon it is wilted. The Bushmen did not know whether the wind direction had any effect on the behaviour of undisturbed animals.

Sleep and slumber

Gemsbok sleep lying on their legs and chests with their heads to one side. They use any bush as cover. Eland and wildebeest lie in a similar position, but the latter may roll on their sides under a tree. Hartebeest lie like gemsbok, roll on their sides or sleep stretched out in the pans. Springbok sleep on their chests but may roll over. They sleep in pans and flats. Small buck sleep on their chests but do not roll over. During the heat in the middle of the day wildebeest slumber under a tree either lying down or standing. Sleep and slumber are different. During sleep, flies cover the head of the animal and the ears hang down. In slumber the ears move back and forth slowly.

If an animal is awake the ears are erect and turn in all directions, listening. Except for lion, animals do not sleep in the middle of the day. They slumber and listen.

Lion, however, are dead to the world when they sleep.

ANIMAL SENSES AND RESPONSE TO STIMULAE

Eyesight and ability to watch

Eyesight varies from one species to another. That of springbok and hartebeest, especially of the cows, is best. The vision of gemsbok and kudu is not as good, while wildebeest have the poorest vision. Cows and young males are the most watchful of the latter. The antelope often watches a moving man and will stand while it sees him but runs the moment he disappears behind a bush. If the animal has to turn its head to watch it will do so for a while but it does not move its body. It may run a bit, turn around and watch again. Antelope can see eyes. They do not like to be looked at. When a hunter stalks an animal it can see him come closer, standing one moment and moving the next. The animal moves its head like a monkey to get a better view (stereoscopic view?). Sometimes the animal fools the hunter by pretending to be grazing while, in fact, it is watching his legs. If an animal thinks it is unobserved it is far less likely to flee than when it knows it is being watched. In a moving herd those in front are more watchful than those on the sides; in a grazing herd several females usually stand to one side, to be replaced by others when they return to the herd. It is easy to pick out these sentinels.

Colour preference

White and reddish colours attract game ungulates, but when they smell the object they run. Dark colours such as those of skin covers can be seen from afar and frighten the animals.

Power of smell

All antelope have good powers of smell, but some (such as the wildebeest) depend more on it than others (such as the hartebeest). In winter their sense of smell is keener than it is in summer. It is also better in the morning and evening than at

midday. When the ground is wet game animals have a better sense of smell than when the ground is dry. Rain can obliterate the smell of a person; besides wet ground has a strong smell of its own. After rain of two or three days, game can smell very well. The Bushmen explain this by saying that the sun „pulls” up the „wet” and the smell goes between the wet. Now the wind carries this. They say that on such days man can even smell game if the wind is right.

The wind is not essential to take human smell to an animal. A fly may sit on the hunter and then go to the buck, taking the man's smell along. This can happen on a hot day and the antelope will be seen to dart off suddenly.

Feeling

The !xo have often seen buck place their lips on the ground without grazing, or even to drag their lips a little. When a gemsbok wants to lie down it first feels the ground with its lips. The Bushmen do not know how to explain this behaviour, but think the animal is feeling the ground.

Hearing

Of all the ungulates the kudu can hear best. The animals are very well attuned to the warning noises of their own kind and those of other animals including birds. They immediately lift their heads to look for danger. Noises which are strange and not associated with an animal's everyday life do not frighten them. A lorry, no matter how much it rumbles, does not frighten an animal unless man can be seen or smelled. A wounded and pursued animal is very alert in all its senses. The snapping of a twig can send it running despite the fact that it has neither smelled nor seen its enemy.

Curiosity

This is a matter of sight, not of hearing or smell, because smell gives the absolute answer to the potential danger of an object. The !xo knew of no type of noise which encouraged game ungulates to satisfy their curiosity. (The !xo do not use calls to attract game.) A lorry neither attracts nor frightens game. Curiosity plays only a small part in their behaviour. Some animals are more curious than others. Thus a

duiker and particularly a steenbok, commences to run away when danger appears but soon stops to turn and look out of curiosity. Hartebeest, wildebeest and springbok behave similarly to satisfy their curiosity, but never kudu. Gemsbok also stop and look; they usually run a long way before coming to a halt.

Signs

When an animal flees from danger it not only makes warning sounds but also gives signals to the others. Springbok raise their tails and the hair on their tails stands up and spreads into a bright, white flag. Gemsbok flatten their ears. Eland also flatten their ears back, shaking their heads to and fro. The tail is up. Kudu similarly raise the tail and fan the hair on them to show a flag. Hartebeest flatten the ears. Their tail is raised, but only when the animals are running away. Gemsbok raise their tails and spread the hair on it, while duiker shake their tails and make a „sht-sht-sht” sound. Wildebeest show no such signs of alarm. None of these games ungulates have olfactory signs, they said.

Albinism and melanism

The !xo were well acquainted with albinism. They have seen adult as well as lamb albinos among springbok and duiker. All examples had either greyish, blueish or grey-blue eyes, while the fur was whitish. If the father is normal and the mother white, the lamb will be grey. If both are white, the lamb will also be white. The Bushmen had seen a near-white cheetah.

The phenomenon of melanism seems to be very rare. The informants only recall having seen a very dark cheetah and a dark leopard, but the young were light in colour.

CONCEPTS AND ATTITUDES OF !XO TOWARDS UNGULATES

!xo taxonomy has been discussed elsewhere (HEINZ and MARTINI (a)). This paper is essentially an ethno-ethological study and as such gives extensive evidence of the !xo's anthropomorphic view of his animated world. The animals dealt with are the source of much of the !xo's protein intake. In hunting them he anthropo-

morphises them and shoes them respect. He does not drink or partake of food while following the wounded for that would also strengthen the prey. After the chase, he relates the tale and speaks with respect of the animal's endurance in attempting to escape.

The animals discussed here figure in his games and dances (gemsbok-, elanddance) (see SBRZESNY 1974). During the female puberty ceremonies the gemsbok-brow-shield is in evidence as is also the gemsbok colour pattern on the face of the emerging girl (HEINZ 1966; HEINZ and HEUNEMANN 1974). Antelope horns are tied to the heads of men dancing around the initiate's hut. During the male initiation, boys are made to shoot and 'kill' a symbolic replica of some antelope.

Duiker meat is women's meat and its skin extensively covers her body. The !xo identifies himself extensively with these ungulates or considers his intentions to be influenced by them. Thus he would deem any further hunting on that day to be useless were the first animal he had encountered to be a steenbok which, though standing close and perfectly still, he had repeatedly missed. This buck, he earnestly believes, would actively affect his hunting ability for the rest of the day. These are the animals, too, which are transitionally or permanently debarred from the diet of certain sections of the society. The most notable food taboo is that of the steenbok for young men and women and even for older women (see HEINZ 1966).

To the !xo the living creature always reacts rationally. He obviously has no concept for instinct, and when a creature acts or reacts differently than he would, or in a seemingly inexplicable manner, he explains this by saying: „Gu/e (God) made it to act that way.”

These mammals, as others as well, do not have calves, lambs, piglets, etc., they have children. Oa, a term shared with the !xo themselves. !u Oa, n!ei Oa, /ali Oa, donka Oa – young eland, hartebeest, wildebeest and kudu respectively. The word piglet, //xubi, however, comes closest to the young of the gemsbok, †xabi, and steenbok /ebi. It is natural, therefore to hear that an old kudu bull takes out his son from the herd, to teach him and finally to present him with a wife n/n, or that a lead-cow is „boss”, that her position is hereditary, that she is followed by her child, and that if this be a son, he will hand over leadership to one of his sisters. Doubtless the most anthropo-

morphic activity is attributed to the black-backed jackal who is endearingly referred to as a „clever old man”. An abnormal bull is /aam /i – crazy, a sexually mature creature is n//om sa, grown up. The lead-cow is the smelling-cow.

When hunting, Bushmen are in continuous non-verbal communication with each other, giving extensive signs specific for each animal and others indicating that creature's behaviour. While watching, buck may be described as //aba sa – running, //ua – standing, au sa – going off, si – coming, luee – standing and alert, /oa – passing, !a – resting in the shade, Oan – sleeping. But there are doubtless many more terms which enable a !xo to pinpoint a particular target in a herd. Were he not so well able to read the intentions of the animal he is following with regard to where it is heading, he would not be able to short-cut the winding trail and would find it difficult to catch up. However, he never loses sight of the fact that he is dealing with a rational being and therefore tries to project himself into the thoughts of his quarry.

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LITERATURE CITED

- HEINZ, H.J., 1966. The Social Organization of the !xo Bushmen. M.A. Thesis, Univ. of S.A.
- HEINZ, H.J., 1971. The Ethno-biology of the !xo Bushmen, The anatomical and physiological knowledge. S.A. Jl. of Science, p. 43
- HEINZ, H.J. and HEUNEMANN, D., 1974. A !xo girls puberty ceremony. Publ. z. Wiss. Filmen. Inst. f. d. Wiss. Film, Goettingen, Bd. 5
- HEINZ, H.J. and MAGUIRE, B., 1973. The Ethno-biology of the !xo Bushmen: The Ethno-botanical knowledge. Botswana Notes and Records. Supplement
- HEINZ, H.J. and MARTINI, A. (a). The Ethno-biology of the !xo Bushmen: The ornithological knowledge. Botswana Notes and Records (in print)
- SBRZESNY, H., 1974. Die Spiele der !XO-Buschleute. Unter besonderer Berücksichtigung ihrer sozialisierenden und gruppenbindenden Funktion. Universität München, Ph.D. Thesis
- SILBERBAUER, G., 1973. Socioecology of the G/wi Bushmen. Ph.D. Thesis, Monash University, Australia



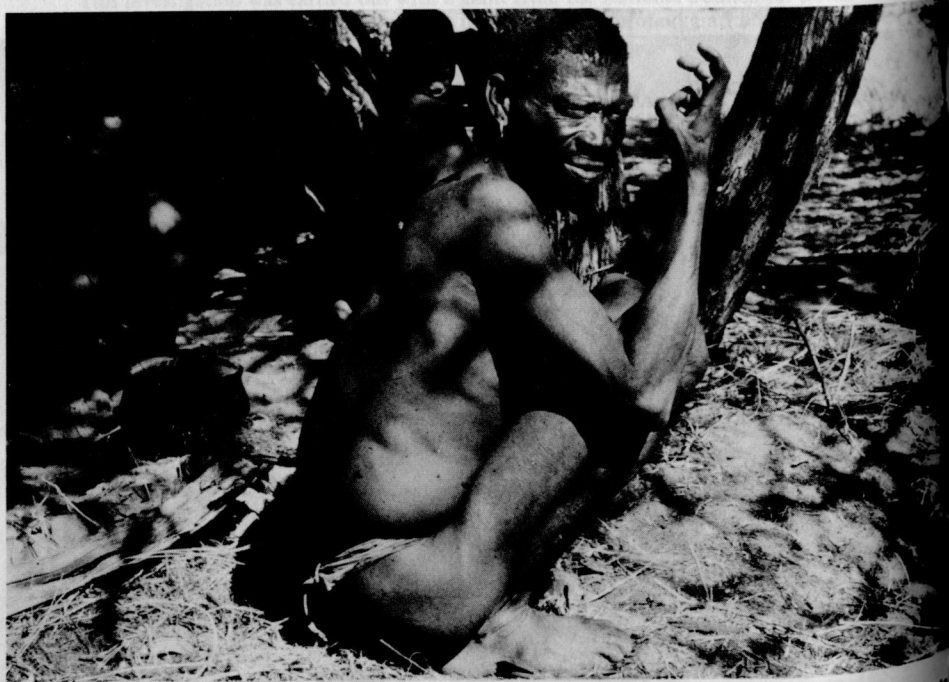
This picture shows the sign for gemsbok.



silently with each other while hunting. The movements of the sign for hartebeest. activities of the animal. This picture shows the sign for hartebeest.



Small game is carried as a compact bundle to be skinned at home. To prevent dangling legs the bok's legs are ingeniously folded in place.



Bushmen hand signs identify most larger animals and they use these to communicate.