

Unique Research Area in Africa

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The Sengwa Research Area in north-west Rhodesia consists of 145 square miles of uninhabited woodland and flood-plain, virtually undisturbed by man and now set aside solely for wildlife research. The author describes the government Research Station and the work going on there, particularly on warthogs, in which he took part in 1972–73.

In 1969 the Rhodesian Department of National Parks and Wildlife Management sent Dr David Cumming to establish a wildlife research area and station in the Chirisa Game Reserve in the remote north-west corner of Rhodesia. At that time there was no human habitation for tens of miles around. His original camp was sited at Sengwa Gorge, on the Sengwa river, a spectacular cutting carved by the river out of the sandstone. From there he and his African assistants built access roads, explored and mapped this previously little known region, and started the first of the wildlife research. Eventually two small offices, a laboratory and a home were built at the gorge, and today the research area covers 145 square miles in one of the wildest and so far unspoilt areas in Africa.

In 1971 work began on a new large laboratory/office block, situated at the edge of a high escarpment overlooking much of the Sengwa and Lutope rivers, and the mopane woodlands. The building, the Hostes Nicoll Wildlife Research Institute, is now complete and consists of seven spacious laboratory/offices, a large teaching laboratory, a library, two darkrooms, an electronics laboratory and one for chemical work. There are new houses also ready, and a workshop complex. Dr Cumming is the Director, in charge of fourteen highly-trained African game scouts, who are well versed both in objective field observation techniques and the use of radio equipment in research; much of Sengwa's success is due to their efforts and interest.

The research station stands on the Sengwa river, 120 miles south of its confluence with the Zambesi, at the point where the Lutope River joins it from the south, with the Manyoni river coming in lower downstream from the east. A clearly defined south-west to north-east faulted scarp divides the area into two distinct levels. The two tributaries join the Sengwa a few miles below this escarpment and much of the research area forms a basin with an escarpment on the south and east.

The Sengwa flood-plain is clothed with a dense blanket of tall *Trystachia* grassland, which cuts through the surrounding mopane woodland like a yellow sword, following the path of the river. Large stands of acacia woodlands cluster round the Lutope river, and mahoganias, cargelias and various species of acacia flourish on the rich alluvium of the flood-plain. Elsewhere, in the drier areas, mopane woodland thrives, and high up on the escarpment low sinanga vegetation gains control, sprouting low, twisted bushes on

the dry rocks. The highest of these escarpments juts out of the Sengwa grassland like a huge, blood-red sandstone battleship. The main landmark of the area, is called Ntaba Mangwe, 'Mountain of Vultures', as vultures and saddle-bill storks are always to be seen circling near it.

The area is well populated with large mammals. Elephant are over-prolific and are gradually destroying the once fine acacia woodlands along the Lutope river. Impala, waterbuck, kudu, reedbuck and buffalo are the major ungulates, with, of course, many smaller species. Predators are quite common, especially lion and cheetah, and several leopards have been recorded. Black rhino are scarce, although we found some along the remote northern boundary of the reserve, and there is a scheme to bring some in from other parks. The bird life is prolific; in a dry season the author recorded over 200 species, including several species of stork, bee-eater, sunbird and birds of prey.

The Institute's research programme is geared to study of the large mammals in relation to their habitats in the local ecosystems, with a view to providing basic knowledge so as to achieve ecological stability in Rhodesia's wildlife areas. To this end the main line of research is devoted to a comparative study of population regulation in large mammals, since an understanding of how populations are regulated and inter-related is essential to the sound exploitation and manipulation of wildlife resources. A study of the interactions of large herbivores and the vegetation forms an integral part of a comparative study of their population regulation. Present projects include studies of warthog, elephant and kudu biology; impala reproduction; the structure and biomass of brachystegia and mopane woodlands, and vulture biology. The author was involved largely with the warthog and elephant studies.

Warthog Studies

It is important to know something of the warthog's interactions with its habitat, not only because it is an important element in the area's ecology, but because it is a major host for the blood-sucking tsetse fly *Glossina morsitans*, which transmits nagana, the sleeping sickness of domestic livestock. Over the past eight years all warthog holes in two four-square-mile areas have been mapped and numbered. In one of these areas several warthog groups (known as sounders) are captured, and one adult in each sounder is fitted with a stout collar containing a radio transmitter.

Catching warthogs is a dangerous and lengthy procedure. At dusk the previous day the game scouts set out in teams of two, to watch the warthog holes—these may be in old aardvark burrows, porcupine holes or erosion gulleys, all of which may have numerous exits. Well before sunset, the game scouts arrange themselves on often uncomfortable trees overlooking a hole, and settle down with notebook and binoculars to watch for returning animals. At about sunset, if they

Opposite
SETTING THE NETS at the warthog tree.
WARTHOG with the collar in place.



are in luck, a grey undulating file of warthogs comes rustling through the grass, carefully sniffing the air. When satisfied that all is clear, they slowly march into the hole for the night. The game scouts note the age and sex of the warthogs, many of them marked during previous captures.

Well before dawn next morning after collecting the long cylindrical nets, poles, radios and tool kits for the capture, the landrover sets off into the gloom to the chosen hole. Each game scout is allocated a pole, and bearing these rifle-like over their shoulders, they march off in silence through the long grass to the hole. Here, holding the poles like lances, they suddenly rush to fill each of the many exits with a tight wedge of poles, closing the sleeping warthogs in. The long cylindrical net is then carefully laid over the selected exit, and the poles removed. By now it is dawn, and it only remains to wait for the warthogs to make a break, and dash into the net in a grey squealing, wriggling mass, on which the game scouts pounce in a wrestling match, trying to avoid the flaying hooves and tusks.

Warthogs live in family groups, consisting of perhaps several adults with sub-adults and juveniles in the majority. When such a group is captured, one adult is fitted with a radio collar, and the rest given coded plastic collars and ear notches for future field identification. Each radio-collared animal has its own frequency, so that different groups can be monitored simultaneously.

This valuable radio-telemetry technique has provided much information otherwise difficult to obtain. It is possible, for example, to follow a group of animals throughout the course of a day, making notes on behaviour, food preferences, activity and home range. At Sengwa the animals were tracked in this way on foot, and also from remote, fixed receiving Yagi antennae high up on the escarpments overlooking the warthog domains. By a process of triangulation, we could pinpoint various groups exactly over many twelve-hour periods and learn about warthog home range behaviour. Dr Cumming has found that the animals are faithful to their home ranges, and may adhere to them for life, but that some can vary with seasonal diet changes and the location of suitable feeding grounds. His data also suggest that they have a clan system, a clan being a group of two or more sounders which share the same holes and whose home ranges are co-extensive.

Such information helps to build up a comprehensive picture of tsetse fly distribution and ecology in relation to that of the wild mammals which serve as a reservoir of nagana, and can give important clues as to possible eradication methods in rich game areas.

Elephants

Like many other African game reserves Sengwa has an elephant overpopulation problem, but no culling of the animals is to take place until the appropriate studies have been made, and these are already under way. At the time of the author's stay Douglas Anderson, a post-graduate student from the University of Rhodesia, was investigating the extent and nature of vegetation damage by elephants in Sengwa, and an elephant radio telemetry project was started.

One animal was darted with the immobilising drug M99, and

chased at speed through the bush until it finally went down near the Sengwa river, where it was given a radio collar and symbols painted on its sides to make it recognisable from the air. The antidote M285 took effect in less than five minutes; the elephant then rose uncertainly to its feet and wobbled off to the Sengwa for a long drink before slowly disappearing into the bush. Tracking it was done from a small aircraft fitted with receiving equipment that has a range of twenty miles, and also from the ground using a portable loop antenna. Two days later it was tracked once more from the ground to the west bank of the Lutope river, where it was watering with two other bull elephants, and the author has tracked it successfully on several other occasions. Since then, elephant have been located with long-range antennae mounted on a landrover. Bearings on animals are taken from two separate locations, and by triangulation of these bearings the elephant's approximate position can be found on an aerial photograph, and final contact made with short-range loop antennae.

Kudu Study

The kudu study involved constructing a large funnel-shaped corral in the bush near the Lutope river. The animals were herded into the narrow neck of this by a low-flying helicopter and immobilised with M99. Six out of thirty-two kudu captured in this way were fitted with radio collars, and the rest tagged with plastic markers.

Two years ago Sengwa recruited an electrical engineer, with a passionate interest in wildlife, who is responsible for extending tracking systems, and developing new ones, including the more sophisticated techniques of telemetering physiological data.

The Institute now has facilities to cater for four full-time post-graduate research fellows, and the Research Area is open to study to biologists from all over the world. The only game reserve in Africa devoted completely to wildlife research, it provides a unique opportunity to study the wildlife in pristine conditions.

Stephen Zilberman worked at the Sengwa Research Station as a Research Assistant, before going up to the University of Durham to read Zoology.

Numbers up in Kaziranga

Nearly all large mammals in the Kaziranga National Park in Assam appear to have increased since 1966, according to the 1972 census results, reported by P. Lahan and R. N. Sonowal in the *Bombay NHS Journal*. Some of the increase they believe is due to the more intensive coverage achieved in the later census. Great Indian rhino numbers are now estimated at about 670 compared with 400, tigers at 30 compared with 20. Swamp deer *Cervus duvauceli* more than doubled their numbers, from an estimated 250 to 520—making this a sizeable proportion, and the largest single herd, of the 5000 Schaller estimated as the total population for the whole sub-continent, including both subspecies. Eighteen gaur were counted only one in 1966). An apparent small decrease in sambar deer numbers they attribute to the fact that the dense forest could not be adequately covered.

Except for rhinos, poaching in the sanctuary, they say, has been largely eliminated as a result of the severe penalties and strict law enforcement. With a market price of Rs10,000 per kilogram (over £550) the rhino horn is still worth considerable risks, but poaching has been reduced. In 1965 18 rhinos were poached, but in 1970 only two, and in 1971 eight.