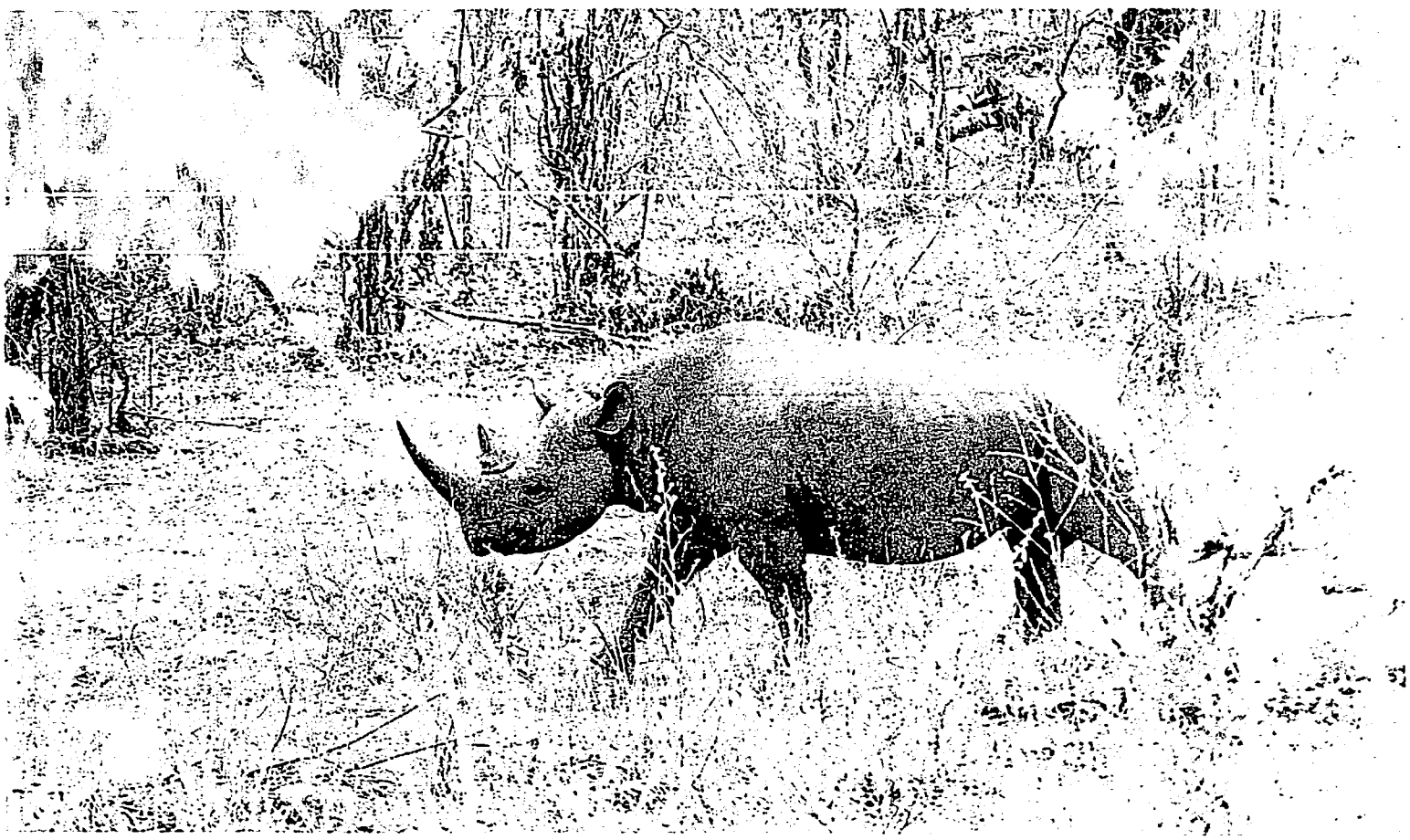
1990

CHETE 1990

Cambridge University
xplorers & Travellers Club
DO NOT REMOVE



A CAMBRIDGE UNIVERSITY EXPEDITION TO ZIMBABWE

The report of the Cambridge University Expedition to the Chete Safari Area (Binga, Zimbabwe). A black rhino population survey.

Zvakawanikwa pakuverengwa kwezvipembele munzwimbo ye Chete Safari Area (Binga , Zimbabwe) . Navadzidzi ve chikoro che Cambridge University.

Zyakajanika mukabalwa kwezipembele mundawu ye Chete Safari Area mubboma lye Binga, Zimbabwe a bayayi be cikoloce Cambridge University.

Umbiko owhitshwa ngabafundi be Cambridge University ekubaleni obhejani e sigabeni Sechete Safari Area (Binga, Zimbabwe).

Expedition members

Leader: Richard Johnson
Graduate in Veterinary Medicine at Jesus College, Cambridge. Age 21.

Food Officer: Nicola Dorward
Studying Modern Languages at Jesus College, Cambridge. Age 21.

Equipment Officer: William Duckett
Graduate in Engineering at Pembroke College, Cambridge. Age 22.

Medical Officer: Nicholas Beare
Studying Medicine at Fitzwilliam College, Cambridge. Age 21.

Patron: Professor Colin Renfrew, ScD, FBA.

pp. 1-59

Published 1991

Figure 1: Map of Zimbabwe showing the Sebungwe and Middle Zambezi regions with their National Parks and Safari Areas.

Introduction

The Black Rhinoceros (*Diceros bicornis*) is one of Africa's most threatened large mammals. Its numbers have been reduced from 100,000 to 3,000 in the last 30 years largely due to illegal poaching for its horn. The horn commands high prices in North Yemen for dagger handles and in the Far East for traditional medicines.

Zimbabwe has over half the world's remaining black rhinos. However numbers taken from aerial surveys are very innaccurate, so Zimbabwe's Department of National Parks and Wildlife Management needed a ground based survey of the rhino population of Chete Safari Area.

This is a remote,1080 km^2 wilderness in northern Zimbabwe, bordering on Lake Kariba (figure1). Only National Parks Staff and a professional hunting operation have access to it and it is not used by the general public. A partial translocation of rhinos was carried out in September - October 1990.

We were lucky enough to be given this population estimate project by the Department of Natiomnal Parks and Wildlife.

Aims of the Expedition

The aim of our expedition was to establish the status and distribution of the black rhino within Chete. We intended to cover this large area in a short time with relatively little manpower. In the past, aerial surveys have been used to estimate rhino populations but this has proved inaccurate due to the difficulty in seeing lone rhinos in dense bush. Individual identification of all rhinos in a given area has been done successfully, but this takes a long time (one year in 200 km^2, Leader-Williams 1985) and is only suitable for small areas. We therefore decided to walk straight line transects and record all rhino spoor, middens and sightings. We did not expect to make many sightings but predicted that we would be able to make a population estimate from spoor measurements. The spoor and midden data was to be used to show the distribution of rhinos. Since this method was "low-tech" it was hoped that it could be developed for future use.

While walking transects we intended to record data of other large mammal signs and sightings.

Expedition Journal

12th to 18th July

The expedition started at the eastern end of the vast Lake Kariba, formed by the damming of the Zambezi River in 1963 for hydroelectric power.

We were very lucky to have the support of the Dorward family (parents of Nicky),whose cars and 50 foot motor boat, the Chessa, provided luxurious transport out. It took two solid days' motoring to reach Chete, which lies at the midpoint of the lake. Our first sightings of it were of daunting rocky cliffs and incredibly thick bush, far removed from the gentler Matusadona (Eastern Kariba) scenery we had expected.

Chete Gorge (figure 2) is the main camp of the park, housing most of the 19 scouts and the Senior Ranger, Norman English. Although we had liased extensively with National Parks, we had had no contact with Norman; consequently, he was the target of many anxious questions! We were able to leave all our excess supplies for the first five weeks with him. Once we had discussed our plans, we returned up the coastline to Sinamwenda, site of a disused university research station, this time with our two new scouts on board: Maketo, a Shona, and Lackson, a Nambian. Sinamwenda lies at the northern limit of Chete's coastline, and from here we would be moving steadily southwards.

The format which we would follow for the 8 weeks involved two parties. The first comprised 2 Cambridge students and 1 scout, who would walk a 50km transect to the Chete/Siabuwa boundary and return to the lake 2km further down, recording all rhino signs, and also signs of other game. The other two students and 1 scout would remain on the lakeshore, moving the basecamp 5km along the bays of the coast to meet the incoming party. We used an 18 foot fibreglass canoe on the lake, which proved a quiet means of travel, and could carry up to 350kg at a time.

Transect One: 16th to 18th July.

Will and Nick started the first transect at dawn, whilst the rest of us were dropped by the Chessa at the Peninsula Camp, thus avoiding the first canoe stage! This northern part of Chete had a high baobab density and was surveyed to assess elephant damage (see science report). Meanwhile, for Will, Nick and Maketo, the beginning of the first transect was ironically some of the hardest walking experienced in the park. Transect lines had to be followed straight, whatever the difficulties of the terrain. They found a high concentration of rhino signs, however, and saw their first elephant. Maketo excelled himself as a naturally straight

walker, following a 130° outward bearing, and a 310° bearing towards the lake.

Norman was able to help with the water supply of these early transects, by dropping off 25 litres ahead of the walkers , tieing it in a tree with baobab bark, to keep it out of reach of the wildlife. Getting to the dropoff point involved negotiating Chete's abysmal roads, which were generally rocky tracks, blocked with trees which playful elephants had felled.

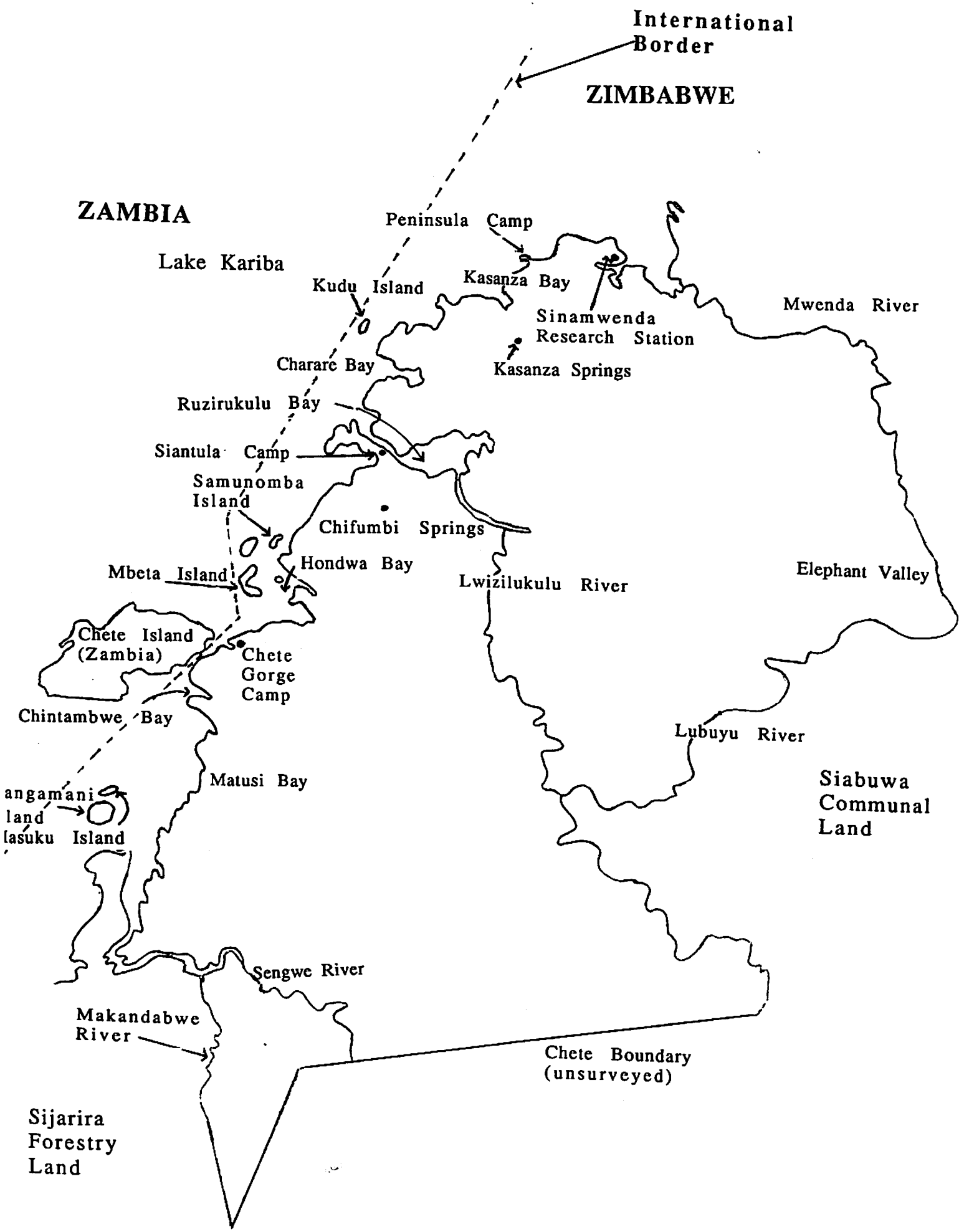
Transect Two:19th to 22nd July

Richard and I, and an unrested Maketo set off on the 2nd transect. We were surprised by the absence of game we saw on foot; on our first day, only one impala herd was seen. This lack of game compared to the amount one would see in a National Park, can be attributed to the fact that on foot the animals could see and smell us. Also, car-based safaris cover more ground, often travelling between man-made water supplies upon which the animal population is dependant. So, in fact, there was little compensation for the harsh discomfort of walking. The jesse bush scratched all exposed skin, tore clothing and shredded Karrimats; it alternated with a loose, rocky terrain that was ideal for twisting ankles and grazing shins. The heat turned the hours into an ordeal, with the sun already hot on our faces by eight-thirty. Generally we would walk from 6.30 in the morning, stopping for a long siesta during the hottest part of the day. We made camp between 5.30 and 6 at night, depending on when we reached safe (high) ground or a targeted spring.

On the second day of this transect, we saw our first rhino, forty metres from the transect line. Also we saw the only genet on transect, curled in the hollow of a tree. This second transect was the only one which did not reach the boundary, and this was because of lack of water.

Will and Nick,meanwhile, had settled down to the delights of the lakeshore life. Without the promise of a bath, shave, and change of clothes at the end of each transect, we would never have managed them! They moved camp to the Kasanza river mouth in two loads. For the purposes of moving camp, the food was stored in metal containers, two of which could be fitted in the canoe at a time. Film and valuables were carried in watertight BDH's, and the paraphenalia of the camp in a large metal trunk. Along with rucksacks, the worms for fishing, the medical supplies, and the radio, this made an enormous amount of equipment, and the canoe was always ungainly, overloaded, and difficult to balance. Since July and August are the windiest months on Kariba, it was astonishing we never capsized!

Figure 2: **Chete Safari Area**



The game at Kasanza was diverse, but by far the most exciting were 2 rhinos, which came down to drink in the late dusk. Will and Nick were charged by one of these rhinos, and it was only the steady forethought of Lackson, the scout with them, which prevented contact. He threw a small stick in the rhino's path, and it veered away!

While Will and Nick were walking the third transect, Richard and I spent an idyllic few days in the tropical island setting of a disused hunters' camp, complete with sandy beach. Here we had the first successful catch of fish. The most common fish in Kariba is Tilapia (bream); in general, we were unlucky with fishing, in spite of a steady supply of worms fed on elephant dung and sadza, a maize meal. In contrast, the scouts used to disappear with rudimentary rods and little bait, and return with enormous catches!

It was very windy at this time, and eventually we were forced to move camp late in the afternoon, when the wind usually died down. With dusk falling, we had to flag down a kapenta rig,(local fishing boat), so that Maketo could hitch a ride to our next base, Charare. This huge bay teeming with game will be remembered for a large pride of lions, which wanted to cross by our camp during the night. We deterred them twice, by letting off thunderflashes. The second one failed to wake Maketo up! The next morning we found that the lions had got their own way - since we found their spoor close by.

Will and Nick saw another three rhinos in the three and a half days they were absent. The first got very inquisitive, as they were trying to edge round it, and advanced to within 20m of them. Once again, Lackson was reduced to waving a stick around, which sent it crashing off in the opposite direction. After this second close shave, they were astounded to find themselves yet again in a tricky position on the evening of the second day, when they were cornered by two elephant on the one side, and two rhino on the other! The landscape out here on the boundary was much more savannah-like, with tall trees, long grass, and much more game. Trying to extricate themselves, they overshot the boundary, and got lost! Only when they got to higher ground did they work out where they were. Part of the exhiliration of the transects was the sheer isolation: from the high evening camps, nothing could be seen for miles around but an unbroken tide of trees, and the sun sinking dramatically below the horizon.

<u>Transect four: 27th to 30th July</u>

Whilst Richard and I walked out from Charare to the boundary, Will and Nick collected the speedboat from Chete Gorge,

for use in the Ruzirukuru Bay. This huge bay opens out from the Lwizilukulu River, one of the main rivers running through Chete, and for a long stretch forming its boundary on the eastern side of the park. It was our intention to pitch camp for a few days up this river, and the sheer distances involved, combined with the consideration of the numbers of hippo likely to be encountered in the river mouth, made using the canoe an unwise option.

At this stage two new scouts joined Will and Nick: Madekwana, who is the sergeant in charge of Siantura Camp, and a Shona; and Anderson, one of the Tonga tribe which was displaced out of the Zambezi Valley by the forming of the lake.The four of them pitched camp in the Ruzirukuru Bay, which has a good population of rhinos, so that there was a strong chance of them seeing one there. After moving camp, they had the task of completing a small section of the fourth transect which extended out on a peninsula and so was rather inaccessible for Richard and I. They picked a very large quantity of middens and spoor, reflecting the suspected density of the area.

For Richard and I, this transect was "The Elephant Transect". The enormous numbers we saw created unforseen logistical difficulties, as avoiding the elephant often meant walking off the transect line, which was almost impossible to find again, given the lack of landmarks. On the first day, we were forced down a cliff to get water instead of taking an easier route by two bull elephant; on the second day several herds with small calves caused the transect line to be abandoned completely shortly before the boundary, in the attempt to get to safer ground. The fact that we had lost radio contact due to lack of batteries increased the potential danger of our situation. It was at times like this that the very real isolation we were in was brought home to us.

By the third day, we were in desperate need of water, and were forced to walk about 5kms off our transect line to find it; moreover, it was quite a tussle with the elephants before they would give up the waterhole. Maketo was forced to fire three shots in the air to scare them off. The water we found in these small muddy remains of last year's rivers and waterholes was never very appetizing; filled with animal droppings and urine, at first we thought it safer to purify it. But the time this exercise required,using a PWP water-filter, combined with the fact that the scouts always drank the water straight, eventually persuaded us to follow their example. None of us were ever actually ill, amazingly enough! The scouts had an uncanny knowledge of where water was most likely to be found, using animal tracks and the lie of the land to assist them in their search, and we carried less and less water as the expedition progressed. Sometimes they

would find a veritable oasis of green fecundity in the midst of a seemingly barren landscape. At others we had to make do with a murky whole dug by elephants, and filled with bees and other drowned insects!

Because of the lack of radio communication, we did not know where Nick and Will were based. We hit the Lwizilukulu as high up as there was water, and met up by waving a white sheet and firing a shot in the air when Will was crossing the bay in the speedboat.

Transect Five: 31st July to 4th August

We spent two days as a group,to do some preliminary analysis on the data we had been collecting on our transects, to see whether it was effective, and in what ways it might be improved. Our camp, for these few days, was on the steep banks of the Lwizilukulu River, where it is joined by the Dongatumbu River. This river winds sluggishly through a flat, narrow plain, enclosed on either side by the start of the Lwizilukulu Gorge. The grass is close-cropped by some of the largest herds we had yet seen: kudu, waterbuck, impala, buffalo, klipspringer. Huge crocodiles slid noiselessly into the water, while the hippos, unused to human intrusion, snorted and bellowed their disapproval, endeavouring to scare us off with mock charges and the gnashing of enormous teeth.

The fifth and sixth transects were noticeable for the lack of rhino spoor that was picked up on them. Cutting through the middle of the park, Nick and Will had to climb in and out of the gorge created by a tributary of the Lwizilukulu four times on their first day. They were rewarded by camping that night at the highest point of the park, at 945m, with a beautiful view of the sun setting over Zambia, and of the lake, lit up by kapenta rigs. Hitting the boundary on their second day, they found a concentration of rhino spoor around the pool they collected water from, but again none as they climbed the escarpment out of the valley on the boundary. This was the first transect on which the skeleton of an old poached rhino was found; altogether we found three in the eight weeks. Since National Parks has a policy of collecting all skulls of poached rhinos, this points to a fairly efficient rate of collection in Chete. It was always rather disturbing to come across the hacked skulls of these defenceless and incurably inquisitive animals.

New animals sighted as they neared the lake again were bushbuck, shy and attractively dappled, and vervet monkeys, which were almost certainly being harrassed by a leopard (whose spoor they picked up), shortly before their arrival. On this first

transect with Madekwana, he proved his worth as an unparalleled tracker and spoor identifier. The advantage of having the scouts with us to help identify spoor were manifold; it meant that our results were not influenced by an initial weakness in spoor identification followed by a later marked improvement.

The three of them rejoined us at Jota River, where we had made camp near a rather grisly impala bait hanging in a tree. Alongside was a cut line, and a screen for hunters to wait for a leopard in. We found such remains a rather disturbing intrusion upon the scene of naturalness.

Transects Six and Seven: 5th to 11th August

Norman was going to Sengwa Research station, bordering Chirisa Safari Area, to have the poached rhino skulls from Chete aged; Richard decided to join him on this two day trip, as he would have the opportunity to speak to Ian Coulson, Head of the research station, who could advise us on our methodology so far.

For this reason our next two transects took on a different pattern. We decided to undertake two simultaneously, Will and Anderson walking the one, whilst Nick, Madekwana, and I walked the other. This meant moving basecamp downshore in advance of the walking and lost us a couple of days. Our new camp was on Sanumomba island, a small but very picturesque island just off the mainland. It was inhabited only by a herd of kudu, and the vegetation was consequently much more lush than elsewhere. Also at this time we did an overnight spring watch at Kasanza Springs, for pure interest. It entailed Norman joining us to drive us back to the springs, where we had been ten days previously. The experiment was not overly successful, as even with a full moon we found we could not see very clearly, but we did catch our first glimpse of a lion, and also of several white tailed mongooses.

On the transects we had little contact with each other, even though we were only walking two kilometres apart, and at times were lunching not 400 metres apart, unawares! Will arrived back in three days, having seen some superb elephants, whilst Nick and I took a more leisurely four days, and sighted the first eland of the expedition.There was a very great concentration of rhino spoor and middens found near Hondwa Bay at the end of the transects.

Richard had a great deal to tell us about his trip to Sengwa. Armed with a rather grisly cargo of 65 rhino skulls, they had driven to Sengwa Gorge mostly on tsetse fly fence roadsvia Siabuwa, Gokwe, and Chirisa. He had been amazed at the amount

of game compared with Chete, having seen large herds of reedbuck, waterbuck , and buffalo.

Transect Eight: 12th to 17th August

This transect was undertaken by Richard and I, and a new scout, Sergeant Caleb. Anderson and Madikwana had been with us for sixteen days, way over their normal patrol time, and were understandably eager to return to their numerous wives and gardens! The other new scout was Sergeant Million, who had worked in Chete for eight years.

The eighth transect started with a long canoe trip to Chete Gorge. It was a windy day, and though Caleb did not know how to swim, he still made a concerted effort to capsize the canoe, so it was a relief when we finally disembarked! The transect proved to be the longest , taking a total of four and a half days. In fact we had to equip ourselves with more food at a communal land store, as we had only taken enough for three days. The main difficulty was the Lwizilukulu Gorge, which we seemed to spend days negotiating, only to have to retackle it on the way back. We were always amazed to find elephant paths down what seemed to us the steepest of slopes. But we also had some of our most picturesque overnight camping spots on this transect, usually by water, as water supplies began to get infinitely more reliable as we moved down the park. Within the sheer walls of the Lwizilukulu Gorge, one night, we caught sight of the round head of a Cape otter, in a large pool, a rare sight. Otherwise little game was spotted on the transect, and it was a relief to get back.

Back on Sanumomba, Will and Nick were battling with kamakazi mayflies, and uncharacteristic cold, windy weather, with even the splatterings of some rain. Each region had its own terrorizing insect: mopane flies, which search out sweat in swarms - even crawling into eyes; African bees, which especially enjoyed our suncream; "mopane beetles", which were small but had a large bite! We had no problems from more dangerous spiders and scorpions, and only saw a few snakes, due to their hibernation.

Whilst moving camp, they surprised the tourists on the Kariba Ferry, with their Livingstone-style canoe, fully laden, and topped by a pair of kudu horns, rounding Mbeta Island in the late afternoon sun. The horns had veen found on Sanumomba by Sergeant Caleb, during a beat that we had carried out.
Once they got to Chete Gorge, they went with Norman to have the kudu horns measured at the hunters' camp. The horns were peculiar, in that one horn pointed out at sideways from the head, creating a tip to tip width of 52inches; Norman thought this might

be a new record width. This visit to the hunters' camp was the first opportunity we had had to see the general set-up there, since in general we kept very much apart from them in order not to disturb their hunting.

Will's birthday was forgotten by us all!

At Chintambwe, near Chete Gorge, they had the best sighting of a hippo on the trip, catching one on land at dusk as it came charging out of the bushes in a desperate bid to reach the safety of water.

The Resupply:18th to 20th August

Nicky's parents had decided to revisit us on the Chessa, and this provided us with the perfect opportunity for a large resupply of food, and to send out postcards to all our sponsors. It was also a wonderful taste of civilisation for us after five weeks in the bush, with sumptuous food that made the endless tins of corned beef and the monotony of dehydrated food seem like a distint dream. This is not to say we ate badly in Chete; we were even introduced to some of the specialities of the bush by the scouts, which included marula nuts from elephant dung, and baobab fruit, which were difficult to knock down from the high branches of the trees, but could be made into a very tasty, tart porridge when mixed with sadza.

Transect Nine: 21st to 24th August

Will and Nick were due to do the next transect, whilst Richard and I remained at Chintambwe after the Chessa's departure. This bay was situated about 4kms from Chete Gorge, and was to be a camping site of ours more than once. It was particularly memorable, with huge boulders scattered on the shoreline, amidst which we made a cosy camp. Opposite we could see Chete Island, very close to Zimbabwe, but actually part of Zambian territory. Huge numbers of elephants are concentrated on this island, and we could see them every evening coming down in droves to drink.

On their first day walking, Nick got charged again, but this time by an animal much smaller than a rhino: a duiker (antelope)! It darted out of a thicket straight at him, going very fast, and could have done some serious damage if he hadn't had the presence of mind to leap aside. They also surprised some female kudu, at a distance of only 8m. By late on their first evening, they still had not found water, the expected water source having turned out to be dry; by following fresh elephant spoor,

they eventually located a small muddy pool in the Lui River, 5m by 3m, which a crocodile inhabited in spite of its size.

By now the temperatures were definitely getting much hotter, and they had to walk much earlier and later, in order to avoid the worst of the heat. Also a new kind of terrain was emerging: reedy grass hiding sharp pointed rocks that were impossible to walk on, and which game would be very unlikely to inhabit in any case. Hitting Brachystegia country again with great relief, they were back at the lake again on the morning of their fourth day.

Before moving downshore, Richard and I had had a pleasant few days at Chintambwe with Caleb, seeing some excellent game. From the canoe we watched bull elephants at close quarters, drinking water and communicating with wierd, deep rumblings. Likewise, we saw warthogs rootling for food near the shore, and small herds of kudu. Herds of impala were often sneaking down to the water alongside the campsite, and then starting off with frightened snorting when they caught our scent. We were particularly surprised at 9 o'clock one night to hear a whole herd of buffalo come down to drink about 30m from our camp. When we went to investigate, they stampeded back into the bush like a herd of wary cattle. Perhaps the most endearing inhabitants of Chintambwe were the numerous five-lined skinks, yellow striped lizards that used to creep out in the early morning sun to bask on the enormous rocks.

We moved the camp in two halves, late in the evening, and early in the morning, to Matusi, where we met the incoming walkers. This campsite was especially noticeable for its huge termite mound, a towering pinnacle of red earth around which we scattered our possessions.

Transects Ten and Eleven: 25th to 30th August

Richard's ankle, which he had actually sprained badly barely a week before the expedition was due to start, was playing up. So we decided that the rest of us should do another double transect, since the last one had worked well. We spent a few days getting the speedboat again, as we would be moving into the Sengwe River soon, sorting out scouts, and in Will and Nick's case resting.

On Monday, Nick headed off with Caleb, whilst Richard ferried Will, Sergeant Million, and myself south to their transect line. He had planned to spend a few days on Kangamani, a small island which is known for its high density of bull elephants that instinctively seem to know they will be safe there both from the poachers' and the hunters' bullets. He was unfortunately further incapacitated at this stage by a bad steam burn on his hand, the

inevitable result of cooking over a campfire for two months, and had to have it bandaged up for over a week. Over the next few days he was accompanied by Maketo, who had been with us at the beginning of the expedition. Whilst on Kangamani, he very nearly lost the canoe to some rather zealous safari operators from the neighbouring Forestry land, who thought it might have been left on the island by poachers!

Will and I finished our transect in a very quick 2 days: the distances got much shorter towards the eastern side of the park. On the evening of the first day, 1km from the boundary, we found the third rhino skull, and near it a used cartridge. The second day the walking was extremely fruitful in terms of spoor, as we crossed several large river beds, and reached the Sengwe River which forms the eastern boundary, and is a real congregation point for game. For the first time we hit a piece of ground that was physically impassable, and had to make a substantial detour.

Richard met up with us on his way to Sengwe from Kangamani on the third morning. The three of us piled into the speedboat, along with all the gear and the two scouts, and we chugged slowly round the peninsula and up the Sengwe River. This river is very distinctive with its meandering course, which doubles back on itself, and floods over the flat grassland. Clumps of salvinia weed and green grass float on the surface of the water, whilst the birdlife is exceptional. Carmine bee-eaters, brilliant in their red, pink and blue plumage, perched on tree branches, and a Goliath Heron stalked along the shore. Our campsite was on an island, which had become re-linked with the mainland as a result of low water levels. An astonishing 28 hippos inhabited the nearby waters, staring with suspicious eyes as we moved in. Maketo and Million surpassed themselves as fishermen, catching 39 bream in a few hours!

Nick arrived back the next morning with quite a story to tell. On the first morning of their walk, Caleb left his radio at the spot where they had their morning rest, and had to turn back for it at lunchtime. Nick decided to rest and wait for him, somewhat unwisely as it turned out, as by dusk he had still not turned up, and Nick was facing the prospect of camping alone. Fearing that Caleb might have got hurt he shouted repeatedly, and was finally rewarded just as it was getting dark, when he heard whistling. Caleb had got lost! The truth was that Caleb had only been transferred to Chete two months ago, and the territory was still relatively new to him. The second morning both of them set off together to relocate the radio, so that it was 9.30 before they were back on track again. They managed to reach the boundary that evening, and pitched camp in a fairly flat spot. Here Nick was charged by his third species of animal - 2 male impala passed him

within inches as he jumped behind a tree! The next day, they arrived at the lake, but they could not get into radio contact with us, and so had no idea where we were based on the Sengwe. It was only on their fourth morning, after 4 hours walking, that they finally located us, just sitting down to a leisurely breakfast at about 10 o'clock!

Twelfth Transect: 31st August to 1st September

Will and I undertook the first part of this transect, which was cut off from the rest by a bend in the Sengwe. Meanwhile, Richard and Nick pottered in the speedboat, sighting elephant, kudu, impala, baboon, and bushbuck. The next day Nick and Will continued the twelfth transect, whilst Richard and I followed them out that afternoon to make a camp inland. There was a narrow strip of land up in the south-western corner of the park which necessitated three short transects, so we planned to do them in three groups the following day.

In the event, this last walk was one of the most tense, because we came across extensive Zambian poacher spoor on all three of the transects; it was fresh and we thought the poachers might still be around. It was curiously frightening to be suddenly suspecting the heavy silence around us and to be seeing every tree and rock in terms of a potential hiding place. Immediately we had finished our transects we headed back to the Sengwe River, which the poachers appeared to be making for, and where we had left the speedboat in an obvious position. Poachers are famed for stealing likely getaway vehicles. On our way we discovered that the poachers had actually stepped on some of our footprints of the previous evening, and must have guessed we were in the vicinity. It was amazing to see how the scouts switched into an anti-poaching mode, walking fast, apart, and silently. Luckily we found our boat still safe, but the poachers were unfortunately never located.

Tying Up the Loose Ends: 2nd to 10th September

The twelfth transect concluded the walking part of the expedition, and in the last week, we had time to do a bit of gameviewing, reading and swimming. We returned to Chintambwe for a few days, where I developed conjunctivitis, and eventually had to be taken back to Norman's house to get out of the dust and bright light. Will and Nick went back to Hondwa Bay opposite Sanumomba Island, which had been one of our favourite game spots, with a particularly high rhino concentration. They saw the last rhinos of the expedition, a rhino cow and calf coming down to drink on Jota beach.

The last few days in Chete were completely taken up with cleaning and sorting out kit, making lists of equipment left in Chete for the use of the scouts, and finalizing information from maps and reports that we would not later have access to. Norman was very helpful in checking over some of our data, and advising us. The day we left there was another burst of poaching activity in Chizarira, the neighbouring National Park, and the Chete scouts were called in to apprehend the poachers (see Poaching in Chete). So it was on a note of high drama that we said our farewells to them, to Norman, and to what had been our home for 2 months. We left on the ferry, which goes from one end of the lake to the other every 2 days, and which passed Chete at 11pm. We were all extremely sorry to leave, having without exception found the project an enriching and educative experience. We were especially pleased to be able to leave with the feeling of having accomplished what we had set out to achieve.

Written by Nicola Dorward

SCIENCE REPORT

Study Area

Chete is designated a hunting area extending over 1081 km^2 in north Matabeleland. Its north-western border is formed by Lake Kariba. There are 3 seasonal river systems which provide water in the form of pools in the dry season (July - October).

Vegetation

Most of Chete is covered by mopane *Colophospermum* woodland or scrub. Areas of *Brachystegia* spp. occur on raised ground. The northern half of Chete has a relatively high density of baobabs which are very infrequent in the south. *Combretum* bush is often found on steep slopes and gorges. Acacia species are uncommon and are found mainly in shrub form. Open grassland areas are limited in Chete to the lakeshore where they are heavily grazed. The southern half of Chete is more open due to the mature mopane woodland with a good grass cover. There have been no recent burns in the area and this may allow bush encroachment, which is also suggested by aerial photos.

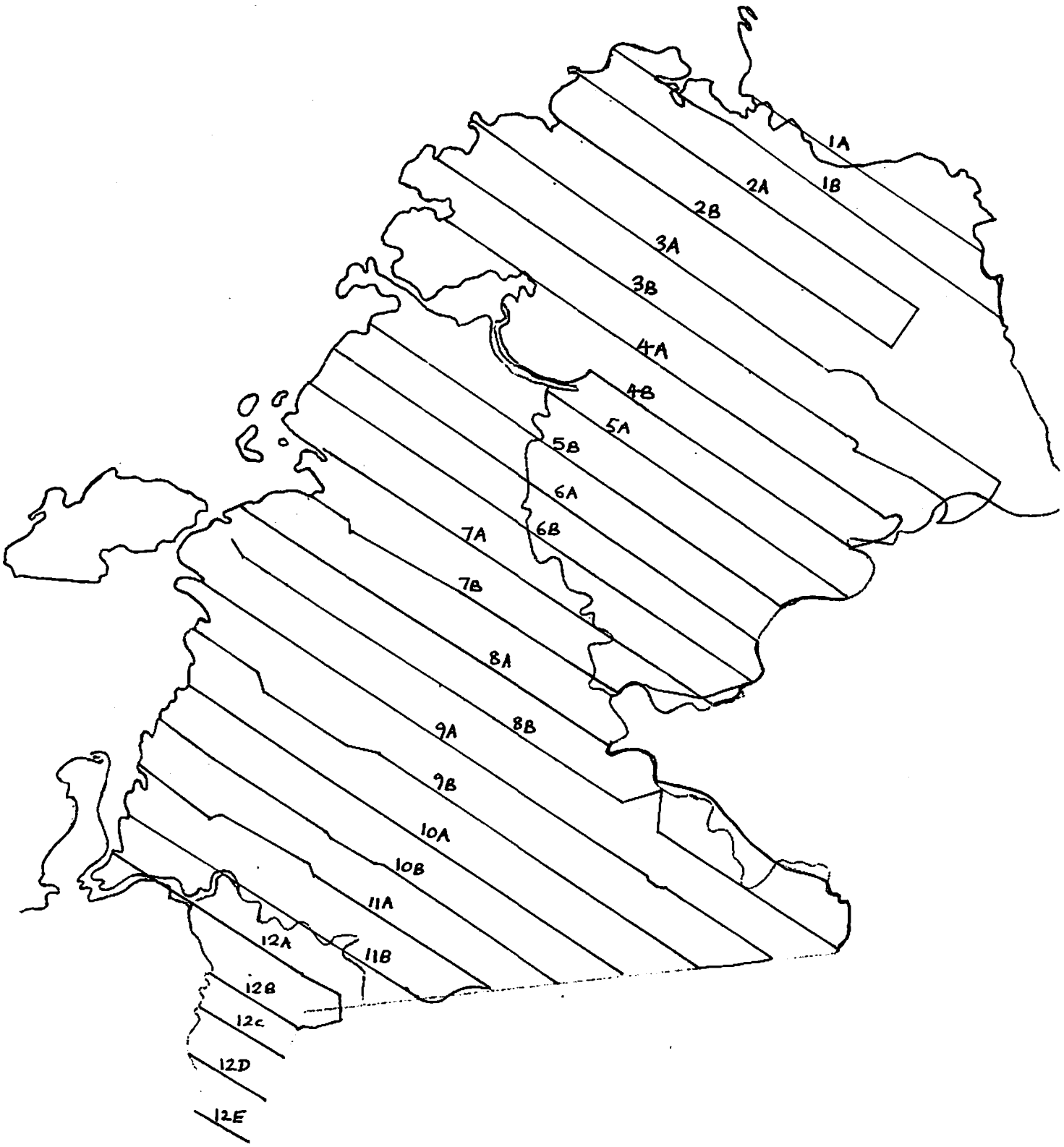
Methods

Transects

The transects were walked between the 16th July and the 1st September. Parallel transects were chosen to follow a bearing roughly perpendicular to the lake and cutting the main gamepaths (figure 3). These covered the whole park at 2 km intervals. With few major landmarks and very low visibility we relied strongly on compass "dead reckoning". It was surprising how accurately we could follow this bearing and reference to roads, rivers or hill-tops showed we were usually only 100 to 300 m away from the transect line after 10 km. Transects were drawn irrespective of contours and other features which often meant difficult routes had to be followed. Following gamepaths was avoided to prevent biasing the results. The distance along the transect line was measured by pedometers which count the number of strides taken. This provided a relative rather than actual distance. Their accuracy varied according to terrain and so required recalibration.

The total distance of transects covered was 554 km in 12 return journeys to and from the lake, each taking aproximately 3 days.

Figure 3: Transects walked - Total 554 km.



Data collected on transect

The distance from the observer to every large mammal sighted was measured using a split-image rangefinder and the angle from the line of transect by a compass. Thus the perpendicular distance from the transect line was calculated. All spoor less than 24 hours old was recorded and group size estimated to produce the relative distribution maps (see below). This was done by dividing Chete into 2 km squares. The number of spoor seen in a square was divided by the distance of transect covered (see figure 4) to give an index of animal density accounting for effort in each square. The number of spoor seen was used to produce spoor seen per km figures.

All signs of rhinos were recorded, including spoor (tracks), middens (communal dung-piles), scrapes and urine sprays. The game scouts aged the spoor and middens and only those which were less than one week old were used in the final analysis. The maximum diameter of the forefoot was measured to distinguish individuals. The scouts attempted to sex the spoor according to the relative depth and width of the toe impressions. This is as yet an untested method of sexing but since the criteria was constant between scouts we used this as a method of distinguishing two types rhinos on their foot form rather than sex. We have called them type 1 and type 2. We have used these data to produce both a population estimate and relative distribution maps.

Water present in springs and drying river pools was mapped.

Lakeshore studies

1) All animals seen at each base camp (usually 3 days) were recorded including distinguishing features such as herd structure and sex ratios.
2) Additional rhino spoor measurements were made.
3) A survey of elephant damage on baobabs was done. This species can be used as an indicator of elephant over-population.
4) Used and disused fish eagle nests were counted.
5) A bird checklist was compiled.
6) Island studies were undertaken.

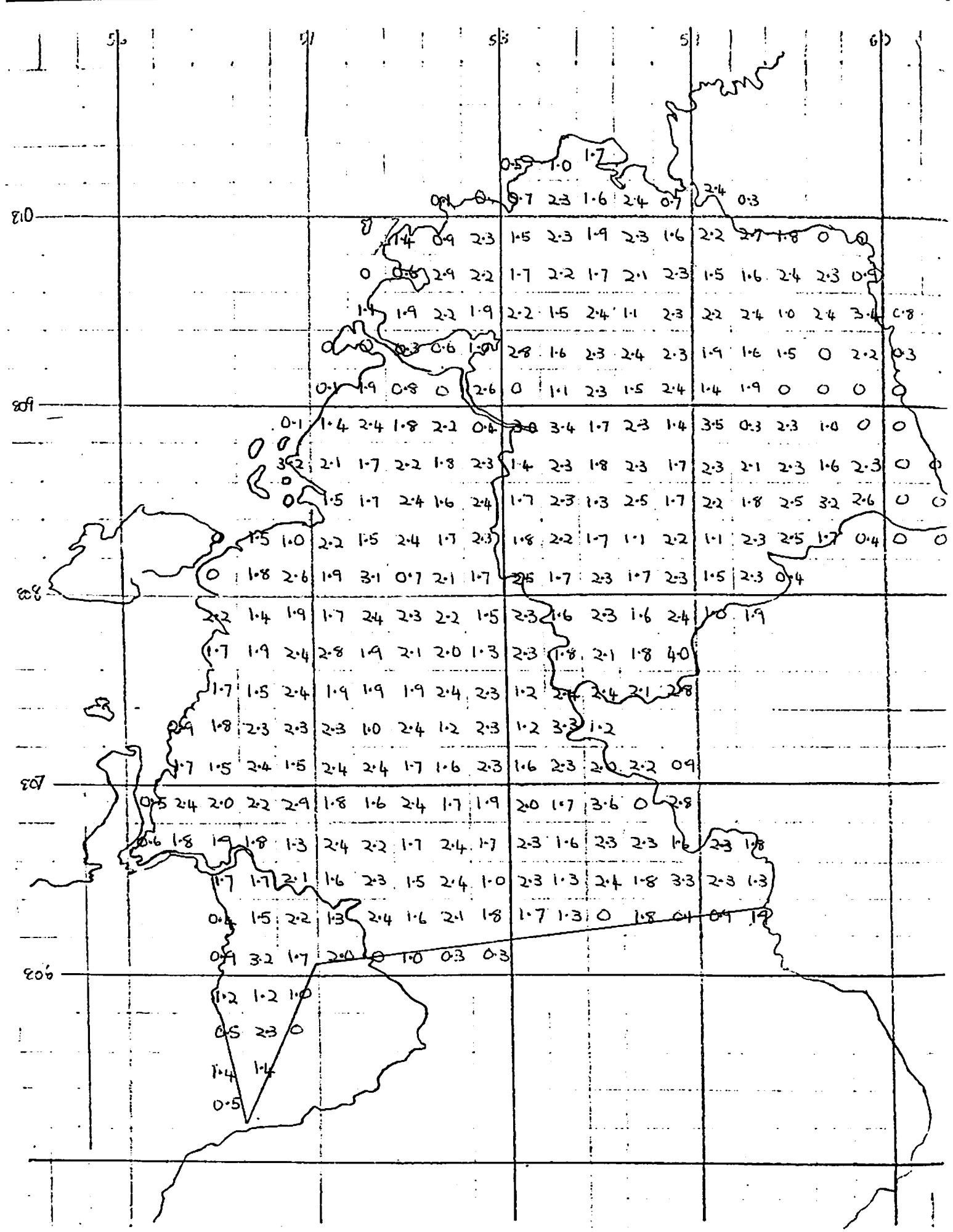


Figure 4: Two km squares and transect length within each.

Results

Rhinos

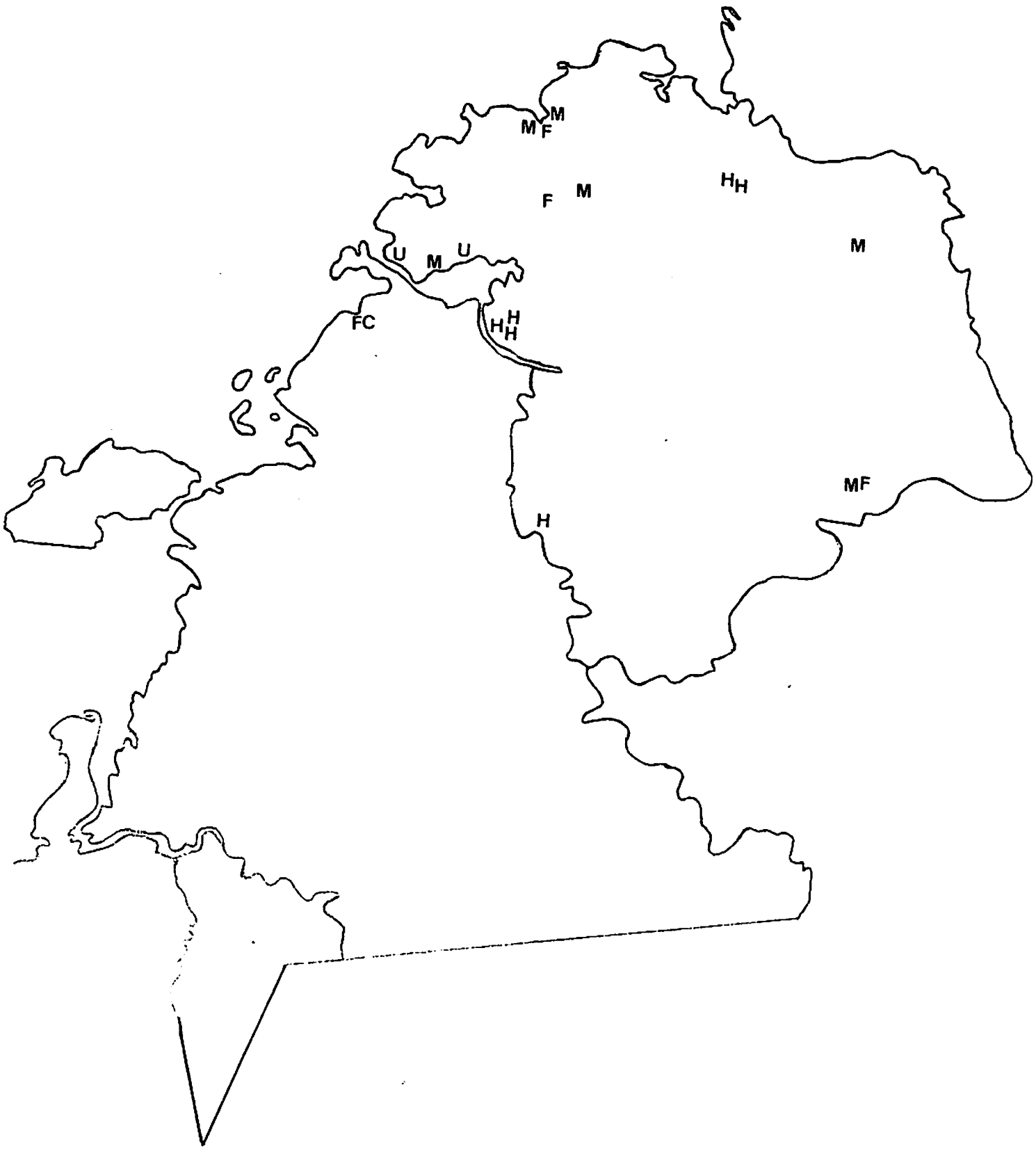
We made only 5 sightings of rhinos on the transects (figure 5). This low sample size dictates that an estimate of numbers from the sightings is not possible. We therefore made an estimate of the rhino population from the spoor which we cut, using the following assumptions:

1)Accounting for variations in soil we estimate the spoor could be measured to an accuracy of 3 cm. Footprint size from the same rhino can vary by 1.5 cm between left and right.

2)The sexing of spoor by the scouts may or may not have been accurate but since they were consistently using the same criteria they could distinguish between rhinos. Instead of categorizing these distinctions into genders we have allocated them type 1 and type 2.

3)Any two rhino spoor not distinguished by the above were the same unless they were more than 4 km apart. This assumption is based on an average range of 16 km^2 for a rhino in woodland habitat (Leader-Williams in Luangwa Valley in Zambia, personal communication 1990). Range sizes vary between individuals, sexes and seasons, so 16 km^2 is not an absolute figure, only our best estimate. However it may under-estimate the total because rhino ranges are known to overlap, the females' more extensively than the males'.

Figure 5: Rhino sightings off and on transect. M = Male, F = Female, U = Unsexed adult, H = Rhino heard, but not seen.



Population estimate from spoor:

Unclassified spoor:

fore spoor width(to nearest cm)	Number seen
unmeasured	2 (21)
18	(1)
20	(2)
21	1 (1)
22	1 (1)
22.5	(1)
23	1 (2)
24	(3)
24.5	1
25	(2)
26(hind)*	(1)
29*	(1)
Total	6 (36)

(Numbers in brackets refer to rhinos eliminated according to the outlined assumptions)

* These are exceptionally large spoor widths compared to recordings made elsewhere. The 29 cm foreprint measure was, however, made on a firm substrate.

Type 1 spoor:

Mean spoor width=22.6cm

fore spoor width(to nearest cm)	Number seen
unmeasured	3 (5)
18	2
18.5	1
19	2 (1)
19.5	(1)
20	3 (2)
21	1 (3)
21.5	1
22	5 (9)
22.5	(1)
23	5 (4)
23.5	2 (1)
24	4 (14)
25	(2)
26	2 (1)
Total	31 (44)

Type 2 spoor:

Mean spoor width= 20.7cm

fore spoor width(to nearest cm)	Number seen
unmeasured	(2)
16	1
18	2 (2)
18.5	(2)
19	(8)
19.5	(1)
20	5 (8)
20.5	(1)
21	4 (4)
21.5	2
22	2 (6)
22.5	(1)
23	4 (2)
24	2 (1)
25	1
Total	23 (38)

Mothers with calves:

fore spoor width(to nearest cm), mother + calf	
unmeasured	1 (3)
- + 11	(1)
- + 14	(1)
- + 15	(1)
19 + -	1
19 + 17	1
20 + 17	(1)
21 + -	(1)
22 + 14	(1)
22 + 15	1
23 + -	1
23 + -	1
23 + 17	1
23 + 17.5	(1)
Total pairs	7 (10)
Total	14 (20)

Rhino population estimate: 74

A population estimate was also made assuming a greater accuracy in measuring spoor. Assuming an accuracy 1.5 cm instead of 3 cm, but with the same range size of 16 km^2, the population estimate was 115.

Rhino distribution from signs

In areas of high rhino density spoor and middens were encountered frequently and their abundance can be used as a measure of relative rhino density within Chete. The number of spoor correlates with the number of middens and sightings but the exact relation to population size is unknown. Chete was divided into 2 km squares. The number of spoor and middens seen in a square was divided by the distance of transect covered (figure 4) to give an index of rhino density accounting for effort in each square.

Maps of spoor density, midden density and density of all rhino signs less than one week old are shown in figures 6, 7 and 8. These maps show a higher density of rhinos in the northern part of Chete with particular concentrations around Ruzirukulu Bay (the bay of the Lwizilukulu River), Hondwa Bay and Kasanza Springs. The south of the area has a relatively lower number of rhinos and a large portion of the south west of Chete was devoid of rhino signs. All 13 sightings of rhinos were in the north of Chete including 4 in Ruzirukuru Bay and 3 in Kasanza Bay (see figure 5).

This distribution cannot be accounted for by a lack of water since there were more springs (S) and river pools (P) in the south than the north (see figure 8 and 9). The 2 km squares with the highest density of rhino spoor were either by the lake or near a watersource, but there were many areas with adequate water supply, especially in the south, without any rhinos. The reason for the present distribution of rhinos in Chete is discussed in "Poaching in Chete" below.

Figure 6: Distribution of rhino spoor per km of transect.

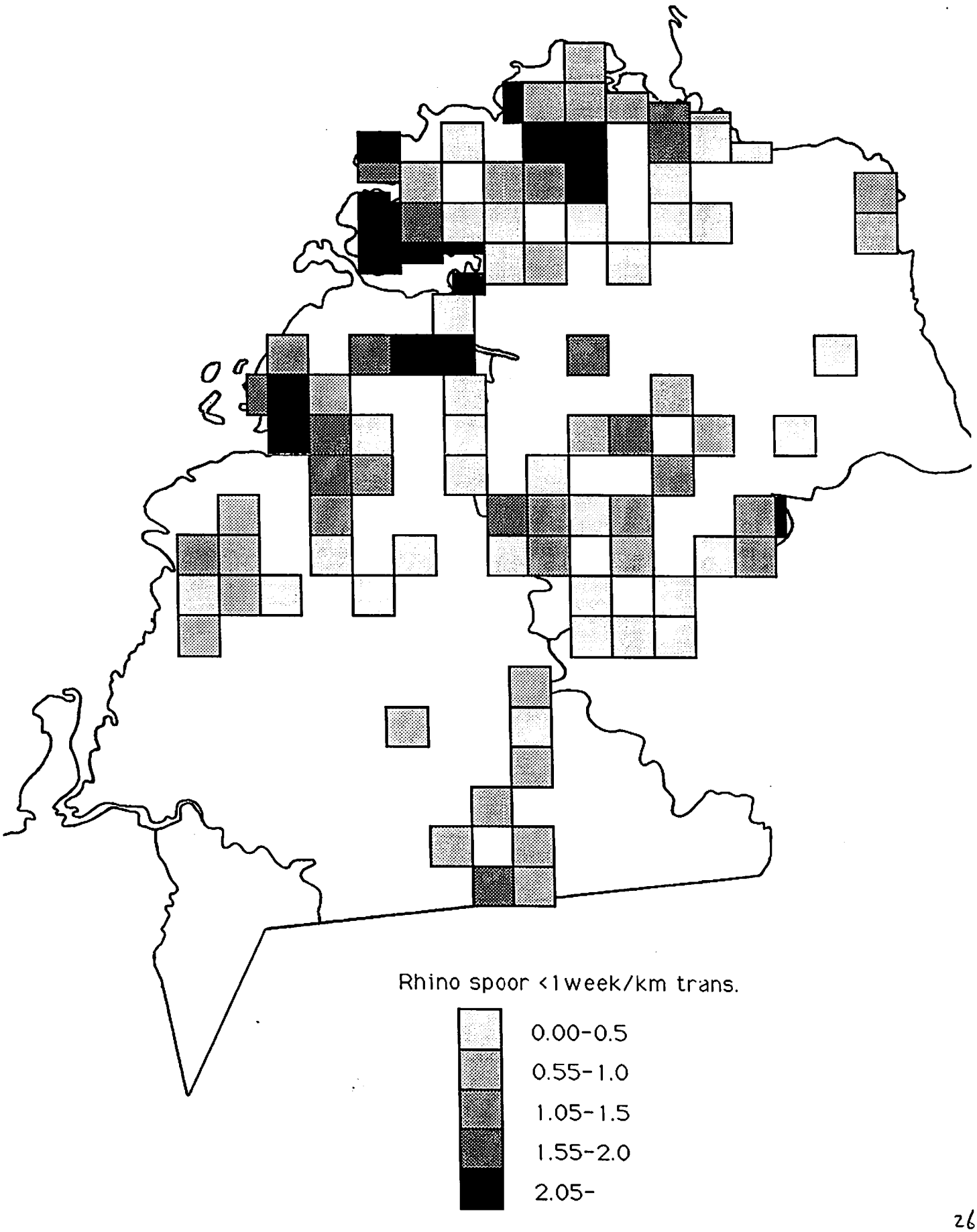


Figure 7: Distribution of rhino middens per km of transect.

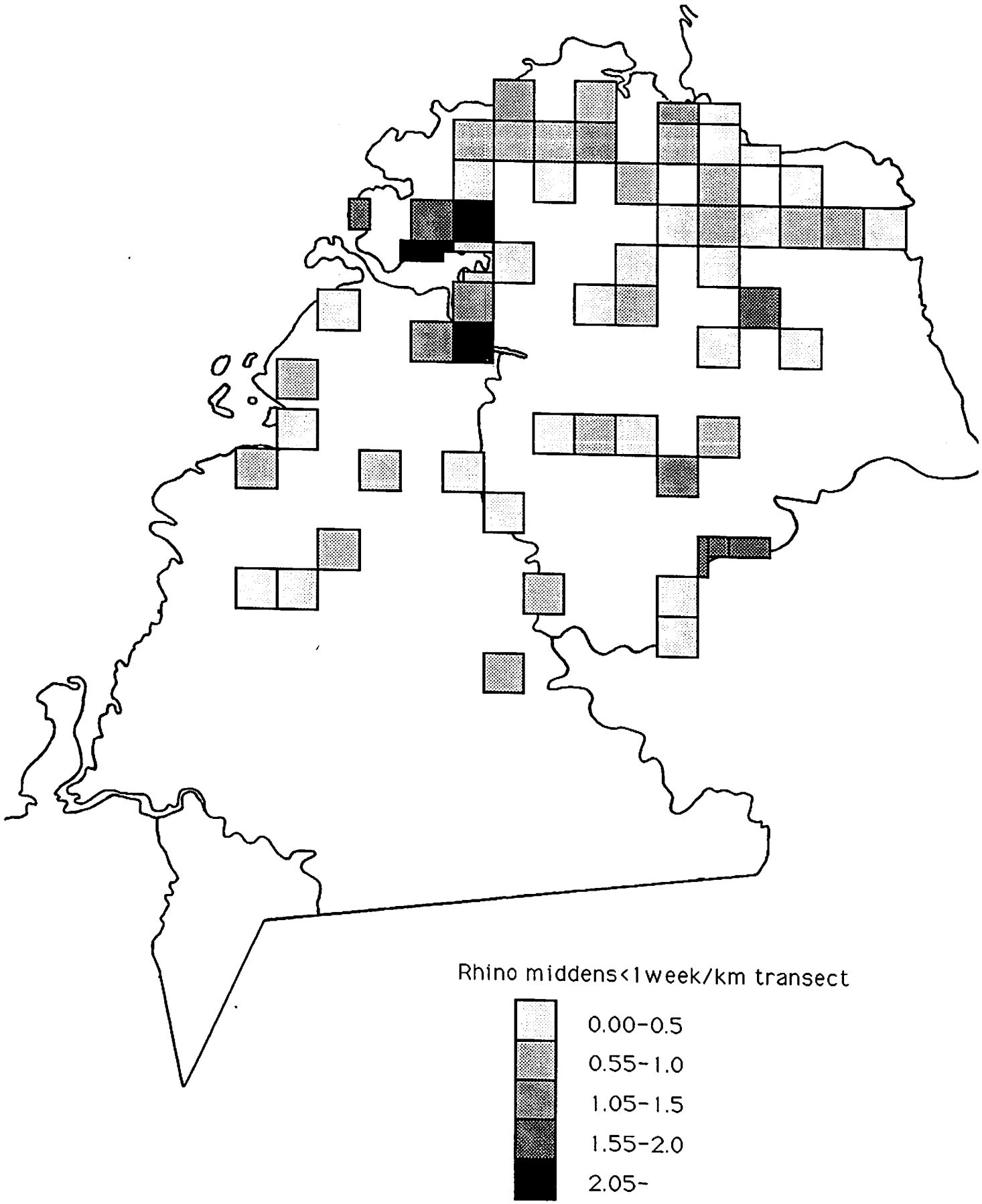
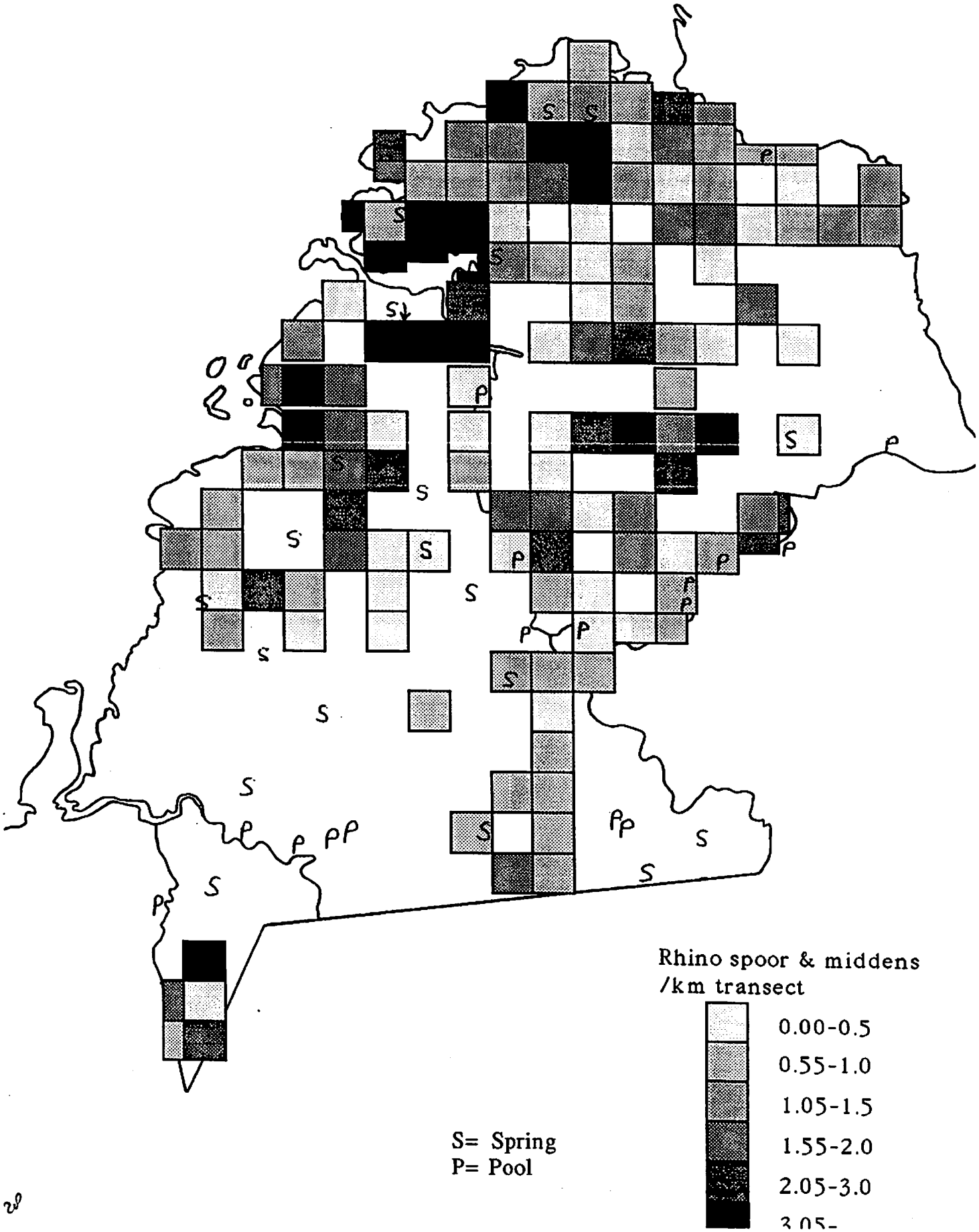


Figure 8: Distribution of all rhino signs per km of transect.



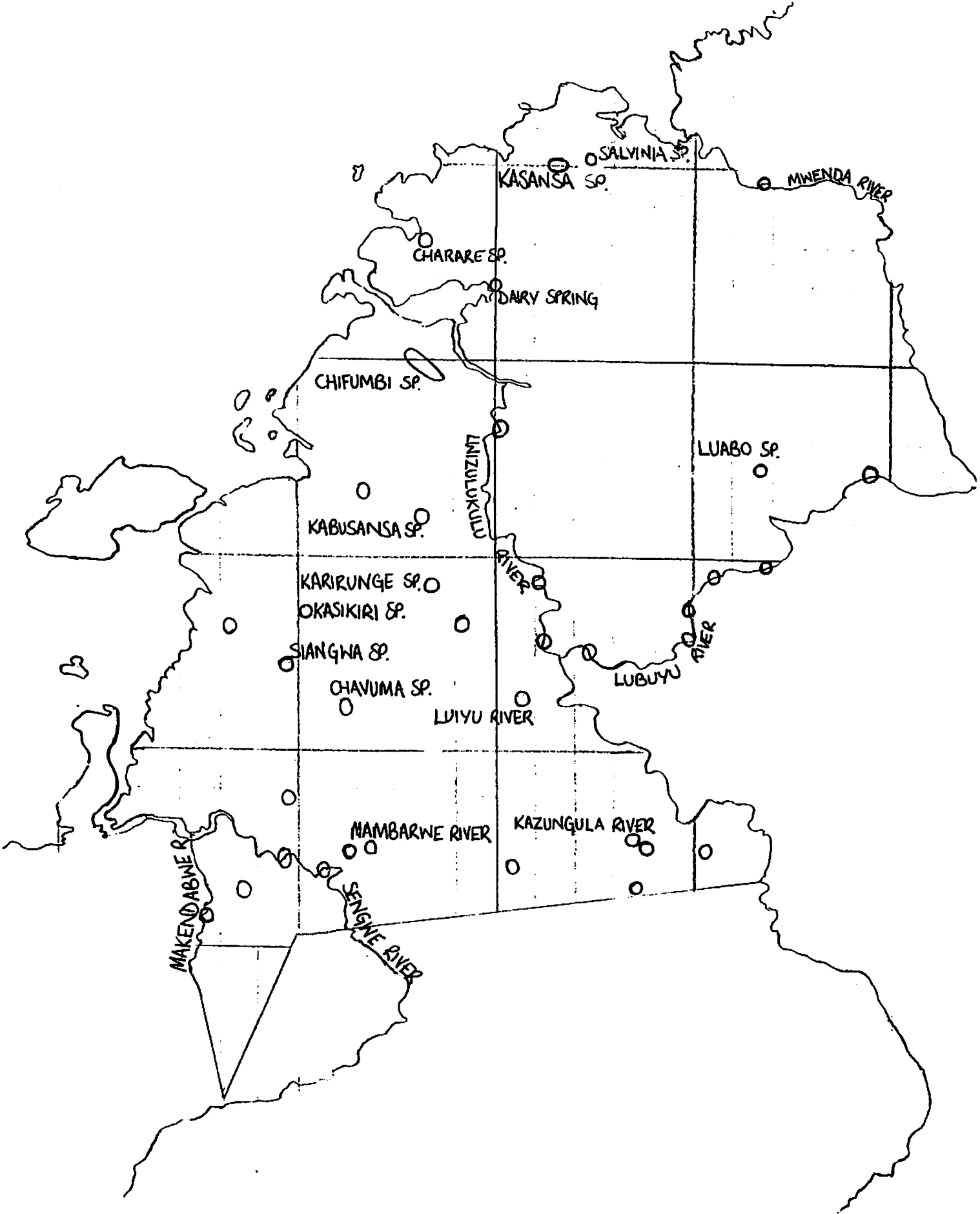


Figure 9: Water distribution in Chete.

Poaching in Chete

Rhino poaching started in Chete in 1986 and increased significantly in 1988 when 40 rhinos were killed in 2 months. There have been no rhinos known to have been shot since 1989. The absence of recent poaching in Chete is mainly due to the committment and motivation of the scouts on their anti-poaching patrols. These consist of 10 day foot patrols deployed by landrover or speedboat. The latter is highly effective in Chete, due to the very poor roads. The threat to rhinos comes from Zambians crossing the lake carrying AK 47's. The Chete scouts have identified 65 carcasses from 1986 to 1989. Over our transects we only found 3 previously unknown carcasses.

The distribution of rhino carcasses (figure 21) shows the reason for the large difference in rhino densities within Chete. Poaching activity in 1988 and 1989 was almost entirely confined to the south of Chete and this has affected the present distribution. The spoor and midden maps (figures 6, 7 and 8) show a negative correlation between the present densities and the extent of previous poaching.

The reason that the rhino poaching has been concentrated in the south of Chete may be the proximity of the Zambian international border which follows the old Zambezi river bed through Chete Gorge. At its closest the border is a few hundred metres away from Chete Safari Area and although mainland Zambia is 20km away, Chete Island is within swimming distance. In fact the most successful anti-poaching operation in Chete was apprehending poachers attempting to swim across Chete Gorge. To date 15 poachers have been shot by Chete scouts and 6 more captured. However our results highlight the fact that there is still a vunerable population at high density in the northern part of Chete. This could easily be eradicated if the poachers turned their attention to it, as has happened in the south.

Graph 1 was produced from Chete records: Poaching activity is taken as the sum of killed, escaped and captured poachers. It shows a correlation between poaching activity and rhinos killed

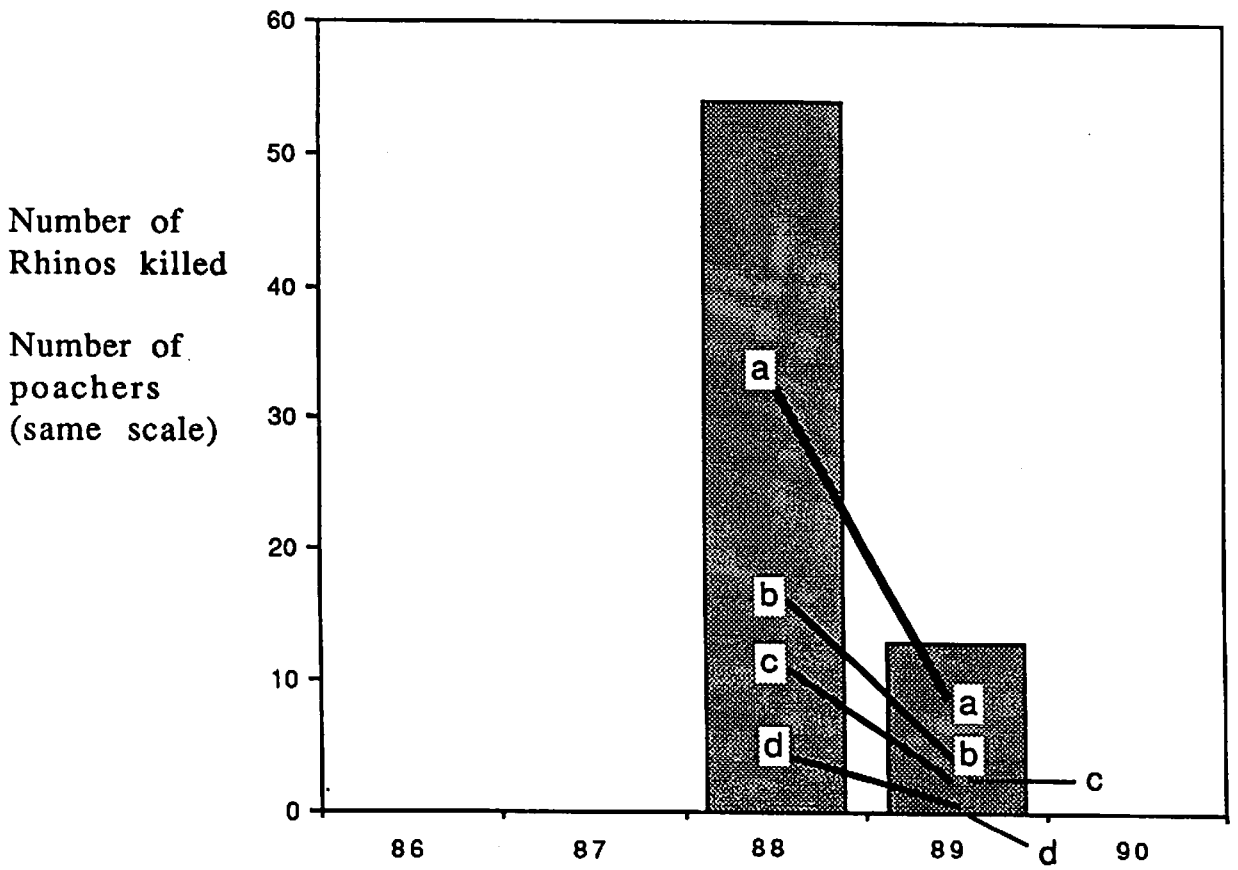
We found a large cable snare set at a height to trap a rhino on the Siabuwa boundary, formed by the Lwizilukulu River. This was probably set by a Zimbabwean from this communal land. Up to now very little Zimbabwean rhino poaching has been reported.

On September 1st we found fresh human tracks at repeated sites in the south-eastern corner of Chete. These were made by 2 Zambians probably returning from Chizarira, who were never apprehended despite several ambushes being set up.

On September 10th 6 Zambians were seen in the Lwizilukulu Gorge of the Chizarira escarpment shooting at a herd of elephants. No Chizarira scouts were available so the Chete scouts were immediately dispatched and drove by Landrover to Chizarira. Out of a group 6 they shot 4 dead, wounded 1 who was presumed dead and 1 was later captured by Zimbabwean police.

Meat poaching is not a pressing problem in Chete at the moment. We did find 1 game bird trap near the Siabuwa boundary and 1 wire snare by the Sengwe; and saw 2 fires on the 5th transect which were probably started deliberately to produce a 'flush' of grass to attract game. There is increased habitation along Chete's eastern boundary with cultivation along the Lwizilukulu river bank and one herd of goats was seen inside Chete. Other evidence of population pressure was from many human paths there.

Rhino poaching and Poaching activity



a = poaching activity (b+c+d), poachers: b = escaped c = killed d = captured

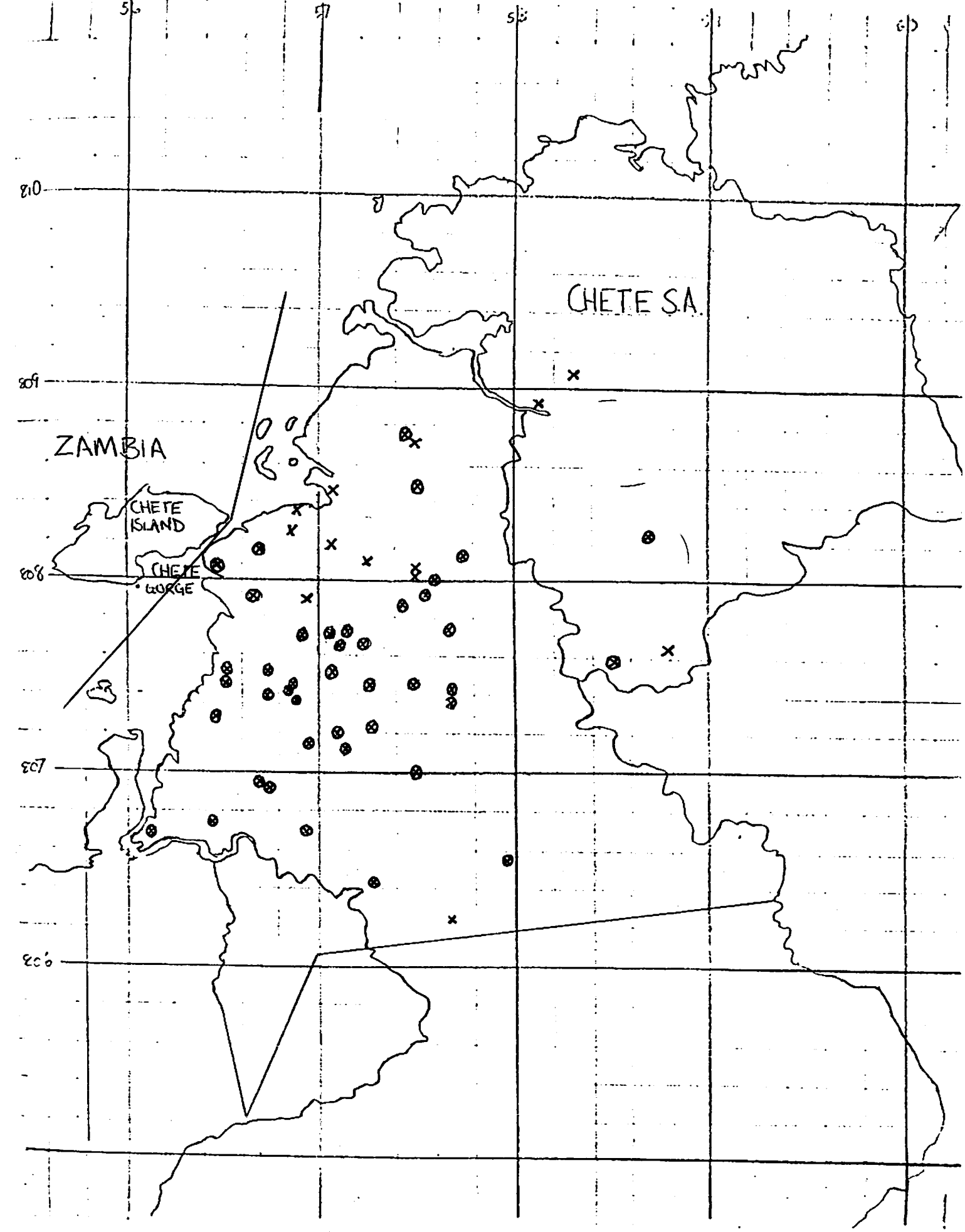


Figure 21:Location of rhino carcasses.

Future Developments

It is proposed by the National Black Rhino Conservation Strategy to concentrate *in situ* protection in ten designated areas in Zimbabwe, for example Chewore Safari Area and Chizarira National Park. Rhinos in the remaining areas will be translocated either to safer sanctuaries (many of which are private ranches) as viable breeding nuclei or to overseas captive breeding programmes. A viable breeding nucleus is considered to be 50 non-related effective breeders from which the population can expand to over 200 through unrestricted breeding. These sanctuaries are enclosed by high voltage electric fencing to keep rhinos from wandering and poachers out.

Chete is not designated a rhino stronghold for *in situ* protection and so it is planned to translocate the rhinos out of the Safari Area. The translocation was delayed to mid-September, so that by the end of September only three had been captured by Umtshibi capture unit. We were able to help the translocation by giving preliminary results to Warden Takawira and Dr Mike Kock in the form of grid references of rhinos on the boundary of Chete, which are more at risk. Rhino populations near the main camps of Siantura amd Chete Gorge will be left for the time being. To date 30 rhinos have been captured.

Hunting

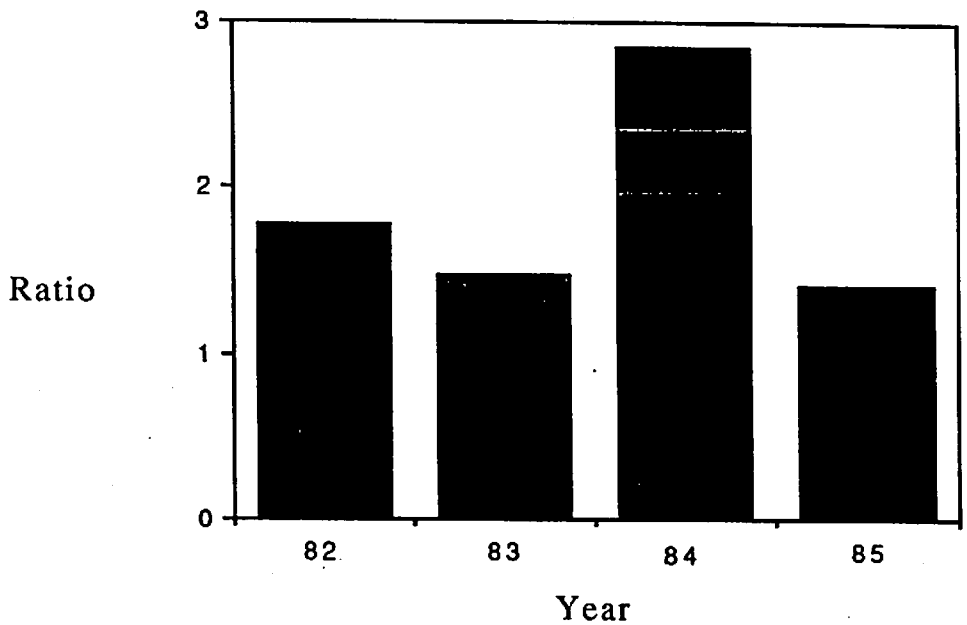
Chete is designated a Safari Area which allows strictly controlled professional hunting within it. Due to Chete's rugged and inpenetrable nature it is unsuited to tourist game-viewing so hunting maximises wildlife utilisation in the area. The hunting consession is presently held by Bembesi Safaris, who run one or two hunting parties most of the time between April and December. The hunting clients come from America and Europe and pay a daily rate plus a trophy fee for each animal shot.

Scout Records

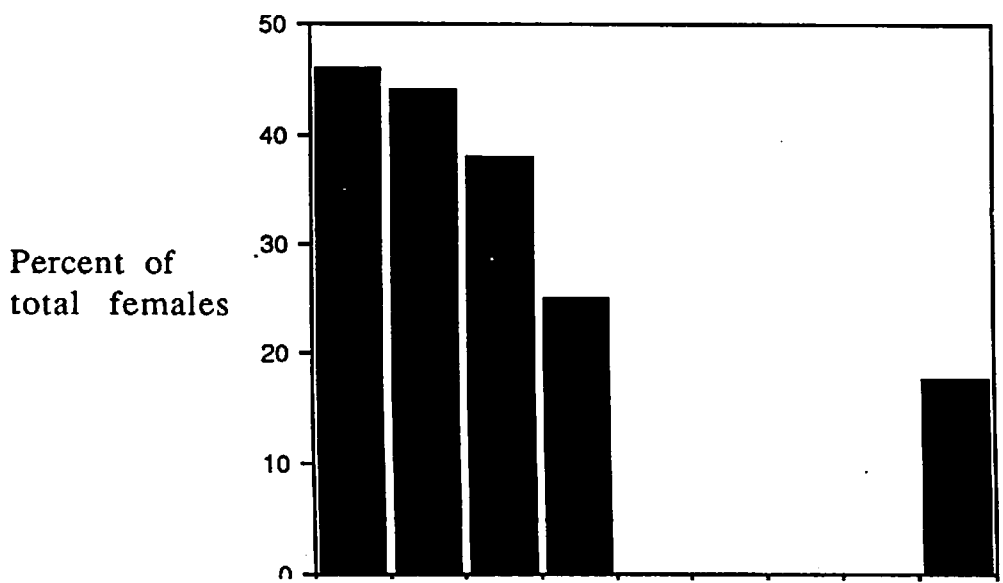
These graphs were made from scout patrol records based on rhino sightings. Graph 2 shows the male to female ratio from 1982 to 1985 which has a mean of 1.7.

Graph 3 shows the decline of the proportion of females with calves within the female population. The 1990 results are from our survey and are based on spoor. This decline from 1982 to 1985 may be due to the severe drought during this period. Assuming the result from spoor is comparable, the1990 figure is low. One might expect that population growth would increase in response to a decline in rhino density, however the low numbers of females with calves may be due to the stress placed on the population by poaching or from direct competition with elephants for food. All female rhinos captured in the recent translocation were in very poor condition and unlikely to breed.

Graph 2: Male to Female ratios. n = 254



Graph 3: Females with calves. n = 150



References

Bradley-Martin, E. (1982). Run Rhino Run. Chatto and Windus, London.

Burnham et al.(1980). Density estimates from line transects. Wildlife Monographs, 72.

Davies, J.G. (1972) Operation Rhino. London.

Diller H. & Haltenorth J.(Collins 1980). A Field Guide to the Mammals of Africa.

Goddard, J. (1967a). The validity of censusing black rhinoceros populations from the air. E. Afr. Wildl J., 15:18-23.

Goddard, J. (1967b). Home range, behaviour and recruitment in two black rhinoceros populations. E. Afr. Wildl J., 15: 133-150.

IUCN. (1987). Directory of Afrotropical protected areas.

Kiwia, H.Y.D.(1989). Ranging patterns in the black rhinoceros (*Diceros bicornis* (L.)) in Ngorongoro Crater, Tanzania. Afr. J. Ecol. 27:305-312.

Leader-Williams, N. (1985). Black rhino in South Luangwa National Park: their distribution and future protection. Oryx, 19:27-33.

Leader-Williams, N. (1990). Black rhinos and African elephants: lessons in conservation funding. Oryx, 24:23-29.

Mukinya, J.G. (1973). Density, distribution, population structure and social organisation of the black rhinoceros in Masai Mara Game Reserve. E. Afr. Wildl J. 11: 385-400.

Mukinya, J.G. (1977). Feeding and drinking habits of the black rhinoceros in Masai Mara Game Reserve. E. Afr. Wildl J.15:125-138.

Newman, K. (1983). Newman's Birds of Southern Africa. Macmillan South Africa, Johannesburg.

Player,I. (1972). The White Rhino Saga. London.

Seymour Smith, J.L. & Magadza C.H.D.(1980). Iwaba game ranch census. Que Que group of Intensive Conservation Areas' Game Management Manual.(unpublished)

Du Toit, R.F. (1989) Issues relevant to a national black rhino strategy. Report to the Minister of Natural Resources and Tourism Zimbabwe].

Walker, C. (1987). Signs of the Wild. C. Struik Publishers, Cape Town.

Western, D and Vigne, L. (1985) The deteriorating status of African rhinos. Oryx, 19: 215-220.

For further information contact: Richard Johnson,
Blyth House,
Marnhull,
Dorset, DT10 1JT.