

CHAPTER 5

It was only through focussing on the general predator community that I began to realise the abundance of **SPOTTED HYAENAS** and **WILD DOGS** to be far higher in the north, north-west and western areas of the Reserve than it is in the south. In the south it is only in a small valley on the Tull Lodge property that one can be fairly certain of finding hyaenas.

The whooping call of the spotted hyaena is as much part of the African night as is the roar of the lion or the wail of the jackal. While the distinctive vocalizations of the various African predators facilitates the recording of their presence, their absence is not as easily noticed or confirmed. In particular, subtle differences in densities within the same area are subconsciously obscured by an assumption of pristine conditions. This in turn is reinforced by an absence of immediately apparent evidence of active human interference in the ecosystem.

As the jackal study progressed, I naturally began to ponder over what it was that had induced the jackals to become regular predators of adult impala in the south-central region of the NTGR. In considering their immediate environment I began to realise that potential competitors, in the form of spotted hyaenas, brown hyaenas and wild dogs, were conspicuous by their absence. While lions and leopards are subjected to heavy poaching pressure in the NTGR (Patterson 1988), their presence in relatively high numbers created the impression to the casual observer of a natural predator system. Indeed, the lion is so intimately associated with wilderness and wild places that its very presence seems to imply the converse - i.e. that a true wilderness exists wherever the lion walks. In the case of wild dogs and brown hyaenas in the

NTGR the situation is simple and opposite - both species are extinct.

It was only through focussing on the general predator community that I began to realize that there is an uneven distribution of spotted hyaenas in the NTGR. The abundance of spotted hyaenas appears to be far higher in the north, north-west and western areas of the Reserve than it is in the south-central region. In the south it is only in a small valley on the Tuli Lodge property that one can be fairly certain of finding hyaenas. Through living in the north and studying the jackals in the southern areas over a period of two years this observation became re-inforced by daily experience. As this observation then became incorporated into my explanation for the current predator-prey relationships in the NTGR, it became important to quantify this observation in some way.

As mentioned above, absence is a difficult variable to quantify. Relative absence is an even more slippery subject. As any tests applied were to test an hypothesis, objectivity became a real issue in this aspect of the study.

This chapter is a record of the several attempts made to measure in a quantifiable manner the observed paucity of spotted hyaenas in the south-central region of the NTGR. Each aspect is incorporated in a separate section.

SECTION 1 - DIRECTED OBSERVATIONS

Introduction

Having made the general observation that I was encountering less evidence of hyaenas in the south than in the north, I set about making specific observations to confirm or disprove this observation. During this time of directed observation, what was not seen became as important as what was seen.

Methods and ResultsLion Capture

Lions were captured on nine occasions in the south-central region in order to fit or remove radio collars or to remove wire snares (Patterson 1988). In addition, capture of a wounded lioness was unsuccessfully attempted. Impala, kudu and donkey carcasses were used as bait on different occasions. The carcass was opened and dragged a variable distance and then chained to a tree. Tape recordings of hyaenas feeding were played through horn speakers via an amplifier on some of the occasions.

Hyaenas were never seen on any of the above occasions, nor were any heard to call.

On six similar occasions in the northern and western regions, hyaenas were heard to call on each occasion, and were seen on two of the occasions.

Jackal trapping

Intensive efforts were made to trap jackals in the south-central region. Trapping took place from November 1986 to February 1987, during April 1987, and in February 1988 (see Chapter 3). Traps used included pit-fall traps, noose traps, foothold traps, drop traps and cage traps, all of which required the use of bait which was derived from antelope shot in the Reserve. In the case of the drop trap a wildebeest carcass was used. Attraction of jackals to within range for darting was attempted using an elephant carcass (see Carcass 4, below), two impala carcasses, and a large number of impala remains (skin, bones and viscera) from the impala project.

Despite prolonged activity with attractive (sometimes pungent!) material, only one spotted hyaena was attracted to the jackal trapping activity (see Section 4, below). On no occasion did any hyaena discharge, tamper with or destroy any traps set for jackals in the south-central region of the NTGR.

Elephant carcasses

Carnivore activity at six elephant carcasses, at the sites shown in Fig. 36, were noted. At carcass 1, three hyaenas were observed. They arrived from a westerly direction. At carcass 2 no hyaenas were observed, although prolonged observations were not undertaken. Carcass 3 was closely observed by Patterson for five nights (Patterson, 1988). No spotted hyaenas were seen or heard in the vicinity of this carcass (Patterson, pers. comm.). Carcass 4 was intensively observed every night for five nights from the time it was deposited at this site, and was sporadically observed for a further ten nights. No spotted hyaenas were seen at this carcass. Carcass 5 was

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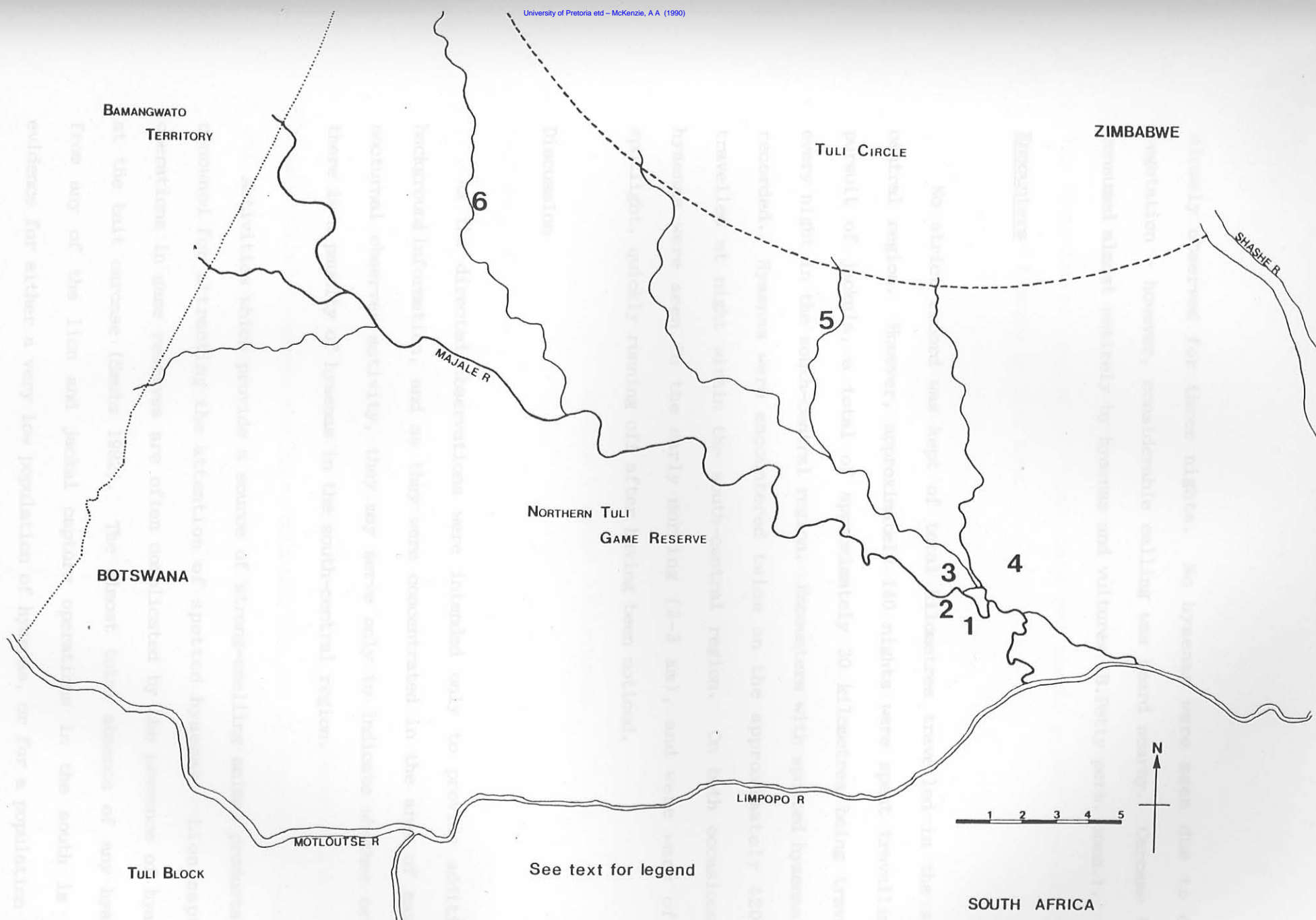


Figure 36. Location of elephant carcasses at which spotted hyaena presence was monitored.

closely observed for three nights. No hyaenas were seen due to dense vegetation - however, considerable calling was heard nearby. Carcase 6 was consumed almost entirely by hyaenas and vultures (B.Petty pers. comm.).

Encounters

No strict record was kept of total kilometres travelled in the south-central region. However, approximately 140 nights were spent travelling in pursuit of jackals, a total of approximately 30 kilometres being travelled every night in the south-central region. Encounters with spotted hyaenas were recorded. Hyaenas were encountered twice on the approximately 4200 km travelled at night within the south-central region. On both occasions the hyaenas were seen in the early morning (2-3 am), and were wary of the spotlight, quickly running off after having been noticed.

SECTION 2 - DENIS AND LATRINES

Discussion

Introduction

As the directed observations were intended only to provide additional background information, and as they were concentrated in the area of maximum nocturnal observer activity, they may serve only to indicate whether or not there is a paucity of hyaenas in the south-central region.

Activities which provide a source of strong-smelling animal products are renowned for attracting the attention of spotted hyaenas. Lion capture operations in game reserves are often complicated by the presence of hyaenas at the bait carcase (Smuts 1982). The almost total absence of any hyaenas from any of the lion and jackal capture operations in the south is thus evidence for either a very low population of hyaenas, or for a population that

is extremely wary of human activity.

The total absence of any hyaenas from two of the elephant carcasses in the south-central region over many days and nights points to a remarkable scarcity of hyaenas in this area.

The low encounter rate serves to reinforce the other observations. The fact that those hyaenas that were encountered were encountered only in the early hours of the morning, and that they were wary of the light and vehicle despite relatively heavy and continuous human activity in this region is noteworthy.

SECTION 2 - DENS AND LATRINES

Discussion

Introduction

Dens

Spotted hyaena dens are sites of considerable activity, and their latrines are a highly visible sign of their presence in an area (Kruuk 1972, Bearder & Randall 1978, Henschel 1986). As physical manifestations which are closely linked to hyaena abundance, dens and latrines are thus useful indirect indicators of the presence of hyaenas. These features were thus used in the present study to obtain an index of relative hyaena abundance in the different areas of the Reserve.

Materials and methods

Personal observations, as well as any reliable reports, were used to plot the sites of active hyaena dens on a 1:50 000 map of the Reserve.

Personal observations were made of hyaena latrines, which were also plotted on a 1:50 000 map. An attempt was made to cover as many of the roads in the Reserve as possible.

Results

Recorded den and latrine sites are presented in Fig. 37. The area of greatest observer activity, and thereby greatest chance of observation of dens and latrines, is indicated with a dashed line on the map.

Discussion

Dens

As den sites were points of active discussion between staff in the Reserve, their presence was very likely to be recorded. In addition, the level of game viewing activity, both day and night, in the south-central region is so high that it is impossible that an active den site would remain unnoticed in this area. It is thus highly significant that no den site, active or inactive, was recorded within the south-central NTGR either by myself or by other observers. The dens recorded in the other areas of the Reserve span a period of several years (1985-1988). As hyaenas do not restrict their activity to any one den site, these recorded den sites do not

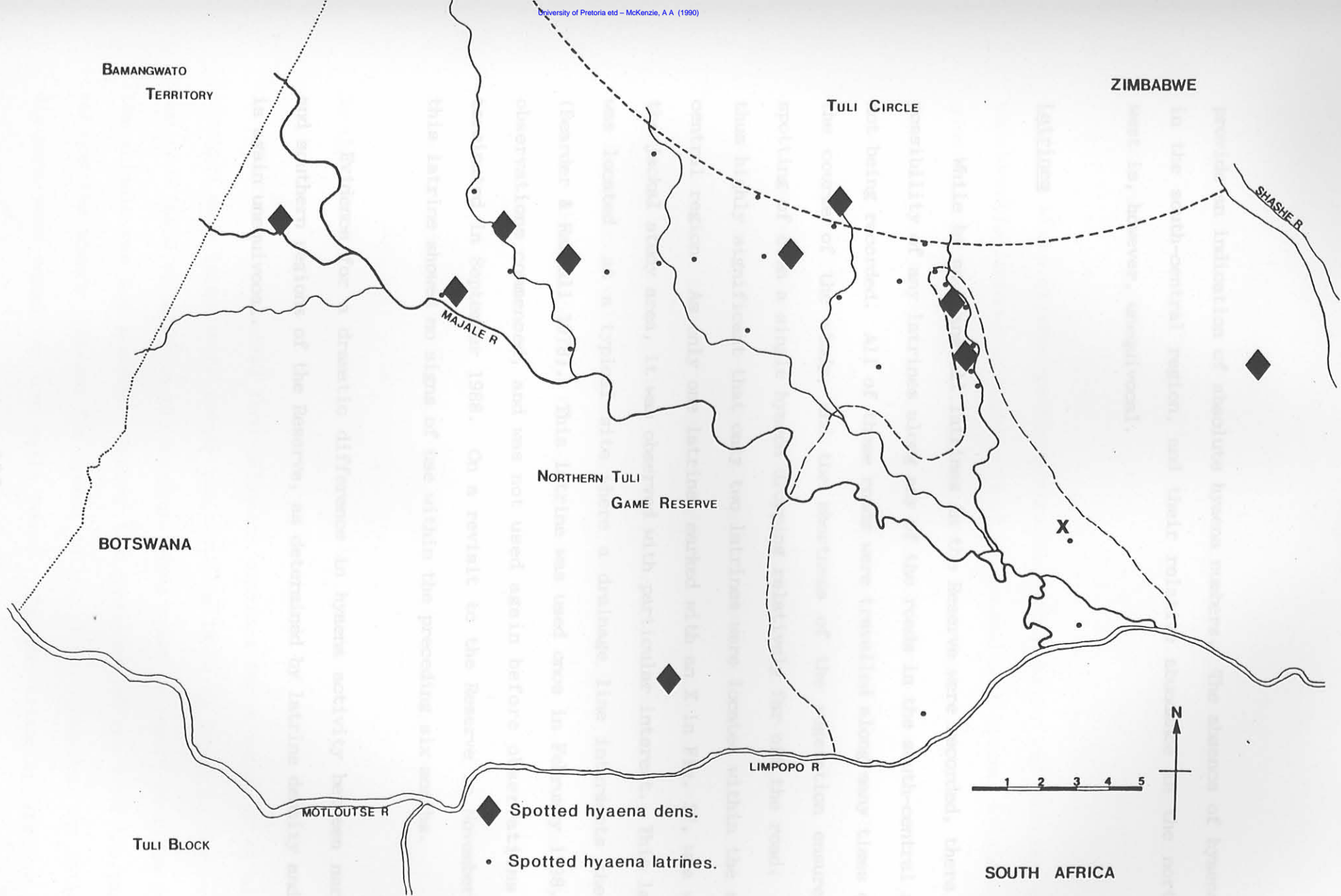


Figure 37. Recorded spotted hyaena dens and latrines: 1985-1988.

provide an indication of absolute hyaena numbers. The absence of hyaena dens in the south-central region, and their relative abundance in the north and west is, however, unequivocal.

Latrines While by no means all latrines in the Reserve were recorded, there is no possibility of any latrines along any of the roads in the south-central region not being recorded. All of these roads were travelled along many times during the course of the study, and the shortness of the vegetation ensures the spotting of even a single hyaena dropping relatively far off the road. It is thus highly significant that only two latrines were located within the south-central region. As only one latrine, marked with an X in Fig. 37, was within the jackal study area, it was observed with particular interest. This latrine was located at a typical site where a drainage line intersects the road (Bearder & Randall 1978). This latrine was used once in February 1988, when observations commenced, and was not used again before observations were terminated in September 1988. On a revisit to the Reserve in November 1989 this latrine showed no signs of use within the preceding six months.

Evidence for a dramatic difference in hyaena activity between northern and southern regions of the Reserve, as determined by latrine density and use, is again unequivocal.

ched from telemetry stations for a total of 44 nights. Bearings were taken every twenty minutes from 18h00 to 23h00 in the evening and from 06h00 to 08h00 in the morning. Time taken to record bearings of all the animals was 5-8 minutes. During the remainder of the time the persons manning the towers listened for hyaena calls. Time, direction and estimated distance were noted for any calls heard. As the telemetry stations were

SECTION 3 - CALL FREQUENCY

Introduction

The whoop of the spotted hyaena is distinctive, and carries over a considerable distance at night. If it is assumed that hyaenas within a small geographical area call at approximately the same frequency, then call frequency can be used to provide an index of relative abundance within that area.

A marked difference in the frequency with which calls were heard in the southern and northern regions was noted on a casual basis. As the obtaining of an accurate index of hyaena abundance was not a priority of the jackal project, precious nights could not be expended on direct personal determination of call frequency both in the north and in the south. For this section, the observations of reliable observers were used to supplement my personal observations.

Materials and methods**South**

Jackals were tracked from telemetry stations for a total of 44 nights. Bearings were taken every twenty minutes from 18h00 to 23h00 in the evening and from 06h00 to 08h00 in the morning. Time taken to record bearings of all the animals was 5-8 minutes. During the remainder of the time the persons manning the towers listened for hyaena calls. Time, direction and estimated distance were noted for any calls heard. As the telemetry stations were

placed on the highest hills within the jackal study area, and as the observers were sitting in the open, conditions were ideal for hearing any hyaena calls. Observers slept within a low walled enclosure, or in the back of an open vehicle. Under these conditions, small sounds were sufficient to wake the observer. Thus all nearby hyaena whoops were heard and recorded between the evening and morning tracking sessions.

North

The community resident at Fika Futi camp (see Fig. 3) was recruited to note whether or not they heard hyaena calls each night. These observations were then recorded by M.Sekoba. With the human activity associated with this camp, and as the observers slept indoors, only calls of hyaenas close to camp were noted.

Results

Hyaena calls were heard both in the north and in the south. The frequencies with which calls were noted in the two areas are summarized in Table 16. The approximate positions of all calls heard in the south are presented in Fig. 38.

Figure 38. Points of origin of spotted hyaena calls recorded from telemetry stations in the south-central region of the NTGR between 01/03/88 and 15/06/88. Outline represents radius of 3,5 km from telemetry stations, within which 95% of calls were heard.

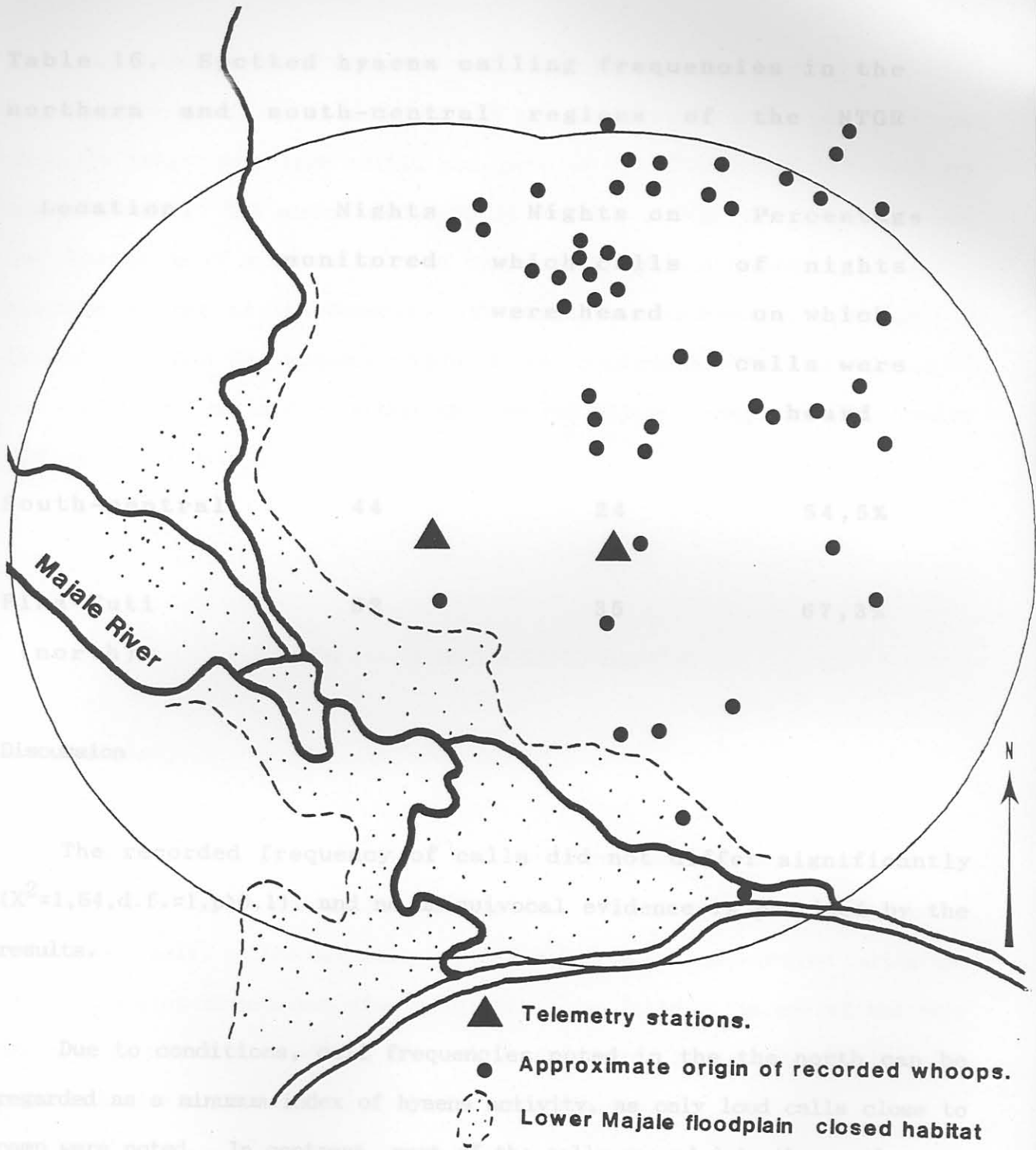


Figure 38. Points of origin of spotted hyaena calls recorded from telemetry stations in the south-central region of the NTGR between 01/03/88 and 15/06/88. Outline represents radius of 3,5 km from telemetry stations, within which 95% of calls were heard.

Table 16. Spotted hyaena calling frequencies in the northern and south-central regions of the NTGR

Location	Nights monitored	Nights on which calls were heard	Percentage of nights on which calls were heard
South-central	44	24	54,5%
Fika-Futi (north)	52	35	67,3%

Discussion

The recorded frequency of calls did not differ significantly ($X^2=1,64, d.f.=1, p>0,1$), and no unequivocal evidence is provided by the results.

Due to conditions, call frequencies noted in the north can be regarded as a minimum index of hyaena activity, as only loud calls close to camp were noted. In contrast, most of the calls recorded in the south, even when the observer was woken by the call, were made more than two kilometres away.

The distribution of calls heard in the south is noteworthy (Fig. 38). The joined circles in the figure represent a radius of 6 km from the two

stations, within which 95% of the calls were heard. The majority of calls were heard to the north or north-east of the jackal study area - only 6 of the 50 calls heard were from within the part of the study area traversed by vehicle tracks. The marked dichotomy is evident in Fig. 38, and reinforces the observation of a higher level of hyaena activity in northern as opposed to southern sectors of the Reserve. It would be a subjective exercise to separate the data for purposes of statistical comparison. The significance of the scarcity of calls from within the central Majale floodplain will require further investigation.

SECTION 4 - TELEMETRY/RADIO TRACKING

Introduction

Radio collaring of hyaenas did not form part of the jackal study. However, a suitable collar was available. Thus, when the opportunity presented itself, on the one occasion when a hyaena was encountered during the jackal trapping excursions, the radio collar was fitted. As one of the very few hyaenas encountered within the jackal study area, it was intended that its movements within the study area should be determined.

Materials and methods

searched every 20 min between 18h00 and 23h00 and between 05h00 and 08h00 from both stations for a total of 44 days between 30-03-88 and 15-05-88. The maximum reception range of the towers was 6 km. Reports by other persons who observed the collared hyaena were noted.

Capture

The hyaena was darted from a vehicle on 23/11/1987 using a modified Telinject Vario 1V dart pistol (Telinject SA, Randburg, RSA). Drugs administered were 3 mg etorphine hydrochloride (M99, Rickett and Coleman Pharmaceuticals, Pinelands) and 30 mg xylazine hydrochloride (Rompun, Bayer Pharmaceuticals, Johannesburg) (van Jaarsveld, McKenzie & Meltzer 1984).

Radio Collar

The radio collar was constructed from 50 mm wide machine belting. The van Urk (G. van Urk, Potchefstroom University, Potchefstroom, RSA) transmitter with a 25 cm antenna was connected to a size D lithium battery (Israel Electronics Industries, Tel Aviv, Israel), and potted in Araldite potting fluid (Araldite CW 1312 GB & HY 1300 GB, Ciba Geigy Plastics, Cambridge, UK). The collar was affixed around the neck of the hyaena using pop rivets.

Location

The frequency of the radio collar was incorporated in the memory of the Yaesu radios used for tracking the jackals (Chapter 3). Whenever jackals were located from the top of a hill, the hyaena frequency was used to ascertain the presence and position of the hyaena. During the jackal telemetric study the hyaena frequency was searched every 20 min between 18h00 and 23h00 and between 06h00 and 08h00 from both stations for a total of 44 days between 30-03-88 and 15-06-88. The maximum reception range of the towers was 6 km. Reports by other persons who observed the collared hyaena were noted.

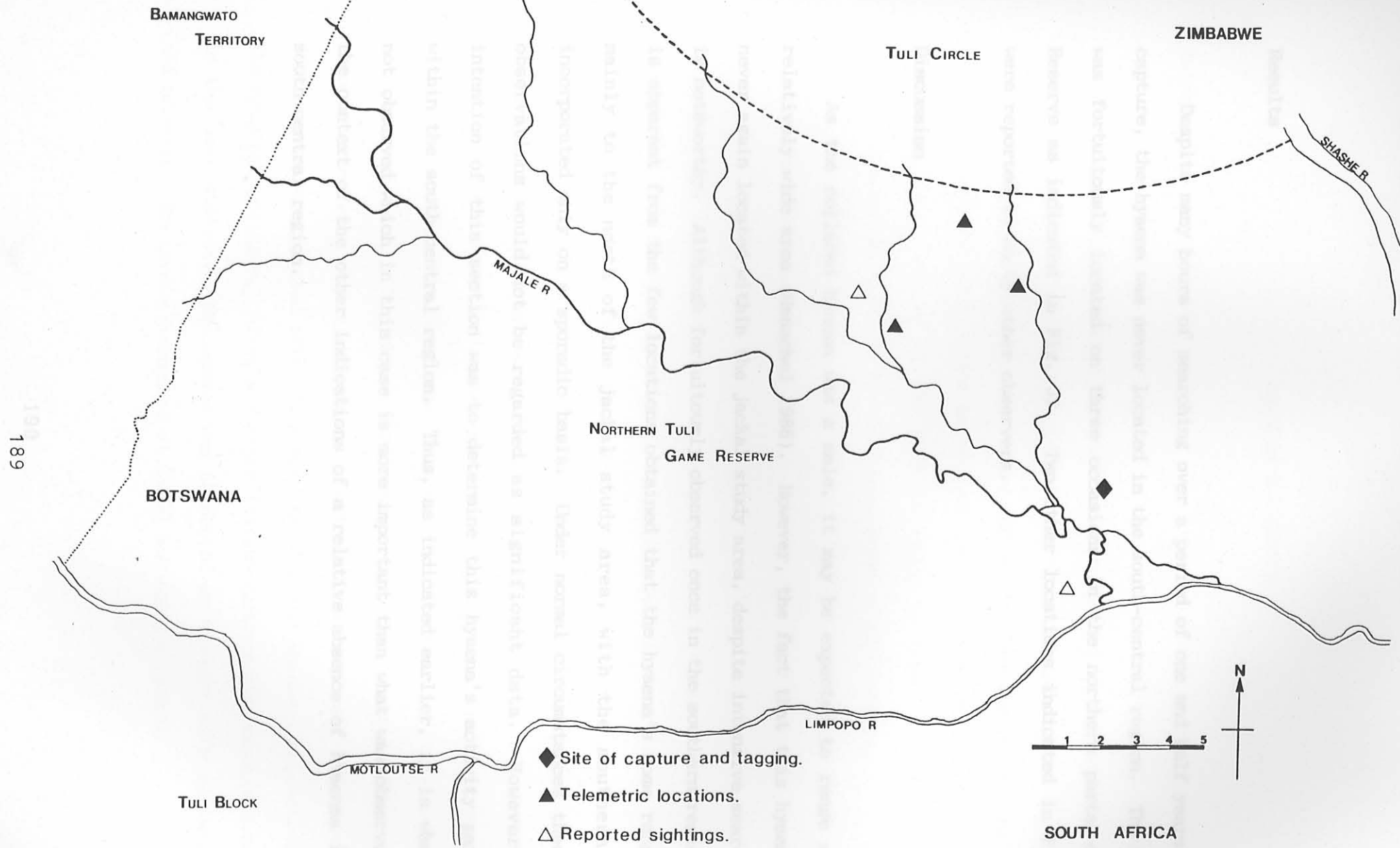


Figure 39. Location records for radio-tagged male spotted hyaena.

Results

SECTION I - CENSUS

Despite many hours of searching over a period of one and half years after capture, the hyaena was never located in the south-central region. The hyaena was fortuitously located on three occasions in the northern parts of the Reserve as indicated in Fig. 39. Two other locations indicated in Fig. 39 were reported to me by other observers. In this way can be counted (Mills 1985). In the context of other aspects of the present study it was decided to

Discussion hyaena census of the NCR in order to obtain an indication of relative hyaena abundance in the different areas of the Reserve.

As the collared hyaena was a male, it may be expected to range over a relatively wide area (Henschel 1986). However, the fact that this hyaena was never again located within the jackal study area, despite intensive searching, is noteworthy. Although fortuitously observed once in the southern region, it is apparent from the few locations obtained that the hyaena's home range was mainly to the north of the jackal study area, with the southern area incorporated only on a sporadic basis. Under normal circumstances these few observations would not be regarded as significant data. However, the intention of this section was to determine this hyaena's activity patterns within the south-central region. Thus, as indicated earlier, it is what was not observed which in this case is more important than what was observed, in the context of the other indications of a relative absence of hyaenas in the south-central region. After five minutes with the speaker perpendicular to the original position. After a further fifteen minutes the vehicle proceeded to the next station. The census was conducted on a night with minimal wind and no moon. The census commenced at 21h00 and ended at 06h00.

SECTION 5 - CENSUS

Introduction

As successful scavengers, spotted hyaenas respond to any indication that a meal may be for the taking. Hyaenas can thus be induced to investigate sounds associated with feeding activity, and in this way can be counted (Mills 1985). In the context of other aspects of the present study it was decided to conduct a hyaena census of the NTGR in order to obtain an indication of relative hyaena abundance in the different areas of the Reserve.

Materials and Methods

Two open landcruisers were each equipped with a cassette tape recorder, 12V booster, 45 cm horn speaker, 2 spotlights and 4 observers. Ten sites where hyaenas would be called up in the manner described by Mills (1985) were selected to span the entire NTGR (Fig. 40). At each station tape recorded sounds of feeding hyaenas were played at maximum volume for two minutes with the horn speaker in a horizontal position. With the equipment used this sound was audible to the human ear over a distance of one-and-a-half kilometres on a still night. The speaker was then rotated 180° and the process repeated. Any hyaena calls heard or sightings made were recorded. The process was repeated after five minutes with the speaker perpendicular to the original position. After a further fifteen minutes the vehicle proceeded to the next station. The census was conducted on a night with minimal wind and no moon. The census commenced at 21h00 and ended at 04h00.

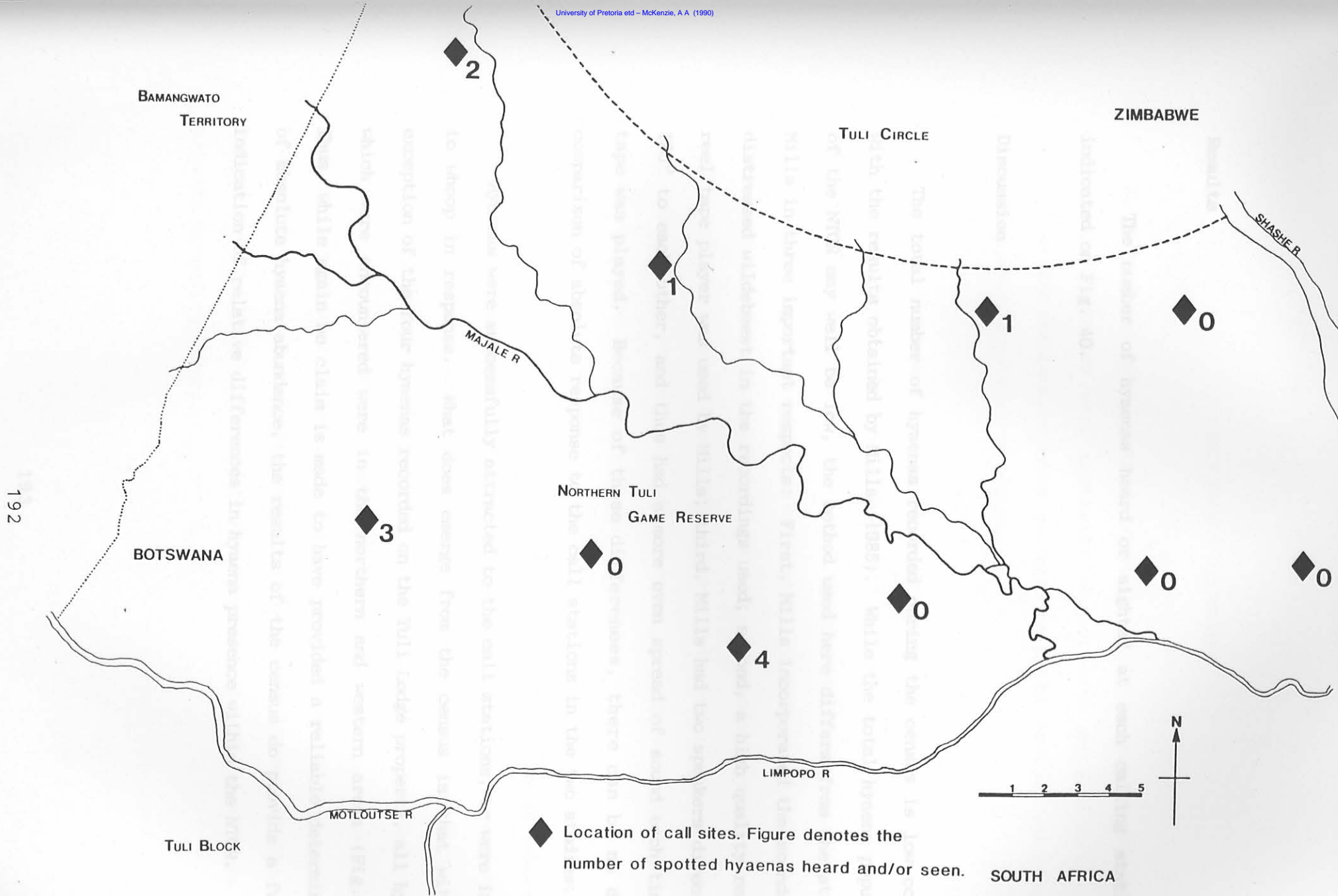


Figure 40. Call-sites and results: spotted hyaena census, 25th May 1986.

Results

SECTION 6 - INTERVIEWS

The number of hyaenas heard or sighted at each calling station is indicated on Fig. 40.

Discussion

The total number of hyaenas recorded during the census is low compared with the results obtained by Mills (1985). While the total hyaena population of the NTGR may well be low, the method used here differs from the study by Mills in three important respects: First, Mills incorporated the sounds of a distressed wildebeest in the recordings used; second, a high quality reel-to-reel tape player was used by Mills; third, Mills had two speakers directed at 180° to each other, and thus had a more even spread of sound each time the tape was played. Because of these differences, there can be no direct comparison of absolute response to the call stations in the two studies.

Hyaenas were successfully attracted to the call stations, or were induced to whoop in response. What does emerge from the census is that with the exception of the four hyaenas recorded on the Tuli Lodge property, all hyaenas which were encountered were in the northern and western areas (Fig. 40). Thus, while again no claim is made to have provided a reliable determination of absolute hyaena abundance, the results of the census do provide a further indication of relative differences in hyaena presence within the NTGR.

SECTION 6 - INTERVIEWS

As part of the small community of people in the Reserve, my thoughts and developing hypotheses were naturally shared with my fellows. Their interaction and feedback provided an opportunity to develop and change my ideas about many aspects of the study.

An acceptable method of research is to conduct interviews in which people are asked directed questions without any indication of what answer the researcher may be expecting. In view of the abovementioned circumstances, it was not possible, once the importance of hyaena distribution to the study had become apparent, to conduct blind interviews. And, unfortunately, it is only those people who were resident in the Reserve and spent a large proportion of their time in the central and northern areas at night who could provide a reliable assessment of relative hyaena densities.

With the abovementioned limitations in mind, the following people were specifically interviewed on this subject: Fish Maila, Solomon Talana, Johannes Nare, John Modeme, Gareth Patterson, Mark Fraser-Valentine, Geoff Dyer and Kim Wolhuter. Each person was asked where in the Reserve they encountered most hyaenas. They were then asked specifically to recall whether they had seen hyaenas in the south-central region. Each of the people thus interviewed indicated that they rarely, if ever, saw hyaenas in the south-central region, while their sightings of hyaenas in the north were of a moderate to high frequency.

WILD DOGS

Lind (1974) reported that wild dogs were extinct in the NTGR. During the three-and-a-half years of my residence in the Reserve I never personally saw, or heard of, any wild dogs in the Reserve. On one occasion in 1986 there was an unconfirmed report of wild dogs on a nearby farm (Faurie pers. comm.). If these were indeed wild dogs they did not enter the Reserve, nor were they subsequently reported from any other nearby areas.

GENERAL DISCUSSION

While each observation in this section on its own does not constitute irrefutable evidence, the combined result of the various studies discussed above is that the observed paucity of hyaenas in the south-central region has been firmly established. The total absence of wild dogs from the NTGR was also confirmed.

The reason behind the relative absence of hyaenas in the south-central region may indeed be very complex. If one looks for an immediate answer in the present environment, there may be several factors which could play a role. The level of lion activity in the south-central region is the highest in the Reserve (Patterson 1988). As lions and spotted hyaenas are competitors, there may be cause to invoke competitive exclusion as the reason for the inverse relationship. However, there is no evidence from other studies to indicate permanent exclusion of hyaenas by lions or *vice versa* (Kruuk 1972, Schaller 1972, Henschel 1986). If anything, a high level of lion activity results in a higher availability of scavengeable resources, thus resulting in at least a potentially positive effect on hyaena numbers. The distribution of antelope

biomass in the Reserve, with far higher numbers of potential prey species in the south-central region than elsewhere (Joubert 1984) also suggests a potentially attractive environment for hyaenas.

As there is no physical barrier between the northern and southern regions of the Reserve there appears to be no immediate factor which would unequivocally explain the discrepancy in spotted hyaena numbers between the adjacent regions.

In looking for an ultimate solution to the enigma, however, the history of the Reserve becomes highly significant (see Chapter 2). Prior to becoming a reserve, the northeastern Tuli Block was a cattle farming area (Lind 1974). It is only its present protected status which allows the existence of the wild fauna in the NTGR. There is, however, no justification for assuming that all species have responded equally to the transition from cattle farm to "wilderness" area. Thus, for example, the white rhinoceros *Ceratotherium simum*, wild dog, roan and sable, previously found in the area, remain extinct to this day (Lind 1974, pers. obs.). Giraffe were re-introduced in 1984 (McKenzie 1985) - otherwise this species would also be extinct in the NTGR. Impala increased rapidly to reach an estimated maximum of 22 000 (Walker 1983). Other species are placed somewhere in the continuum from extinct to over-abundant - each species being subject to different biotic and abiotic influences in the recovering ecosystem.

Farming activities are destined to conflict with nature. There is evidence of intensive human pastoralism in this region of the Limpopo valley since 800 AD (Voight & Plug 1981, Voight 1983). Voight (1983) records that there were large numbers of domestic stock associated with the Mapungubwe

settlement at the junction of the Shashe and Limpopo Rivers which, as Voight states (p1) was, from the point of view of human movements, contiguous with the present-day Northern Tuli Game Reserve. The most intensive recorded human activity in the south-central region was between the mid 1800s and 1930 when the lower Majale floodplain was a large Babirwa settlement of several hundred people (Molelu 1985). While these people did not initially possess firearms, their predominantly pastoral activities must have resulted in conflict with the large predators encountered in the area, as evidenced by the ruins of a large number of kraals found in the area (McKenzie 1987, pers. obs.). Kraaling is a defensive means of avoiding the deprivations of large carnivores on vulnerable domestic stock. With the arrival of European settlers, firearms became available, shortly to be followed by European occupation of the land and commercial cattle farming.

Without pointing any accusing fingers, it can be assumed that, as in all other farming areas of Africa, large predators were persecuted by pastoralist and farmers alike to the point where their deprivations on livestock were of manageable proportions. Furthermore, the intensity of persecution would naturally have varied with the level of human activity, the lower Majale floodplain being the centre of settlement and farming in the region. As an example of the level of human persecution, 150 lions are known to have been shot in the area during the 1950's alone (Lind 1974). Recorded human deprivations on wild dogs in the region extends back to 800 AD (Voight 1985:19, 37). This extended to within historical times when a bounty system ensured human persecution of wild dogs in the present-day NTGR (Lind, 1974) and in adjacent areas of Zimbabwe (Skinner pers. comm.).

When farming and most of the hunting ceased in the NTGR in the mid-1960s, the fauna of the region were depauperate. Game numbers gradually increased to reach a maximum in 1983 and, with this, predator numbers also increased. Large predators, as judged by sightings, were almost non-existent in 1965, but increased exponentially as conditions improved (Steyn pers. comm.). Naturally enough, lion and leopard sightings were most notable, and an increase in sighting frequency was taken as a sign of general improvement. However, the wild dog remained, as it does to this day, extinct in the NTGR.

There are no records to indicate progress as regards changes in spotted hyaena numbers over the years. As avid predators of domestic stock, hyaenas would not have been immune to persecution. In assuming that the spotted hyaena would mirror the response of the lions and leopards to improving conditions, an important aspect of hyaena biology may be overlooked. As indicated earlier in this chapter, absence is a difficult parameter to quantify. However, both Kruuk (1972) and Henschel (1986) have noted that spotted hyaenas are slow to recolonize areas where they have previously been persecuted by man. However, together with indications that brown hyaenas may have long social memories in relation to territorial boundaries (Skinner & van Aarde pers. comm.), these studies indicate that assumption of an automatic recolonization of an area by hyaenas may be simplistic. In particular, there are no grounds to assume that hyaena populations will "bounce back" following persecution, as asserted by Thomson (1986). of negative associations, this observation lends credibility to the hypothesis that hyaenas are highly social. If indeed social memory is operative in the re-colonization by spotted hyaenas of the NTGR (McKenzie 1989c), then this would explain:

1. The relatively low densities of hyaenas in most parts of the NTGR;

2. The flight responses of many hyaenas encountered in the Reserve, despite heavy "friendly" vehicle activity over several years;

3. The observation that hyaenas enter the south-central region when there is unlikely to be any human activity; and

4. The relative paucity of hyaenas in the south-central region and, in particular, the absence of denning activity in this area.

Indeed, as any hunting of hyaenas in the past would almost certainly have taken place at night with the use of a spotlight, the presence of vehicles with spotlights at night in the south-central district may in fact be reinforcing the negative association with this area which has, historically, always been the area of greatest human activity.

It is instructive to consider the area on the Tuli Lodge property where hyaenas are regularly seen. Sightings here are so regular, and the animals are so tame, that the negative influences described above appear not to have affected this clan of hyaenas. However, within recent times hyaenas were encouraged to frequent this area by regular feeding for game viewing purposes (Fuhr pers. comm.). This activity extended over several years, and the remains of the antelope carcasses can be found there to this day (pers. obs.). Contrary to refuting the above scenario of negative associations, this observation lends credibility to the hypothesis that hyaenas are highly sensitive to interactive associations. In this case a positive association with man has led to permanent settlement by the hyaenas in this specific area, directly adjacent to an area where hyaenas are almost never encountered.

GENERAL CONCLUSION

CHAPTER 8

The important outcome of this chapter is the confirmation that there are no resident, and only a very few itinerant spotted hyaenas in the south-central region of the NTGR, and that wild dogs remain extinct in the Reserve. The repercussions which this has had on the processes within the Reserve are discussed in Chapter 7.

This superficial study of the hyaenas of the NTGR does not confirm in any substantive way the role of social memory in spotted hyaena biology. It does, however, add weight to the increasing body of evidence that spotted hyaenas do not simply react to immediate changes in their environment, but are strongly influenced by ultimate factors, including historical associations.

PathologyMicro-pathologyIntegumentGeneral appearance

From a distance the animal appears mottled. In its mildest form this mottling is restricted to the side of the thorax, abdomen and upper hind legs. In the severest cases almost the entire body is affected. This mottled appearance is most apparent in the isopala and steenbok which are normally a reddish-brown colour; it is less apparent in the kudu which has a greyish-brown pelage.