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Attitudes and perceptions of local communities towards the reintroduction of black rhino (*Diceros bicornis bicornis*) into their historical range in northwest Kunene Region, Namibia:

a Masters Dissertation from 2004

Simson !Uri‡khob

With a Foreword by Sian Sullivan and Jeff Muntifering,

"Historicising black rhino in west Namibia"

September 2020

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Bath Spa University, School of Oriental & African Studies, University of Edinburgh

with Namibian partners:

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Future Pasts draws on Arts and Humanities research methodologies to document and analyse culturally-inflected perceptions and practices of sustainability. The project has a particular geographical focus on west Namibia, where three of our core research team have long-term field research experience.

The project seeks to:

- enhance understanding of sociocultural, economic and environmental changes in historical and post-independence contexts;
- document and support cultural heritage and indigenous knowledge regarding present and historical cultural landscapes of west Namibia;
- extend analysis and understanding of the historical ecologies of the Namib;
- interrogate interpretations of 'sustainability', particularly those contributing to the promotion of a growth-oriented 'green economy';
- foster cross-cultural public discussion of concerns relating to environmental change and sustainability;
- critically engage with the power dimensions shaping whose pasts become transferred forwards to the future in contemporary approaches to environmental conservation and sustainability.

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Sian Sullivan (Principal Investigator and Professor of Environment and Culture, Bath Spa University);
Angela Impey (Co-Investigator and Reader in Ethnomusicology, SOAS, London);
Rick Rohde (Co-Investigator, Centre for African Studies, University of Edinburgh);
Mike Hannis (Research Fellow and Senior Lecturer, Ethics, Politics and Environment, Bath Spa University);
Chris Low (Research Fellow and Museum Director, !khwa ttu, South Africa).

Namibian partner organisations include the National Museum of Namibia, Gobabeb Research and Training Centre, Save the Rhino Trust, the Namidaman Traditional Authority, Sesfontein Conservancy and Mamokobo Film and Research.

Although the formal funding period of the project is now over, we continue to have research material to share through this Working Paper Series. We also continue to be interested in making available work that fits with the project's research themes, but has not yet found a publication home – see below.

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A foreword: historicising black rhino in west Namibia

Sian Sullivan[1] and Jeff Muntifering[2]

1. Introduction[3]

Future Pasts is pleased to make available the following MSc dissertation by Simson !Uri‡khob, CEO[4] since 2014 of the Namibian NGO Save the Rhino Trust (SRT)[5]. Entitled 'Attitudes and perceptions of local communities towards the reintroduction of black rhino (*Diceros bicornis bicornis*) into their historical range in northwest Kunene Region, Namibia', Simson's dissertation was submitted 'in partial fulfilment of the requirement for the degree of Master of Science in Conservation Biology' at the University of Kent at Canterbury's Durrell Institute of Conservation and Ecology (DICE) in the United Kingdom. The dissertation is a tribute to a series of people to whom the *Future Pasts* (FP) research project is also indebted. It seems appropriate here to mention three of these individuals: the late Blythe Loutit, co-founder (with Ina Britz, and assisted by Rudi Loutit) of SRT, who welcomed FP principal investigator Sian Sullivan as a volunteer undergraduate student in 1992[6] and encouraged Simson !Uri‡khob in his early days as an employee of SRT; the late Mike Hearn, former Director of Research for SRT and friend to us all; and Professor Nigel Leader-Williams[7], who supervised the research of both Simson and Mike Hearn at DICE, and whose work on rhino conservation and ecology is internationally acclaimed[8].

In this Foreword we provide a brief Namibian history of the critically endangered and 'unique'[9] 'South-western black rhino'[10]. Our aim is to situate Simson !Uri‡khob's MSc

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[2] Science Adviser, Save the Rhino Trust (SRT), and Adjunct Professor, Namibia University of Science and Technology (NUST).
[3] *Contribution statement*: Sian Sullivan contributed the historical research in especially Section 2 of this Foreword, and Jeff Muntifering contributed material on current circumstances in especially Section 3.
[4] Abbreviations used in this foreword: AfRSG – African Rhino Specialist Group; BCRP – Black Rhino Custodianship Program; CBNRM – Community-Based Natural Resources Management; CEO – Chief Executive Officer; CITES – Convention on Trade in Endangered Species; DICE – Durrell Institute of Conservation and Ecology; FP – *Future Pasts*; IUCN – International Union for Conservation of Nature; MSc – Master of Science; NGO – Non-Governmental Organisation; SADF – South African Defence Force; SRT – Save the Rhino Trust; SWAPO – South West African People's Organisation; UK – United Kingdom; UNESCO – United Nations Educational, Scientific and Cultural Organization
[5] http://www.savetherhinotrust.org/
[6] Contributing to a BSc dissertation and an ecology research paper published by the Namibian journal *Dinteria* (Sullivan 1993; Sullivan and Konstant 1997).
[7] Leader-Williams 1992, 2013; Di Minin *et al*. 2015.
[8] Simson's dissertation below includes a fuller acknowledgement section, as accompanied his dissertation in 2004.
[9] I.e. because 'unreconstructed' through 'reintroduction from other metapopulations' (Hearn 2003, p. vii).
[10] https://rhinos.org/2019-state-of-the-rhino/. The black rhino *Diceros bicornis* is on Appendix 1 of the International Union for the Conservation of Nature (IUCN) Convention on Trade in Endangered Species (CITES), meaning that trade is heavily restricted https://www.cites.org/eng/app/appendices.php (both sites last accessed 12 September 2020). The desert-dwelling population of *Diceros bicornis bicornis* in west Namibia has been recognised by the African Rhino Specialist Group (AfRSG) as a 'Key 1 Population' representing 'the only desert ecotype population of black rhino', as well as one of the only remaining populations globally that 'has survived on land that has no formal conservation status', whilst '[t]he Etosha National Park population is the biggest single population of any [rhino] subspecies' (Hearn 2003, p. 8).

research and highlight its importance. In brief, it is extraordinary that black rhino currently thrive in north-west Namibia, given 1) the clearance of black rhino from most of its former range, as the colonial frontier – enabled by firearm technology – expanded erratically from especially the 1830s; and 2) the concentration of both economically marginalised autochthonous Namibians and high-value black rhino in the relatively inaccessible and inhospitable landscapes of west Namibia. !Uri‡khob's research with those living in landscapes forming the existing and potential range for black rhino is an important contribution to understanding and celebrating contemporary circumstances, which is why we are enhancing its public accessibility with this publication. Our Foreword is also partly a response to !Uri‡khob's assertion that,

> examination of the relationship between local communities and conservation issues requires deeper understanding of the history of the region as well as factors shaping regional political concerns[11].

We proceed by outlining what is known about the past presence of *Diceros bicornis bicornis* in the western reaches of the territory that became known as Namibia. We foreground the different pressures that have caused its present restricted distribution, of which the west Kunene population forms a critical part, introducing here an online map of historical documentation of encounters with rhino. We conclude by returning to the significance of Simson !Uri‡khob's contemporary research for current monitoring, tourism and local values connected with black rhino in west Namibia.

2. *Diceros bicornis bicornis* – a brief Namibian history

Namibia is renowned for its rock art – both petroglyphs and paintings – found where appropriate surfaces exist and providing testament to the dynamic pre-colonial presence of diverse human actors stretching back thousands of years[12]. Images of rhino are a notable component of rock art assemblages, from the Orange to the Kunene Rivers in west Namibia[13]. A recently surveyed petroglyph site west of the |Ui-||aes / Twyfelfontein UNESCO World Heritage Site, awarded especially for its rock art record of 'ritual practices relating to hunter-gather communities in this part of southern Africa over at least two millennia'[14], revealed 46 images of rhinoceroses, of which 20 are identified clearly as black rhino[15]. Rhino feature prominently in engravings at a site recorded by Eugene Joubert some decades ago as 'Sossos' and known locally as ǂKhari ('small') Soso (Figure 1). Indeed, Save the Rhino Trust's familiar logo was inspired by an engraving of a black rhino at |Ui-||aes / Twyfelfontein (Figure 2). It seems probable that black rhino in the western reaches of what is now Namibia have long been attributed multiple kinds of value by the diverse array of people encountering this charismatic animal.

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[11] !Uri‡khob 2020[2004], p. 19.
[12] For example, Rudner 1957; Jacobson 1976; Wadley 1979; John Kinahan 2001[1991]; Pleurdeau *et al*. 2012, online.
[13] Joubert 1971, 1984.
[14] https://whc.unesco.org/en/list/1255/ last accessed, 11 September 2020.
[15] Lenssen-Erz 2018.

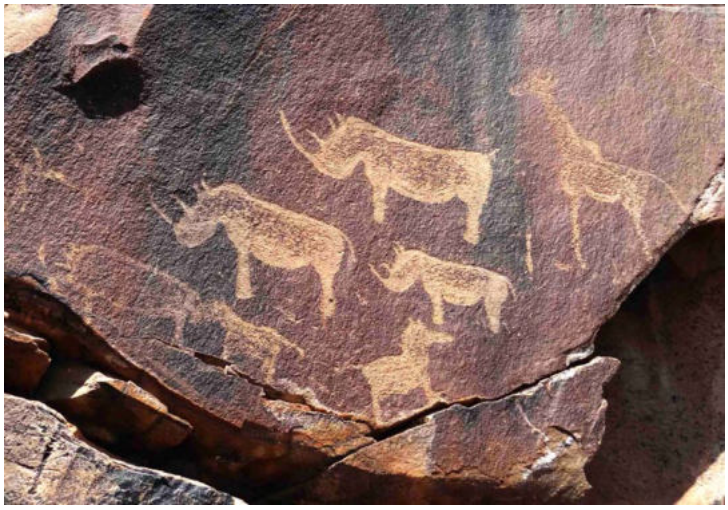

Figure 1. Petroglyphs of rhinos at ǂKhari Soso. Photo: Sian Sullivan, 24 February 2015.

Figure 2. Rhino petroglyph at Twyfelfontein / |Ui||aes (left), drawn on in the logo of Namibia's Save the Rhino Trust, designed by Blythe Loutit (right). Sources: Fondazione Passaré, CC BY-SA 3.0, https://commons.wikimedia.org/w/index.php?curid=29701704, accessed 11 September 2020; http://www.savetherhinotrust.org/.

When Namibia's black rhino are invoked today it is frequently in the context of both concern regarding its exploitation for rhino horn, as well as celebration of its conservation beyond national parks in Namibia's north-west. In only a short period of recent history, rhino horn for consumption has become a commodity with destructively high value in specific markets[16], prompting urgent conservation responses that can be highly militarised[17]. Its value is now so high that some economists have flamboyantly suggested that it is profitable for speculators to collude so as 'to coordinate an extinction strategy': maximising profits through simultaneously stockpiling rhino horn and 'depressing wild stocks'[18].

Historically, however, it was not the commodity value of rhino horn that contributed to the demise of rhinoceros populations across southern Africa. In the early years of an expanding

[16] Bradley Martin and Bradley Martin 1982.
[17] Ferreira and Okita-Ouma 2012; Hanks 2015.
[18] Mason 2012, p. 180.

commercial hunting frontier linked with European colonial expansion, rhino instead were attacked relentlessly for their meat and hide, as well as just for 'the sport' of killing them. The virtual extermination of these animals was justified on the grounds of its 'unpleasant character', being described as variously 'witless, choleric, dyspeptic and unsociable'[19]. In just a few short pages of the narrative by British army captain James Edward Alexander from his impressive 1836-1837 travels in southern and central Namibia, the black rhino is characterised as a *monster* and a *brute*, whose behaviour is *wicked*, *fiendish* and *spiteful*[20]. Such terms negate the possibility of empathy or concern for these animals. Instead, they justify attacks and valorise the heroism of the hunter. In the late nineteenth century, a consolidated European mania for trophies and natural history specimens presented a new threat, leading, for example, to the last two white rhinoceroses (*Ceratotherium simum*) of Mashonaland being shot (by a Robert Coryndon) to be mounted and sold: 'one to the Rothschild Collection [in Tring, Hertfordshire, UK], the other to the Cape Town Museum'[21].

Figure 3 below shows the locations of documented historical encounters with rhinos in the western part of southern Africa. Full descriptions of these encounters are available in the online version of this map linked at https://www.futurepasts.net/historical-references-rhino-namibia, as well as in a timeline of reviewed literature online at https://www.futurepasts.net/encounters-with-rhino-timeline. As Eugene Joubert wrote in 1971,

> before 1900, the black rhinoceros was distributed from the Kunene river in the north, down to the Orange River in the south, and extended westwards to the eastern boundary of the Namib desert … [although] [t]hey may have entered the Namib desert down river courses during the rainy season.[22]

The map and accompanying documentation confirms that historical processes leading to the demise of black rhino in Namibia match the broader trajectory outlined above. We elaborate these encounters below to illustrate something of the character of this historical assault on rhino.

Historicising rhino presence: 1700s-1800s

The first documented encounter between 'Europeans' and rhino in Namibia appears to be that of the 'farmer and elephant hunter' Jakobus Coetzé (also Coetse, Coetsee). He journeyed on 14 July 1760 with two wagons and accompanied by 12 members 'of the Gerigriquas Nation'[23] from his home at Aurora on the west side of the Piquetberg, northwards to the Gariep (!Garieb), as the westward reaches of the Orange River was then known. He carried a permit from the Cape Governor, Ryk Tulbagh (then 'Councillor Extraordinary of Dutch India and Governor of the Cape of Good Hope and Dependencies thereof'[24]), to shoot elephant beyond

[19] Mackenzie 1987, p. 53
[20] Alexander 2006[1838] vol. 2, pp. 3-11.
[21] Mackenzie 1987, p. 55; also Rookmaaker 2007.
[22] Joubert 1971, p. 36.
[23] In Mossop 1935, p. 277, also 1947, p. 94.
[24] In Mossop 1935, p. 277.

the Orange[25], claiming during his lifetime 'to be the first European to have penetrated far beyond the Great (Orange) River'[26]. He observed 'a multitude' of rhinoceroses, lions and giraffe in the land of the 'Great Amacquas', near Warmbad[27], at a time when encounters with such animals were already becoming rare in the increasingly settled land south of the Orange. One year later Coetzé accompanied a 'scientific expedition' from Cape Town led by Hendrik Hop. Near a Nama settlement on the Lion River between the Great and Little 'Karras' Mountains, Hop describes how rhinos, giraffes, buffaloes, zebras, quaggas, kudus, elands, hartebeests and gnus 'offered wonderful opportunities for hunting'[28].

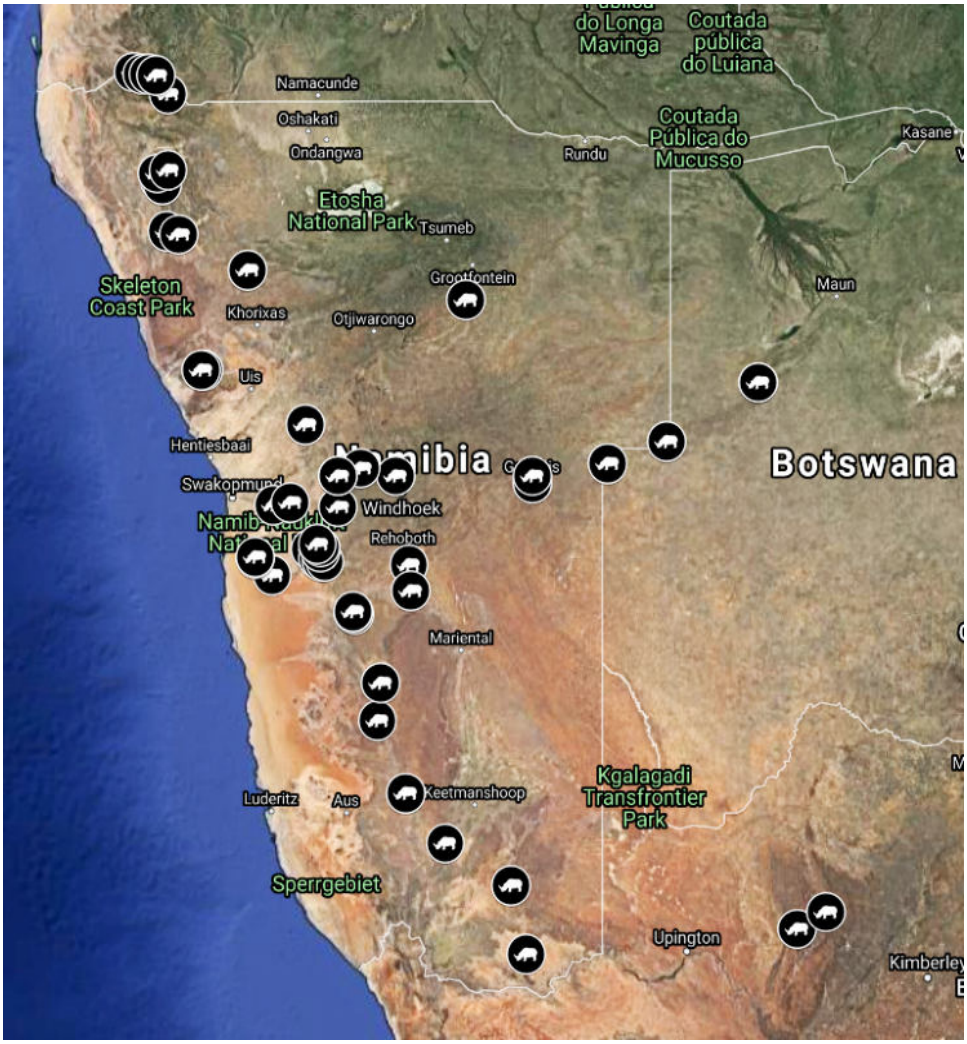

Figure 3. Historical distribution of black rhino, based on documented encounters in a spatialised reading of referenced historical texts, combined with other reviews (notably Joubert 1971, 1984 and Rookmaaker 2007). Nb. This screenshot only shows placemarks for animals fairly definitively identified in the reviewed literature as 'black rhino' and thus as *Diceros bicornis bicornis*. The online version of the map is linked at https://www.futurepasts.net/historical-references-rhino-namibia. Here, some – perhaps many – of the rhinos reported in the west that are not identified as either 'white' or 'black', as well as those putatively identified as 'white', might in fact have been *D. bicornis bicornis*, i.e. it is probable that the placemarks on this map under-record known historical encounters with black rhino.

[25] Du Pisani 1986, p. 14; Wallace 2011: pp. 50-51; Reported by Lemmer (1957, p.15) as '[t]he Orange River is crossed by the first European, Jacob Coetsee, whilst hunting elephant'.
[26] Mossop 1947, p. 94; also Mossop 1935, p. 9.
[27] In Mossop 1935, p. 287; hence 'the earliest record in the literature of the occurrence of rhinoceroses in South West Africa' seems to be one year earlier than the Hendrik Hop expedition of 1761, as reported by Joubert (1971, p. 34).
[28] Vedder 2016[1938], p. 20.

Some decades later in January 1791, travelling northwards through the waterless stretches of southern Namibia, an expedition led by Willem van Reenen reportedly sustained itself by hunting rhinoceroses, giraffes and buffalo. The expedition reached the hot springs of Rhenius mountain [seemingly present-day Rehoboth] in 'the land of the Heydamarassen [Damara / ǂNūkhoe]', where a copper mine was located[29]. Van Reenen's party commenced their journey home in February 1791, reaching Modderfontein/Keetmanshoop in March and staying with a Gideon Visagie who, with his wife, was raising and dealing in cattle there,[30] leading in Van Reenen's report to perhaps 'the first mention of a white woman having her home in South West Africa'[31]. Van Reenen traded six of his best guns with local people for cattle, arriving back at his homestead on the Olifants River in the Cape on 20 June, his party apparently having killed 65 rhinos, six giraffes and other game in 'no inconsiderable quantity which the big-game hunter did not regard as worthy of mention'[32]. Reportedly, Van Reenen also returned to the Cape with eight 'Damaras' (Herero) who historian Jan-Bart Gewald labels as 'slaves', noting that the Dutch East India Company 'permitted the free trade in slaves' from this year[33].

The first recorded European encounters with rhino further north appear to be linked with a 1793 journey from the Cape to Walvis Bay by the ship *Meermin*, under a Captain Duminy. Duminy was under orders through the Dutch East India Company to 'annex part of the coastline' for the Netherlands[34]. He and his crew experienced uneasy relations with inhabitants of Walvis Bay, who were armed with assegais, and refused to bring cattle for exchange or act as guides[35]. This voyage also carried Pieter Pienaar – 'a well-known big game hunter'[36] – and the brothers (and prominent Cape *burghers*) of Willem van Reenen mentioned above (Sebastiaan Valentijn van Reenen and Dirk Gijsberg van Reenen[37]). At Walvis Bay they were met by their guide Barend Freyn[38] who had travelled overland from Warmbad and led them to the Swakop / Tsoaxau river with fresh water, luxuriant vegetation and a great number of game, such as elephants, rhinoceroses, gemsbuck and springbuck[39]. Pienaar and his party followed the Swakop eastwards on a hunting trip into the interior, reportedly encountering 'over 300 rhinoceros and even a greater number of elephants, gemsbuck, springbuck, buffaloes, and lions'; killing 20 rhinos, three elephants and (echoing Willem van Reenen's account above) 'much other game which he never counted', thereby providing food for those who joined his expedition[40].

[29] Vedder 2016[1938], p. 33; also John Kinahan 1980, p. 18.
[30] Vedder 2016[1938], pp. 32-33.
[31] Vedder 2016[1938], p. 36.
[32] Vedder 2016[1938], pp. 36-37.
[33] Gewald 1995, p. 423 and references therein. Gewald (1995, 424) thus includes slaves as part of Visagie's business, writing that in present-day Keetmanshoop he had 'built up a raiding/trading dynasty based on the exchange of cattle and slaves for guns, powder and lead'.
[34] Du Pisani 1986, p. 13; Jill Kinahan 2000, p. 15; also Heawood 1912.
[35] Jill Kinahan 2000, p. 15.
[36] Du Pisani 1986, p. 13.
[37] Du Pisani 1986, p. 13.
[38] Vedder 2016[1938], p. 37; also in Green 1953, p. 203.
[39] Vedder 2016[1938], p. 38.
[40] Mossop 1935, p. 11; Vedder 2016[1938], p. 38.

A handful of decades later, the narrative of *An Expedition of Discovery into the Interior of Africa* by British army captain James Edward Alexander again indicates that black rhino were prevalent in southern and central Namibia in 1837, although perhaps not as ubiquitous as suggested by the accounts above[41]. The first apparently black rhinos Alexander's party encountered were along the 'Chuntob' River (Tsondab) at 'Bulls Mouth Pass' – or 'Kopumnaas' as Alexander rendered the Khoekhoegowab name: 'so named from its being full of dangers, like the Valley of the Shadow of Death'[42]. The landscapes approaching this pass are described as the 'domain' of the black rhinoceros, which they 'seemed now to have invaded'[43]. Alexander's 'two first rhinoceroses, being continually on the move, escaped from us though we tickled them roughly' with gunshots[44]. This encounter is enough to prompt a lengthy description of the animal which:

> resembles in general appearance an immense hog; twelve feet and a half long, six feet and a half high, girth eight feet and a half, and of the weight of half a dozen bullocks[45]; its body is smooth, and there is no hair seen except at the tip of the ears, and the extremity of the tail. The horns of concreted hair, the foremost curved like a sabre, and the second resembling a flattened cone, stand on the nose and above the eye; in the young animals the foremost horn is the longest, whilst in the old ones they are of equal length, namely a foot and a half or more: though the older the rhinoceros the shorter are its horns, as they wear them by sharpening them against the trees, and by rooting up the ground with them when in a passion. … on the approach of danger, if his quick ear or keen scent make him aware of the vicinity of a hunter, the head is quickly raised, and the horns stand stiff and ready for combat on his terrible front.[46]

Whilst Alexander reconnoitred the Pass, his party resumed 'the sport on the plain, and two more rhinoceroses were mortally wounded' – as depicted in Figure 4. The people ate apparently ten pounds of flesh each in as many hours', talking all the time 'of their day's adventures…'[47].

The following day (31st March 1837), whilst settling for the night 'beside a pool of the Chuntop' 'an alarm of a rhinoceros near the wagon' leads to a hunt: the rhinoceros was *becrept* (stalked), and 'unconscious of danger, … quietly eating from a bush' was shot with 'three balls through the backbone and jaw'[48]. The animal was a female with 'two perfect horns of equal length', and when butchered they found inside 'a foetus the size of a pig a month old'[49].

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[41] The narratives of Alexander and other key accounts written by historical travellers, hunters, traders and missionaries to especially west and north-west Namibia and in the vicinity of Etosha Pan are being mapped at https://www.etosha-kunene-histories.net/wp4-spatialising-colonialities.
[42] Alexander 2006[1838] vol. 1, pp. 297, 299-300.
[43] Alexander 2006[1838] vol. 2, pp. 1.
[44] Alexander 2006[1838] vol. 1, pp. 297, 299-300
[45] This seems large for a black rhino. Given that the author identifies the rhino here clearly as 'black' it is possible he was exaggerating these measurements for effect.
[46] Alexander 2006[1838] vol. 2, pp. 1-2.
[47] Alexander 2006[1838] vol. 2, p. 9.
[48] Alexander 2006[1838] vol. 2, p. 11.
[49] Alexander 2006[1838] vol. 2, p. 12.

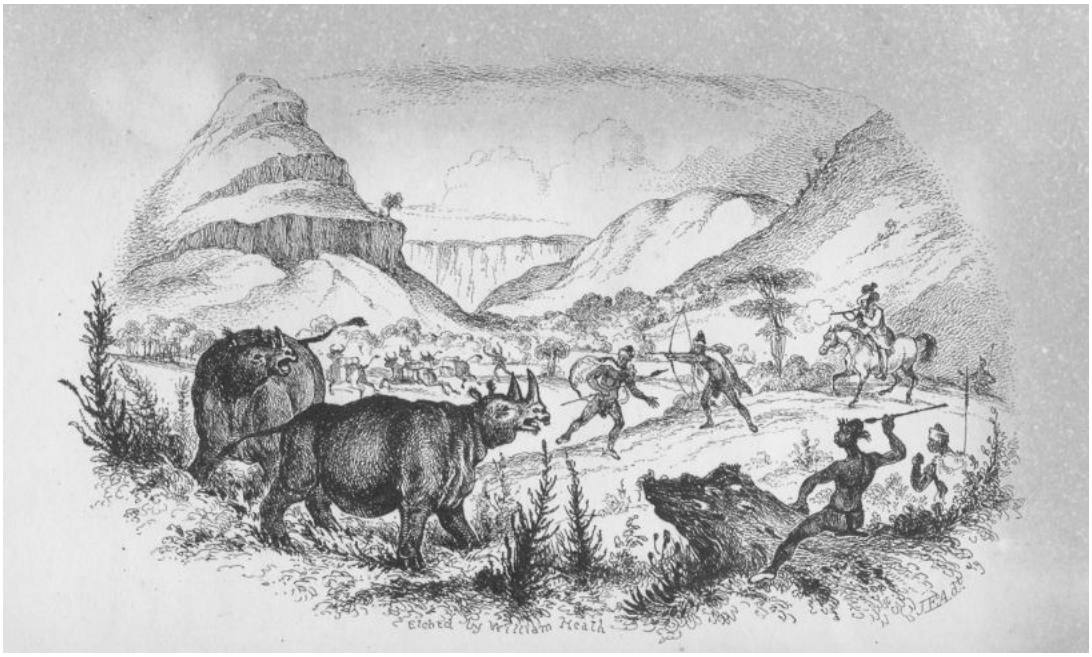

Figure 4. Rhinoceros hunt in Bull's Mouth Pass, included in Alexander's narrative (2006[1838], vol. 1 facing p. 175). Engraving by William Heath (1795-1840) (Rookmaaker 2007, p. 106). Source: http://libweb5.princeton.edu/visual_materials/maps/websites/africa/alexander/alexander3.jpg 25 August 2020.

Rookmaaker argues that the skull of this rhino hunted by Alexander's party may have eventually found its way to the Museum of the Senckenbergische Naturforschende Gesellshaft in Frankfurt[50]. The provenance of the *Diceros bicornis* skull in Figure 5 has the label *Rhinoceros africana* and was donated by William Ogilby (1807-1873), the Secretary of the Zoological Society of London who had catalogued Alexander's collection, sorting his two collected rhino skulls into '*Rhinoceros africanus*' and '*Rhinoceros simus*'. If this rumination is correct, the skull depicted in Figure 5 below might, rather incredibly, be the skull of the very rhino whose hunt Alexander depicts so vividly in his narrative to no doubt fuel the imaginations of other would be 'big game hunters' in years to come.

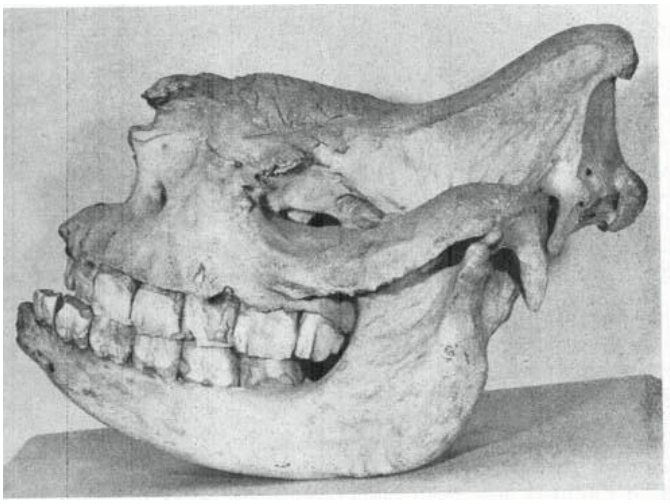

Figure 5. 'Skull of *Diceros bicornis* donated by Ogilby to the Museum of the Senckenbergische Naturforschende Gesellschaft in Frankfurt am Main (no. 699)'. Source: Rookmaaker 2007, p. 107.

[50] Rookmaaker 2007, p. 107.

A number of Alexander's interactions with local people indicate that they too were very accustomed to encountering and hunting rhino. South of 'Bull Mouth's Pass' a man in 'a party of Boschmans on the move (two men, six women, six children)' responds to the question of 'what he most wished for in the world' that this would be 'the rhinoceros, and to get it easily'[51]. Later, after time spent at Walvis Bay, probably at Sandfontein / ǂKhîsa||gubus, Alexander meets 'Quasip', the chief of 'the bay people' at Rooibank / |Awa!haos, who was returning to the bay from inland and reports that 'some distance up the Kuisip, we should fall in with plenty of rhinoceroses, and also obtain other game to support us'[52]. As Alexander's party travels eastwards from Walvis Bay via Onanis (ǂŌ!nanis) they encounter black rhino multiple times, contributing the cluster of observations on Figure 3 in the upper 'Kuisip' river and the Gamsberg (which Alexander calls 'Tans Mountain, the inverted comma signalling the click consonant in its name of the time, i.e. ǂGans).

It is again clear from Alexander's 1838 account that rhinos were not hunted for trade in their horn as a high-value commodity. Instead it was the meat and hides that tended to be in demand[53]. Francis Galton, travelling east from Walvis Bay in 1850-1851, later writes of how he preferred rhino meat 'to the flesh of any other animal, especially if it was young, rolled in a piece of spare hide and baked in the earth'[54]. Nonetheless, enjoyment of the 'sport' of hunting, as well as collecting natural history specimen-trophies for exhibiting in collections in Europe, became increasingly sought after by European actors in their variously combined activities as explorers, hunters, traders and missionaries. A couple of decades later still, James Chapman, described as 'a naturalist, not by education, but decidedly by inclination' makes multiple references 'to rhinoceros, both black and white'[55]. He carried a stereoscopic camera to Lake Ngami in 1859-1860, reportedly taking the first photograph of a black rhino, and encounters with rhino recorded in his diaries again indicate that rhino were ubiquitous[56]. Likewise, the Wesleyan missionary Joseph Tindall, stationed in Gobabis in 1846, reports that rhino were common, writing that 'over 40 had been shot in a few months', of two different species with different temperaments[57].

This slaughter of rhino and other animal species in the Gobabis area continued for some years, involving European actors and local pastoralists alike, whose ability to impact animal populations was enhanced by firearms. In a well-known account from August 1851, for example, Francis Galton and Charles John Andersson find the Khaus (Kai||khaun) Nama leader Amiral [Amraal] Lambert at Elephant Fountain [i.e. Gobabis] with

> about forty men, who had just arrived *en route* for a shooting excursion to the east. They take their waggons with them for some days, and then make an encampment, whence they journey short distances on ride-oxen, and shoot what they can, bringing the meat back jerked to the waggon. It was delightful to hear people talk familiarly of the rhinoceros as

[51] Alexander 1838 vol. 1, pp. 287-288.
[52] Alexander 2006[1938] vol. 2, p. 108.
[53] Rookmaaker 2007, p. 109.
[54] Rookmaaker 2007, p. 109 after Galton 1853, p. 275.
[55] Rookmaaker 2007, p. 132.
[56] Rookmaaker 2007, pp. 132-133.
[57] Rookmaaker 2007, pp. 115-116.

> an everyday kind of game, and we longed for a raid upon them. … On the last shooting excursion Amiral's men had "bagged" forty of them.
> … [travelling east] we arrived at the first great shooting place. … Rhinoceros skulls were lying in every direction, but strangely enough only one spoor could be seen. … [further east still] a rhinoceros, a lion, a hyena, and a gnu were "bagged".[58]

Rhino presence after colonisation

Fast forwards eight decades, through Namibia's ferociously turbulent colonial history that acted to attack Africans and wildlife alike, it is clear that this ubiquity of rhino in southern and central Namibia had been largely destroyed through hunting by diverse men with firearms. Nevertheless, the new post-World War 1 Resident Commissioner of Owamboland, Major Charles N. Manning, frequently reported signs that rhinos were 'plentiful' as he journeyed through the north-west of the country to disarm and create administrative order of native populations there. This was apparently the case, even though the area had been subjected to significant hunting pressure from especially hunting parties of trekboers[59] settled in southern Angola[60]. At 'Koandimwa', south-east of Kaoko Otavi, Manning notes the '[r]emains of summer cattle posts of nomadic Ovatshimba. No inhabitants now', and writes of 'constant indications rhinoceros, viz. spoor and parallel lines dug in ground with horns or feet. Every few hundred yards new signs of rhino'[61]. In the early 1950s, at a time when in the west of the country the Omaruru River formed the boundary of the 'Police Zone' and all travel north of here required a permit, Anglican Rector Frank Haythornthwaite also reported the spoor of rhino in the Ugab River. Visiting Brandberg West Mine located in his parish, which at the time reached from Walvis Bay *All the Way to Abenab* (as his memoir is called), he writes:

> [o]ccasionally a solitary rhino will go by, bound for open water up or down the river. Rhinos love trekking in this manner. I do not know of anyone who has actually seen rhino go by since the pumps have been put in, but spoor has been seen. With no reeds to rustle, a rhino would go quietly by[62].

As is well-known, however, these remaining populations of rhino in the remote and rugged landscapes north of the Ugab River themselves came under severe threat in recent decades. Already in the mid- to late 1960s it was reported that,

> [t]he situation with regard to rhino is much more critical than is generally expected. The distribution of the black rhino, which used to occur throughout most of Suidwes, is limited to the northwest corner. The total population of black rhino in 1966 was ninety animals. What was also disturbing, however, is the spread of these animals. Only 17 percent were within the amended limits of the Etosha National Park as suggested by the Odendaal

[58] Galton 1890[1853], pp. 158, 164.
[59] In the wake of the abolition of slavery in the 1830s and the new freedoms of 'coloured' peoples of the Cape (under Ordinance 50 of 1828),-several thousand 'Trek Boers' 'abandon[ed] their farms and settlements in the Cape to embark on their famous Great Trek': some pushed into Nama lands south of the Orange / Gariep River, stimulating movement of Nama northwards over the Orange (Olusoga and Erichsen 2010, p. 23); others moved east to the Transvaal, and in the 1870s trekked west across the Kalahari towards present-day Grootfontein in Namibia, and thence to north-west Namibia and southern Angola (Rizzo 2012, p. 37).
[60] Joubert 1984, p. 12; Bollig and Olwage 2016.
[61] Manning Diary Notes 19 August 1917 and Manning Report 1917, p. 10. NAN SWAA 2516 A552/22 Kaokoveld, Major Manning's Report, 1917, with additions made from extracts of his diary.
[62] Haythornthwaite 1956, p. 105.

> Commission [which moved the short-lived westwards boundary along the coast to the Park's present position[63]]. The other 83 percent were on private land or in communal or intended communal territories. It was clear that drastic steps were needed to ensure its survival.[64]

From 1967 into the early 1970s some 55 rhino were translocated to Etosha National Park from the west by the newly created Game Capture Unit (established in 1966), with five rhinos lost in this process overall[65]. In 1971 the former 'South West Africa's first Director of Nature Conservation and Tourism – Bernabe de la Bat – is reported to have told honorary game wardens of South African Air Force (SADF) officers shooting wildlife from airplanes[66]. In the early 1970s, the late Garth Owen-Smith wrote for the west of Namibia that '[t]he black rhinoceros appears to be decreasing on the plateau, but it is still relatively common in the escarpment mountains and on the semi-desert plains'[67].

In especially the 1970s and 1980s, a toxic combination of war, availability of firearms, and a multi-year drought conspired to create targets of the wildlife of the north-west[68]. Severe drought from 1979-1982 decimated wildlife and livestock in north-west Namibia, making indigenous fauna 'vulnerable to subsistence hunting by the now impoverished Herero and Damara inhabitants in the region', as well as to '[h]unting by government officials, the SADF and other non-residents'[69]. Simultaneously, the opening into Kaokoveld of a western front to the growing independence war between the South West African People's Organisation (SWAPO) and the South African government, led to .303 rifles being issued 'to several thousand Kaokoland men' by the SADF[70] so that they could protect themselves and their families, an initiative that enhanced local hunting[71]. By now rhino horn had become a high-value consumer commodity, sought after by elite and local hunters alike and contributing to a reported decline in black rhino in Africa overall from 65,000 in 1970 to below 2,300 in 1993, rising to around 5,500 in 2019[72].

This combination of earlier rhino translocations away from the west, and the devastating effects of both hunting and drought on black rhino populations, meant that by 1984 there were approximately 300 black rhinos ('conservative estimate') in Etosha National Park' but 'only 46 black rhinos ['[a]ccording to reliable information'], in South West Africa beyond the borders of Etosha'[73]. Thus, whilst the total number of black rhino in the territory had tripled since 1966, 85% of the population at this time was within the boundaries of Etosha National Park[74].

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[63] For a short period the boundary of Etosha National Park extended along the Ugab River to the coast (from 1958), was moved north to between the !Uniab and Koigab Rivers from 1967 to 1970 (Tinley 1971), and then the westwards boundary reverted to its present position in 1970. From 1907 until 1958 the western boundary of the park instead stretched north-west to encompass northern Kaokoveld. See map of the changing boundaries of Etosha National Park in Dieckmann 2007, p. 76.
[64] Joubert 1984, p. 12, author translation from Afrikaans, with help of Google translate 30 August 2020.
[65] Joubert 1984, p. 14. Hearn (2003, p. 8) writes that 56 rhino were moved into Etosha from1968-1973.
[66] Botha 2005, p. 180.
[67] Owen-Smith 1972, p. 33.
[68] Reardon 1986; Owen-Smith 2010.
[69] Owen-Smith 2002, pp. 2, 8.
[70] Jacobsohn 1998[1990], p. 45.
[71] Reardon 1986.
[72] https://rhinos.org/2019-state-of-the-rhino/ last accessed 12 September 2020.
[73] Joubert 1984, p. 14.
[74] Joubert 1984, p. 14.

This pattern seems to be something of a reversal of what is known of the past distribution of *D. bicornis bicornis*, wherein rhino were rarely encountered in the vicinity of the present-day Etosha National Park: the first Europeans to apparently reach the pan in 1851 (Francis Galton and Charles John Andersson) reported few (if any) rhino in the northern areas through which they travelled[75]. Joubert echoes this observation, reporting that '[a]ccording to the old Heikum [Hai||om] Bushman now resident at Okaukeujo, no rhino were ever known to them or their fathers to have occurred in their old hunting grounds to the near west and south of the Etosha pan'[76].

The reduced western rhino populations remained under attack, with, for example, a Rehoboth resident shooting five rhinos in the former Damaraland 'Homeland' (two in the Palmwag Concession) in 1989[77]. These pressures precipitated a controversial dehorning programme: in the same year, then Senior Nature Conservation Officer Rudi Loutit and Department of Nature Conservation vet Pete Morkel undertook 'the first ever de-horning of wild rhino in vulnerable areas south of the cordon [vet] fence', and ten rhino were reportedly also translocated to Waterberg Plateau Park[78].

This specific set of patterns and pressures regarding the distribution of *D. bicornis bicornis* in the late 1970s and early 1980s prompted formation of the series of non-governmental conservation organisations (NGOs) coalescing in 'Save the Rhino Trust' today[79]. An Auxiliary Game Guard system operating in conjunction with government patrols in areas of settlement and pastoral land-use in north-west Namibia, also helped to improve circumstances as the 1979-1982 drought broke and hostilities involving South Africa, Angola and Namibia ceased in the late 1980s[80]. As the late Mike Hearn writes,

> [f]ocusing on the charismatic megafauna, a community-based conservation approach in the early 1980s was balanced by intensive field operations and strong law enforcement carried out by both government and non-governmental organisations. These measures greatly reduced poaching and contributed to wider biodiversity conservation objectives.[81]

3. And now?

This brief historical narrative draws out several key and interconnected issues underscoring the challenges of black rhino conservation in west Namibia today. The ferocious impacts of

[75] Galton 1852, 1890[1853]. Also compare the information in the two maps linked below, which indicate areas of historical travel where rhinos do not appear to have been encountered:
1) https://www.futurepasts.net/historical-references-rhino-namibia records historical encounters with rhino (as per Figure 3);
2) https://www.etosha-kunene-histories.net/wp4-spatialising-colonialities spatialises observations from the journeys of historical travellers who kept journals of their observations.
Note that this mapping of historical references is ongoing. It is possible (although perhaps unlikely) that further literature review may clarify more historical records of encounters with rhino elsewhere in Namibia. As it stands, there appear to be large areas of the territory travelled through historically where no rhino were encountered with other areas of dense encounters with rhino that have none of these animals today.
[76] Joubert 1971, p. 36
[77] Owen-Smith 2002, p. 7.
[78] Owen-Smith 2002, p. 7.
[79] Clements *et al.* 1984; Reardon 1986; Hall-Martin *et al.* 1988.
[80] Berger *et al.* 1993, p. 923.
[81] Hearn 2003, p. 1.

hunting with firearms on an unsuspecting and slow-reproducing species from the late 1700s onwards, led to the present circumstances of remnant black rhino populations in remote and inaccessible areas that are challenging to monitor and patrol. The parallel historical marginalisation of Namibia's autochthonous peoples and resultant economic vulnerability, combined with structural inequality and promoted desires for perhaps unattainable levels of consumerism, potentially cloaks access to the 'new gold' of rhino horn with the seductive allure of a quick solution to personal poverty[82].

In combination, all these factors make the continued, but vulnerable, conservation of black rhino in the communal area conservancies and tourism concessions of west Namibia even more extraordinary. The ongoing presence and recovery of black rhino populations in west Namibia today[83] is testament to the work of a series of highly committed individuals, non-governmental organisations (NGOs), long-term donors and government agencies. It is also connected with a series of strategic translocations of animals, local perceptions of which are explored in Simson !Uri‡khob's dissertation below.

Today's proactive rhino monitoring and conservation work brings renewed efforts to improve the value that local people attach to saving the region's black rhino. This effort was catalysed in 2003 with the Namibian Ministry of Environment and Tourism's (MET, now Ministry of Environment, Forestry and Tourism, MEFT) willingness to extend their Black Rhino Custodianship Programme (BCRP) into Namibia's remaining communal areas[84]. Originally formed to support black rhino protection on commercial farms under freehold tenure, extension of this rhino custodianship policy into areas under communal tenure demonstrates the government's willingness to share key values including power (through devolved decision-making), respect (through co-management roles) and wealth (through the emerging rhino tourism)[85]. As Chief Control Warden for the BCRP, Birgit Kötting, writes,

> [t]he first communal conservancy officially joined the BRCP in April 2004, when four animals were introduced into a fenced core area. From 2006 onward, several other conservancies, all in the remote Kunene region of northwest Namibia, have joined the program and taken in rhinos from the free-roaming Kunene population.[86]

This is the context in which Simson !Uri‡khob's dissertation is situated and to which it contributed.

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[82] As depicted for west Namibia in the 2019 Namibian film *Baxu and the Giants* https://www.baxuandthegiants.com/.
[83] Brodie *et al*. 2011.
[84] An enduring split in Namibia between areas under freehold tenure and areas remaining as 'communal land' is an outcome of Namibia's specific historical circumstances. This history gave rise to a division between surveyed freehold farms allocated to settler farmers by the country's colonial and apartheid governments, separated from areas forming so-called 'Native Reserves' and 'Homelands' where peoples autochthonous at the advent of colonial rule were constrained to live and that have remained under communal forms of tenure and management (Sullivan 2018). Today, this split is becoming refracted in various ways: for example, through the redistribution of freehold land to black Namibian commercial farmers, as well as to disadvantaged communities as resettlement farms. In remaining communal areas, a broader movement towards Community-Based Natural Resources Management (CBNRM) and diversified livelihoods has encouraged the establishment of some 86 registered conservancies in communal areas, with more than 200,000 people residing in these conservancies (MET/NACSO 2020; Lendelvo *et al*. 2020).
[85] Muntifering *et al*., 2017; Kötting 2020, online.
[86] Kötting 2020, online.

In 2003, SRT also established a partnership with a renowned private sector tourism operator, Wilderness Safaris, to design and deliver a novel rhino tracking experience[87] that would also serve as a prototype[88] for expanding rhino tourism joint-ventures into additional communal area conservancies. Following extensive discussions with community leaders during a stakeholder workshop in 2004[89] it was clear that the tourism opportunity would become the driving force behind the impending translocations and reintroductions of over 40 black rhinos from their core habitat in the Palmwag Concession Area into historical rangelands across the Kunene region, between 2005 and 2010[90]. These proposed translocations were the primary reason for Simson !Uri‡khob's MSc research into the 'Attitudes and perceptions of local communities towards the reintroduction of black rhino (*Diceros bicornis bicornis*) into their historical range in northwest Kunene Region, Namibia', as shared below.

More recently, in an attempt to combat the latest escalation in poaching, conservancy leadership in the north-west requested NGOs (specifically SRT) to consider engaging and empowering a new generation of 'Conservancy Rhino Rangers' appointed by and accountable to them (the Conservancy), so as to help fulfil conservancy obligations to the government as Rhino Custodians. This initiative led to the establishment of the Conservancy Rhino Ranger Incentive Programme in 2012. This programme sought to shift the rhino protection agenda from being government/NGO-based, towards a more community-led initiative, while also providing a community-centred basis to strengthen collaboration across multiple institutions and industries including government, NGO, private sector tourism and law enforcement[91].

Simson !Uri‡khob's MSc dissertation from 2004 thus contributes understanding regarding the attitudes towards black rhino held by local inhabitants in southern Kunene who were faced with a particular moment of the reintroduction of this species to areas of its former habitation. At this time, around 6,000 people were living 'close to the rhino range, dispersed in small villages and at natural water points occurring on the periphery of the rhino range'[92]. Simson's dissertation provides important baseline data from 16 years ago that can be revisited so as to contextualise contemporary rhino presence in west Namibia, the present status of the translocations being prepared for in the early 2000s, and as a resource for considering relationships between local peoples and rhino populations today.

In editing and preparing Simson's dissertation for publication it was decided not to update the text, but instead to share it as a particular moment in the development of new relations between people and rhinos in the communally managed areas of southern Kunene Region. Circumstances here of course are changing all the time. Bringing this Foreword to completion towards the end of 2020 we are faced with the unprecedented and unpredicted impacts of the

[87] Muntifering *et al*., 2019.
[88] Muntifering *et al*., 2020.
[89] Durrell Institute for Conservation and Ecology 2005.
[90] Uri-khob *et al*., 2010.
[91] Muntifering, 2019.
[92] Hearn 2003, p. v.

COVID-19 pandemic. Travel bans and other regulations are making it extremely difficult for Namibia's communal area conservancies to receive the tourists on which the CBNRM model for income generation and livelihood improvement largely relies[93]. The settlements and communities focused on in Simson's dissertation are significantly affected, as is the work of SRT.

Yet, what is encouraging is an unrelenting willingness and dedication demonstrated by the men and women working together on the ground in north-west Namibia to ensure 'their' rhinos are safe from poachers. They have not only continued with their rhino monitoring work, but have actually increased their efforts. Notably, since the COVID-19 lock-down measures and tourism restrictions took place, rhino monitoring effort – in terms of field days and foot kilometres – has dramatically increased: by 13% and 27% respectively, compared with the same period in 2019. Further, an all-time monthly rhino sighting record was achieved in July 2020 with 467 confirmed sightings[94]. What is even more noteworthy is that these results have occurred despite COVID-19 related reductions in patrol food and delayed performance bonus payments, and with zero tourism income.

The COVID-19 pandemic has certainly emphasised the need for all tourism-reliant institutions to diversify income streams. Moving forward, SRT and our partners in rhino conservation are exploring new financial models, possibly building off the Community Conservation Fund Namibia's *Wildlife Credit* initiative that leverages multiple income streams from a diverse set of financing sources[95]. Although dependent on sustained tourism income, it is also heartening that recent data show a willingness amongst rhino safari tourists towards paying more for a greater share of any profits to be distributed to local communities, as well as a preference towards paying more for local rhino tracker involvement in rhino safaris[96]. Perhaps additionally relevant for rhino conservation in north-west Namibia could be a deeper entangling of cultural and historical dimensions of land-use and value with conservation concerns, such that 'cultural heritage' and an appreciation of peoples' pasts might be connected more strongly, and with mutual benefit, to contemporary conservation activities in the area[97].

Simon !Uri‡khob's MSc dissertation clearly demonstrates great local appreciation of *Diceros bicornis bicornis* in north-west Namibia. The ongoing challenge is to align multiple values for this charismatic but threatened species, such that black rhino remain in their starkly beautiful desert home into the future, and local peoples continue to benefit from their value.

[93] Lendelvo *et al*. 2020.
[94] SRT unpublished report, 2020.
[95] Naidoo *et al*., in review.
[96] Naidoo *et al*., in review.
[97] Sullivan and Ganuses in press.

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'Ulundi', by Blythe Loutit. Greetings card sold from the late 1980s by Save the Rhino Trust to raise money for a Conservation Endowment Fund used to support rhino conservation. Source: scanned card sent to Sian Sullivan in 1988, personal archive.

Attitudes and perceptions of local communities towards the reintroduction of black rhino (*Diceros bicornis bicornis*) into their historical range in northwest Kunene Region, Namibia: a Masters Dissertation from 2004

Simson !Uri‡khob[1] [2]

Abstract. This paper examines the attitudes and perceptions of rural communities living in three conservancies in the Kunene Region of Namibia towards wildlife in general, and to the reintroduction of black rhino (*Diceros bicornis bicornis*) into these conservancies, which fall within the historical range of this species. A questionnaire survey was undertaken in May and June 2004 that captured information on demographic data, socio-economic data and knowledge of wildlife amongst households residing close to the current rhino range, as well as with those living in the middle of the surveyed conservancies and in neighbouring self-sufficient conservancies. A high proportion of respondents were found to be very positive towards conserving wildlife as well as to the reintroduction of rhino. Positive attitudes tended to be associated with education and were also associated with households that already benefit from a conservancy, as well as amongst those who live next to conservancies with good benefit-sharing schemes. These findings suggest that benefits influence attitudes. It was additionally found that respondents whose family members work in tourism-related fields were very positive towards conserving wildlife. Education level, age, gender, occupation and which conservancy respondents were from were the most important factors influencing attitudes of respondents towards conserving wildlife. At the same time, a proportion of respondents were not in favour of conserving wildlife, reportedly since they do not receive any benefits from wildlife, incurring only losses to livestock and crops from wildlife, and especially from elephants and predators.

Potential release sites for black rhino reintroduced to conservancy areas were identified by respondents and assessed separately for their habitat suitability, access to surface water and the impact of human settlements in these areas. The Klip River area of the ≠Khoadi-||Hôas Conservancy was found to be the most favourable site for reintroducing rhino. Zonation of this area by the conservancy for only wildlife use further supports this site being considered for the reintroduction of rhino into their historical range in the following year. Finally, it was realised that examination of the relationship between local communities and conservation issues requires deeper understanding of the history of the region as well as factors shaping regional political concerns.

Key words. Black rhino (*Diceros bicornis bicornis*); Kunene Region, Namibia; ≠Khoadi-||Hôas Conservancy; Omatandeka Conservancy; ||Huab Conservancy; species reintroduction; CBNRM; biodiversity conservation

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[2] *Contribution statement*: Simson !Uri‡khob is the sole author of this Working Paper. It has been minimally edited and formatted by Sian Sullivan, but no updating has taken place.

1. Introduction

This paper aims to understand three main things: 1) the attitudes of local communities towards reintroduction of black rhino (*Diceros bicornis bicornis*) into the historical range of this species in north-west Namibia; 2) the perceptions of community members regarding the positive and negative aspects of living with black rhinos; and 3) the ecological suitability of reintroduction sites. Surveys of attitudes of rural people towards conservation can provide guidance for present and future policy, and for management decisions involved in the design, implementation and evaluation of conservation development projects in Namibia (Parry and Campbell 1992).

1.1 General introduction

In many parts of the world, conflict between local communities and wildlife is a major conservation issue, especially in relation to conflicts with large-bodied animals (Lee *et al.* 1986). The success of conservation efforts on communal land[3] is dependent on smoothing this relationship between wildlife and the people who incur the costs of living with wild animals (O'Connell-Rodwell *et al.* 2000). In response, a process of addressing sustainable development on communal land in Namibia was initiated by the post-Independence Namibian Government which, among other activities, put faith in a community-based approach to natural resource management (CBNRM[4]) (Jones 2001). Community-based conservation is a way of trying to involve and engage rural people and communities in taking joint responsibility for the sustainable management of wildlife and other natural resources in a defined area, and to share, both directly and indirectly, the benefits of this management.

The development of policies arising from Namibia's Policy on Wildlife Management, Utilisation and Tourism in Communal Areas made it possible to implement suitable institutional conditions that allow the implementation of conservancies on communal land (Skyer 2003). The aim of this policy in Namibia is to promote the development of rural communities who live close to wildlife, along with the legal and sustainable use of wildlife

[3] Land that was not surveyed, fenced and privatised (i.e. enclosed) under Namibia's German colonial and apartheid administrations, constituting remaining areas in which autochthonous Namibians could live.

[4] *List of Acronyms:* AfRSG - African Rhino Specialist Group; CBD - Convention of Biodiversity; CBNRM - Community Based Natural Resource Management; DEA - Directorate of Environmental Affairs; DICE - Durrell Institute of Conservation and Ecology; DFID - Department for International Development; DRFN - Desert Research Foundation of Namibia; ENP - Etosha National Park; EWT - Endangered Wildlife Trust; GPS -Global Positioning System; HWC - Human-Wildlife Conflict; IRDNC - Integrated Rural Development and Nature Conservation; IUCN – International Union for the Conservation of Nature; IUCN/ SSC - IUCN Species Survival Commission; LIFE Programme – Living in a Finite Environment Programme (funded by WWF/USAID); MCP - Minimum Convex Polygons; MET - Ministry of Environment and Tourism; MWCT - Ministry of Wildlife, Conservation and Tourism; NWT - Namibia Wildlife Trust; NASCO - Namibia Association of CBNRM Support Organisations; NGO - Non-Governmental Organisation; SWA - South West Africa; SADC - Southern African Development Countries; SADF - South African Defence Force; SRT - Save the Rhino Trust; UNAM - University of Namibia; UNDP - United Nation Development Programme; USAID - United States Agency for International Development; USFW - United States Department of Fisheries and Wildlife; WILD - Wildlife Integration for Livelihood Diversification; WWF - World Wide Fund for Nature

populations, and other natural resources outside protected areas where human habitation is restricted or disallowed. The objective is to demonstrate the positive role that wildlife, and its habitat, can have in land-use planning for socio-economic development at local, regional and national levels (Ashley 1995).

The CBNRM programme in Namibia is seen by some as a movement rather than a project or programme, and is regarded as the leading model in the country – even the continent – for a more integrated and strategic approach to rural development. It also serves as a bridge for maintaining relationships between rural communities, conservation bodies and the private sector (Jones and Murphree 2001). CBNRM differs from concepts such as co-management and protected area outreach, in that the community located alongside wildlife and natural resources (or at least its representatives), has a much greater degree of decision-making power over control and benefit sharing (Jones 1996; Barrow and Murphree 2001). The CBNRM approach underlines the establishment of conservancy programme in Namibia (Barrow and Murphree 2001). A conservancy consists of a group of commercial farms or areas of communal land of which neighbouring land owners or members have pooled resources for the purpose of conserving and using wildlife sustainably.

Although at the time of writing the conservancy approach in Namibia is still new, this MSc dissertation from 2004 affirms that communal area residents believe the approach is in some respects beneficial to them. Tourism is one means of generating direct financial benefits from wildlife for local communities. Even before the establishment of conservancies, some community members managed to build small campsites and crafts shops and generated funds for their day to day life with the help of NGOs like Save the Rhino Trust (SRT) and the Endangered Wildlife Trust (EWT). In the Kunene Region of north-west Namibia the black rhino is one of the main tourist attractions. However, no real specific benefits accrue from rhino for the local communities in this region, since [at the time of writing] most rhino only occur in the tourism concessions, which are run by private lodge owners and tour operators who pay lease fees to Treasury.

It is often asserted that in the past communities developed a negative attitude towards wildlife, because they were unable to benefit from the wildlife alongside which they were living. The attitudes of local people, however, also vary according to gender (i.e. sex as male or female), age and previous experience of wildlife (Hill 1998). For an effective conservation programme to work, therefore, the attitudes of local communities must be studied so as to understand their perceptions towards wildlife and the conservation of natural resources (Fiallo and Jacobson, 1995).

In particular, an increasing number of conservationists are concluding that secure property rights are the most important element for the success of community-based conservation

initiatives. It is a major challenge, however, for conservationists to promote secure tenure where communities have no state recognised land rights (Lynch and Alcorn 1994). These are the circumstances in which this study is situated.

1.2 Background to the study

1.2.1 Continental trends in black rhino conservation

Although once widely distributed across the African continent, numbers of black rhino *(Diceros bicornis)* have declined from as early as the latter half of the 19th century, due primarily to hunting in association with the strengthening of European influence over trade and land use for other purposes (Emslie and Brooks 1999). Heavy poaching in the 1970s, resulting from high demand for rhino horn in Asia and Middle Africa, meant that rhino numbers decreased from approximately 65,000 across the entire continent, to a few hundred in some countries (Figure 1), although Namibia and South Africa's black rhino numbers *increased* following the 1980s.

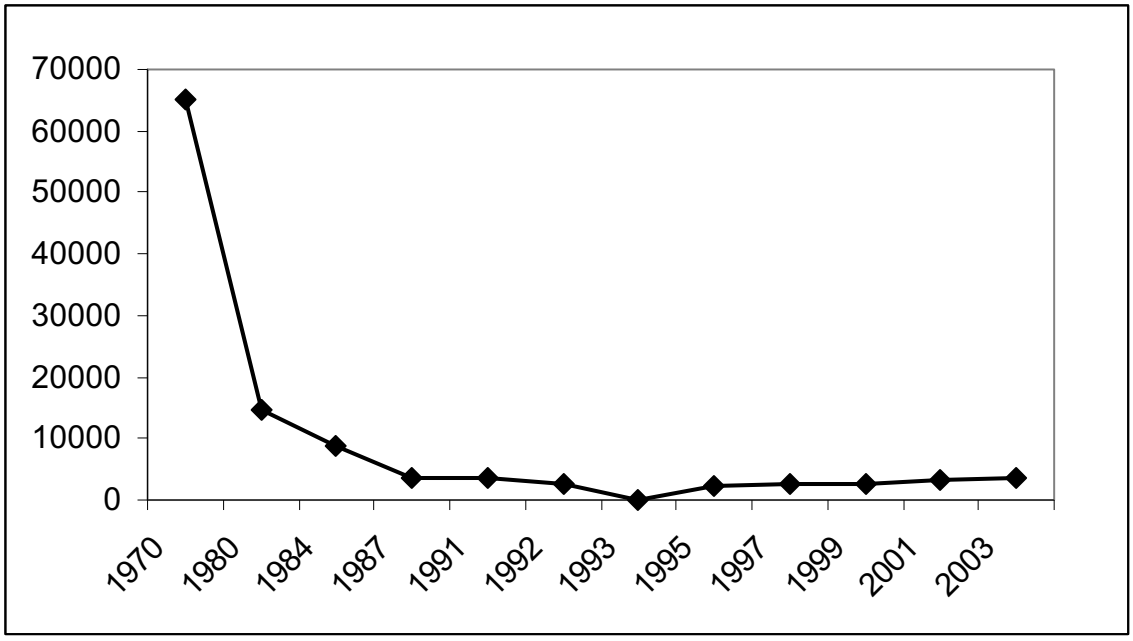

Figure 1. Trend in numbers of black rhinos across Africa, 1970 – 2003. Source: Emslie and Brooks, 1999 and additional data from AfRSG (African Rhino Specialist Group) 2004).

In 1997, the continental total of black rhinos was estimated at only 2,600 animals (Emslie and Brooks 1999). There are four black rhino subspecies in Africa (Figure 2). The western black rhino (*Diceros bicornis longipes*) is mainly distributed in Cameroon with maybe a few remaining in Chad[5]. The Eastern black rhino (*Diceros bicornis michaeli*) were historically

[5] Declared extinct in 2011, see https://www.savetherhino.org/rhino-species/black-rhino/western-black-rhino-declared-extinct-in-2011-journalists-reporting-news-two-years-later/ (Editor's note).

found across Kenya, Tanzania, Sudan, Ethiopia, Somalia and some occur out of range in South Africa. The south-central black rhino (*Diceros bicornis minor*) is the most numerous of the black rhino subspecies and occurred historically from western and southern Tanzania, throughout Zambia, Zimbabwe and Mozambique to the north and eastern parts of South Africa (Emslie and Brooks 1999). The southwestern black rhino (*Diceros bicornis bicornis*) forming the basis of this study is an arid-adapted subspecies, for which the majority of animals occur in Namibia with [at the time of study] some possibly occurring in southern Angola and western Botswana, as well as some small reintroduced populations in southwestern South Africa.

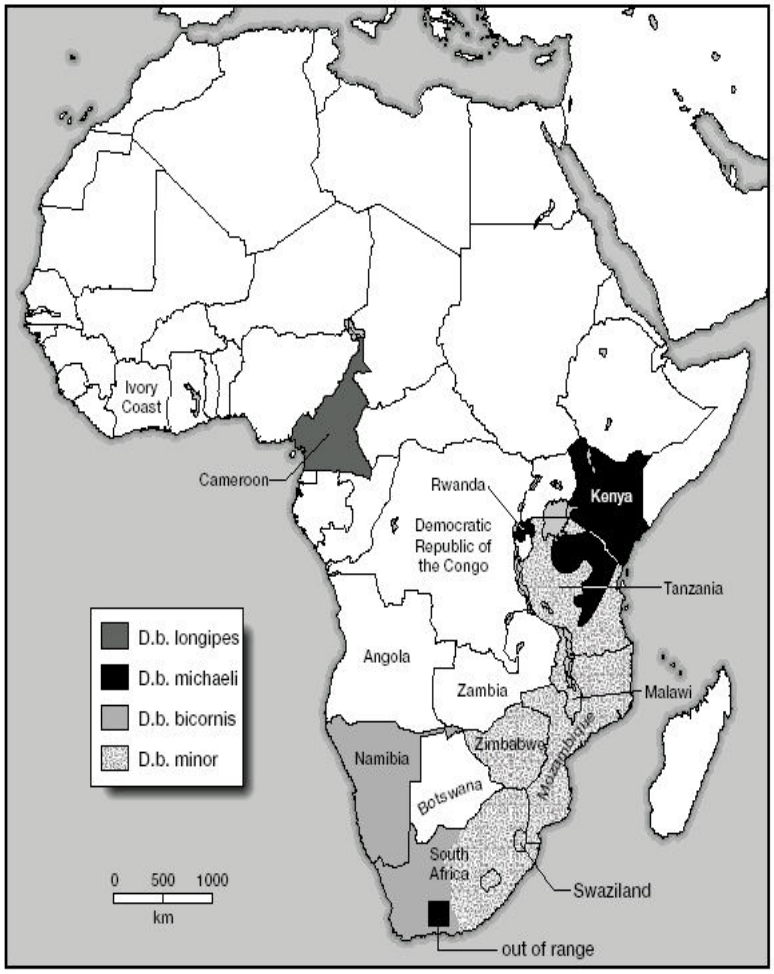

Figure 2. Map of Africa showing the distribution of the four subspecies black rhino in 1997 at the continental level in Africa. Source: based on information in Emslie and Brooks (1999).

Coupled with protection, good biological management across the continent has been a critical factor leading to the gradual recovery of black rhinos. Information gained from surveys of black rhino provide managers with the necessary data to improve their understanding of factors affecting population performance. This includes: breeding rates; mortalities; rhino distribution and social behaviour; rhino density with respect to carrying capacity; and, climatic events. This information has enabled adaptive management approaches aiming to

manage current populations below carrying capacity and translocate founder populations to new areas for rapid growth. These programmes have involved partnerships between state and the private sector (Emslie and Brooks 1999).

1.2.2 Black rhino conservation in Namibia

Namibia's black rhino population forms one third of the remaining population of black rhino in Africa and is the stronghold of the southwestern subspecies (*Diceros bicornis bicornis*) (MET 2003). The historical range of this subspecies includes Angola, western Botswana and the northern and western Cape of South Africa, which are all neighbours of Namibia. Historically, rhino were distributed in the then South West Africa, northwest from Outjo to the Kaokoveld and Kunene River, northeast beyond the town of Gobabis in isolated localities in '!kungveld' and Okavango, with the remainder of the distribution east along the 16th Longitude and south past Windhoek to the Orange river (Joubert 1971). Today, however, they are confined to northwest Namibia between the Ugab and Hoarusib rivers, where they are most plentiful on the semi-desert plains and adjoining arid mountains of both the Kaokoveld floristic region, known in the past by the former 'Homeland' names of 'Damaraland' and 'Kaokoland' (Figure 3) (Viljoen 1982; Loutit *et al*. 1987; Hearn 2003). They also occur in state protected areas, with [at the time of writing] an increasing population managed by freehold/commercial farmers under the custodianship programme, under agreement with the Government (MET 2003)[6].

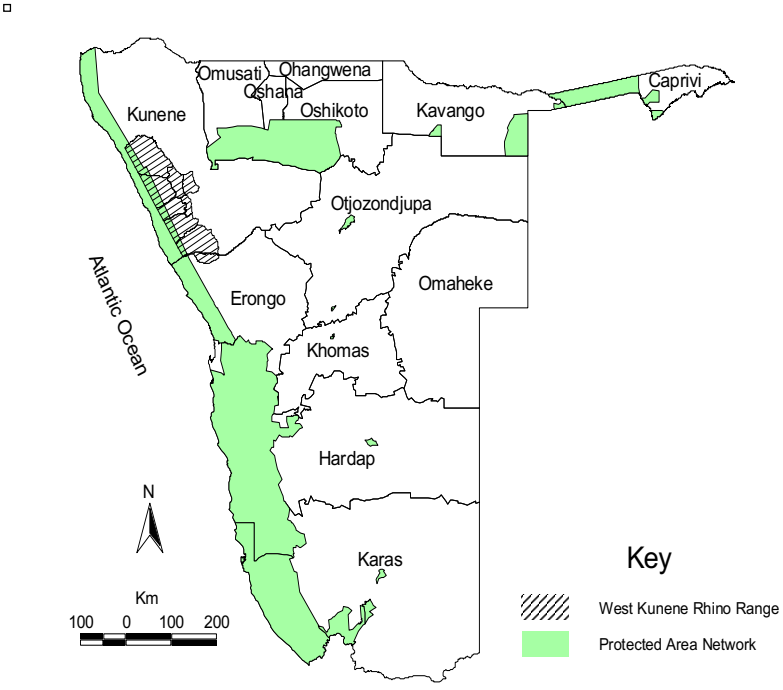

Figure 3. Kunene rhino range and regions of Namibia, in relation to the protected area network in Namibia. Source: Hearn 2003, p. 1.

[6] As mentioned in the Foreword above, this rhino custodianship programme was extended to communal-area conservancies in 2003.

Black rhino numbers are increasing slowly under a well-established conservation and management programme, developed and updated through the MET Black Rhino Conservation Strategy for Namibia (MET 2003). Increases have been recorded each year (Figure 4), although there was a drop in 1990 during the period of independence. The 2004 figure for black rhino, presented at the African Rhino Specialist Group (AfRSG) meeting in Kenya, stands at a national population of 1140. This dramatic increase is accounted for by the refining of count methods in Etosha National Park (ENP).

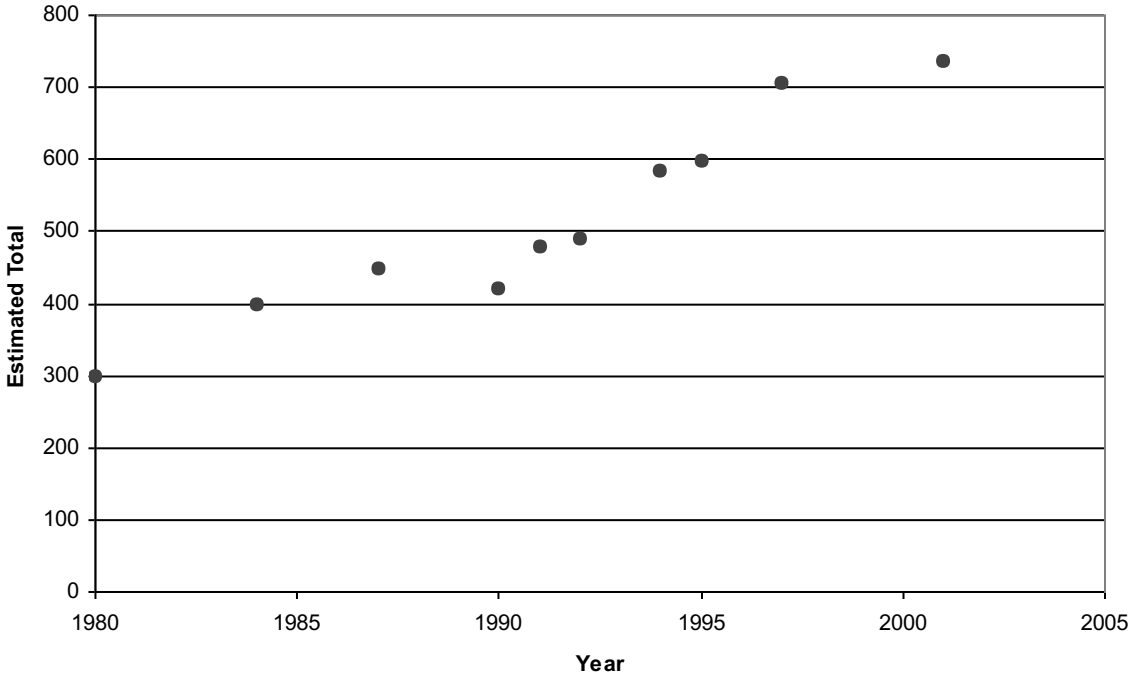

Figure 4. Estimate of the numbers of rhino for Namibia from 1980 – 2002. Source: AfRSG figures from 2004.

The rhino in northwest Kunene Region of Namibia were nearly wiped out between 1970 and 1981, partly by heavy poaching by some local residents of Kaokoland and Damaraland to obtain money to buy livestock, but also through poaching by the South African Defence Force (SADF), coupled with a catastrophic drought in the north (Owen-Smith 1986). In 1982, Blythe Loutit, the late Ina Britz and other concerned conservationists and conservation minded people gathered to form the Namibia Wildlife Trust (NWT). The group was joined by Garth Owen-Smith and was helped by Chris Eyre, then the Nature Conservation official for Kaokoland. As a result, poaching was brought under control through community game guards (CGGs) (Owen Smith, 1986) who knew the area, movements of the game and even the poachers because some of them 'were former poachers'. After this period of heavy 'commercial' poaching, the growth of human population and people overlapping with rhino habitat meant that the available range of the Kunene rhino population shrank further.

The Namibian black rhino is the largest of all the subspecies, adapted to arid conditions and not represented in any zoo or captive breeding facility. In physical characteristics, the desert-dwelling black rhino are much the same as those of the east coast, but they vary ecologically, because of differences in habitat. The desert-dwelling black rhino has been given the highest priority by both the Namibian government and the international scientific community (Reuter and Lindeque 1997; MET 2003). At the time of writing, this rhino in west Namibia constitutes the last substantial population of any species of rhino anywhere in the world living outside a protected area.

The future of the southwestern black rhino will depend on Namibia's ability to maintain adequate standards of protection, monitoring and sustainable utilisation of rhinos, along with expanding current areas of the range of this species to accommodate further population increases. Although the numbers of Namibian black rhinos are increasing, the expected target of a viable population of 2000 animals will only be achieved with expansion of its range (MET 2003). This is only possible through the reintroduction of 'wild-collected' individuals into ecologically suitable sites within their historical range, where the species no longer occurs (Primack 2002).

1.2.3 Re-introduction

The Re-introduction Specialist Group of the IUCN's Species Survival Commission (IUCN/ SSC) has drafted guidelines in response to the increasing occurrence of re-introduction projects worldwide, and consequently, to the growing need for specific policy guidelines to help ensure that these re-introductions achieve their intended conservation benefits (IUCN 1995).

Re-introduction is the releasing of captive-bred or wild-collected individuals into an ecologically suitable site, within their known historical range but where in the present the species no longer occurs. The main aim of re-introduction programmes is to establish viable, free-ranging populations in areas where they have become locally extinct. The objectives of re-introduction include enhancing the long-term survival of a species, providing long-term economic benefits to the local economy, and promoting conservation awareness. In the case of a re-introduction, the movement of individual animals from wild populations is referred to as translocation rather than re-introduction. An augmentation programme involves releasing individuals into an existing population to increase population size and enhance the gene pool. These animals can also be captive bred or wild collected individuals (Primack 2002).

Re-introduction is a systematic process that must proceed through four main phases: 1. a feasibility study and background research to determine the possibility of success of the re-introduction; 2. a preparation phase; and most importantly, 3. the post release and 4. monitoring phases (Stanley-Price 1989). Drawing on especially Primack (2002), overlapping

with these phases are a further five key dimensions needed for the success of species re-introductions:

1. Feasibility study

A feasibility study is required to assess the taxonomic status of the individuals to be re-introduced. They should preferably be of the same subspecies as those which were extirpated, unless there is not enough of the same taxonomic group. Detailed studies should be made that includes the description of habitat preference, intraspecific variation and adaptation to local ecological conditions, social behaviour, group composition, home range sizes, shelter and food requirements foraging behaviour and feeding, predators and diseases.

2. Availability of suitable stock

Source animals should come from wild populations and should ideally be closely related to the native stock and the removal of individuals for re-introduction should not endanger the source population. Since there is no captive black rhino in Namibia all the re-introduction animals need to be from different source populations.[7]

3. Availability of suitable release sites

To guarantee the long-tem survival of the re-introduced species, re-introductions should only take place in habitats and landscapes that fulfil the requirements of the policy guidelines of the IUCN/SSC. The re-introduction of a species should occur in their historical range, where they will adapt to the environment quickly.[8]

4. Identification and elimination of causes of species decline

Before re-introducing animals into a new environment the causes of previous extinctions should be clearly understood and eliminated or controlled. Most of the previous causes of decline in a species include: over-hunting, over-collection, pollution, poisoning, disease, competition with or predation by introduced species, habitat loss and competition with livestock.[9]

5. Local community support

It is expensive to establish a new population and therefore requires good planning and long-term commitment. An assessment of the attitudes of local people is necessary to ensure the long-term protection of the re-introduced population, especially if the causes of decline were due to human factors. For a re-introduction programme to be successful, it should be fully

[7] An example of such re-introductions from wild populations is the Kakapo (*Strigops habroptilus*), a large flightless, nocturnal and solitary parrot in New Zealand which went extinct because of introduced mammalian predators. Only two small populations were discovered in the late 1970s following which 65 kakapos were collected from the wild and released onto an isolated island where their breeding was a success, although the chick's survival was very low and needed extra artificial incubation and raising of chicks in captivity (Primack 2002).

[8] For example, the fish species known as the Big Bend Gambusia (*Gambusia gaigei*) was only found in a single spring in Texas, which dried up in 1954, eliminating this population such that the species was thought to be extinct. A year later, however, the fish species was rediscovered and were raised in captivity and released into an artificial pond that helped the species to survive the drought and invasion by exotic fish. The species were later re-established in their original spring which was then managed for the protection of this species (Minckley 1995, cited in Primack 2002).

[9] For example the re-introduction of the Arabian oryx (*Oryx leucoryx*) in Oman was a successful project, but the oryx had to be moved after two decades of success due to the theft of oryx to supply private collectors (Stanley-Price 1989).

understood, accepted and supported by the local communities, hence the relevance of the present study. In particular, to avoid any negative impacts from the re-introduction on the local community the re-introduced species should not cause any threat to human life, property or livestock. Providing economic benefits in the form of compensation for damage, or employment opportunities will create incentives and therefore greater community support for the project. The re-introduction of four black rhino into Uukwaluudhi Conservancy of Omusati Region in north-central Namibia, for example, led to community members being employed as game guards and generated new options for tourism development in the area.

1.2.4 The emergence of a community based conservation approach to conserving natural resources

As noted above, a community-based conservation approach emerged in north-west Namibia in the early 1980s, focusing on charismatic megafauna and balanced by intensive field operations and strong law enforcement carried out by both government and non-governmental organisations. These measures greatly reduced poaching and contributed to wider biodiversity conservation objectives. Nonetheless, problems associated with human–wildlife conflict (HWC) are a longstanding issue that needs to be addressed, because the damage that wildlife causes to people can result in a change of attitudes towards wildlife (Mulonga *et al.* 2003).

The former Ministry of Wildlife, Conservation and Tourism (MWCT) realised they were unable to carry out their primary tasks of maintaining ecosystems, essential ecological processes and biological diversity, as well as permitting the sustainable use of natural resources, without the involvement of the local communities who live alongside and use (or would like to use) these resources. Starting in 1992, and with the help of Save The Rhino Trust (SRT), Integrated Rural Development and Nature Conservation (IRDNC), the University of Namibia (UNAM), other NGOs and line Ministries, the then MWCT undertook a series of socio-ecological surveys in north-west Namibia. These surveys identified problems rural communities experience with wildlife and demonstrated the need to develop a partnership with local communities and NGOs to design CBNRM projects as a solution to potential conflicts between communities and wildlife. The overall aim was to establish a partnership between local people and the government in managing natural resources such as wildlife, forestry and fisheries to the benefit of all parties involved (Jones 1993).

Historically, the CBNRM idea started with the concept of community game guards (CGGs) acting under the traditional leaders and NGOs with the help of the government. It grew from this “childhood stage” until it became Namibia’s CBNRM programme. CBNRM projects have resulted in the empowerment of communities in natural resource management through conservancy development (Figure 5), diversified stakeholder participation in wildlife monitoring, and increased development options for tourism enterprises. In combination, these

endeavours have required integrated land use planning that maximises benefits to communities, whilst sustainably using resources.

The first conservancy in Namibia's black rhino range was Torra Conservancy, registered in 1998 and obtaining legal rights over the utilisation of resources. Torra rapidly became financially self-sufficient due to a lucrative tourism joint venture in the area with Wilderness Safaris (Humphrey and Humphrey 2003).

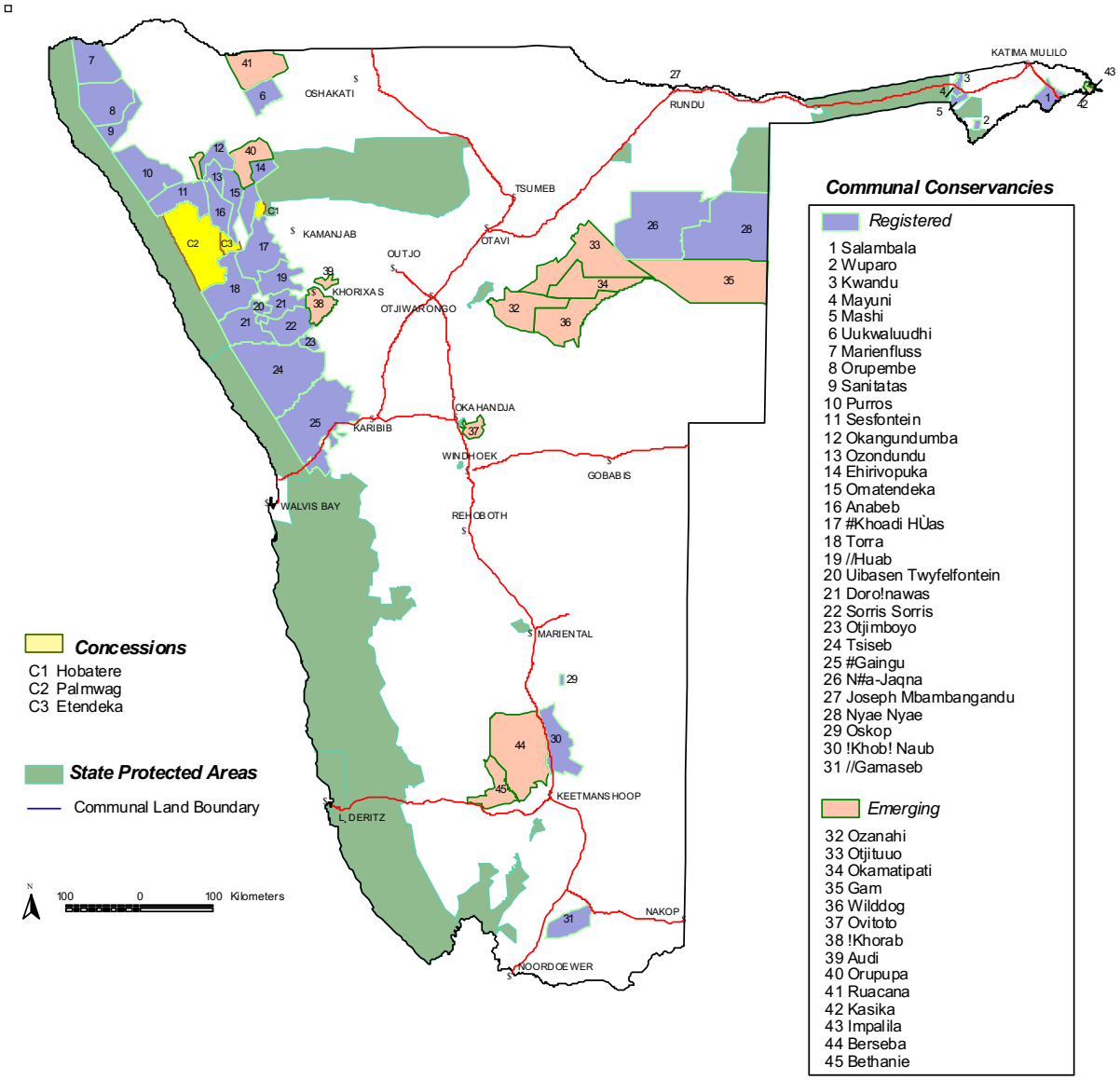

Figure 5. Map of Namibia showing the registered conservancies, parks and concessions in 2004.

1.3 Dissertation aims and objective

The black rhino of Kunene have begun a successful recovery, but are in need of biological management (Hearn 2003). Because of the possibility that rhinos may need to be relocated to areas within that historic range, this study aimed to determine which areas may ecologically be the most suitable. In addition, because the rhino population inhabits land under communal forms of management and tenure, the study aimed to assess the attitudes of communities in areas that might possibly receive rhinos.

The objectives of the study were to:

- understand the attitudes and perceptions of individuals from different households towards the reintroduction of black rhino into its historical range in Kunene Region;
- assess the rhino habitat, water availability and relevant human impacts in these areas;
- assist the Ministry of Environment and Tourism (MET) and surrounding communities in promoting the protection and sustainable management of black rhino, elephant, other fauna and their environment in northwestern Namibia, and to thereby also ensure that the biodiversity of this unique arid terrain is conserved.

2. Study Area

2.1 Namibia

Namibia is the driest country south of the Sahara. It covers an area of 824,000 km² and 78% of the entire country is classified as arid. The Namib Desert is the oldest desert in the world and covers about 50 000 km². A further 21% of Namibia is semi-arid, with a mean rainfall that varies from 100 to 600 mm per year (Curtis *et al.* 1998). Some parts of the coastal desert strip receive no rainfall at all (although acquire moisture from coastal fog, see 2.2.1), with both the south west farming areas and the north-east receiving up to 600 mm rainfall per year (Ashley 1995).

Namibia has five perennial rivers, but all of them are on national borders and do not flow through the country. The Orange River, in the south of the country forms the border between Namibia and South Africa, while the Kunene River in the north of the country divides Namibia from Angola. The Okavango, Zambezi and Kwando-Liyanti-Chobe rivers are also in the north and serve, respectively, as borders between Zambia, Angola, Botswana and Zimbabwe. All these rivers originate from neighbouring countries where high rainfall supports their flow throughout the year. In addition, twelve major ephemeral rivers flow

through the western and northwestern parts of Namibia and form their catchments (Jacobson *et al.* 1995).

2.2 Description of the Kunene study area

The field research for this study was conducted in three registered communal conservancies in the north-western part of Namibia, namely: ǂKhoadi-||Hôas and ||Huab conservancies in the former Damaraland; and Omatendeka conservancy in the former Kaokoveld (Owen-Smith 1986). There are three important ephemeral rivers in the Kunene study areas which flow only during the raining season but provide important riparian vegetation and underground water flows: Hoanib, Ombonde (a tributary of the Hoanib) and ||Huab. The study area falls in the Hoanib and ||Huab ephemeral river catchments.

2.2.1 Climate

The Kunene Region experiences three seasons: the wet season runs from March to May; the cold and dry season, from June to August; and, the dry, hot summer from September to February. Rainfall varies considerably, ranging from between 0 and 345 mm of rainfall per year, or even more, dictating the nomadic behaviour of people, livestock and wildlife in arid areas (Hearn, 1999 and references therein). The temperature too is extremely variable, ranging from zero to above 40ºC. In the west, coastal fog occurs for most of the year due to the cold Benguela Current, and this can reach as far as 120 km inland. This moisture keeps desert plants and animals alive and for this reason is ecologically very significant.

2.2.2 Geology

The former Damaraland and Kaokoland 'homelands' are located in the mountainous escarpment regions of north-west Namibia. Although much of Namibia is covered with recent deposits of sand and calcretes, the northwest is different. The area is mostly mountainous with a few plains covered with groups of rocks known as the Damaran Sequence, formed approximately 850-500 million years ago. Although separated by a thousand miles, the geology of western Namibia is very similar to the geology of areas of South America, with landscapes characterised by massive basaltic lava flows (Jacobson *et al.* 1995) forming some of the most interesting geological features in the world.

2.2.3 Topography

As mentioned above, the most influential characteristic of the northwest of Namibia is the westward flowing ephemeral rivers, which form important sources of water. Water from the upper areas of these catchments, where there is steep topography and high rainfall, drains through the semi-arid region of the communal farming areas through to the Namibian coastline (Hearn 1999). The only perennial river in the area is the Kunene River that flows

from the highlands of Angola. The most distinctive topographical features of the area are the flat-topped mountains, which can rise as high as 6000 feet (Owen-Smith 1972).

2.2.4 Soil

Very few studies of the soils in the Kunene have been conducted but it is known that the soil in the Kunene is mostly very thin and poorly developed. Alluvial and colluvial deposits are responsible for the thickest and most fertile soil. Alluvial soils develop in deposits laid down by flowing rivers, while colluvial soils form in materials moved down hill slopes which have accumulated near the base of the slopes (Jacobson *et al.* 1995). If alluvial soils are associated with a high water table they can be appropriate for agricultural purposes, but suffer from poor drainage and are naturally very salty. The result of too high a concentration of humans, livestock and wildlife in small areas of alluvial soils may cause removal of vegetation cover and compaction of the soil surface, resulting in ground erosion.

2.2.5 Vegetation

Namibia has six different major vegetation types comprising the Northen Namib, Central Namib, Southern Namib, Saline desert, Mopane savanna and the endemic-rich winter Desert and Succulent steppe (Barnard *et al.* 1998). Changes in rainfall, coupled with the temperature, soil and topography, determine the diverse and changing vegetation structure across Kunene Region (Jacobson *et al.*, 1995). Most of Kunene Region is comprised of areas dominated by "Mopane" (*Colophospermum mopane)* savanna, which become restricted to depressions and small riverbeds in areas with under 100 mm mean rainfall (Hearn 1999). Other dominant species found in Kunene are *Salvadora persica, Boscia albitrunca, Euphorbia damarana, Terminalia prunioides, Euphorbia virosa, Boscia foetida* and *Acacia reficiens,* the latter mostly in grassy plains areas. Large stands of ephemeral grasses include *Stipagrostis uniplumis* which dominates the landscape in some parts of Kunene but is subject to intense grazing closer to water-points (Owen-Smith 1972) where grazing and trampling by concentrations of cattle can undermine the ability of soils to hold water during the rainy season (Jacobson *et al.*, 1995). Large trees like *Faidherbia albida, Acacia tortilis, Acacia erioloba, Combretum imberbii* and *Combretum wattii* are found along the riverbeds (Fennessy and Fennessy 2004).

2.2.6 Fauna

Although the northwest of Namibia has experienced severe drought at different periods in the last 25 years, as well as serious poaching that spiralled out of control from the late 1970s, game populations have built up again and can now be seen moving across the area in large numbers. Most of the big game animals can also be found in all the conservancy study sites including elephant (*Loxodanta africana*), giraffe (*Giraffa camelopardalis*), Hartmann's zebra *(Equus zebra hartmanni)*, greater kudu (*Tragelaphus strepsiceros*), oryx (*Oryx gazella*), springbok (*Antidorcas marsupialis*), eland (*Tragelaphus oryx*) and black-faced impala

(*Aepyceros melampus petersi*) in some areas. Predators, especially lions (*Panthera leo*), leopards (*Panthera pardus*), cheetah *(Acinonyx jubatus*) and spotted hyaenas (*Crocuta crocuta*) also occur in the study area.

Many species of birds as well as some small mammals and reptiles also occupy these areas, the latter being elusive and not easy to see. The region is additionally rich in endemic plants and animals, many having names that honour the region, for example the Damara tern and the Herero chat (*Namibornis herero*) (Tinley 1971). Namibia has approximately 13 species of birds that are regarded as endemic, or near endemic, and most of them are restricted in distribution to the northwest of Namibia (Jarvis and Robertson 1997).

2.3 Human Population

2.3.1 Colonial history

Namibia, formerly Deutsche-Südwestafrica during the German colonial period from 1884 to 1915, and South West Africa (SWA) during the South African colonial period from 1915 to 1989, has had a long and complex history (Barnard *et al.* 1998). The first settlers from the Cape region of South Africa crossed the Orange River and entered the central parts of the territory – known then as 'Damaraland' – through 'Great Namaqualand' in the south, in the late 1700s and early to mid-1800s (see Foreword above). They started establishing small trade and mission stations in especially the 1850s in different parts of the territory. As detailed in Owen-Smith (1972), on which the following historical summary is based, Charles John Andersson made the first attempt to enter Kaokoveld in 1858, entering a region of arid mountains by trekking through Damaraland, but being halted by the ruggedness of the area. Hendrik Smuts, a hunter from the Cape, made it as far north as Kunene and was reportedly the first white person to reached the Kunene River. He was later followed by the hunters Frederick Green and Axil Eriksson. South West Africa came under formal German control in 1885, but the Kaokoveld in the north-west was 'sold' to a London based mining company called the Kaokoland and Mining Company (Kaoko Land und Minengesellschaft).

In 1915, the forces from Deutsche-Sudwestafrica surrendered to the occupying Union Forces and Namibia was mandated to South Africa by the Treaty of Versailles. The northern Kaokoveld was proclaimed as three 'native reserves' under the leadership of Chiefs Oorlog (Vita Thom], Muhoni Katiti and Kasupi, with their predominantly ovaHimba and ovaTjimba followers. At this time the Kaokoveld north of the Hoanib River was additionally within the boundaries of Game Reserve No. 2, established in 1907 under German colonial rule and stretching from Etosha Pan diagonally north-west to include the area between Kunene and Hoanib Rivers. The regional offices of administration were in Outjo and the former Owamboland, but little attention was given by officials to the affairs of Kaokoveld. In 1928, under South African administration, the boundaries of Etosha Game Reserve 2 were re-

established, covering an area of 54,750km^2, and continued to include Kaokoveld in the north-west. Kaokoveld was proclaimed a separate 'Native Reserve' in 1947 and its inclusion as part of Etosha Game Reserve ceased when the north-west area of the Game Reserve was moved for a brief period south of the Hoanib River. The area was later de-proclaimed as a Native Reserve when the northern 'homelands' of 'Kaokoland', 'Damaraland' and 'Owamboland' were established following the recommendations of the Odendaal Commission of 1964 (Owen-Smith 1972). Following independence in 1990 the communally-managed 'homelands' were dissolved. The new administrative regions combine areas under freehold and communal land tenure, although there remains an ongoing difference between communally managed areas where communal-area conservancies are located, and commercial farming areas under freehold tenure.

2.3.2 Land tenure

Colonial regimes in most African countries established state control over the land, natural resources and wildlife, and this arrangement was taken over by the national governments of Namibia after Independence. As a consequence, many rural communities that were dependent on resources in the former communally-managed 'homelands' had no formal resource use or land tenure rights (Blackie 1999). There is, therefore, a need for clear policy regarding tenure rights which should be in place for any programme to be successful. When the conservancy legislation was promulgated and conservancies registered, there was still no clarity on land tenure arrangements. This happened because the MET, who was running the CBNRM programme, held power over natural resources and not the land itself, except in protected areas. As a consequence, the Wildlife Management, Utilisation and Tourism in Communal Areas Policy of 1995 was amended and states as follows (MET, 1995: 2):

- the right to utilise and benefit from wildlife on communal land should be devolved to a rural community that forms a conservancy in terms of the Ministry's policy on conservancies;
- each conservancy should have the rights to utilise wildlife within the bounds of the conservancy to the benefit of the community. Once a quota for each available species has been set, the conservancy members may decide how these animals may be utilised. They may decide to allow hunting by members of the conservancy, culling of game for meat, the sale of animals for trophy hunting, or the live sale of game;
- the conservancy should be able to enter into a business arrangement with private companies to carry out some or all of these activities;
- the conservancy would also have the right to establish tourism facilities within its boundaries or engage in a commercial agreement with a registered tourism operator to act on its behalf.

Conservancies only have resource user rights and not land tenure rights (Jones and Murphree, 2001). Land tenure rights rest with the Ministry of Lands and Resettlements and the traditional leaders (Skyer 2003), although later policies permit Communal Land Boards to be

formed with representation from all sectors and with requirements to respect any management plans by conservancies.

Thus, the new Communal Land Reform Act no. 5 2002 states that:

> (4) Before granting a right to leasehold, subsection (1) in respect of land which is wholly or partly situated in an area which has been declared a conservancy in terms of section 24A of the Nature Conservation Ordinance, 1975 (Ordinance No.4 of 1975), a board must have due regard to any management and utilization plans framed by the conservancy committee concerned in relation to that conservancy, and such board may not grant the right of leasehold if the purpose for which the land in question is proposed to be used under such right would defeat the objectives of such management and utilization plan (GRN 2002).

Communities must form a conservancy before they can gain rights to use resources, but these rights are limited, meaning that the rights are conditional. In addition, only conservancy committee members have the legal rights to resources, and not the wider communities within the conservancies, and with reference to conditional rights, the Minister has the right and ability to withdraw the right if he is not satisfied with the way the rights are practiced (Long and Jones 2004).

2.3.3 Indigenous people

At the time of writing, the total population of Namibia is 1.6 million people, with the population of the Kunene Region standing at 64,017 in the 1997 census, representing about 4.5% of the total Namibian population. Damara, Herero, Nama and Himba are the four main indigenous groups in Kunene, including the present and historical black rhino range. Damara (ǂNūkhoen) dominated the area before the arrival of the Herero and Owambos into Namibia, although Bushmen were also present in small numbers. The Herero and the Owambo languages are more closely related than the Damara, who are closer to Khoe and San, speaking a Khoe language with distinctive click consonants. The Herero and Himba are mostly pastoralists and move with the rain to areas where there is enough grazing and water: they are therefore more dependent on milk and meat, although they utilize some plant crops in good rain years. The Damara are mainly small-stock farmers, although some have large cattle herds that are mainly restricted to the higher rainfall areas.

2.3.4 Rhino numbers

The MET conducted the first black rhino census in 1991, in conjunction with Save the Rhino Trust, other NGOs and private people who volunteered to help. The first census was a success and was repeated in 1997 and again in 2002 when the total population estimate was 136 for the west Kunene population (Table 1) (Hearn 2003, p. 13).

Estimate	Year	Area	Source
150	1922-1923	Ugab river to the Kunene	Shortridge,1934
50	1923		Manning
150	1970	Kaokoland	Owen-Smith, 1970
30	1975	Kaokoland	Joubert & Mostert, 1975
20	1977	Kaokoland	Viljoen, 1982
300	1970	Kaokoland and Damaraland	Loutit,1988
60	1982	Kaokoland and Damaraland	Loutit, 1988
136	2002	Kaokoland and Damaraland	Hearn, 2002

Table 1. Summary of the past estimates of black rhino numbers in the north-west Kunene Region. Source: Hearn 2003, p. 13.

2.4 Choice of study sites

Three registered conservancies within the historical rhino range in northwest Kunene Region were selected for this study on the basis that they lie in the historical range of the black rhino, have high rainfall and were the most recent areas to have rhino, even if poached or translocated in the late 1970s and 1980s. All these sites have also had single black rhino moving briefly into these areas in the last ten years, mostly through translocations by MET, but in the case of one site, because a rhino is still occasionally seen in this area. These areas were therefore assumed to have the most potential for the reintroduction of black rhino.

2.4.1 ǂKhoadi-||Hôas conservancy

ǂKhoadi-||Hôas conservancy, whose name means "elephant's corner", is situated within the Sesfontein constituency in the southern half of Kunene Region, Namibia (Figures 6 and 7). The conservancy falls in the desert and savanna biomes. This conservancy was one of the first four conservancies registered in 1998 and shares its boundaries with commercial/freehold farms to the east, Torra and Ehirovipuka conservancies to the west and north respectively, and Hobatere Tourism Concession to the north-east. The veterinary fence, originally constructed to stop the spread of foot and mouth disease, constitutes the northern boundary.

Figure 6. Elephants in ǂKhoadi-||Hôas (meaning 'elephant's corner') conservancy.

The conservancy covers 3,364 km² and Anker and Erwee are the two major settlements in the conservancy with schools, clinics and the Directorate of Agriculture and Water Affairs administration offices. The area is relatively densely populated with 3,463 people and 641 households, equivalent to one person per square kilometre (Long 2004). The conservancy and MET headquarters are situated in what used to be the old livestock Breeding Station. Damara are the dominant ethnic group in the conservancy although there are a number of Herero, Owambo and Nama are also represented (Long 2004).

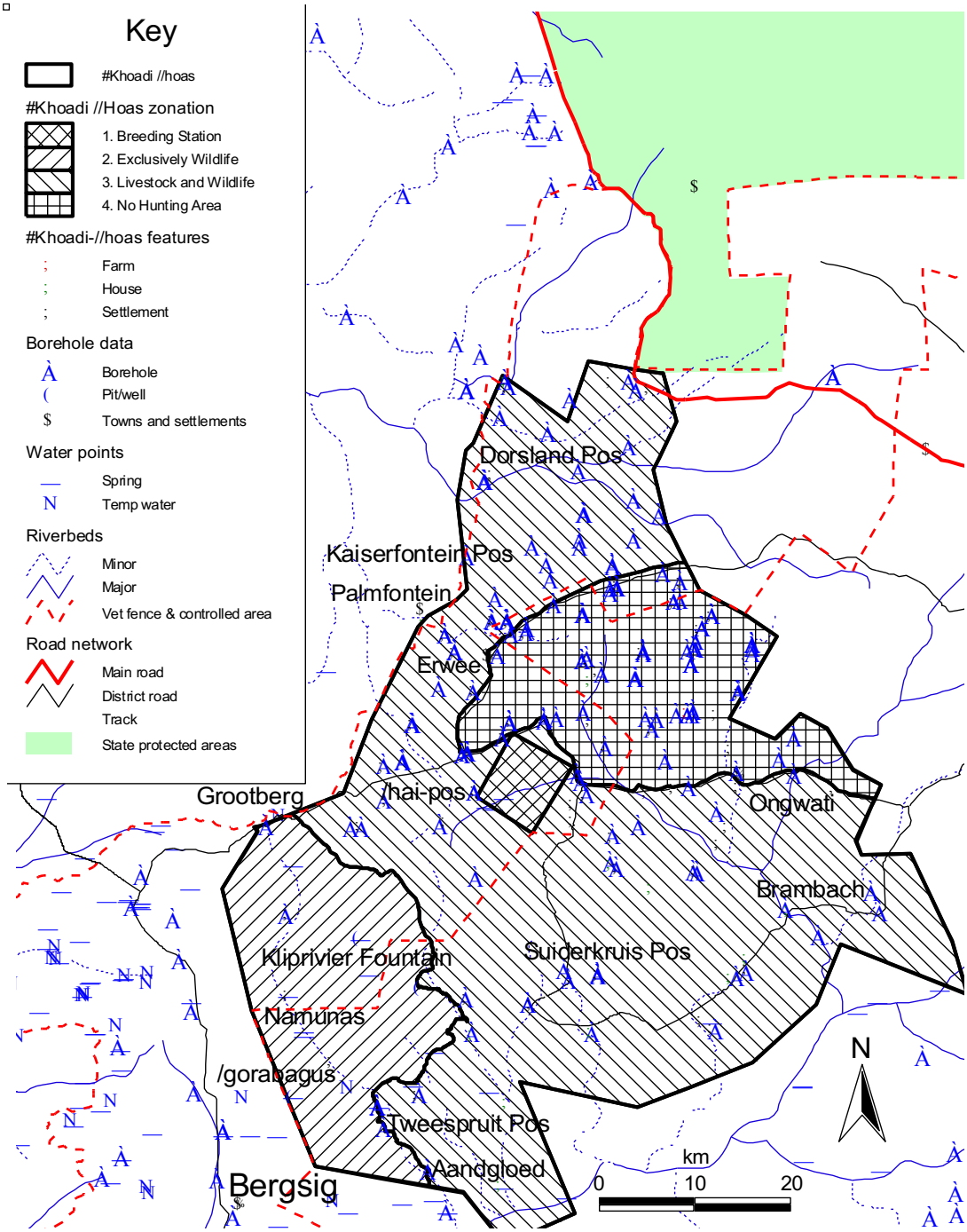

Figure 7. Map of the ≠Khoadi-||Hôas Conservancy.

2.4.2 Omatendeka consevancy

Omatandeka conservancy is also situated in the Sesfontein constituency in the southern half of Kunene Region, Namibia (Figure 8) and falls in the savanna biome of the region. The conservancy was registered in 2003 and is in an early stage of development. The conservancy covers an area of 1,619 km² with a population of 7000, of which at the time of writing 374 are registered conservancy members (MET/CSD 2003). The conservancy is bordered by three other conservancies, Anabeb, Ozondundu and Ehirovipuka, with Etendeka Tourism Concession to the west. The conservancy headquarters, along with a police station, is situated in Omuramba, which is the main settlement in the area. The nearest school and clinic is 7 km away from Omuramba. The majority of the inhabitants are Herero, with some representatives of other ethnic groups. Most of the people in the area are livestock farmers and they prefer to farm with cattle and limited cropping.

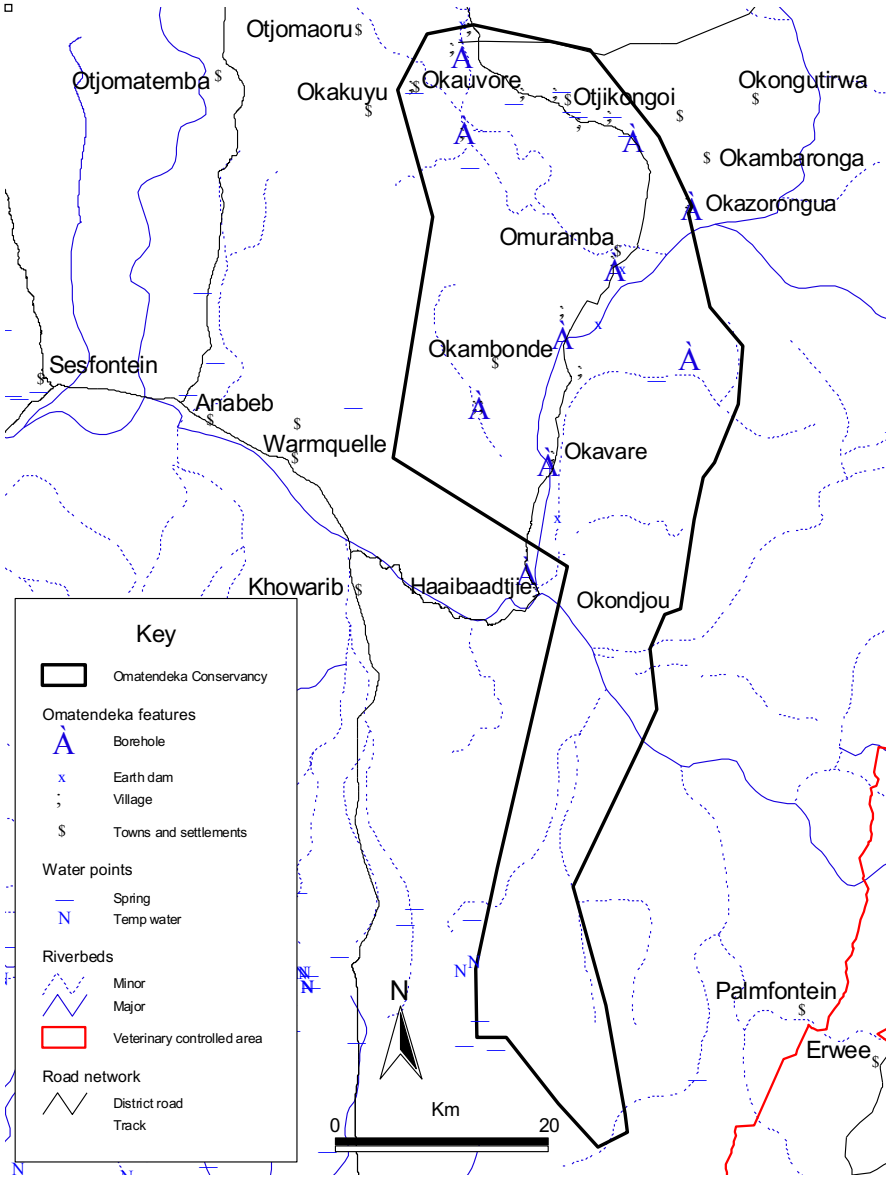

Figure 8. Map of the Omatendeka Conservancy.

2.4.3 ||Huab conservancy

||Huab conservancy (Figure 9) also falls in the desert and savanna biomes of the region and covers an area of 1,818 km² with a human population of 10,000 inhabitants of which at the time of writing 364 are registered conservancy members (MET/CSD 2003). The conservancy borders onto commercial/freehold farms to the east, and three other conservancies, Doro-!nawas and Torra to the west, and ǂKhoadi-||hôas to the north. The dominant ethnic group are Damara, followed by Nama (although they may not be members of the ||Huab conservancy) and a few representatives of other ethnic groups. Fransfontein is the main closest settlement, with a school, clinic, police station and a post office. The conservancy is still at an early stage of development. Most of the people living in this conservancy are livestock farmers and also plant crops.

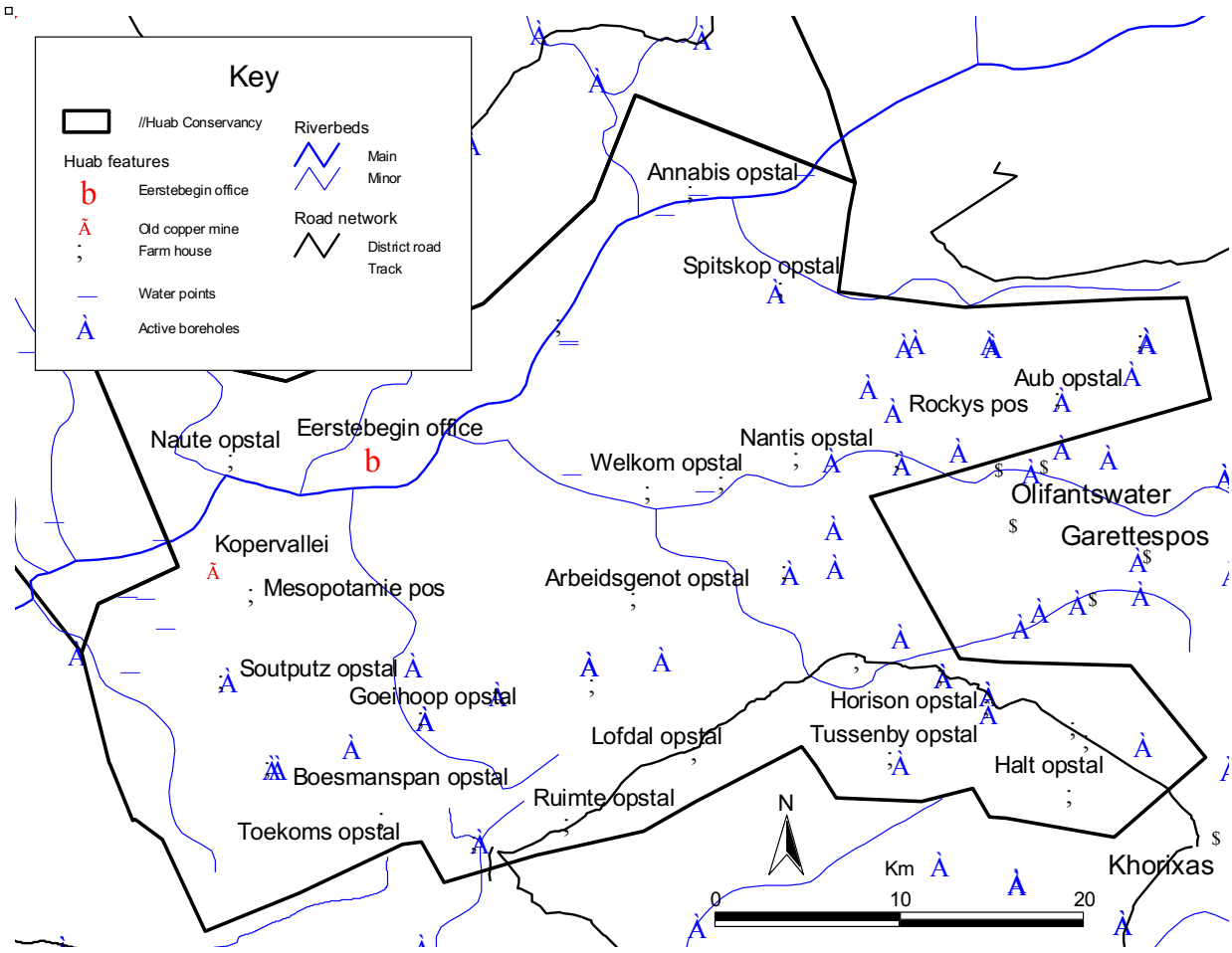

Figure 9. Map of ||Huab conservancy.

3. Methodology

The methods used for this study were developed as part of a Darwin Initiative Project, called *Black Rhino Conservation and Ecotourism Impacts in North-western Namibia*, implemented by DICE, in partnership with SRT and the MET. I was involved in the design of methods used in this study, as part of the input from one of the Namibian partners, SRT. Prior to implementation the questionnaire survey was further refined by myself and the Darwin Initiative project officer, Michael Hearn. The study builds on the more than 13 years I have been involved with SRT during which I have collected and co-ordinated the collection of, both black rhino and ecological data on water and food resources.

3.1 Questionnaire survey

3.1.1 Introduction

A questionnaire survey was conducted over a period of six weeks between 1st May 2004 and 30th June 2004. We used random sampling by selecting settlements on the edge of the wildlife areas that were closest to wildlife and those living in the middle of the studied conservancies (as above). We selected individuals from different households with different social, economic and cultural backgrounds. The survey focussed on farmers who will potentially share resources (water and browse) with translocated rhinos, wildlife managers, campsite owners, local tour guides, traditional authorities and ordinary conservancy members. We conducted face to face interviews with one individual at a time, spending at least 30-40 minutes with one respondent if a translator was required. Survey time was considerably less when questionnaires were conducted with respondents fluent in Damara, i.e. my mother tongue, where no translator was necessary.

3.1.2 Questionnaire design

As noted above, the questionnaire was designed with help from Mike Hearn, Director of Research at Save the Rhino Trust. The survey was designed to capture the attitudes of local communities towards the possible reintroduction of rhino into their areas, as well as their knowledge of other wildlife. The questionnaire was sub-divided into three sections and contained two types of questions: (a) ‘closed’ questions, with a list of possible answers to each question; and, (b) ‘open-ended’ questions giving respondents an opportunity to express their views freely. The first section was the introduction, which sought background information on the demographics of the respondents. The second section sought information on household economy and resource use. The last section consisted of questions that sought to capture general knowledge of wildlife, in particular on the black rhino.

3.1.3 Pre-testing of survey

A pre-test of the survey was carried out during October and November 2003 by a group of students from a USA research programme, Round River, in conjunction with SRT and the Darwin Initiative Project co-ordinated by DICE. The pre-testing was carried out in Sanitatis and Torra conservancies in northwest Kunene Region. These areas are also part of the historical rhino range and have potential for rhino reintroduction. The survey was judged to be successful, and only a few changes were made to the questionnaire before it was used for the full survey in 2004.

3.1.4 Data collection

Before the full survey was conducted we informed all the conservancy committees at the quarterly planning meeting in Wereldsend, where conservancies plan their workplans with support service NGOs (SRT and IRDNC) and the MET. In addition, I personally went and met with the conservancy committees to explain the procedures of the survey before we went into conservancies to begin the survey. Although everybody knew us, we requested guides and translators from the conservancy members to enable the conservancy to gain more confidence in the survey process. We also had a government official with us to make it clear that this was a government-driven effort in conjunction with SRT and DICE. This may of course have shaped the findings in the study, but it was important to be clear about the institutional collaborations making the survey possible.

3.1.5 Collection protocol

The survey team consisted of three enumerators from the community, SRT and IRDNC, who were trained on the objectives and methods and who understood the questionnaires. Before the survey began, a briefing session was conducted with each respondent to outline the purpose and objectives of the survey and make sure the respondent understood the reason behind it. Two of the enumerators were involved in the pre-testing of the surveys and therefore had first-hand experience with this type of survey. Translators were used for those who did not understand and speak the local indigenous languages. Since our time was limited we tried to avoid unnecessary conversations and spent only time on the relevant topics in the questionnaire.

3.1.6 Data analysis

The responses given in the completed questionnaire were numerically coded and analysed using SPSS software (Version 11.0). Pearson's chi-square test was used to determine differences in sample characteristics among the three conservancies. Multivariate logistic regression models were used to determine the factors that influence positive attitudes of people towards wildlife. As explained further below, however, these models failed to adequately account for responses due to a heavy bias in the dataset towards one dependent

variable. A Pearson's chi-square test was used to evaluate the opinions of the respondents to tested questions with alternative answers on a continuum scale.

3.1.7 Limitations and Constraints

Due to commitments and responsibilities we found it difficult to meet some of the most important people, such as the headmen, councillors and committee members of the conservancies. At the same time, however, in only a few cases the 'most responsible people' from the households were away working in towns and cities and therefore not able to contribute to the survey, i.e. we were able to gain relevant responses from household decision-makers in most cases. In some cases in the marginal farming areas where resources are shared with wildlife, livestock herders were temporarily present from other regions and had a sparse knowledge of the region. It was not always possible, therefore, to get good information from those living close to where rhino may be introduced, or where rhino had been recorded in the last five years. When the household head, in most cases men, were absent the women often felt they could not give out information without their husband being present. When this was the case we explained to them it is important to air their views even if their husband was absent, since they share responsibility for development in their area and are registered as individual members of the conservancy and not in 'family' groups. Time and the difficult accessibility to some areas were other limiting factors, since we were reliant on motorised transport that, no matter what they were designed for, were often unable to cope with the harsh conditions of northwest Namibia – as Figure 10 illustrates.

Figure 10. Survey group stuck in a river.

3.2 Ecological suitability of study sites

3.2.1 Distribution and density of black rhino

The distribution of black rhino in the Kunene range was sourced from information gained from surveys and ongoing monitoring programmes of rhino in Namibia. For the purposes of this study, the dataset from Hearn (2003) was used to map range and density of black rhino in relation to the study sites. This used Minimum Convex Polygons (MCP) of individual home ranges to map distribution. Density was calculated using a script (Smith 2002) designed to count the number of home range polygons overlapping a 2x2 km vector grid of the area.

3.2.2 Vegetation types across study area and current rhino range

As part of the study of factors determining rhino presence and breeding performance in the current range as undertaken by the Darwin Project Officer, vegetation and topographic classification of the northwest had been mapped using data from the Nambian Atlas Project (Mendelson *et al*. 2002)[10]. These data were imported into ArcView (by Esri) with the spatial analysis tool extension, to analyse the attributes within the current range of the black rhino in Kunene. Using the summarise command in ArcView these data were clipped to each study site and the potential release sites identified by respondents. The area of each unit was calculated using the XTools extension in ArcView.

3.2.3 Boreholes and water points

A total of 448 water points were located using a GPS receiver during SRT patrols undertaken during monitoring and censuses of the rhino range in 1997/98 and 2002/03. A further 73 springs were located by field staff working for the conservancies from conservancies bordering the range. These data were stored in files on the ConInfo (i.e. conservation information) database, developed by the WWF/USAID LIFE Programme for mapping features within conservancies to aid management. Data on the number and distribution of boreholes was acquired as part of the Darwin Initiative Project's study of habitat conditions of the entire historical range of the black rhino in Kunene from the Ministry of Rural Water Supply offices in the town of Khorixas.

Data on access to springs for each study site was imported into ArcView and distance to spring data calculated with the spatial analysis tool extension, for each study site and potential release site identified by respondents during surveys. These were mapped and the mean distance to spring calculated using the summarise command in ArcView.

[10] Now available at the Namibian Environment Information Service, http://www.the-eis.com/searchresults.php?action=moreinfo&id=2816

3.1.2 Livestock and people

Data on the distribution and density of people across the study area were acquired from the Namibian Atlas Project and imported into ArcView. Distance to settlements was calculated using the spatial analysis extension, so as to analyse the distance from settlements for each study site and the potential release sites identified by respondents during the questionnaire survey. These were mapped and the mean distance to settlements was calculated using the summarise command in ArcView.

Data on livestock numbers were obtained from the offices of the Directorate of Veterinary Services in Khorixas. These data were from 1989 to 1998, and were compiled from census data for Damaraland, Sesfontein and Kaokoland. Due to changes in administrative borders during this time period, which in turn resulted in changes in the presentation of these figures, annual data for Sesfontein were divided equally by the Directorate between figures for Damaraland and Kaokoland so as to calculate livestock numbers for Kunene North and Kunene South. The Directorate acknowledges that some of the data may not be correct, although they try to avoid this.

4. Results

A total of 304 questionnaire surveys were undertaken across the study area. The results shared here first describe the composition and characteristics of the surveyed respondents with respect to age, sex, ethnicity, length of residence, education, marital status, family size and soicioeconomic background including livestock ownership (Sections 4.1 and 4.2). I then summarise the findings regarding the attitudes of local people towards wildlife and the reintroduction of black rhino into their historical range (Sections 4.3 to 4.6). In Section 4.7 I use data acquired by the Darwin Initiative Project to analyse ecological and anthropogenic factors in the three study sites as well as habitat suitability in the entire Kunene historical range for black rhino.

4.1 Personal background

4.1.1 Age and sex of respondents

The age of respondents varied from 25 to over 65 years. The respondents were grouped into age classes with intervals of five years (Figure 11). There was a difference (χ^2=37.27, df=10, P>0.001) in the number of respondents in the different age classes across conservancies. Most respondents from ||Huab conservancy were either in younger or older age classes, while most respondents in Omatendeka were aged between 26 and 45 years. Both sexes were well represented among respondents in all conservancies with no difference (χ^2=0.57, df=2, P>0.05) across conservancies (Figure 12).

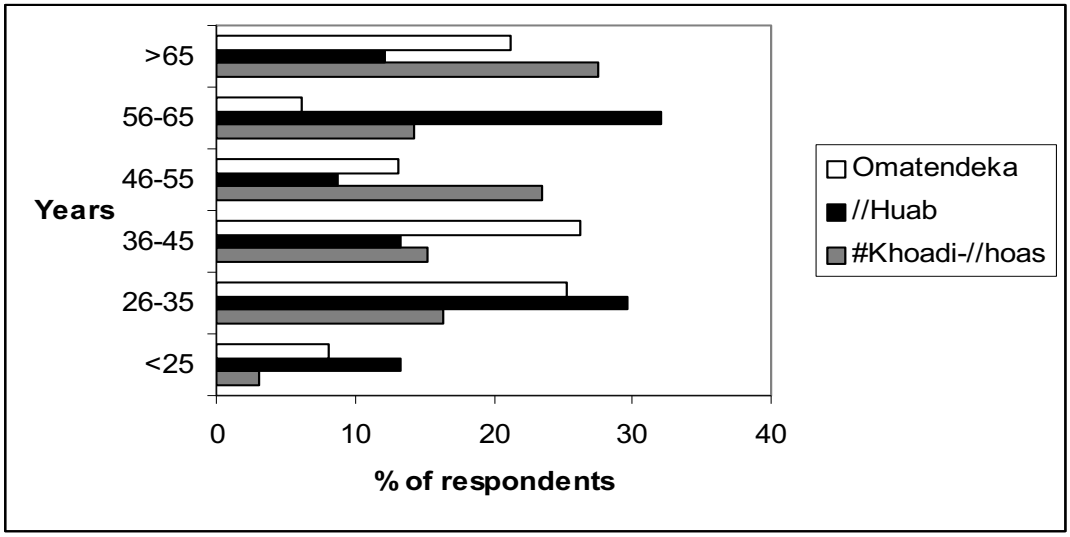

Figure 11. Age structure of respondents in the study sites.

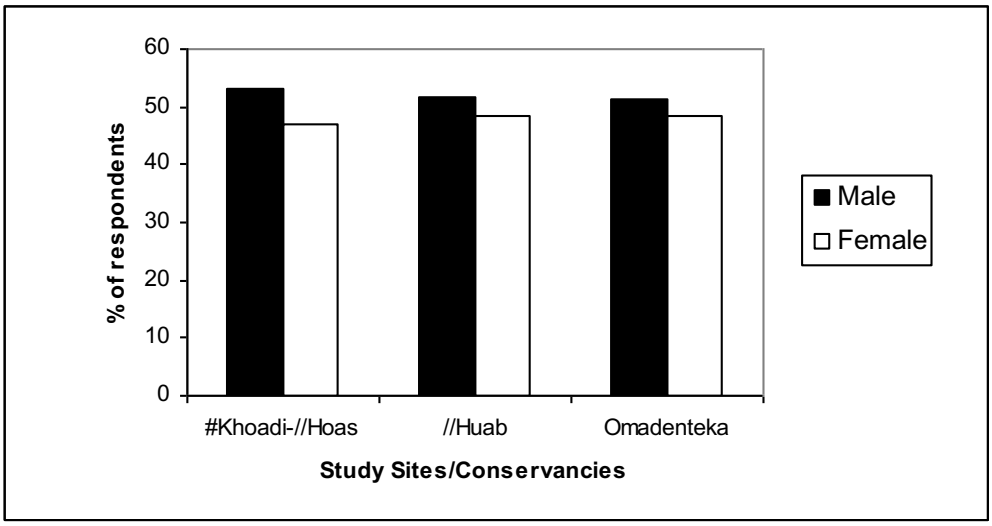

Figure 12. Sex of respondents in three study sites.

4.1.2 Ethnic groups

The ethnic identity of respondents corresponded with their respective areas of residence. There was a significant difference (χ^2=232.42, df=16, P<0.001) in ethnic groups among the respondents across the conservancies with most respondents in ǂKhoadi-||Hôas and ||Huab being Damara, whilst most respondents in Omatendeka were Herero (Figure 13).

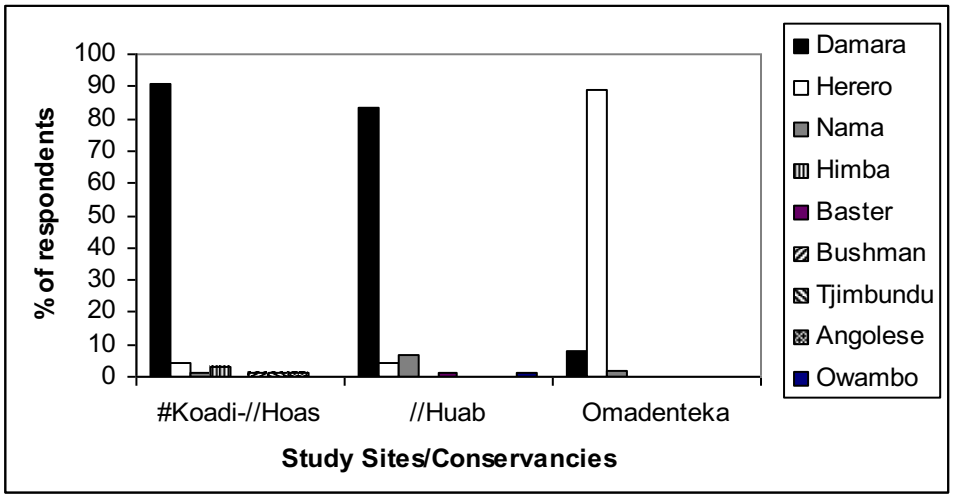

Figure 13. The ethnic groups of respondents in the study sites

4.1.3 Length of residence

The length of residence of respondents in their conservancies varied between 1-30 years. There was a difference (χ^2=29.83, df=10, P<0.01) in the length of residence across conservancies (Figure 14). Most and respondents in ||Huab (53.8%) and Omatendeka (60.6%) had lived for more than 30 years in their conservancy. However, respondents were relatively evenly spread across length of residence in ǂKhoadi-||Hôas conservancy, although a majority had lived there for more than 20 years.

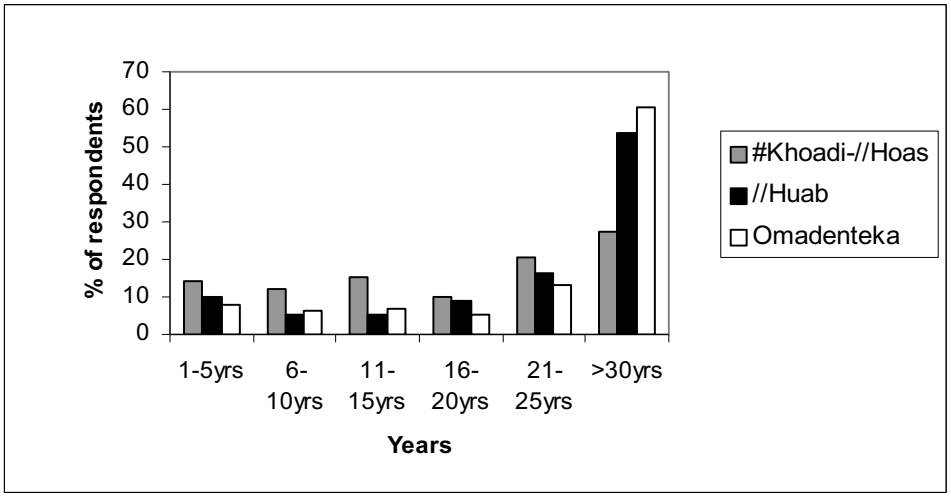

Figure 14. Respondents' length of residence in the study sites.

4.1.4 Education level

Nearly half (43.4%) of respondents had no formal education and could not read or write. However, 33.3% of respondents had primary education, 21.1% had secondary education, and only 2.1% had attended university. There was a difference (χ^2=16.42, df=6, P<0.01) among the education levels across the conservancies. Corresponding with findings in Fennessy and Fennessy (2004), most (53.5%) respondents who had not attended school came from

Omatendeka conservancy (Figure 15). Residents here had faced difficulties during the apartheid period, when the area was declared a war zone, and most of the respondents lived in very remote areas far from schools.

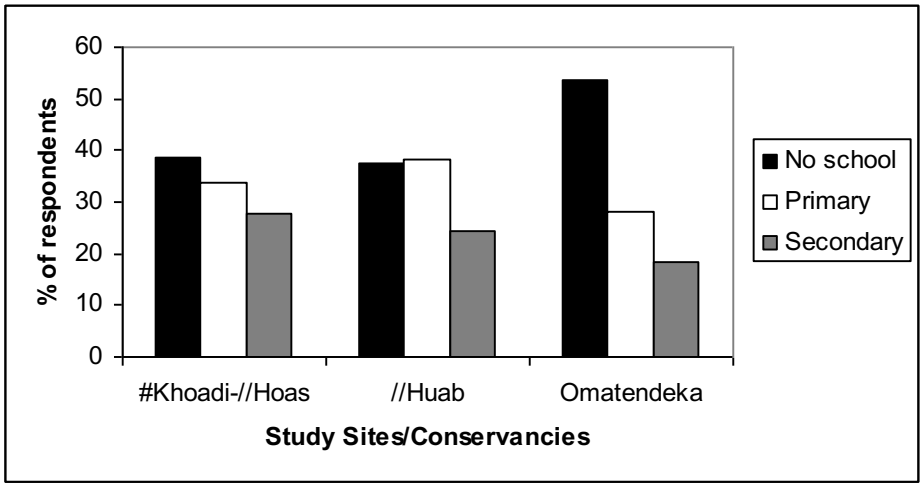

Figure 15. Education profile of respondents in the study sites.

4.1.5 Marital status

Between 38% and 60% of respondents were married, although there were many single respondents (Figure 16). The divorce rate was very low and fewer than 10% had been widowed. There was no significant difference (χ^2=7.76, df=6, P>0.05) in the marital status of respondents across conservancies.

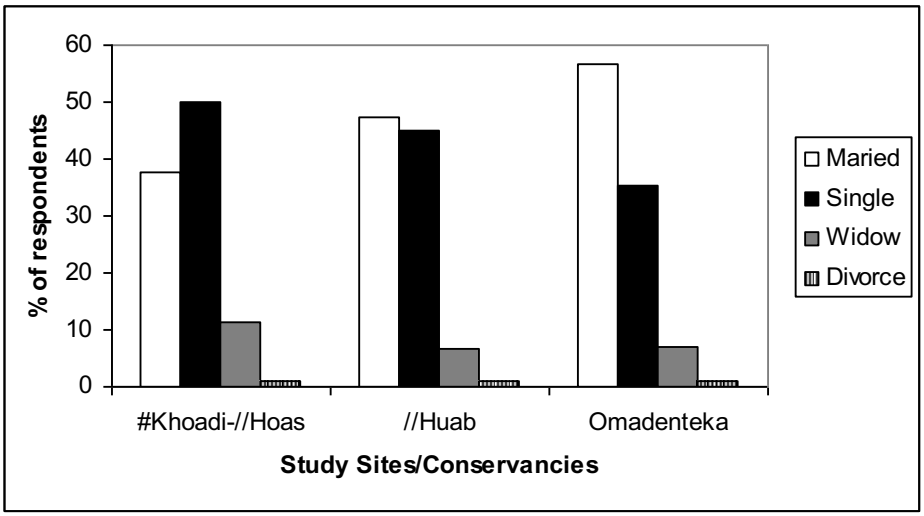

Figure 16. Marital status of respondents in the study sites.

4.1.6 Family size

The family sizes of most respondents varied from 1-30 individuals per household. Large family sizes occur because extended families are often regarded as part of a single household,

according to the different local traditions and cultures. The numbers of adults and children represented by surveyed households in each of the three conservancies is shown in Figure 17.

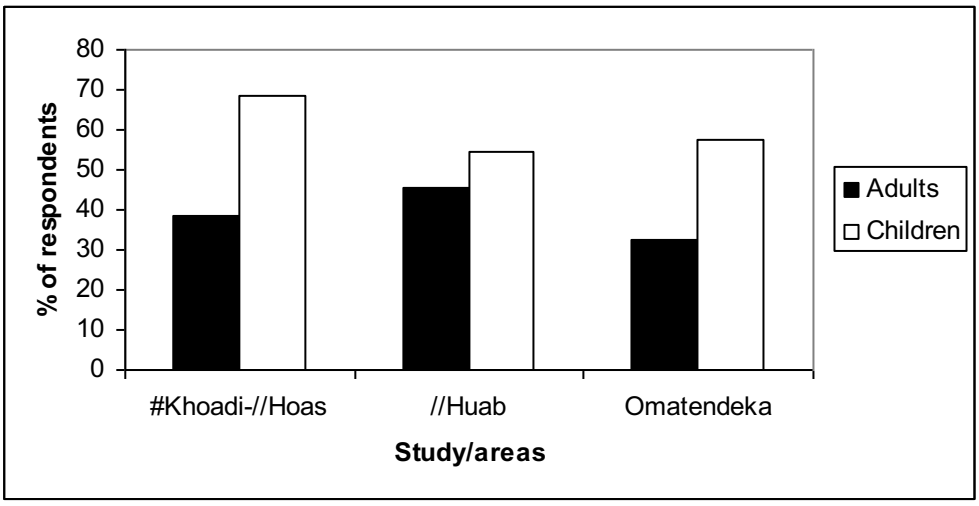

Figure 17. Proportion of adults and children of respondents in the study sites.

4.2 Socio-economic background

4.2.1 Job as a source of income

Most respondents were not dependent on income from a job but for some 30% a job provided a very important source of income (Figure 18). There was no difference (χ^2=10.57, df=8, P>0.05) across conservancies. Those respondents that depended on jobs as a very important source of income usually worked in cities and towns, only coming back to the conservancy areas during weekends or holidays.

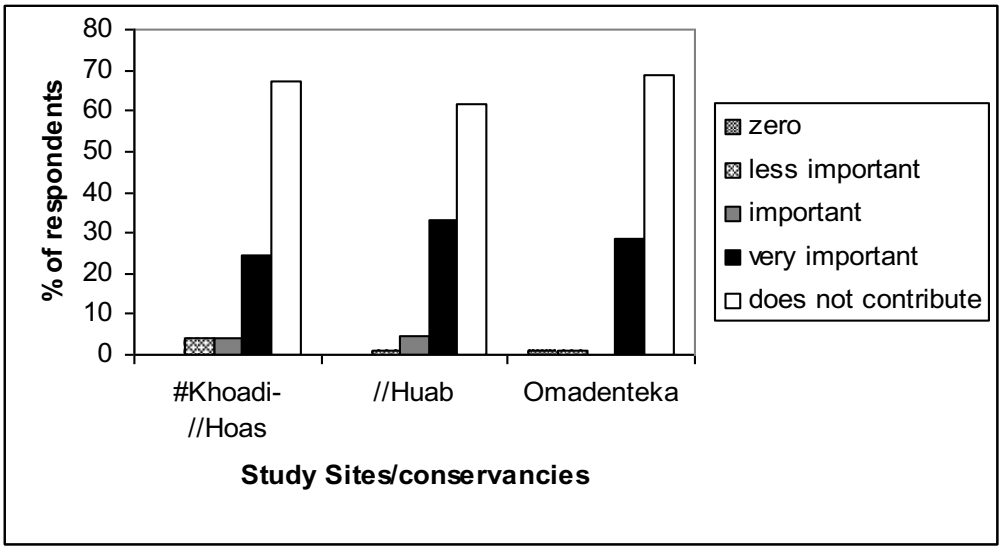

Figure 18. Job as an important source of income.

4.2.2 Livestock sales as an important source of income

As livestock farmers, most respondents meet their livelihood security needs from livestock sales. Livestock also provide fresh meat, butter, blood and milk, are used to plough and as transport animals. Cow dung is a very important material for building traditional huts, for which it is used for plastering walls, while cow skins are sold for clothing, especially for some of the members in the Omatendeka study area (Richardson 1998). There was no difference between conservancies (χ^2=12.9, df=8, P>0.05) in the perceived importance of livestock as a source of income between respondents and across conservancies (Figure 19, Table 2). There is also a strong cultural belief that a household head must have many livestock, so that he will then gain more respect from the others.

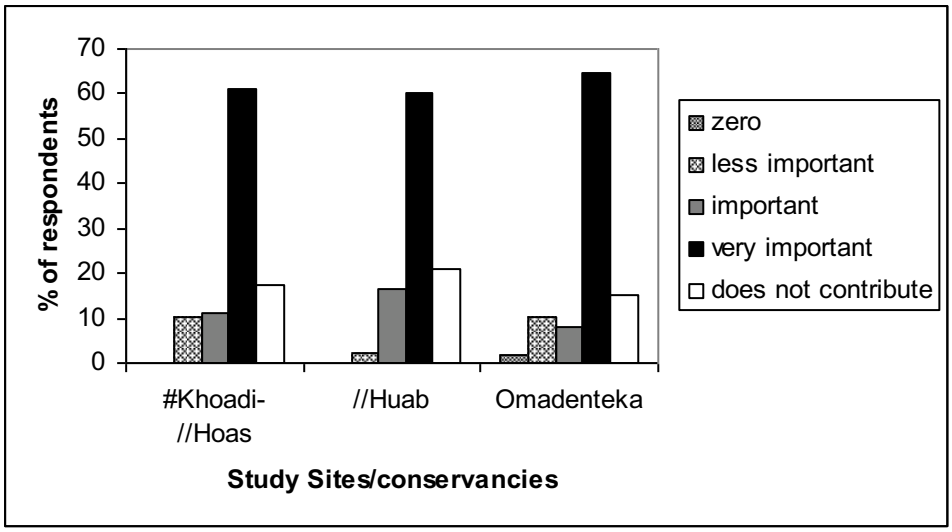

Figure 19. Livestock sales as an important source of income.

	Goats	Sheep	Cattle	Donkey	Horse	Chicken
ǂHoadi-‖Hôas	6924	1310	1949	430	130	1074
‖Huab	6594	1788	1950	516	97	725
Omatendeka	4748	610	4906	392	230	512

Table 2. Number of livestock, captured from the questionnaire, owned by respondents across the study sites.

Omatendeka falls in Kunene North and the other two study sites in Kunene South. As can be seen, farming with cattle, goats and sheep as a source of income and subsistence is very important for respondents in the surveyed conservancies. Some of the respondents in Kunene North are pastoralists who move with the rain for better grazing. Respondents in Kunene South also move during drought periods, but are more able to control grazing since there are areas fenced off as a legacy of the former 'homeland' history of these area as fenced freehold land for commercial settler farmers (Kambatuku 1996; Sullivan 1996), although policy does not currently allow fencing on communal land. At the time of writing livestock numbers are increasing rapidly in the region. The total numbers shown in Figures 20-24 for Kunene North and Kunene South, as compiled by the Directorate of Veterinary Service (1989-1998),

indicate that in Kunene North the numbers of goats in particular increased during this period. The numbers dropped suddenly between 1993 and 1995 due to drought, but picked up again after this. White farmers from South Africa also came and bought large numbers of goat and sheep in Kunene Region during this period, especially in Kunene North.

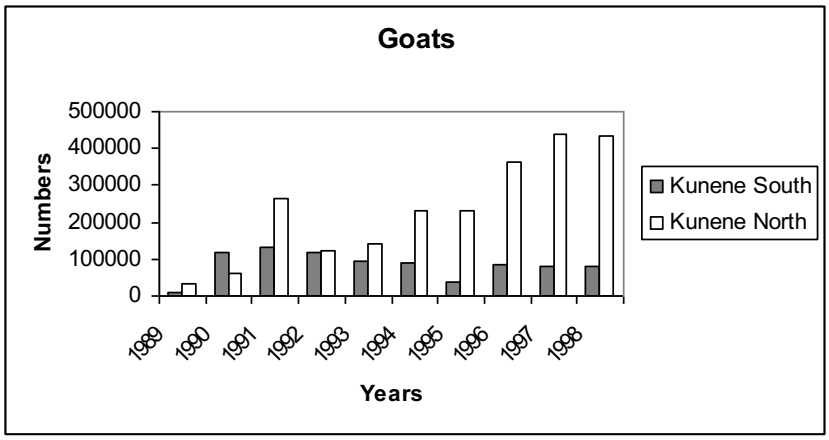

Figure 20. Numbers of goats owned by communal farmers across the Kunene Region from 1989 to 1998.

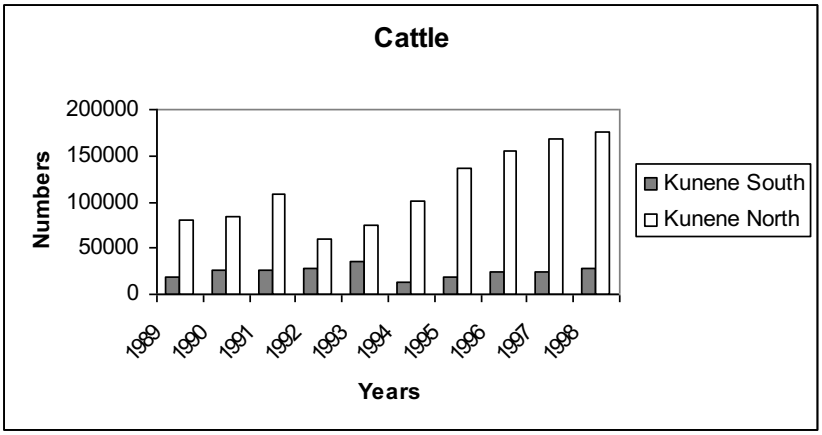

Figure 21. Numbers of cattle owned by communal farmers across Kunene Region from 1989 to 1998.

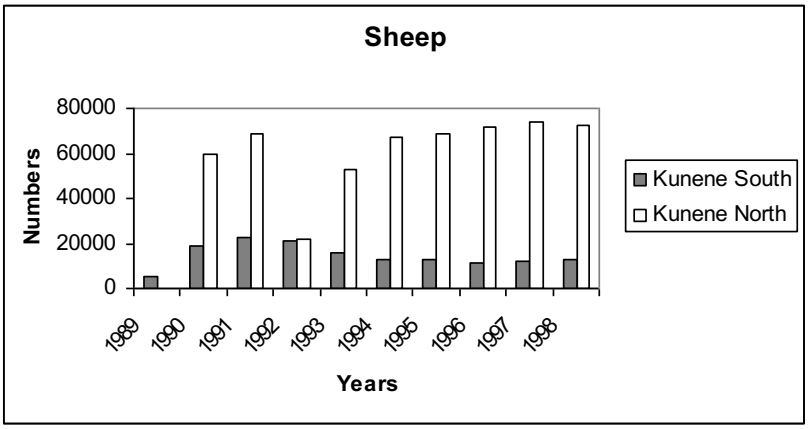

Figure 22. Numbers of sheep owned by local communities in the Kunene Region, Namibia.

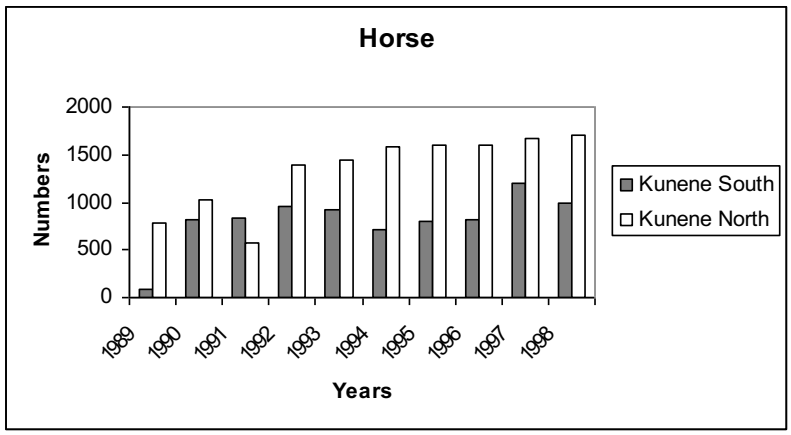

Figure 23. Number of horses in northwest Kunene Region from 1989 to 1998.

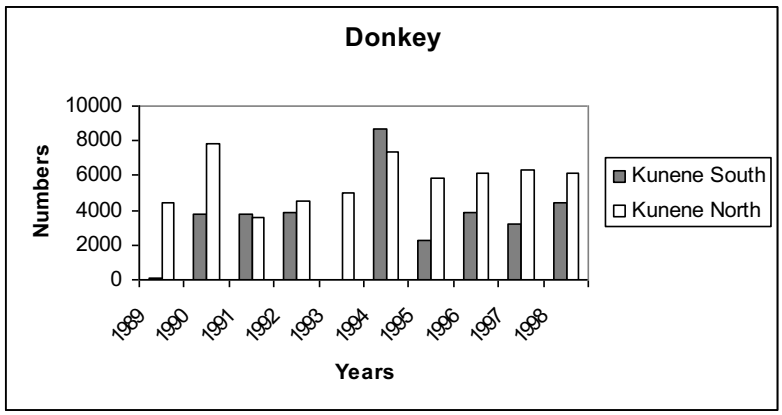

Figure 24. Numbers of donkeys in northwest Kunene Region from 1989 to 1998.

4.2.3 Crops as an important source of income

Most respondents do not see crop production as contributing an important means of income (Figure 25). However, there was a significant difference (χ^2=42.16, df=8, P<0.001) between respondents regarding the importance of crop production as source of income across conservancies. Respondents from Omatendeka note the importance of rain fed gardens. However, elephants always raid their crops, so they cannot plant maize.

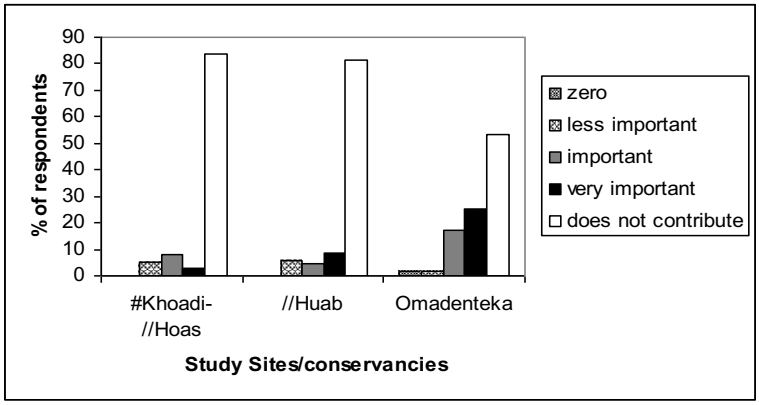

Figure 25. Crops production and sales as an important source of income.

4.2.4 Other important source of income

Most respondents did not identify other important sources of income (Figure 26). However, there was a significant difference (χ^2=27.63, df= 8, P<0.001) between the respondents across conservancies. Some 29.7% of respondents in ||Huab, 20.2% of respondents in Omatendeka and 12.2% of respondents in ǂKhoadi-||Hôas identified other sources of income. These included pensions for older respondents, part time jobs and craft making for the young respondents.

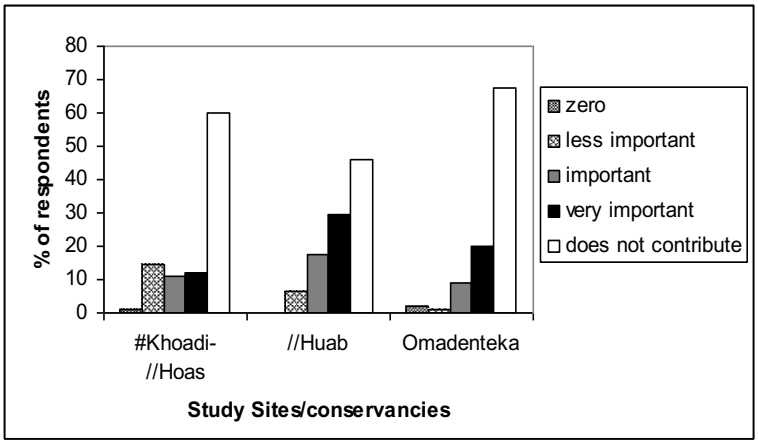

Figure 26. Other important sources of income in study areas.

4.3 Support for wildlife conservation

4.3.1 Conservancy membership

Most respondents were registered conservancy members in their various conservancies (Figure 27). There was no difference (χ^2=5.58, df=2, P>0.05) in membership between the respondents across conservancies. A few respondents were either not members or were not sure whether they were registered members. These uncertainties over membership were due to low awareness or poor education of respondents.

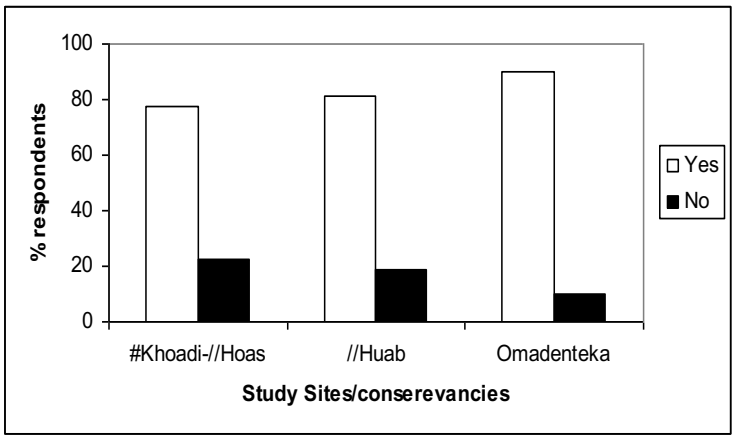

Figure 27. Membership profile of respondents in their respective study areas.

4.3.2 Support for wildlife conservation

Most respondents supported wildlife conservation in their conservancies (Figure 28) and statistically there was no difference (χ^2=3.905, df=2, P>0.05) in the views of respondents across conservancies.

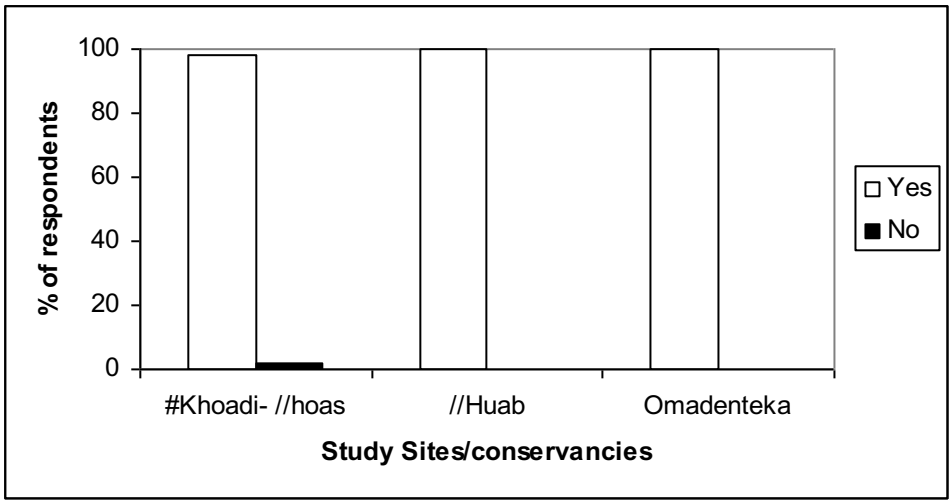

Figure 28. Respondents' view on whether it's important to conserve wildlife.

The reasons given for supporting wildlife conservation varied from tourist attraction and job creation, for the future generations and that the conservancy depends on wildlife (Figure 29). Furthermore, there was no difference (χ^2=8.296, df=8, P>0.05) in the views of respondents across conservancies although it appeared that more respondents in ǂKhoadi-||Hôas (12%) and ||Huab (12%) regard wildlife in a similar way to their livestock than in Omatendeka (6%).

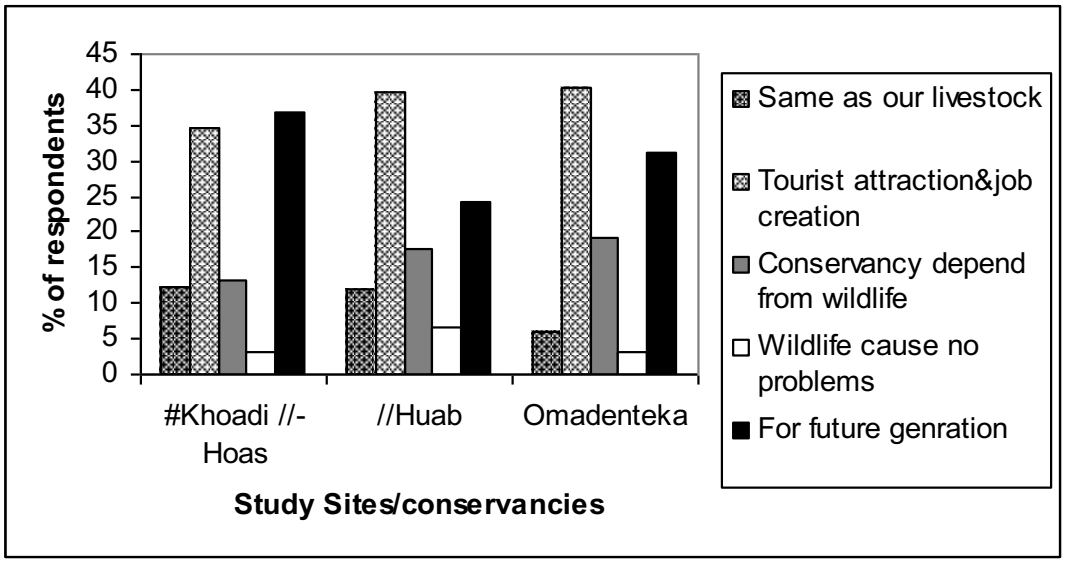

Figure 29. Respondents' views on the reasons for conserving wildlife across conservancies.

4.4 Knowledge of rhinos in Kunene

4.4.1 Personal experience of seeing rhinos

Most respondents claimed to have seen a black rhino in their lives (Figure 30) and there was no difference (χ^2=15.020, df=6, P>0.05) in the claims of respondents across conservancies. Most sightings of rhino were in the last 5 years in all study sites: Omatendeka (58%), ǂKhoadi-||Hôas (44%) and ||Huab (31%).

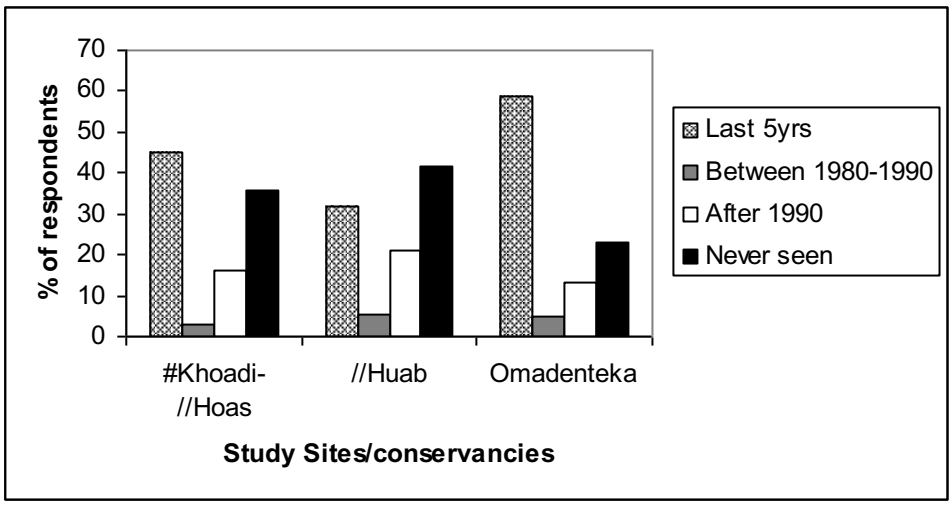

Figure 30. Respondents that have seen rhino in their life time.

4.4.2 Past use of rhinos

Most (50%) of the respondents had no idea what rhino products were used in the past (Figure 31) but the views of respondents differed (χ^2=11.755, df=8, P<0.05) across conservancies. Many respondents in ǂKhoadi-||Hôas (46%) know that poachers killed rhinos to sell the horn, with only 28% and 29% of respondents saying that they knew this in ||Huab and Omatendeka, respectively. Most respondents emphasised, however, that they had never seen the sale of horn and based their views only on stories that they hear from other people. Only a few respondents mentioned that rhino meat was used for eating in the past. Some respondents mentioned the killing of rhinos in self-defence.

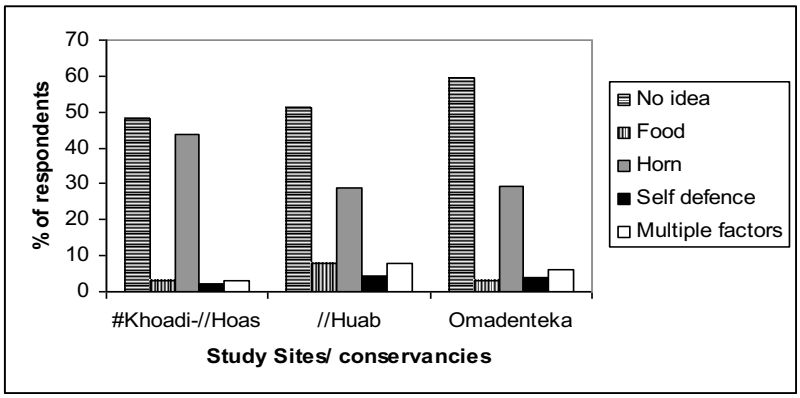

Figure 31. Respondents' views of why rhino were poached in the past.

4.4.3 Historical views on rhino

Most respondents had no idea what happened to black rhinos in the past (Figure 32) although there was a significant difference (χ^2=48.1, df=12, P<0.001) across conservancies. More respondents in the Omatendeka conservancy held views on reasons why rhino were lost. Over 20% of respondents felt that this was due to translocation to areas with better food, as they had witnessed most of the translocations, although they were not told where the rhino were taken.

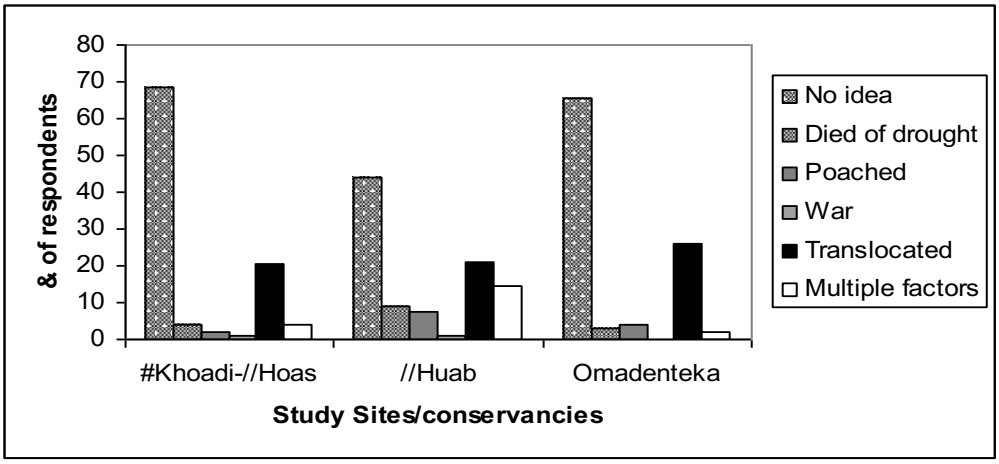

Figure 32. Respondents' knowledge of what happens to the rhino in the past.

4.4.4 Current status of rhinos

Most respondents had no idea whether or not rhino numbers were increasing or decreasing in Kunene (Figure 33), which is not surprising given that rural residents do not have access to these data. There was a difference, however, in the views of respondents across conservancies (χ^2=16.122, df=6, P<0.01) with more respondents in ||Huab holding views on whether rhinos were increasing than in ǂKhoadi-||Hôas or in Omatendeka. Some respondents presumed that numbers are increasing because they hear other community members talking about rhino with calves in other areas. Other respondents felt rhino numbers were decreasing because they are not in their conservancies.

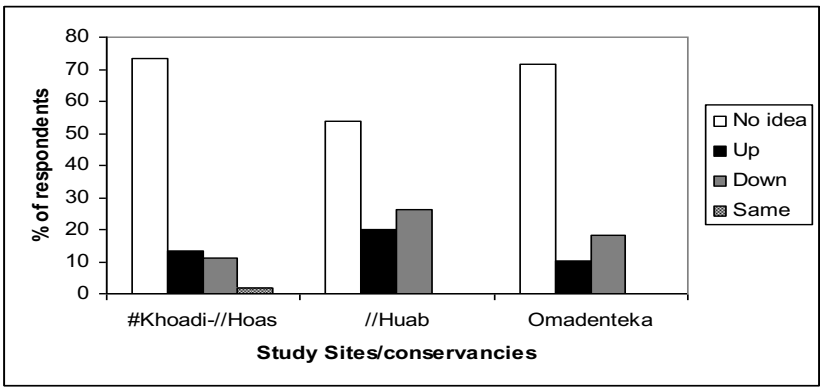

Figure 33. Respondents' views on whether rhino numbers in Kunene have changed since 1981.

4.5 Competition between rhinos and livestock

4.5.1 Threat to human life

Many respondents felt that black rhinos are a threat to human life (Figure 34), which is not surprising, since most respondents are not familiar with rhinos. There was a difference, however (χ^2=40.70, df=8, P<0.001), among the views of respondents across conservancies. More respondents from Omatendeka (57%) felt black rhinos were a very important threat than in ||Huab (38%) or ǂKhoadi-||Hôas (39%). Most respondents felt that they should share experiences at a workshop to learn about rhino because they do not know about its behaviour and see it as a threat.

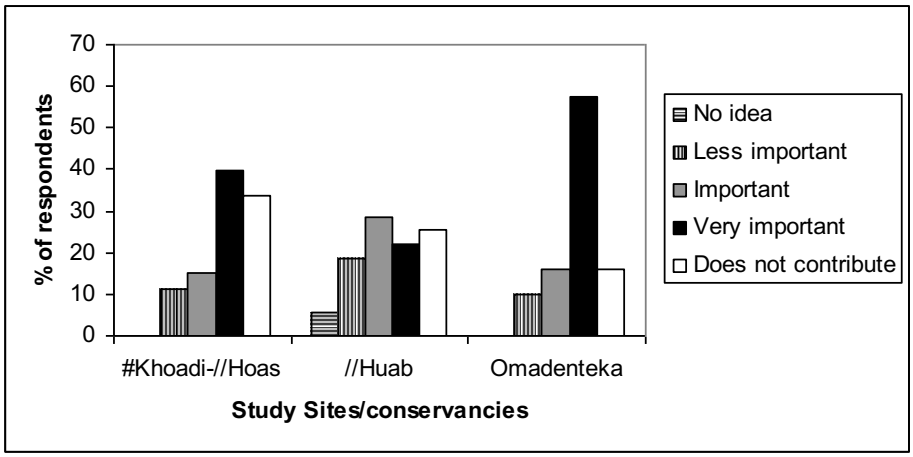

Figure 34. Respondents' views on whether or not black rhino pose a threat to human life.

4.5.2 Threat to livestock

In contrast, most respondents felt that rhinos did not pose a threat to their livestock (Figure 35) although there was a difference (χ^2=29.064, df =10, P<0.01) between the views of respondents across conservancies. More respondents in Omatendeka (91%) were unconcerned about the threat posed by rhino to their livestock than in both ||Huab (71%) and ǂKhoadi-||hôas (71%).

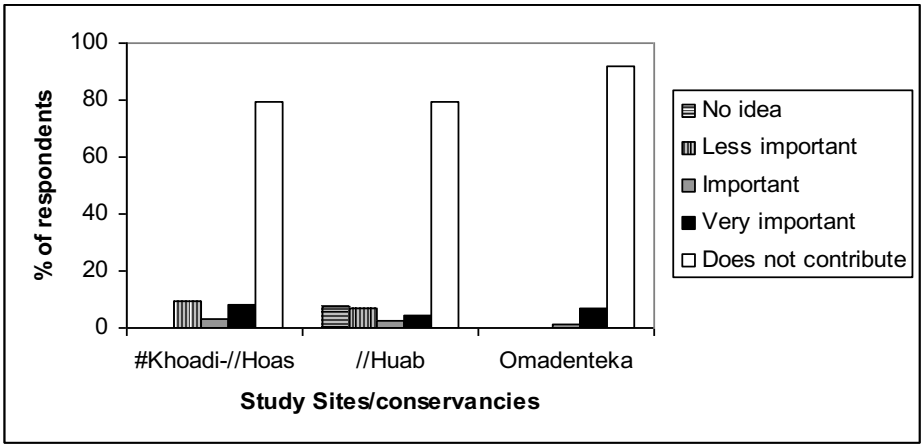

Figure 35. Respondents' views on whether the rhino is a threat for their livestock.

5.5.3 Competition for food with livestock

Most respondents felt that rhinos would not browse all the bushes and that there would be enough food for both rhino and livestock (Figure 36), although there was a difference (χ^2=37.327, df=10, P<0.001) in the views of respondents across conservancies. There was least concern in Omatendeka (94%) about the possible effects of competition over food when compared to both ǂKhoadi-||Hôas (77%) and ||Huab (82%).

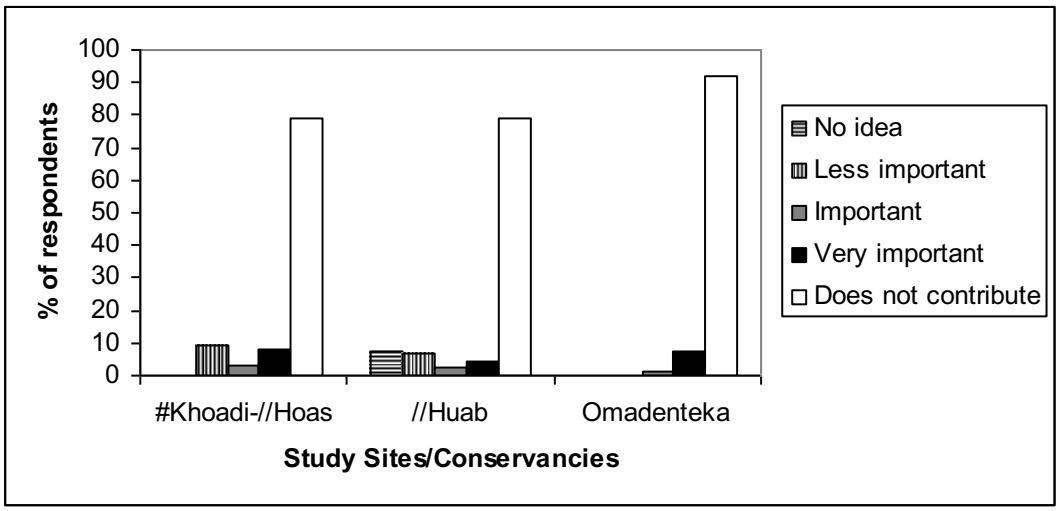

Figure 36. Respondents' views on whether the rhino will browse all the bushes/food of the livestock.

4.5.4 Drink all water

Most respondents felt that rhinos would not drink all the water, and that there would be enough water for both rhinos and livestock (Figure 37) although there was a difference (χ^2= 29.388, df= 10, P<0.001) in the views of respondents across conservancies. There was least concern in ǂKhoadi-||Hôas (96%) about the possible effects of competition for water, with more concern in ||Huab (75%) and Omatendeka (77%) about possible short supply of water.

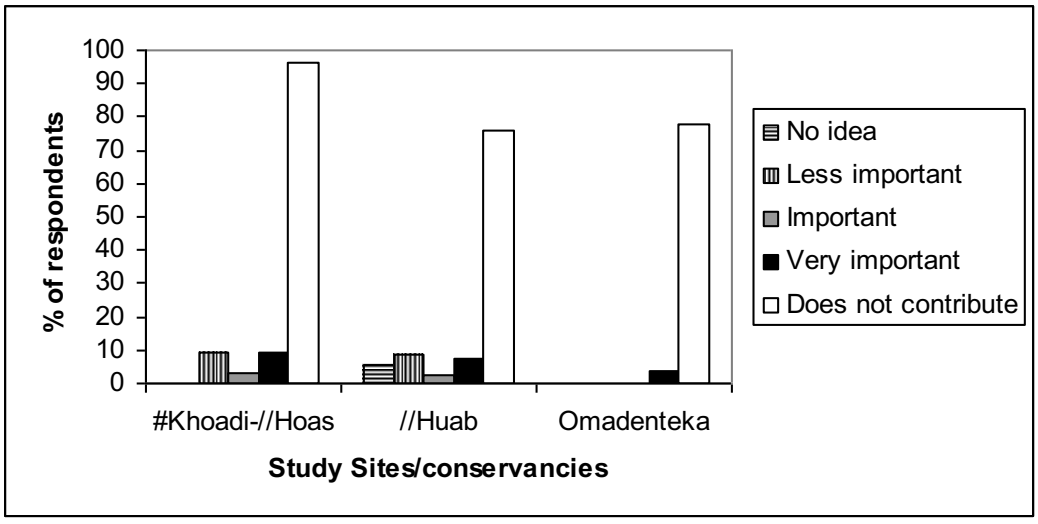

Figure 37. Respondent perception on whether there is enough water for rhino.

4.6 The reintroduction of rhino into conservancies

4.6.1 Support for reintroduction of rhino

Most respondents supported the reintroduction of rhino into their conservancies (Figure 38) although there was a difference (χ^2=8.018, df=2, P<0.05) across conservancies. The most support for the reintroduction of rhinos was in Omatendeka (93%), followed by ||Huab (87%) and less support in ǂKhoadi-||Hôas (80%).

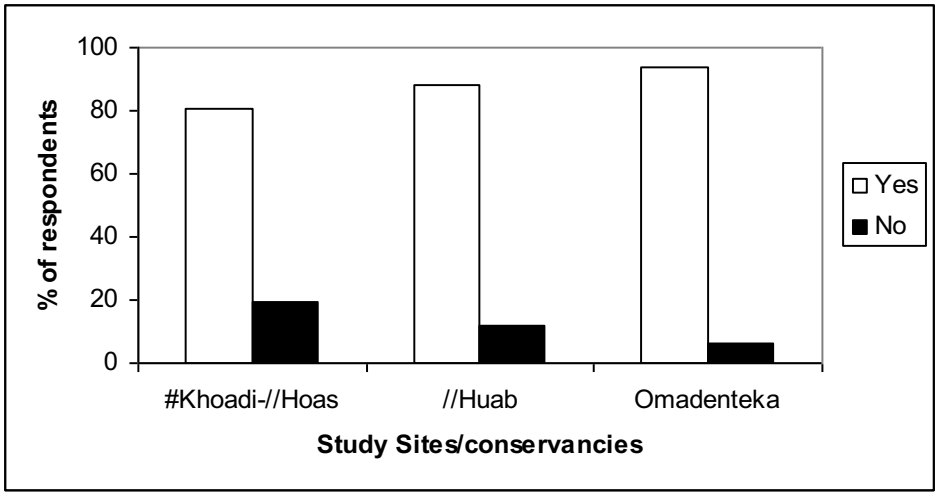

Figure 38. Profile of respondents whether they want rhino or not.

The reasons given for supporting the reintroduction of rhinos (Figure 39) were as a tourist attraction, for future generations to see them, that there are rights to protect them, that they are similar to their livestock, and for the development of the country. There was a difference (χ^2=33.866, df=12, P<0.001) across conservancies with more respondents in ||Huab (15%) concerned about the possible danger rhinos can have, and respondents being least concerned in both ǂKhoadi-||Hôas (5%) and Omatendeka (5%).

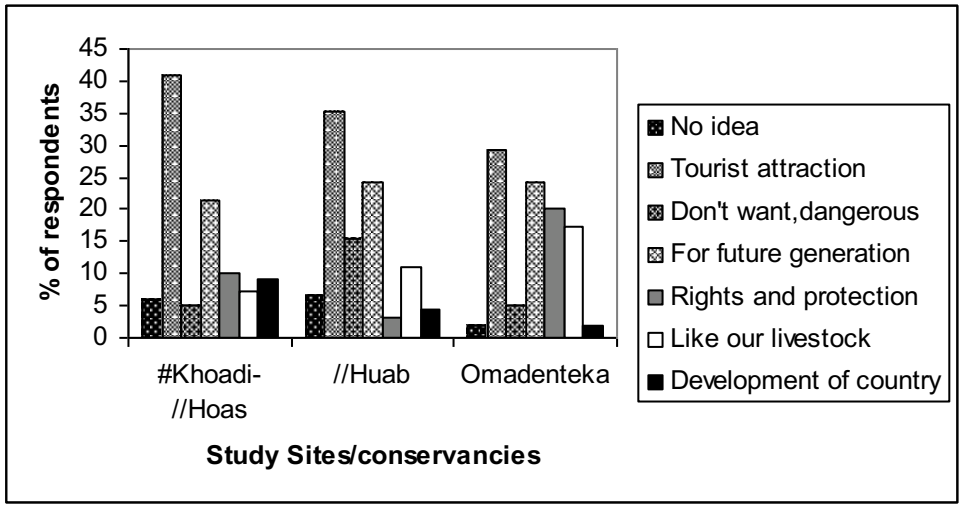

Figure 39. Reasons why respondents want rhino in their conservancies.

4.6.2 Responsibility

Most respondents in ǂKhoadi-||Hôas (57%), ||Huab (73%) and Omatendeka (64%) felt that conservancy committees and community game guards should be responsible for wildlife monitoring in their conservancies (Figures 40, 41 and 42), although there was a difference (χ^2=13.018, df=4, P<0.05) of views among respondents across the conservancies. Most respondents from ǂKhoadi-||Hôas (60%) and Omatendeka (63%) felt that law-enforcement should be the responsibility of MET and Police. More respondents from Omatendeka (66%) felt that NGOs would be responsible for training and research (Figure 40), although there was a difference (χ^2=16.764, df=6, P<0.05) in the views of respondents across conservancies.

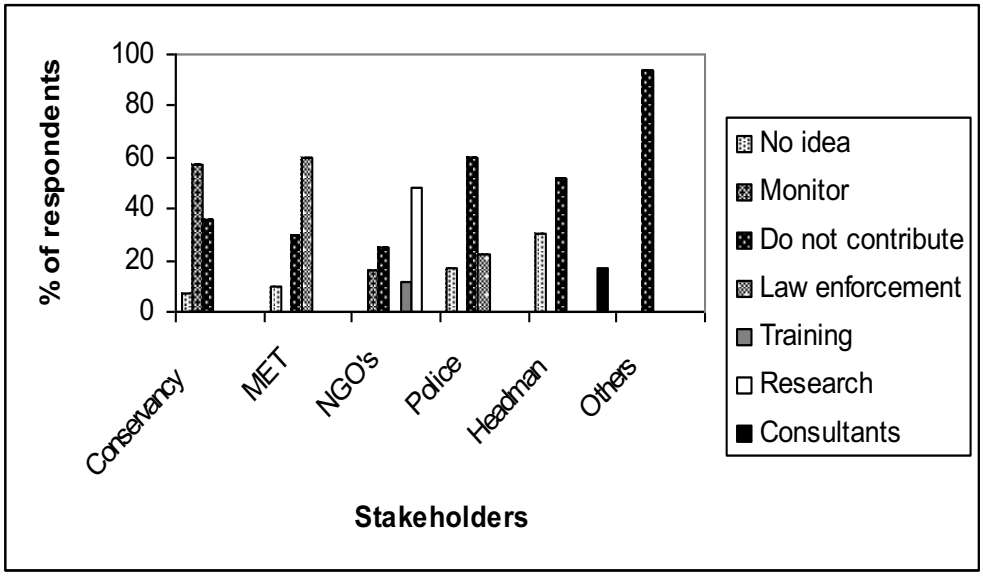

Figure 40. Responsibilities of stakeholder groups for ǂKhoadi-||Hôas Conservancy.

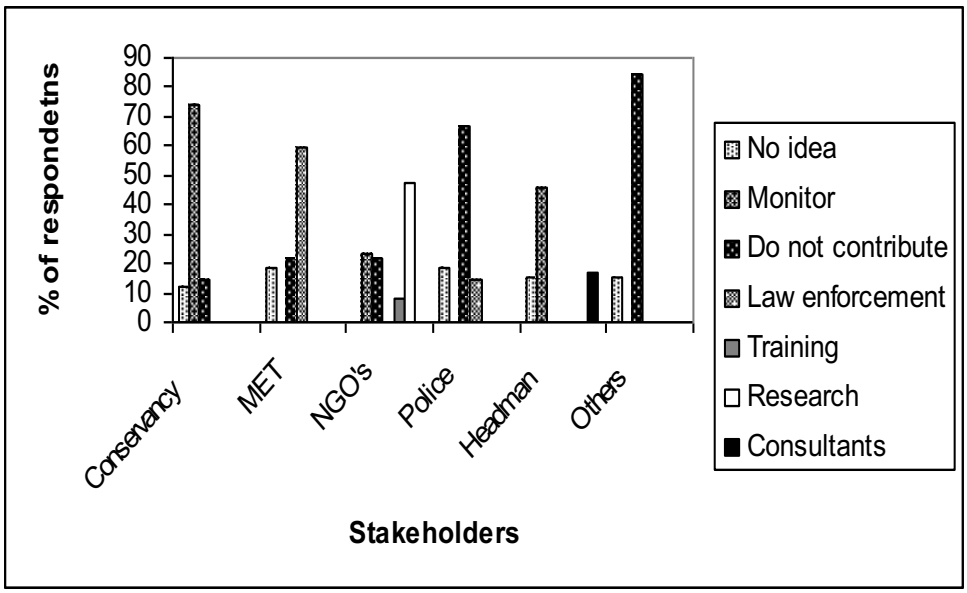

Figure 41. Responsibilities of stakeholder groups for ||Huab Conservancy.

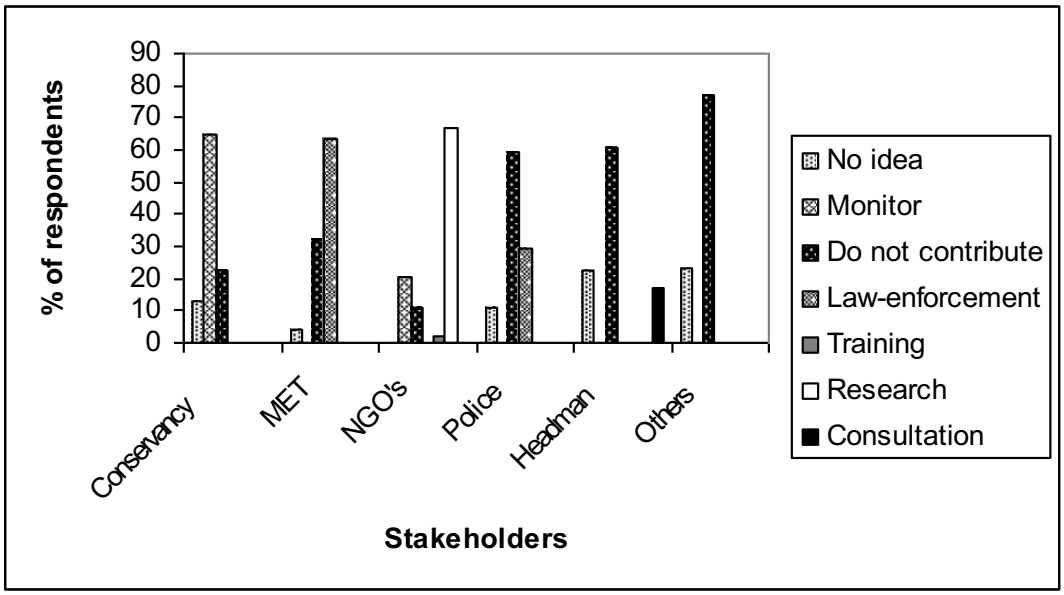

Figure 42. Responsibilities of stakeholder groups for Omatendeka Conservancy.

4.7 Ecological suitability of study sites

4.7.1 Distribution of rhino and potential release sites

Respondents identified areas they felt were most suitable for rhino to be reintroduced for each of the study sites. These areas were mapped as potential release sites in relation to data from Hearn (2003) on the distribution and density of rhino in the current range (Figure 43).

4.7.2 Vegetation types favoured by rhino

As part of the Darwin Initiative Project, stratified sampling units were developed from vegetation data modified from the MET's Atlas Project (Mendlesohn *et al.*, 2002). This was clipped to the current rhino range and sites surveyed as part of the community survey (Figure 44). Although rhino occur across twelve different vegetation types within their current range, they mostly favour the *Euphorbia* basalt foothills and the *Euphorbia* basalt plateau habitat. Rhino density in the present range is highest in the *Euphorbia* spp. dominated basalt foothills and plateau (Figure 45).

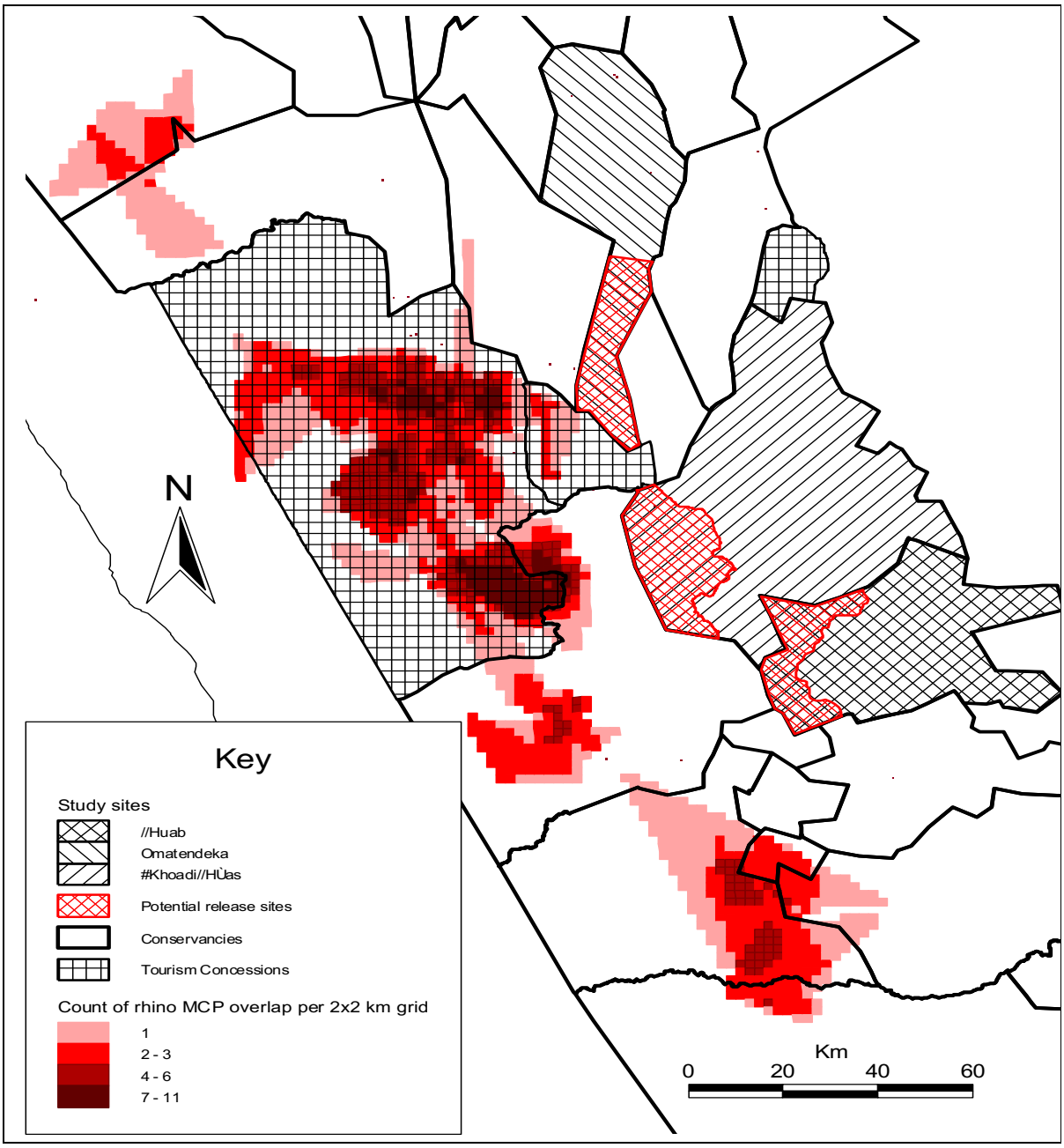

Figure 43. Rhino distribution, expressed by the count of home range minimum convex polygons (MCPs), in relation to the study sites and indicating the potential release sites.

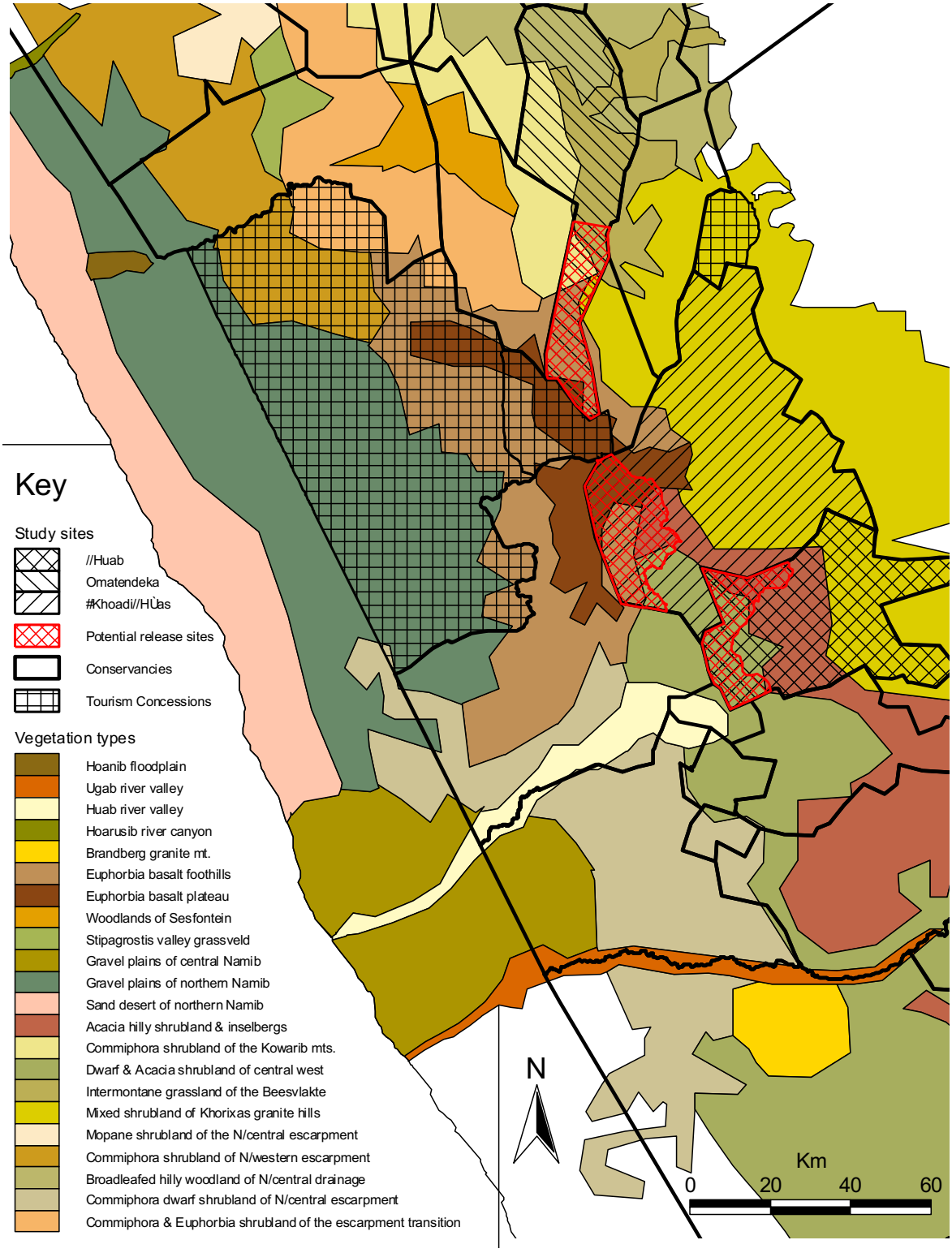

Figure 44. Vegetation type across the current Kunene range of the black rhino and the three study sites, including vegetation composition of the potential release sites.

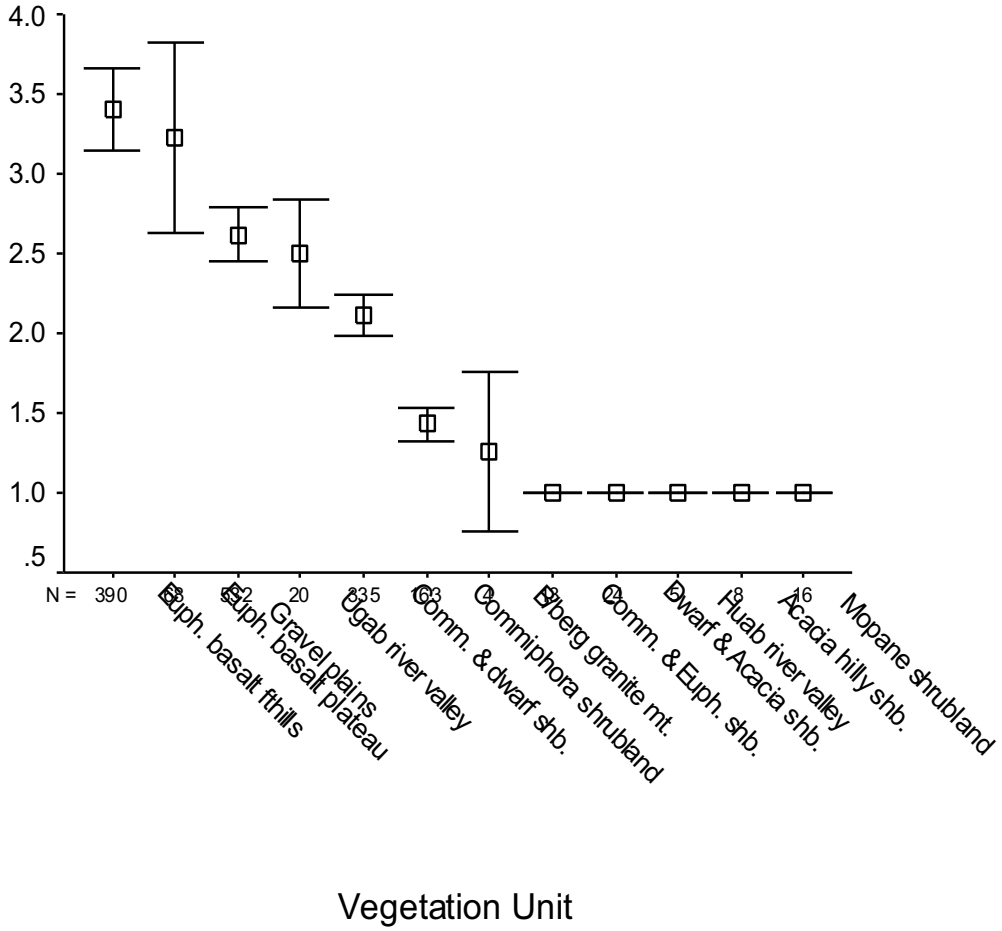

Figure 45. Rhino density per vegetation unit in the current range, expressed as the count of MCPs per 2x2km grid square. Source: Hearn 2003, p. 24.

Description	In current rhino range	Habitat type per Study Site/km²		
		ǂKhoadi-‖Hôas	‖Huab	Omatendeka
Euphorbia basalt foothills	Yes	287.40		229.23
Euphorpia basalt plateau	Yes	315.52		31.29
Acacia hilly shrubland and inselbergs	Yes	355.60	636.07	
Mixed shrubland of Khorixas granite hills	No	2,121.12	844.09	22.30
Dwarf and Acacia shrubland of the central west	Yes	282.40	335.83	
Commiphora shrubland of Kowarib mountains	No			407.15
Intermontane grassland of the Beesvlakte	No			521.86
Broadleafed hilly woodland of north-central drainage	No			344.84

Table 3. Proportions of vegetation types found in each study site and if they are present in the current range.

4.7.3 Access to water across study sites

4.7.3.1 Access to springs

Springs are widely distributed all over the region with permanent springs, temporal springs and manmade springs (xoras / gorras). Data for more than 400 permanent springs were mapped across the study area to indicate access to water for rhinos (Figure 46). The mean distance to water in the potential release sites was highest in Omatendeka, followed by ||Huab and lowest in ǂKhoadi-||Hôas

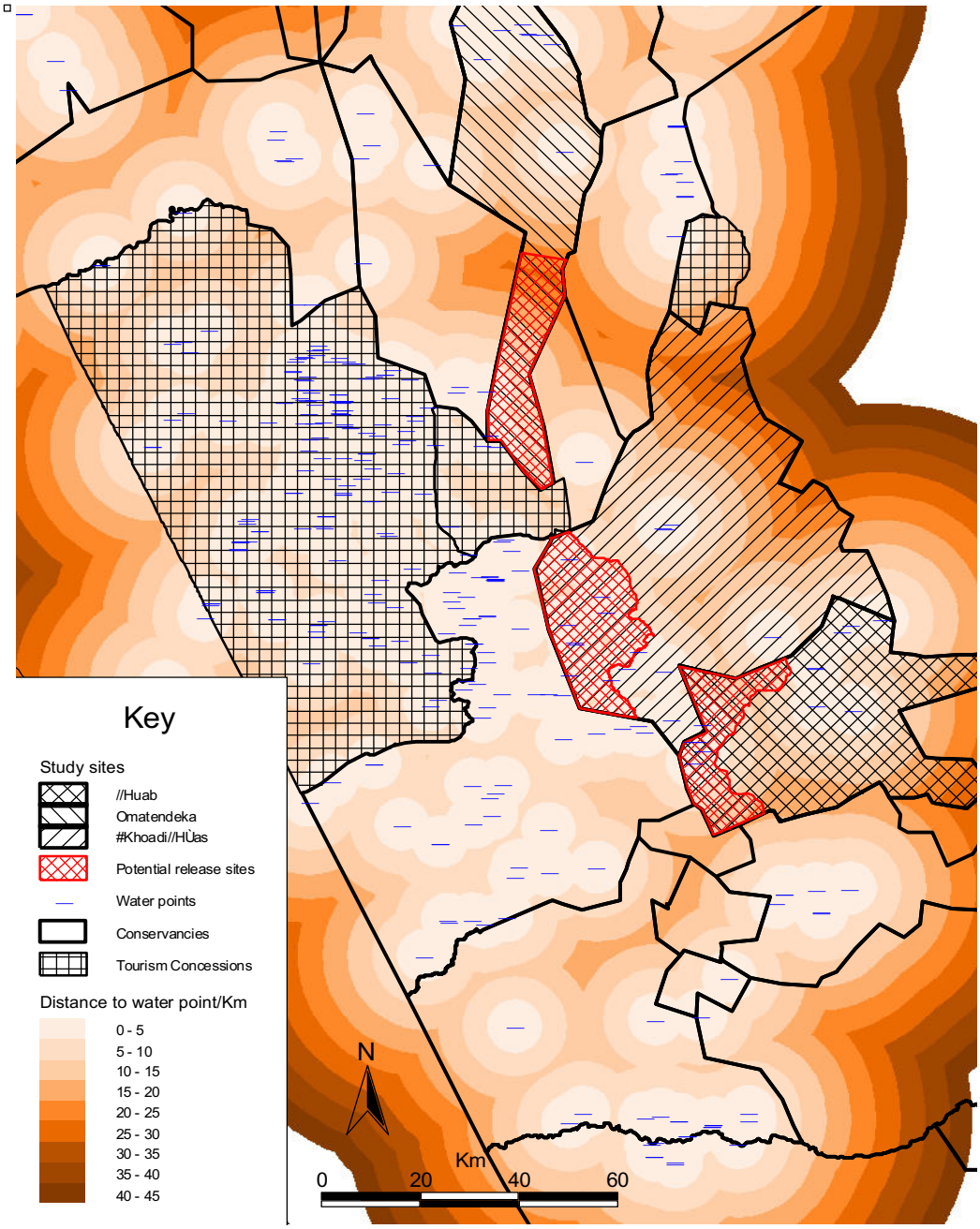

Figure 46. Distance to water points (permanent springs) for each of the study sites, indicating the potential release sites identified during surveys with community members.

4.7.3.2 Distribution of boreholes

Although there are more than 300 boreholes in the study area, not all boreholes were permanently inhabited by people (Figure 47). Livestock farmers either use these boreholes to water livestock, returning to homesteads in the evening; or, in some cases boreholes in the current rhino range are used for wildlife (for example Probeer in Doro !Nawas, and Jebico in Torra conservancy; and springs in ǂKhoadi-||Hôas) and may be accessed only for emergency grazing in heavy drought periods. This is the case of boreholes in the potential release site of ǂKhoadi-||Hôas.

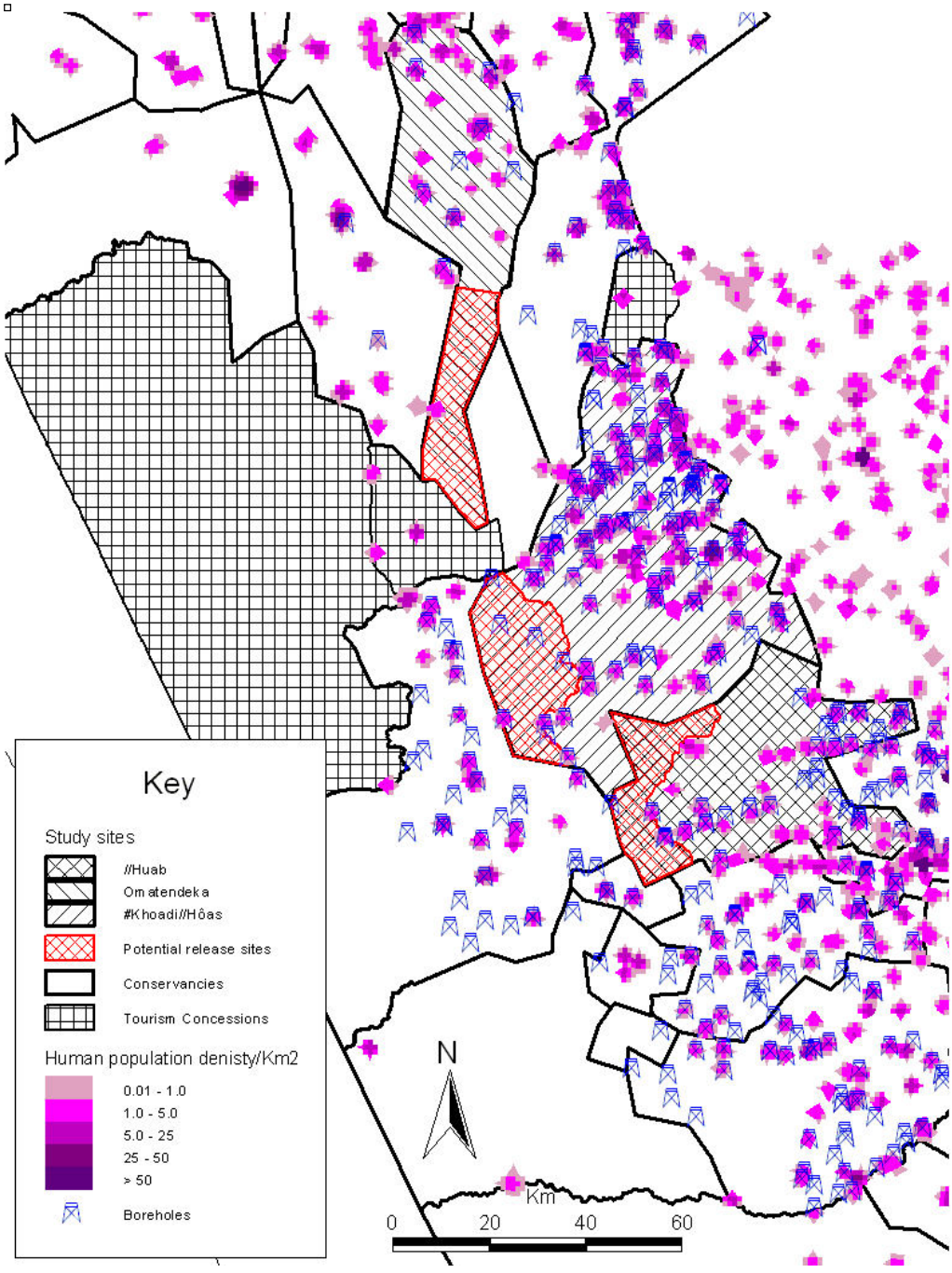

Figure 47. Borehole distribution across the three study sites in relation to potential release areas and indicating human population distribution and density.

4.7.4 Distance to human settlements population distribution and numbers

At the time of writing, the population of Kunene Region was 64,017 (UNDP 1997) and represented 4.6 % of the 1.6 million population of Namibia. Since most of the people are pastoralists they move with their livestock in response to rainfall and the resulting increase in grazing. Figure 48 shows the distribution of people in the study area and Table 4 provides figures for the mean distance of human habitation from potential rhino release sites. The three points of human population concentration in the far west at the bottom/centre of the map, are the MET Skeleton Coast Park entry gate at Springbokwasser, Schoemann's tourist camp and the SRT Ugab base camp. These are not used for livestock farming, though a small herd of 20 goats are kept for subsistence purposes by SRT staff at the Ugab camp (Dâures Camp). In Figure 48 to the north and east of the study area are the population centres of Sesfontein, Warmquelle, Erwee, Kamanjab and Khorixas, all clearly visible on the map. It is clear that major settlements are located close to main roads in the region, which themselves have been constructed so as to service historic concentrations of settlement. The majority of potential rhino release sites identified by respondents in each of the study sites have no people residing in them. In Omatendeka, however, some people moved in from Opuwo as a result of the drought in 1994: these people did not return, even after the rains came in 1995, and have permanently settled in the area. They are not conservancy members and Chief Lucky Kasaona expressed concern about their presence in a short interview I had with him at Omuramba on the 19th July during the surveys.

Conservancy	**Distance of human habitation from potential rhino release sites in km**
ǂKhoadi-‖Hôas	1.67
‖Huab	2.15
Omatendeka	3.23

Table 4. Mean distance to human population habitation in the potential release sites.

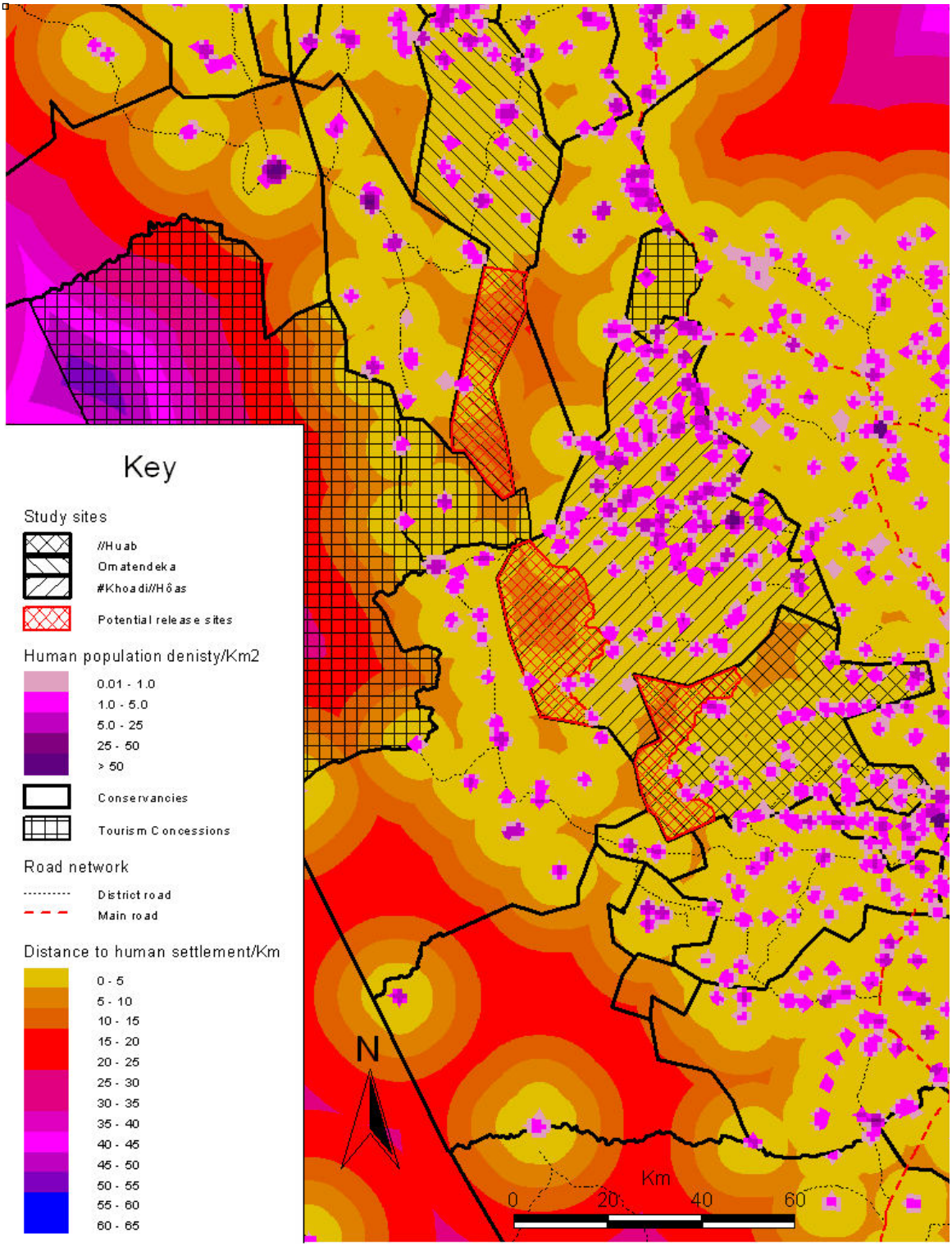

Figure 48. Distance to human settlements and density of people for each study site in relation to the road network, indicating the potential rhino release sites identified during surveys with community members.

5. Discussion

5.1 General discussion

The survey results suggest that the perceived incentives derived from wildlife conservation appear to out-weigh direct and opportunity costs to communities in the three study sites. In general, local communities support the conservation of wildlife in their conservancies. Perceptions toward rhino suggest there is support for the reintroduction of black rhino into the three study sites. The greatest cost rhino could pose to communities is threatening human life. Resource competition, notably competition for water, was not perceived to be a threat.

ǂKhoadi-||Hôas and Omatendeka conservancies have good representation of the favoured rhino habitat found in the current Kunene range. ǂKhoadi-||Hôas study site has the larger proportions of preferred habitat, both *Euphorbia* basalt foothills and Euphorbia basalt plateau, followed by Omatendeka (Table 3). In contrast, ||Huab consisted of mainly *Acacia* hilly shrubland and inselbergs and mixed shrubland of the Khorixas granite hills (Table 3). Studies by Joubert (1996) on rhinos in the north-west prior to the heavy poaching of the 1970s and 1980s suggest that rhinos concentrate on various *Acacia* hilly shrubs and herbs during the winter months. Rhinos also prefer hilly areas during the warmer summer months and moved west into the plateau areas during the rainy seasons. Studies by Hearn (2003) indicate that the highest number of overlapping home ranges for rhinos in Kunene by 2x2 vector grid can be found closer to water. This is a good indicator that there is potential for suitable habitat for rhino in all the potential release sites, though the impact of livestock on available resources would also need to be assessed.

The assessment of habitat suitability in the three study sites suggests ≠Khoadi-||Hôas is the most favoured site for reintroduction and could support rhino in its present state. Figure 49 summarises the distance to human settlements and water for the potential release sites identified by respondents in the three study sites. The lowest distance to water, therefore better access, combined with relatively lowest distance to settlements was recorded in the ≠Khoadi-||Hôas potential release site. Although Figure 49 suggests that the impact of humans may be lowest in Omatendeka (because settlement sites are furthest away from the potential rhino release sites), this was in fact the only site where people were living in the area identified as a potential release site by respondents. As mentioned above, however, these people were not registered conservancy members. An additional compromising factor here is that Omatendeka has almost double the human population when compared to the other two study sites. The zoning of conservancies will be critical to any reintroduction programme, since the position of springs and waterholes, combined with grazing, determine the movements of both wildlife and livestock (Leggett 1999). The zoning by ǂKhoadi-||Hôas of

the potential release site as a wildlife zone supports the Klip River in ≠Khoadi-||Hôas as the most feasible site for the reintroduction of rhino.

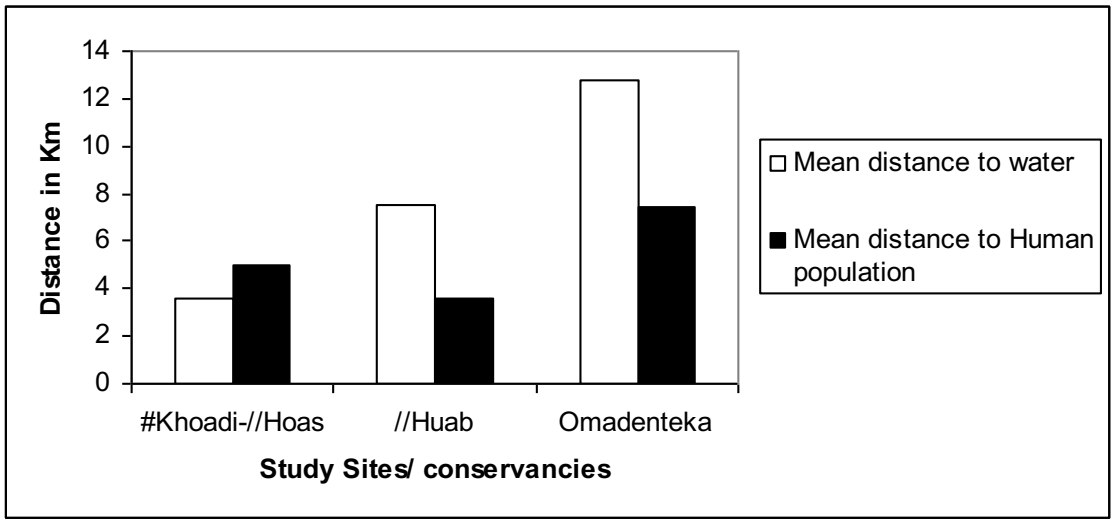

Figure 49. Summary of data from tables in the results section on analysis of the mean distance to water and human population in each of the potential release sites for the three study sites.

5.2 Attitudes of local communities towards other wildlife

> It does not seem strange to me that I should protect animals. I have learned to do so from my parents. The animals are not bad. If they go we will suffer a great loneliness of the spirit (Werimba Rutjani of the Kaokoveld Himba, quoted in Adams and McShane 1992, p. 160).

This statement recorded in Kaokoveld corroborates attitudes expressed by study respondents that wild animals are valued. It shows clearly that the conservation of wildlife is not a new issue for the people of Africa, or of those living in north-west Namibia.

Indeed, there was widespread local support for conserving wildlife (Figure 28) with the majority of respondents accepting the need to conserve wildlife and positive attitudes towards wildlife linked with benefits from meat distribution, cash from live sale, trophy hunting and tourism. It is widely accepted that the most important factors determining the success of community-based conservation projects in Africa are: increasing benefits to rural communities directly affected by the wildlife; and involving communities in decision-making (Parry and Campbell 1992). Negative attitudes towards wildlife in the study area are a result of the treatment they received during the colonial regime when wildlife was regarded as important while peoples' lives were not, putatively causing dislike for wildlife and even leading people to kill wildlife as a means of revenge.

Indeed, the survey results shared here suggest that residents in ǂKhoadi-||Hôas and Omatendeka conservancies had negative attitudes towards elephants as a result of the heavy cost experienced from raiding crops and breaking water installations. Studies by Parry and Campbell (1992) in northern Botswana concluded that local communities held negative attitudes towards wildlife damaging their crops and as a result of livestock losses to predators, even when they received benefits. Figure 28, however, indicates that only 2% of the ǂKhoadi-||Hôas respondents do not support the idea of conserving wildlife. This appears to be as a result of not receiving any benefits from wildlife and only experiencing heavy losses that were not compensated for. Another very important component associated with negative attitudes to wildlife is lack of education. The survey results indicate that respondents with high education levels had positive attitudes towards conserving wildlife. Age also influenced the attitudes of respondents, with young respondents tending to be more positive than older respondents. This pattern corresponds with the surveys carried out by Jacobson (1987) and Parry and Campbell (1992) in South Africa and Botswana respectively. Fiallo and Jacobson (1995) observed that local communities benefiting from wildlife had more positive attitudes than those whom do not benefit. Also, those with family members employed in wildlife related fields showed more positive attitudes towards wildlife. Other studies also found that rural people in developing countries with access to conservation related benefits could positively influence local attitudes, although these benefits cannot always outweigh losses that are incurred (Gillingham and Lee, 1999). Negative attitudes result from unfair benefit distribution and unsolved conflicts with wildlife. Although there are already benefit-sharing schemes, priority should be given to improving these schemes, aiming for equity amongst residents' benefits as inequalities in benefits also influences the attitudes of the local communities towards wildlife. More attention should also be paid to meat distribution: in ǂKhoadi-||Hôas, for example, some respondents complained that they only received rotten meat.

The focus for future CBNRM initiatives is to better understand to what extent the distribution of benefits can secure the support of local communities for the conservation of wildlife (Gillingham and Lee 1999). Local communities appear to realise that the conservancy programme is in a development phase and therefore cannot satisfy each and every individual in the conservancy. Changes made in wildlife management, and natural resource use, have made people feel more confident with the progress.

Article 2 of the Convention on Biological Diversity (CBD) defines 'sustainable use' as,

> [t]he use of components of biological diversity in a way and at a rate that does not lead to the long-tem decline of biological diversity, thereby maintaining its potential to meet the needs and aspiration of the present and future generations.[11]

[11] https://www.cbd.int/convention/articles/?a=cbd-02

The results of this study recognise the importance of conserving wildlife and emphasises that both tourism and the need for the future generations to enjoy the presence of wildlife, including rhinos, in considering why to conserve wildlife and its importance. The findings thus support the CBD on 'sustainable use'. Currently, tourism is one of the largest and fastest growing industries in the world and is the third largest contributor to GDP in Namibia. The success of tourism is both from the enjoyment of natural areas (scenic) and from wildlife. Tourism (non-consumptive use) in Namibia provides one of the main sources of conservation-related income, since people cannot solely rely on benefits in the form of meat and trophy hunting (consumptive use) for the long-term sustainability of the programmes. Therefore, most of the respondents focus on tourism as the main reason why they should conserve wildlife. In fact, wildlife is one of the most productive uses of land in Africa, particularly in the semi-arid areas, where wildlife based incentives can play an important role for communities to diversify land use strategies away from solely subsistence farming, and therefore increase opportunities that ensure livelihood security for future generations.

5.3 Attitudes of local communities towards rhino

Communities have different attitudes towards rhino, dependent on their previous experiences with this species. Attitudes vary between individuals, age groups and the level of education. This is similar to findings among communities in South Africa (Hulme and Infield 2001). Although some older people may have suffered bad experiences with rhino in the old days, they still felt that the lack of rhino today is a loss to the nation. Most respondents felt rhinos are a threat to human life (Figure 34). When asked why, they said that black rhino are very short tempered and aggressive animals and even an elephant is better than a rhino. For example, some respondents noted, "if a fly sat on you, as a human, and then flies off and sits on the rhino, if the rhino smells your scent, then it will track you and kill you". However, when asked whether they know someone that was killed by a rhino, they replied "no, only elephants killed people". There was a case where a rhino cow killed a dog in the Omatendeka conservancy at Otjihapa spring bordering the Etendeka Tourism Concession. The dogs tried to attack the rhino and her calf, obviously not familiar with rhino, as they do not occur in this area, or where farmers who had moved into the area from outside the conservancy.

Likewise, most respondents maintained that rhino are very aggressive and unpredictable in behaviour. However, most of the older and some younger people that have previously seen rhino report that rhino can be dangerous at times, since it is a wild animal, but they are still less dangerous than elephants, as they avoid people by running away. Some respondents mentioned that they do not have as good experiences with rhino as they had with elephant, but think they can learn about rhino, as they did with elephants, so they can get used to them. This could explain why respondents feel that they could be trained how to protect themselves against rhino and also to know the behaviour of rhino should they have to live with rhino in their area.

Local people are aware, however, that rhinos are a wild animal and need to be treated with respect and care. Respondents in the ǂKhoadi-||Hôas and Omatendeka conservancies had seen a young male rhino wandering in their areas in 2002 and 2003. Equally, this animal was confused and had no water, so they were moving around with cattle and donkeys in search of water and were regarded as very dangerous, plus no one expected rhino to be there. In the case of Omatendeka, the rhino was captured and moved to Etosha, although the community members were unhappy with this decision (see below). ||Huab conservancy also experienced a wandering rhino in November 2003. In this case the rhino used the more accessible springs (Figure 46) in the west and north of the conservancy and was not seen as a big threat for the inhabitants of the area. During the dry months of the year rhinos tend to move frequently beyond their home areas to locate food that they do not find in their home range during the dry months of the year (Joubert 1996).

In most cases rhino were not perceived as a threat to livestock in any conservancy (Figure 35). The rhino is a browser and may compete with goats for browse, yet the results suggest that communities feel there is enough bush/browse for goats, and water for all livestock, to share these resources with black rhino (Figure 36 and 37). In addition, the recovery of livestock numbers after the droughts experienced in Namibia could indicate that the environment is resilient and can recover quickly once rain falls to support the large numbers of livestock (Jacobson *et al.* 1995).

Previous studies have shown that increasing human impact, including settlements and grazing of livestock, can have a serious impact on wildlife in Africa (Stephens *et al.* 2001). In contrast, traditional leader Chief Japuha from the Omatendeka conservancy noted the following at the rhino meeting held at Palmwag Lodge in Kunene Region, in March 2004:

> I appreciate this workshop, a meeting which tackles all the rhino issues, which we have heard about before. I thank you all that we are all still together, with the conservancies and their partners. I am now glad to see that we are all partners in rhino management and glad that the issue of disturbance to rhino is being recognized. Our traditional grazing system may affect the rhino management, but we are still all together. That's why we zone the conservancy areas, … and we have already started with our conservation measures (in Hearn *et al*. 2004, p. 15).

Headman Japuha was one of the community members concerned about the removal to Etosha National Park of the wandering rhino from his area in 2002/3, although he accepted the reasons for the translocation.

The survey results indicate that water is not a problem in the areas recommended for rhino translocation by respondents since there are many natural springs in the areas demarcated by the conservancies as wildlife zones. However, in Omatendeka competition over access to water due to farmers from outside the conservancy residing in the potential release site could

limit the potential for rhino in this area, without zoning and secure land tenure for the conservancy.

Water from natural springs is an important lifeline in the arid western areas, where people and livestock live alongside, and may compete with, wildlife. Boreholes to the east tend to only meet the surface water needs of people and livestock. Boreholes and water points serve as focal points for the activities of most animals and people. The availability of water in the area and the volume of water available are the most important factors for life (Joubert 1996). Also, springs provide a cheap and convenient source of water, but their utilisation by livestock and people can sometimes cause conflict with wildlife. Farmers move in and stay close to the water points and by doing so, can disturb wildlife and degrade the immediate vegetation around the water holes (Jacobson *et al.* 1995).

Wildlife, including rhino and elephant, drink at night when there are fewer disturbances from people and livestock at waterholes (Joubert 1996). However, dogs can easily disturb rhino and as discussed this has been documented in one of the study sites. Although rhino require large amounts of space they will not cause the problems associated with elephants such as raiding crops, breaking windmills and dams, and frightening people at settlements. However, some members of the community felt that a fence should be put up between wildlife zones and farming areas in conservancies for the safety of people and the security of rhinos from possible poaching.

Communities have shared resources with rhino and other wildlife in the past. In some cases respondents felt that these most valuable resources had been taken away without consultation during the colonial times. Although the majority of respondents in all the conservancies had no idea what happened to the rhino in the past (ǂKhoadi-||Hôas 68%, ||Huab 45% and Omatendeka 65%), the results suggest they were aware of the threats posed to black rhino and that rhinos were moved to areas with better food (ǂKhoadi-||Hôas 22%, ||Huab 23% and Omatendeka 23.9%) (Figure 32). The three main reasons why communities want rhino are for their benefit as tourist attractions, for the future generations, and for the conservancy which depends on wildlife (Figure 39). Usually, parents plan the future around their children. These results suggest natural resources are valued by communities and will contribute to livelihood security for future generations. Local people in the study sites viewed rhino similarly to their livestock and therefore see them as an asset.

Since they have user rights for other wildlife, rhinos should be treated the same. Efraim Thaniseb, a conservancy committee member of the Anabeb conservancy, thus voiced his views as follows,

> [i]f you look at the other species such as springbok, conservancies get direct benefits from these species. However, the rhino is like the holy fire, we cannot have a say, though we

> share resources such as springs. We need ownership as a means of benefiting from the rhinos (in Hearn *et al*. 2004, p. 18).

At the same time, local communities acknowledge the importance of rhino, the threats rhino may face, and the responsibility of protecting rhino. In addition, some of the respondents were aware of the cost involved in rhino conservation, but also realise the benefits that can be derived from rhinos through tourism.

Again, in the words of a community member, Mr. Nderura, who represents the traditional leadership of Chief Langman Muzuma of Otjokavare, Omatendeka:

> Experts and doctors are talking and it is difficult for me to speak in this company. However, we are the herders and I feel I must add to this. We are not against rhino, but we want the full community involvement in every process. On the question of leave it, [i.e. taking no biological management action] we have gone beyond this – the community guards system and other initiatives are testaments to this. The request is to allow communities to participate to prevent negative attitudes in the communities and not rely solely on the decisions from Windhoek and the international experts (quoted in Hearn, 2004, p. 13).

Young people involved in the tourism industry realise the importance of rhino tracking as a source of income from tourism and have positive attitudes towards rhino. They feel strongly that they are also entitled to have rhino in their conservancies.

Most respondents do not know why people poached rhino in the old days (Figure 31) and some believe that it is against their tradition and culture to even touch a rhino. Others were told that people poached rhino to sell the horn, but it was only the colonial rulers that had access to firearms who could then kill rhino. Community members from the Sesfontein area who had firearms, killed rhino for meat in the old days, since rhino is big and could feed a family for some time. However, many people have become community game guards, and are now looking after these animals, so hunting rhinos for meat is no longer a threat to rhino. Most respondents were very enthusiastic about having rhino in their conservancies (Figure 38). The relationship between the percentage of people who want rhino and the percentage of positive incentives to have rhino suggests there is real support from communities to have black rhino back in their areas.

6. Conclusion and recommendations

This study found that respondents in conservancy study sites in north-west Namibia support the reintroduction of black rhino into their conservancies. To encourage deeper support of local communities for wildlife conservation, more attention could be given to adult conservation education programmes. Encouraging attendance at school for young people is also valuable as positive attitudes towards rhino conservation are associated with the level of education: the higher the level of education the better the chances are that individuals support wildlife conservation. Most importantly, any conservation programme should aim at the protection of wildlife and local communities with equitable sharing of benefits derived from natural resources. This study thus concludes that to win long-term support and positive attitudes towards conserving wildlife, including black rhino, conservancies will need to satisfy the needs of community members concerning losses and damages caused by wildlife.

The most important issue is that conservancies should aim at joint management of rhino across large units determined by the ecological feasibility of having viable populations of black rhino. Focus should then be given to areas where there is good support from community level institutes responsible for land and the user rights of natural resources, in this case the conservancies and traditional leaders. This can allow further growth in rhino numbers to meet MET strategic goals for rhino growth and develop incentives for communities to offset the costs of wildlife management. Linking the release sites with each other, or the existing range, could also create sufficient space for rhino, in suitable habitat. For example ǂKhoadi-||Hôas and ||Huab conservancies could share the management cost of rhino conservation with Torra, as rhino would range across all these areas in response to rainfall and to gain access to water and browse. Omatendeka conservancy could also negotiate with Ehirovipuka to share the monitoring costs of rhino conservation because the rhino would invariably move between Omatendeka, Ehirovipuka and the “disputed” zone between the two conservancies. Also, although there is more favoured browse in Omatendeka, in terms of matching the vegetation units found in the current Kunene range, water is more abundant in Ehirovipuka.

This study focuses on people’s attitudes and perceptions towards conserving wildlife, particularly the reintroduction of black rhino into their historical range and the ecological suitability of release sites for rhino in northwest Kunene. The results of this study confirmed that within the communities in the three study sites of ǂKhoadi-||Hôas, ||Huab and Omatendeka, there is strong support for wildlife conservation generally, and for rhino conservation in particular.

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