Human Wildlife Conflict (HWC) Data Collation

Synthesis of all existing Human Wildlife Conflict data per conservancy for the Community Conservation Fund of Namibia (CCFN) Project “Poverty Orientated Support Community Conservation in Namibia”.

Final Report

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Contents

List of acronyms

CBNRM	Community Based Natural Resource Management
CCFN	Community Conservation Fund of Namibia
CITES	Convention on International Trade in Endangered Species
HWC	Human Wildlife Conflict
HWCSRS	Human Wildlife Conflict Self Reliance Scheme
IUCN	International Union for Conservation of Nature
MEFT	Ministry of Environment, Forestry and Tourism
NACSO	Namibia Association of CBNRM Support Organisations
UNDP	United Nations Development Programme

Introduction

HWC refers to the conflict between people and wild animals and occurs throughout Namibia on communal as well as freehold land and involves a variety of species. These conflicts range from the destruction of crops and water installations to loss of livestock, homes and in some cases, the loss of human lives. The main problems occur on communal land where elephants and predators are found outside protected areas and where people are least able economically to bear the costs of damage and losses.

Despite considerable efforts to introduce mitigating measures to reduce the incidence of conflict, Human Wildlife Conflict still occurs, and support for the CBNRM approach is eroding, particularly where humans are attacked by wildlife, where especially poor farmers are affected, and in Conservancies where HWC costs are exceeding revenues and other benefits obtained from CBNRM.

In April 2018, Cabinet approved the Revised National Policy on Human Wildlife Conflict Management (2018-2027). The revised Policy provides a framework for addressing HWC more efficiently and effectively to promote both biodiversity conservation as well as human development. This includes the adjustment of values the Government provides through the Human Wildlife Self Conflict Reliance Scheme (HWCSRS) to communities for offsetting the losses caused from HWC (Table 1). Nonetheless, the focus needs to be on reducing the incidence of conflict to the highest degree possible, and in ensuring maximum benefits to communities bearing the burden of conflict.

Table 1 Comparison between offset values and market values

Type of Loss	2009 Policy (N$)	2018 Policy (N$)	Approximate market value (N$)*
Human life or injury			
Life	5 000	100 000	NA
Injury (according to degree of injury)		10 000 – 50 000	NA
Livestock			
Cattle (cow or bull)	1 500	3 000	5 000 – 7 500
Goat	200	500	1 000
Sheep	250	700	850
Horse	500	800	3 500
Donkey	250	500	1 000
Pig	250	700	1 200
Crops			
One quarter of a hectare	200	250	1 000
One hectare	800	1 000	4 000

* These are average estimates based on current prices and approximate weights / yields per ha expected in the communal areas of Namibia. It is especially difficult to estimate the value of crops due to extremely variable yields, and the fact that they are mostly produced for own use (subsistence)

The policy implies that conservancies with hunting concessions would be responsible to pay the offsets, although subsequently MEFT decided to provide payments of N$ 60 000 to all conservancies, and thereafter to make additional payments based on reports from conservancies providing proof of payments for HWC losses to at least that amount. Match funding by conservancies is encouraged but not obligatory. Conservancies could in theory supplement the offset payments to their members (to bring them closer to the real cost), but this has not been recorded as yet. In addition, conservancies can in theory pay for losses not covered through the HWCSRS. There is currently no standard format

for reporting by conservancies, and in most cases the report consists of a copy of a record that shows who received money, with variable details provided. There are, however, review panels that assess all claims, based on the investigation forms, and where available, records from these discussions could provide more detailed information.

The Game Products Trust Fund (GPTF) was established through an Act of Parliament (Act 7 of 1997) to support conservation, the management of wildlife resources and rural development in Namibia (GPTF information brochure).

The main sources of funding into the Game Products Trust Fund are from trophy hunting concessions on State land outside registered conservancies, trophy hunting of problem-causing animals, tourism concessions and sale of wildlife. The GPTF receives the revenue realised on behalf of the MET, and ensures that it is used for wildlife conservation, community conservation and rural development programmes. The GPTF funds projects / grants related to human wildlife conflict, the HWCSRS, anti-poaching activities and grants for wildlife management and protection.

Table 2 provides a breakdown of the HWCSRS off-set payments made by the GPTF over a 4 year period (subsequent data was not available from GPTF).

Table 2 Offset payments for HWC losses paid by the GPTF over a four-year period

	Outside Conservancies		Inside Conservancies				Total offset payments
	No of payments	Offset payments	No of payments	Offset payments	No of Registered conservancies	Area (km^2)	
2014/15	217	524 812	3	180 000	85	162 241	704 811
2015/16	486	1 004 904	39	2 340 000	85	162 241	3 344 904
2016/17	495	1 262 300	10	600 000	86	163 348	1 862 300
2017/18	585	2 411 800	21	1 260 000	86	163 348	3 671 800
TOTAL	1 783	5 203 816	73	4 380 000			9 583 815

There are various sources of potential data on human wildlife conflict, such as the event book system of conservancies; annual conservancy audits; registers on payments under the HWCSRS maintained by conservancies; the incidence reporting forms used by MET; and the payment records of the Game Products Trust Fund. Most of these, however, are currently primarily paper based (with only summarized data captured digitally in ConInfo), and there is to date no single database that contains the full suite of data required to undertake a detailed analysis. In addition, data is being collected for different reasons, by different players, and there is therefore no unified, standardized approach to notation, no single database, the quality of some data is questionable (or unverifiable), and relevant pieces of data are potentially missing. For example, the conservancy audit report provides records on the number of incidents caused by various species, but with no indication of the type or scale of loss (such as number of cattle killed by lion). Data in reports has been consolidated and summarized, thus losing details. The Namibian Association of CBNRM Support Organisations (NACSO) provides various statistics on wildlife incidents including the average number related to the different sectors concerned (crop, livestock and others).

The Event Book is the key tool used by community game guards to record suspected poaching incidents, human wildlife conflict, and wildlife sightings. It is used by almost all registered conservancies and it was designed for use by people with low literacy, but a strong knowledge of

natural resources. Through the Event Book each conflict incident is recorded along with details of the conflict type (crops, livestock etc.), the conflict species (elephant, lion etc.) and the damage done e.g. number of livestock killed or area of crop damage as well as the date and location (Block number) of the incident. The current reporting system already summarizes the data from the event book system capturing number of incidences per month, without further elaboration. More detailed information is available on species/assets affected and value of loss, but it is not yet systematically captured in an electronic database. It is nevertheless useful for providing an indication of trends, such as in Figures 1 and 2.

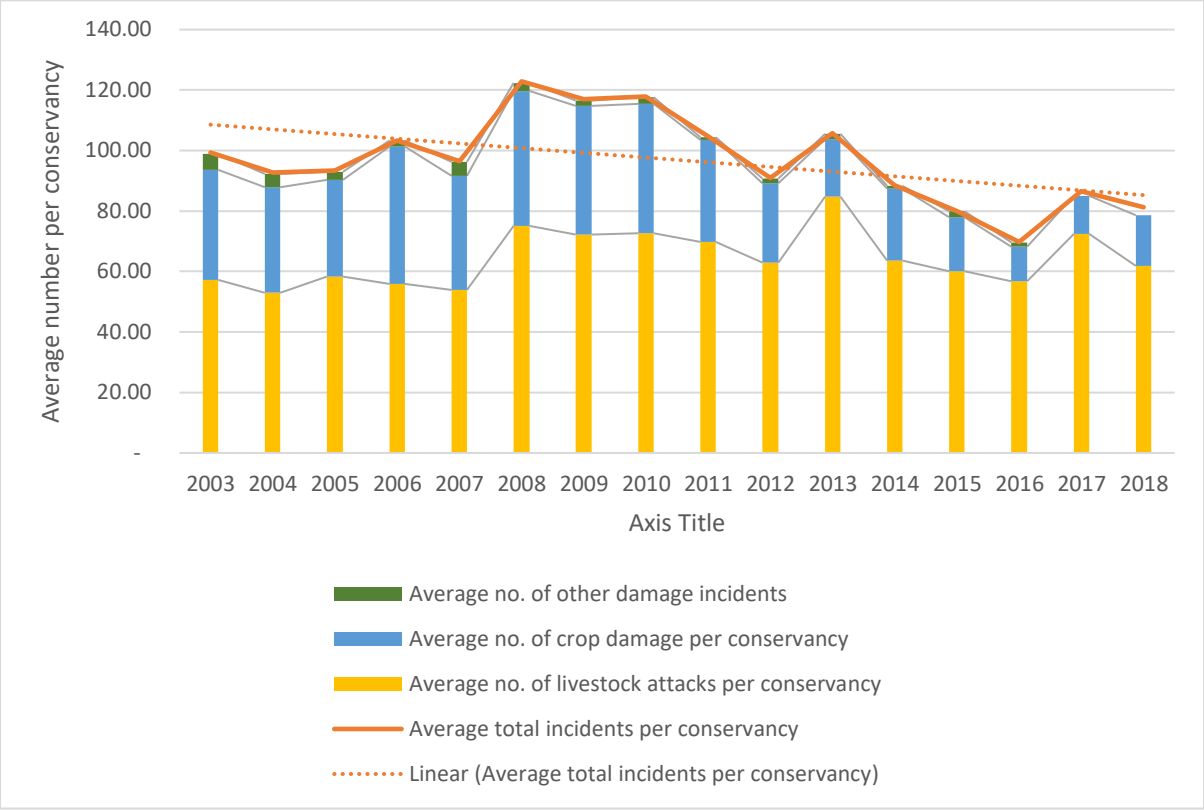


Figure 1 Average incidence of crop, livestock, and other wildlife damage per conservancy from 2003 to 2018 (NACSO 2020)

The two single species that account for the highest number of recorded incidences are hyaena and elephants (which in the north west of the country are responsible primarily for water infrastructure damage, whilst in the north east of the country, the primary damage is to crops) (Figure 2). The highest financial losses however relate to livestock predation, caused by the cumulative effects of a number of large predators. This is partly due to the relatively lower 'value' allocated to crop damage compared to livestock damage (Table 1). Also, although lions attract the most attention, other species such as hyaena, cheetah, jackal and leopard account for higher financial losses.

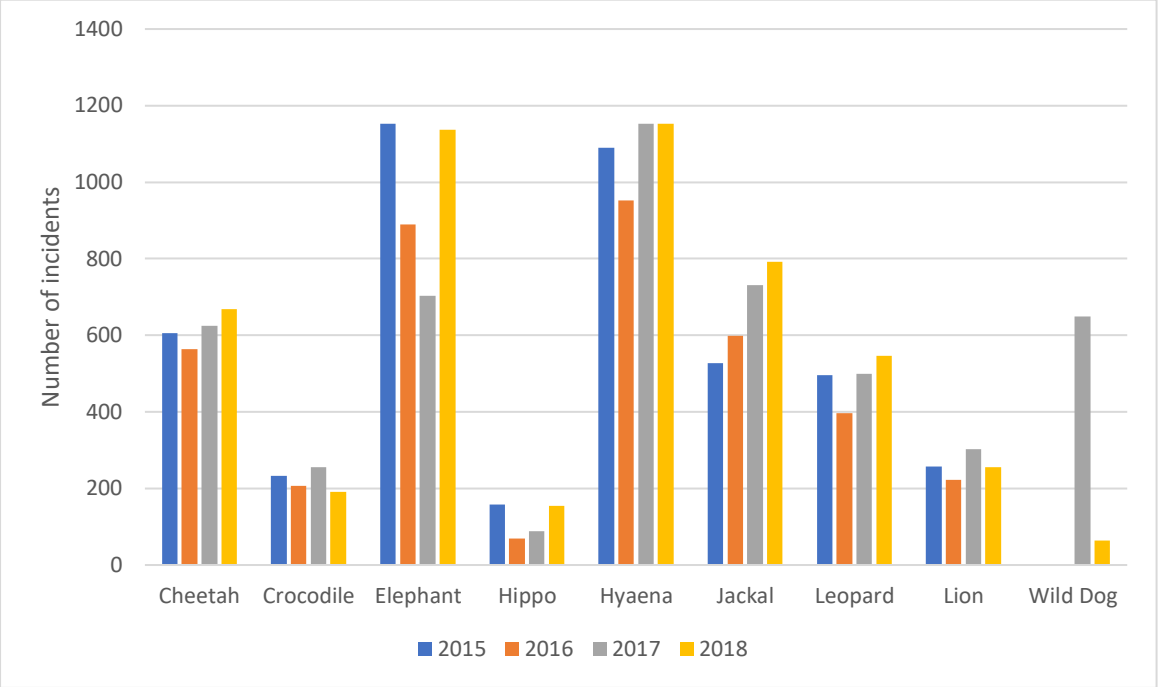


Figure 2 Number of conflict incidences by species in communal conservancies (2015-2018, except Wild Dog 2017-2018)

Specific tasks

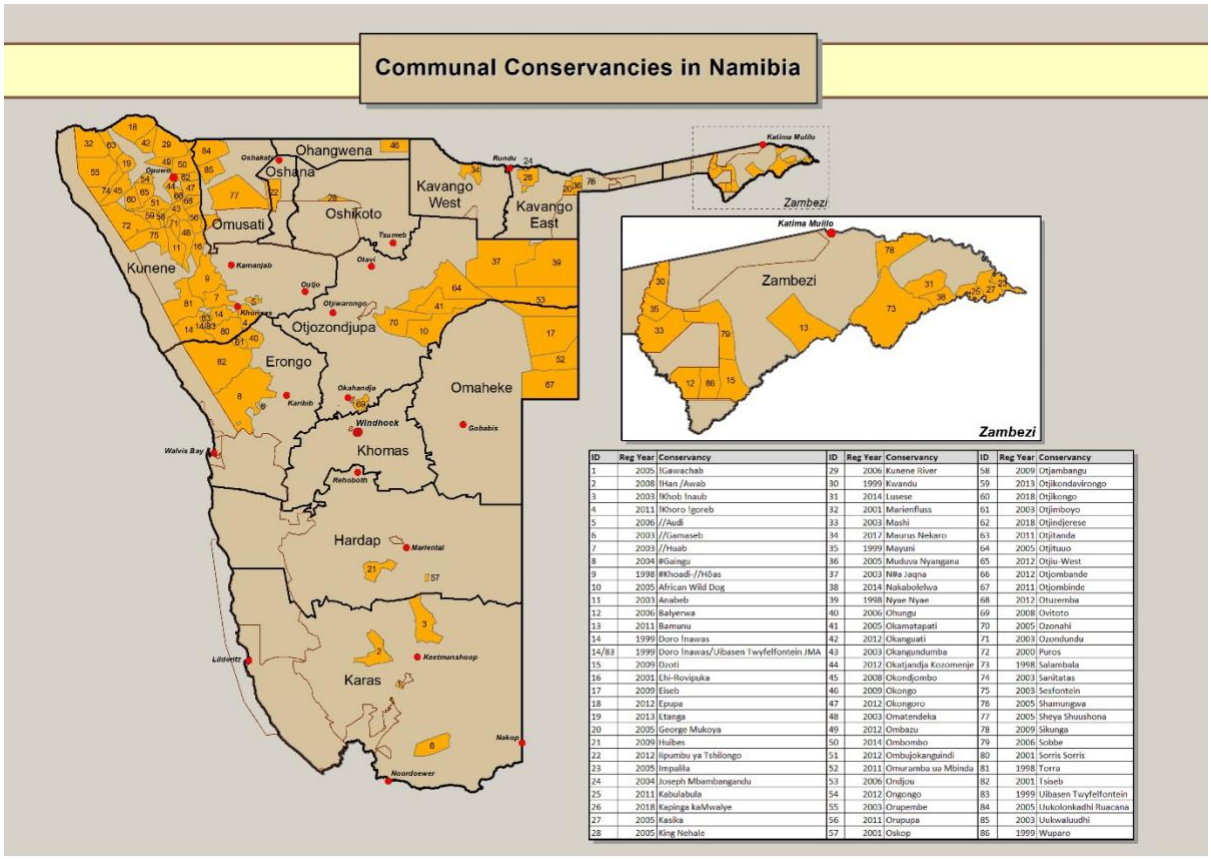
The specific tasks for this consultancy were to:

1. Provide a list of 40+ eligible conservancies experiencing the greatest loss in the country
2. Produce a summary of HWC data including maps highlighting hotspots, number of incidence and extent of loss in each conservancy
3. The average ratios benefits gained from wildlife against loss of wildlife
4. Classify current trends in income vs cost of natural resource conflicts in conservancies which will serve as guiding principles for applicants' contribution during the grant application process.
5. Liaise with the Ministry of Environment, Forestry and Tourism to review conservancy's compliance data Standard Operating Procedures (SOP) and compile a report on status of each conservancy.
6. Present findings in a meeting to NACSO partners, MET, KfW and CCFN.

Conservancies' selection criteria

The direct target group of the programme are the registered communal conservancies (and the people living within them) who are negatively impacted by Human Wildlife Conflict.

Highest income discrepancy: Namibia is categorized as a 'Middle Income Country', but this notwithstanding, it is the country with the **greatest income inequality in the world** according to the 2015 UNDP Human Development Report. While a small proportion of the population, usually based in the urban areas, enjoys considerable wealth, poverty rates are high in the rural communal areas, and in those areas with the highest wildlife densities. As a result, it is the poorest people in Namibia that are most impacted by the effects of human-wildlife conflict.



ID	Reg Year	Conservancy	ID	Reg Year	Conservancy	ID	Reg Year	Conservancy
1	2005	!Gawachab	29	2006	Kunene River	58	2009	Otjambangu
2	2008	!Han /Awab	30	1999	Kwandu	59	2013	Otjikondavirongo
3	2003	!Khob Inaub	31	2014	Lusese	60	2018	Otjikongo
4	2011	!Khoro !goreb	32	2001	Marienfluss	61	2003	Otjimboyo
5	2006	//Audi	33	2003	Mashi	62	2018	Otjindjerese
6	2003	//Gamaseb	34	2017	Mayuni	63	2011	Otjitanda
7	2003	//Huab	35	1999	Mayuni	64	2005	Otjituuo
8	2004	#Gaingu	36	2005	Muduva Nyangana	65	2012	Otjiu-West
9	1998	#Khoadi-//Hôas	37	2003	Nlha Jagna	66	2012	Otjombande
10	2005	African Wild Dog	38	2014	Nakabolelwa	67	2011	Otjombinde
11	2003	Anabeb	39	1998	Nyae Nyae	68	2012	Otuzemba
12	2006	Balyerwa	40	2006	Ohungu	69	2008	Ovitoto
13	2011	Bamunu	41	2005	Okamatapati	70	2005	Ozonahi
14	1999	Doro !nawas	42	2012	Okanguati	71	2003	Ozondundu
14/83	1999	Doro !nawas/Uibasen Twyfelfontein /MA	43	2003	Okangundumba	72	2000	Puros
15	2009	Dzoti	44	2012	Okatjandja Kozomenje	73	1998	Salambala
16	2001	Ehi-Rovipuka	45	2008	Okondjombo	74	2003	Sanitatas
17	2009	Eiseb	46	2009	Okongo	75	2003	Sesfontein
18	2012	Epupa	47	2012	Okongoro	76	2005	Shamungwa
19	2013	Etanga	48	2003	Omatendeka	77	2005	Sheya Shuushona
20	2005	George Mukoya	49	2012	Ombazu	78	2009	Sikunga
21	2009	Huibes	50	2014	Ombombo	79	2006	Sobbe
22	2012	Iipumbu ya Tshilongo	51	2012	Ombujokanguindi	80	2001	Sorris Sorris
23	2005	Impalila	52	2011	Omuramba ua Mbinda	81	1998	Torra
24	2004	Joseph Mbambangandu	53	2006	Ondjou	82	2001	Tsiseb
25	2011	Kabulabula	54	2012	Ongongo	83	1999	Uibasen Twyfelfontein
26	2018	Kapinga kaMwalye	55	2003	Orupembe	84	2005	Uukolonkadhi Ruacana
27	2005	Kasika	56	2011	Orupupa	85	2003	Uukwaluudhi
28	2005	King Nehale	57	2001	Oskop	86	1999	Wuparo

Figure 3 Map of Namibia showing the communal conservancies in relation to the regions of Namibia.

Table 3 provides an overview of several parameters for the various regions of Namibia with most communal conservancies (which correlates with those most affected by human-wildlife conflict). The Kunene region is the most sparsely populated, with the lowest literacy rate, and the second highest poverty headcount (after the Zambezi).

Table 3 Overview of some population analysis for the main regions of Namibia with Communal Conservancies (2011 census)

Criteria	Erongo	Kunene	Omusati	Oshana	Otjozondjupa	Kavango	Zambezi
No of inhabitants	150 809	86 856	243 166	176 674	143 903	223 352	90 596
% of national population	7.1%	4.1%	11.5%	8.4%	6.8%	11%	4.3%
Population growth 2001-2011	3.4%	2.3%	0.6%	0.9%	0.6%	1.0%	0%
Persons per square km	2.4	0.8	9.2	20.4	1.4	4.6	6.2
% living in rural areas	13%	74%	95%	54%	46%	71%	69%
Poverty headcount	6.3%	39.0%	28.6%	21.0%	30.4%	53.0%	39.2%
Literacy rate	97%	65%	88%	96%	83%	79%	84%
Economically active	79%	67%	49%	61%	72%	61%	61%
Of which unemployed	30%	36%	42%	37%	37%	50%	38%

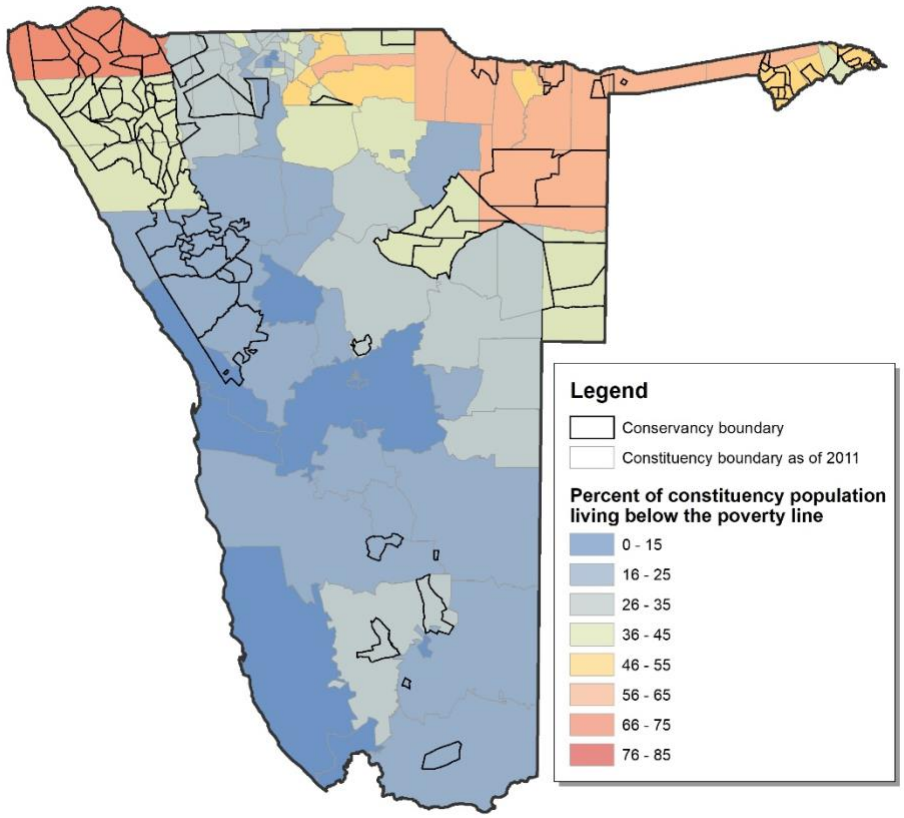


Figure 4 Percentage of Population living below the poverty line of N$4 536 per annum (2011 headcount), with an overlay of the registered communal conservancies

Figure 5 outlines the two general groupings of criteria that have been identified to qualify to be selected as a beneficiary conservancy. The first is that the conservancy must be registered and experiencing high levels of HWC (Physical criteria). The second grouping (Essential criteria) relate to management and commitment issues: commitment to meeting the MEFT compliance requirements for conservancies and address governance issues; availability of a HWC management framework and Conservancy Action Plan (CAP); paying wildlife damage offsets to community members affected by HWC conflicts; and willingness to contract a professional bookkeeper for improving financial governance and proper project fund management.

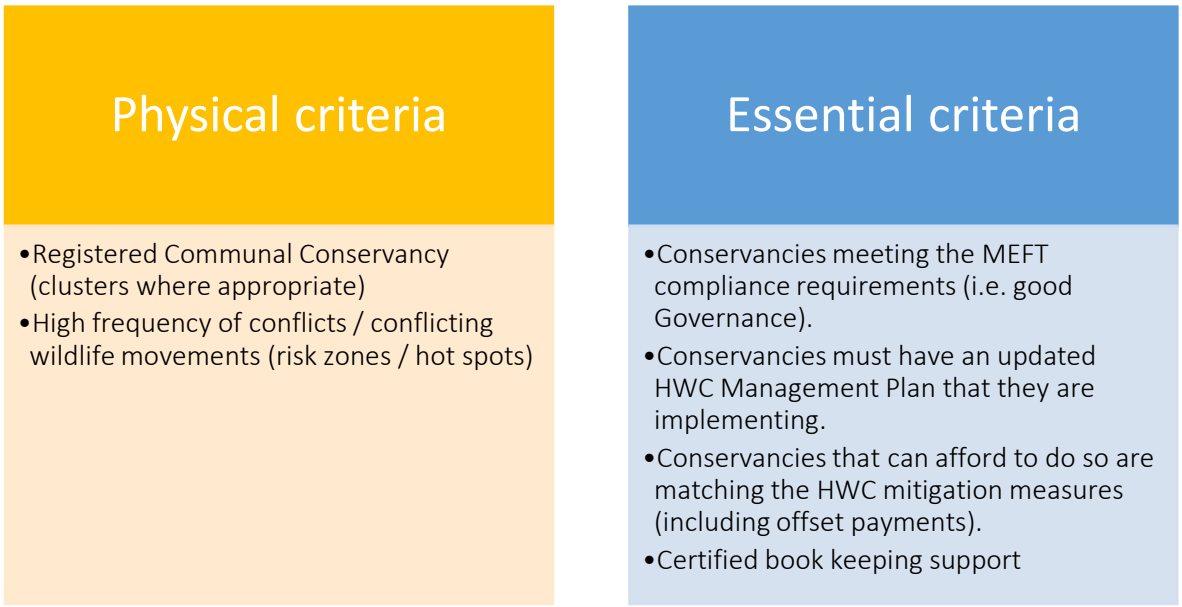


Figure 5 Overarching selection criteria for project conservancies

Figure 6 provides 2018 data on the number of incidents, and the estimated value of losses of HWC in conservancies, sorted according to the number of incidents, and according to the estimated costs. This serves to demonstrate that number of incidents alone is not necessarily a good measure for selection of conservancies, as the economic impact depends on the type of damage caused. In addition, other parameters that must be considered are the losses against the gains (revenues) and impacts at individual/household level. Thus, in the analysis that follows, several other parameters were considered.

As the species involved in HWC generally move across landscapes and conservancies, and the problems experienced are not unique to a conservancy, the ideal will be if HWC management can be aligned and coordinated between conservancies in a landscape. Ideally there will be a hierarchy of plans (landscape level species plans; medium term HWC management framework; landscape or conservancy level action plans) each informing the lower level.

To become eligible for project support each participating conservancy will be required to develop / update a Conservancy Action Plan for HWC Management, summarizing the planned activities by species, group of species (like predators) and / or themes, the location of the hot spots, the target and estimated budget for each project investment; the matching of funds and estimated project beneficiaries including percentage of female. The project will be providing support to develop / review these plans for the pre-selected 40 (possibly more) conservancies, and therefore the presence or not of an updated HWC management plan is not a selection criteria *per se*.

Info Box 1 provides the extract from the feasibility study, identifying what parameters and criteria will be used to select the target conservancies. This study focussed on points 1 and 2 (rate of HWC and compliance, as defined in the fourth bullet).

Info Box 1

Who can apply?

- Registered communal conservancies who are negatively impacted by HWC will be considered for support from the Project. Kyaramacan Association in Bwabwata National Park is also included.
- During the inception phase, the PMT will facilitate a process whereby a list of conservancies meeting the criteria for support from the Project will be identified. These conservancies will be considered target conservancies. For each conservancy, HWC data as well as compliance with MET's SOPs will be reviewed.
- When considering the eligibility of a conservancy for support from the Project, the following will be reviewed:
  1. High rate of HWC incidents and extensive losses due to HWC;
  2. Compliance with MET's SOPs for conservancies;
  3. Recruitment of a qualified external bookkeeper if not already in place;
  4. Agreement to accept external governance support if required;
  5. Agreement to contribute funding for offset payments where possible;
  6. Agreement to contribute to other Project measures (in line with the financial capacities of the conservancy);
  7. The development or revision of a conservancy HWCMAP.
- Assessment of compliance with MEFT SOPs for conservancies will focus on the status of the following documentation:
  1. Submission of the Minutes of the AGM to MET;
  2. Submission to MEFT of the Annual Chairperson's report presented to the AGM;
  3. The status of the WMUP;
  4. Submission of the annual financial report and details of bank accounts and signatories to MET;
  5. Evidence of the implementation of the benefit distribution plan (BDP).
- Grant applications from non-target Project conservancies will not be considered.
- A grant application should focus on one problem-causing species and on one landscape.
- A grant application can be submitted jointly by a conservancy or cluster of conservancies along with an implementation support organization (ISO). A partnership roles and responsibilities statement, signed by all parties (the conservancies and the ISO), should accompany the grant application.
- The CCFN will identify professional service providers which meet the criteria to qualify as such and conservancies can select a preferred service provider from this list to support the development of a grant application.
- The Project encourages clusters of conservancies or conservancies within a landscape to submit a joint application. The PMT will favourably consider joint grant applications in which all conservancies have been identified as target conservancies by the Project.
- Applications can be submitted by a single conservancy providing the justification for this is clearly stated.
- Grant applications should be developed and submitted by the Conservancy Management Committees (CMCs) and the ISO with support from the professional services provided by the CCFN.
- ISOs can be included as an implementing partner in the grant application providing that the ISO qualified (with regard to capacity and technical expertise) during the inception phase screening process.

Extract from feasibility study

Info Box 2

General principles include:

- The target group of the Project are the registered communal conservancies in the northeast, north central and northwest regions of Namibia and their members who are negatively impacted by HWC.
- Selection of conservancies for grants will be contingent on their compliance with defined criteria pertaining to good governance as described in MET's *Guidelines for the Management of Conservancies and Standard Operating Procedures* and also the criteria for eligibility for participation in the KfW co-financed Project.
- HWCM grants are intended to benefit communal conservancies wishing to undertake HWC mitigation actions. The Project will focus on conservancies experiencing significant losses due to HWC and the focus of interventions within these conservancies will be on HWC hotspots.
- Interventions for which funding is applied should be in line with MET's *Revised National Policy on Human Wildlife Conflict Management (2018)*.
- Grant applications should demonstrate the link between HWC and poverty alleviation for conservancy members.
- Professional services from individual consultants or professional service providers for supporting the preparation and development of grant applications will be provided.
- All conservancies intending to apply for grant funding from the Project, will be required as a first step to develop a Human Wildlife Conflict Management and Action Plan (HWCMAP). If the conservancy already has a HWCMAP, then this will need to be reviewed and updated as needed. Professional support services will be provided to support this process.
- The application for grant funding will be to support the implementation of selected components of the HWCMAP.
- The grant award process is intended to provide financial support for applications that demonstrate technical quality and financial accuracy. Requests for support for innovative approaches of addressing HWC by conservancies will be encouraged.
- Conservancies who have the financial means will be required to contribute to HWC measures and provide match funding or in-kind beneficiary contributions where possible. The match funding required will be based on the financial status of the conservancy applying.
- By signing a grant agreement, a conservancy commits to complying with the conditions of the Project.

Extract from CCFN small grants manual

Info Box 2 provides the principles extracted from the CCFN Small grants manual. Again, the first two bullet points are pertinent for this consultancy.

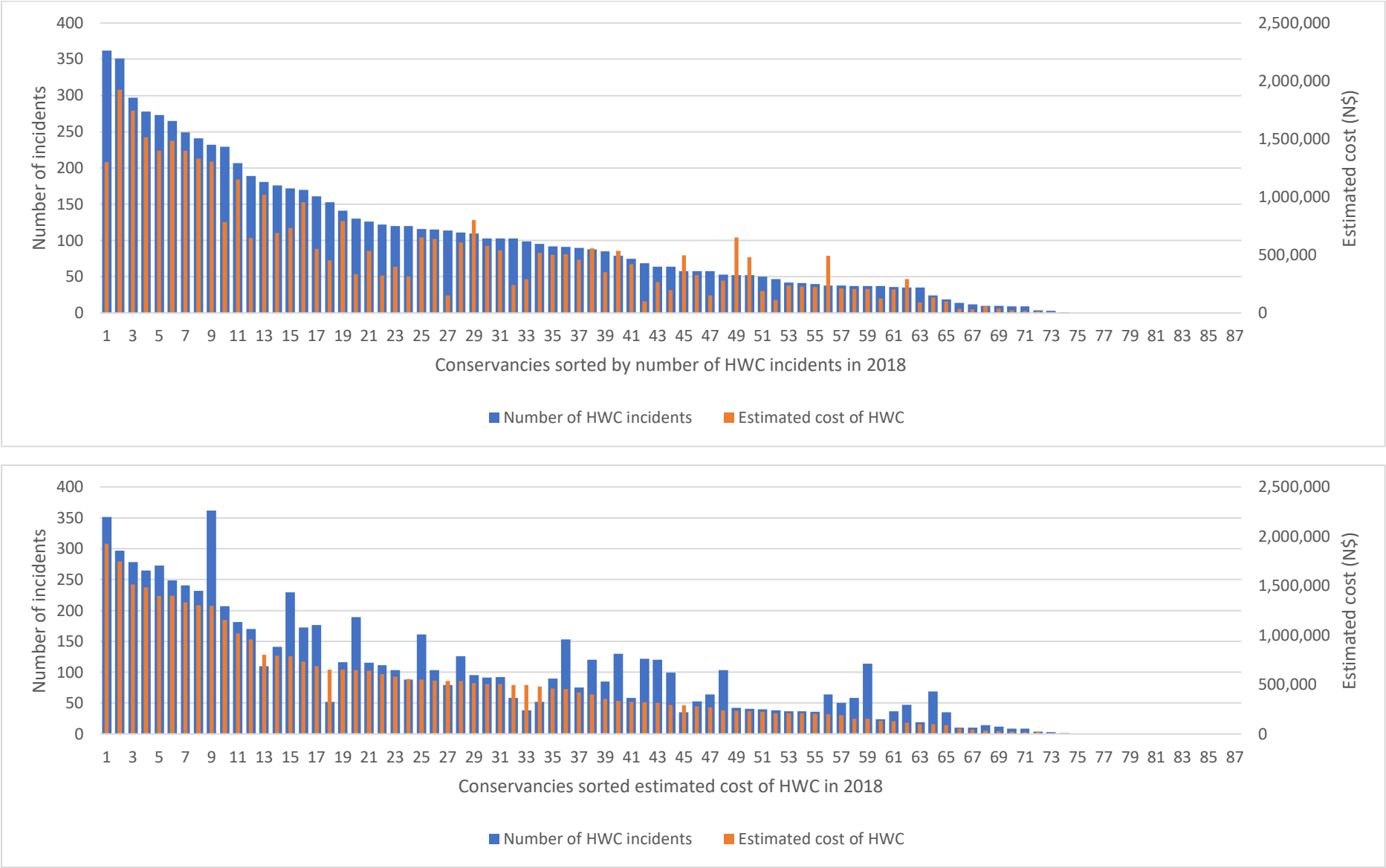


Figure 6 Graphs showing the 2018 conservancy data on HWC on number of incidents of HWC reported through the event book system (extracted from ConInfo) and the estimated cost of the losses. The top graph is sorted according to the number of incidents, and the bottom according to the cost.

Existing HWC data per conservancy

To determine the 40 potentially eligible conservancies, the following approach has been used:

Physical criteria

- Compilation of available HWC data

  A major challenge regarding HWC data is that there is no single digital database of data that contains sufficient details on each incident of conflict, both within and outside conservancies. For the purpose of the preselection of 40 potentially eligible conservancies, it has therefore been necessary to compile data from different sources, and to extrapolate or make assumptions using related data. The most recent complete set of data for conservancies relates to 2018, as data for 2019 is still being collected, compiled and captured onto ConInfo.

  The following data sets have been used:

  - ConInfo HWC data which is extracted and summarized from the conservancy event book system during the annual audits. This data set provides an indication of the number of incidents of conflict, and the conflict species involved. It classifies conflict in four categories: Crop field damage; Livestock attack; Human attack; and Other Damages. It also captures the problem species involved. What this data does not provide is the degree of damage/loss, or whether claims were submitted for HWCSRS offsets. ConInfo data was also used to extract the revenue earned per conservancy.
  - Game Products Trust Fund individual claim data was previously captured from claim forms filed with the GPTF by the consultant for a previous study on HWC insurance. This data set consists of 2280 data points, over the period 2010-2018. The data was used to provide an indication for:
    - the distribution of livestock loss per region (type of livestock) (Table 2)
    - an average of how many animals are lost per event per region (Table 3)
    - an average of how many ha of crops are lost per event per region (Table 4)

    This data was then used to estimate a value of losses for the incidents of HWC reported through ConInfo. There are limitations to this, in that:
    - the data from the GPTF is based on HWC occurring outside conservancies and may not be directly comparable to losses inside conservancies.
    - For consistency, the offset values as outlined in the HWC Policy (Table 1) have been used to estimate the cost of losses. These values do not reflect the actual commercial value of losses but provide a standard across the board.
    - Values do not consider the intrinsic livelihood value to households. For example, the loss of a goat is valued at double the loss of a quarter ha of crops, which could conservatively have yielded 250 kg of grain.

Table 4 Distribution of livestock type affected by HWC in different regions of Namibia based on a dataset of 2280 data points (2010-2018) from claims submitted to the GPTF.

	Cattle	Donkey	Horse	Sheep	Goat
//Karas	0.00%	7.69%	15.38%	76.92%	0.00%
Erongo	23.53%	11.76%	5.88%	29.41%	29.41%
Kavango East	51.57%	1.14%	1.14%	0.85%	45.30%
Kavango West	55.61%	1.60%	0.00%	12.30%	30.48%
Kunene	86.13%	5.11%	1.46%	5.84%	1.46%
Ohangwena	100.00%	0.00%	0.00%	0.00%	0.00%
Omaheke	65.52%	0.00%	0.00%	0.00%	34.48%
Oshana	87.80%	0.00%	0.00%	0.00%	12.20%
Oshikoto	94.40%	1.29%	0.00%	0.00%	4.31%
Otjozondjupa	35.29%	0.00%	0.00%	40.34%	24.37%
Zambezi	99.72%	0.00%	0.00%	0.00%	0.28%

Table 5 Average number of animals lost per event of HWC in different regions of Namibia based on a dataset of 2280 data points (2010-2018) from claims submitted to the GPTF.

	Cattle	Donkey	Horse	Sheep	Goat
//Karas		1.0	1.0	10.0	
Erongo	1.0	1.0	1.0	5.0	5.0
Kavango East	2.3	1.3	1.3	3.0	3.1
Kavango West	2.3	1.5		3.8	2.6
Kunene	2.1	1.8	1.0	2.7	1.0
Ohangwena	1.0				
Omaheke	1.7				5.0
Oshana	1.3				2.5
Oshikoto	1.5	1.5			5.0
Otjozondjupa	1.4			2.8	2.9
Zambezi	2.0				1.0

Table 6 Average area of crop loss per incident of HWC in different regions of Namibia based on a dataset of 2280 data points (2010-2018) from claims submitted to the GPTF.

	Ha of Crops lost
Kavango East	1.30
Kavango West	2.04
Kunene	0.25
Ohangwena	1.33
Omusati	3.20
Oshikoto	1.27
Otjozondjupa	1.00
Zambezi	1.12

Summary of data limitations

The data limitations can be summarized as follows:

- Individual claim data from conservancies is not yet captured on any single database.
- The data from the GPTF is based on HWC occurring outside conservancies and may not be directly comparable to losses within.
- For consistency, the offset values as outlined in the HWC Policy were used to estimate the cost of losses. These values do not reflect the actual commercial value of losses but provide a standard across the board.
- Values do not consider the intrinsic "*livelihood*" value to households. For example, the loss of a goat (± 40-60 kg) is valued at double the loss of a quarter ha of crops, which could conservatively have yielded 250 kg of grain.
- There was only limited HWC data on Coninfo from the Kyaramacan Association in recent years. No data available for 2019. The following table provides the information available for Kyaramacan Association.

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Chetto	**5**		**39**	**22**	**126**	**69**							**9**	**3**	
Crop damage	2		25	22	113	69							1	3	
Livestock attack	3		14		13								8		
Mutjiku	**31**			**5**	**16**	**5**	**22**	**22**		**17**	**2**			**6**	
Crop damage	8				9	5	22			14					
Human attack				1	1					1					
Livestock attack	23			4	6			3		2	2			6	
Other damage								19							
Omega	**6**		**130**	**13**	**11**	**14**	**47**	**42**		**18**	**2**		**36**		
Crop damage	5			10	11	14	47	42		18			36		
Livestock attack	1		130	3							2				
Omega 3	**34**		**30**	**41**	**24**	**50**	**15**	**5**			**2**			**10**	
Crop damage	30		22	39	24	50	2								
Human attack				1											
Livestock attack	4		8	1			13	5			2			10	
Grand Total	**76**		**199**	**81**	**177**	**138**	**84**	**69**		**35**	**6**		**45**	**19**	

Essential criteria

- Compilation of available data on conservancy compliance was obtained from the MEFT/GIZ online information system. Data is available for 2017 and 2018 (with some but not all data available yet for 2019). The main parameters recorded are:

    - Annual General Meeting Compliance

        1. Quorum met?
        2. Notice given to members as per constitution
        3. The AGM agenda was presented and adopted
        4. A list of attendance was kept at this AGM
        5. Minutes of last AGM are available as a document and were approved at current AGM
        6. Corrective actions were taken on previous AGM action points which were not fully addressed
        7. Chairpersons report was made available before or at the AGM
        8. Elections held according to the term of office specified in the constitution
        9. Execution of the previous year's work plan was compared to planned activities in the coming year's work plan
        10. The coming year's work plan is available as a document and was approved by the members
        11. The annual financial statement for the previous year is available as a document and was approved by the members at the AGM
        12. The budget for the coming year is available as a document and was approved by the members at the AGM
        13. The budget for the coming year is aligned with the work plan
        14. The benefit distribution procedure is available as a document and was approved by the members at the AGM

    - Financial compliance:

        1. The approved annual financial statement for the previous year is available as a document?
        2. The annual financial statement was backed by bank statements and correct bookkeeping procedures.
        3. The annual financial statement indicated that spending was kept within budgetary limits.
        4. Did the financial statement mention explicitly the sums unaccounted for?

    - Audit compliance:

        This was only evaluated for those conservancies who according to the constitution require an audit.

        1. An audit was conducted
        2. The audit was budgeted for
        3. The audit indicated that the annual financial statement was a fair representation of the conservancy's financial situation

Performance against these three main parameters was calculated as a percentage of the number of 'yes' responses, divided by the total possible number of responses.

- In addition to the conservancy compliance data, there is also the Natural Resource Management Performance Review, which provides an indication of how committed the conservancy is to good natural resource management and HWC mitigation. Annex 1 provides the Natural Resource Management performance review questionnaire which explains how conservancies are assessed.

Synthesis of existing HWC data per conservancy

All data collected has been compiled into a spreadsheet which forms part of the deliverables for this consultancy (Table 7). Available data has been captured for the years 2016, 2017, 2018 and 2019, with varying degrees of completeness due to data availability constraints.

Table 7 List of fields used in the HWC database

Field name	Source of data	Description
Region		Region conservancy falls in
Conservancy	NACSO	Conservancy name
Year registered	NACSO	Year Conservancy was registered
Month registered	NACSO	Month Conservancy was registered
NRWG area	NRWG	NRWG management area
Area	NACSO	Size of conservancy (km^2)
Approximate population 2019	NACSO website	Estimated population in conservancy
Crop field damage events	CONINFO data (K. Dierkes)	Number of incidents of crop damage due to HWC
Crop field damage (N$)	Calculated	Estimated value of damage – calculated based on the number of incidents, and the average losses extracted from a dataset of 2280 data points of claims submitted to the GPTF over the period 2010-2018.
Livestock attacks	CONINFO data (K. Dierkes)	Number of incidents of livestock losses due to HWC
Livestock attacks (N$)	Calculated	Estimated value of damage – calculated based on the number of incidents, and the average losses extracted from a dataset of 2280 data points of claims submitted to the GPTF over the period 2010-2018.
Human attacks	CONINFO data (K. Dierkes)	Number of incidents of human attacks due to HWC
Human attacks (N$)	Calculated	Estimated value of offset payments – calculated based on the number of incidents, and the average losses extracted from a dataset of 2280 data points of claims submitted to the GPTF over the period 2010-2018.
Other damages	CONINFO data (K. Dierkes)	Number of incidents of other damages due to HWC
Other damages (N$)		This field has not been completed due to the difficulty in applying an average value, as there is

Field name	Source of data	Description
		no data on which to draw, and no information on what type of damage was involved.
Total HWC Incidents	Calculated	Total number of incidents of crop, livestock and human attack
TOTAL HWC Costs	Calculated	This is the total of the estimated values of crop, livestock and human attach.
Average loss per person	Calculated	Total loss divided by the population estimate
Ranking according to conservancy loss	Ranked	Conservancy loss ranked from highest loss (rank of 1), to lowest loss.
Ranking according to loss per person	Ranked	Individual loss ranked from highest loss (rank of 1), to lowest loss.
Total cons Income	NACSO	Cash income for conservancy for year in question
Average income per person	Calculated	Total conservancy income divided by number of people
Balance per person	Calculated	Average income per person minus average loss per person
Ranking according to balance per person	Ranked	Individual loss ranked from highest loss (rank of 1), to lowest loss.
Sum of rankings	Calculated	Sum of the ranks: conservancy loss, loss per person and balance per person
Financial compliance	Innocent MET online system [calculated]	% compliance on 4 compliance questions
Audit compliance	Innocent MET online system [calculated]	% compliance on 3 compliance questions
AGM compliance	Innocent MET online system [calculated]	% compliance on 14 compliance questions
NRM	Katharina NRM performance scoring	Performance scoring: Natural Resource Management
Planning	Katharina NRM performance scoring	Performance scoring: Planning
Monitoring	Katharina NRM performance scoring	Performance scoring: Monitoring
Law enforcement	Katharina NRM performance scoring	Performance scoring: Law Enforcement
HWC	Katharina NRM performance scoring	Performance scoring: Human Wildlife Conflict
Harvest management	Katharina NRM performance scoring	Performance scoring: Harvest management

Field name	Source of data	Description
Benefits	Katharina NRM performance scoring	Performance scoring: Benefit sharing
Sustainability	Katharina NRM performance scoring	Performance scoring: Sustainability

Analysis of 2018 HWC data

The spreadsheet provides the basis for looking at the available information in different ways. For the purpose of demonstrating how the data can be analysed to identify the priority conservancies, the 2018 data is used further in this report, being the most recent complete set of data. It is recommended that the decision on what weighting different criteria will be given, and which set of criteria will be used to make the final selection, be taken as a result of a consultation process with key partners.

Important note:

Data is missing for 2018 for the following conservancies:

- **Ovitoto, Joseph Mbambangandu and Shamugwa**. These three conservancies are not functional and do not have an event book system
- **Otjinderese and Kapinga kaMwalye**: Both conservancies were only registered in 2018
- **!Gawachab, Otjiu-West and Ombazu**: It is not clear why the data for 2018 is missing. 2017 data places Otjiu-West within the top 40 according to average loss per person and balance per person; Ombazu ranks within the top 40 in relation to number of incidents, Total costs, average cost per person, and balance per person.

As a starting point, the following four parameters were explored:

- **Total number of HWC incidents per conservancy** which reflects all the cases recorded of any sort of conflict (derived from the conservancy event book system) and is a measure of the frequency of conflict
- **Estimated total costs of HWC** which is a measure of the financial impact of HWC at conservancy level.
- **Average loss per person** takes into consideration the estimated population living in the conservancy and divides the overall costs by this number to reach an average loss per person. This gives a measure of livelihood impact at individual/household level.
- **Balance per person** considers the cash revenue of the conservancy, averaged per person, and subtracts the average loss per person from HWC, to give a nett loss/gain index.

Table 8 provides the list of conservancies with their respective values of the four parameters. The top 20 most affected under each parameter has been shaded in dark yellow, whilst the following 20 (making up 40) have been shaded in light yellow. In the spreadsheet it is possible to sort by any column, to easily see the changes in ranking. Looking at the table, it becomes immediately clear that there isn't direct correlation between the four parameters. As an example, Maurus Nekaro ranks first

in terms of number of incidents; ninth in terms of estimated costs; but 55th in terms of average loss per person, due to the high estimated population (12 797).

Eight conservancies rank within the top 20 for all four parameters; six rank within the top 20 for three of the four parameters; and nine rank within the top 20 for two of the four parameters.

The results of the four parameters are shown graphically in maps in Figures 7 (total number of HWC incidents), Figure 8 (numbers of HWC according to type), Figure 9 (HWC estimated costs, average loss per person, balance per person).

Based on these four criteria, the final ranking and selection would depend on what weighting might be given to each of the criteria / which criteria would take precedence. Considering that the project aims to link actions with improvement of livelihoods (Info Box 2, Small Grants Manual), it may make sense to use the balance per person, or average loss per person (even though both assume that distribution of losses and benefits are evenly distributed, which we know not to be the case).

Grant applications should demonstrate the link between HWC and poverty alleviation for conservancy members.

Table 8 Table showing all communal conservancies with the total number of HWC incidents, the total estimated cost of losses, the average loss per person, and the balance (income per person minus loss per person)

Region	Conservancy	Total HWC Incidents	Total HWC Costs (NAD)	Average loss per person (NAD)	Balance per person (NAD)
Kavango West	Maurus Nekaro	362	1 299 357.32	101.54	(93.12)
Kunene	Omatendeka	351	1 923 408.55	756.95	(305.80)
Kunene	Ehi-Rovipuka	297	1 746 654.84	1 224.86	(804.11)
Kunene	Ombujokanguindi	278	1 513 336.70	2 161.91	(2 145.39)
Kunene	Okangundumba	273	1 399 370.82	656.37	(633.71)
Kunene	#Khoadi Hoas	265	1 483 249.58	291.81	60.11
Kunene	Ongongo	249	1 398 738.24	1 585.87	(1 585.87)
Kunene	Orupupa	241	1 332 329.17	888.81	(855.65)
Kunene	Ozondundu	232	1 303 242.06	3 307.72	(3 017.58)
Omusati	Uukolonkadhi-Ruacana	229	785 746.34	21.85	(20.13)
Kunene	Anabeb	207	1 152 071.65	769.07	1 871.65
Zambezi	Kwandu	189	646 827.77	167.05	194.36
Kunene	Ombombo	181	1 016 753.50	343.27	(343.27)
Omusati	Uukwaluudhi	176	687 943.90	701.98	(106.57)
Omaheke	Omuramba ua Mbinda	172	732 213.17	1 430.10	(1 430.10)
Kunene	Etanga	170	954 961.85	536.80	(536.80)
Omusati	Sheya Shuushona	161	551 478.05	155.30	(144.04)
Zambezi	Mashi	153	454 331.88	186.89	1 369.14
Kunene	Doro !Nawas	141	792 056.60	537.72	501.67
Zambezi	Mayuni	130	336 489.80	129.52	251.37
Kunene	Torra	126	536 037.73	402.13	3 828.05
Otjozondjupa	Otjituuo	122	321 219.43	54.17	(54.17)
Kunene	Okongoro	120	400 352.16	214.67	(212.92)
Otjozondjupa	Ondjou	120	312 687.64	105.32	4.35
Kunene	//Audi	116	651 621.03	764.81	(764.81)
Kunene	!Khoro !Goreb	115	640 636.18	352.97	(333.45)
Zambezi	Wuparo	114	151 838.52	147.85	2 296.92
Kunene	Sorris Sorris	111	607 431.65	639.40	(86.95)
Kunene	Otjikondavirongo	110	801 314.22	218.04	(218.04)
Kunene	Orupembe	103	578 594.53	3 094.09	(1 940.51)
Kunene	Epupa	103	541 022.58	110.89	15.96
Zambezi	Bamunu	103	241 318.28	104.47	60.90
Ohangwena	Okongo	99	293 666.67	154.07	(154.07)
Kunene	Otuzemba	95	517 552.88	1 132.50	(1 083.49)
//Karas	!Khob !Naub	92	503 252.49	234.95	(234.95)
Kunene	Okatjandja Kozomenje	91	505 818.04	265.66	(265.66)
Zambezi	Salambala	90	458 459.26	51.38	124.83
Kunene	Kunene River	88	556 511.24	80.58	(63.73)
Oshikoto	King Nehale	85	353 974.86	69.83	(24.88)

Region	Conservancy	Total HWC Incidents	Total HWC Costs (NAD)	Average loss per person (NAD)	Balance per person (NAD)
Zambezi	Nakabolelwa	79	536 308.85	670.39	191.15
Kunene	Sesfontein	75	421 306.70	229.59	1 500.13
Kavango East	George Mukoya	69	98 438.34	88.76	432.93
Zambezi	Balyerwa	64	267 462.05	204.64	597.67
Zambezi	Sobbe	64	197 664.87	182.18	963.18
Kunene	Okondjombo	58	325 810.51	3 258.11	(2 830.81)
Otjozondjupa	African Wild Dog	58	152 710.87	33.05	(33.05)
Zambezi	Impalila	58	497 285.51	513.72	(12.11)
Kunene	Otjombande	53	281 621.13	172.46	(172.46)
Zambezi	Kabulabula	52	652 464.54	1 424.60	(433.89)
Kunene	//Huab	52	480 871.13	347.45	(75.21)
Zambezi	Dzoti	50	191 688.92	94.47	634.92
Kavango East	Muduva Nyanga	47	114 676.94	65.76	278.64
Kunene	Puros	42	235 931.75	202.17	623.74
Kunene	Otjitanda	41	230 314.33	401.24	(350.79)
Kunene	Sanitatas	40	224 696.91	1 518.22	(1 518.22)
//Karas	!Han/Awab	38	210 753.85	342.69	(342.69)
Zambezi	Kasika	38	494 288.15	451.82	9.57
Oshana	Iipumbu ya Tshilongo	37	127 469.51	51.73	(51.73)
Kunene	Marienfluss	37	207 844.64	611.31	3 505.76
Kunene	Uibasen Twyfelfontein	37	207 844.64	903.67	11 128.89
Kunene	Otjambangu	36	202 227.22	107.97	(86.08)
Erongo	Otjimboyo	35	90 176.47	278.32	(278.32)
Kunene	Okanguati	35	290 992.37	124.20	(124.20)
Zambezi	Lusese	24	133 503.15	111.72	537.99
Zambezi	Kyaramacan Association	19	98 823.05	17.97	738.19
Erongo	Ohungu	14	36 070.59	27.41	(27.41)
Erongo	Tsiseb	12	30 917.65	11.73	385.32
Kunene	Otjikongo	10	56 174.23	267.50	(267.50)
Omaheke	Otjombinde	10	42 570.53	8.88	(8.88)
Erongo	#Gaingu	9	23 188.24	7.95	233.78
Otjozondjupa	Nyae Nyae	9	20 430.62	6.47	1 503.58
Omaheke	Eiseb	4	17 028.21	10.85	(10.85)
Otjozondjupa	Okamatapati	3	7 898.84	3.95	(3.95)
Otjozondjupa	Ozonahi	1	2 632.95	0.23	(0.23)
//Karas	!Gawachab	0	-	-	-
//Karas	//Gamaseb	0	-	-	-
Hardap	Huibes	0	-	-	-
Kavango East	Joseph Mbambangandu	0	-	-	-
Kavango East	Kapinga kaMwalye	0	-	-	-
Kunene	Ombazu	0	-	-	-
Hardap	Oskop	0	-	-	-

Region	Conservancy	Total HWC Incidents	Total HWC Costs (NAD)	Average loss per person (NAD)	Balance per person (NAD)
Kunene	Otjindjerese	0	-	-	-
Kunene	Otjiu-West	0	-	-	-
Otjozondjupa	Ovitoto	0	-	-	-
Kavango East	Shamungwa	0	-	-	-
Otjozondjupa	N#a-Jaqna	0	-	-	310.33
Zambezi	Sikunga	0	-	-	326.23

Another consideration is that the Project is encouraging clusters of conservancies to submit joint applications, possibly focussed on one problem-causing species, or on one landscape. "*The PMT will favourably consider joint grant applications in which all conservancies have been identified as target conservancies by the Project*."

In this regard, it is then important to also look at the problem causing species. Table 9 provides the top 20 conservancies affected by these species, each showing the number of incidents recorded during 2018. Figure 10 provides maps for the eight most important species, showing the level of incidence per conservancy for 2018.

Table 9 A & B Table listing the top 20 conservancies impacted by eight different species of wildlife, and the number of incidents of HWC recorded during 2018 for that species.

A

Elephant		Hippopotamus		Crocodile		Wild dog	
Mayuni	102	Maurus Nekaro	37	Kasika	29	Otjituuo	189
Mashi	93	Salambala	27	Impalila	24	Okamatapati	62
Wuparo	90	Mayuni	21	Kabulabula	21	African Wild Dog	50
Uukwaluudhi	66	Impalila	21	Kunene River	19	Ondjou	33
Kwandu	56	Kabulabula	11	Epupa	18	Omuramba ua Mbinda	11
Sorris Sorris	51	Mashi	10	Nakabolelwa	15	Okongo	7
Torra	32	Kwandu	9	Lusese	14	Mashi	5
George Mukoya	30	Wuparo	7	Maurus Nekaro	13	Nyae Nyae	2
Okangundumba	25	Kasika	7	Mashi	10	George Mukoya	1
Ozondundu	24	Dzoti	2	Mayuni	9	Otjombinde	1
Bamunu	24	Balyerwa	1	Kwandu	9		
Sobbe	23	Nakabolelwa	1	Marienfluss	7		
Orupupa	22			Salambala	6		
Uukolonkadhi-Ruacana	22			Uukolonkadhi-Ruacana	5		
Balyerwa	22			Dzoti	1		
Ondjou	21						
Salambala	21						
Sheya Shuushona	18						
#Khoadi Hoas	16						
Okongoro	16						

B

Hyaena		Leopard		Lion		Cheetah	
Ehi-Rovipuka	92	Omatendeka	57	Ehi-Rovipuka	39	Ozondundu	75
Sheya Shuushona	83	Ozondundu	50	Nakabolelwa	22	Omatendeka	65
#Khoadi Hoas	74	Orupupa	36	Anabeb	18	Ombujokanguindi	51
Orupupa	74	Ombujokanguindi	36	Iipumbu ya Tshilongo	18	Okangundumba	51
Uukwaluudhi	67	Ondjou	33	Sobbe	17	Ongongo	44
Okangundumba	53	#Khoadi Hoas	24	Torra	16	Orupupa	37
King Nehale	47	Okangundumba	23	Omatendeka	14	Anabeb	35
Omatendeka	45	Uukolonkadhi-Ruacana	22	Balyerwa	13	Otuzemba	30
Sorris Sorris	40	!Khoro !Goreb	20	Dzoti	12	Etanga	27
Ombombo	38	Anabeb	18	#Khoadi Hoas	10	Orupembe	23
Uukolonkadhi-Ruacana	38	Ehi-Rovipuka	16	Sesfontein	10	Ehi-Rovipuka	21
Otuzemba	36	Doro !Nawas	15	Sheya Shuushona	8	African Wild Dog	21
Ozondundu	34	Otjombande	14	Kasika	8	Epupa	17
Ondjou	29	Uibasen Twyfelfontein	13	Mashi	6	Doro !Nawas	16
Okongo	25	Torra	12	Puros	6	Okatjandja Kozomenje	16
Doro !Nawas	22	Muduva Nyanga	12	Tsiseb	5	#Khoadi Hoas	15
Otjikondavirongo	22	Otuzemba	10	Bamunu	5	Sesfontein	15
Kwandu	20	//Huab	9	Kabulabula	5	Sorris Sorris	11
Salambala	20	Ongongo	9	Orupupa	4	Okongoro	11
Anabeb	20	Otjimboyo	8	Wuparo	4	Otjombande	9

Figure 7 Registered communal conservancies with graded colour according to the number of HWC incidents recorded through the event book system in 2018 and 2019.

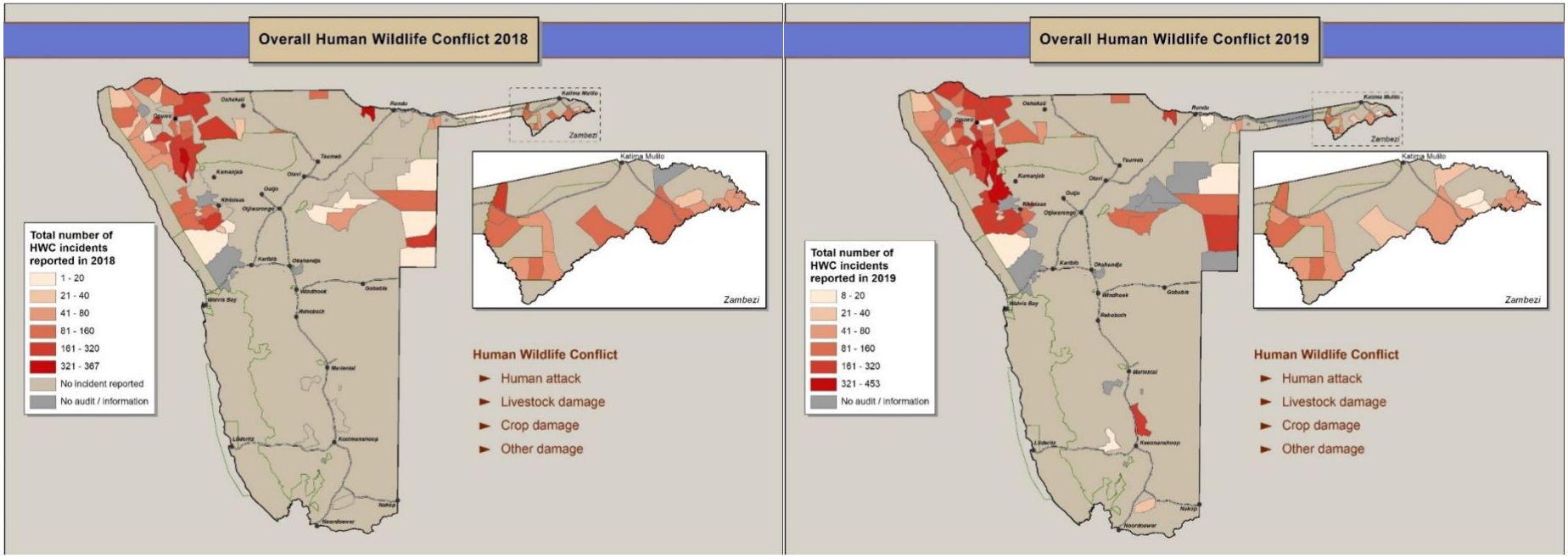
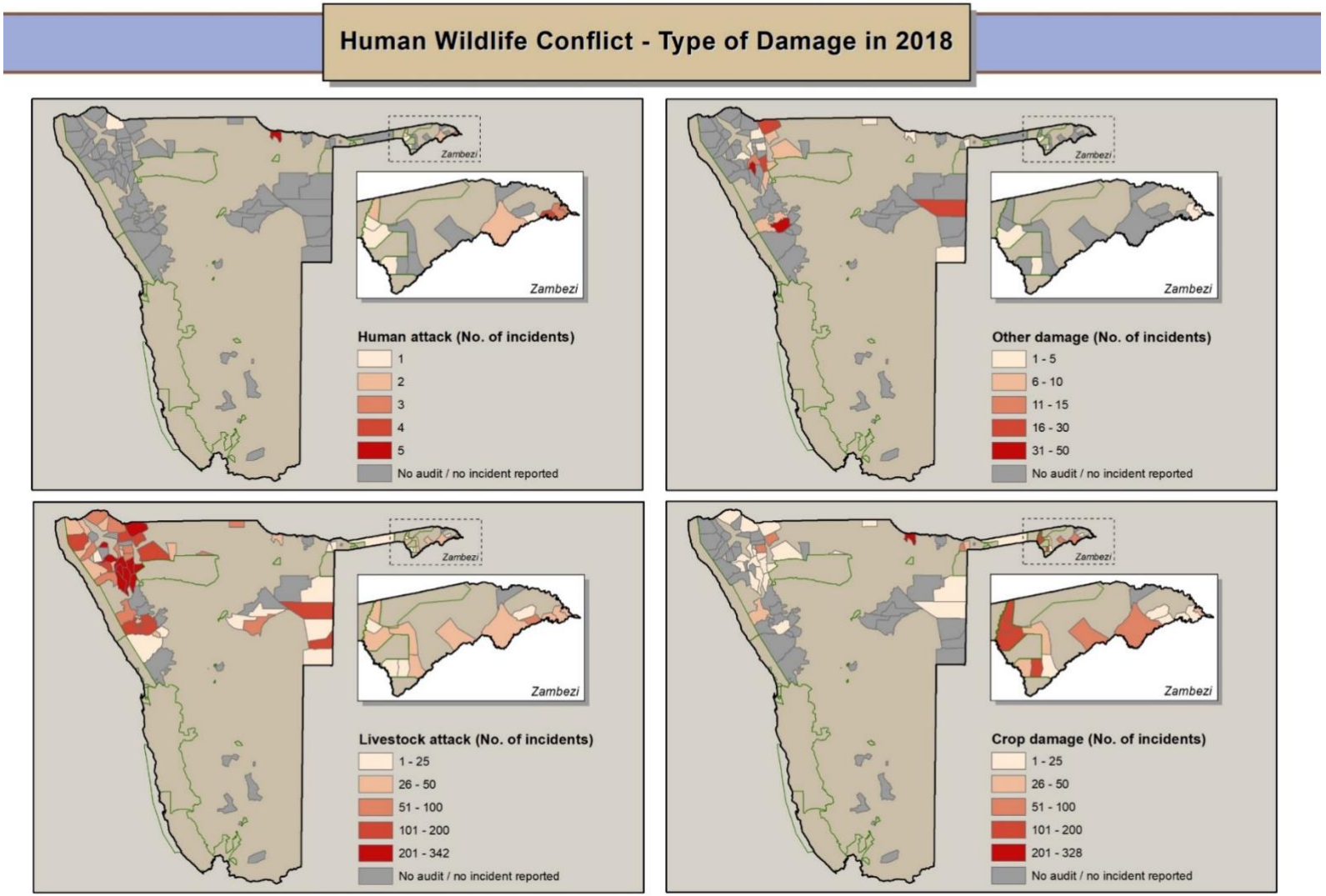


Figure 8 Map showing communal conservancies with graded colour according to the number of HWC incidents of Human Attack, Livestock attack and Crop damage recorded through the event book system (2018 and 2019).



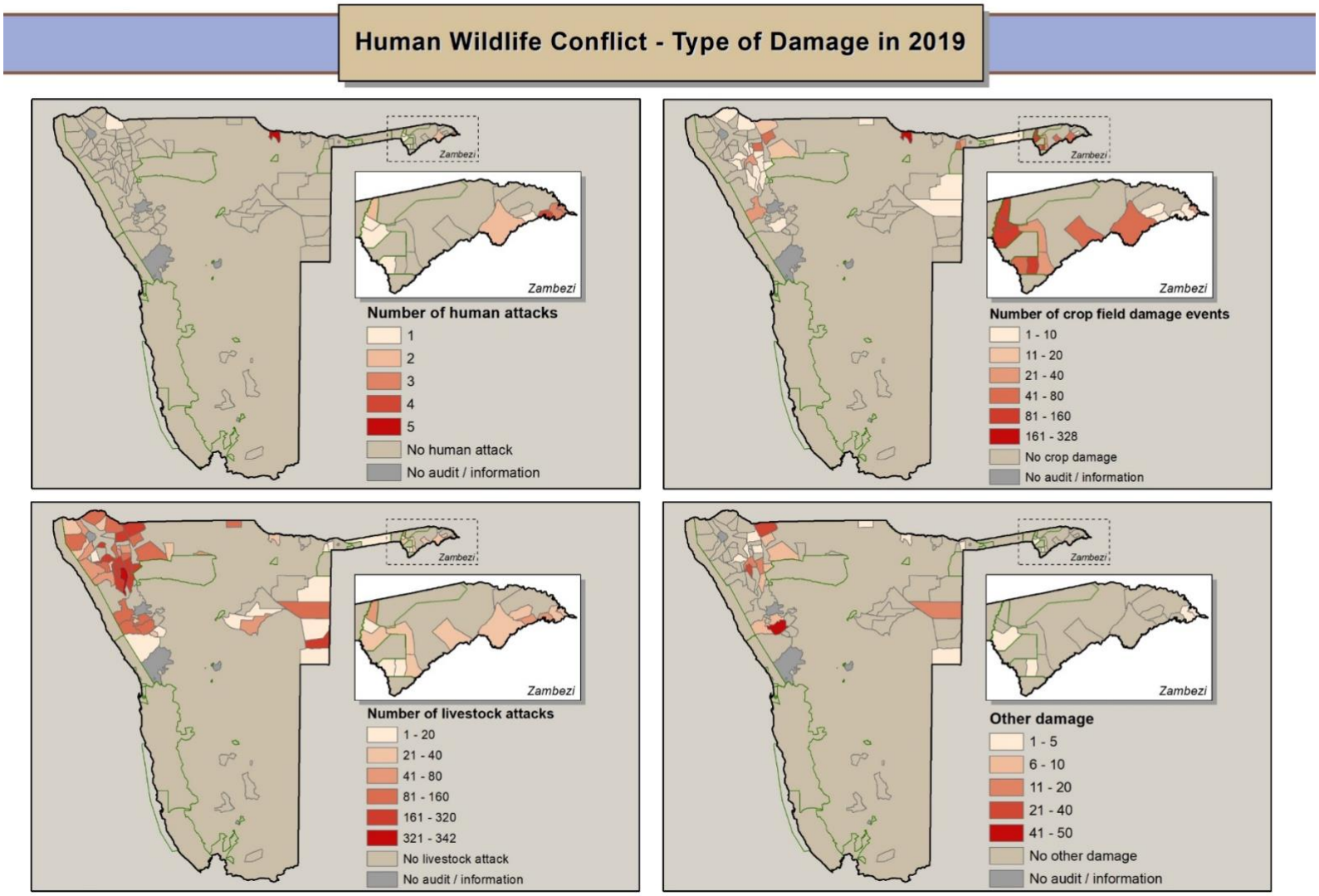

Human Wildlife Conflict - Type of Damage in 2019
Zambezi
Zambezi
Number of human attacks
1
2
3
4
5
No human attack
No audit / information
Zambezi
Zambezi
Number of crop field damage events
1 - 10
11 - 20
21 - 40
41 - 80
81 - 160
161 - 328
No crop damage
No audit / information
Zambezi
Zambezi
Number of livestock attacks
1 - 20
21 - 40
41 - 80
81 - 160
161 - 320
321 - 342
No livestock attack
No audit / information
Zambezi
Zambezi
Other damage
1 - 5
6 - 10
11 - 20
21 - 40
41 - 50
No other damage
No audit / information

Figure 9 Map showing communal conservancies with graded colour according to the estimated costs of HWC incidents of Human Attack (based on the offset payment), Livestock attack and Crop damage recorded through the event book system.

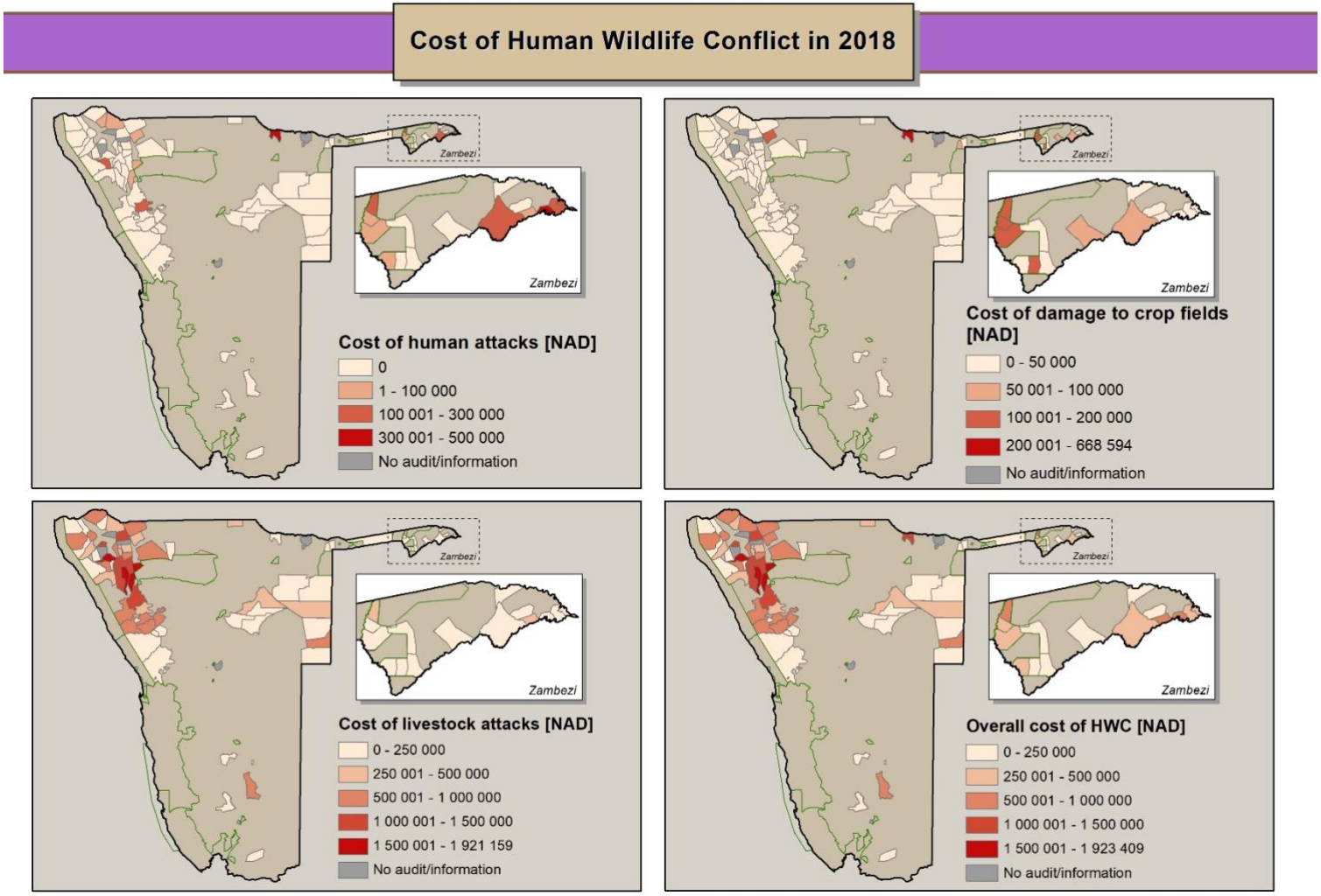


Figure 10 Maps showing communal conservancies with graded colour according to the average income per person; average cost of HWC damage per person; and the resulting average balance per person (income minus costs) as an indicator of overall impact of HWC.

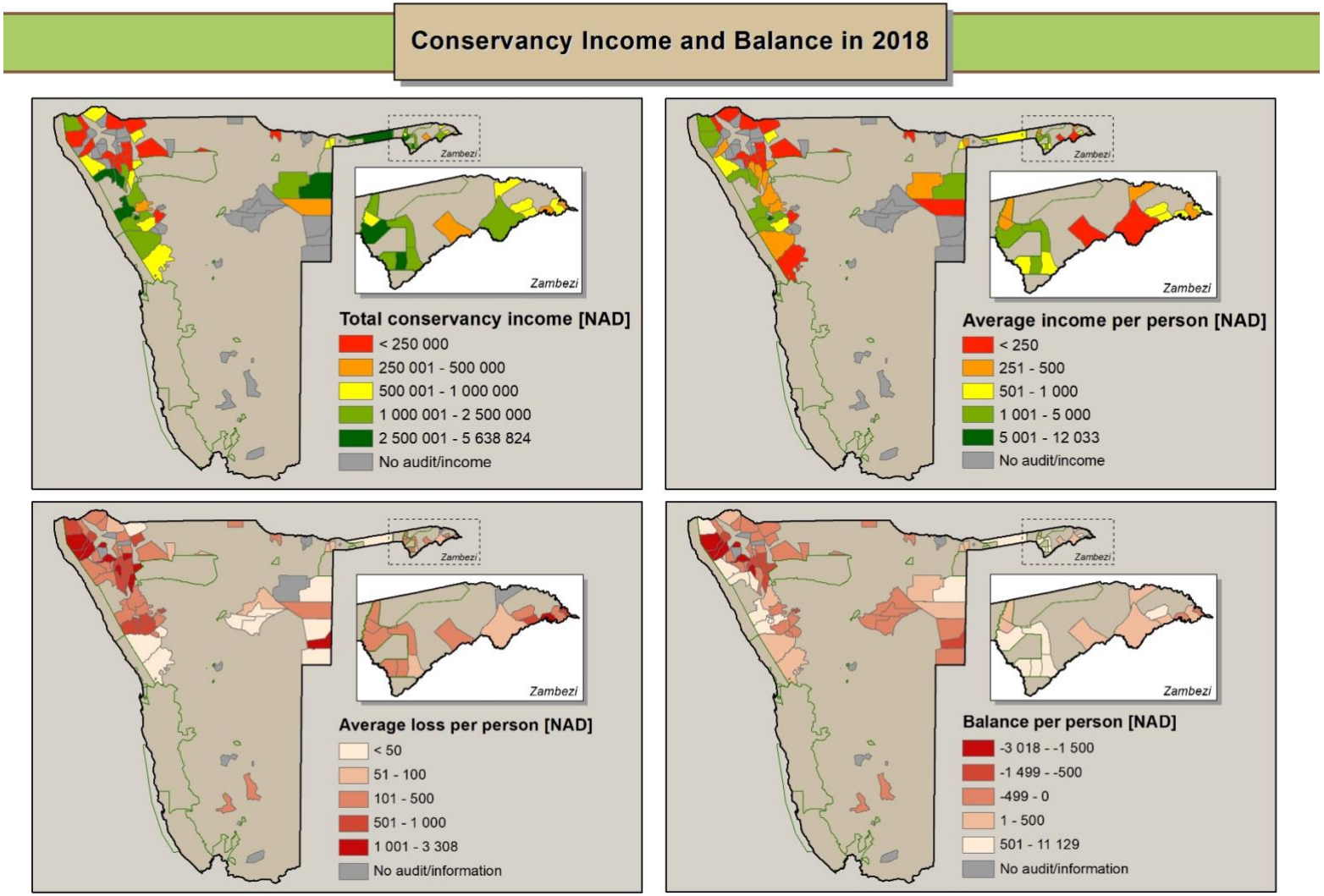
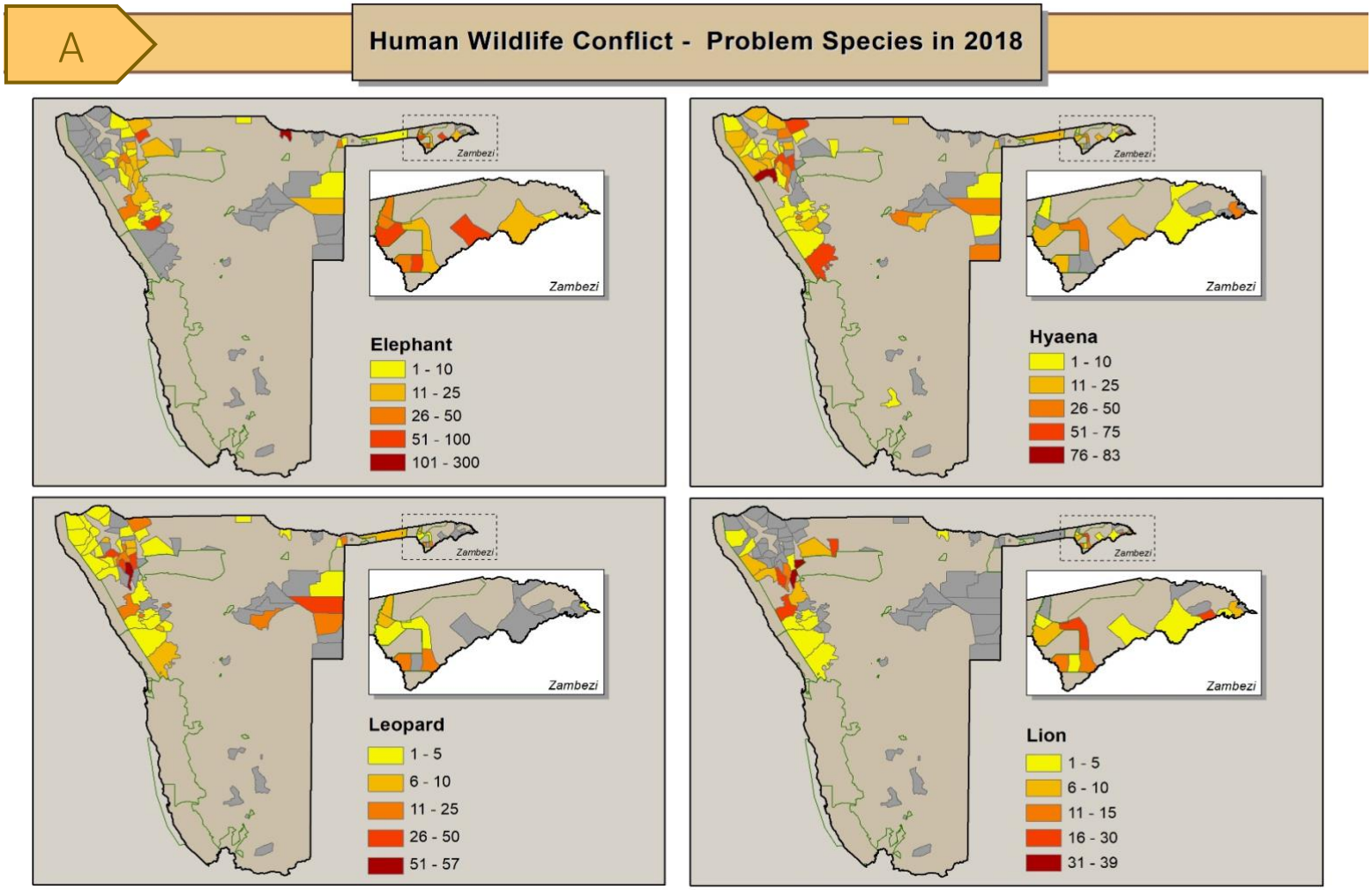
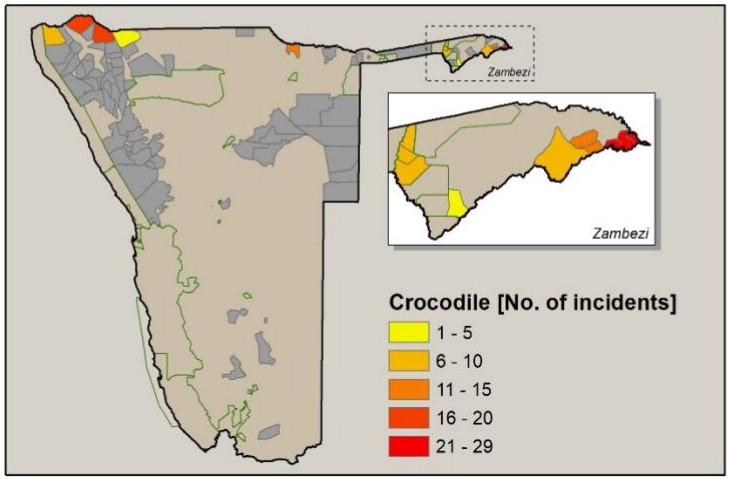


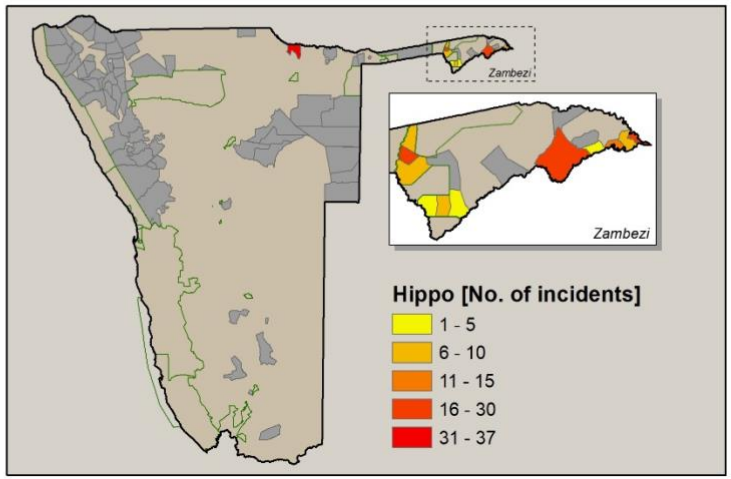
Figure 11 A & B. Maps showing communal conservancies with graded colour according to the species involved (Elephant, Hyaena, Leopard and Lion) recorded through the event book system.

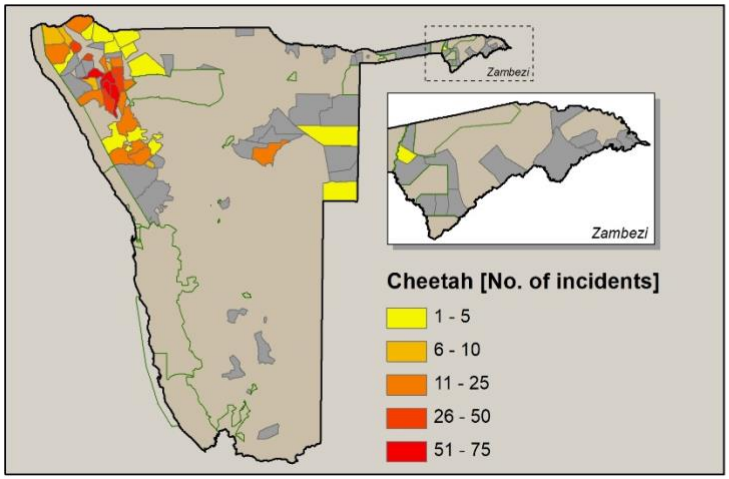


B

Human Wildlife Conflict - Problem Species in 2018







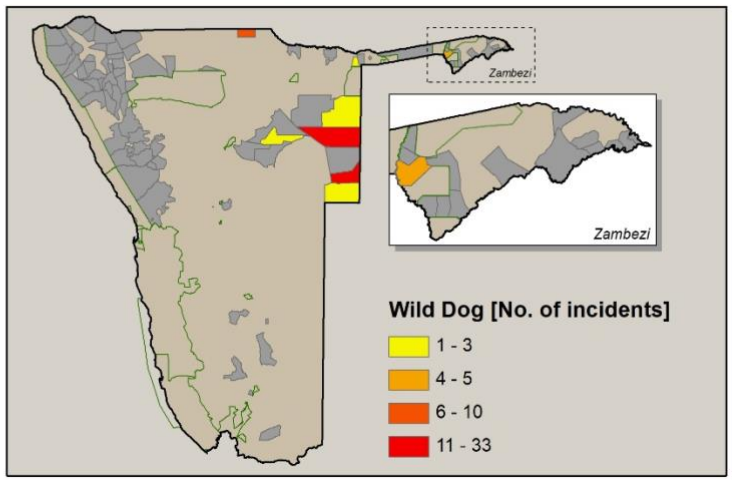


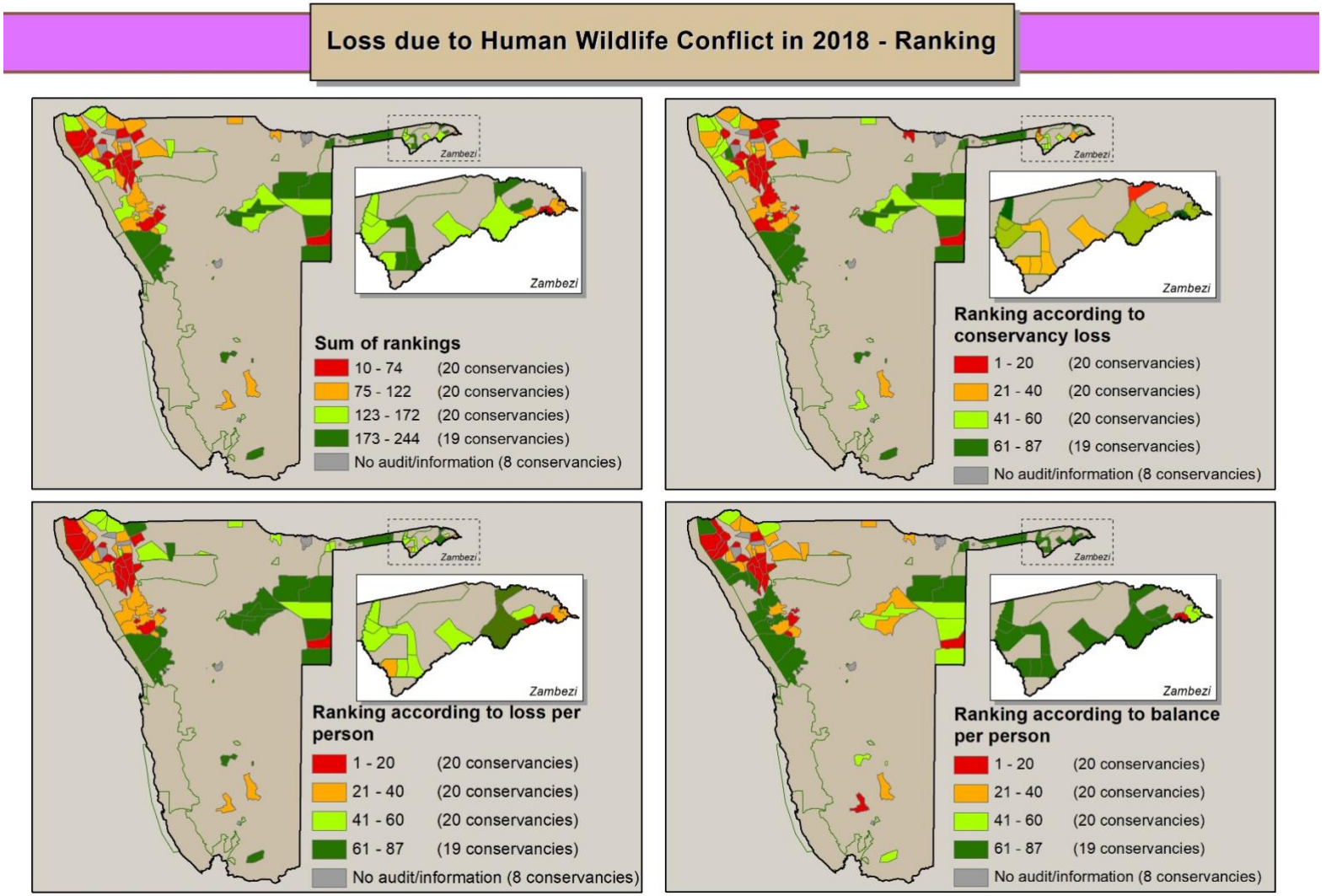
Table 10 provides an example of a combined ranking used to sort conservancies according to degree of impact. In this case, the "sum of the rankings" according to total conservancy loss; loss per member; and balance per member have been used to then sort conservancies into the top 20 and next 20. Only the 68 conservancies that ranked in the top 40 for at least one criteria are listed.

Table 10 Conservancies sorted according to a HWC-index rating based on how they ranked in three different criteria (conservancy loss, loss per member and balance per member)

Region	Conservancy	Ranking according to conservancy loss	Ranking according to loss per member	Ranking according to balance per member	Sum of ranking
Kunene	Ombujokanguindi	3	4	3	10
Kunene	Ozondundu	8	1	1	10
Kunene	Ongongo	6	5	5	16
Kunene	Ehi-Rovipuka	2	9	10	21
Kunene	Orupupa	7	12	9	28
Kunene	Orupembe	16	7	7	30
Omaheke	Omuramba ua Mbinda	23	3	4	30
Kunene	Okangundumba	5	18	12	35
Kunene	Omatendeka	1	16	19	36
Zambezi	Kabulabula	18	8	14	40
Kunene	//Audi	19	15	11	45
Kunene	Okondjombo	41	2	2	45
Kunene	Etanga	12	22	13	47
Kunene	Otuzemba	29	10	8	47
Kunene	Ombombo	11	29	16	56
Omusati	Uukwaluudhi	17	13	30	60
Kunene	Sanitatas	51	6	6	63
Kunene	!Khoro !Goreb	21	27	18	66
Kunene	Sorris Sorris	22	19	32	73
Kunene	Otjikondavirongo	13	37	24	74
Kunene	Okatjandja Kozomenje	30	34	22	86
//Karas	!Khob !Naub	31	35	23	89
Kunene	Otjitanda	50	26	15	91
Omusati	Sheya Shuushona	25	41	28	94
Kavango West	Maurus Nekaro	9	55	31	95
Kunene	#Khoadi Hoas	4	31	61	96
Kunene	//Huab	34	28	34	96
Zambezi	Impalila	32	23	42	97
//Karas	!Han/Awab	52	30	17	99
Kunene	Okongoro	38	38	25	101
Kunene	Anabeb	10	14	83	107
Kunene	Doro !Nawas	14	21	73	108

Region	Conservancy	Ranking according to conservancy loss	Ranking according to loss per member	Ranking according to balance per member	Sum of ranking
Zambezi	Nakabolelwa	27	17	64	108
Kunene	Otjombande	33	24	59	116
Zambezi	Kasika	46	44	26	116
Erongo	Otjimboyo	24	58	35	117
Kunene	Kunene River	44	46	27	117
Ohangwena	Okongo	65	32	20	117
Kunene	Otjikongo	66	33	21	120
Omusati	Uukolonkadhi-Ruacana	15	66	41	122
Kunene	Okanguati	45	49	29	123
Zambezi	Kwandu	20	45	65	130
Kunene	Epupa	26	51	60	137
Oshikoto	King Nehale	39	59	40	138
Kunene	Torra	28	25	86	139
Otjozondjupa	Otjituuo	42	61	36	139
Kunene	Otjambangu	55	52	33	140
Kunene	Uibasen Twyfelfontein	54	11	87	152
Kunene	Sesfontein	37	36	81	154
Otjozondjupa	Ondjou	43	53	58	154
Zambezi	Mayuni	40	48	67	155
Kunene	Marienfluss	36	42	80	158
Zambezi	Mashi	53	20	85	158
Oshana	Iipumbu ya Tshilongo	58	64	38	160
Otjozondjupa	African Wild Dog	61	62	37	160
Zambezi	Salambala	35	63	63	161
Zambezi	Balyerwa	47	39	75	161
Zambezi	Bamunu	48	54	62	164
Kunene	Puros	49	40	76	165
Erongo	Ohungu	68	65	39	172
Zambezi	Sobbe	56	43	79	178
Zambezi	Lusese	60	50	74	184
Kavango East	Muduva Nyanga	57	56	77	190
Zambezi	Wuparo	59	47	84	190
Zambezi	Dzoti	62	60	68	190
Kavango East	George Mukoya	64	57	72	193
Zambezi	Kyaramacan Association	63	67	78	208
Otjozondjupa	Nyae Nyae	71	72	82	225

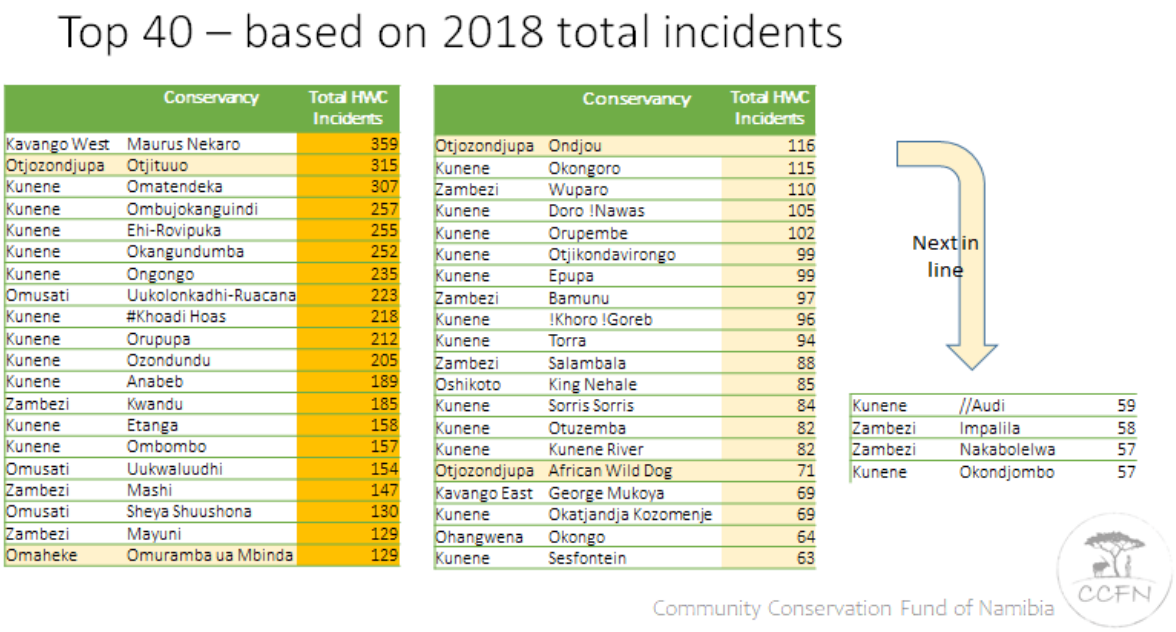
Figure 12 Maps showing the ranking of conservancies based on three different criteria, and the sum of the rankings.



Impacts of Covid-19

The initial analysis was undertaken prior to the impacts of the Covid-19 Global Pandemic. Subsequently, all revenue of conservancies has come to a halt due to Global travel restrictions, and it was decided to concentrate purely on the incidence of HWC only. Figure 13 shows the selection, and provide alternatives should the conservancies in Otjozondjupa and Omaheke not be considered for selection.

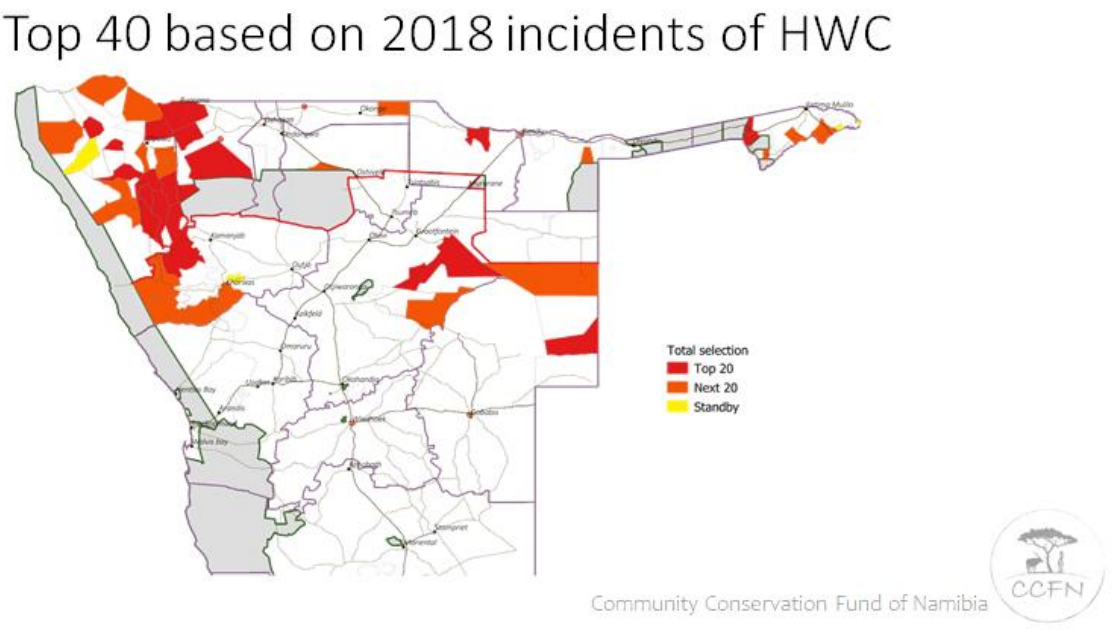
Figure 13 Selection of top 40 conservancies, ranked according to number of HWC incidents recorded in 2018, and shown on a map



	Conservancy	Total HWC Incidents
Kavango West	Maurus Nekaro	359
Otjozondjupa	Otjituuo	315
Kunene	Omatendeka	307
Kunene	Ombujokanguindi	257
Kunene	Ehi-Rovipuka	255
Kunene	Okangundumba	252
Kunene	Ongongo	235
Omusati	Uukolonkadhi-Ruacana	223
Kunene	#Khoadi Hoas	218
Kunene	Orupupa	212
Kunene	Ozondundu	205
Kunene	Anabeb	189
Zambezi	Kwandu	185
Kunene	Etanga	158
Kunene	Ombombo	157
Omusati	Uukwaluudhi	154
Zambezi	Mashi	147
Omusati	Sheya Shuushona	130
Zambezi	Mayuni	129
Omaheke	Omuramba ua Mbinda	129

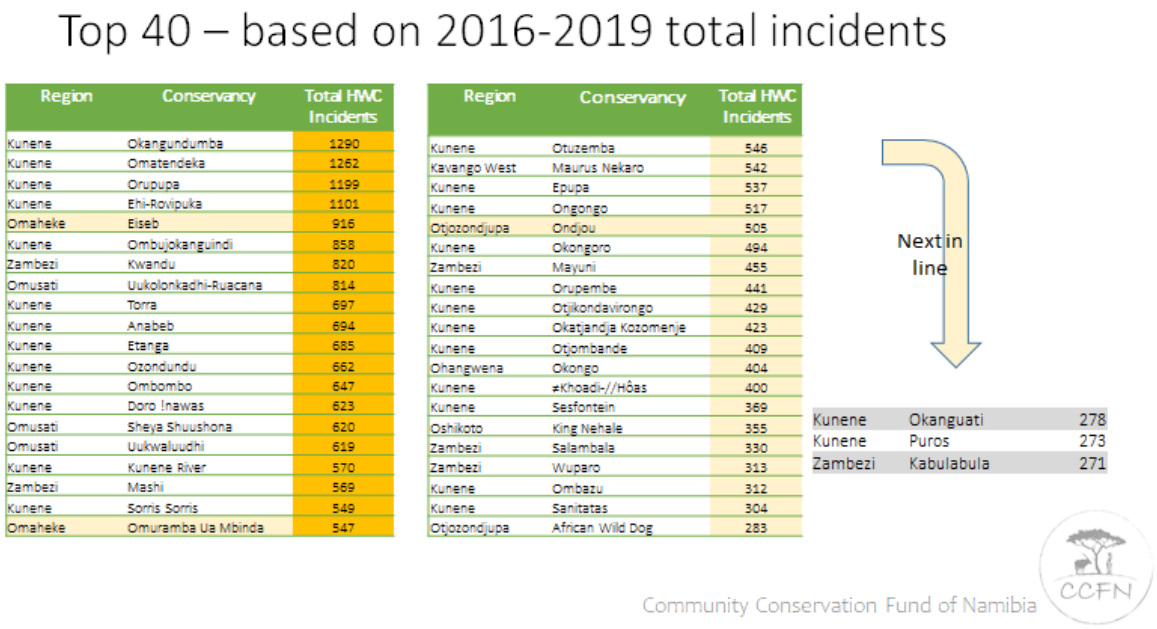
	Conservancy	Total HWC Incidents
Otjozondjupa	Ondjou	116
Kunene	Okongoro	115
Zambezi	Wuparo	110
Kunene	Doro !Nawas	105
Kunene	Orupembe	102
Kunene	Otjikondavirongo	99
Kunene	Epupa	99
Zambezi	Bamunu	97
Kunene	!Khoro !Goreb	96
Kunene	Torra	94
Zambezi	Salambala	88
Oshikoto	King Nehale	85
Kunene	Sorris Sorris	84
Kunene	Otuzemba	82
Kunene	Kunene River	82
Otjozondjupa	African Wild Dog	71
Kavango East	George Mukoya	69
Kunene	Okatjandja Kozomenje	69
Ohangwena	Okongo	64
Kunene	Sesfontein	63

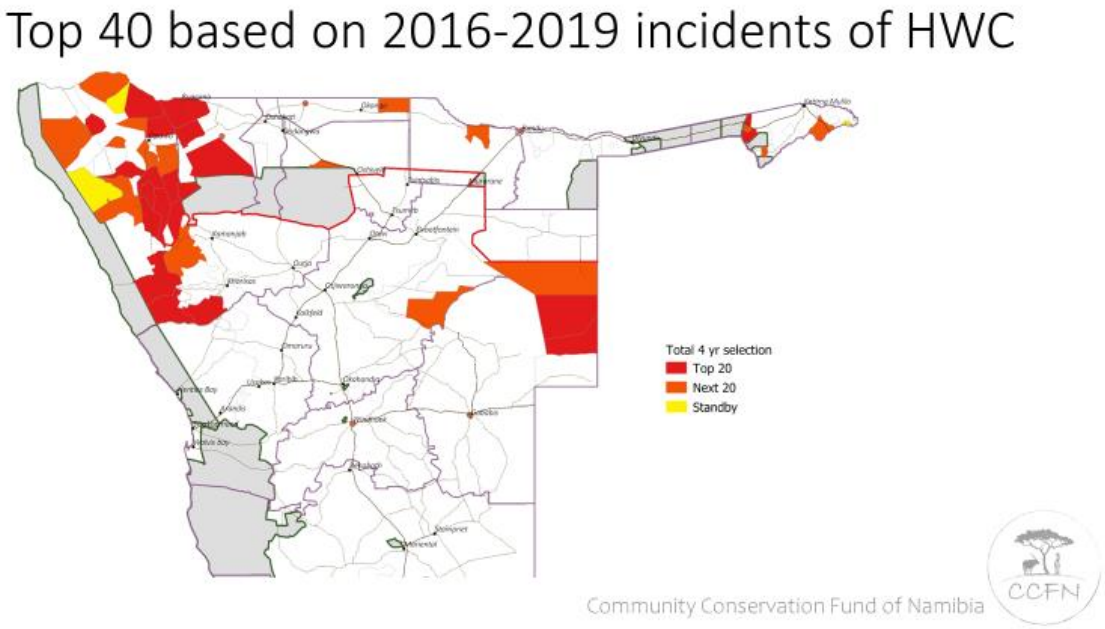
Kunene	//Audi	59
Zambezi	Impalila	58
Zambezi	Nakabolelwa	57
Kunene	Okondjombo	57



Due to the variability that may take place from year to year, the same analysis was undertaken taking the total number of HWC over a four year period.

Figure 14 Selection of top 40 conservancies, ranked according to number of HWC incidents recorded from 2016-2019, and shown on a map





Species landscapes

As mentioned, the Project is encouraging clusters of conservancies to submit joint applications, possibly focussed on one problem-causing species, or on one landscape. "*The PMT will favourably consider joint grant applications in which all conservancies have been identified as target conservancies by the Project*."

The word "conflict" implies at least two parties. So far in the analysis, the emphasis has been on the impact of wildlife on humans, with no consideration of the impact of humans on wildlife. Table 11 shows the conservation status of several species involved in HWC in Namibia, according to National legislation, IUCN and CITES. Amongst these are species considered specially protected, and critically endangered. It would therefore be remiss to ignore the potential impact of HWC on the species, as it is known that this impact can be considerable for some species. A notable example is Wild Dog (considered critically endangered), where entire packs are wiped out due to conflict with farmers.

Table 11 Conservation status of some key species involved in HWC

	NAMIBIAN LEGISLATION	IUCN	CITES
Elephant	Protected	Vulnerable	Appendix II
Spotted hyaena	Protected	Least concern	Not listed
Lion	Specially protected	Vulnerable	Appendix II
Cheetah	Specially protected	Vulnerable	Appendix I
Leopard	Specially protected	Vulnerable	Appendix I
Wild dog	Specially protected	Critically endangered	Not listed
Crocodile	Protected	Least concern	Appendix II
Hippopotamus	Specially protected	Vulnerable	Appendix II

Furthermore, in most cases, the animals involved move over large areas, spanning more than one conservancy. Figure 15 shows an example of elephant movements, also highlighting an especially important elephant corridor that is in a conservancy.

It is therefore impractical to develop HWC strategies at conservancy level in isolation of the surrounding areas.

Figure 15 Map showing elephant movement data from collared animals, and demonstrates the large areas, and key corridor areas occurring in conservancies.

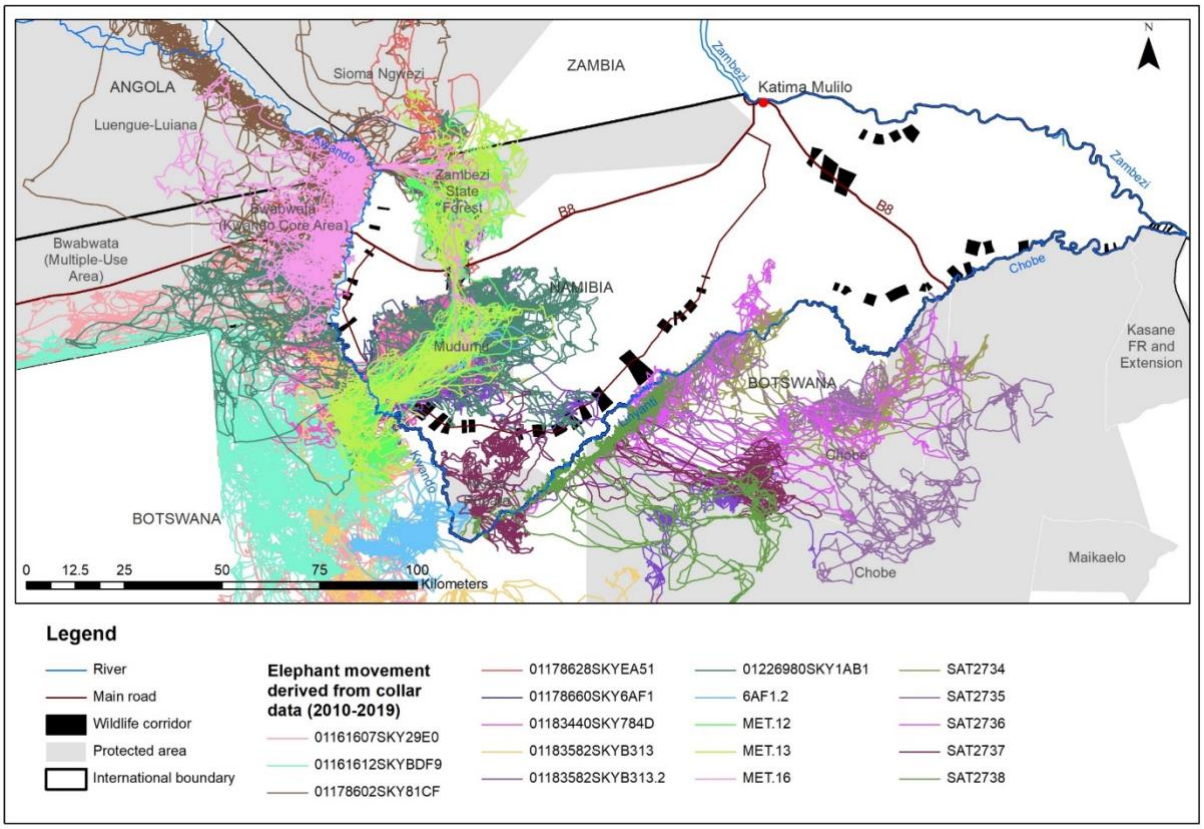


Table 12 provides the number of incidents of HWC recorded per conservancy broken down into species. Shaded cells indicate a ranking within the top 40 for that species (2018 data).

Table 12 Table showing number of incidents of HWC recorded per conservancy broken down into species. Shaded cells indicate a ranking within the top 40 for that species (2018 data).

Name	Elephant	Lion	Hyaena	Wild dog	Cheetah	Leopard	Crocodile	Hippo
!Gawachab	-	-	-	-	-	-	-	-
!Han /Awab	-	-	-	-	-	-	-	-
!Khob !naub	-	-	-	-	-	-	-	-
!Khoro !goreb	7	-	8	-	2	20	-	-
#Gaingu	-	1	-	-	-	-	-	-
#Khoadi-//Hoas	16	10	74	-	15	24	-	-
//Audi	-	-	10	-	2	-	-	-
//Gamaseb	-	-	-	-	-	-	-	-
//Huab	-	-	10	-	5	9	-	-
African Wild Dog	-	-	-	50	21	-	-	-

Name	Elephant	Lion	Hyaena	Wild dog	Cheetah	Leopard	Crocodile	Hippo
Anabeb	4	18	20	-	35	18	-	-
Balyerwa	22	13	-	-	-	-	-	1
Bamunu	24	5	15	-	-	-	-	-
Doro !nawas Area1	3	3	22	-	16	15	-	-
Doro !nawas Area2	-	-	-	-	-	-	-	-
Doro !nawas/Uibasen Twyfelfontein JMA	-	-	-	-	-	-	-	-
Dzoti	6	12	-	-	-	-	1	2
Ehi-Rovipuka	5	39	92	-	21	16	-	-
Eiseb	-	-	-	-	-	4	-	-
Epupa	-	-	-	-	17	2	18	-
Etanga	-	-	12	-	27	3	-	-
George Mukoya	30	-	-	1	-	-	-	-
Huibes	-	-	-	-	-	-	-	-
Iipumbu ya Tshilongo	-	18	11	-	-	-	-	-
Impalila	-	-	-	-	-	-	24	21
Joseph Mbambangandu	-	-	-	-	-	-	-	-
Kabulabula	-	5	-	-	-	-	21	11
Kapinga kaMwalye	-	-	-	-	-	-	-	-
Kasika	-	8	-	-	-	-	29	7
King Nehale	5	-	47	-	-	-	-	-
Kunene River	-	-	-	-	3	6	19	-
Kwandu	56	-	20	-	-	7	9	9
Lusese	-	-	8	-	-	-	14	-
Marienfluss	-	-	-	-	8	-	7	-
Mashi	93	6	11	5	-	5	10	10
Maurus Nekaro	-	1	-	-	-	5	13	37
Mayuni	102	1	-	-	1	7	9	21
Muduva Nyangana	2	-	-	-	-	12	-	-
N#a Jaqna	-	-	-	-	-	-	-	-
Nakabolelwa	2	22	-	-	-	-	15	1

Name	Elephant	Lion	Hyaena	Wild dog	Cheetah	Leopard	Crocodile	Hippo
Nyae Nyae	5	-	-	2	-	3	-	-
Ohungu	1	-	-	-	-	5	-	-
Okamatapati	-	-	-	62	-	-	-	-
Okanguati	-	-	-	-	4	-	-	-
Okangundumba	25	-	53	-	51	23	-	-
Okatjandja Kozomenje	3	-	8	-	16	2	-	-
Okondjombo	-	1	10	-	-	5	-	-
Okongo	9	-	25	7	-	-	-	-
Okongoro	16	-	11	-	11	6	-	-
Omatendeka	9	14	45	-	65	57	-	-
Ombazu	-	-	-	-	-	-	-	-
Ombombo	-	-	38	-	3	-	-	-
Ombujokanguindi	-	-	15	-	51	36	-	-
Omuramba ua Mbinda	-	-	-	11	-	-	-	-
Ondjou	21	-	29	33	3	33	-	-
Ongongo	-	-	9	-	44	9	-	-
Orupembe	-	1	19	-	23	-	-	-
Orupupa	22	4	74	-	37	36	-	-
Oskop	-	-	-	-	-	-	-	-
Otjambangu	-	-	-	-	-	8	-	-
Otjikondavirongo	2	-	22	-	7	-	-	-
Otjikongo	-	-	-	-	-	-	-	-
Otjimboyo	-	-	-	-	6	8	-	-
Otjindjerese	-	-	-	-	-	-	-	-
Otjitanda	-	-	-	-	7	4	-	-
Otjituuo	-	-	8	189	58	60	-	-
Otjiu-West	-	-	-	-	-	-	-	-
Otjombande	1	-	10	-	9	14	-	-
Otjombinde	-	-	-	1	1	-	-	-
Otuzemba	2	-	36	-	30	10	-	-
Ovitoto	-	-	-	-	-	-	-	-
Ozonahi	-	-	-	-	-	-	-	-

Name	Elephant	Lion	Hyaena	Wild dog	Cheetah	Leopard	Crocodile	Hippo
Ozondundu	24	-	34	-	75	50	-	-
Puros	-	6	13	-	-	-	-	-
Salambala	21	2	20	-	-	-	6	27
Sanitatas	-	-	9	-	5	3	-	-
Sesfontein	-	10	15	-	15	4	-	-
Shamungwa	-	-	-	-	-	-	-	-
Sheya Shuushona	18	8	83	-	2	-	-	-
Sikunga	-	-	-	-	-	-	-	-
Sobbe	23	17	-	-	-	-	-	-
Sorris Sorris	51	1	40	-	11	3	-	-
Torra	32	16	12	-	1	12	-	-
Tsiseb	-	5	-	-	-	3	-	-
Uibasen Twyfelfontein	-	-	-	-	3	13	-	-
Uukolonkadhi Ruacana	22	-	38	-	3	22	5	-
Uukwaluudhi	66	-	67	-	2	-	-	-
Wuparo	90	4	-	-	-	-	-	7

Annex 3 provides maps of the incidence of HWC on conservancies by species, with indicative "clusters" of conservancies.

Compliance data

The data obtained from the MEFT online database on compliance covers only about 50% of the conservancies and is therefore not considered sufficiently complete on which to base any selection. In addition, of those available, very few conservancies would qualify as completely compliant according to the list of measures being monitored.

The basis for assessing compliance is set out in the Guidelines for management of conservancies and standard operating procedures, August 2013. When a community wants to become a Conservancy, it must meet all the requirements of the application process. While some of the requirements for qualification may be satisfied by a "one-time" submission in the application process (such as a map), other conditions or requirements must be continuously or repeatedly satisfied, in order for the Conservancy to maintain their qualification. Holding an Annual General Meeting would be an example of such a repeating obligation. These are referred to as the recurrent requirements.

The guidelines define a set of response procedures to be implemented by the MEFT in the case that conservancies are not in compliance.

The goal of the Response Procedures is to ensure that Conservancies do comply with legal requirements, rather than to punish them. That is why the steps are gradual, and why both time and constructive support is offered to assist Conservancies to get back into compliance. The only Conservancies that might possibly have their status withdrawn are those that deliberately refuse (over a period of 9 months) all support assistance to comply.

It is clear that the intent is to adopt a formative rather than punitive approach, and not to unreasonably punish conservancies. Furthermore, it should be noted that levels of 'compliance' may vary from year to year, and therefore a single year in isolation would not be a good measure.

It is therefore recommended that rather than excluding conservancies on the basis of a single year of 'compliance data', that the approach should rather be to only exclude those conservancies who have, in the opinion of MET, consistently and deliberately refused to respond or comply with an enquiry, or who have been issued with a letter of warning, unless the conservancy rectifies any shortcoming within a defined period of time. Conservancies selected for this project should be incentivised and supported to improve compliance and must agree to all conditionalities.

Conclusions and recommendations

The conclusion of the consultants was that final list of target conservancies would depend on what approach is used to make the selection, a decision that would need to be taken by the Project Steering Committee (PSC).

The findings of this study were presented to the Project Steering Committee on the 18 June 2020. Following discussion, the following resolutions were taken:

- No pre-selection of conservancies will take place, but the information gathered will be used to back up decisions when considering applications.[1]
- A landscape/species approach will be adopted as far as possible, with HWC action plans developed at a cluster/landscape level rather than at conservancy level.

[1] Some pre-selection could still be done using landscape and species approach, focussing on key species only (for example as presented in Annex 3). This could aid the PMT in the implementation process, considering the PSC recommendations.

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Ministry of Environment and Tourism. 2018. Revised National policy on human-wildlife conflict management 2018-2027.

Annex 1: Natural Resource Management – Performance Review Questionnaire

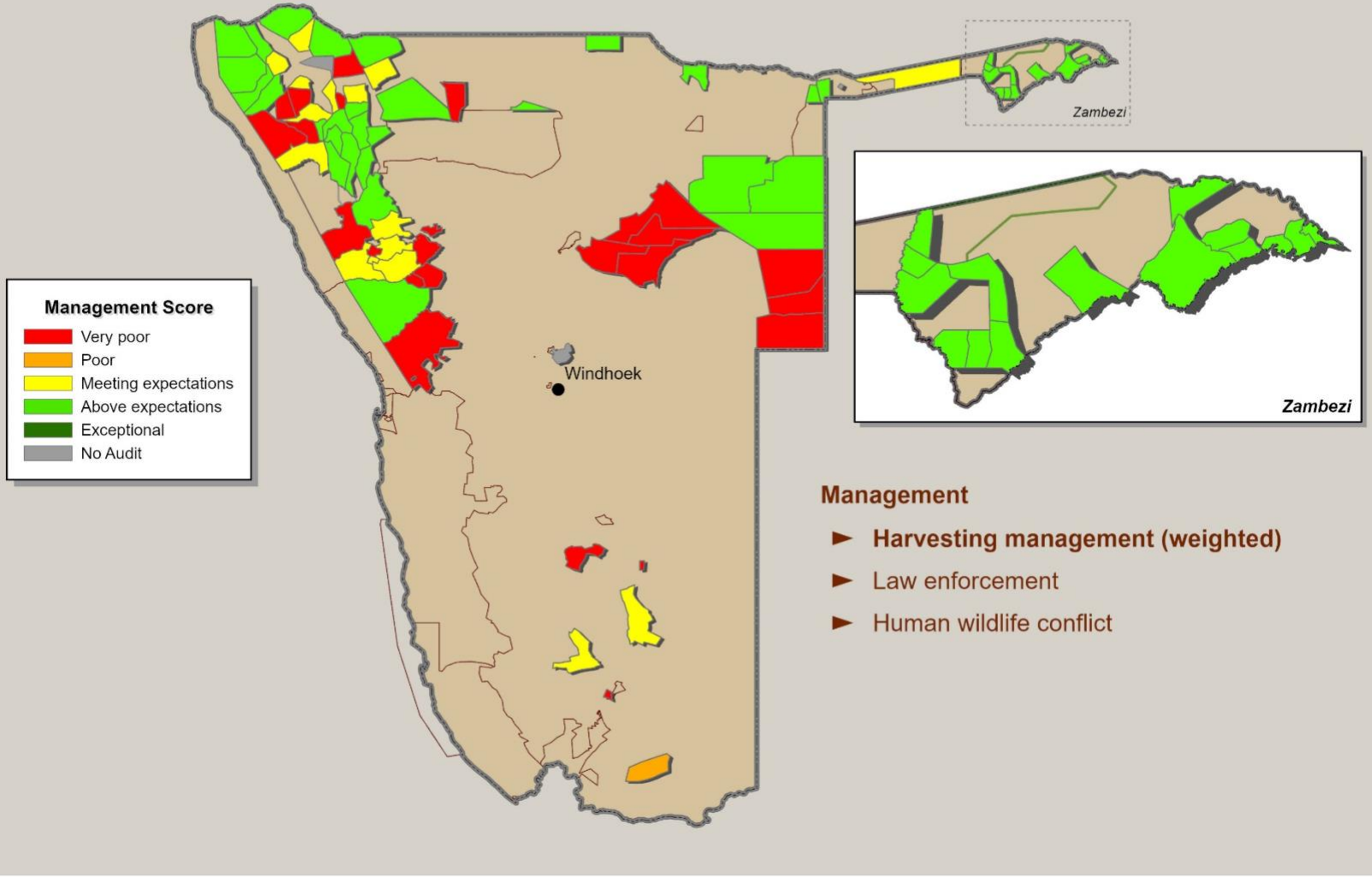
Conservancy ……..		Year ……	
Commitment to Natural Resource Management			
1- Staffing	The conservancy has committed staff to protecting its natural resources?	0 – NONE 1 – WEAK 2 – MODERATE 3 – STRONG	0. no staff 1. volunteers only 2. part-time NRM staff 3. full-time NRM
2- Expenditure on NRM	The conservancy is fully funding its NR maintenance activities and even investing to improve its resources?	0 – NONE 1 – FAIR 2 – GOOD 3 – VERY GOOD 4 – EXCELLENT	0. no expenditure 1. paying for game guards using donor funds 2. paying for game guards using own funds 3. paying for all NRM costs using own funds 4. using own funds for NR improvements such as wildlife introductions, game water, etc
3- Audit attendance	All Community game guards (CGG) and committee are attending the event book audit?	0 – NONE 1 – WEAK 2 – FAIR 3 – ACCEPTABLE 4 – GOOD 5 – VERY GOOD 6 – EXCELLENT	0. no one was present 1. not all event books are present and not all CGG's present 2. all event book are there but not all CGG's are present 3. all CGG's and event books are present 4. same as previous but few committee members are present 5. same as previous but Conservancy chairperson is present 6. same as previous but all Committee members are present
Planning			
4- Management plan	The conservancy has full management plan documentation?	0 – NONE 1 – FAIR 2 – GOOD 3 – EXCELLENT	0. no NR management plan 1. draft NR management plan available 2. NR management plan endorsed by community 3. management plan poster

5- Zonation	The conservancy has fully implemented its zonation vision?	0 – NONE 1 – WEAK 2 – FAIR 3 – GOOD 4 – EXCELLENT	0. no zonation map 1. draft zonation map 2. a community endorsed zonation 3. evidence of implementation of the zonation 4. full implementation of planned zonation
6- Leadership in NRM	The conservancy is showing clear leadership in the management of its Natural Resources?	0 – WEAK 1 – FAIR 2 – GOOD 3 – EXCELLENT	0. service providers leading all NRM activities 1. Conservancy leading one NRM activity 2. Conservancy leading at least two NRM activities 3. Conservancy leading all NRM activities
Monitoring			
7- Display of material	The filing box and files in order?	0 – WEAK 1 – FAIR 2 – EXCELLENT	0. some files are missing 1. all files are present 2. all files are neat and in good order
8- Event books modules	The conservancy has a comprehensive local-level monitoring system in place?	0 – NONE 1 – WEAK 2 – FAIR 3 – GOOD 4 – VERY GOOD 5 – EXCELLENT	0. none 1. partial (only yellow or blue level) event book in place 2. full event book (yellow, blue and red) with less than 3 modules 3. full event book with 4 to 6 modules 4. full event book with almost all modules 5. all natural resources being monitored including red level and a fully completed year-end Audit report
9- Event books quality	The Game Guards are implementing their event book perfectly?	0 – NONE 1 – WEAK 2 – FAIR 3 – EXCELLENT	0. event books are not used 1. event books are not used by all CGG's 2. event books are used by all CGG's but with a few mistakes 3. event books perfectly completed with no mistakes
10- Compliance Reporting	Conservancy is reporting all wildlife Removals and Introductions? (see the Yellow Book)	0 – NONE 1 – PARTIALLY COMPLETED 2 – FULLY COMPLETED	0. no compliance report 1. partial (incomplete compliance report) 2. full compliance reporting

11- Game count	The conservancy is monitoring its key wildlife populations?	0 – NONE 1 – FAIR 2 – GOOD 3 – VERY GOOD 4 – EXCELLENT	0. none 1. annual game count or monthly fixed route patrols 2. annual game count and monthly fixed route patrols 3. same as 2 but monthly fixed route patrols done for more than 8 months of the year 4. same as 3 but breeding success also monitored
12- Reporting & adaptive management	Game Guards are sharing information with all stakeholders and conservancy using information for decision-making?	0 – NONE 1 – WEAK 2 – FAIR 3 – GOOD 4 – VERY GOOD 5 – EXCELLENT 6 – PERFECT	0. monthly reporting charts/ trend charts not compiled 1. monthly reporting charts / trend charts done but not shared 2. monthly charts/ trend charts shared with management 3. all Long-term reporting charts up to date and shared with management committee 4. event book charts presented at AGM 5. event book charts also presented at villages 6. clear evidence of adaptive management decisions
Management			
13- Harvesting management	The Conservancy is fully managing their harvest according to quotas and harvest methods?	0 – NONE 1 – WEAK 2 – FAIR 3 – EXCELLENT	0. Has no quota/ no management 1. Tickets system/game guard reports not implemented 2. Systems implemented but not registered or recorded 3. Systems implemented, registered and recorded in relevant books
14- Law enforcement	The conservancy has almost completely eliminated illegal use of its Natural Resources?	0 – NONE 1 – WEAK 2 – FAIR 3 – GOOD 4 – VERY GOOD 5 – EXCELLENT	0. none 1. only poaching monitoring undertaken 2. casual patrolling & poaching monitoring 3. focused law enforcement patrolling 4. evidence of follow-up and arrests 5. poaching almost non-existent (zero incidents AND good patrolling effort)

15- Human-wildlife conflict	The conservancy has solved most of its HWC problems?	0 – NONE 1 – WEAK 2 – FAIR 3 – GOOD 4 – EXCELLENT	0. no HWC action 1. only recording problem animal incidents 2. Livestock (or crop) mitigation scheme in place 3. Livestock and crop mitigation schemes 4. HWC is almost non-existent
Benefits			
16- Sources of NR income	The conservancy is utilizing a wide range of its natural resources?	0. no NR derived income 1. income from 1 NR based activity 2. income from 2 NR based activities 3. income from 3 NR based activities 4. income from 4 NR based activities 5. income from 5 and more NR activities	
17- Benefits produced	The conservancy is profiting from its natural resources?	0 – NONE 1 – WEAK 2 – FAIR 3 – GOOD 4 – EXCELLENT	0. no benefits from natural resources 1. some resource-use 2. some employment & income from natural resources 3. NR income meets NRM expenditure 4. NR income exceeds entire Conservancy expenditure
Wildlife sustainability			
18- Wildlife population trends	The game population trends in the conservancy are showing sustainability?	0 – VERY WEAK 1 – WEAK 2 – FAIR 3 – GOOD 4 – EXCELLENT	0. on average all species show negative trend 1. most species show negative trend 2. the average, the trend is stable 3. most species show positive trend 4. on average all species show positive trend
19- Wildlife population status	Current wildlife population levels are at or above density targets?	0 – VERY WEAK 1 – WEAK 2 – FAIR 3 – GOOD 4 – EXCELLENT	0. on average species are within 0-20% of target density 1. on average species are within 20-40% of target density 2. on average species are within 60-80% of target density- most species show positive trend 3. on average species are within 80% or higher of target density

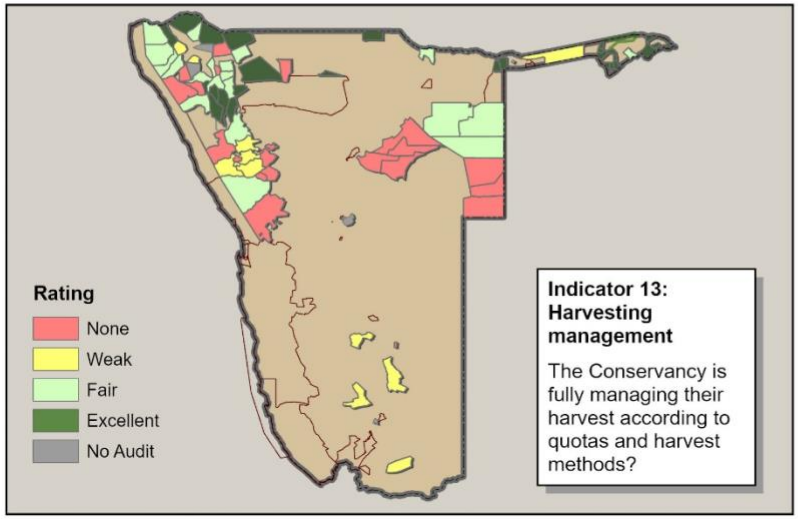
Management - Group Score 2018

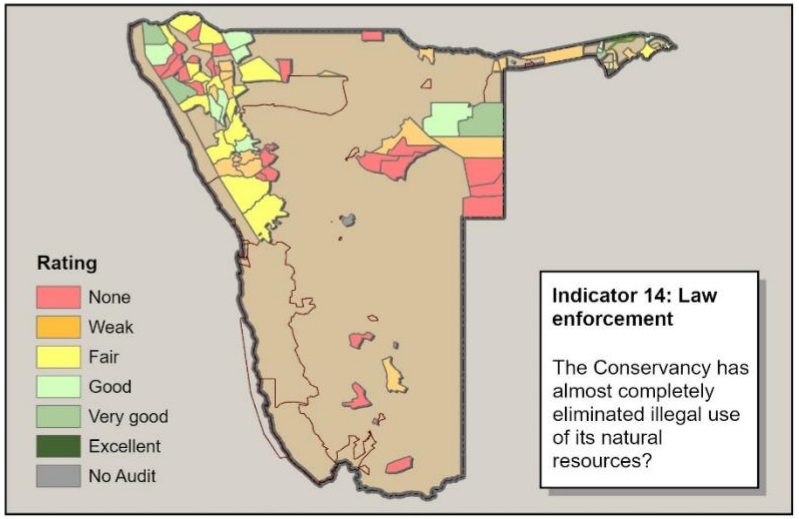


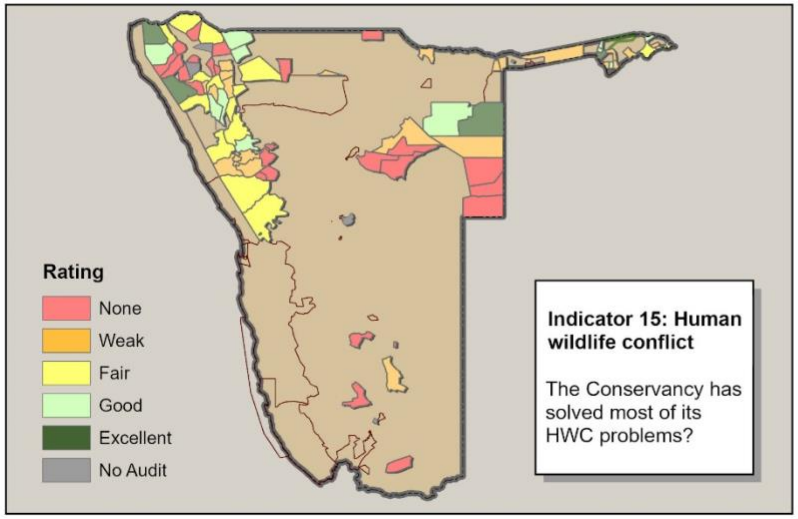
Management

- **Harvesting management (weighted)**
- Law enforcement
- Human wildlife conflict

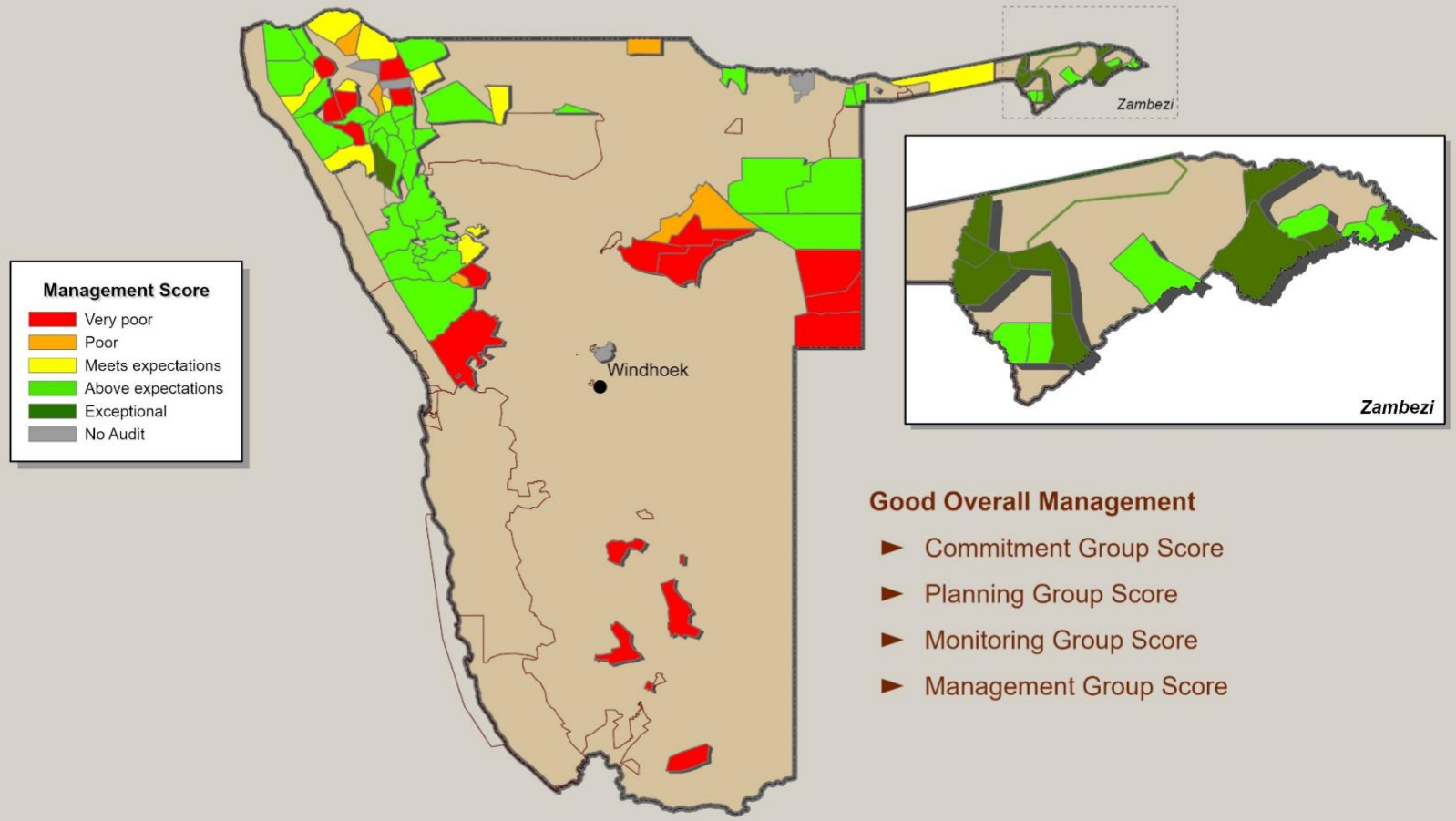
Management - Individual Rating 2018







Good Overall Management - Group Score 2018



Good Overall Management

- Commitment Group Score
- Planning Group Score
- Monitoring Group Score
- Management Group Score

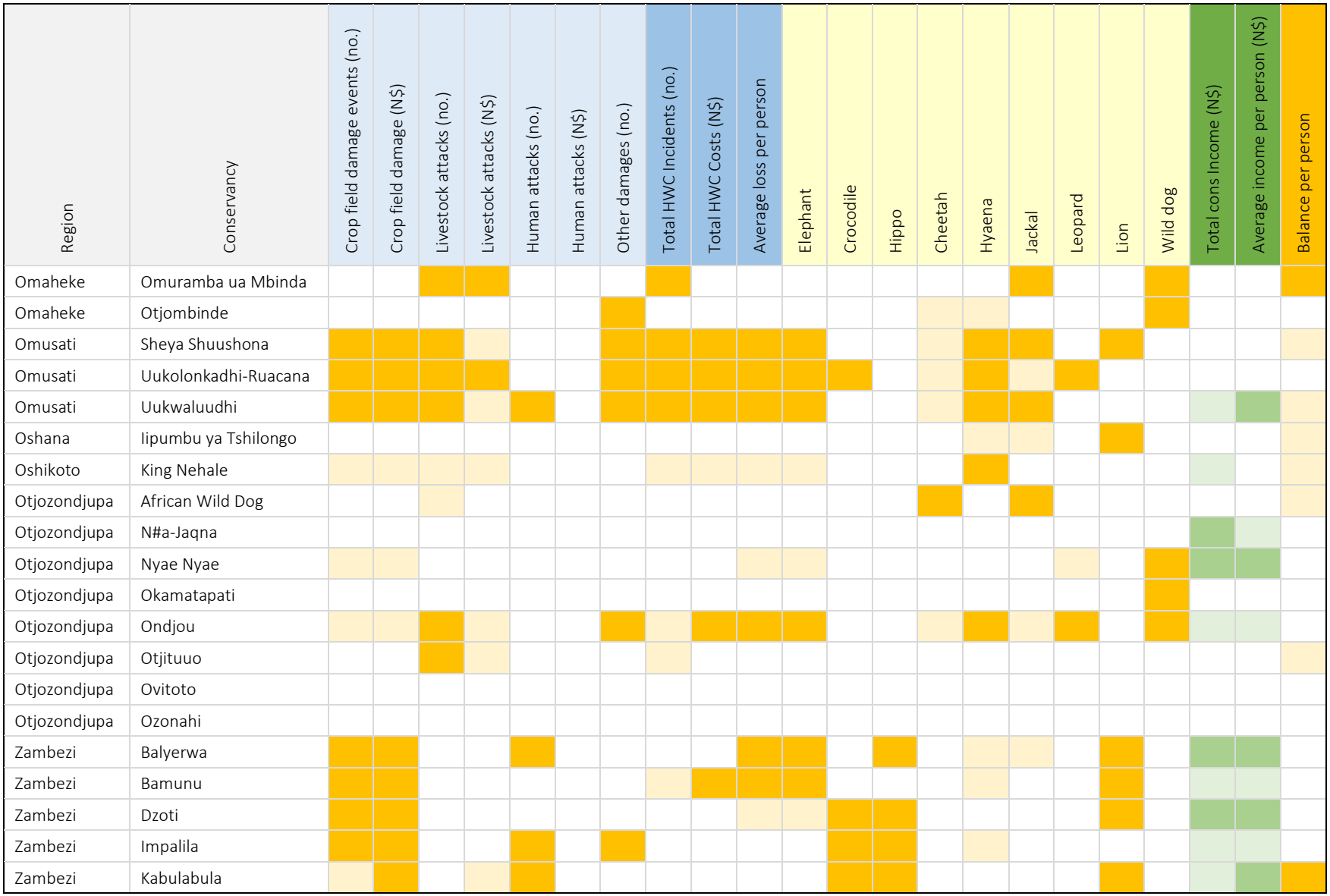
Annex 2: Matrix showing relative ranking of each conservancy against a range of criteria.

In below matrix, dark yellow refers to instances where conservancy falls within the top 20 affected conservancies; light yellow indicates that it falls between 21-40 in ranking, darker green are the top 20 earners, lighter green the following 20 earners.

Region	Conservancy	Crop field damage events (no.)	Crop field damage (N$)	Livestock attacks (no.)	Livestock attacks (N$)	Human attacks (no.)	Human attacks (N$)	Other damages (no.)	Total HWC Incidents (no.)	Total HWC Costs (N$)	Average loss per person	Elephant	Crocodile	Hippo	Cheetah	Hyaena	Jackal	Leopard	Lion	Wild dog	Total cons Income (N$)	Average income per person (N$)	Balance per person
//Karas	!Gawachab																						
//Karas	!Han/Awab																						
//Karas	!Khob !Naub																						
//Karas	//Gamaseb																						
Erongo	#Gaingu																						
Erongo	Ohungu																						
Erongo	Otjimboyo																						
Erongo	Tsiseb																						
Hardap	Huibes																						
Hardap	Oskop																						
Kavango East	George Mukoya																						
Kavango East	Joseph Mbambangandu																						
Kavango East	Kapinga kaMwalye																						
Kavango East	Muduva Nyanga																						
Kavango East	Shamungwa																						
Kavango West	Maurus Nekaro																						

Region	Conservancy	Crop field damage events (no.)	Crop field damage (N$)	Livestock attacks (no.)	Livestock attacks (N$)	Human attacks (no.)	Human attacks (N$)	Other damages (no.)	Total HWC Incidents (no.)	Total HWC Costs (N$)	Average loss per person	Elephant	Crocodile	Hippo	Cheetah	Hyaena	Jackal	Leopard	Lion	Wild dog	Total cons Income (N$)	Average income per person (N$)	Balance per person
Kunene	!Khoro !Goreb																						
Kunene	#Khoadi Hoas																						
Kunene	//Audi																						
Kunene	//Huab																						
Kunene	Anabeb																						
Kunene	Doro !Nawas																						
Kunene	Ehi-Rovipuka																						
Kunene	Epupa																						
Kunene	Etanga																						
Kunene	Kunene River																						
Kunene	Marienfluss																						
Kunene	Okanguati																						
Kunene	Okangundumba																						
Kunene	Okatjandja Kozomenje																						
Kunene	Okondjombo																						
Kunene	Okongoro																						
Kunene	Omatendeka																						
Kunene	Ombazu																						
Kunene	Ombombo																						
Kunene	Ombujokanguindi																						

Region	Conservancy	Crop field damage events (no.)	Crop field damage (N$)	Livestock attacks (no.)	Livestock attacks (N$)	Human attacks (no.)	Human attacks (N$)	Other damages (no.)	Total HWC Incidents (no.)	Total HWC Costs (N$)	Average loss per person	Elephant	Crocodile	Hippo	Cheetah	Hyaena	Jackal	Leopard	Lion	Wild dog	Total cons Income (N$)	Average income per person (N$)	Balance per person
Kunene	Ongongo																						
Kunene	Orupembe																						
Kunene	Orupupa																						
Kunene	Otjambangu																						
Kunene	Otjikondavirongo																						
Kunene	Otjikongo																						
Kunene	Otjindjerese																						
Kunene	Otjitanda																						
Kunene	Otjiu-West																						
Kunene	Otjombande																						
Kunene	Otuzemba																						
Kunene	Ozondundu																						
Kunene	Puros																						
Kunene	Sanitatas																						
Kunene	Sesfontein																						
Kunene	Sorris Sorris																						
Kunene	Torra																						
Kunene	Uibasen Twyfelfontein																						
Ohangwena	Okongo																						
Omaheke	Eiseb																						

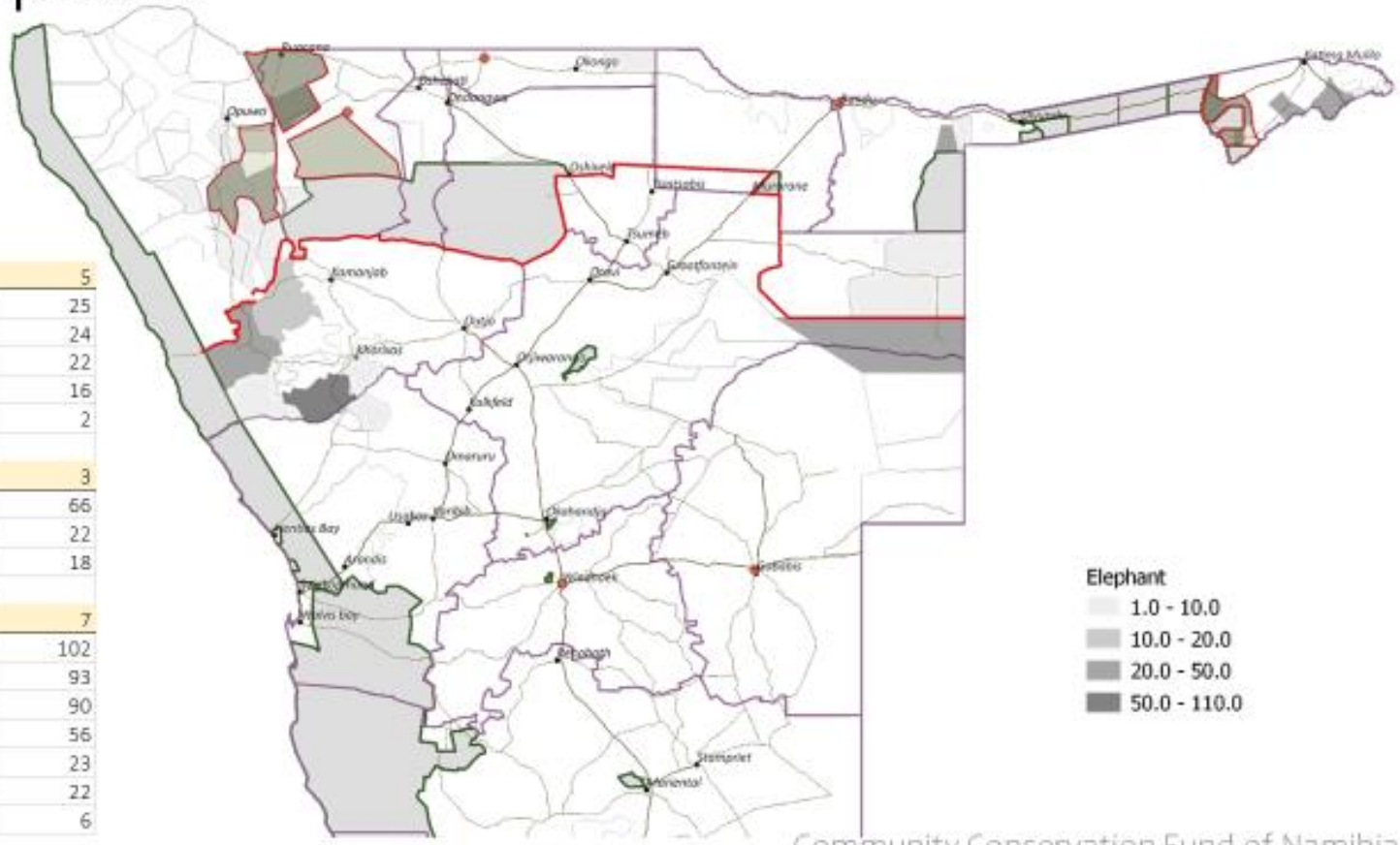

Region
Conservancy
Crop field damage events (no.)
Crop field damage (N$)
Livestock attacks (no.)
Livestock attacks (N$)
Human attacks (no.)
Human attacks (N$)
Other damages (no.)
Total HWC Incidents (no.)
Total HWC Costs (N$)
Average loss per person
Elephant
Crocodile
Hippo
Cheetah
Hyaena
Jackal
Leopard
Lion
Wild dog
Total cons Income (N$)
Average income per person (N$)
Balance per person
Omaheke Omuramba ua Mbinda
Omaheke Otjombinde
Omusati Sheya Shuushona
Omusati Uukolonkadhi-Ruacana
Omusati Uukwaluudhi
Oshana Iipumbu ya Tshilongo
Oshikoto King Nehale
Otjozondjupa African Wild Dog
Otjozondjupa N#a-Jaqna
Otjozondjupa Nyae Nyae
Otjozondjupa Okamatapati
Otjozondjupa Ondjou
Otjozondjupa Otjituuo
Otjozondjupa Ovitoto
Otjozondjupa Ozonahi
Zambezi Balyerwa
Zambezi Bamunu
Zambezi Dzoti
Zambezi Impalila
Zambezi Kabulabula

Region	Conservancy	Crop field damage events (no.)	Crop field damage (N$)	Livestock attacks (no.)	Livestock attacks (N$)	Human attacks (no.)	Human attacks (N$)	Other damages (no.)	Total HWC Incidents (no.)	Total HWC Costs (N$)	Average loss per person	Elephant	Crocodile	Hippo	Cheetah	Hyaena	Jackal	Leopard	Lion	Wild dog	Total cons Income (N$)	Average income per person (N$)	Balance per person
Zambezi	Kasika																						
Zambezi	Kwandu																						
Zambezi	Kyaramacan Association																						
Zambezi	Lusese																						
Zambezi	Mashi																						
Zambezi	Mayuni																						
Zambezi	Nakabolelwa																						
Zambezi	Salambala																						
Zambezi	Sikunga																						
Zambezi	Sobbe																						
Zambezi	Wuparo																						

Annex 3: Maps showing incidents of HWC per species, and indicative "clusters", based on 2018 data

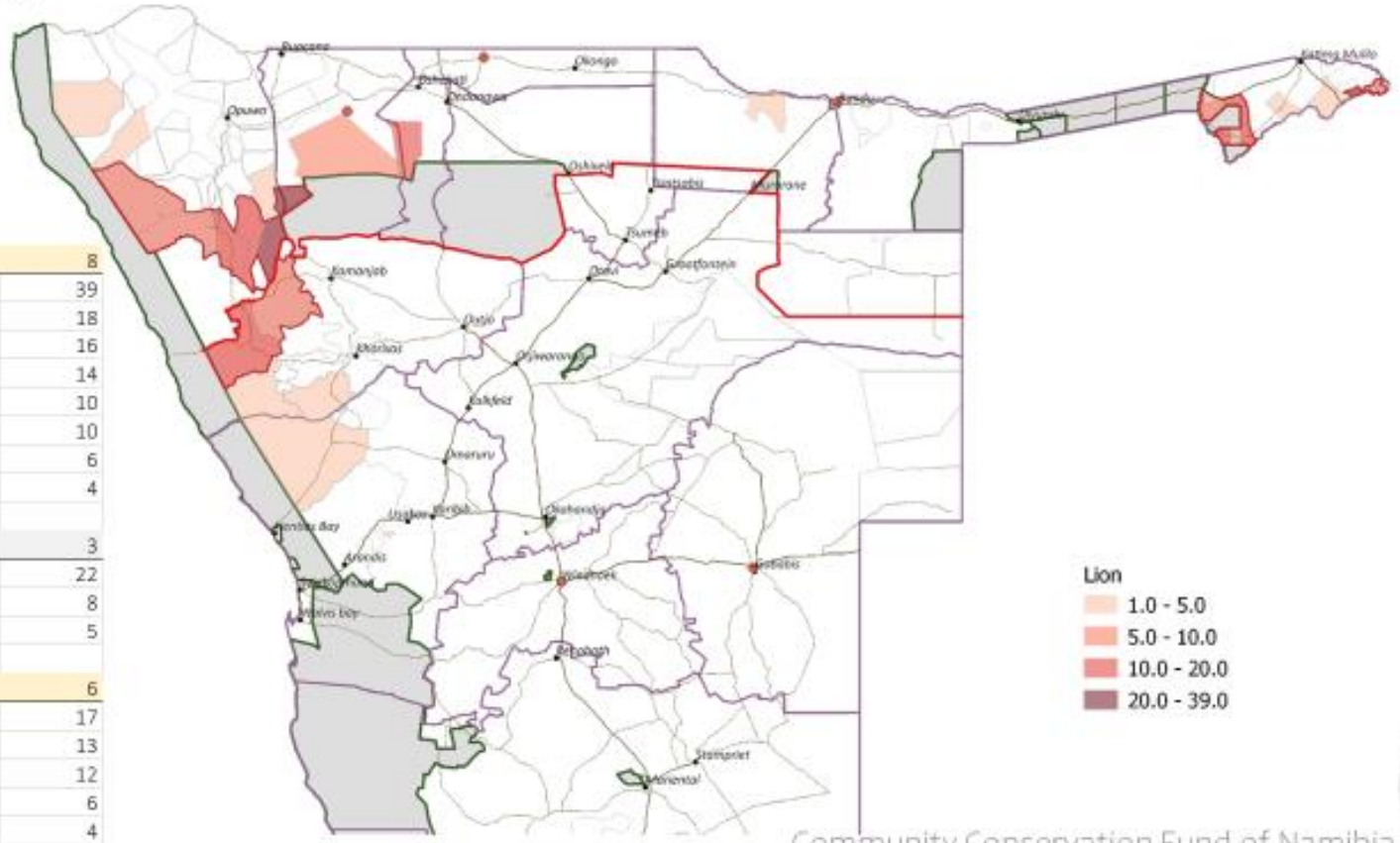
Elephant

Elephant-1	5
Okangundumba	25
Ozondundu	24
Orupupa	22
Okongoro	16
Otuzemba	2
Elephant-2	3
Uukwaluudhi	66
Uukolonkadhi-Ruacana	22
Sheya Shuushona	18
Elephant-3	7
Mayuni	102
Mashi	93
Wuparo	90
Kwandu	56
Sobbe	23
Balyerwa	22
Dzoti	6



Lion

Lion-1	8
Ehi-Rovipuka	39
Anabeb	18
Torra	16
Omatendeka	14
#Khoadi Hoas	10
Sesfontein	10
Puros	6
Orupupa	4
Lion-2	3
Nakabolelwa	22
Kasika	8
Kabulabula	5
Lion-3	6
Sobbe	17
Balyerwa	13
Dzoti	12
Mashi	6
Wuparo	4
Mayuni	1



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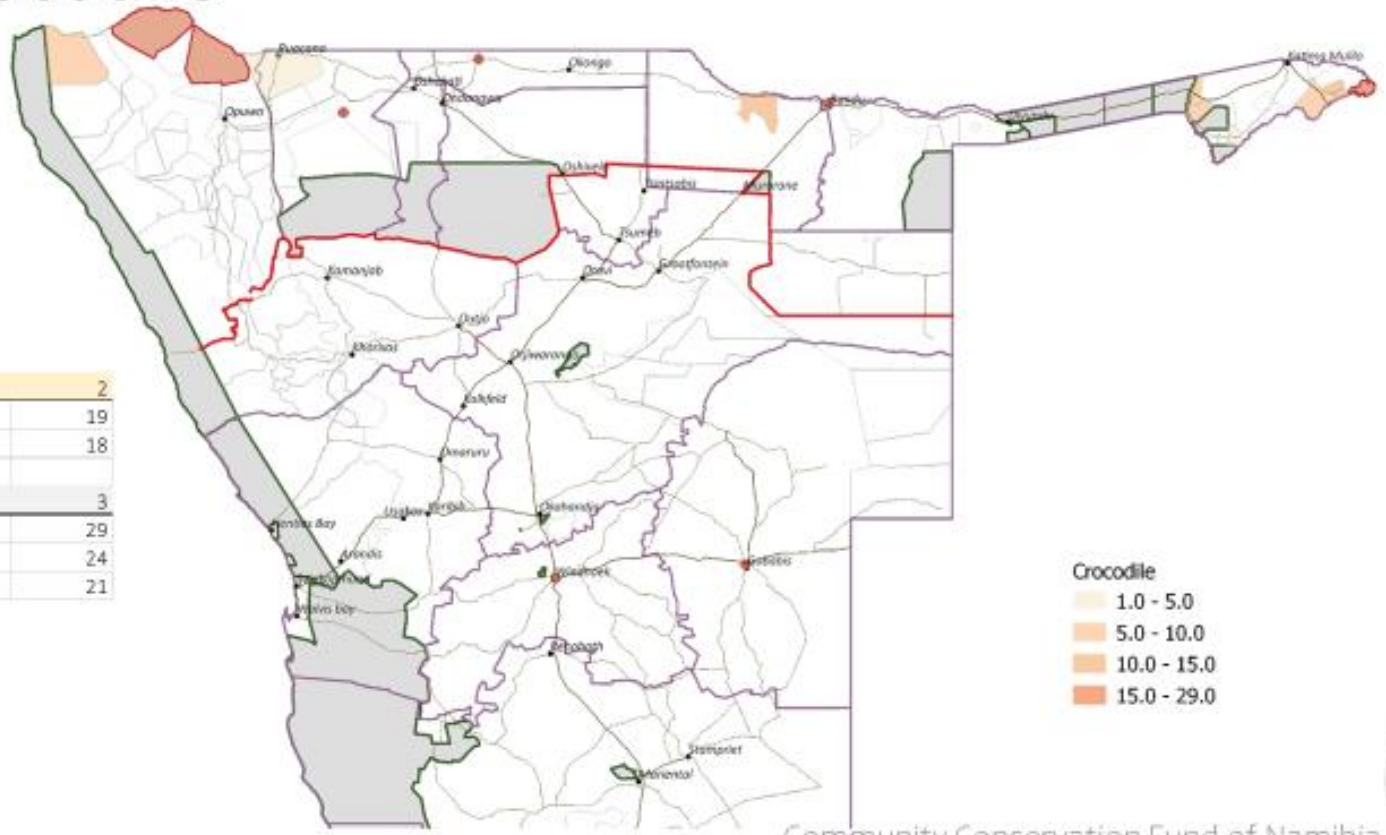
CCFN

Crocodile

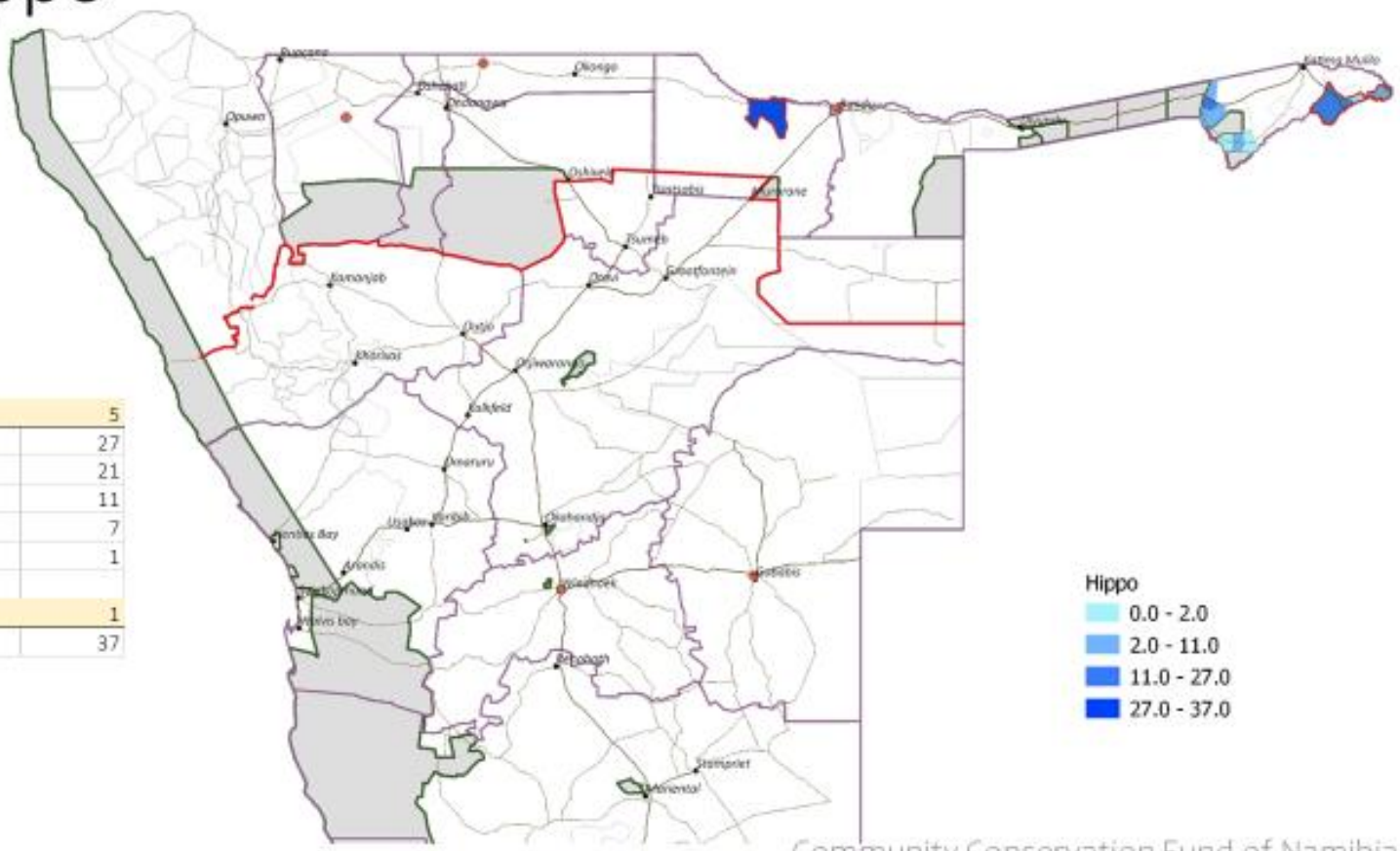
Crocodile-1	2
Kunene River	19
Epupa	18
Crocodile-2	3
Kasika	29
Impalila	24
Kabulabula	21



Community Conservation Fund of Namibia

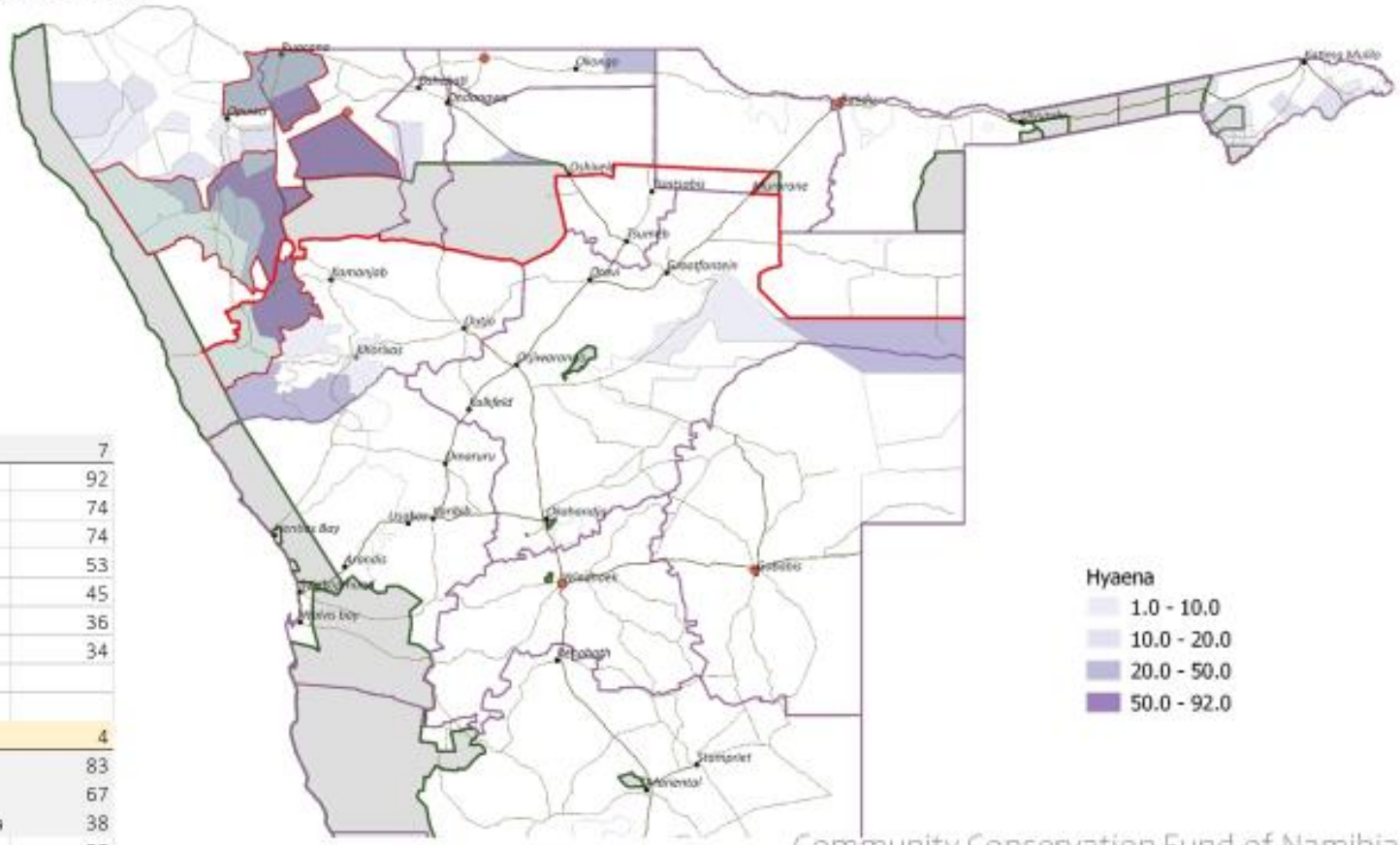
Hippo

Hippo-1	5
Salambala	27
Impalila	21
Kabulabula	11
Kasika	7
Nakabolelwa	1
Hippo-2	1
Maurus Nekaro	37



Community Conservation Fund of Namibia

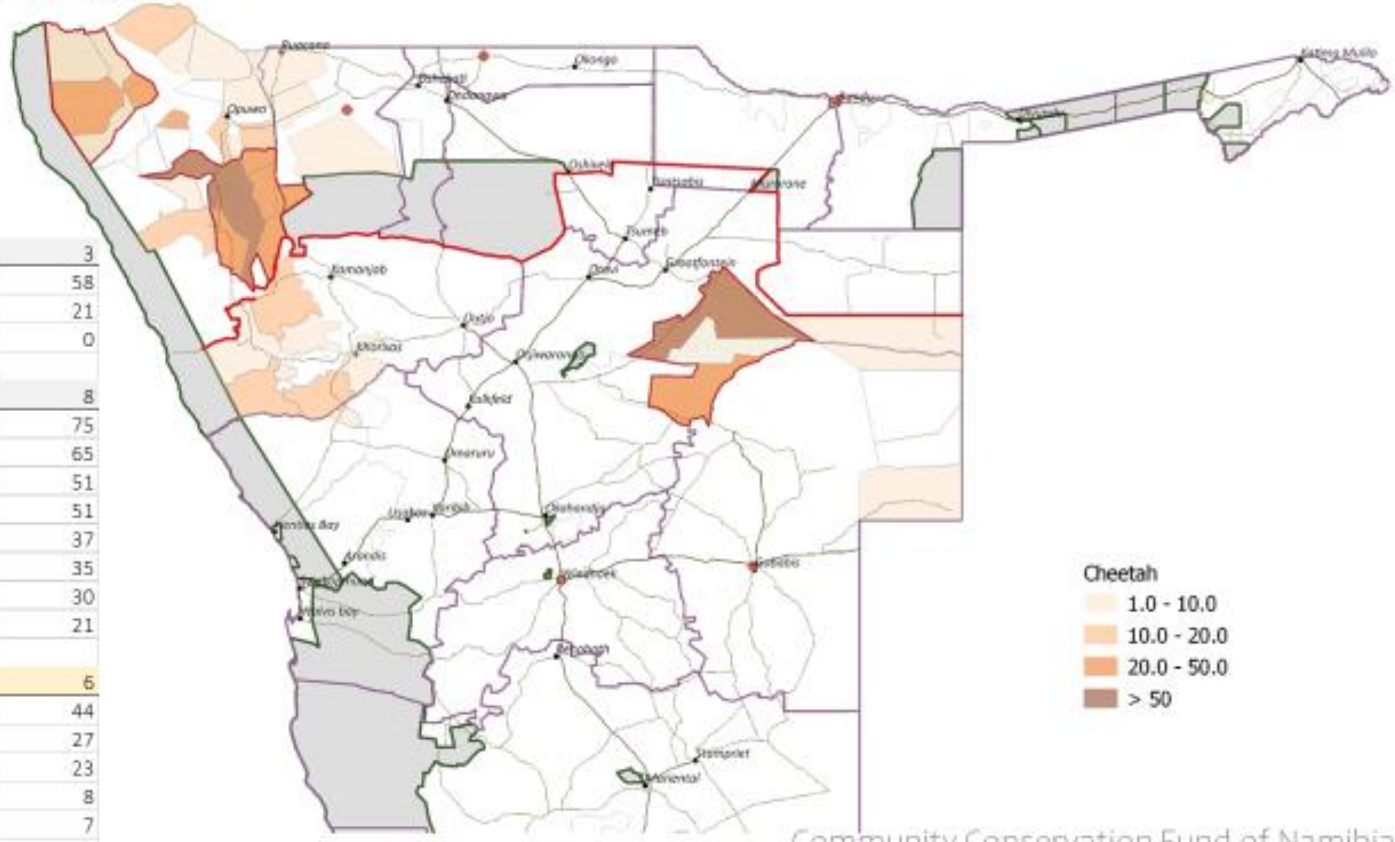
Hyaena



Hyaena-1	7
Ehi-Rovipuka	92
#Khoadi Hoas	74
Orupupa	74
Okangundumba	53
Omatendeka	45
Otuzemba	36
Ozondundu	34
Hyaena-2	4
Sheya Shuushona	83
Uukwaluudhi	67
Uukolonkadhi-Ruacana	38
Ombombo	38

Cheetah

Cheetah-1	3
Otjituuo	58
African Wild Dog	21
Okamatapati	0
Cheetah-2	8
Ozondundu	75
Omatendeka	65
Okangundumba	51
Ombujokanguindi	51
Orupupa	37
Anabeb	35
Otuzemba	30
Ehi-Rovipuka	21
Cheetah-3	6
Ongongo	44
Etanga	27
Orupembe	23
Marienfluss	8
Otjitanda	7
Sanitatas	5

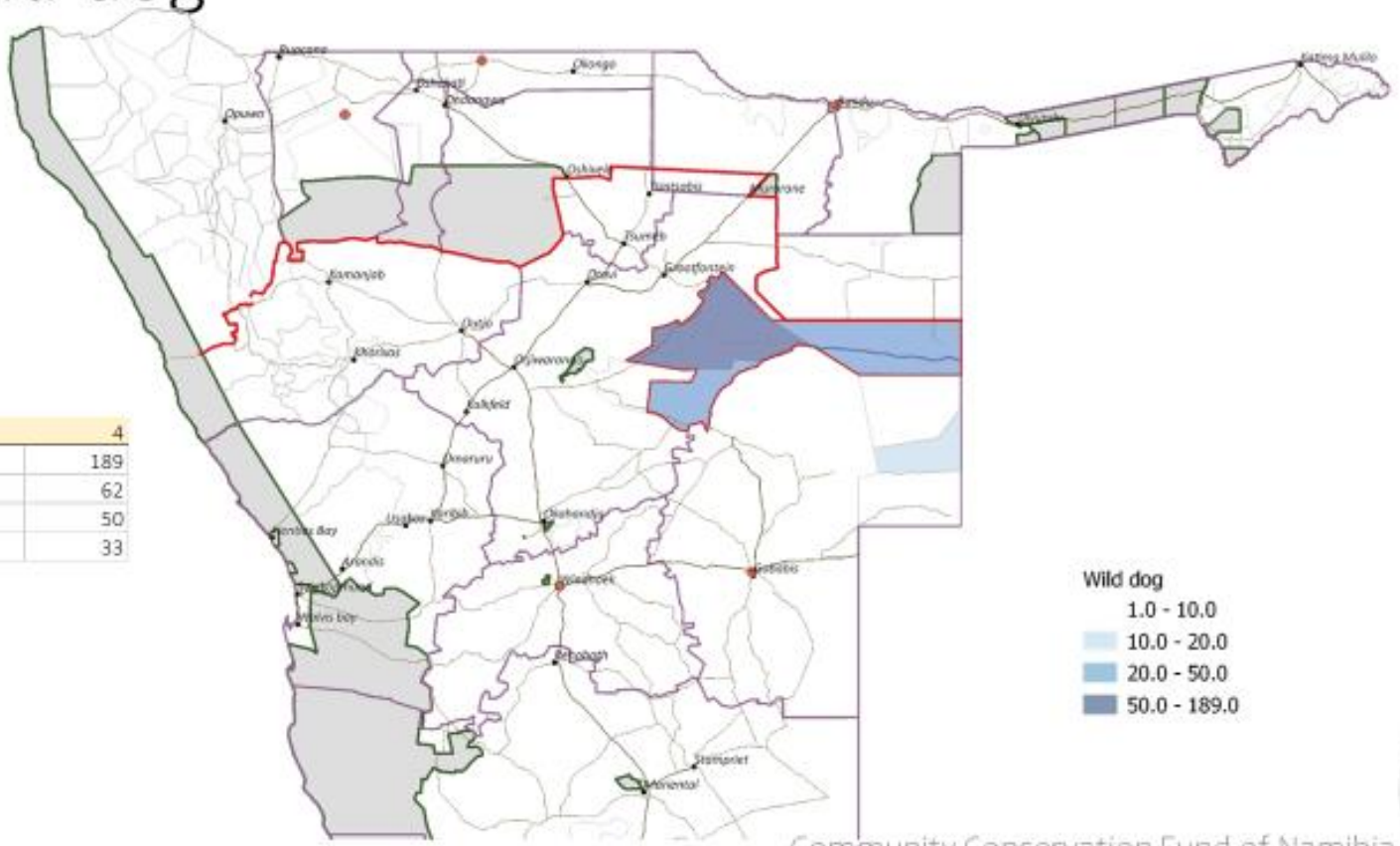


Community Conservation Fund of Namibia

CCFN

Wild dog

Wild dog	4
Otjituuo	189
Okamatapati	62
African Wild Dog	50
Ondjou	33



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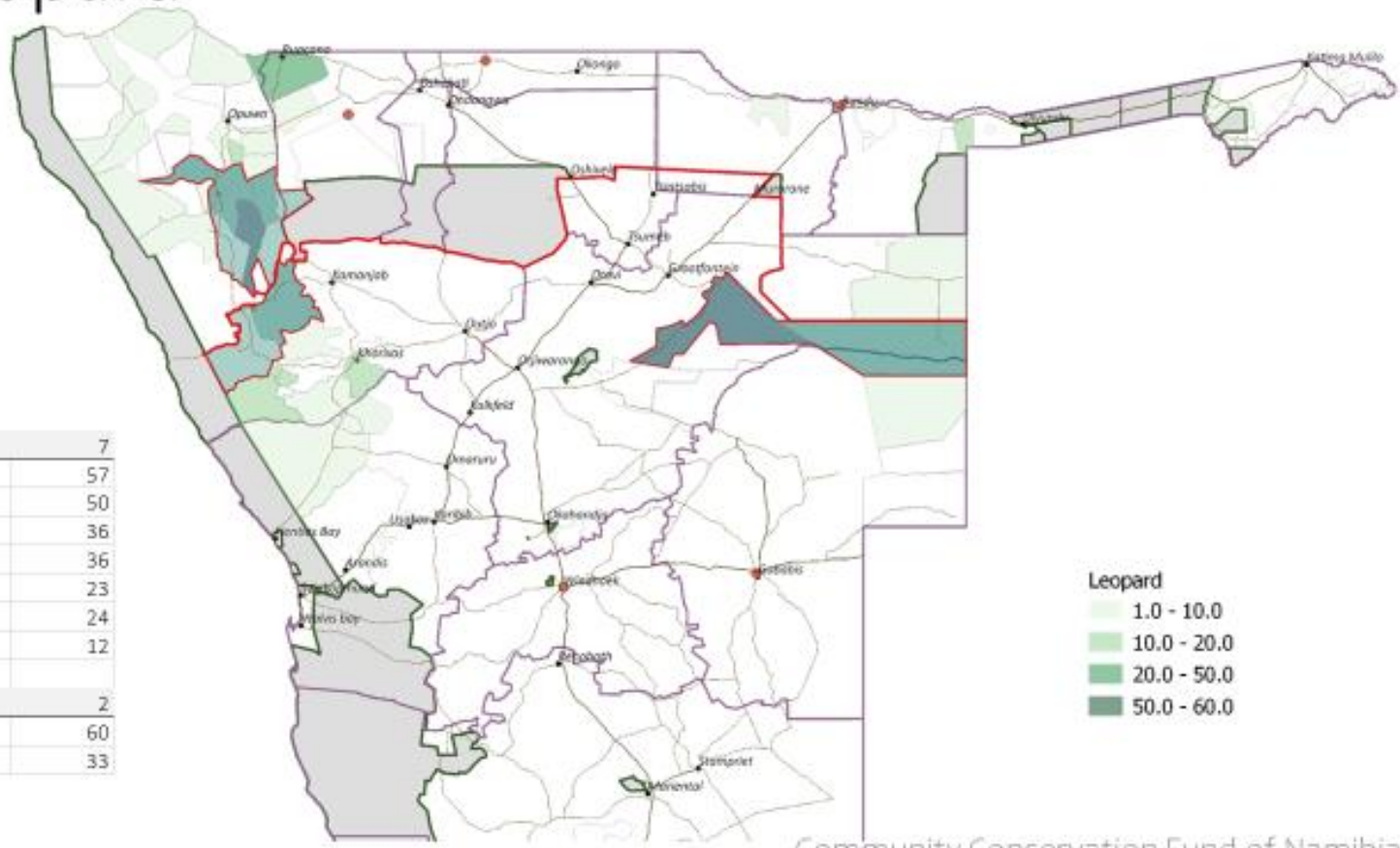
CCFN

Leopard

Leopard-1	7
Omatendeka	57
Ozondundu	50
Ombujokanguindi	36
Orupupa	36
Okangundumba	23
#Khoadi Hoas	24
Torra	12
Leopard-2	2
Otjituuo	60
Ondjou	33



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CCFN