



Global Biodiversity Information Facility (GBIF) Awareness Workshop for Preservation and Use of Hunting Records Project

University of Botswana Library Auditorium, 10 May 2017, 0900 h. – 1200 h.

Information collected by the Botswana Wildlife Management Association between 1996 and 2014 about hunting quotas, concession location, and trophy measurements, as well as biological specimens, forms an important piece of the knowledge legacy of legal hunting in Botswana.

Following the 2014 moratorium on hunting in Botswana, recognising the valuable insights to wildlife research that these materials can provide, the Association is working with the University of Botswana's Okavango Research Institute to catalogue, transfer and preserve the materials in ORI's library and archival collections in Maun, and to capture the data in a widely accessible online resource, the Global Biodiversity Information Facility. The Botswana Department of Wildlife and National Parks is providing guidance and advice to the project.

This workshop shares the experience of the project team and welcomes input from potential users of the collection and its data.

Agenda

Time	Activity	Presenter
0900	Introduction to the workshop	Ms Monica Morrison, PI
0905	Prayer	Mr Masego Dhiwayo, ORI
0910	Welcome remarks	Mr Edwin Qobose, Director, Library Services, UB
0920	Introduction to the project	Dr Gaseitsiwe Masunga, ORI
0940	The records and data of the BWMA	Mrs Debbie Peake, Botswana Wildlife Management Association
1000	Using hunting records data to support wildlife management	Dr Lucas Rutina, ORI, Mrs Debbie Peake, BWMA
1030	Tea break	
1050	Making hunting records and data permanently available	Ms Olebgeng Phaladze, Ms Mosepele Boiditswe, ORI Library and Mr Masego Dhiwayo, ORI GIS Lab
1115	Discussion	Led by Mrs Debbie Peake and Dr Lucas Rutina
1150	Closing	Mrs Babakisi Fidzani, Deputy Director, UB Library
1200	Prayer	Dr Gaseitsiwe Masunga, ORI



Gaborone Awareness Workshop for GBIF Hunting Records Project

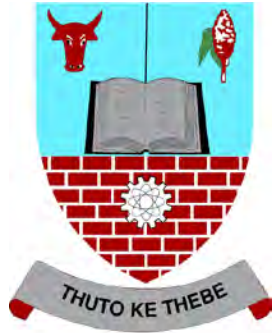


A second awareness workshop for the Global Biodiversity Information Facility (GBIF) Biodiversity Information for Development (BID) project to rescue records and data of the Botswana Wildlife Management Association (BWMA) was held at the University of Botswana's Library auditorium in Gaborone on Wednesday, May 10th, 2017. A cross-section of stakeholders from government, NGOs, tertiary education and the private sector heard about the project's progress with preservation of records and mobilisation of trophy hunting data at the Okavango Research Institute.

Presentations by the project team members stimulated an intense discussion about biodiversity data sharing policies. Referring to the willingness of the BWMA to make its records freely available, representatives of the National Archives, University of Botswana library, the Kalahari Conservation Society, and researchers called for government to follow this example. The issue of cost recovery was raised by government officials. Information sharing systems, such as the Botswana Environmental Information System (EIS), are costly to maintain, so charging users a fee for their use might support them. DWNP officials present explained that, under Botswana's participation in the Convention on Biological Diversity (CBD), the National Biological Diversity Authority (NBDA) is meant to be a platform for sharing of biodiversity data.

Many at the meeting called for further use of the data mobilised by the project through combining it with Problem Animal Control, illegal harvesting, and aerial survey data, as well as legacy records from previous projects and data from independent researchers.

The [Data Rescue for the Records of the Botswana Wildlife Management Association](#) project runs until the end of July 2017. Find out more about the GBIF's BID programme [here](#).



UNIVERSITY
of
BOTSWANA

Okavango Research Institute

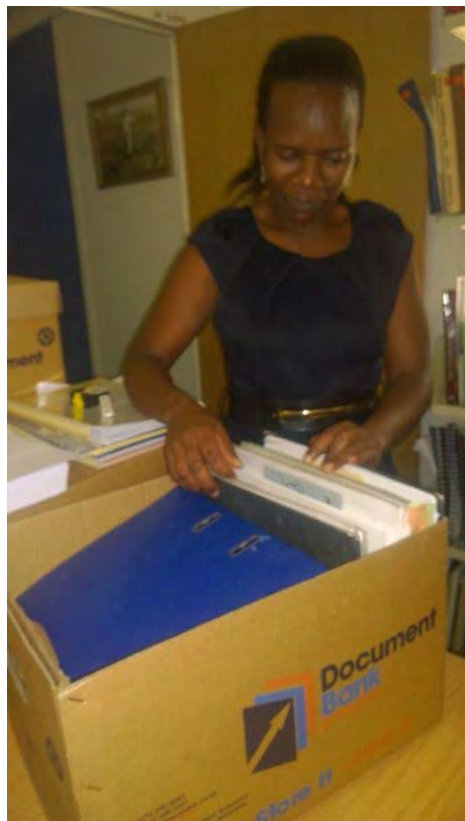
Processing and Publishing of Hunting Records in the Integrated Publishing Toolkit

Mosepele Boiditswe, Olebogeng Phaladze & Masego Dhliwayo
GBIF Awareness Workshop for Preservation and Use of Hunting
Records Project
Gaborone Botswana
10 May 2017





- Records from the Botswana Wildlife Management Association (BWMA)
- To ensure continued access to legacy biodiversity data related to animals formerly hunted in Botswana
- Supported by the Global Biodiversity Information Facility (GBIF)

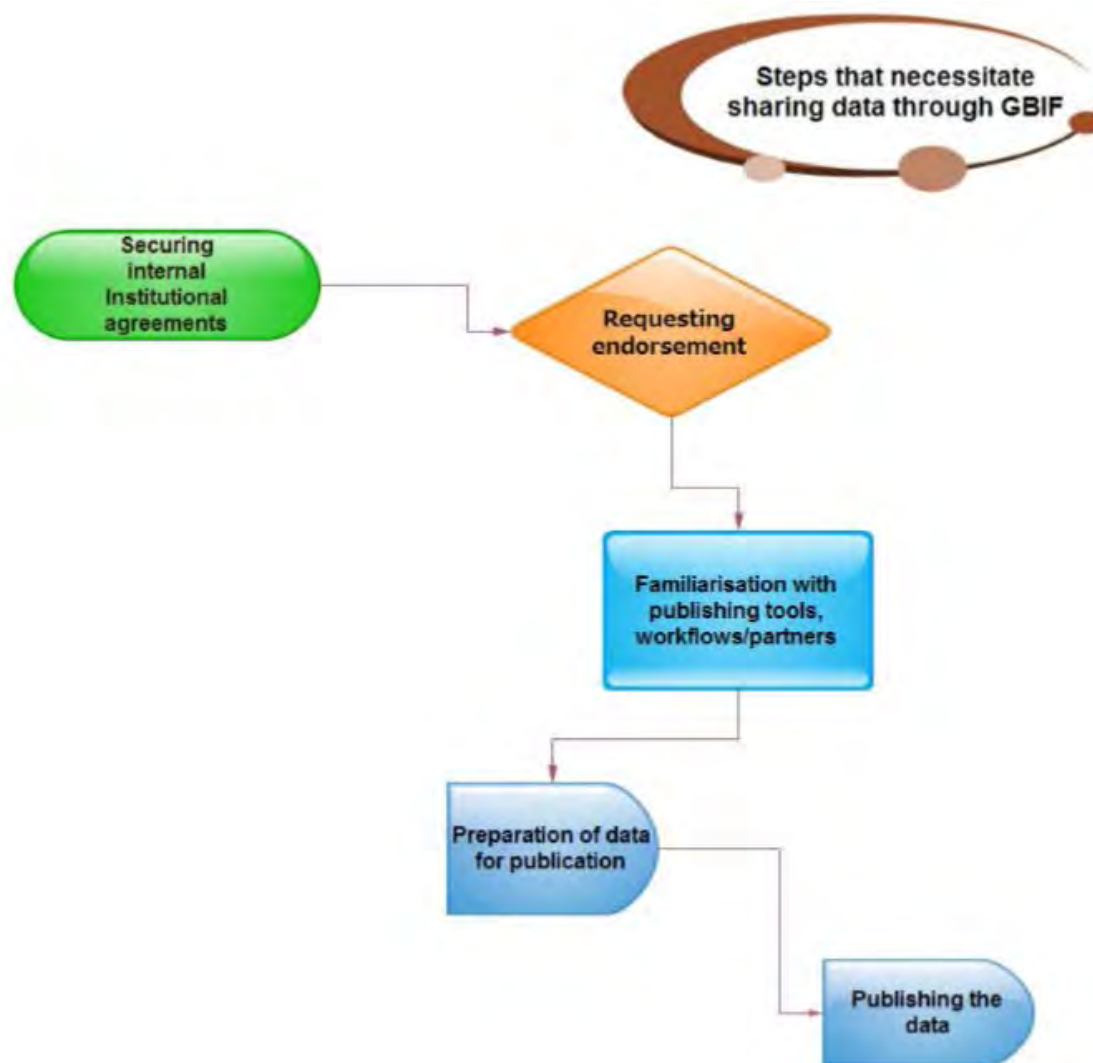


- Reports
- Excel datasets
- Correspondence
- Trophy descriptions
- Biological specimens

Inventoried and then moved to ORI Library



The library team produced an inventory & detailed archival description of the records





The GBIF Integrated data Publishing Toolkit (IPT)

is a free open source software tool written in Java that is used to publish and share biodiversity datasets through the GBIF network.

<http://www.gbif.org/ipt>

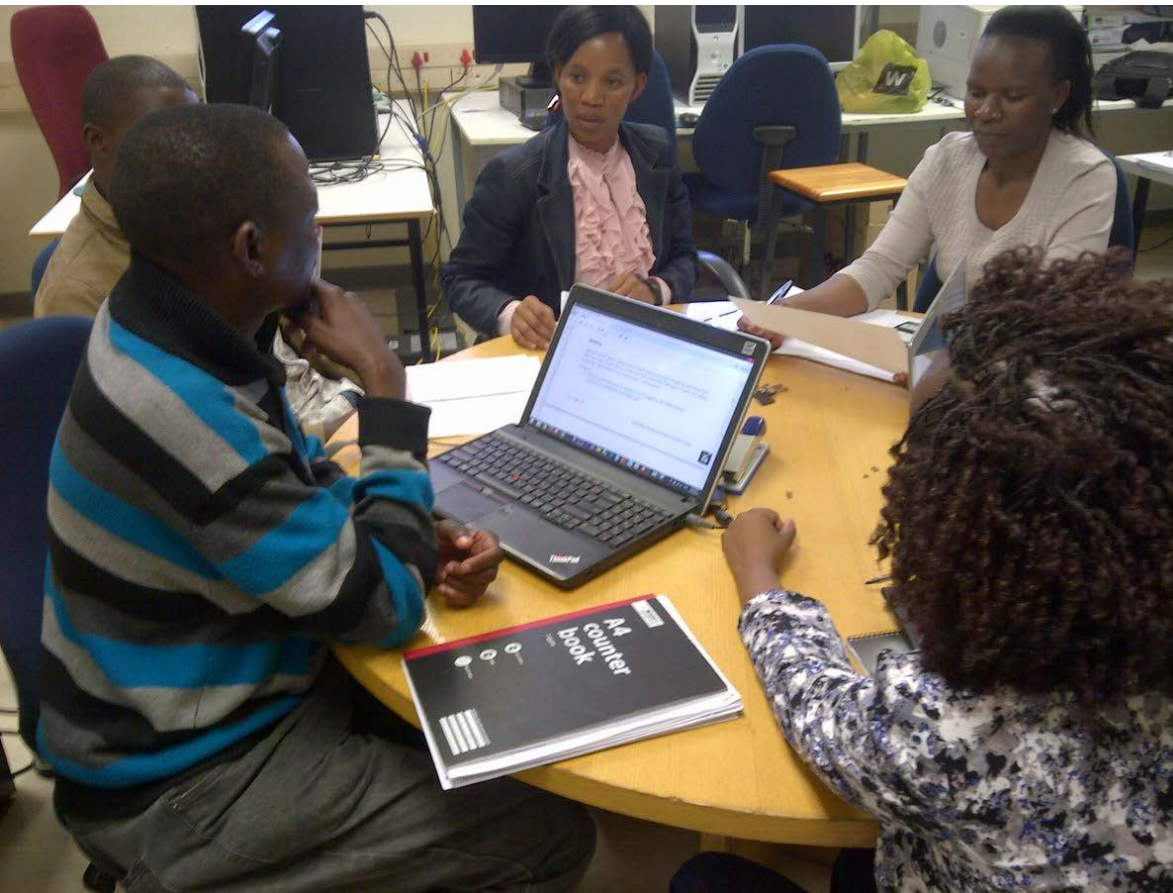
IPT User Manual:

<https://github.com/gbif/ipt/wiki/IPT2ManualNotes.wiki>

Robertson T, Döring M, Guralnick R, Bloom D, Wicczorek J, Braak K, Otegui J, Russell L, Desmet P (2014). The GBIF integrated publishing toolkit: Facilitating the efficient publishing of biodiversity data on the internet. PLoS One 9(8). [doi:10.1371/journal.pone.0102623](https://doi.org/10.1371/journal.pone.0102623)



- The Global Biodiversity Information Facility Integrated Publishing Toolkit -GBIF IPT
- Free, open source software
- For publishing and sharing biodiversity data



- Data already recorded in Excel documents transferred to Okavango Research Centre's GIS laboratory server
- Data hosting at ORI is a significant commitment
 - consistent online presence
 - stable and secure infrastructure
 - helpdesk support to users
 - accuracy of data

Darwin Core standard

Darwin Core – a vocabulary of terms



Wieczorek J, Bloom D, Guralnick R, Blum S, Döring M, De Giovanni R, Robertson T, and Viegals D (2012) Darwin Core: An Evolving Community-Developed Biodiversity Data Standard. *PLoS ONE* 7(1): e29715. (doi:10.1371/journal.pone.0029715)



Facilitate data sharing through:

- well defined standard core vocabulary
- flexible framework to maximize reusability
- Content based on taxa and occurrence in nature
- extended terms for sharing additional data

Metadata and mapping

D	E	F	H	I	J	K	L	M	N	O	P	Q
		CITES	Rt tusk				Lt tusk				TOTAL	TOTAL
Lic #	Area:	ID NO.	weight:	Length:	Circ:	T-Lip:	weight:	Length:	Circ:	T-Lip:	wt. Kgs	Wt. lbs
12063A	NG41	BW 01/02	25.0	70.0	17.5	44.4	24.5	66.5	17.5	40.3	49.5	109.1
12001A	NG47	BW 03/04	14.0	47.0	16.5	22.5	17.0	65.0	16.5	43.2	31.0	68.4
12051A	NG43	BW 05/06	28.5	68.3	18.0	36.2	30.5	75.5	18.0	46.2	59.0	130.1
12081A	NG30	BW 07/08	39.0	69.1	20.6	41.0	36.0	67.5	22.3	41.0	75.0	165.4
12077A	NG32	BW 09/10	26.0	71.0	18.4	45.0	24.5	65.5	18.4	39.6	50.5	111.4
12122A	NG 34	BW 11/12	22.0	62.0	18.0	37.0	22.5	58.2	18.0	36.2	44.5	98.1
12070A	NG34	BW 13/14	25.5	60.3	16.4	34.0	27.0	63.4	17.0	36.2	52.5	115.8
12097A	NG47	BW 15/16	30.5	65.6	17.5	42.0	29.0	67.0	18.0	42.0	59.5	131.2
12065A	NG42	BW 17/18	20.5	62.0	18.0	38.0	16.0	46.4	18.0	23.0	36.5	80.5
12234A	NG4	BW 19/20	21.0	60.5	17.0	32.0	20.0	60.0	17.0	30.0	41.0	90.4
12162A	NG47	BW 21/22	16.0	60.5	15.0	35.5	16.0	59.0	15.6	34.0	32.0	70.6
12005A	NG20	BW 23/24	29.5	71.0	17.5	45.0	24.5	55.0	17.5	31.0	54.0	119.1
12109A	NG20	BW 25/26	18.0	63.5	15.0	37.5	18.5	63.0	15.0	35.0	36.5	80.5
12137A	NG43	BW 27/28	19.0	59.0	15.5	31.0	20.0	64.0	15.5	34.0	39.0	86.0
12042A	NG18	BW 29/30	34.5	70.0	18.4	42.0	34.0	70.0	18.0	44.0	68.5	151.0
12038A	NG18	BW 31/32	30.0	62.5	19.3	35.2	33.0	69.2	19.5	40.0	63.0	138.9
12041A	NG18	BW 33/34	36.0	73.5	19.5	46.6	33.0	68.2	19.0	39.4	69.0	152.1
12114	NG34	BW 35/36	20.0	63.0	16.0	36.0	19.0	66.4	17.0	40.0	39.0	86.0
12175A	NG32	BW 37/38	27.5	67.5	19.5	38.6	27.0	69.0	19.0	40.0	54.5	120.2
12086A	NG29	BW 39/40	23.0	67.0	17.0	39.5	23.5	66.5	17.0	39.4	46.5	102.5
12085A	NG29	BW 41/42	26.0	68.1	18.0	41.6	27.5	74.5	17.4	46.0	53.5	118.0
12087A	NG29	BW 43/44	23.5	65.2	18.1	36.2	24.0	68.1	18.2	40.2	47.5	104.7
12066A	NG42	BW 45/46	29.0	66.2	18.5	34.0	29.5	57.0	19.5	27.5	58.5	129.0
12180A	NG42	BW 47/48	18.5	56.0	16.0	29.4	19.5	58.0	16.0	31.2	38.0	83.8
12185A	NG41	BW 49/50	27.0	62.0	20.0	33.0	29.0	64.0	20.5	35.0	56.0	123.5
12184A	NG41	BW 51/52	30.0	60.5	19.6	30.5	26.5	70.0	18.5	40.5	56.5	124.6
12301A	NG34	BW 53/54	19.0	66.3	15.6	40.5	19.5	67.7	16.0	41.2	38.5	84.9
1701A	CT2	BW 55/56	23.5	66.0	17.6	41.0	24.5	64.6	18.0	38.0	48.0	105.8
1622A	CT2	BW 57/58	22.0	55.0	17.2	28.1	26.0	63.5	17.4	37.2	48.0	105.8
12355A	NG41	BW 59/60	33.5	66.2	18.0	37.6	29.0	79.0	18.0	52.0	62.5	137.8
12356A	NG41	BW 61/62	24.0	60.6	17.0	35.6	24.0	64.1	16.5	40.4	48.0	105.8
12655A	NG41	BW 63/64	21.5	62.4	16.5	35.3	23.0	63.3	17.0	33.5	44.5	98.1

Original spreadsheet from Debbie Peake:

- license
- area
- CITES ID
- tusk weight
- tusk length
- circumference
- tip to lip
- weight

Metadata and mapping

A	B	C	D	E
occurrenceID	dynamicProperties	informationWithheld	basisOfRecord	ScientificName
BWMA-2002-001	country of hunter	hunters names withheld	material sample	loxodonta africana
BWMA-2002-002	country of hunter	hunters names withheld	material sample	loxodonta africana
BWMA-2002-003	country of hunter	hunters names withheld	material sample	loxodonta africana
BWMA-2002-004	country of hunter	hunters names withheld	material sample	loxodonta africana
BWMA-2002-005	country of hunter	hunters names withheld	material sample	loxodonta africana
BWMA-2002-006	country of hunter	hunters names withheld	material sample	loxodonta africana
BWMA-2002-008	country of hunter	hunters names withheld	material sample	loxodonta africana
BWMA-2002-009	country of hunter	hunters names withheld	material sample	loxodonta africana
BWMA-2002-010	country of hunter	hunters names withheld	material sample	loxodonta africana
BWMA-2002-011	country of hunter	hunters names withheld	material sample	loxodonta africana
BWMA-2002-012	country of hunter	hunters names withheld	material sample	loxodonta africana
BWMA-2002-013	country of hunter	hunters names withheld	material sample	loxodonta africana
BWMA-2002-014	country of hunter	hunters names withheld	material sample	loxodonta africana
BWMA-2002-015	country of hunter	hunters names withheld	material sample	loxodonta africana
BWMA-2002-016	country of hunter	hunters names withheld	material sample	loxodonta africana
BWMA-2002-017	country of hunter	hunters names withheld	material sample	loxodonta africana
BWMA-2002-018	country of hunter	hunters names withheld	material sample	loxodonta africana
BWMA-2002-019	country of hunter	hunters names withheld	material sample	loxodonta africana
BWMA-2002-020	country of hunter	hunters names withheld	material sample	loxodonta africana
BWMA-2002-021	country of hunter	hunters names withheld	material sample	loxodonta africana
BWMA-2002-022	country of hunter	hunters names withheld	material sample	loxodonta africana
BWMA-2002-023	country of hunter	hunters names withheld	material sample	loxodonta africana
BWMA-2002-024	country of hunter	hunters names withheld	material sample	loxodonta africana
BWMA-2002-025	country of hunter	hunters names withheld	material sample	loxodonta africana
BWMA-2002-026	country of hunter	hunters names withheld	material sample	loxodonta africana
BWMA-2002-027	country of hunter	hunters names withheld	material sample	loxodonta africana
BWMA-2002-028	country of hunter	hunters names withheld	material sample	loxodonta africana
BWMA-2002-029	country of hunter	hunters names withheld	material sample	loxodonta africana
BWMA-2002-030	country of hunter	hunters names withheld	material sample	loxodonta africana
BWMA-2002-031	country of hunter	hunters names withheld	material sample	loxodonta africana
BWMA-2002-032	country of hunter	hunters names withheld	material sample	loxodonta africana
BWMA-2002-033	country of hunter	hunters names withheld	material sample	loxodonta africana
BWMA-2002-034	country of hunter	hunters names withheld	material sample	loxodonta africana
BWMA-2002-036	country of hunter	hunters names withheld	material sample	loxodonta africana
BWMA-2002-037	country of hunter	hunters names withheld	material sample	loxodonta africana

New spreadsheet with data mapped

- occurrence ID
- country of hunter
- hunter's name withheld
- basis of record
- scientific name
- kingdom
- family
- genus
- higher classification
- ... 56 Darwin core terms



GBIF INTEGRATED PUBLISHING TOOLKIT (IPT)
free and open access to biodiversity data

Logged in as osuwe@ori.ub.bw [Account](#) [Logout](#) [ENGLISH](#)

TEST MODE

[Home](#) [Manage Resources](#) [Administration](#) [About](#)

This resource has no publishing organisation meaning that it cannot be registered with GBIF. Please contact your IPT administrator for help associating the correct publishing organisation with this IPT.

Resource Title test_data

Section
[Basic Metadata](#)
[Geographic Coverage](#)

GBIF INTEGRATED PUBLISHING TOOLKIT (IPT)
free and open access to biodiversity data

Logged in as osuwe@ori.ub.bw [Account](#) [Logout](#) [ENGLISH](#)

TEST MODE

[Home](#) [Manage Resources](#) [About](#)

Resources you have rights to manage

Name	Organisation	Type	Subtype	Records	Last modified	Last publication	Next publication	Visibility	Author
test_data	Not registered	Occurrence	Specimen	0	2017-03-01	Not published	—	Private	Olebogeng Suwe

Showing 1 to 1 of 1

Filter:

◀ previous next ▶

Create New Resource

You can create a new blank resource, upload an existing resource saved as a zipped Darwin Core archive, or upload an existing IPT resource using its zipped resource configuration folder. Please refer to the User Manual for more specific instructions. A short name is required.

Shortname

Type

Optional archived resource to load: No file selected.

The team is working on **populating the metadata template** with all the required data from the Excel spreadsheets



- The data can provide insights to wildlife research
- rich context for scientific and economic studies of natural resources management in northern Botswana
- From tusk length, weight - can estimate age, compare data from one concession to another, enquire why there are differences





USING HUNTING RECORDS TO SUPPORT WILDLIFE MANAGEMENT

LUCAS RUTINA

OKAVANGO RESEARCH INSTITUTE

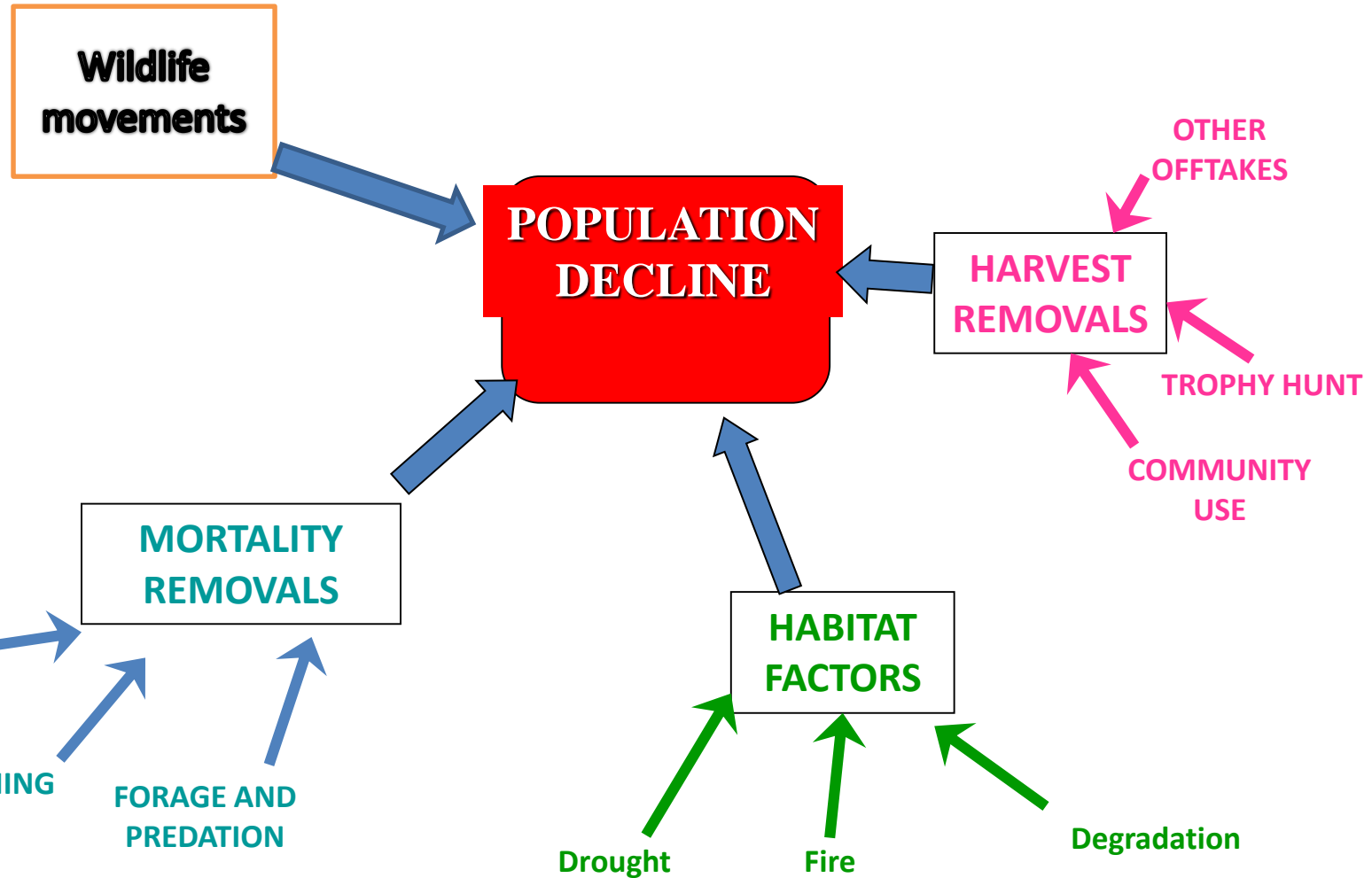
DEBBIE PEAKE

BOTSWANA WILDLIFE MANAGEMENT
ASSOCIATION

BACKGROUND

- ❖ What is wildlife management?
 - ❖ Management of wildlife populations and their habitat
 - ❖ Include interaction (intra and inter)
 - ❖ In agro-ecosystems

- ❖ What are the goals of wildlife management?
 - ❖ Population increasing
 - ❖ Population stable
 - ❖ Population decreasing
 - ❖ Leave it alone and keep an eye

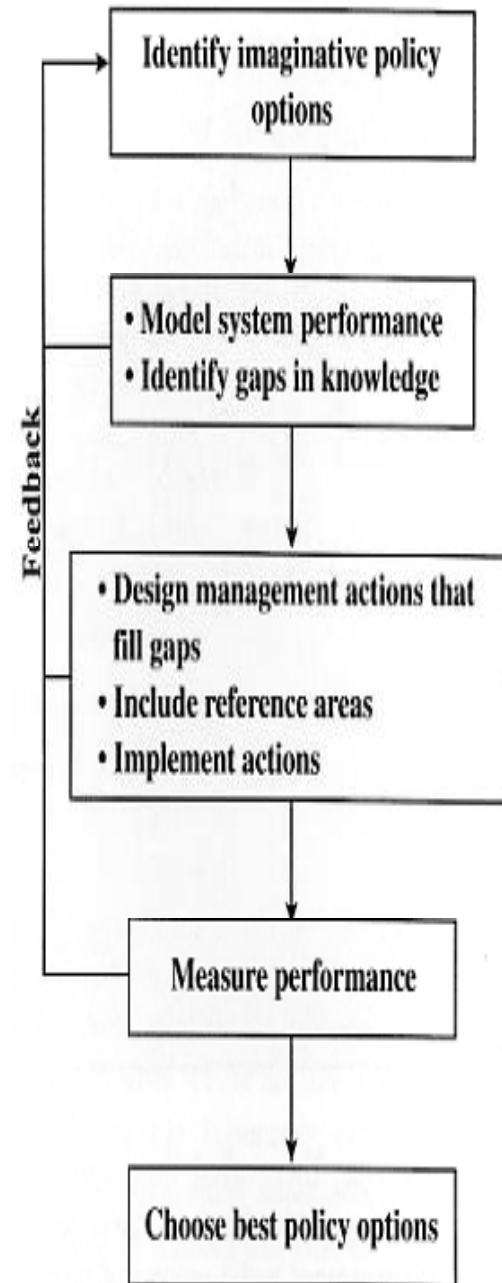


How we learn

- Tradition (“local knowledge”)
- Trial-and-error (“college of hard knocks”, “on-the-job-training”)
- Scientific experiment (objective, explicit, replicable, but often reductionist)
- Adaptive management:
Combine advantages of trial-and-error and scientific learning

Adaptive management

- The process of treating management as an experiment



Resilience and Resistance

- In wildlife management (and ES generally) we often assume systems are linear and changes incremental, but often not the case
- Sudden shifts can alter ecosystems, as well as human understanding and the institutions that carry out management
- Ecosystems properties, :
 - **Resilience:** The capacity of a system to absorb disturbance and still retain its basic function and structure
 - **Resistance:** the capacity of the ecosystem to resist to change following disturbance

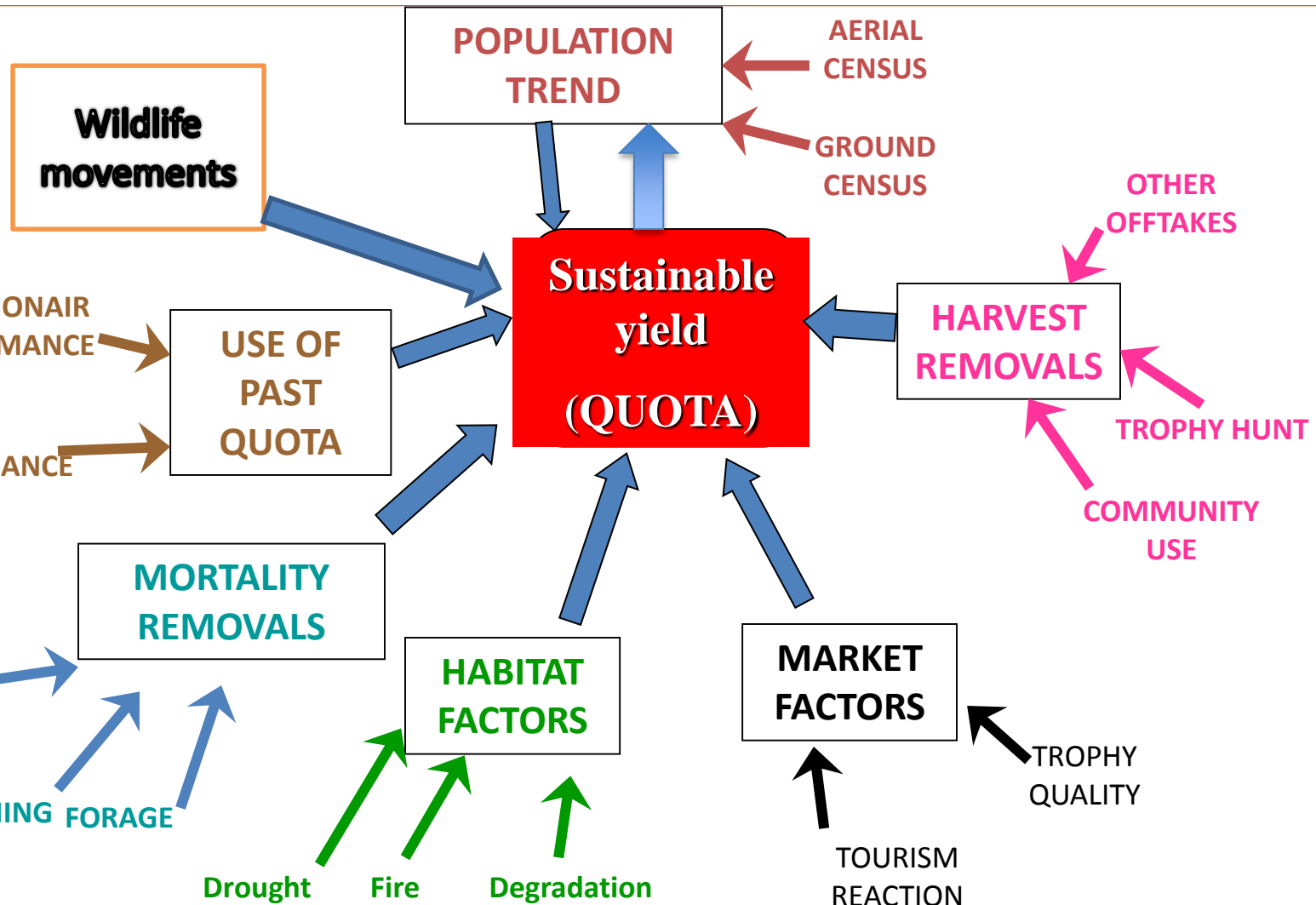
- Social-ecological systems can exist in more than one kind of stable state
 - If system changes too much it can cross a threshold and begin behaving in new and unexpected ways (it has undergone a “regime shift”)

Types of complexity

- Environmental variation
- Ecological variation in populations
- Synergistic effects (e.g., multiple stresses like drought and disease)
- Cumulative effects

Resilience and ecological systems

- Ecological and human systems are dynamic
 - Constantly confronted with “surprise” events
 - What is optimal one year, is not the next
 - Structure and function of ecosystems change over time
- Not just *amount* of knowledge that is important (*e.g.*, species, ecosystems) but also *kind* of knowledge
 - How we perceive connections, consider uncertainty, consider resilience



GBIF HUNTING RECORDS PROJECT GABORONE WORKSHOP ATTENDANCE LIST

TITLE	FIRST NAME	LAST NAME	TELEPHONE	CELLPHONE	ORGANISATION	EMAIL ADDRESS
Dr.	Jaap	Artzen	3903401	72141259	CAR	jarntzen@car.org.bw
Ms.	Mpho	Ashworth		77582117	Radio Botswana News	mpho@bluezebracreative.com
Ms.	Mosepele	Boiditswe	6817241		UB/ORI	mboiditswe@ac.ub.bw
Ms.	Molly	Botlhole	3554509	74116080	UB	bothole@mopipi.ub.bw
Mr.	Kwashirai	Chigodora	3671325	71541151	Statistics Botswana	kchigodora@ststsbots.org.bw
Mr.	Leonard	Dikobe	3974557	71810710	Kalahari Conservation Society	leonarddikobe@kcs.org.bw
Mr.	Kakanyo Fani	Dintwa	3671324	71699261	Statistics Botswana	fdintwa@gmail.com
Mr.	Phetho M.	Diphoko		74809670	UB	marvindiphoko@gmail.com
Mr.	Matthews	Direnyane	3996569	73269102	DWNP	mdirenyane@gov.bw
Dr.	Marks	Ditlhogo	3552665	71306673	UB	ditlhogo@mopipi.ub.bw
Mr.	Sagoh	Djete	3610040/3610036	72477965	European Union	Sagoh.DJETE@eeas.europa.eu
Mrs.	B.T.	Fidzani		75492658	UB, Library	fidzanib@mopipi.ub.bw
Dr.	Sam K.	Kaunda	3555028	71756997	UB/KCS	kaundakk@mopipi.ub.bw
Mr.	Keineetse D.M	Keineetse		72242001	Freelance Journalist	kkeineetse@gmail.com
Ms.	Obusitswe Amo	Keitsile	3996515	72617316	DWNP	oakeitsile@gov.bw
Mr.	Dikeme	Kgaodi	3902050	71717321	DEA	dkgaodi@gov.bw
Mr.	Ogopoleng	Kgomoethata	3653614	76878762	Daily news (BOPA)	okgomoethata@gmail.com
Mr.	Motlhatlosi	Kgosintwa		72444664	Kalahari Conservation Society	mkgosintwa@kcs.org.bw
Mr.	Goweditswe	Kome	3653640	71278462	Daily News (BOPA)	gkome@gov.bw
Mr.	Abednico	Macheme	3971405	71578530	DWNP	amacheme@gov.bw
Ms.	Jennifer K. M.	Makgopa		71372424	UB	jenniferkatsom@gmail.com
Dr.	Gaseitsiwe	Masunga	6817225	73807357	UB/ORI	gsmasunga@ub.ac.bw
Ms.	Keddy	Moleofhi	3190540	76642841	Birdlife Botswana	education@birdlifebotswana.org.bw
Ms.	Monica	Morrison	6862825	71757223	Moedi wa Kitso	monicamorrison@gmail.com
Ms.	Debbie	Peake	6862671	71312148	BWMA	debbie@mochaba.net
Ms.	Olebogeng	Phaladze	6817241	7353883	UB/ORI	osuwe@@ac.ub.bw
Mr.	Seitshiro	Pule	3552756	72878956	UB	pseitshiro@yahoo.com
Mr	Edwin	Qobose	3555049		UN/Library	QOBOSE@mopipi.ub.bw
Dr.	Lucas	Rutina	6817239	73381217	UB/ORI	lrutina@ori.ub.bw
Dr.	Peter	Sebina	3552640	72172548	UB/ Faculty of Humanities	sebinapm@mopipi.ub.bw
Mr.	Thatayaone	Segaetsho	3555153	73427639	UB-Library	segaetsho@mopipi.ub.bw
Mr.	Gabotsewe B.	Sekgororoane	3552588	72425882	UB	sekgorob@mopipi.ub.bw
Ms.	Kelebogile	Selala	3996515	71913417	DWNP	lalahditshego@gmail.com
Ms.	Iwani	Simon	3911820	71635942	Botswana National Archives	iysimon@gov.bw
Mr.	Botilo	Tshimologo	3190540	76805650	Birdlife Botswana	bttshimologo@gmail.com















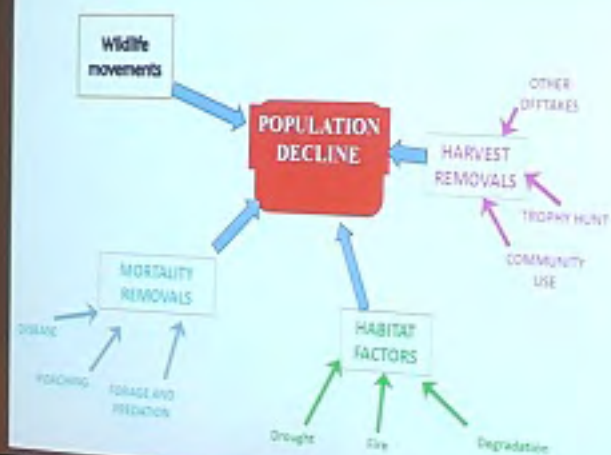




Preparing to share the data













Processing Activities

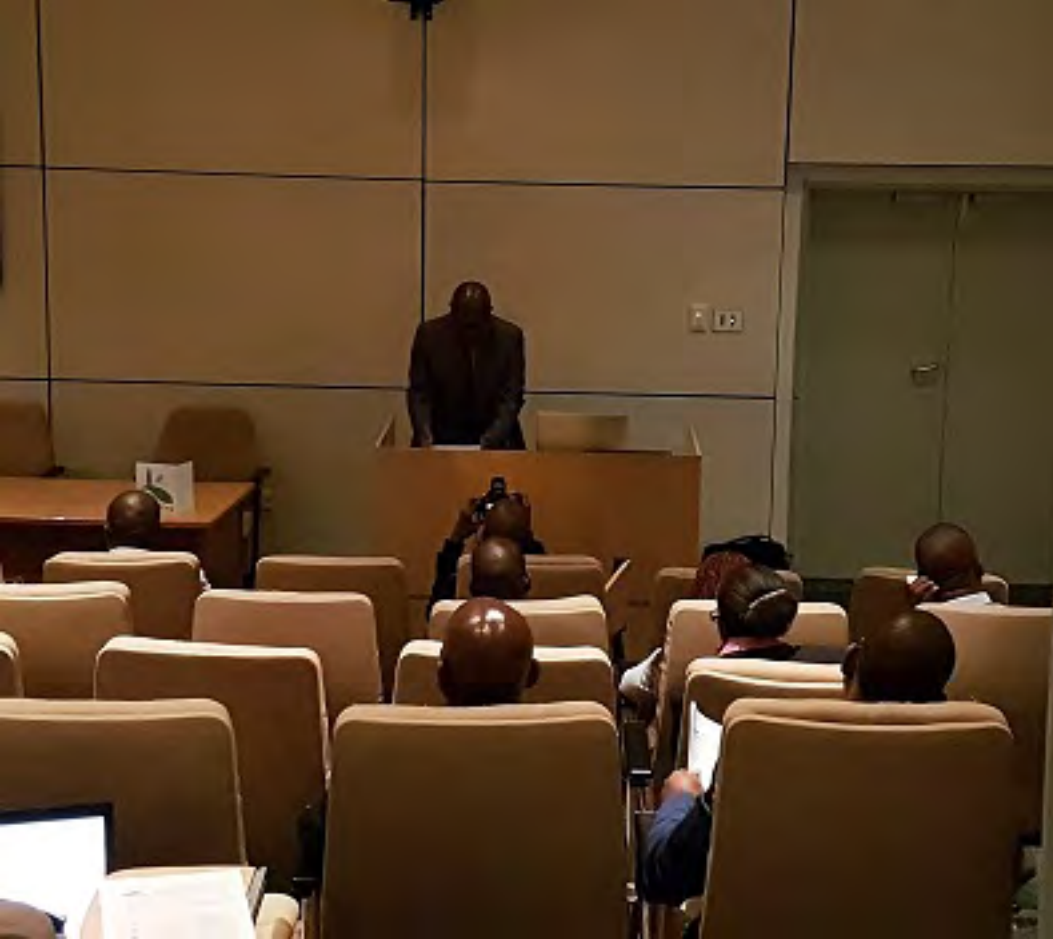


The library team produced an inventory & detailed archival description of the records













Thank you



Thank you



