SADC Regional Programme for Rhino Conservation

WILDxl

Local Database Version 1.0

User Manual

CESVI
cooperaziene e sviluppo

SOUTHERN AFRICAN DEVELOPMENT COMMUNITY
TOWARDS A COMMON FUTURE

IUCN
The World Conservation Union

WWF

SPECIES SURVIVAL COMMISSION
AFRICAN RHINO SPECIALIST GROUP

PUBLICATION CREDITS:

ABOUT the SADC Regional Programme for Rhino Conservation

The Programme is funded by the Italian Ministry of Foreign Affairs, Directorate General for Development Cooperation (Project AID 5064).

The Programme is contracted to CESVI and implemented through a regional consortium which comprises:
- The Secretariat of the Southern Africa Development Community (SADC)
- IUCN-ROSA (The World Conservation Union - Regional Office for Southern Africa)
- The IUCN African Rhino Specialist Group
- WWF-SARPO - (World Wide Fund for Nature - Southern Africa Regional Programme Office)
- CESVI (Cooperazione e Sviluppo)

The *Programme goal* is to contribute to maintain viable and well distributed metapopulations of Southern African rhino taxa as flagship species for biodiversity conservation within the SADC region.

The *Programme objective* is to implement a pragmatic regional rhino strategy within the SADC region following the acquisition of sound information on, firstly, the constraints and opportunities for rhino conservation within each range state and secondly, the constraints and opportunities for rhino metapopulation management at the regional level.

DISCLAIMER

The information, opinions and materials presented herewith do not necessarily reflect the official views of any of the organisations involved, including the Italian Ministry of Foreign Affairs, SADC, CESVI, IUCN-ROSA, WWF-SARPO, AfRSG or governments of SADC member countries.

CONTACT DETAILS FOR THE PROGRAMME:

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Introduction

WILDXL is an Excel package that extends the statistical reporting capabilities of the WILDb database application. It extracts data automatically from WILDb and performs numerous population level statistical calculations on it – primarily in the areas of calving rates, population distribution, and death rates.

The WILDb Local Database is a Microsoft Access Database Application designed primarily to assist with rhino monitoring at 'subpopulation' level in Southern Africa.

WILDb and WILDXL were developed for use by National Parks and Conservancies by WWF SARPO as part of the SADC Regional Programme for Rhino Conservation, funded by the Italian Ministry of Foreign Affairs, Directorate General for Development Cooperation.

How to read this manual

WILDXL is made up of numerous calculations and tables. In order to fully understand how these calculations work and what they are based on, this manual defines each one in terms of its component fields and formulae. It provides hypertext links (underlined and highlighted in blue) to those components so that you can trace any given formula back to its raw data parts.

Refer to The Data Pages for a description of the raw fields as they are extracted from WILDb. This chapter will also define any calculations being performed by WILDb itself, before being loaded into WILDXL.

Refer to The Stats Pages for a description of the calculations performed on the raw data. Each calculation will make use of one or more fields from a *Data* page – clicking on the hypertext links in the manual will take you to the corresponding explanation for those fields.

Refer to The Tables Pages for a description of the Excel Pivot Tables summarising distribution patterns from the raw data.

System Overview

WILDXL is a single Excel Workbook containing several separate worksheets. One of these worksheets, called "**Control**", contains buttons and combo boxes that allow the user to selectively import data from their local WILDb database.

Version 1.36 of WILDb (or later) must be installed for WILDXL to function correctly. This is because WILDb contains inbuilt support for WILDXL's data extraction process.

The other worksheets in WILDXL fall within three categories:
- *Data* pages – these contain the raw data imported from WILDb, as well as some preliminary calculations on that data
- *Stats* pages – these contain statistical analysis of the raw data, grouped by the year that data relates to. Stats are calculated based on both recorded Events/Individuals, and on summary Population Counts entered into WILDb
- *Tables* pages – these contain Excel Pivot tables that represent multi-dimensional breakdowns of Death Rate and Population Distribution, again grouped by year

All of these pages represent a single species at a time. One copy will exist for each species being analysed. Pages representing the Black and White Rhino species are currently included. The one exception to this is the *Individual Stats* page, which shows Average Sighting Gaps for all active Individuals of both species.

WILDXL Installation

System Requirements

Hardware

WILDXL requires at least a Pentium 2 processor with at least 16mb of memory. The faster the processor and the more memory the better, as it places a reasonably heavy load on resources for some functions.

You should have at least 5Mb of free space on your C: drive. This is in addition to requirements for WILDb (see separate manual).

Software

Microsoft Excel 2000.
Tested for Windows 98, and XP.

Installation

WILDXL is normally installed as part of WILDb. It can be manually copied to any directory, but WILDb must be installed in C:\WILDb as described in the manual for that product.

The Control Page
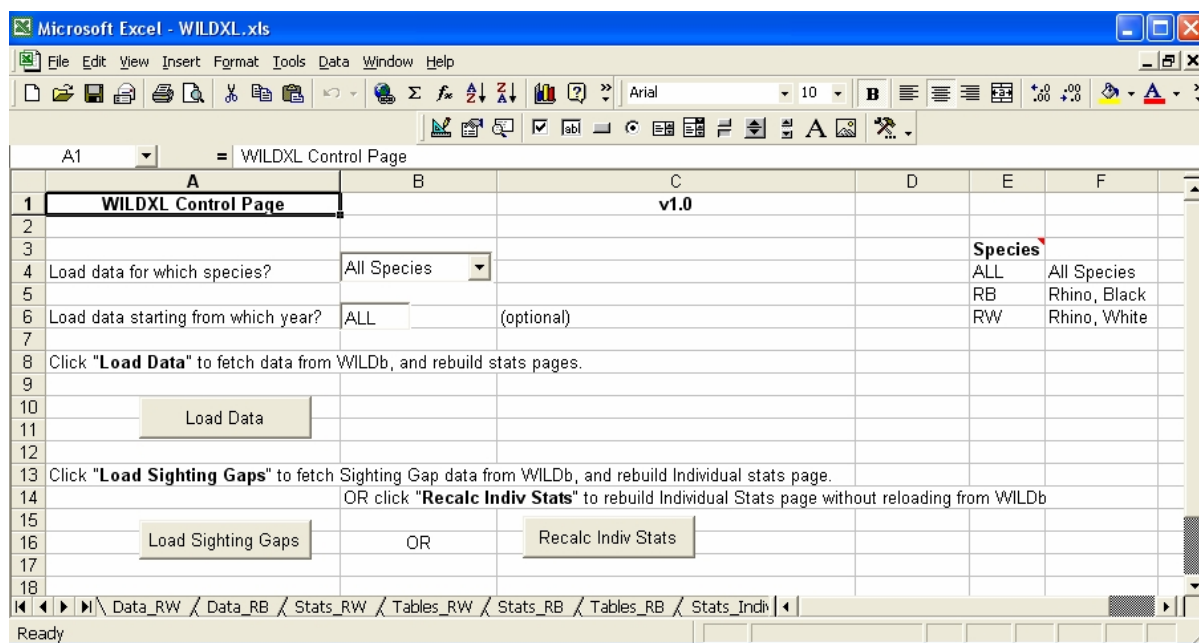
Use the WILDXL Control Page to import data from WILDb. Depending on the volume of data involved, this can be a time consuming process – especially once WILDb has been collecting data for several years. For this reason, the control page lets you restrict the amount of data you are importing in two ways:

1. You can specify which species you want to import (species are listed in the table on the right hand side of the page). Data for other species is not changed. Leave this field blank to import all species (currently only Black and White Rhinos are supported)
2. You can specify a starting year for data to import. If you only need to update data for the current year, then enter it in this text box. If you have changed historical data in WILDb you might want to enter an earlier year. If you want to refresh all data in WILDXL, then leave this field blank.

Click **Load Data** once you have completed your selections.

The data for **Average Sighting Gaps** is imported using the separate button provided. This is because WILDb needs to do extensive data sorting to calculate this information before providing it to WILDXL, which can be time consuming. Click **Load Sighting Gaps** to load the raw data (into the *Data* pages) and recalculate the *Individual Stats* page (Stats_Indiv). If you specified a Species Code and Starting Year, these will be taken into account. If you only want to recalculate the Stats page, click **Recalc Indiv Stats**. You may want to do this if you've manually changed the raw data in WILDXL, for example.

The Lookups Page

This is a hidden worksheet that contains a table listing "Death Types" (WILDb Event Subtypes) that should be attributed to a Human cause. This list can be modified as required (when a new Event Subtype is added to WILDb, for example).

To view the hidden page, click on Format->Sheet->Unhide, and choose the "Lookups" page

The Data Pages

There is one *Data* page for each Species. They are called Data_RB and Data_RW, for Black and White Rhinos respectively. RB and RW correspond to the Species Code used in WILDb.

The *Data* pages contain the raw data loaded from WILDb. They are used as the data source for the statistical calculations on the *stats* pages, and are not meant for viewing. If required you can manually alter the data loaded from WILDb – any changes will be automatically reflected in the *stats* pages. See Description of the Data Fields on page 11 for more information.

There are nine different types of data loaded into WILDXL, as well as a number of columns containing preliminary calculations on those data. The data categories are:
- Individual Details
- Births
- Deaths
- Population Counts
- Age Classifications
- Sighting Gaps
- Age/Sex By Sightings
- Incoming Animals
- Outgoing Animals

Each category is shown in a different colour. Anything without a coloured background is a calculation based on the raw data.

See Description of the Data Fields for a detailed breakdown of the columns in each category.

The layout and content of the *Data* pages cannot be freely modified by hand. This is because the data tables are dynamic (the number of rows in each category changes with each import).

How you can customise the *Data* pages

Any values imported from WILDb can be manually changed in WILDXL and the calculations on the *stats* pages will update accordingly. Note that next time you re-import the data your manual changes will be overwritten, so if they are important remember to update WILDb too.

Some preliminary calculations are performed on the *data* pages prior to further manipulation on the *stats* pages. These are the fields with no coloured background. The formulas within can be modified manually – change the formula in the first row and it will be propagated through the table when data is reloaded. See Description of the Data Fields for detail on these columns, and remember that changes here will affect the *stats* and *tables* pages.

How you should <u>not</u> customise the *Data* pages

You should not add or delete columns on these pages, as this may upset the automatic management of data rows.

New *Data* pages representing different species can be added, but this requires reasonably detailed knowledge of how WILDXL works, and how to develop in Excel. No new VBA (programming behind the scenes) will be required, however.

Description of the Data Fields

Individual Details

This is the first block of data with a green background and contains details of recorded Individuals from WILDb. Most fields are self-explanatory (and direct from WILDb). Following is a clarification of the others:

- StatsYear – Any given Individual will appear once for every year it was active in the subpopulation. If was involved in any Event in a calendar year, then it was assumed to be present in that year. This method was adopted in order to generate historical population stats – WILDb does not maintain historical data on Individuals.
  NOTE: Any calves that are recorded in a birth event <u>will</u> be included in the list of Individuals for a given year, even if they haven't been identified yet or if they hadn't yet been identified during the given year. Their name will be "0" since it is unknown. The important thing is that they <u>will</u> be counted in population and calving stats.
- Introduced – Note that "-1" represents a "true" value, and "0" represents "false". This is a Microsoft Access convention.
- AgeAtFirstCalf – in months, for mothers. Note that this reflects offspring recorded in WILDb only. It is not necessary that the first Birth Event is recorded, as long as the Offspring is (Mother's age is derived from the calf's birth date)
- AvgCalvingInterval – in months, for mothers of at least two calves by the end of the StatsYear. See previous point about included Offspring. Note also that the average interval is calculated based on calves born during or before the StatsYear only.
- CountOfBirths – how many calves a Mother has given birth to up to and including the specified year
- Calving Stats 3Yr and 5Yr – stats reflecting calves born only in the last three and five years respectively (relative to the StatsYear)
- MonthAgeEndOfYear – Age, in months, as at the end of the StatsYear

Individual Details Calculated Fields

These are the non-coloured fields following the Individual Details. They contain Excel formulas that perform basic mappings to interpret some of the raw data from WILDb. The results are then used in the *Stats* pages.

Field	References	Meaning	Used by
Age Category	MonthAgeEndOfYear AgeCategory	Map age to category	
Adult Female	Age Category BreedingAgeFemale Sex	True or False	
Adult Male	Age Category BreedingAgeMale Sex	True or False	
Calf	Age Category CalfAge	True or False	
>7y.o. Female/Male	MonthAgeEndOfYear Sex	True or False	
AFC Not Introduced	Introduced AgeAtFirstCalf	Blank if introduced, else Age At First Calf	
ACI Not Introduced	Introduced AvgCalvingInterval	Blank if introduced, else Avg Calving Interval	
COB Not Introduced	Introduced CountOfBirths	Blank if introduced, else Count of Births	
ACI 3/5Yr Not Introduced	As above, except 3/5 year rolling averages instead	Blank if introduced, else ACI with recent calves	
COB 3/5Yr Not Introduced	As above, except 3/5 year count instead	Blank if introduced, else count of recent births	

Births

This contains details of recorded Births from WILDb. Note that it only reflects Birth Events – it does not derive unrecorded Births from Individual Birth-dates. It does include births of unidentified calves ("non-individuals") and births to unidentified Mothers. It also lists separate births where more than one offspring was delivered at one time (unlikely as this might be for Rhinos!). Most fields are self-explanatory (and direct from WILDb). Following is a clarification:

- BirthYear – The year in which the birth occurred
- MotherID – Internal WILDb ID of the Mother (if identified). Not the National ID. Used for matching
- OffspringID – As above, for the calf

Deaths

This contains details of recorded Deaths from WILDb, including deaths of unidentified animals. Most fields are self-explanatory (and direct from WILDb). Following is a clarification:

- DeathYear – The year in which the death occurred
- DeathType – This is the Event Subtype recorded in WILDb
- IndividualID - Internal WILDb ID of the deceased (if identified). Not the National ID. Used for matching
- MonthAgeAtDeath – Animal's age in months when it died. For unidentified animals, this is calculated as the end of the age category recorded by the observer
- CountIndividuals – For unidentified animals, this is the group size (for this age/sex combination). For Individuals, it is always one

Deaths Calculated Fields

These are the non-coloured fields following the Deaths data. They contain Excel formulas that perform basic mappings and calculations to interpret some of the raw data from WILDb. The results are then used in the *Stats* pages.

Field	References	Meaning	Used by
Age Category	MonthAgeAtDeath AgeCategory	Map age to category	
# Yr Deaths	DeathYear CountIndividuals	Sum of dead animals in specified year	
Human?	**Error! Reference source not found.** DeathType	Whether this death was human caused	
CountByMan	Human? CountIndividuals	CountIndividuals if human caused, else 0	
# Yr Deaths By Man	DeathYear CountByMan	Sum of animals killed by humans in specified year	
Population Est	DeathYear DefiniteTotalCount	Sums the Definite Count of animals for specified year (taken from Population Counts)	

Population Counts By Year

This contains details of recorded Population Counts from WILDb. Only the last full count of all individuals is taken for each year (each year will have one row for each combination of Sex and Age Category present in the population). Most fields are self-explanatory (and direct from WILDb). Following is a clarification:

- CountYear – The year the count relates to
- CountID – Internal WILDb ID for this count. Used for mapping
- KnownIndividualsCount – Count of recorded Individuals in WILDb for that year, broken down by Sex and Age Category
- DefiniteTotalCount – User entered figure with minimum count for the given Sex and Age Category
- ProbableTotalCount – User entered figure with "best guess" count for the given Sex and Age Category
- PossibleTotalCount – User entered figure with optimistic count for the given Sex and Age Category

Population Counts Calculated Fields

These are the non-coloured fields following the Population Counts By Year data. They contain Excel formulas that perform basic mappings to interpret some of the raw data from WILDb. The results are then used in the *Stats* pages.

Field	References	Meaning	Used by
Adult Female	Age Category BreedingAgeFemale Sex	True or False	
Adult Male	Age Category BreedingAgeMale Sex	True or False	
Calf?	Age Category CalfAge	True or False	
Newborn?	Age Category EndMonth	< 12 months at end of year? True or False	
>7y.o. Female/Male?	Age Category StartMonth Sex	True or False	

Age Classifications

This contains details of the customised Age Categories in the local WILDb database. The categories are those within the Age Classification system of the Species to which this page is relevant. Most fields are self-explanatory (and direct from WILDb). Following is a clarification:

- AgeCategory – The name of the age grouping
- StartMonth – The first MonthAgeEndOfYear (inclusive) that will qualify an animal to be included in this category
- EndMonth – The last MonthAgeEndOfYear (inclusive) that will qualify an animal to be included in this category
- BreedingAgeMale – Is a male in this category at breeding age?
- BreedingAgeFemale – Is a female in this category at breeding age?
- CalfAge – Is an animal in this category classified as a calf?

Sighting Gaps

This contains a row for each sighting of an individual, and shows the gap between this sighting and the last. Note that it is populated via a separate Control Page button to the other tables on the *Data* pages (see **Error! Reference source not found.** on page 3). Most fields are self-explanatory (and direct from WILDb). Following is a clarification:

- LaterEventDate – The date of the more recent of two consecutive sightings
- SightingGapDays – The number of days between the previous sighting date and LaterEventDate

Age/Sex By Sightings

This contains a set of counts of the number of animals sighted each year, broken down by Sex and Age Category. It is used in providing Age/Sex distributions based purely on numbers sighted rather than population estimates or known individuals. Most fields are self-explanatory (and direct from WILDb). Following is a clarification:

- StatsYear – The year to which this count belongs
- Count – The number of animals sighted within this Age/Sex group, as calculated by WILDb

Age/Sex By Sightings Calculated Fields

This is the single non-coloured field following the Age/Sex By Sightings data. It contains an Excel formula that performs basic calculations and mappings to interpret the raw data from WILDb. The results are NOT CURRENTLY USED

Field	References	Meaning	Used by
Population Est	StatsYearDeathYear DefiniteTotalCount	Sums the Definite Count of animals for specified year (taken from Population Counts)	

Incoming

This contains a count of the number of animals introduced or who immigrated each year. Most fields are self-explanatory (and direct from WILDb). Following is a clarification:

- CountIndividuals – The number of animals who were introduced or who immigrated in this year

Outgoing

This contains a count of the number of animals removed or who emigrated each year. Most fields are self-explanatory (and direct from WILDb). Following is a clarification:

- CountIndividuals – The number of animals who were removed or who emigrated in this year

The Stats Pages

There is one *Stats* page for each Species. They are called Stats_RB and Stats_RW, for Black and White Rhinos respectively. RB and RW correspond to the Species Codes used in WILDb.

The *Stats* pages contain calculations based on the data in the *Data* pages.

There are two main sections (with red headings) for the stats on these pages:

- Using WILDb Events – the stats in this section are based on known Individual Details. WILDb has used its Event history to determine whether each Individual was present in a given StatsYear (if it was involved in an event, then it was present and is included in the stats for that year).
- Using Population Counts – the stats in this section are based on Population Counts By Year recorded by WILDb. Note that within each count, it is the KnownIndividualsCount that is used for the calculations

The first section has two subsections:

- Population Summary – containing counts, ratios, and calculations describing the population and the Events that occurred on it
- Calving Stats – Showing Average Calving Intervals and Age At First Calf calculations, with rolling averages for both. This subsection is further broken down to show stats where introduced mothers have been both included and excluded.

The section based on population counts contains "Population Summary" type stats only.

See Description of the Stats Fields for a detailed breakdown of the columns in each section.

The layout and content of the *Stats* pages cannot be freely modified by hand. This is because the tables are dynamic (the number of rows in each section changes with each import).

How you can customise the Stats pages

The formulas can be modified manually – change the formula in the first row and it will be propagated through the table when data is reloaded. See [Description of the Stats Fields](#) for detail on these columns.

How you should <u>not</u> customise the Stats pages

You should not add or delete columns on these pages, as this may upset the automatic management of data rows.

New *Stats* pages representing different species can be added, but this requires reasonably detailed knowledge of how WILDXL works, and how to develop in Excel. No new VBA (programming behind the scenes) will be required, however.

Description of the Stats Fields

Population Summary

Note that the table includes a count, average, and standard deviation for most fields.

Field	Description	Formula
Year	Each StatsYear within which an Individual has been active will be listed here.	N/A
# Individuals	How many known individuals were active in this Year	Count where StatsYear = Year
Row	The first row in Individual Details for this Year. Used by other formulae	Match where StatsYear = Year
# Rows	How many rows in Individual Details match this Year. Used by other formulae	= # Individuals
# Adult Females	How many breeding age females were present this Year	Count if Adult Female true, starting at Row including # Rows
# Adult Males	How many breeding age males were present this Year	Count if Adult Male true, starting at Row including # Rows
# Calves	How many calves were present this Year	Count if Calf true, starting at Row including # Rows. Note that this includes unidentified calves recorded in a Birth Event.
% Calves	Percentage of known population that was a calf	# Calves / # Individuals
# Births	Number of animals born this Year	Count if BirthYear = Year
# Cows Calving	How many Mothers gave birth.	Assumed to = # Births
% Cows Calving	Percentage of Adult Females giving birth	# Cows Calving / # Adult Females
Calves : BAFs	Ratio of Calves to Breeding Age Females	# Calves / # Adult Females
% calves newborn	% of calves present who were born that Year	# Births / # Calves
7y.o F/M	Ratio of Females to Males where >= 7 years old	Count if >7y.o. Female/Male true, starting at Row including # Rows. Divide this by same for Males.
# Deaths	Number of animals that died this Year	# Yr Deaths for this Year
% Deaths	Percentage of present population who died	# Deaths / # Individuals
# Deaths By Man	Number of animals killed by human activities	# Yr Deaths By Man for this Year
# Incoming	Number of animals immigrating or introduced	CountIndividuals for this Year
# Outgoing	Number of animals emigrating or removed	CountIndividuals for this Year
G. Rate 1	Population Growth Rate since previous Year	E to the power of (Log_e (# Individuals this Year / # Individuals for last Year)) - 1
G. Rate 2	Population Growth Rate since first Year	E to the power of (Log_e (# Individuals this Year / # Individuals for last Year) / count of Years) – 1
Underlying G. Rate 1	As for G. Rate 1 but removing effect of migrations / introductions / removals / human caused deaths	As for G. Rate 1 but using # Individuals this Year + # Outgoing + # Deaths By Man - # Incoming
Underlying G. Rate 2	As for G. Rate 2 but removing effect of migrations / introductions / removals / human caused deaths	As for Underlying G. Rate 1 but using sum of # Outgoing, # Deaths By Man, # Incoming since first Year
Av Sighting Gap	Average number of days between sightings of specific Individuals this Year	Average SightingGapDays for this Year

Calving Stats – Including Introduced Mothers

Note that the table includes a count, average, and standard deviation calculation for most fields.

Field	Description	Formula
Year	Each StatsYear within which an Individual has been active will be listed here.	N/A
# Individuals	How many known individuals were active in this Year	Count where StatsYear = Year
Row	The first row in Individual Details for this Year. Used by other formulae	Match where StatsYear = Year
# Rows	How many rows in Individual Details match this Year. Used by other formulae	= # Individuals
Av AFC	Average Age At First Calf in months, based on AFC for all Mothers active in this Year	Average(AgeAtFirstCalf) starting at Row including # Rows
Av AFC (3 Yr)	Average Age At First Calf in months, based on AFC for all Mothers active in any of the last three Years	As above, but starting two Rows above and including Sum(last three # Rows)
Av AFC (5 Yr)	Average Age At First Calf in months, based on AFC for all Mothers active in any of the last five Years	As above, but starting four Rows above and including Sum(last five # Rows)
Av CI	Average of the "Average Calving Interval" figures for each Mother active in this Year. Based on calves born during or before this Year.	Average(AvgCalvingInterval) starting at Row including # Rows
# Cows in ACI	Number of Mothers included in Av CI	Count(AvgCalvingInterval) starting at Row including # Rows
# Calves in ACI	Number of Offspring included in Av CI	Sum(CountOfBirths)
Av CI (3 Yr)	As for Av CI, but including only calves born in the last three Years	Average(Calving Stats 3Yr and 5Yr) starting at Row including # Rows
# Cows in ACI	Number of Mothers included in 3Yr ACI	Count(Calving Stats 3Yr and 5Yr) starting at Row including # Rows
# Calves in ACI	Number of Offspring included in 3Yr ACI	Sum(Calving Stats 3Yr and 5Yr) starting at Row including # Rows
Av CI (5 Yr)	As for Av CI, but including only calves born in the last five Years	Average(Calving Stats 3Yr and 5Yr) starting at Row including # Rows
# Cows in ACI	Number of Mothers included in 5Yr ACI	Count(Calving Stats 3Yr and 5Yr) starting at Row including # Rows
# Calves in ACI	Number of Offspring included in 5Yr ACI	Sum(Calving Stats 3Yr and 5Yr) starting at Row including # Rows

Calving Stats – Excluding Introduced Mothers

This table provides similar stats to the previous one, except that all calculations are based only on non-introduced Mothers and their calves.

Note that the table includes a count, average, and standard deviation for most fields.

Field	Description	Formula
Av AFC	Average Age At First Calf in months, based on AFC for all Mothers active in this Year	Average(AFC Not Introduced) starting at Row including # Rows
Av AFC (3 Yr)	Average Age At First Calf in months, based on AFC for all Mothers active in any of the last three Years	As above, but starting two Rows above and including Sum(last three # Rows)
Av AFC (5 Yr)	Average Age At First Calf in months, based on AFC for all Mothers active in any of the last five Years	As above, but starting four Rows above and including Sum(last five # Rows)
Av CI	Average of the "Average Calving Interval" figures for each Mother active in this Year. Based on calves born during or before this Year.	Average(ACI Not Introduced) starting at Row including # Rows
# Cows in ACI	Number of Mothers included in Av CI	Count(ACI Not Introduced) starting at Row including # Rows
# Calves in ACI	Number of Offspring included in Av CI	Sum(COB Not Introduced)
Av CI (3 Yr)	As for Av CI, but including only calves born in the last three Years	Average(ACI 3/5Yr Not Introduced) starting at Row including # Rows
# Cows in ACI	Number of Mothers included in 3Yr ACI	Count(ACI 3/5Yr Not Introduced) starting at Row including # Rows
# Calves in ACI	Number of Offspring included in 3Yr ACI	Sum(COB 3/5Yr Not Introduced) starting at Row including # Rows
Av CI (5 Yr)	As for Av CI, but including only calves born in the last five Years	Average(ACI 3/5Yr Not Introduced) starting at Row including # Rows
# Cows in ACI	Number of Mothers included in 5Yr ACI	Count(ACI 3/5Yr Not Introduced) starting at Row including # Rows
# Calves in ACI	Number of Offspring included in 5Yr ACI	Sum(COB 3/5Yr Not Introduced) starting at Row including # Rows

Population Summary using Population Counts

These figures are similar to those in Population Summary, except that they are based on the Total Known Individuals recorded by WILDb in the latest full Population Count for each year.

Note that the table includes a count, average, and standard deviation for most fields.

Field	Description	Formula
Year	Each recorded CountYear will be listed here.	N/A
# Individuals	How many known individuals were recorded in this count	Sum (KnownIndividualsCount) where CountYear = Year
Row	The first row in Population Counts By Year for this Year. Used by other formulae	Match where CountYear = Year
# Rows	How many rows in Population Counts By Year match this Year. Used by other formulae	Next Row – this Row (or 100 if last Row)
# Adult Females	How many breeding age females were present this Year	Sum (KnownIndividualsCount) if Adult Female true, starting at Row including # Rows
# Adult Males	How many breeding age males were present this Year	Sum (KnownIndividualsCount) if Adult Male true, starting at Row including # Rows
# Calves	How many calves were present this Year	Sum (KnownIndividualsCount) if Calf? true, starting at Row including # Rows
# Births	Number of animals born this Year	Sum (KnownIndividualsCount) if Newborn? true, starting at Row including # Rows
# Cows Calving	How many Mothers gave birth.	Assumed to = # Births
% Cows Calving	Percentage of Adult Females giving birth	# Cows Calving / # Adult Females
Calves : BAFs	Ratio of Calves to Breeding Age Females	# Calves / # Adult Females
% calves newborn	% of calves present who were born that Year	# Births / # Calves
7y.o F/M	Ratio of Females to Males where >= 7 years old	Count if >7y.o. Female/Male? true, starting at Row including # Rows. Divide this by same for Males.
G. Rate 1	Population Growth Rate since previous Year	E to the power of (Log_e (# Individuals this Year / # Individuals for last Year)) - 1
G. Rate 2	Population Growth Rate since first Year	E to the power of (Log_e (# Individuals this Year / # Individuals for last Year) / count of Years) – 1

The Individual Stats Page

There is one *Individual Stats* page that covers all Species. It is called Stats_Indiv. This page shows all currently active Individuals with the last sighting date and average sighting gap for each animal. It also shows the "Mode" gap (ie the most common) for each animal, plus an "Alert" field that indicates when an animal hasn't been seen for an unusual length of time.

The *Individual Stats* page is built by WILDXL based on data in the hidden *Data_Indiv* page. This page in turn is loaded from WILDb, and contains a list of the number of days between every sighting for every active Individual.

The layout and content of the *Individual Stats* page <u>cannot</u> be freely modified by hand. This is because the table is dynamic (the number of rows changes with each import).

How you can customise the *Individual Stats* page

The formula in the Alert column can be modified manually – change the formula in the first row and it will be propagated through the table when data is reloaded.

How you should <u>not</u> customise the *Individual Stats* page

You should not add or delete columns on this page, as this may upset the automatic management of data rows.

Description of the Individual Stats Fields

The first columns on the page are Individual details loaded directly from WILDb including Name, National ID, Birth Date, etc. The last columns are calculated by WILDXL as follows:

Field	Description	Formula
LastSightingDate	The date of the last recorded event this animal was involved in	N/A
AvgSightingGapDays	The average gap between sightings, in days, for this animal	Average(gaps from hidden Data_Indiv page)
SightingGapMode	The most common length of time between sightings, in days, for this animal	Mode(gaps from hidden Data_Indiv page)
Alert?	Green, Yellow, or Red depending on how many days since this animal was seen	If LastSightingDate is more than AvgSightingGapDays days ago then RED, else if LastSightingDate is more than SightingGapMode days ago then YELLOW, else GREEN

The Tables Pages

There is one *Tables* page for each Species. They are called Tables_RB and Tables_RW, for Black and White Rhinos respectively. RB and RW correspond to the Species Codes used in WILDb.

The *Tables* pages contain Excel Pivot Tables that are based on the data in the *Data* pages.

The layout and content of the *Tables* pages can be modified by hand with some reservations (see below). This is because the pages are dynamic (the number of rows in each table changes with each import).

How you can customise the *Tables* pages

You may switch around the fields used in the columns of each Pivot table, as long as you don't increase the size of the table (ie the number of fields on the X axis). This is because WILDXL automatically creates enough rows between tables to cater for their maximum size.

To change the fields, drag and drop them to/from the floating Pivot Table menu bar. Alternatively, use Excel's Pivot Table Wizard (accessible from the Pivot Table menu) and click the "Layout" button.

How you should not customise the *Tables* pages

You should not add or delete tables, as they are automatically controlled by WILDXL. You should also not change the tables' Y axis from "Year", as WILDXL will no longer be able to determine the worksheet space required for the table.

New *Tables* pages representing different species can be added, but this requires reasonably detailed knowledge of how WILDXL works, and how to develop in Excel. No new VBA (programming behind the scenes) will be required, however.

Description of the Tables

% of Deaths By Type

This table shows the distribution of various "Death Types" within the total Deaths for the Subpopulation, broken down by DeathYear . It also provides the overall distribution across all years.

% of Deaths By Age/Sex

This table shows the distribution of total Deaths for the Subpopulation, broken down firstly by Age Category and then by Sex, for each DeathYear . There is a separate subtotal for each Age Category (with all Sexes included), plus the overall distributions across all years.

Deaths as % of Population by Age/Sex

This table shows the percentage of total population (Population Est) that died each DeathYear , broken down firstly by Age Category and then by Sex. There is a separate subtotal for each Age Category (with all Sexes included), plus the overall distributions across all years.

Age/Sex structure

This table shows the distribution of total Individual Details for the Subpopulation, broken down firstly by Age Category and then by Sex, for each StatsYear. There is a separate subtotal for each Age Category (with all Sexes included), plus the overall distributions across all years.

Age/Sex structure by Sightings

This table shows the distribution of total Age/Sex By Sightings for the Subpopulation as a percentage of the Population Est, broken down firstly by Age Category and then by Sex, for each StatsYear. There is a separate subtotal for each Age Category (with all Sexes included), plus the overall distributions across all years.