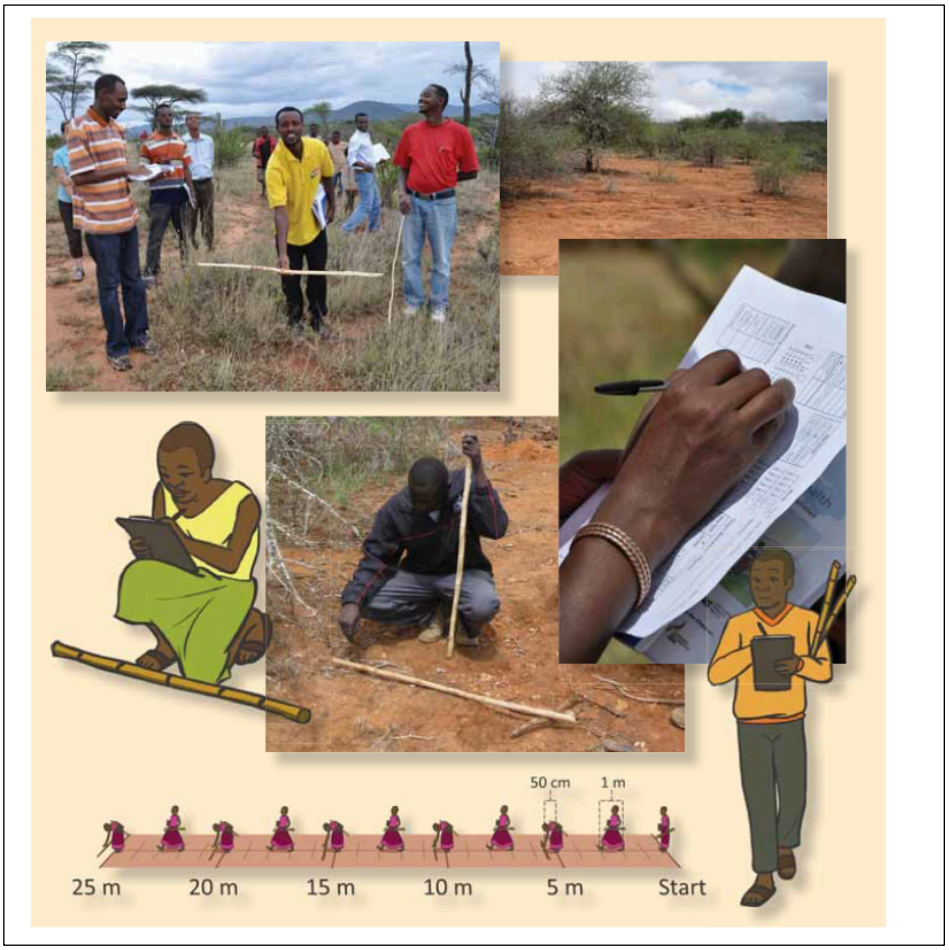
GUIDELINES FOR ESTABLISHING A MONITORING SYSTEM IN GRAZING AREAS INCLUDING PHYSICAL BASELINE SURVEY OR PARTICIPATORY RANGELAND RESOURCE ASSESSMENT



2020

Compiled by ILRI (International Livestock Research Institute)

Introduction

These guidelines have been produced for the EU-funded Piloting of Participatory Rangeland Management Project in Kenya and Tanzania to inform the undertaking of a physical baseline and later monitoring of changes. The Project contributes to the Rangelands Initiative of the International Land Coalition (ILC) and the ILC's national engagement strategies in Tanzania and Kenya.

The guideline includes sections adapted from the publication *Monitoring Rangeland Health* published by Riginos and Herrick (2010) and the Participatory Rangeland Management Toolkit for Kenya by ILRI (2018). This guideline is produced by ILRI (International Livestock Research Institute) as part of the technical support provided to the above project. The views expressed do not necessarily reflect the views of the European Union or the International Land Coalition.

The guidelines are divided into four parts:

I. General introduction to the importance of carrying out a baseline or rangeland inventory including use of the data.
II. Choice of the Project site and preparation including taking photos
III. Undertaking of the physical survey or rangeland inventory.
IV. Further monitoring as part of community monitoring system

SECTION I: INTRODUCTION – THE IMPORTANCE OF MONITORING RANGELANDS[1]

Monitoring rangeland condition and evaluating the effectiveness of management are important aspects of strengthening the planning and management of rangelands. Communities need to develop their own monitoring and evaluation (M&E) systems as part of strengthening their rangeland management roles. The data collected can be used for a number of purposes including providing a baseline from which change can be evaluated; assessing the potential, condition and challenges of the rangeland in order to prioritise interventions and activities during planning processes; and in order to know whether the management strategy is working or failing and/or needs adaptation.

Rangeland monitoring is helpful because it addresses some of the important challenges in managing rangelands through grazing management and other approaches. These challenges include: (i) slow change; (ii) high variability; and (iii) the importance of a long-term management strategy. Rangeland quality changes slowly over many years, which is difficult to observe by eye alone—collecting even a little data over two or more years can provide more detail. Rangelands are also variable in space and time. This variation makes observation of changes difficult.

This guideline uses simple data collection tools that do not require scientific expertise allowing community members to be easily trained, involved and to continue the monitoring as part of the rangeland management process. The tools also allow relatively quick collection of data with limited resources.

In addition, the rangeland inventory tools are developed to allow input to the **LANDPKS** global database on land condition. As such, this means that the Project is contributing to processes and information beyond the local area as an additional output of the monitoring activity. LAND PKS also provides an App that can be used for the data collection allowing easy collection (see Box 1).

This guideline focuses mainly on the above ground vegetation as a marker for assessing rangeland condition and productivity levels. As is know the amount of vegetation above ground is the most important factor in determining the quality and quantity of feed available for livestock and thus are of key interest to community members and thus should be central to any community monitoring system. However, it is recognised that in some cases additional information may be required by government or other stakeholders on such as soils, water availability, land capability classification etc (and indeed some of this information is included in the LAND PKS data collection tool). This information can indeed be collected but will be time-consuming and require additional technical expertise – thus it is recommended that

[1] Adapted from International Livestock Research Institute (2018). Rapid community rangeland monitoring tool: Guide to starting monitoring. Tool 2-2 of the *Participatory Rangeland Management Toolkit for Kenya*. Nairobi, Kenya: International Livestock Research Institute (ILRI).

such information is only collected if thought really necessary. Tools for this additional data collection can be advised by ILRI on request.

Box 1: LANDPKS

A free modular mobile phone app connected to global databases, models, and cloud-based storage.

LandPKS is a system for storing and accessing user data, as well providing access to knowledge that can inform sustainable land management. It can be downloaded from both the iTunes and Google Play Stores for free. The LandPKS app includes the following features (with many more currently in development):

- Long-term climate data
- Soil texture guide
- Soil color determination
- Land capability classification results
- Vegetation monitoring with the LandCover module
- Photos and notes
- Instant results in the Report
- Downloadable pdf report
- Spanish language translations (French and Swahili to be released soon)

Source: https://landpotential.org

SECTION II. CHOICE OF MONITORING SITE AND TAKING PHOTOS[2]

Consult community members in order to choose the monitoring sites i.e. where it would be useful and important to do so. This can include:

1. Important pastures used for intense grazing
2. Degraded areas — where good grasses have been lost, where grass cover is decreasing, where soil erosion is increasing, etc.
3. Areas the community may want to restore, through planned grazing, resting, re-seeding, etc.

It is best to locate monitoring sites in transition areas in rangelands (being on a transition lets you see the change directly through photography over time), for example:

1. Where a shrubby area meets a grassy area
2. Where an area with good grass or shrubs meets an area with severe erosion
3. Where different soil types meet — for example, where red soil meets black soil
4. Where areas with different hydrology meet — for example, where a swamp meets a grassland or shrubland
5. See Figure 2 for an example of a complex 'general area' prioritized for monitoring by a community, showing the best locations for monitoring sites.

Do NOT locate monitoring sites in 'sacrifice zones' with major degradation e.g.

1. Bomas or settlements — minimum distance 200 m. from any boma or settlement
2. Water points — minimum distance 200 m from any pond, borehole, dam, river, etc.

Do NOT locate monitoring sites outside of rangelands:

1. Crops (sites close to crops are okay—minimum distance 50 m. from crops—but **DO NOT include crops in the photos or the data**.
2. Private exclosures and fenced areas — sites *close* to fenced private grazing exclosures are okay (minimum distance 50 m. from exclosures or fences), but **DO NOT include private areas in the photos or the data**. (Note: if you are monitoring exclosures or paddocks, ignore this rule.)
3. Streams — sites close to streams are okay (no minimum distance) — but **DO NOT include streams in the photos or the data.**

DO locate monitoring sites in different areas. It could be that only 1 or 2 of the sites in Figure 1 would be monitored. If you can monitor several areas, place them some distance from each other (> 10 km).

[2] Adapted from International Livestock Research Institute (2018) Rapid community rangeland monitoring tool: Guide to starting monitoring. Tool 2-2 of the *Participatory Rangeland Management Toolkit for Kenya*. Nairobi, Kenya: International Livestock Research Institute (ILRI).

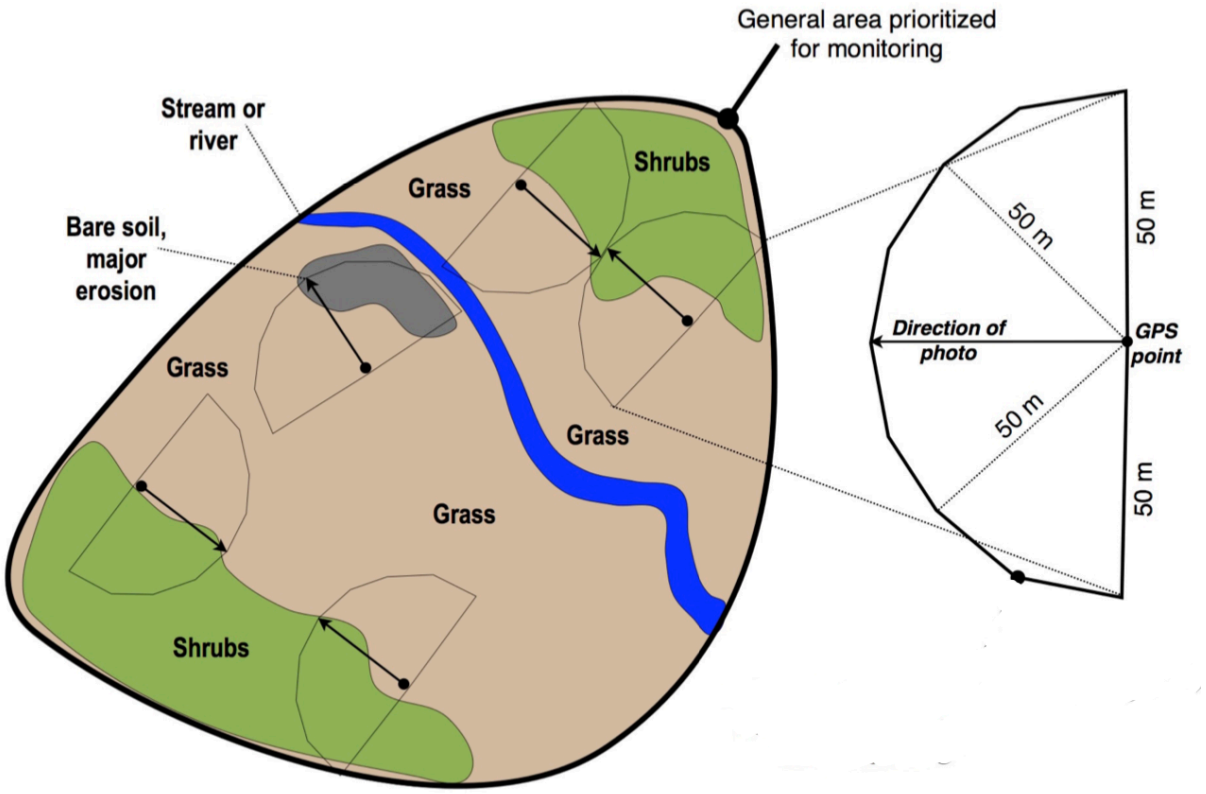


Figure 1: Examples of monitoring sites in a rangeland (Source ILRI 2018)

Take photos of the monitoring site

Stand at the GPS point. If you are standing in a transition area, take the photo *along the transition* — for example, in an area where grass meets shrubs take the photo so that it includes ***both*** the grass ***and*** the shrubs (see Figure 2).

If it is ***not*** a transition area, take the photo in a direction to include a landmark — for example, a special large or dead tree, a large termite mound, a special or large hill in the distance.

Hold the tablet horizontally, with a very small amount of sky at the top of the photo. Check that the tablet is *fully zoomed* out as wide as possible. Keeping your hands still, take two (2) photos.

Figure 2 Change in grassland condition over 2 years near Dida Hara, Borana Zone, Ethiopia, in a site restored by thinning excess shrubs and prescribed fire (this site was bush- thinned in 2006 and burned in 2007). Note that the grass is expanding in cover, and the trees and shrubs have grown taller. The live and dead trees, and the hills in the distance, were used as landmarks to take the exact same photo 2 years later (Source ILRI 2018).

Daily wrap-up

At the *end of every day,* download photos from the tablet to a computer, so that the photos are not lost. On the computer, *every day*, change the filename of each photo to:
Site_number_date. jpg

For example, on one day (July 15, 2018) I have taken photos at 3 monitoring sites in an area named Maji, and with Site IDs 'Maji 1,' 'Maji 2,' and 'Maji 3.' After I download the photos for that day, I change the photo filenames to:

- Maji_1_20180715. jpg
- Maji_2_20180715. jpg
- Maji_3_20180715. jpg

Equipment

- GPS unit, with the locations of all monitoring sites loaded onto the GPS
- Tablet
- Datasheets (see below)
- Measuring stick (see below)
- Smart phone is uploading data direct to LANDPKS.

SECTION III: HOW TO CARRY OUT A RANGELAND VEGETATION INVENTORY[3]

How-To-Do a Rangeland Vegetation Inventory

As above, you will have identified your monitoring sites. A series of observation and measurements will be made along a transect from the point where you are standing. Make the transect walk in four directions – North, South, East and West for 20 metres in each direction.

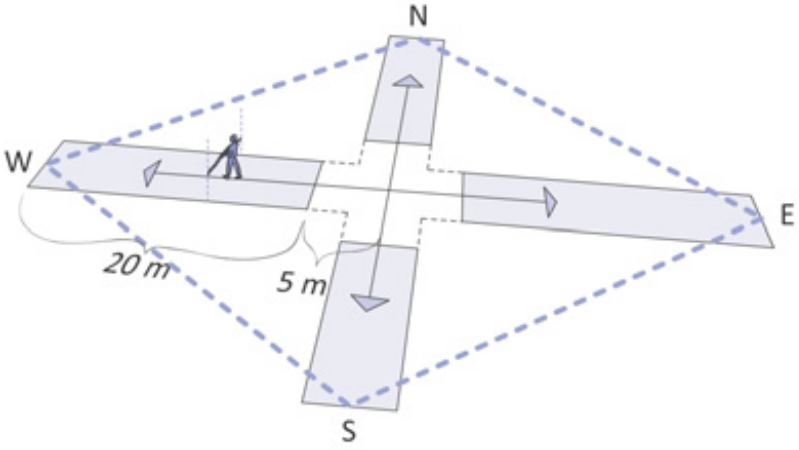


Figure 2-13-1 Schematic diagram showing sampling spots

You need two measuring sticks – these should be 1 m in length, with markings made along it at 20cm intervals. Equally a traditional pastoralist stick (of approximately the same length) could be used and marked.

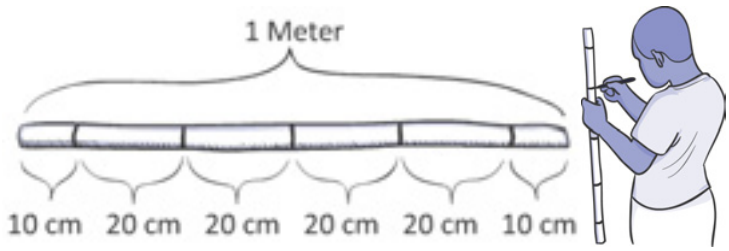
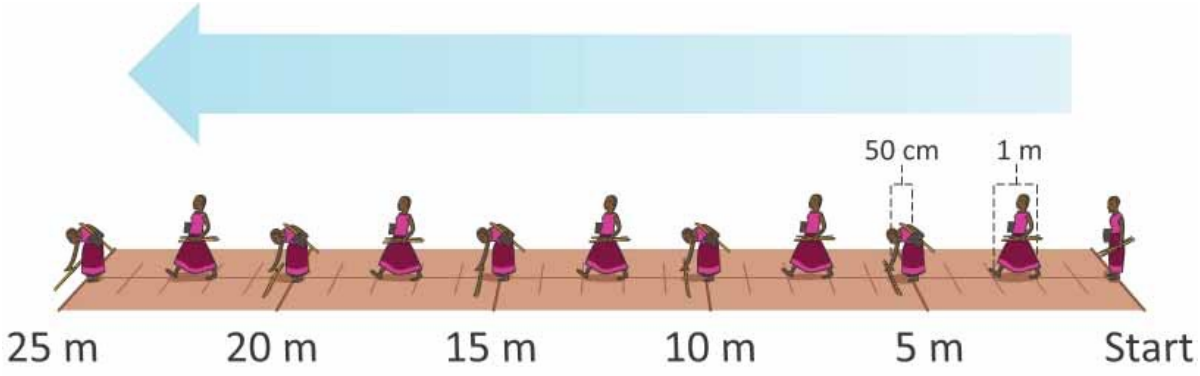


Figure 2-13-2 How to mark the measuring stick

For each transect:

1. Walk 5m North in a straight line from the site's centre point.
2. Put down the stick in front of you.
3. Each transect is 25m. You will lay down the stick and collect data every 5 m along the transect.

[3] **Adapted from** Riginos, C. and J. Herrick (2010) *Monitoring Rangeland Health.* Internet: http://www.mpala.org/Monitoring_Guide.pdf



4. Use the stick to collect data on **A. Basal cover - Plant cover** and **gaps between plants**. And make a mark on the data collection form Worksheet 2-13a.

Datasheets

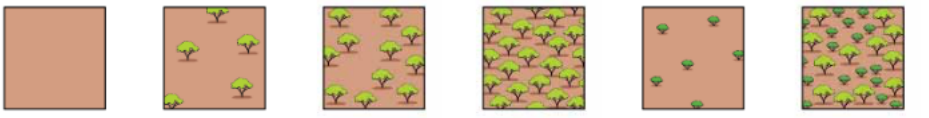
In most cases you will only need the Background Datasheet and the Core Datasheet (Worksheet 2-13a). The Core Datasheet is organised around a large cross (+). Each arm of the cross represents one 'transect.' The four transects extend in four directions – North, South, East and West. Each transect is 25 m long. You will lay the stick, collect and record data every 5 m along the transect.

Figure 2-13-3 You will fill in boxes like this on the datasheet (Worksheet 2-13a)

Basic site information

Things to write in the boxes for basis site information:

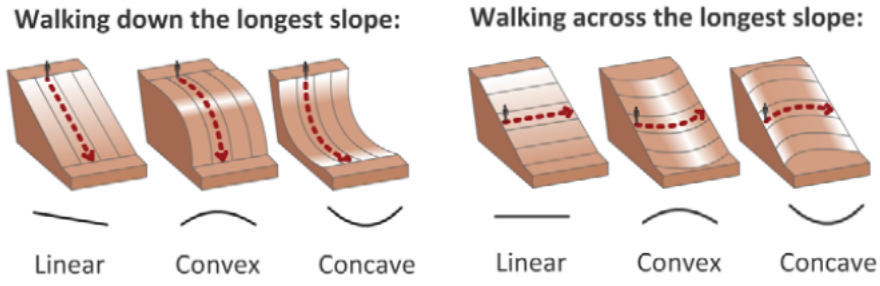
1. Record name of the site
2. Describe the location of the site
3. Describe the centre point of the site – are there any defining charactersistics that would help you find the site again.
4. Take GPS readings if possible.
5. Record the vegetation or structure at the site, shrubs and trees etc.



6. Record the soil depth – dig until you hit the bedrock, or look at the profile in a nearby gully. If you dig down to 50cm and have not hit bedrock then write ">50cm".

7. Wet a handful of surface soil, rolling it in the palm of your hand for several minutes to make a ball of mud. Tick all the descriptions of the soil that best describe it:
    a. Is it sticky, slippery or sandy?
    b. Is the colour red, grey or brown?
    c. Is the colour light, medium or dark?
8. Repeat this with a handful of i) sub-surface soil and ii) deep soil.
9. Determine the percent slope:
    a. Place the stick vertically on the ground. Hold on end of the 5m piece of string at the 50cm mark on the stick.
    b. Stand behind the stick on the downhill side of the stick, with your eye level if the 50cm mark on the stick. Look uphill.
    c. Find the point on the slope that is level with your eyes. Have a second person walk to this point with the other end of the string. Pull the string tight so that it makes a straight line between the top of the stick and the point on the slope level with your eyes.
    d. Have the second person mark the end of the string or keep holding it.
    e. Put the string on the found and measure its length.
    f. Record the length in meters.
    g. Calculate percent slope = [1/(2*length)] *100

10. Circle the shape of the main (longest) downward slope. Imagine walking down it – what is the shape?
11. Circle the shape of the cross-slope.



Fill in the observational indicators including:

a. Erosion features
b. Soil surface hardness
c. Recent grazing intensity

d. Recent browsing intensity
e. Distance to water
f. Distance to nearest boma/settlement
g. Other including is there anything important to note about the site, is it bad or good site for livestock, are there any wildlife species here etc.

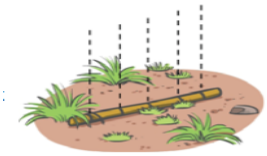
Data collection along transects

Collect all the following data along the transects at once including:

i) Plant and ground cover
ii) Gaps >1m between plants (per cent of ground in large gaps)
iii) Plant height
iv) Plant density
v)

i) Plant and ground cover

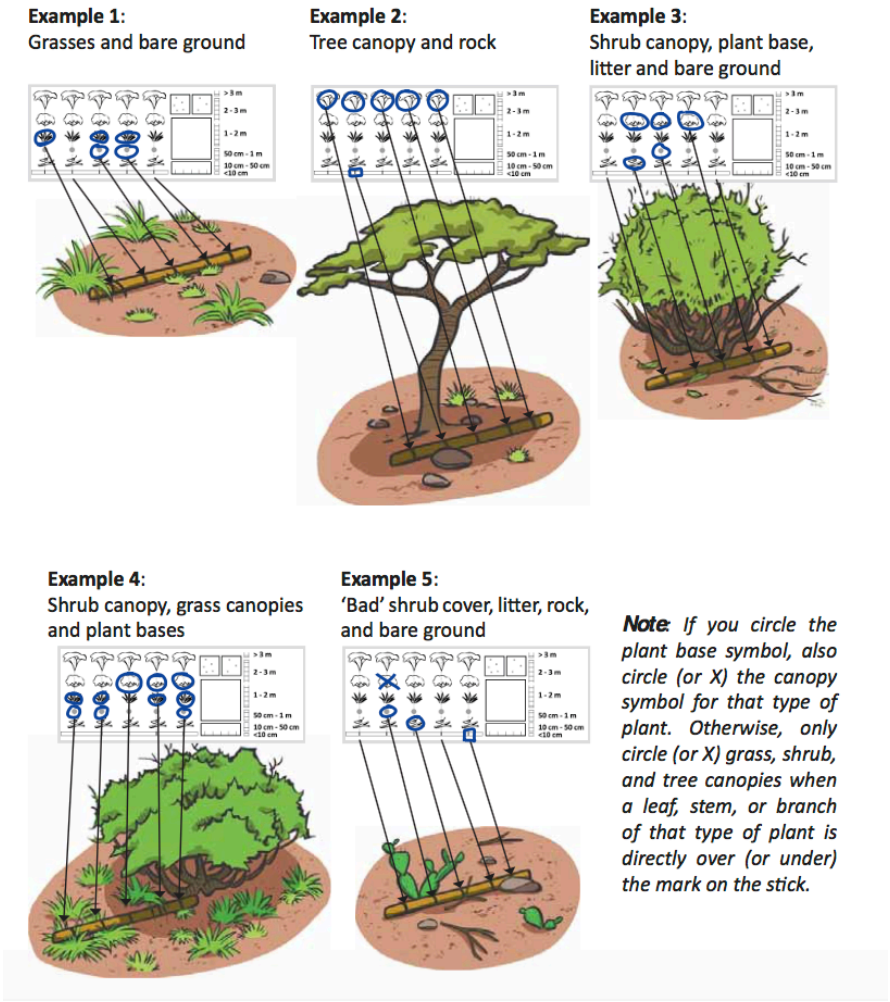
1. Walk 5m North in a straight line from the site's centre point.
2. Put down the stick 50 cm in front of your feet.
3. Record what type of plant or ground cover is present at each mark on the stick. Only record the plant cover that is either hanging over or is directly under the stick.



Record only the plant and ground cover that are immediately above or below each mark on the stick

4. For each point along the edge of the stick decide what (if anything) is over the soil surface. Draw the appropriate symbol on that point on the stick diagram in the datasheet i.e. 'rock' (any piece of rock or small stone more than 5mm in diameter; if lichen draw a V; if there is nothing do not mark that point in any way.
5. For each point along the stick decide what (if any) litter or perennial plants cover the ground at that point. This step focuses on perennial plants (i.e. grow every year). If you wish to collect information on annual plants, then record them as 'key species' using a different symbol.
6. Mark the appropriate symbols above the stick diagram on the datasheet (you can circle more than one for each point). You can mark 'good' species of plants by putting a circle round the symbol, and 'bad' species by putting an X. Use these rules as a guide:
    a. If the point falls on top of litter, circle the stick and leaf symbol. Litter is unattached material such as sticks, leaves, logs and animal dung.
    b. If the point falls on a perennial plant or grass base, circle the small dot.
    c. If the point falls under or over a perennial grass or forb, mark the grass symbol.
    d. If the point falls under a shrub leaf or stem, mark the shrub symbol.
    e. If the point falls under a tree leaf or stem mark the tree symbol.
    f. Do not mark any symbol if there is no litter or plant cover at that point.

7. Continue collecting data every 5 m until the end of the transect. Repeat these steps for each of the three other transects/directions.



Analysis

1. Summarise the data in the 'Plant and Ground Cover (%)' corner of the datasheet.

2. For trees, shrubs and grasses:

a. Count the number of times you have circled the tree symbol. Record this under the 'Good' column. This number represents the percent cover of 'good' trees. If you did not collect separate data for 'good' and 'bad' plant species, skip to step 2c and simply record the total number of times you marked the tree symbol.
b. Count the number of times you have put an X through the tree symbol and record this under the 'Bad' column in the datasheet. This represents the percent cover of 'bad' trees.
c. Add together the number of trees in the 'Good' column and in the 'Bad' column. Record this number in the 'Total' column. This represents the total percent tree cover at this site.
d. Repeat steps 2a – 2c for shrubs and grasses to get good, bad and total percent cover for shrubs and grasses.

1. For plant bases, litter, rock, and lichen:

a. Count the number of times you marked each type of ground cover. Record the numbers under the 'Total' column. These numbers represent the percent of the ground that is protected by plant bases, litter, rock, and lichen.

4. To calculate total number of points with plant cover, count the number of points on the datasheet where you marked (with a circle or X) *any* type of plant (trees, shrub, grass or forb, or base). Count each point only once. For example, even if you have circled a grass canopy and a tree canopy, only count this point once. This is the percent total plant cover.
5. To calculate the percent bare ground, count the number of points for which you *did not* make any marks on the datasheet on or above that point on the stick. In other words, count the number of points at which a raindrop falling straight down would hit bare soil. This is the percent bare ground.

Collecting cover data for key species

You could add in an extra symbol for a particular plant species such as one favoured by local communities, or an increaser or decreaser (Box 2-6a-2).

ii) Gaps > 1m between plants (per cent of ground in large gaps)

The gaps-between-plants method tells you what percent of the landscape falls in large (greater

Collecting the data

1. Walk 5 m North from the site's centre point.
2. Put down the stick 50 cm in front of your feet. And repeat as above.
3. As above collect all types of data at the same time.
4. Gaps between plant bases:

    a. Shade, colour in, or mark the basal gap box on the datasheet if the stick touches any kind of plant base in any place along the stick (ignoring the marks on the stick). This indicates that the gap is broken (there is not a gap > 1 m between plant bases).

    b. Leave the basal gap box empty if the stick is entirely within a basal gap (the stick is not touching any plant bases). This indicates that the gap is *not* broken (there is a gap > 1 m between plant bases).

4. Gaps between plant canopies:

    a. Shade, colour in, or mark the canopy gap box if there is plant leaf or stem over any part of the stick. This indicates that there is not a gap > 1 m between plant canopies.

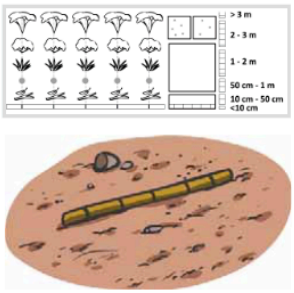
    b. Leave the canopy gap box empty if the stick is entirely within a canopy gap (there is no plant leaf or stem over the stick). This indicates that there is a gap > 1 m between plant canopies.

Note: The plant leaf or stem must be between 10 cm and 2 m in height. (Canopies shorter than 10 cm or taller than 2 m are not effective at slowing wind erosion).

5. Continue collecting gap data every 5 m until the end of the transect (laying down your stick when you stop at 5, 10, 15, 20, and 25 m from the centre point).

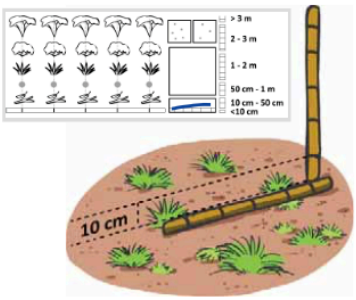
6. Repeat these steps for each of the three other transects (East, South, West).

Example 1:
There are no plant bases or canopies along the stick, so do not mark anything. This indicates that there is a gap > 1 m between both plant bases and plant canopies.



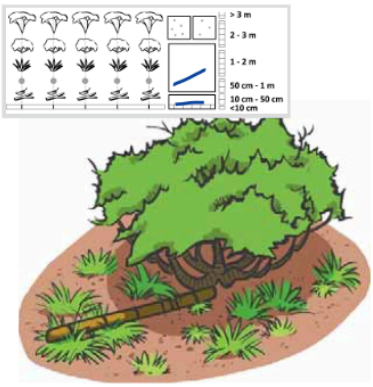
Example 2:
There are plant bases along the stick, so mark the basal gap box. This indicates that there is no gap > 1 m between plant bases.

There are no plant canopies between 10 cm and 2 m in height over the stick, so do not mark the canopy gap box. This indicates that there is a gap > 1 m between plant canopies.



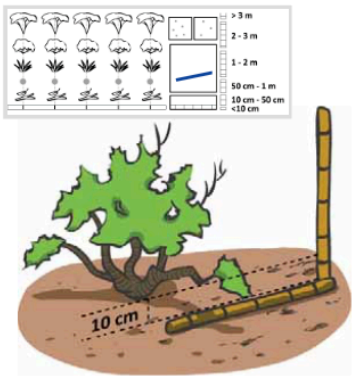
Example 3:
There are plant bases along the stick, so mark the basal gap box. This indicates that there is no gap > 1 m between plant bases.

There is a plant canopy between 10 cm and 2 m in height over the stick, so also mark the canopy gap box. This indicates that there is no gap > 1 m between plant canopies.



Example 4:
There are no plant bases along the stick, so do not mark the basal gap box. This indicates that there is a gap > 1 m between plant bases.

There is a plant canopy between 10 cm and 2 m in height over the stick, so mark the canopy gap box. This indicates that there is no gap > 1 m between plant canopies.



<u>Analysing the data</u>

1. Summarise the data in the ‘Gaps’ corner of the datasheet.

2. Count the number of basal gap boxes you did not shade or mark. (Remember, an empty box means that there was a basal gap; a shaded or marked box means that there was at least one plant base breaking up the gap). Record the number of empty basal gap boxes in the ‘Gaps > 1 m Between Plant Bases’ box.

5. Count the number of canopy gap boxes you did not shade or mark. (Remember, an empty box means that there was a canopy gap; a shaded or marked box means that there was at least one plant canopy breaking up the gap). Record the number in the 'Gaps > 1 m Between-Plant-Canopy' box.
6. Multiply each number by 5 to get the percent of the landscape that has large (> 1 m) gaps between plant bases and canopies.

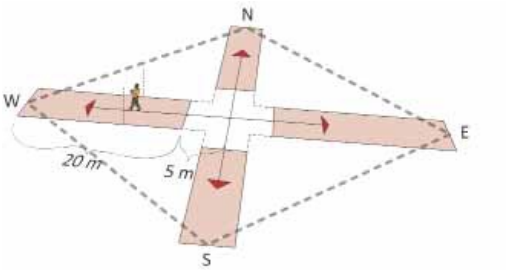
Plant Density

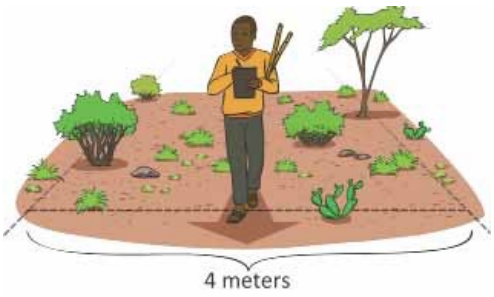
This method can be used for all species together or for 'key' species of particular interest (good or bad). t can also be used to determine the density of seedlings as well as larger plants. Finally, this method can be used to measure the density of a particular species within several height classes. For example, you could measure the density of seedlings, saplings, and larger plants of an invading or undesirable species. This will give more information about how many large plants of this species you can expect there to be in the future.

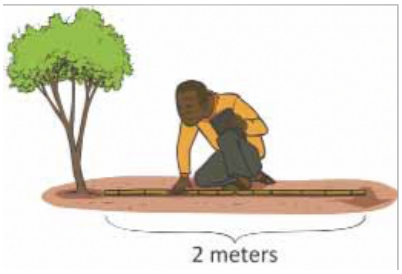
Plant density data are collected by counting the number of plants that are rooted within a plot of known size. The plots should be evenly distributed throughout the monitoring site.

Collecting data: four 20 m-long belt transects (Four 80 m^2 plots)

1. Walk 5 m North from the site's centre point.
2. Walk slowly in a straight line, counting the number of plants with the base of the stem (or trunk) rooted within 2 m on either side of the line. Use the sticks to measure 2 m from the line if you are not sure whether the plant is inside the belt or not.
3. For plants on the edge of the plot: count them if more than half of their stem or trunk is within (inside of) 2 m of the line; do not count them if more than half of their stem or trunk is more than 2 m from the line.
4. For each plant that you count, record a tally mark in the 'Number of Plants' row in the 'Plant Density' corner of the datasheet.
5. Continue walking and counting un l you have reached the end of the transect (25 m from the centre point).
6. Repeat these steps for each of the three remaining other transects (East, South, West).







7. Count the number of tally marks you have made for each type of plant and write this total in the 'Number of Plants' row of the datasheet.
8. Record the size and number of plots in the 'Plot Size' and 'Number of Plots' rows.

Analysing the data

1. Calculate the area you sampled: area sampled = plot size x number of plots.
2. Calculate plant density: plant density = total number of plants / area sampled.

Collection of information on local names and uses

If you have a local community member with your ask him/her about the different species – what is its local name, what it is used for, is it palatable/non-palatable, does it grow every year etc. You can also collect some of the plants and identify when them back on the office or send to a herbarium or local expert. If no community members with you, you could hold a meeting with some afterwards.

If there are any non-local and invasive species, make a special note of this. These will need special management to avoid further spread and/or their removal.

You could also rank the plants identified for their usefulness, palatability, and invasive or non-useful characteristics.

Table 2-13-1 Form for documenting local names, uses and occurence

Local name of plant	Latin species name	Use of plant	Considered good or bad	Distribution

DATA COLLECTION SHEETS

Background Datasheet - Version 2

Basic Site Information

(Record only first time site is visited. Used for interpretation.)

Site name: _____

Description of where the site is located:

Description of central point location:

GPS

Datum: _____

Northing: _____

Easting: _____

Vegetation Type:

	None:	Few:	Many:	Dense:
Shrubs	○	○	○	○
Trees	○	○	○	○

Common Species

Grass: _____

Shrub: _____

Tree: _____

Forb/Herb: _____

Soil Surface: 0 - 10 cm

Texture:	Colour:	Colour:
○ Sticky	○ Red	○ Light
○ Slippery	○ Grey	○ Medium
○ Sandy	○ Brown	○ Dark

Sub-Surface: 10 - 30 cm Compared to soil surface:

More:	Less:	Same:		
○	○	○	Sticky	○ Lighter
○	○	○	Slippery	○ Same as
○	○	○	Sandy	○ Darker

Sub-Surface: 30 - 50 cm Compared to 10 - 30 cm:

More:	Less:	Same:		
○	○	○	Sticky	○ Lighter
○	○	○	Slippery	○ Same as
○	○	○	Sandy	○ Darker

Soil Depth: _____ cm

Slope

Length of string: _____ m

% Slope: _____

(% Slope = [1 / (2*length)] * 100)

Shape:
(walking down the longest slope)

Shape:
(walking across the longest slope)

Observational Indicators

(Record each time data are collected)

Season: _____ Date: _____

- Indicators of Change -

Signs of Erosion:

	None:	Few:	Some:	A lot:
Rills	○	○	○	○
Gullies	○	○	○	○
Litter Dams	○	○	○	○
Pedestals	○	○	○	○
Soil Deposition	○	○	○	○
Water Flow Patterns	○	○	○	○
Sheet Erosion	○	○	○	○
Other: _____	○	○	○	○

Soil Surface Hardness:

Soil surface (0 - 10 cm) in large gaps (gaps > 1 stick) is:

○ Hard ○ Soft ○ No large gaps

Soil surface (0 - 10 cm) in grassy areas is:

○ Much softer than
○ Softer than
○ The same as

the soil surface in large gaps.

- Indicators of Site Use -

Grass (not protected by shrubs/trees) has been grazed:

○ Not at all
○ Lightly
○ Moderately
○ Heavily

Species that have done most of the grazing:

_____

Trees/shrubs have been browsed:

○ Not at all
○ Lightly
○ Moderately
○ Heavily

Species that have done most of the browsing:

_____

Recent cutting:

○ Grass cutting
○ Tree cutting

Animals visible while at site?

○ No
○ Yes Species: _____

Distance to water:

Temporary	Permanent	
○	○	<200 m
○	○	200 m - 1 km
○	○	1 - 3 km
○	○	>3 km

Distance to boma / settlement:

Used within the past year	Used more than a year ago	
○	○	<200 m
○	○	200 m - 1 km
○	○	1 - 3 km
○	○	>3 km

Other indicators, notes, & observations about the site:

EXAMPLES OF SHEETS FILLED OUT

Plant and Ground Cover (%)

Plant	Good	Bad	Total
Tree			
Shrub			
Grass			
Plant Base			
Litter			
Rock			
Lichen			

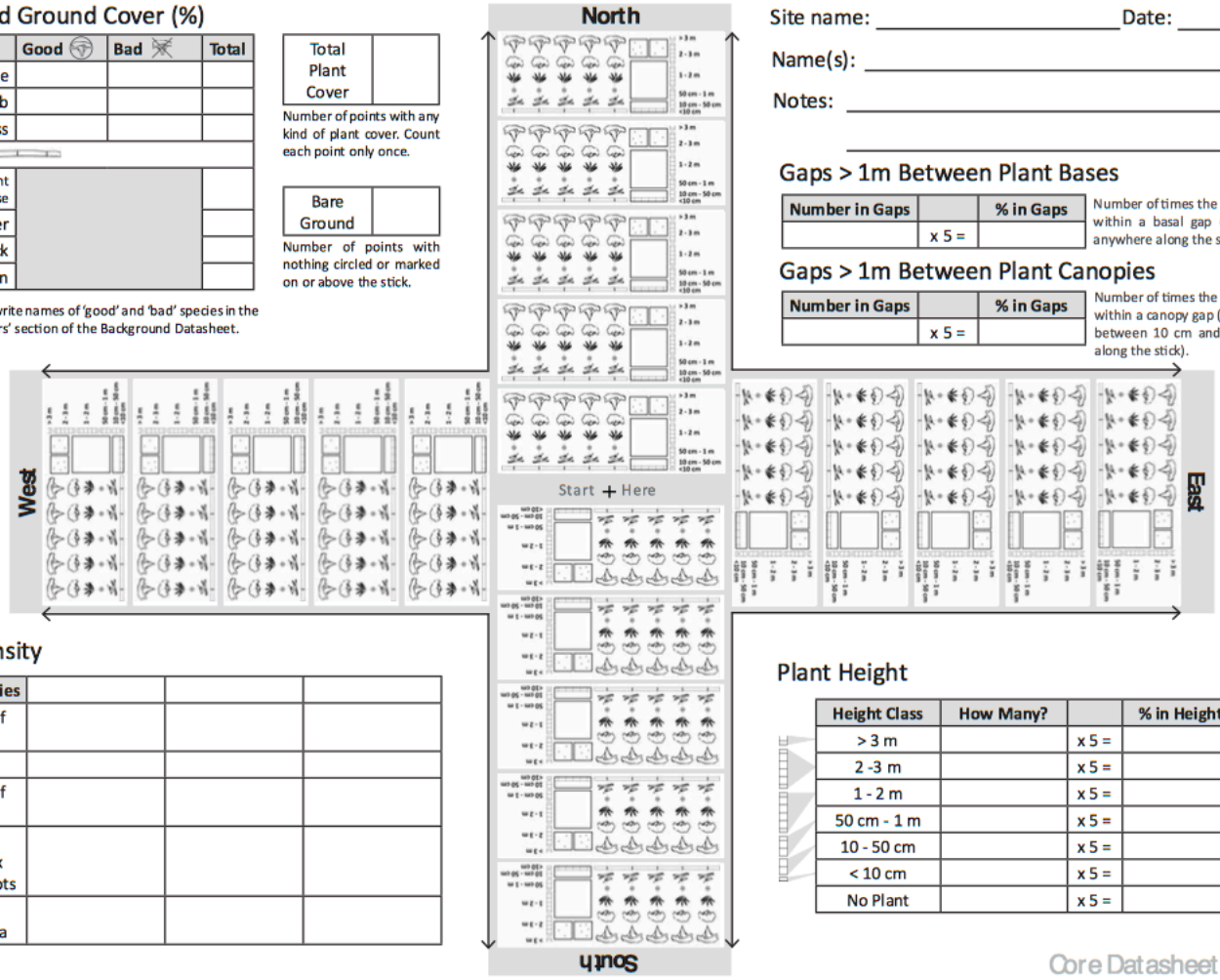
Note: You can write names of 'good' and 'bad' species in the 'Other indicators' section of the Background Datasheet.

Total Plant Cover	

Number of points with any kind of plant cover. Count each point only once.

Bare Ground	

Number of points with nothing circled or marked on or above the stick.



Site name: _____ Date: _____

Name(s): _____

Notes: _____

Gaps > 1m Between Plant Bases

Number in Gaps		% in Gaps
	x 5 =	

Number of times the stick fell entirely within a basal gap (no plant bases anywhere along the stick).

Gaps > 1m Between Plant Canopies

Number in Gaps		% in Gaps
	x 5 =	

Number of times the stick fell entirely within a canopy gap (no plant canopy between 10 cm and 2 m anywhere along the stick).

Plant Density

Type / Species			
Number of Plants			
Plot Size			
Number of Plots			
Area = Plot size x Number plots			
Density = plants/area			

Plant Height

Height Class	How Many?		% in Height Class
> 3 m		x 5 =	
2 -3 m		x 5 =	
1 - 2 m		x 5 =	
50 cm - 1 m		x 5 =	
10 - 50 cm		x 5 =	
< 10 cm		x 5 =	
No Plant		x 5 =	

Background Datasheet - Version 2

Basic Site Information
(Record only first time site is visited. Used for interpretation.)

Site name: Jackal Kopje

Description of where the site is located:

West of exclosure fence

Description of central point location:

Bare patch by large A. mellifera 50 m west of fence

GPS

Datum: WGS 84 (UTM)
Northing: 0032879
Easting: 0264317

Vegetation Type:

	None:	Few:	Many:	Dense:
Shrubs	○	●	○	○
Trees	○	○	●	○

Common Species

Grass: Cynodon; Eragrostis
Shrub: Rhus; Croton
Tree: A. mellifera; Acacia
Forb/Herb: Ocimum; Plectranthus

Soil Surface: 0 - 10 cm

Texture:	Colour:	Colour:
○ Sticky	● Red	○ Light
● Slippery	○ Grey	● Medium
● Sandy	● Brown	○ Dark

Sub-Surface: 10 - 30 cm Compared to soil surface:

More:	Less:	Same:		
○	○	○	Sticky	● Lighter
○	●	○	Slippery	○ Same as
●	○	○	Sandy	○ Darker

Sub-Surface: 30 - 50 cm Compared to 10 - 30 cm:

More:	Less:	Same:		
○	○	○	Sticky	● Lighter
○	●	○	Slippery	○ Same as
●	○	○	Sandy	○ Darker

Soil Depth: >50 cm

Slope

Length of string: 6 m

% Slope: 8.3 %
(% Slope = [1 / (2*length)] * 100)

Shape:
(walking down the longest slope)

Shape:
(walking across the longest slope)

Observational Indicators
(Record each time data are collected)

Season: Dry Date: March 3, 2010

- Indicators of Change -

Signs of Erosion:

	None:	Few:	Some:	A lot:
Rills	○	○	●	○
Gullies	●	○	○	○
Litter Dams	○	○	●	○
Pedestals	○	●	○	○
Soil Deposition	○	●	○	○
Water Flow Patterns	○	○	○	●
Sheet Erosion	○	○	○	●
Other: _____	○	○	○	○

Soil Surface Hardness:

Soil surface (0 - 10 cm) in large gaps (gaps > 1 stick) is:
● Hard ○ Soft ○ No large gaps

Soil surface (0 - 10 cm) in grassy areas is:
○ Much softer than
● Softer than
○ The same as
the soil surface in large gaps.

- Indicators of Site Use -

Grass (not protected by shrubs/trees) has been grazed:
○ Not at all
○ Lightly
● Moderately
○ Heavily

Species that have done most of the grazing: unknown wildlife

Trees/shrubs have been browsed:
○ Not at all
○ Lightly
● Moderately
○ Heavily

Species that have done most of the browsing: elephants

Recent cutting:
○ Grass cutting
○ Tree cutting

Animals visible while at site?
● No
○ Yes Species: _____

Distance to water:

Temporary	Permanent	
○	○	<200 m
○	○	200 m - 1 km
○	●	1 - 3 km
○	○	>3 km

Distance to boma / settlement:

Used within the past year	Used more than a year ago	
○	○	<200 m
○	○	200 m - 1 km
●	●	1 - 3 km
○	○	>3 km

Other indicators, notes, & observations about the site:

Bedrock exposed in some places

Plant and Ground Cover (%)

Plant	Good	Bad	Total
Tree			45
Shrub			1
Grass			15
Plant Base			6
Litter			11
Rock			0
Lichen			34

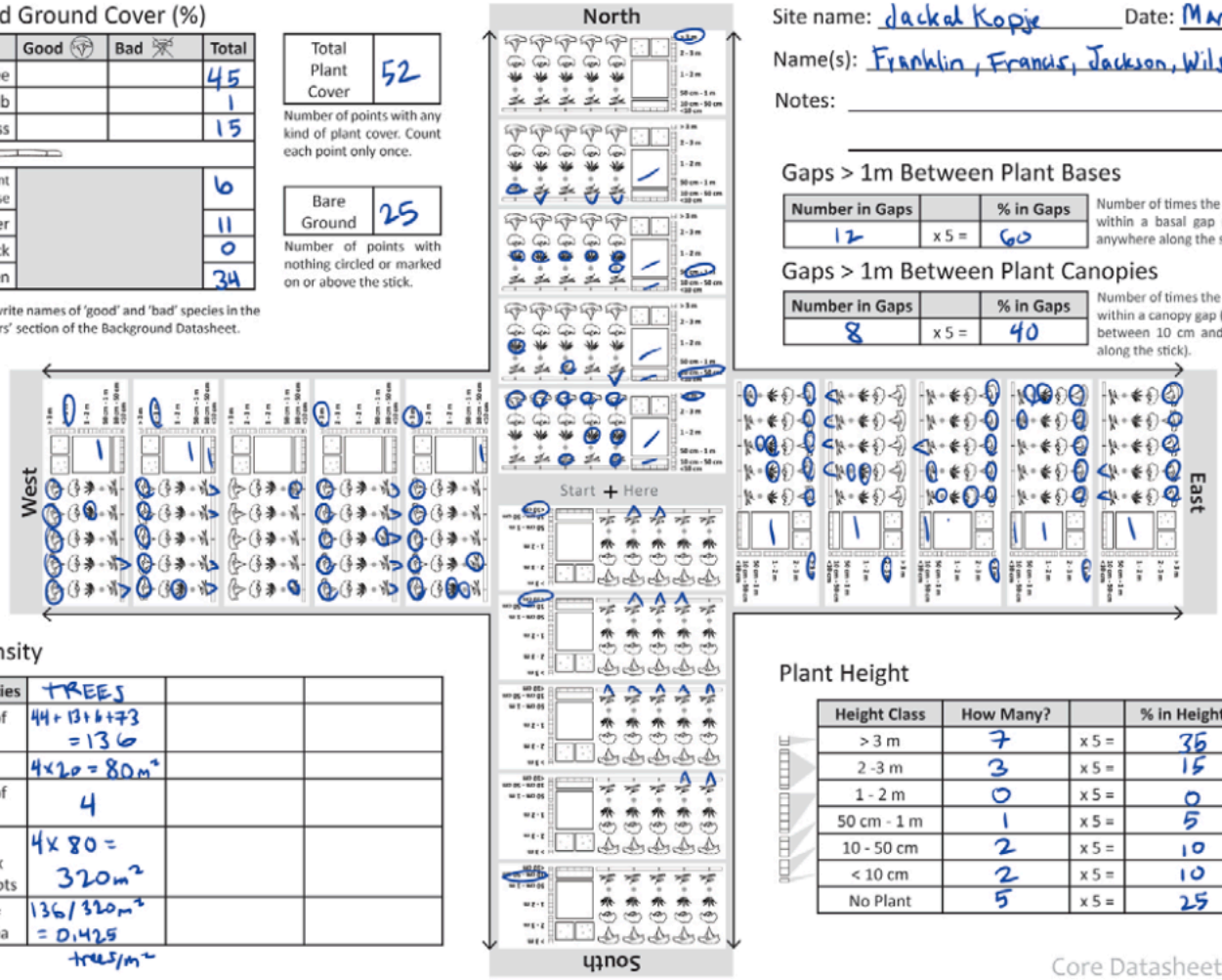
Note: You can write names of 'good' and 'bad' species in the 'Other indicators' section of the Background Datasheet.

Total Plant Cover	52

Number of points with any kind of plant cover. Count each point only once.

Bare Ground	25

Number of points with nothing circled or marked on or above the stick.



Site name: Jackal Kopje Date: March 3, 2010

Name(s): Franklin, Francis, Jackson, Wilson

Notes: _____

Gaps > 1m Between Plant Bases

Number in Gaps		% in Gaps
12	x 5 =	60

Number of times the stick fell entirely within a basal gap (no plant bases anywhere along the stick).

Gaps > 1m Between Plant Canopies

Number in Gaps		% in Gaps
8	x 5 =	40

Number of times the stick fell entirely within a canopy gap (no plant canopy between 10 cm and 2 m anywhere along the stick).

Plant Density

Type / Species	TREES		
Number of Plants	44 + 13 + 6 + 73 = 136		
Plot Size	4 x 20 = 80 m²		
Number of Plots	4		
Area = Plot size x Number plots	4 x 80 = 320 m²		
Density = plants/area	136 / 320 m² = 0.425 trees/m²		

Plant Height

Height Class	How Many?		% in Height Class
> 3 m	7	x 5 =	35
2 -3 m	3	x 5 =	15
1 - 2 m	0	x 5 =	0
50 cm - 1 m	1	x 5 =	5
10 - 50 cm	2	x 5 =	10
< 10 cm	2	x 5 =	10
No Plant	5	x 5 =	25

IV. FURTHER MONITORING AS PART OF A COMMUNITY MONITORING SYSTEM

The above describes the establishment of a baseline from which monitoring can take place. The importance of regular monitoring has also been described in Section 1. It is therefore important that the above data collection is repeated on a regular basis in order to monitor change and ideally progress in attaining the goals of the rangeland management plan as defined by the community, and the impact of activities undertaken.

It is recommended that the above process is repeated once every year, **at the same time and locations** as the baseline was undertaken. The location can be located through the GPS reference. Photos should be taken in the same direction as previously – take the printed photo from the previous baseline to make sure that this is the case. The rangelands inventory information can also be re-collected every year – however if thought too time-consuming this could be every two or four years. Monitoring would be particularly important in areas where rangeland management interventions and activities have taken place in order to assess the impact of these.

This monitoring should be part of a community monitoring system set up as part of the rangeland management plan. In the plan it should state who is responsible for doing the monitoring, how often this will be, what will be done, and what resources will be required to undertake it. Those responsible for the implementation of the rangeland management plan should make sure that the monitoring is undertaken in a timely and correct manner.