



Natural Resource Conservation and Development.

Level II

Learning Guide # 51

**Unit of Competence: Assist Sustainable Wildlife
Conservation and Development**

**Module Title: Assisting Sustainable Wildlife
Conservation and Development**

LG Code: AGR NRC2 M11 1019.

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LO4: Collect and Record Wildlife Resource Data



Instruction Sheet	Learning Guide #51
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This learning guide is developed to provide you the necessary information regarding the following **content coverage** and topics –

- Determining Specific Requirements of Data.
- Wildlife Resource Data Collection Methods
- Communicating Advice about proposed Data Collection.
- Identifying difficulties and seeking advice
- Completing Legible and Accurate Records.

This guide will also assist you to attain the learning outcome stated in the cover page. Specifically, upon completion of this Learning Guide, **you will be able to –**

- Determine specific requirements of Data.
- Select and record wildlife resource data collection methods
- Communicate advice about proposed data collection.
- Identify difficulties and seeking advice
- Complete legible and accurate records.

Learning Instructions:

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described in number 3 to 6.
3. Read the information written in the “Information Sheets 1, Information Sheets2, Information Sheets3, Information Sheets 4, and Information Sheets 5.
4. Accomplish the “Self-check 1, Self-check”2, Self-check 3, Self-check 4, and Self-check 5 **in page – 3, 8, 9 ,11, and 14 respectively.**
5. If you earned a satisfactory evaluation proceed to “Information Sheet 2”.
6. Submit your accomplished Self-check. This will form part of your training portfolio.



Information Sheet-1	Determining Specific Requirements of Data.
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4.1. Determining Specific Requirements of Data.

Introduction

Requirements management is the process of documenting, analyzing, tracing, prioritizing and agreeing on requirements and then controlling change and communicating to relevant stakeholders. It is a continuous process through out a project. A requirement is a capability to which a project outcome (product or service) should conform.

The purpose of requirements management is to assure the organization documents, verifies and meets the needs and expectations of its customers and internal or external stakeholders. Requirements management begins with the analysis and elicitation of the objectives and constraints of the organization.

The basic questions are asked before data collections are:

- What are the goals and objective? (plan of data collection)
- What are the constraints? (short come for data collection)
- How collect data? (methods data collection)
- What are the current tools and equipment available and new needed?
- Where and when data to be collect?
- Do we have the right people to support for data collection?
- What department has the budget for this?

Generally, Feasibility of wildlife data collection, costs of the requirements and other related issue are determined.

Types of Data

Data can be classified in to primary or secondary based on their sources.

Primary Data

Primary data means original data that has been collected specially for the purpose in mind.

It means when an authorized organization, investigator or an enumerator collects the data for the first time from the original source.



Primary data collection use survey, field research, questionnaires, direct interview, experiments and direct observation

Secondary Data

Secondary data is data that has been collected from different literatures. Secondary data is data that is being reused. Usually in a different context.

Secondary data collection may be conducted by collecting information from different paper based sources such as books, journals, research report, newspaper, magazines, personal diaries letters and electronic sources such as internet, videos, CD ROMs, broadcast, etc.

Self-Check – 1

Multiple choice

Name: _____ **Date:** _____

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page. (2pts each)

- _____ is the process of documenting, analyzing, tracing, prioritizing and agreeing on requirements and then controlling change and communicating to relevant stakeholders (3pts)
A. Requirements management C. Wild life management
B. Data collection D. None
- Primary data collection includes one of the following
A. Field research C. Direct interview
B. Questionnaires D. All
- One is not secondary data collection method.
A. Books B. research report
C. Journals D. Experiments

Note: Satisfactory rating – 3 points

Unsatisfactory - below 3 points

Answer Sheet

Score = _____

Rating: _____



Information Sheet-2	Wildlife Resource Data Collection Methods
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4.2. Wildlife Resource Data Collection Methods

To introduce the names of different techniques or methods used in counting wild animals, the following are listed. (Direct and in direct methods)

Sources of data may be obtained from a variety of sources, such as;

- Counting wild animals at particular stages of growth, those with particular characteristics or at specified locations, feeding rates and mixes,
- Wildlife marking systems, reproductive data (mating, birthing, defects, individual traits and sport hunting),
- Disease prevention and control mechanisms,
- Medications administered by veterinary units, with necessary equipment.

Direct Methods

1- AERIAL SAMPLE COUNT

It is now a very frequent used method of counting large mammals. Particularly aerial transect sampling count is most popular type of sampling method employed.

- The principle is that the aircraft flies in a straight line from one side of the census zone to the other at a fixed height above the ground.
- Streamers are attached to the wing struts of the aircraft so that the observer sees a strip demarcated on the ground.
- The transects are sample units, and the observer counts all the animals that he sees between the streamers.

Use of aerial photographs and satellite images are also used to estimate population density of bigger animals.

2- GROUND COUNTING

This could be carried out by using vehicle or on foot.

2.1 - TOTAL COUNT

- It requires large number of personnel's, which line up, walk through the area and drive all animals from the area



- It is a method used to count relatively large animals
- Observers must be stationed around the target area to count any animal leaving it.
- The applicability of total count methods obviously varies among species and their habitat
- Sometimes the whole area must be searched; every animal must be located and accurately counted.

The limitations of the method are:

- It only possible on smaller area.
- Applicable only to observable & larger animals.
- It will be difficult for fast moving animals. Because it is likely to count the same animal twice & the animal aware and disappear before locating them.

2.2- TRANSECT SAMPLE COUNTS

Out of the given whole area, only samples of a given area are used to estimate the total population. The general procedure here is to count all the individuals on sample area of known size and to extrapolate the average to the whole area.

An important principle for accuracy / reliability depends on:

- The greater the number of unit samples, the greater the accuracy of the estimate. Here the statistician a device is required.
- The more clumped (aggregate) the animal, the more sampling unit is needed.
- The population of each sample area must be known exactly.
- The sample must represent the whole area; this is achieved by random sampling.

Counting can be done either by use of vehicle or on foot. The experts needed to distribute many short transect at random locations within the census zone. The transect should oriented to cut across the major vegetation boundaries.

The simple formula used to estimate population density is:

$$O = (K \times S \times 2) \text{ km}^2$$

$$D = N/O$$

$$P = N/O \times H$$



Where: -

O = Observed area (sample area)

K = Length of the transact distance traveled while counting, when vehicle used it determined from the speedometer and on foot census determined by number of paces.

S = Sighting distance on both sides of the transact.

The distance of any group of Animals form the observes is checked with a range finder.

D = Density, number of animals counted per km²

N= Total number of animals counted on observed area.

H = Size of the whole conservation area on which one wants to estimate population size.

P = Total population size of the whole are or population estimate.

For foot census three individuals are usually needed

- * One observer
- * One pacer
- * One recorder

Indirect methods

There are certain situations in which none of the direct methods discussed so far can be applied.

For example, when the animals are totally, or almost, invisible or when only a proportion of the total animals in an area can be seen at any one time. In this case indirect methods of counting have to be used.

1. Mark Release - Recapture methods

The basic theory of mark-release-recapture methods is that a known number of animals from an area is caught and marked in some obvious way. The animals are then released.

A suitable period of time is allowed for the marked animals to mix in the population, before further catches are carried out. The total number of animals can then be estimated from the proportion of marked to unmarked animals in the catches.



The technique involves capture, marking, release and recapture. The method not only estimates density but also birth rate and death rate of population.

Different types of marking

- Paints
- Labels (tag)
- Dyes
- Mutilation

The result obtained using such techniques sometimes become inaccurate because:

2. Pellet counts

The theory is that if you know the rate of defecation then you work out from pellet counts the number of animals in an area.

The main practical problems are: -

- Knowing the rate of defecation,
- Locating all the piles of pellets, and
- Accurately identifying and aging the pellets.

3. Broadcasting tape-recorded calls.

The idea here is to use a tape recording of a social call to elicit a vocal or visual response from an otherwise silent or invisible animal.

E.g. the method is used in east Africa on hyenas. In this case lion feeding noises were broadcast to attract hyenas, and *vice-versa*.

4. Vocalization

E.g. the number of pheasant calls heard per 15 minutes in the early morning has been used as an index of the size of the pheasant population.



Self-Check – 2

Written test.

Name: _____ **Date:** _____

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page.

1. Write down the direct and in direct methods of wild life data collection.

A. Direct methods (4pts)

B. In direct methods (4pts)

Note: Satisfactory rating 4 points

Unsatisfactory - below 4 points

Answer Sheet

Score = _____

Rating: _____



Information Sheet-3	Communicating Advice about proposed Data Collection.
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4.3. Communicating Advice about proposed Data Collection

People advised about the wildlife resource data collection activities.

Other employees working with wildlife resource conservation and materials may need to be advised so that the activities can proceed smoothly and wildlife resource under study is ear tagged or collared until data collection is completed.

The necessary advice during data collection of wild animals

- Don't approach wild animals
- Don't feed wildlife
- Use binocular to minimize stress and disturbance of wild animals
- Observer should identify wild animal in lesser risk area

Self-Check – 3	Written test
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Name: _____ **Date:** _____

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page.

1. Why do you communicate advise about data collection? (4pts)
2. What advice should be considered during data collection of wild life? (3pts)

Note: Satisfactory rating - 4 points

Unsatisfactory - below 4 points

Answer Sheet

Score = _____
Rating: _____



Information Sheet-4	Identifying difficulties and seeking advice
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4.4. Identifying difficulties and seeking advice

Common Problems Encountered in data Collection

Studies performed to date have indicated that the upper-air measurement systems described in this document can reliably and routinely provide high quality meteorological data.

However, these are complicated systems, and like all such systems are subject to sources of interference and other problems that can affect data quality. Users should read the instrument manuals to obtain an understanding of potential shortcomings and limitations of these instruments. If any persistent or recurring problems are experienced, the manufacturer or someone knowledgeable about instrument operations should be consulted.

Generally Common Problems Encountered in Data Collection are:

- I. In accuracy of data collection and data analyzing
- II. Biasness of data (falsify the data collected)
- III. Sampling error
- IV. Uncertainties in collection mechanism.

Uncertainties collection mechanism may produce unrealistic information.

The difficulties reporting procedure is designed to,

- Identify potential hazards to the health and safety of workers
- Encourage early reporting and corrective actions
- Reduce the number of incidents arising from work activities
- Enable senior management to identify areas concern
- To identify the steps to be taken for reporting difficulties conditions that may arise in the workplace



Self-Check – 4

Written Test

Name: _____ **Date:** _____

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page.

1. List down common problems encountered in Data Collection? (8pts)

a. _____

b. _____

c. _____

d. _____

Note: Satisfactory rating - 4 points

Unsatisfactory - below 4 points

Answer Sheet

Score = _____

Rating: _____



Information Sheet-5	Complete legible and accurate records.
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5.1. Complete legible and accurate records.

The concept of **record** is variously defined. The ISO 15489-1:2016 defines *records* as "information created, received, and maintained as evidence and as an asset by an organization or person, in pursuit of legal obligations or in the transaction of business". While there are many purposes of and benefits to records management, as both these definitions highlight, a key feature of records is their ability to serve as evidence of an event. Proper records management can help preserve this feature of records.

Not all documents are records. A record is a document consciously retained as evidence of an action. Records management systems generally distinguish between records and non-records (convenience copies, rough drafts, duplicates), which do not need formal management. Many systems, especially for electronic records, require documents to be formally declared as a record so they can be managed. Once declared, a record cannot be changed and can only be disposed of within the rules of the system.

Records may be covered by access controls to regulate who can access them and under what circumstances. Physical controls may be used to keep confidential records secure – personnel files, for instance, which hold sensitive personal data, may be held in a locked cabinet with a control log to track access. Digital records systems may include role-based access controls, allowing permissions (to view, change and/or delete) to be allocated to staff depending on their role in the organization. An audit trail showing all access and changes can be maintained to ensure the integrity of the records.

Just as the records of the organization come in a variety of formats, the storage of records can vary throughout the organization. File maintenance may be carried out by the owner, designee, a records repository, or clerk. Records may be managed in a centralized location, such as a records center or repository, or the control of records may be decentralized across various departments and locations within the entity. Records may be formally and discretely identified by coding and housed in folders specifically designed for optimum protection and storage capacity, or they may be casually identified and filed with no apparent indexing. Organizations that manage records casually find it difficult to access and retrieve information when needed. The inefficiency of filing maintenance and storage systems can prove to be costly in terms of wasted space and resources expended searching for records.



An inactive record is a record that is no longer needed to conduct current business but is being preserved until it meets the end of its retention period, such as when a project ends, a product line is retired, or the end of a fiscal reporting period is reached. These records may hold business, legal, fiscal, or historical value for the entity in the future and, therefore, are required to be maintained for a short or permanent duration. Records are managed according to the retention schedule. Once the life of a record has been satisfied according to its predetermined period and there are no legal holds pending, it is authorized for final disposition, which may include destruction, transfer, or permanent preservation.

A disaster recovery plan is a written and approved course of action to take after a disaster strikes that details how an organization will restore critical business functions and reclaim damaged or threatened records.

An active record is a record needed to perform current operations, subject to frequent use, and usually located near the user. In the past, 'records management' was sometimes used to refer only to the management of records which were no longer in everyday use but still needed to be kept – "semi-current" or "inactive" records, often stored in basements or offsite. More modern usage tends to refer to the entire "lifecycle" of records – from the point of creation right through until their eventual disposal.

From the very first day you should always carry a notebook in which they take notes while things are happening, or very soon afterwards. They should also get into the habit from the start - of sitting down at the end of each day with their notebook to write down their observations more fully (usually a minimum of three or four pages per day), either in their notebook or on a computer.

When we refer to 'field notes' we mean the detailed notes that the researcher makes at the end of the day which describe:

- what has happened
- who they talked to
- what they observed
- what they think about all of these things
- perhaps some thoughts on what they need to concentrate on the coming days of research

Field notes have to be written regularly, preferably every day. They are your most important record of all that you have observed and what you think about your project. Over time, these field notes will build into a rich and valuable archive of full document.



The aim in writing field notes is to record everything in detail. Field notes are not reports or summaries, or just a selection of interesting things. They are the raw material.

Things that you might have at first thought were not interesting or important may later become of interest to you or your initiative. By keeping detailed field notes you will always have access to your earlier research ideas and observations and you can use them at any time, now or in the future.

The data records should become:

- legible: not to be illegal
- accurate: avoid unnecessary or error
- Complete: the recorded information should be full expressing the objectives that sated
Compile and present wildlife resource data

Self-Check – 5	Written Test
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Name: _____ Date: _____

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page.

1. List down characteristics of accurate record? (6pts)
 - a. _____
 - b. _____
 - c. _____
2. Define record? (4pts)

Note: Satisfactory rating - 5 points

Unsatisfactory - below 5 points

Answer Sheet

Score = _____
Rating: _____



List of Reference Materials

1. EBI (2014) Ethiopia's Fifth National Report to the Convention on Biological Diversity. Ethiopian Biodiversity Institute, Addis Ababa.
2. Wolff, J.V. (1961) Wildlife in Ethiopia. Ethiopian Forestry Review, 2, 3-13.
3. Tefera, M. (2011) Wildlife in Ethiopia: Endemic Large Mammals. Current Zoology, 6, 108-116.