



# FINAL REPORT

## TRAINING ON SPATIAL DATA ANALYSIS FOR STAFF AND VOLUNTEERS OF KOMODO NATIONAL PARK CONSERVATION

Location : Komodo Visitor Center  
Cakalang Lane, Labuan Bajo, Komodo, West Manggarai, East Nusa  
Tenggara 86763

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Komodo National Park

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## INTRODUCTION

Assalamu'alaikum Wr. Wb.

Praise be to Allah, the Most Gracious, the Most Merciful, for His blessings and guidance bestowed upon us all, enabling the training program organized for the National Park to proceed smoothly and successfully.

In order to enhance human resources, the Komodo National Park Office and *the Investing in the Komodo Dragon and Other Globally Threatened Species in Flores (IN – FLORES)* Project are collaborating with PT Arkabumi Sinergi Bersama to conduct a Geographic Information System (GIS) Training Program titled "Spatial Data Analysis Training for Conservation Officers & Cadres of Komodo National Park." It is hoped that through this activity, participants will enhance their competencies in the field of GIS.

In the implementation and writing of this activity report, there are still many shortcomings and errors. Therefore, we apologize and hope for constructive criticism and suggestions from all parties for improvements in future events.

In closing, we hope that this activity report will be beneficial to all parties.

Peace be upon you.

Yogyakarta, July 17, 2025

PT Arkabumi Sinergi Bersama

A handwritten signature in black ink is written over the ARKABUMI logo. The logo consists of a stylized blue 'A' with an orange triangle at its base, followed by the word 'ARKABUMI' in blue capital letters.

Dhega Wasi Wihikan, S.T.,

Director

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## CHAPTER I

### Introduction

#### I.1 Background

Komodo National Park is a conservation area with extraordinary biodiversity, particularly as it is the natural habitat of rare species such as the Komodo dragon (*Varanus komodoensis*). The area also encompasses unique terrestrial and marine ecosystems, requiring comprehensive and data-driven management approaches. In the context of conservation and sustainable natural resource management, the use of geospatial technologies such as Geographic Information Systems (GIS) has become increasingly important.

A Geographic Information System (GIS) is a computer-based system used to collect, store, analyze, and present data related to geographical positions on the Earth's surface. In Komodo National Park, GIS can be used for various purposes, such as monitoring land cover changes, species distribution, patrol route planning, and tourism activity monitoring. This technology enables faster, more accurate, and data-driven decision-making in efforts to preserve the national park's ecosystem.

The application of GIS in Komodo National Park not only supports conservation activities but also aids in spatial planning and mitigation against threats such as forest fires or human disturbances. Through the integration of spatial data and thematic analysis, park managers can map protection zones, priority habitats, and areas prone to damage. Therefore, a study on the utilization of GIS in the management of Komodo National Park is highly relevant and crucial in supporting technology-based conservation.

#### I.2 Purpose and Objectives

The Geographic Information System training organized by the Komodo National Park Office, IN-FLORES, and PT Arkabumi Sinergi Bersama is expected to improve the competence of employees, particularly in the GIS sector.

The objectives of this activity include:

##### A. Basic Geographic Information System Training

1. Participants will be able to manage spatial data (*input, create, edit, delete*)
2. Participants can digitize vector spatial data in the form of points, lines, and polygons
3. Participants can manage attribute data
4. Participants can perform map *layouting*

5. Participants can enter GPS coordinates into a map
  6. Participants can perform simple spatial analysis
- B. Advanced Geographic Information System Training:
1. Participants can create thematic maps such as
    - a. Wildlife and Plant Potential Maps
    - b. Land Patrol Route Maps
    - c. Marine Patrol Route Map
    - d. Habitat suitability map for red-legged goslings based on a 'weighted overlay' of multiple input map parameters
  2. Participants can perform spatial analysis for various needs such as resource distribution, topography, and weather.

### **I.1 Target**

The target audience for this activity is Komodo National Park staff.

## CHAPTER II T OF ACTIVITIES

### II.1 Time and

The Geographic Information System Training Activity was conducted with the following details:

- Activity Location : Komodo Visitor Center  
Cakalang Lane, Labuan Bajo, Komodo, West Manggarai, East Nusa Tenggara 86763
- Event Date : Wednesday, July 9, 2024 – Friday, July 11, 2025

### II.2 Speakers

Speakers for this Mine Geodetic Training include:

- **Lesan Permonojati, S.Si., M.Sc.** – Advanced GIS Instructor  
Over 15 years of experience in Geographic Information Systems, and also as an ArcGIS and QGIS Instructor at PT Arkabumi Sinergi Bersama
- **Ahmad Nur Aly, B.Eng.** – Basic GIS Instructor  
Over 3 years of experience in ArcGIS and QGIS Geospatial Training at PT Arkabumi Sinergi Bersama

### II.3 Equipment

The software used is ArcMap, which is part of ArcGIS Desktop

### II.4 Schedule

The activity will be conducted on Wednesday, July 9, 2025 – Friday, July 11, 2025, from 8:00 AM to 4:00 PM.

The schedule of activities and materials to be covered are outlined in the table below.

Day	Level	Training Materials
<b>Wednesday, July 9, 2025</b>		
I	Basics	Theory and concepts of Geographic Information Systems (GIS)
		Basic operation of GIS software (ArcGIS)
		Introduction to spatial data (raster and vector)
		Digitization of spatial data (points, lines, polygons)
	Advanced	Refresher on Geographic Information System (GIS) theory and concepts
		Analysis of Wildlife and Plant Potential

Day	Level	Training Materials
		Analysis of Land and Sea Patrol Routes
<b>Thursday, July 10, 2025</b>		
II	Basic	Advanced spatial data digitization
		Integration of spatial data and attribute data
		Spatial data editing: attribute editing and queries
	Advanced	Habitat Suitability Analysis of the Red-legged Goose Bird
		Analysis of land and sea topography
<b>Friday, July 11, 2025</b>		
III	Basics	Symbolic notation
		Map layout creation
		Case study: Inputting points from field acquisition coordinates
		Spatial data analysis
	Continuation	Rainfall analysis
		Discussion & case studies from participants

## II.5 Participants

There are 12 participants in the Basic Geographic Information System Training, consisting of 3 women and 9 men, with the following names:

No	Name	Gender
1	Ahmadin, S.Hut	Male
2	Ande Kefi	Male
3	Gabriel Guan	Male
4	Judy Aries	Male
5	Kresensia Boo	Female
6	Maksimianus Pamur	Male
7	Margaretha Priska	Female
8	Muhlas	Male
9	Naoma Yunita Banamtuan	Female
10	Rafael F. A. Putra	Male
11	Rawuh Pradana	Male
12	Thomas Swibertus Ude	Male

Meanwhile, there are 3 participants in the Advanced Geographic Information System Training, consisting of 2 females and 1 male, with the following names:

No	Name	Gender
1	Agitha Putri Br Bangun	Female
2	Dimitri Hanzaila	Male
3	Maria Rosdalima Panggur	Male

Of the total 15 participants, 4 ( %) were female. The female participants came from several relevant fields/departments and actively participated in all training sessions.

## II.6 Training Method

The training methods used in this activity were designed to support participants' theoretical understanding and practical skills in applying Geographic Information Systems (GIS). The training approach focused on participatory methods and hands-on training so that participants could immediately apply the material they learned.

The training methods used include:

### 1. Interactive Lectures (20%)

Lectures are delivered by instructors to provide a basic understanding of GIS concepts, types of spatial data, data processing, and GIS applications in various fields. The lectures are delivered interactively by involving participants in question and answer sessions and brief discussions.

### 2. Hands-on Practice (70%)

The main part of the training consists of practical use of ArcGIS software, with simple but applicable case studies. The practice is carried out in stages, starting from:

- Importing and visualizing spatial data
- Processing vector and raster data
- Spatial analysis
- Creation of thematic maps
- Simulation of GIS applications for specific thematic mapping

Each participant uses their own computer/laptop and is assisted by instructors and teaching assistants to ensure that each participant follows the steps properly.

### 3. Discussion and Feedback (10%)

At the end of the session, participants are encouraged to present their practical results and discuss the challenges they faced during the training. This discussion aims to strengthen understanding, improve processes, and provide feedback on the training methods.

This method was chosen to ensure that participants not only understand GIS concepts theoretically but also have basic skills in operating GIS software and applying it in the context of their respective jobs or fields. In its implementation, the training is divided into two classes: Basic and Advanced. The Basic class focuses on the fundamentals of GIS and basic operation of ArcMap software, while the Advanced class focuses on specific themes that support work at Komodo National Park.

## II.7 Training Schedule

- **Day 1 – Wednesday, July 9, 2025**

The material on day 1 of the basic level class was an explanation of the concepts of Geographic Information Systems and an introduction to ArcMap tools. Participants were also introduced to the creation of vector spatial data in the form of shapefiles (SHP). Participants selected and queried existing vector data based on attributes. Participants created vector data in the form of shapefiles and continued with an introduction to digitization and attribute filling.

The advanced-level class will review the material and tools in greater detail and depth. Participants will then create maps and perform spatial analysis on the theme of Wildlife and Plant Potential as well as Land and Sea Patrol Routes, with the output being a map.

- **Day 2 – Thursday, July 10, 2025**

The material for Day 2 of the basic class is the creation of a thematic map of Land Cover and Tourism on Padar Island in Komodo National Park. At this stage, participants must be able to create vector data points, lines, and polygons with their attributes. Participants also fill in attribute data manually and automatically using *the field calculator* and *calculate geometry*. Some steps from the previous day will be reviewed, and participants will then be asked to perform them again without instructor guidance to test their understanding. The advanced-level class on Day 2 continues with thematic map creation and spatial analysis. Participants will conduct habitat suitability analysis for red-footed boobies using a 'weighted overlay' of several input map parameters. Additionally, participants will perform

terrain analysis of land and sea, producing slope maps and sea depth maps in Komodo National Park.

- **Day 3 – Thursday, September 19, 2024**

The material for day 3 of the basic level class is the symbology and *layouting* of the map created on day 2. Then, there is a quiz on spatial data analysis tasks found on the map. After that, there is a discussion and case study session, especially regarding the use of ArcMap needed by participants in their TN Nasional work activities. One of them is inputting coordinates from field measurements into ArcMap to determine the location, shape, and area.

The advanced-level class on Day 3 continues map creation and spatial analysis with the theme of rainfall using the IDW (Inverse Distance Weighted) method to estimate rainfall values at a specific point. This is followed by a discussion and question-and-answer session, including the creation of a grid map for Komodo National Park.

## **II.8 Achievement of Learning Outcomes**

All participants in the basic-level class were able to follow the process from start to finish, resulting in thematic maps, layouting, and spatial data analysis. Participants in the advanced-level class were also able to complete the creation of all targeted thematic maps.

## **II.9 Activity Evaluation**

- The facilities provided by Komodo National Park were very complete, supporting the smooth implementation of the activity in line with its objectives.
- Participants arrived on time, were highly enthusiastic, and motivated, enabling the activities to proceed effectively and smoothly.

## CHAPTER

### III

## CLOSING

#### III.1 Conclusion

From the implementation of the Komodo National Park Geographic Information System Training, it can be concluded that the activity achieved its training targets.

#### III.2 Recommendations

These recommendations are expected to be beneficial for relevant parties. Participants can practice their skills independently or through discussions with other participants, and further apply these skills in decision-making or analysis in their daily work at Komodo National Park. If any difficulties arise, participants may contact the instructor or Arkabumi.

This concludes the activity report of the training program organized by Komodo National Park and IN-FLORES in collaboration with PT. Arkabumi Sinergi Bersama. The appendix contains documentation, maps, and spatial analyses conducted by the participants, as well as the attendance list. It is hoped that this report provides an overview of the implementation of the activity.

As a closing, it is hoped that this training will enhance the technical skills of the participants. Additionally, it is hoped that this training will assist Komodo National Park in improving operational efficiency through a more skilled and trained workforce. Finally, we apologize for any shortcomings or errors encountered during the training activity. Thank you.

## ATTACHMENT

### Activity Documentation

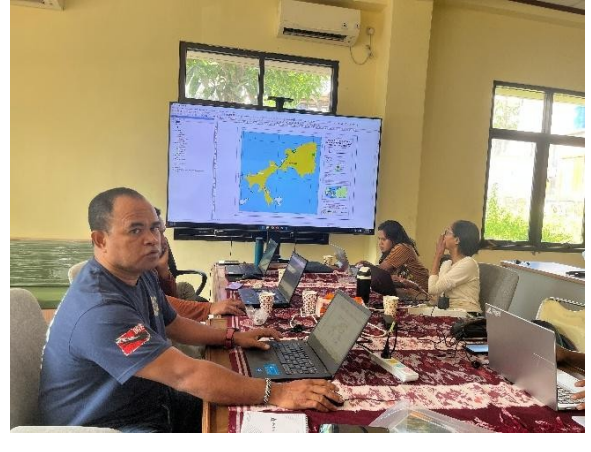
#### 1. Day 1 (Date: Wednesday, July 9, 2025)



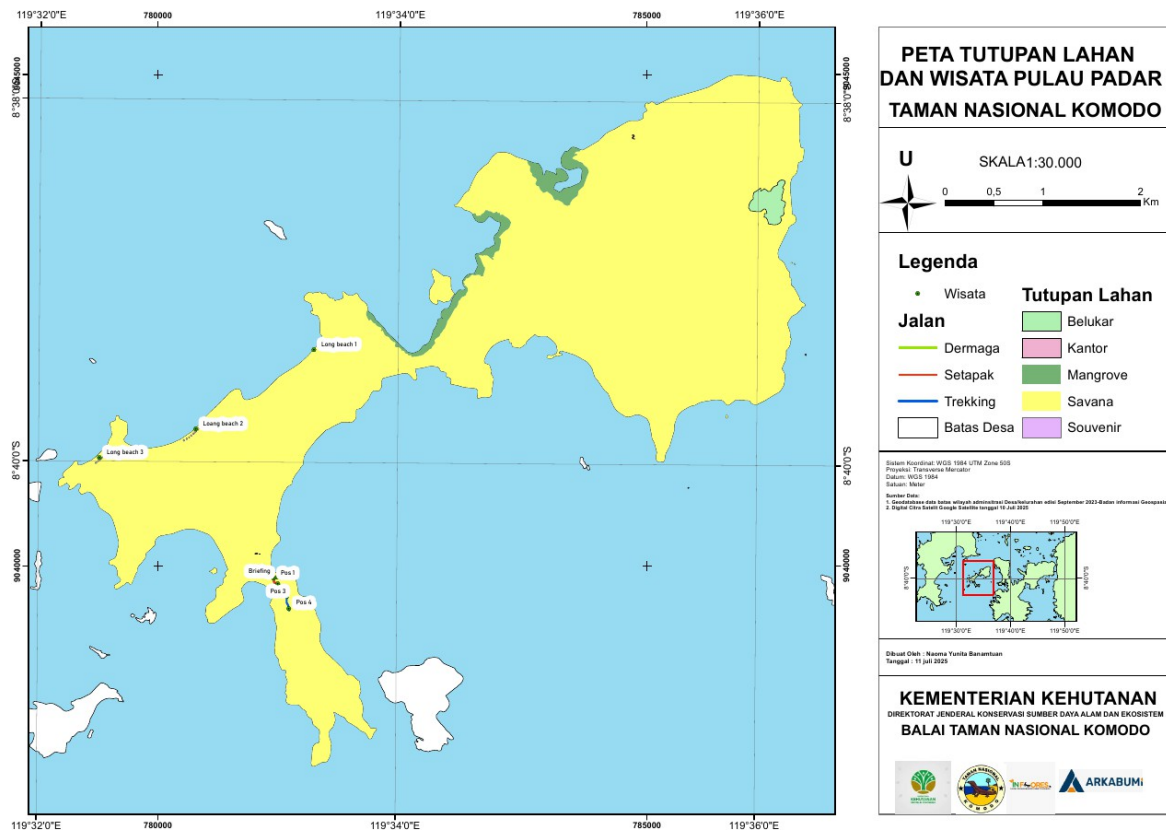
2. Day 2 (Date: Thursday, July 10, 2025)



3. Day 3 (Date: Friday, July 11, 2025)

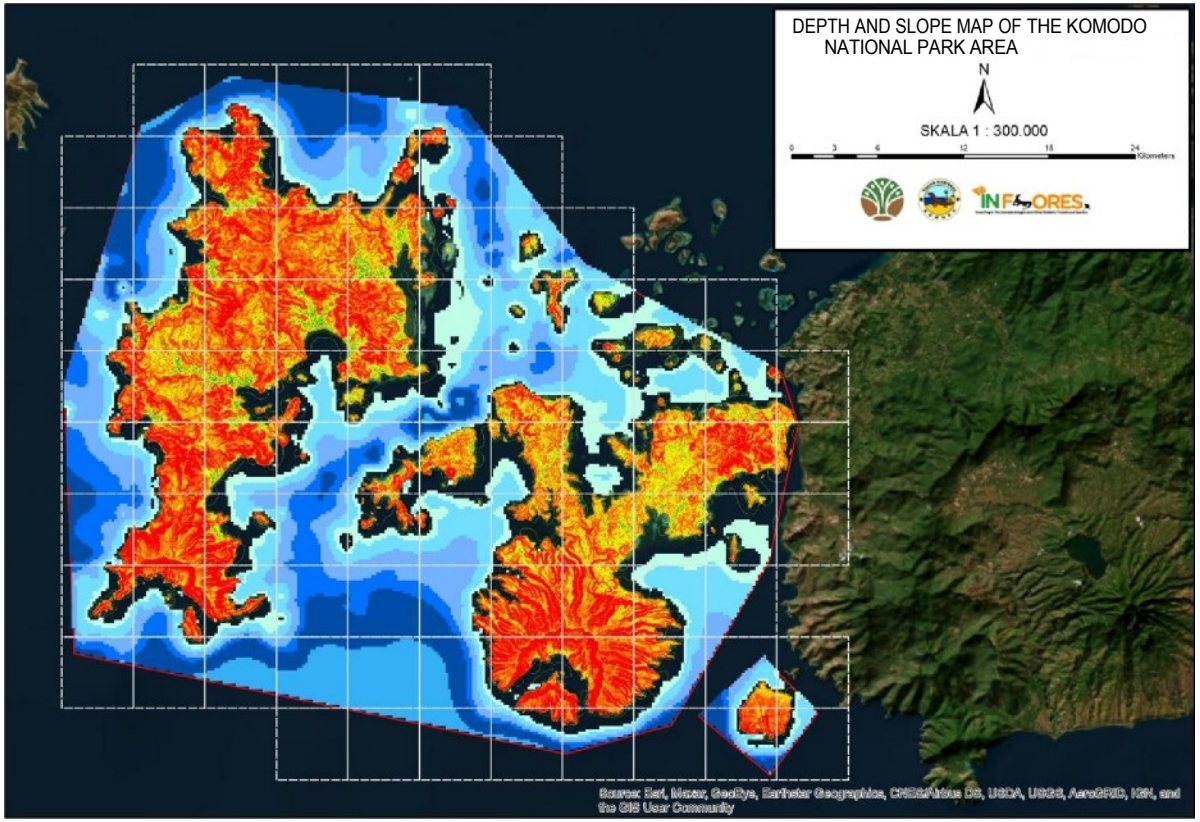
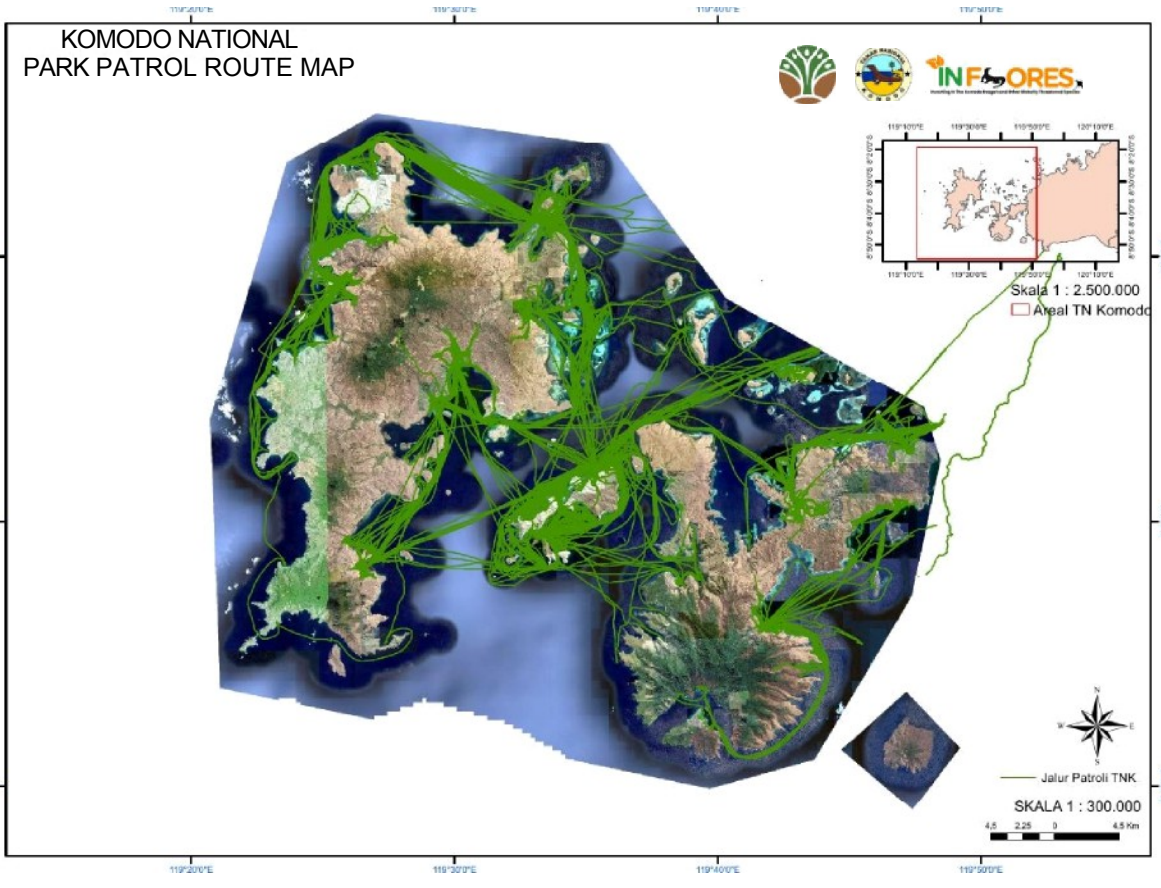


## Thematic Map Results

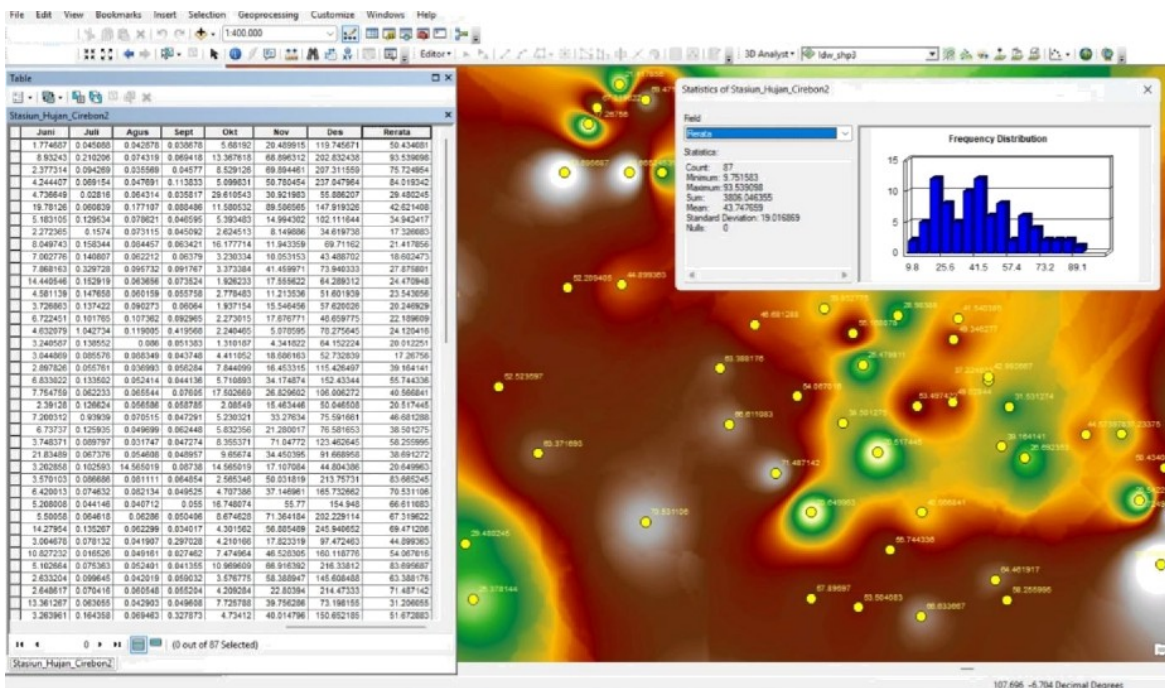
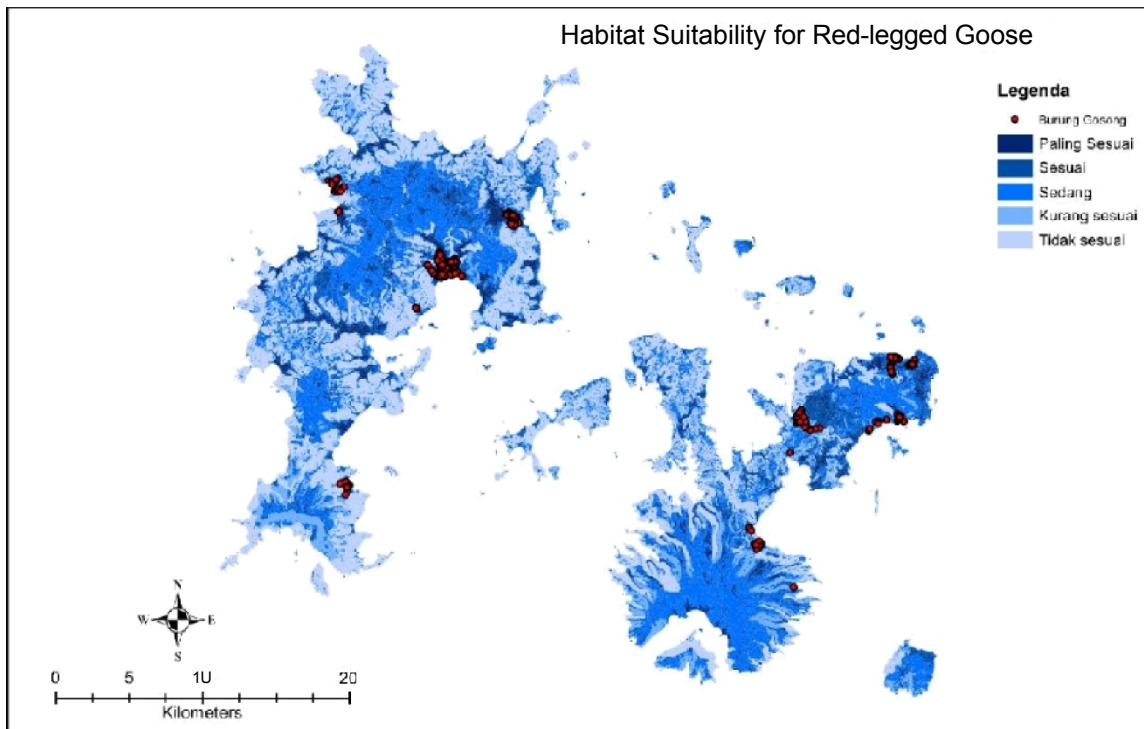


1. Mangrove di Pulau Padar berdasarkan peta di atas terkonsentrasi di Pulau Padar bagian Utara yang terbagi dalam dua lokasi yang sering disebut dengan bakau/mangrove Panjang dan Bakau/Mangrove Love. Luasan Bakau Love/Mangrove Love adalah 14,1 Ha, sedangkan luasan bakau/mangrove Panjang adalah 15,3 Ha. Kondisi ini menunjukkan bahwa untuk bakau Panjang memiliki luas lebih 0,8 % dibanding bakau love.
2. Bangunan di pulau padar terdiri dari Bangunan Kantor Seksi Padar baik di bagian utara dan Selatan Pulau Padar selain itu terdapat juga bangunan tempat penjualan souvenir. Dari peta, luas bangunan untuk kantor dari 9 (Sembilan) bangunan menggunakan areal seluas 0,09 Ha dan luasan yang diperuntukan untuk souvenir sejumlah 18 (delapan belas) bangunan adalah 0,32 Ha. Total areal yang digunakan untuk 2 jenis bangunan tersebut adalah 0,41 Ha. Lokasi souvenir di legenda ditandai dengan warna ungu, terletak di lokasi wisata long pink beach dan Padar Selatan.
3. Berikut merupakan data export dari tutupan lahan dengan keterangan luasan masing-masing:

Id	Tutupan	Luas_M2	Luas_Ha
0	Savana	13620006,429900000000	1361,90808944000
0	Mangrove	153722,65764100000	15,37226576410
0	Mangrove	141323,52479200000	14,13235247920
0	Belukar	98548,30892530000	9,85483089253
0	Kantor	311,86954877900	0,03118695488
0	Kantor	145,46356920000	0,01454635692
0	Kantor	39,5425552350	0,00395425555



# Habitat Suitability for Red-legged Goose



# Daftar Hadir



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## Daftar Hadir Peserta Pelatihan

### Pelatihan Sistem Informasi Geografis Taman Nasional Komodo

Instruktur : Lesan Permonojati dan Ahmad Nur Aly

Hari/Tanggal : Rabu, 9 Juli 2025

No	Nama	TTD
1	Dimitri Hanzalla	
2	Muhlas	
3	Thomas Swibertus Lde	
4	Rafael F.A. Putra	
5	Ahmadin, S.Hut	
6	Ande Kefi	
7	Maksimianus Pamian	
8	Margaretha Priska	
9	Wilhelmus Gampur Kresniansa Boo	
10	Naoma Yunita Banamtuan	
11	Agitha Putri Br Bangun	
12	Rawuh Pradana	
13	Gabriel Guan	
14	Maria Rosdalima Panggur	
15	Judy Aries	

PIC

Aldira Bayu

Instruktur

Lesan Permonojati

Instruktur








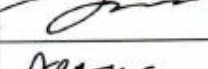




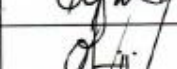


Ahmad Nur Aly

### Daftar Hadir Peserta Pelatihan

#### Pelatihan Sistem Informasi Geografis Taman Nasional Komodo

Instruktur : Lesan Permonojati dan Ahmad Nur Aly

Hari/Tanggal : Kamis, 10 Juli 2025

No	Nama	TTD
1	Dimitri Hanzalla	
2	Muhlas	
3	Thomas Swibertus Ude	
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7	Maksimianus Pamalar	
8	Margaretha Priska	
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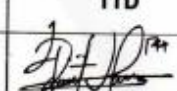
















Ahmad Nur Aly

**Daftar Hadir Peserta Pelatihan**
**Pelatihan Sistem Informasi Geografis Taman Nasional Komodo**

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Hari/Tanggal : Jumat, 11 Juli 2025

No	Nama	TTD
1	Dimitri Hanzalla	
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5	Ahmadin, S.Hut	
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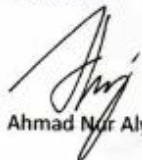
Aldira Bayu

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