REPORT ACTIVITY RESULTS

Prey Animal Inventory and Habitat Assessment of Komodo Dragons (*Varanus komodoensis)* In Pota in 2024

East Nusa Tenggara KSDA Center, Region II
KSDA Division

ENDORSEMENT SHEET

On behalf of the Head of the East Nusa Tenggara Natural Resources Conservation Center, hereby declares approval and ratification of the Report on the Results of Prey Animal Inventory and Habitat Study of Komodo Lizards (*Varanus komodoensis*) in Pota, East Manggarai Regency, East Nusa Tenggara Province in 2024 with the method, location, cost and implementation schedule as described in this work plan.

Ruteng, October 2024

Checked/assessed by :
Head of Region III Conservation Section,

Yohanes Berchmans Fua, S.Hut. NIP.
19720201 200003 1 006

Prepared by :
Skilled PEH,

Wahid Fortuna Anwar
NIP. 19991019 202203 1 002

Endorsed by :
An Head of the NTT KSDA Center Head
of the KSDA Region II Division,

Dahliwari Widiyanto, S.Hut, M.Si. NIP.
19810119 200501 1 006

FOREWORD

The Komodo monitor lizard (*Varanus komodoensis*) is an endemic Indonesian reptile species found only on several islands in East Nusa Tenggara. As an apex predator in its ecosystem, the existence and sustainability of the Komodo monitor lizard population is highly dependent on the availability of prey animals and the quality of its habitat.

Effective conservation of Komodo monitor lizards requires an in-depth understanding of prey animal population dynamics and habitat characteristics that support the survival of this species. Therefore, it is very important to conduct prey animal inventory and habitat assessment of Komodo monitor lizards.

This Activity Implementation Report is expected to provide accurate data and information to support conservation efforts and habitat management of Komodo monitor lizards in the future.

The authors,

TABLE OF CONTENTS

TABLE OF TABLES

LIST OF FIGURES

LIST OF ATTACHMENTS

I. INTRODUCTION

A. Background

Komodo monitor lizards are the largest lizards in the world, with adult males reaching 3 m in length and weighing 87 kg (Jessop *et al*., 2006). Although it is unusual for terrestrial reptiles to be apex predators, the absence of carnivorous mammals and their large size make adult Komodo monitor lizards apex predators in their ecosystem (Auffenberg, 1981; Ciofi, 2002; Jessop *et al*., 2006; 2007). Currently, the distribution of Komodo monitor lizards is restricted to five small islands in Eastern Indonesia, with four island populations located within Komodo National Park (TNK) and another fragmented population on the island of Flores (Ciofi & De Boer, 2004). The distribution of Komodo dragons outside of conservation areas on Flores Island is estimated to have declined significantly over the last 40 years (Ciofi, 2002). Anthropogenic threats, including poaching of Timor deer (*Rusa timorensis*) and habitat loss are thought to be the main causes of the various disruptions to the Komodo monitor lizard's distribution (Ciofi *et al*, 2007; Jessop *et al*, 2007). As a result, long-term monitoring is recommended to understand the status of Komodo monitor lizard populations so that management authorities can identify threatened populations and take action to save them (Jessop et al., 2007).

According to Auffenberg (1981) the distribution of Komodo dragons includes western Flores Island, Komodo Island, Rinca Island, Padar Island, Gilimotang and Nusa Kode Island. The distribution on Flores Island can be grouped into two main parts, namely in the western part of Flores Island from Labuan Bajo to Nangalili and on the North Coast from Dampek to the west of Riung (BBKSDA NTT-KSP, 2019, Ciofi, 2002). In the NTT KSDA Center area, several conservation areas are the habitat of these animals, namely: Wae Wuul CA and TWA Tujuh Belas Pulau, including the Pota and Longos Island Essential Ecosystem Areas.

The Pota Essential Ecosystem Area (KEE) is located on the northern coast of Flores Island and is part of the Komodo monitor lizard distribution. Administratively, this area is part of Sambi Rampas Sub-district, East Manggarai Regency. Habitat types in this area consist of open deciduous forest, coastal forest and mangrove forest. Komodo lizards in the KEE Pota forest are distributed from Nanga Baras in the west to Nampar Sepang in the east.

Since 2014, BBKSDA NTT and KSP have conducted annual monitoring of the Komodo monitor lizard population and its prey in KEE Pota. Based on

As a result of prey animal survey observations, deer as the main prey animal of Komodo monitor lizards are no longer found in this area. This is due to the high level of human activity accompanied by the conversion of Komodo monitor lizard habitat into settlements and plantations. Some other potential prey animals that can be found are monkeys, wild boars, goats, cows, buffaloes and civets. Then, the results of a survey of the Komodo monitor lizard population using *camera traps* in 2023 estimated the population abundance in this area to be around 0.189 (meaning: 18.9% of the study area is occupied by Komodo dragons, with a study area in Pota of 921.43 Ha) with an estimated population abundance of 3.35 ± 1.92 individuals in Pota in 2023.

The Pota Essential Ecosystem Area is an area outside the conservation area (ex situ), monitoring the Komodo monitor lizard population is very necessary to determine its existence and estimate the Komodo lizard population. Data and information obtained through this activity will be used in management as a consideration in making policies related to Komodo monitor lizards.

B. Purpose and Objectives

This activity is intended to collect the latest data and information on prey animal populations and habitat conditions of Komodo monitor lizards in their distribution areas. This information will form the basis for decision-making and planning of more effective conservation strategies to protect this species and its ecosystem.

The objectives of this activity include:

1. Inventory the species and abundance of prey animals of Komodo monitor lizards in the study area.
2. Assess the characteristics and quality of Komodo monitor lizard habitat, including vegetation, water sources and other environmental factors.
3. Identify factors affecting prey availability and habitat quality for Komodo monitor lizards.
4. Analyze potential threats to prey animals and Komodo monitor lizard habitat.
5. Provide baseline data for long-term monitoring of Komodo monitor lizard prey populations and habitat conditions.

C. Legal Basis

1. Presidential Decree No. 4 of 1993, concerning National Animals and Flowers;
2. Law No. 5 of 1990 on Conservation of Biological Resources and Ecosystems;
3. Law No. 41 of 1999 on Forestry;
4. Decree of the Director General of KSDAE No. 180/IV/KKH/2015, priority endangered animals that are monitored for populations of 25 species;
5. Minister of Environment and Forestry Regulation No. 15 of 2021 on the Organization and Work Procedures of the Ministry of Environment and Forestry;
6. Minister of Environment and Forestry Regulation No. 17 of 2022 on the Organization and Work Procedure of the Technical Implementation Unit of the Directorate General of Natural Resources and Ecosystem Conservation;
7. Budget Implementation List (DIPA) of Direct Foreign Grants for In-Flores Project Year 2024.

II. METHODOLOGY

A. Prey animal population monitoring method

Population assessment of large mammals

In wild mammal management, information on both numbers and other factors affecting species numbers over time is needed. Various methods have been used to conduct direct surveys of animals (Buckland *et al.* 2001). However, for some species there are problems with capture techniques, so indirect surveys by finding signs of their presence (pellets, droppings, nests, tracks, etc.) can provide more accurate data. Furthermore, direct measurements are often very complex and tend to be costly, making them less applicable in developing countries. In particular, where activities are conducted to monitor multiple species.

Dung counts using line transect, quadrat sampling, or line transect-based sampling methods have been used extensively to estimate the numbers, often to provide population density indices, of a wide variety of vertebrate species including deer, kangaroos, elephants, possums, pigs and goats (Forsyth *et al.* 2003; Marques *et al.* 2001). The advantage of using this method, compared to conventional techniques for estimating population density based on encounter and capture of target animals, is that it is not affected by avoidance behavior or the presence of dense vegetation that reduces the probability of encounter.

This method can be applied especially to monitor the population condition of Timor deer (*Cervus timorensis*), water buffalo (*Bubalus bubalis*), wild boar (*Sus scrofa*) which are the major prey of Komodo monitor lizards.

How to work

1. At the location to be surveyed, random points are first determined to determine the location of the transect, the number of points is adjusted to the area to be surveyed, and the number of points is expected to be sufficient to represent all habitat types at the location. Then the points are recorded coordinates using GPS. These points will then become the starting point as a reference for laying transect lines.
2. After obtaining the reference point, then randomly determine the direction of the transect (compass direction in the range 0-360°).

3. From the transect reference point, stretch a transect that is 150 meters long and has been marked every 5 meters as the center point of the plot in the predetermined direction.
4. Along the transect line, 30 plots were placed every 5 meters in the form of a circle with a radius of 1m. To facilitate the creation of circular plots, plastic/wooden stakes with a 1-meter long rope can be used at the center point of the plot to create the circumference of the circle.
5. An observer then records all dung groups (for deer, pigs and buffalo) within the plot. Leaf and grass debris were removed or set aside to clarify the area so that counting could be done properly.
6. Dung was counted as a group unit if more than 50% of the dung was within the plot. Dung was called a group if it: 1) in the form of whole clumps; 2) in the form of clustered granules; 3) in the form of scattered granules but still in one group. Identification of dung groups can be based on similarities in color, shape and size.
7. If there are scattered dung (especially deer) in a plot then they are counted individually (one by one, each grain). To determine the number of scattered dung groups in a plot, the number of individual dung was then divided by the average value of the number of individual dung from 10 intact dung groups, resulting in the number of groups in a plot.
8. All dung groups were counted, unless they were completely damaged or destroyed (due to decomposition or trampling, or other reasons) they were excluded from the count.
9. Environmental variables, especially rainfall and temperature, affect damage. It is recommended that dung counts are conducted in the summer, when there is no significant rain (around late August - September). In addition, to maintain consistent counts, the survey should be conducted at the same time for each site.

B. Prey Animal Population Data Analysis

The prey density index value obtained using this method is not an absolute prey density value. The prey density index is calculated by dividing the number of dung groups in all transects by the number of transects to obtain an average value of dung per transect for each area surveyed.

$$IP = \frac{n_{1-30}}{nt}$$

Where *IP* : Population index
n1-30 : Total number of dung groups in the plot for all transects in the study site
nt : Number of transects

This index value can be used to compare the density of Komodo monitor lizards' large prey between sites as well as to compare the prey of Komodo monitor lizards at the same site each year.

C. Methods to detect the presence of Komodo monitor lizards

Camera trap.

Camera trap device (Blaze Video model A-252). *The camera trap* was attached to a tree trunk at a height of 40 cm from the ground and placed at a distance of 3-4 meters from the bait box (Figure 2). *The camera trap* was programmed to take 3 pictures every time an animal was detected and the video was 15 seconds long. A time interval of 15 minutes was set to avoid shooting the same animal continuously. The results of the data collection were written in the form of a *tally sheet* (attached) for analysis in data processing.

D. Analysis to determine the probability of detection and site occupancy values.

Analysis of the value of the proportion of area *occupied* by Komodo monitor lizards used the *site occupancy* model approach, with the help of the PRESENCE 2.4 program (Hines, 2006; http://www.mbr-pwrc.usgs.gov/software/presence.html). The analysis model used was the Royle/Nichols Heterogeineity model (Royle and Nichols, 2003), based on a modification of the closed population *Mark-Recapture* method by MacKenzie *et al.* (2002; 2006). The model estimates population size based on temporally replicated presence/absence data at several study sites. The model assumes heterogeneity in detection probabilities between each study site due to heterogeneity in abundance, meaning that higher detection probability values indicate a tendency for higher abundance values as well (Royle and Nichols, 2003).

The *single season* model was chosen because data collection is conducted over a short period of time on a regular basis without any long breaks in time that could disrupt data collection efforts, so weather conditions are relatively the same (MacKenzie *et al*., 2002). The basic assumptions that must be met in the *single season* model include: (1) the study site is free from changes during the sampling duration, (2) the probability of occupancy is the same for all areas, (3) species can be identified well, (4) the probability of detection of a species in one area is independent of other areas (MacKenzie *et al*., 2002; MacKenzie & Kendall, 2002).

III. ACTIVITY IMPLEMENTATION

A. Tools and Materials

1. Prey Animal Population Monitoring

No	Name of Tools and Materials	Usage
1.	Work Map	As a reference for the location and determination of prey animal population monitoring sites.
2.	GPS	GPS is a tool to determine the location of the Komodo monitor lizard population monitoring location.
3.	Compass	Determination of transect direction
4.	Transect rope	A 150-meter long transect rope, which has been marked every 5 meters, can be made from fishing line.
5.	Stationery and Tally Sheet	To record transect results

2. Monitoring Komodo monitor lizards (*Varanus komodoensis*)

Tools and materials used during the Komodo monitor lizard (*Varanus komodoensis*) monitoring activities are:

No	Name of Tools and Materials	Usage
1.	Work Map	As a reference for the location and determination of the location of monitoring the Komodo monitor lizard population.
2.	GPS	Saving the geographical coordinates of the Komodo monitor lizard population monitoring location.
3.	Compass	Determination of cardinal directions
4.	Digital Camera	Documenting the results of the activity
5.	Camera Trap	Documenting each Komodo dragon recorded by a camera with a PIR (Passive infra Red) sensor with triggers in the form of movement or heat with a Bushnell type camera. or heat with Bushnell type
6.	Binoculars	Viewing the condition of the Komodo dragon population monitoring area
7.	Tallysheet and field notebook + writing pad	Document field data
8	Bait meat	As bait to bring komodo lizards to the observation site
9	Nylon Rope	To tie the bait wrapped in plastic
10.	Plastic bags and bait boxes	To store the meat and spread the foul smell of the meat to attract Komodo dragons.
11.	Timer	To determine the observation time

Table 1. Tools and Materials

Description:

a) *Camera trap*, the type of camera commonly used in the BBKSDA NTT working area is the *Blaze Video A-252* model.
b) GPS, this tool is needed to know and mark the location where the camera trap is permanently placed, so that it will be useful for long-term population monitoring programs.
c) Map, required for guidance in *camera trap* positioning and sampling design activities.
d) Bait (meat), For each *camera trap* monitoring location, 2 Kilograms of bait meat is allocated. Bait is needed to attract Komodo monitor lizards around the *camera trap* location and also to attract Komodo dragons to the *camera trap* position, so that their presence can be detected by the *camera trap*.
e) Plastic bags for hanging bait, plastic bags are needed to store pieces of bait meat and then hang them, to help decompose the meat and spread the stench of rotting meat to attract Komodo monitor lizards, preferably chosen in a striking color, so that later it is easier to recognize the location in the process of taking *camera traps*.
f) Bait box, a small box, a place to store bait in front, serves to attract Komodo Dragons to the front of the camera trap. It is recommended that the box size is not too small and made of strong material so that it cannot be eaten by Komodo monitor lizards and is not easily damaged / rusted.

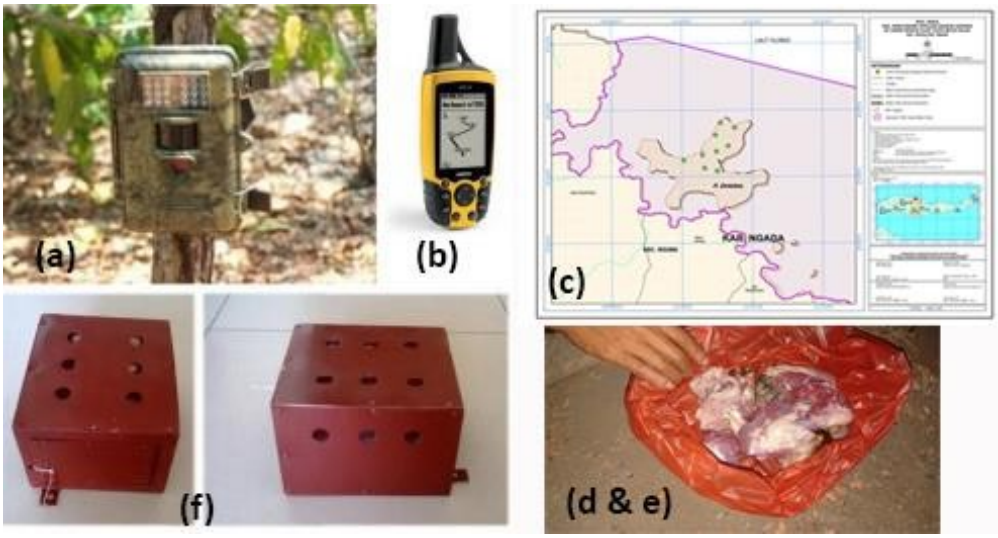


Figure 1. Tools and Materials

B. Location

The location of the Komodo monitor lizard (*Varanus komodoensis*) population monitoring activity was carried out in Pota, administratively located in Sambi Rampas District, East Manggarai Regency, East Nusa Tenggara Province.

Location map of the Komodo monitor lizard monitoring activity in Pota, East Manggarai Regency

C. Implementation Team

The personnel implementing this activity are planned to be 11 (eleven) people as listed in table 1 below:

No	Name/NIP/Rank/Group	Position
1	*2*	*3*
1.	Beatrix Luisa Wisang, S.P./ 19731006 200112 2 002	Junior PEH Expert at the KSDA Region II Division
2.	Ferdinandus Boy Kali, S.Hut./ 19861119202321 1 007	First Expert Forestry Extension Worker at Watunggong Regional Conservation Resort
3.	Wahid Fortuna Anwar / 19991019 202203 1 002	Beginner PEH at Watu Ata CA Area Conservation Resort
4.	Arakib Raunsafikr Wuran, A.Md./ 19900821 202321 1 013	Skilled Forestry Instructor at Labuan Bajo Area Conservation Resort
5.	Hasan Mere Gadi Djou / 19790608 199903 1 001	Executive Forestry Ranger at Ende Regional Conservation Resort
6.	Yohanes Ntarung / 19740719 200604 1 006	Data Processor at Watunggong Regional Conservation Resort

7.	Saverius A. Jematu / 19920827 202421 1 024	Manggala Agni at Watunggong Area Conservation Resort
8.	Timotio Lopes Busa/ -	Other Forest Safety Personnel at Ende Regional Conservation Resort
9.	PM	Supervision from Balai
10.	PM	Supervision from the Center

Table 2. Activity Implementation Personnel

D. Cost

The cost of implementing prey animal population monitoring activities and monitoring the Komodo monitor lizard population amounted to **Rp. 73,870,000 (*Seventy Three Million Eight Hundred Seventy Thousand*)** with the following details:

Sub Activity/MAK	Sub-Activity/Type of Expenditure/Details of Expenditure	Volume		Unit Cost (Rp.)	Total (Rp.)
2	3	4		5	6
521211	Material Expenditure				14,570,000
	- Tools and Materials	1	Keg	6,220,000	6,220,000
	- Duplication and binding of reports	7	Ex	50,000	350,000
	- Personal Use	12	pcs	250,000	3,000,000
	- Preparation meeting consumption	20	OH	50,000	1,000,000
	- Consumption of result discussion meeting	20	OH	50,000	1,000,000
	- Food for laborers [10 people x 6 hr x 1 keg]	60	OH	50,000	3,000,000
521219	Other Non Operational Goods Expenditure				6,000,000
	- Labor wages [10 people x 6 days x 1 keg]	60	OH	100,000	6,000,000
522141	Rental Expenditure				3,000,000
	- Vehicle rental	1	KEG	3,000,000	3,000,000
524111	Ordinary Office Travel Expenditure				59,300,000
	> Travel from Fields and Sections				**34,800,000**
	- Daily allowance for personnel from Division/Section [6 people x 10 days]	60	OH	400,000	24,000,000
	- Lodging costs for personnel from the Division / Section [6 people x 9 days]	54	OH	200,000	10,800,000
	> Travel from Resort				**15,800,000**
	- Daily allowance for personnel from Resort [4 persons x 10 days]	40	OH	170,000	6,800,000
	- Lodging expenses for personnel from Resort [4 persons x 9 days]	45	OH	200,000	9,000,000
	> Travel in the framework of Supervision				**8,700,000**
	- Daily allowance [2 persons x 5 days x 1 keg]	10	OH	430,000	4,300,000
	- Lodging expenses [2 people x 4 days]	8	OH	550,000	4,400,000
	- Transportation costs [2 people x 1 keg]	2	OT	5,000,000	10,000,000
	J u m l a h : A			**-**	**73,870,000**

Table 3. Detailed Cost Budget

E. Time and Schedule of Activity Implementation

The implementation of monitoring will be carried out for 10 (ten) days starting from August 18 to 27, 2024 as per the following schedule:

No	Stage of Implementation	Activity Implementation Time Month: July to October 2024											
		July		December									
		25	26	1	2	3	4	5	6	7	8	9	10	11
1.	Preparation of RPK													
2.	Preparation of tools and materials													
3.	Activity implementation													
4.	Recapitulation and data analysis													

Table 4. Activity Implementation Schedule

F. Report

The report is prepared by the Implementation Team as documentation of the results of activities and as an accountability material for the implementation of activities.

IV. RESULTS AND DISCUSSION

A. Monitoring Komodo monitor lizards using *camera traps*

Due to the Komodo monitor lizard monitoring activities in Pota in 2024, the location of the *camera trap* is different from the previous year, so from the results of the installation of camera traps at 18 points of the location, it is known that as many as 4 camera trap points captured the presence of Komodo dragons, as shown in the table below:

TALLY SHEET DATA CAMERA TRAP

Lokasi : **Pota** **Tahun :** **2024**

No	ID Camera	Tanggal Pasang	Tanggal Ambil	4-Oct-24		5-Oct-24		6-Oct-24	
				Sesi 1 (Pagi)	Sesi 2 (Sore)	Sesi 3 (Pagi)	Sesi 4 (Sore)	Sesi 5 (Pagi)	Sesi 6 (Sore)
1	POTA 01	3-Oct-24	7-Oct-24	0	0	0	0	0	0
2	POTA 02	3-Oct-24	7-Oct-24	0	0	0	0	0	0
3	POTA 03	3-Oct-24	7-Oct-24	0	0	0	1	0	0
4	POTA 04	3-Oct-24	7-Oct-24	0	0	0	0	0	0
5	POTA 05	3-Oct-24	7-Oct-24	0	0	0	0	0	0
6	POTA 06	3-Oct-24	7-Oct-24	0	0	0	0	0	0
7	POTA 07	3-Oct-24	7-Oct-24	0	0	0	0	0	0
8	POTA 08	3-Oct-24	7-Oct-24	0	0	0	0	1	0
9	POTA 09	3-Oct-24	7-Oct-24	0	0	0	0	0	0
10	POTA 10	3-Oct-24	7-Oct-24	0	0	0	0	0	0
11	POTA 11	3-Oct-24	7-Oct-24	0	0	0	0	0	0
12	POTA 12	3-Oct-24	7-Oct-24	0	0	0	0	0	0
13	POTA 13	3-Oct-24	7-Oct-24	0	0	0	0	0	0
14	POTA 15	3-Oct-24	7-Oct-24	0	0	0	0	0	0
15	POTA 16	3-Oct-24	7-Oct-24	0	0	0	0	0	0
16	POTA 17	3-Oct-24	7-Oct-24	0	0	0	0	0	0
17	POTA 18	3-Oct-24	7-Oct-24	0	0	1	0	0	0
18	POTA 19	3-Oct-24	7-Oct-24	1	0	1	0	1	0

Table 5. Data on the Presence of Komodo Lizards

Due to the implementation of Komodo Dragon Population monitoring activities in Pota in 2024 carried out in a different place than the previous year, we have not been able to compare the distribution of the Komodo dragon population, but at the location to date the distribution area is in the eastern and western parts of Watu Weri hill with the following distribution map:

Figure 3. Distribution map of Komodo monitor lizards caught by camera traps.

There are several images of Komodo lizards captured by camera traps:

Figure 4. Capture of Komodo monitor lizards

Analysis Result

The estimated density of Komodo monitor lizards per camera trap has a value of 0.2728. The estimated value of the proportion of Komodo monitor lizard occupancy area in the study area in Pota is 0.2388. While the estimated value of Komodo monitor lizard abundance in the Pota study area shows 2.54 and the estimated probability of detection is 0.2036.

The number of camera traps installed was 18 cameras with a distance of 500 meters between camera traps. The Komodo dragon's olfactory distance is 500 meters, with the detection distance of each camera overlapping and not overlapping each other, the camera detection radius is ± 500 meters.

From the results of the camera capture, it can be seen that the Komodo monitor lizards in Pota are relatively healthy, this is shown through photos at the base of the Komodo monitor lizard's tail that looks fat (convex) not concave. As is known, based on several studies, the base of the tail of the Varanidae lizard family (monitor lizards) (including Komodo lizards) is a storage place for fat reserves (Ariefiandy et all, 2012). However, security of the Komodo monitor lizard population area is still considered to maintain the survival of the lizards.

Discussion

Of the 18 camera trap installation points, there were 4 points that detected the presence of komodo lizards.

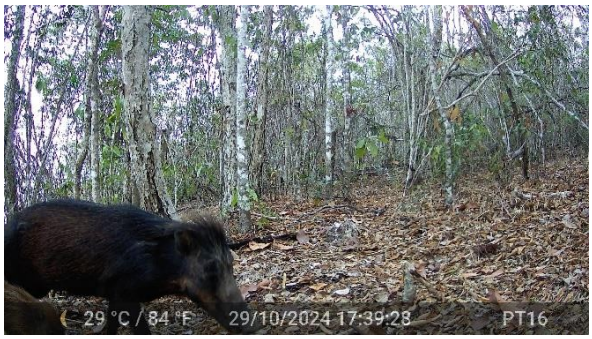
The results of the Presence analysis show that the estimated average density of Komodo dragons per camera trap during monitoring at the Pota study site in 2024 is 0.27 ± 0.14 individuals with a 95% confidence level and the confidence interval value ranges from 0.1 - 0.75 individuals. While the estimated proportion of Komodo dragon occupancy area in the Pota study area during monitoring was 0.24 ± 0.11 with a 95% confidence level, the confidence interval value ranged from 2% - 45%. Thus, about 24% or approximately a quarter of the studied area in the Pota study site was occupied by Komodo dragons at the time of monitoring.

The detection probability value of 0.20 ± 0.09 with a 95% confidence level means that during the activity the probability of detecting the presence of Komodo dragons in each session was only 7% - 43%. This means that 24% of the area inhabited by komodo dragons during this activity, if a camera trap is installed for 6 sessions (3 days) of monitoring, there is a possibility of seeing komodo dragons around only 20%. While the estimated population abundance of komodo lizards during this activity was 4.91 ± 2.54 individuals with a confidence level of 95%, the total population ranged from 1 - 13 individuals. This shows that the Komodo monitor lizard population in the Pota study area is relatively difficult to find directly. However, it is necessary to conduct regular monitoring in order to obtain population trend data so as to reach a conclusion on the condition of the Komodo monitor lizard population in Pota.

The minimum number of Komodo dragons known from monitoring activities carried out in the Pota study area in 2024 amounted to 5 Komodo dragons consisting of 4 juveniles and 1 adult. This data was obtained through the data tabulation form in Form 2. Individual Estimation where direct counting of each individual Komodo dragon caught by camera traps is carried out.

B. Monitoring of Komodo monitor lizards' prey animals

From the results of camera trapping, it can be seen that there are several animals that have the potential to become food animals for Komodo monitor lizards, including Gosong birds (*Megapodiidae*) and long-tailed monkeys (*Macaca fascicularis*) (Figure 10.).



Wild boar (*Sus sucrofa*)

Monkey (*Macaca fascicularis*)

Porcupine (*Hystrix javanica*)

Weasel (*Paradoxurus*)

Figure 5. Potential prey items of Komodo dragons

Using the faecal count method (counting groups of animal feces on plots along the transect line. From 33 transect lines with a length of 150 meters, divided into 30 plots/transect with a plot area of 3.14 m^2. From a total of 495 plots, several animal droppings were found, but monkey droppings with the highest density/hectare among other animals with a density/hectare of 357.1± 62.3. Below is a photo documentation of animal droppings found inside and outside the plots.

Komodo monitor lizard (*Varanus komodoensis*) feces

Monkey droppings (*Macaca fascicularis*)

Figure 6. Animal droppings found during the *Feacal Count* session.

C. Potential Threats

During the implementation of monitoring activities, the team found potential threats to Komodo dragons in the Pota study area, namely competing predators and predators for the dragons themselves, namely dogs and water monitors. The following is a photo of a camera trap that captured the presence of dogs and water monitor lizards:

Capture of Water Lizards (*Varanus salvator*)

Dog (*Canis*) Capture

V. CONCLUSIONS AND RECOMMENDATIONS

Of the 18 cameras installed, 4 cameras captured the presence of Komodo monitor lizards, meaning that the Komodo monitor lizard population distribution can be found in the study area in Pota. The proportion of occupied area in the study area in Pota is 0.24 ± 0.11 (95% CI = 0 - 45%) which means that approximately a quarter of the study area that has been studied is inhabited by Komodo lizards with a detection probability of 0.20 ± 0.09 (95% CI = 7 - 43%) which means that each camera trap per each session has a 20% probability of detecting the presence of Komodo dragons. The mean density of Komodo dragons in each camera trap was 0.27 ± 0.14 individuals (95% CI = 0.09 - 0.75 individuals) and the estimated abundance of Komodo lizards in the study area was 4.91 ± 2.54 individuals (95% CI = 1 - 13 individuals).

In the study area, an animal that has the potential to feed Komodo monitor lizards is the monkey (Macaca fascicularis) with a density per hectare of 357.1 ± 62.3. In addition to monkeys, there are other animals caught in camera traps or found directly in their feces such as wild boars, civets, and porcupines.

Potential threats to Komodo dragons in the Pota habitat study are competing predators and predation of the dragons themselves such as water monitor lizards and dogs that can predate on komodo dragon pups. Unlike in previous years where in previous years' study areas in addition to competing predators, deforestation and land use change are also threats to komodo dragon habitat.

APPENDIX

1. Bait Preparation

2. Preparation Meeting

3. Camera Trap Installation

4. Prey Animal Dung Counting

5. Data collection Vegetation Analysis

6. Data Entry and Analysis

Bibliography

Auffenberg, W. (1981). *The Behavioral Ecology of the Komodo Monitor*. Gainesville: University Presses of Florida.

Ariefiandy, A., Purwandana, D., Coulson, G., Forsyth, D. M., and Jessop, T. S. (2013). Monitoring the ungulate prey of the Komodo dragon: distance sampling or faecal counts? Wildlife Biology, 19, 126-137.

Ariefiandy, A., Purwandana D., Aganto S., Ciofi C. and Jessop T.S. (2013). Can camera traps monitor Komodo dragons, a large ectothermic predator? PLoS ONE 8(3): e58800. doi:10.1371/journal.pone.0058800.

Ciofi, C. (2002). Conservation genetics of the Komodo dragon. In *Komodo Dragons: Biology and Conservation, (Zoo and Aquarium Biology and Conservation Series)*: 129-164. Murphy, J.B., Ciofi, C., de La Panouse, C. & Walsh, T. (Ed.). Washington and London: Smithsonian Institution Press.

Ciofi, C. & De Boer, M. (2004). Distribution and conservation of the Komodo monitor (*Varanus komodoensis*). *Herpetological Journal* **14**, 99-107.

Hines, J.E. (2006). PRESENCE 2.4 - Software to Estimate Patch Occupancy and Related Parameters. USGS-PWRC. http://www.mbr-pwrc.usgs.gov/software/ presence.html

Jessop, T.S., Madsen, T., Sumner, J., Rudiharto, H., Phillips, J.A. & Ciofi, C. (2006). Maximum body size among insular Komodo dragon populations covaries with large prey density. *Oikos* **112**, 422-429

MacKenzie, D. I., Nichols, J. D., Lachman, G. B., Droege, S., Andrew Royle, J., & Langtimm, C. A. (2002). Estimating site occupancy rates when detection probabilities are less than one. Ecology, 83(8), 2248-2255.

MacKenzie, D. I., & Kendall, W. L. (2002). How should detection probability be incorporated into estimates of relative abundance. Ecology, 83(9), 2387-2393.

Royle, J. A., & Nichols, J. D. (2003). Estimating abundance from repeated presence-absence data or point counts. Ecology, 84(3), 777-790.

Achmad Ariefandy, Deni Purwandana, Maman Surahman, Claudio Ciofi, Tim S. Jessop (2013). Technical Guidelines for Monitoring Komodo monitor lizards and their prey in Flores, Indonesia.