
PENYELAMATAN DAN KONSERVASI HARIMAU SUMATERA (PKHS)

Annual Report 2021



*Workshop of Guideline Document for Tiger Conservation
in Bukit Tiga Puluh National Park*

Collaboration:



PENYELAMATAN DAN KONSERVASI HARIMAU SUMATERA (PKHS)

Annual Report 2021

Collaboration between:

Bukit Tiga Puluh National Park

Way Kambas National Park

Yayasan Penyelamatan Dan Konservasi Harimau Sumatera (PKHS)

Yayasan Pelita Talang Mamak (PETAMA)

Funding by:

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I. INTRODUCTION

During year of 2021, Penyelamatan dan Konservasi Harimau Sumatera (PKHS) carried out field activities in 2 conservation areas are in the Bukit Tiga Puluh National Park (BTNP), Riau Province; and in the Way Kambas National Park (WKNP), Lampung Province. The activities was doing are;

- a) Way Kambas National Park;
 - 1) Survey, patrol and monitoring of tiger population, prey animals and habits.
 - 2) Monitoring of wildlifes in the sampling plot of grazing area of animal prey in Kali Biru river.
 - 3) Maintanance of 2 units drilled wells in the inside national park area as a source of water for wildlifes and fighting forest fires.
 - 4) Public awareness campaign about conservation, especially the Sumatran tiger conservation.
 - 5) Collaborative activities with national park management and others conservations institutions.

- b) Bukit Tiga Puluh National Park;
 - 1) Survey, patrol and monitoring of tiger population, prey animals and habits.
 - 2) Given education (elementary school level) for children in the deep of the BTNP forest.
 - 3) Workshop to making of guide document of sumatran tiger management and conservation in the Bukit Tiga Puluh National Park area and around it.

II. IMPLEMENTATION AND RESULTS OF ACTIVITIES

1. WAY KAMBAS NATIONAL PARK (WKNP)

A. SURVEY, PATROL AND MONITORING POPULATION OF SUMATRAN TIGER, PREYS AND HABITS

PKHS field team was done 11 trips for patrol and monitoring tigers, preys and their habits in the SPTN I Way Kanan and SPTN III Kuala Penet. The activities were by 1 team involving 12 peoples consisting of 6 PKHS staffs and 6 WKNP staffs (ranger).

Table 1. Implementations and results of activities

Description	Number	Total
Implementation of activities	11 trip	60 days
Number of track lengh		507 km
Number of coverage area		15.200 ha
Coverage area of WKNP Sexion		Way Kanan, Kuala Penet
Coverage area of WKNP Resort		Way Kanan, Kuala Kambas

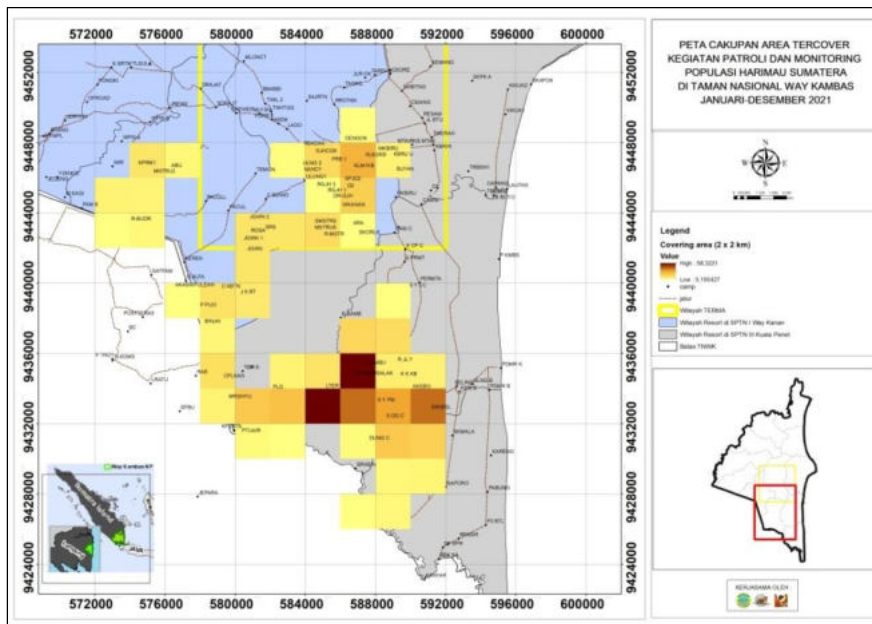


Figure 1. Map of coverage area of patrol

The number of camera traps are installed are 14 units (stations) spread over two SPTN areas, that are the SPTN I Way Kanan and SPTN III Kuala Penet. As many as 2 camera traps lost stolen and damaged by irresponsible peoples. There are 3 camera traps are not good performed.

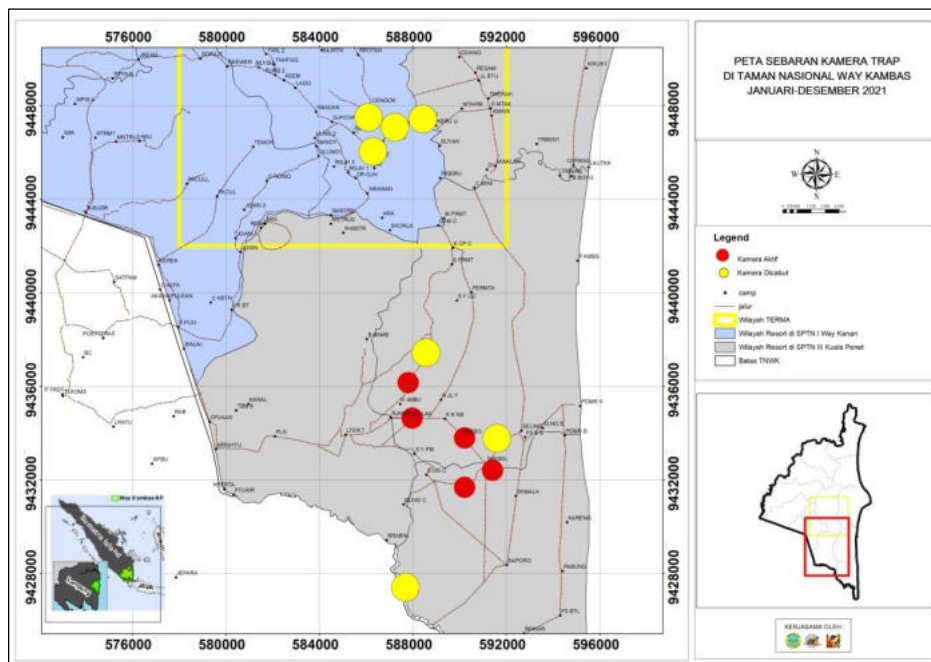


Figure 2. Map location of camera traps distribution on 2021

Result of Survey and Patrol

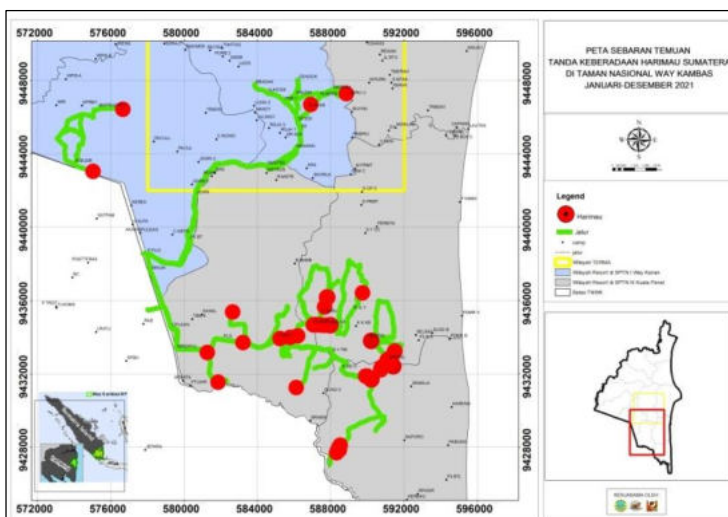
Wildlifes

Results of the occupancy/transect survey, data on the presence of wildlifes has been collected. 11 species of wildlife has been identified consisting of 5 big mammals that are sumatran tiger, sumatran elephant, tapir, sun bear, dan wild cats; and also 6 species of sumatran tiger preys that are barking deer, sambar deer, wild pig, long –tailed macaque, siamang, and mouse deer.

Table 2. List of findings of mammals sign presence.

No	Species	Number of location	Number of Findings	Description
Big mammals				
1	Sumatran tiger	54	61	Footprints, scrapes, scratches, urine
2	Tapir	53	59	Footprints, scrapes, feces, urine, food waste, and watching
3	Wild cats	6	6	Footprints
4	Sun bear	10	10	Footprints, scrapes
5	Sumatran elephant	8	47	Footprints, feces, and watching
Sub total		131	183	
Sumatran tiger preys				
6	Barjing deer	59	59	Footprints, feces, and watching
7	Sambar deer	43	43	Footprints, voice, and watching
8	Wild pig	84	84	Footprints, puddle, pig's nest, carcass
9	Long-tailed macaque	2	2	Watching
10	Siamang	4	4	Voice, watching
11	Mouse deer	2	2	Footprints
Sub total		194	194	
Total		325	377	

The Sumatran Tiger



Sign of presence of sumatran tiger like footprints, scrapes, scratches, and urine was founded in 54 locations. The distribution of these findings is spread throughout the activity locations, with the most findings found in Kuala Kambas Resort.

Figure 3. Map of distribution of sumatran tiger sign presence

The Sumatran Tiger Preys

Founded sign presence of 6 sumatran tiger preys that are wild pig, sambar deer, barking deer, mouse deer, long-tailed macaque, and siamang. Wild pig are most found. But, starting of March 2021, found quite a lot of carcasses of wild pigs. It is thought to be due to the *African Swine Fever* (ASF) epidemic. This resulted in a drastic decrease in wild boar findings until the end of the year.

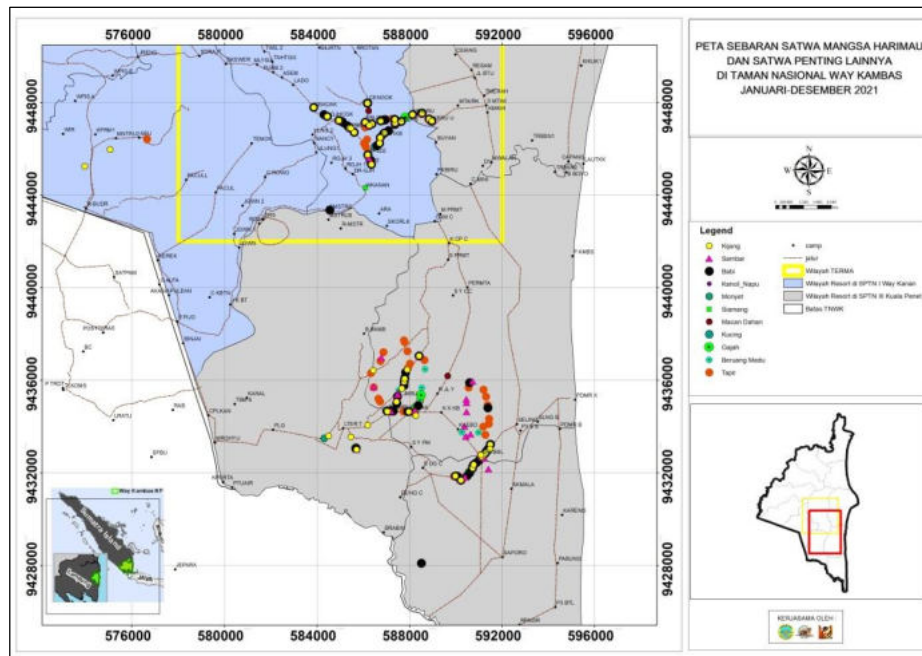


Figure 4. Map of distribution of sumatran tiger preys sign presences

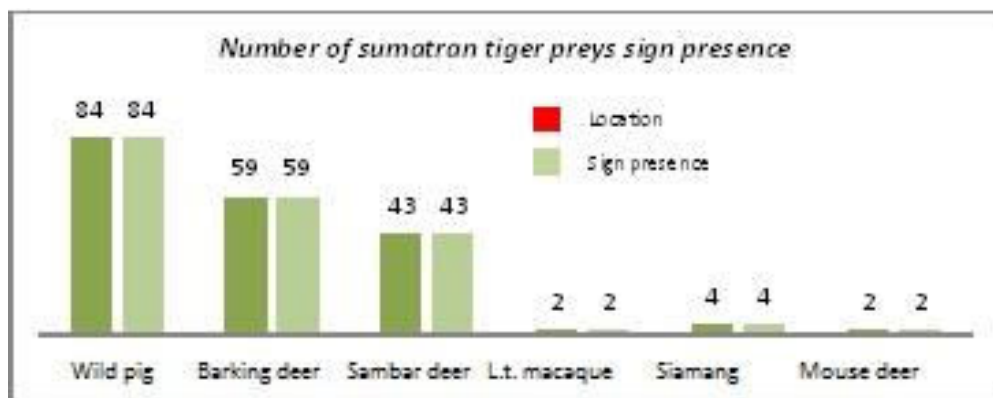


Figure 5. Graph of distribution of sumatran tiger preys sign presences

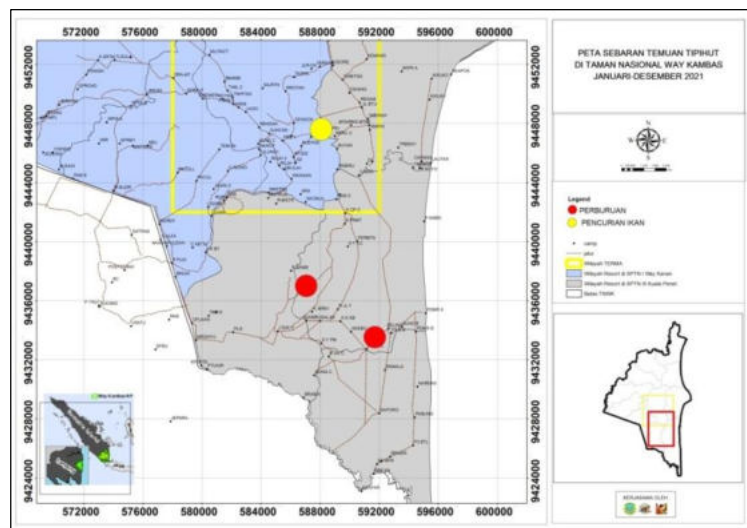
The Forestry Crime Activity

Founded 2 types of findings indicate illegal activities (poaching and fishing) within the WKNP area. The findings of the hunting sign were in the form of theft/destruction of the camera trap and the recording of several moments of dogs to hunting/gladakes are crossing the camera trap location. Meanwhile, for the theft of fish, the finding is to catch the perpetrators of fishing in Rawa Kali Biru. There have been appeals, warnings, and expulsions (forcibly repatriated) to the perpetrators.

Table 3. List of forestry crime activities

No	Kind of crime	Location	Number of evidence	Description
1	Hunting	2	2	Theft/damage of camera traps Jalur Seling locations. Captured by a glade dog by camera trap.
2	Fishing	1	1	10 illegal fisher from Labuhan Ratu VI vilage

Figure 6. Map of forestry Crime activities



The Camera Trapp

The Wildlifes

Results of camera trap are instaled during 1.769 *trap day/night* are recorded 1.798 video of wildlifes with 1.747 independent videos. Have been identified 32 species consisting of 25 mammals, 1 reptil, and 6 aves. 25 species of mammals came from 5 ordo, ordo *carnivore* are most species that are 15 species (60% of mammals videos or 47% of wildlifes videos). But, ordo by most video are *artiodactyla* tat are 984 videos atau 55% of wildlifes videos. 5 species with highest encounter rate (ER) and relative abundance index (RAI) are mouse deer, barking deer, wild pig, sempidan biru, and long-tailed macaque.

Table 4. Encounter rate (ER) and relative abundance index (RAI) of wildlives in the WKNP, results of camera trap in 2021.

Class/Ordo	Species	Number of Video			ER	RAI
		Total	Independent	Percent %		
<i>Mamalia</i>						
<i>Artiodactyla</i>	Common wild pig	189	183	10,5	10,68	10,345
	Barking deer	305	300	17,0	17,24	16,959
	Mouse deer	388	381	21,6	21,93	21,538
	Sambar deer	102	99	5,7	5,77	5,596
<i>Carnivora</i>	Sumatran tiger	44	43	2,4	2,49	2,431
	Tenggalong	93	93	5,2	5,26	5,257
	Malayan sun bear	21	21	1,2	1,19	1,187
	Leopard cat	33	33	1,8	1,87	1,865
	Palm banded civet	11	11	0,6	0,62	0,622
	Masked palm civet	4	4	0,2	0,23	0,226
	Small indian civet	9	9	0,5	0,51	0,509
	Common palm civet	18	18	1,0	1,02	1,018
	Otter civet	6	6	0,3	0,34	0,339
	Clouded leopard	6	6	0,3	0,34	0,339
	Marbled cat	7	7	0,4	0,40	0,396
	Short-tailed mongoose	30	30	1,7	1,70	1,696
	Martin	2	2	0,1	0,11	0,113
	Domestic dog	1	1	0,1	0,06	0,057
	<i>Primata</i>	Long-tailed macaque	121	112	6,7	6,84
Pig-tailed macaque		70	65	3,9	3,96	3,674
<i>Proboscidea</i>	Tapir	9	9	0,5	0,51	0,509
	Sumatran elephant	23	20	1,3	1,30	1,131
<i>Rodentia</i>	Malayan porcupine	11	10	0,6	0,62	0,565
	Squirrel	11	10	0,6	0,62	0,565
	Rat	2	2	0,1	0,11	0,113
<i>Reptilia</i>	Monitor lizard	14	14	0,8	0,79	0,791
<i>Aves</i>	Bird	19	18	1,1	1,07	1,018
	Crested fireback	173	166	9,6	9,78	9,384
	Junglefowl	51	49	2,8	2,88	2,770
	Hawk	1	1	0,1	0,06	0,057
	Lesser adjutant	23	23	1,3	1,30	1,300
	Storm's stork	1	1	0,1	0,06	0,057
<i>Total Video</i>		1.798	1.747	100,0		
<i>Total Trap Day</i>		1.769				

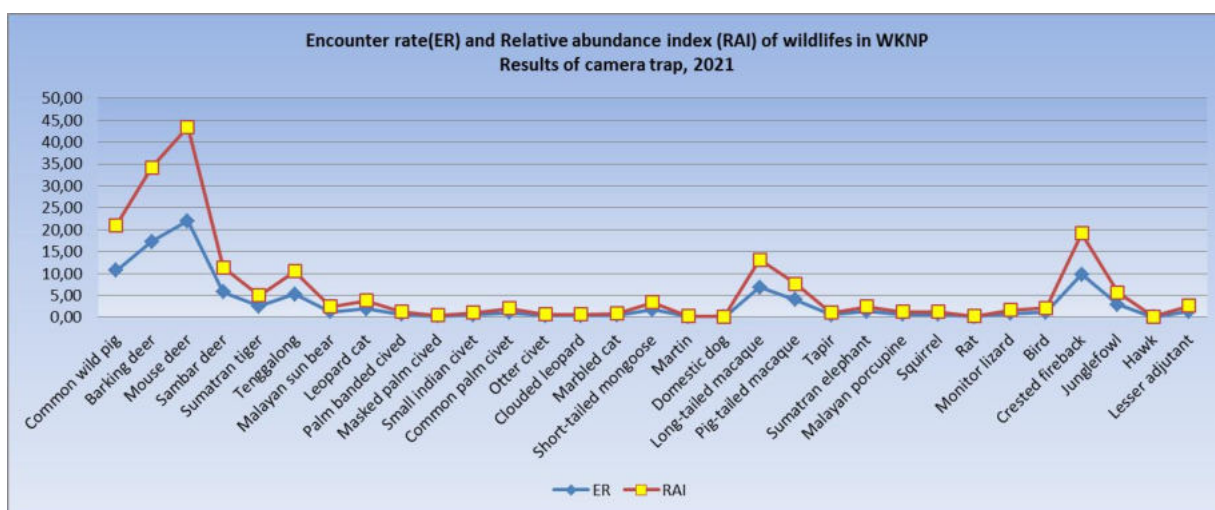


Figure 7. Graph of Encounter rate (ER) and relative abundance index (RAI) of wildlives in the WKNP, results of camera trap in 2021.

The Sumatran Tiger

Recorded 44 sumatran tiger videos with 43 independent videos. The sumatran tiger was captured in 7 camera trap locations.

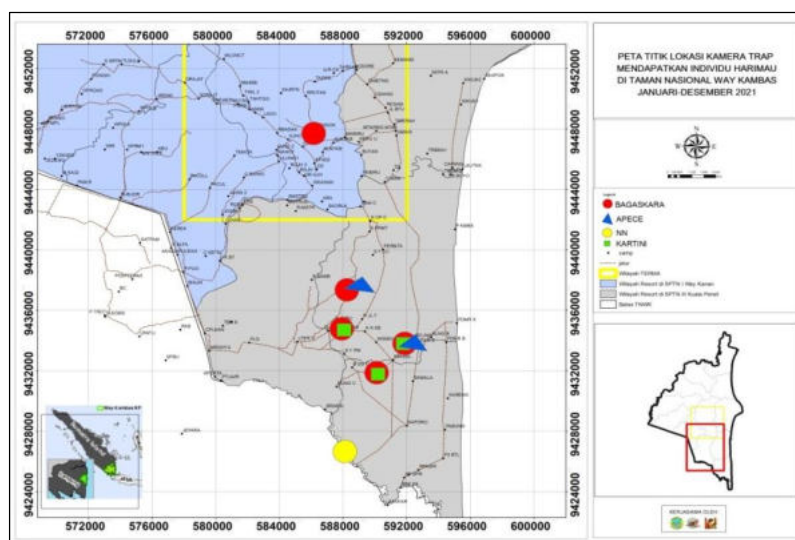


Figure 8. Map location of camera trap are captured of sumatran tiger

After analyzing 43 sumatran tiger videos, identified 4 tiger individuals consisting of 3 adults males and 1 adult female. To simplify identification process and monitoring in the field, then each individual tiger are given an identity marker name ID, that are BAGASKARA, APECE, and NN (adult male), and KARTINI (adult female). NN (noname) is a new tiger individual captured in this year. In May 2021, KARTINI was monitored/captured in big belly or pregnant. But, she was never captured the next time. BAGASKARA and KARTINI are a tiger couple, because often recorded in the same place by nearly the same time of recording. The encounter rate (ER) and relative abundance index (RAI) of the Sumatran tiger are ER=2,43 and RAI=2,431.

Figure 9. Four tiger individuals are monitored of camera trap in 2021



BAGASKARA



APECE



KARTINI



NN

Result of analysis of time the tiger was caught by camera trap, it is known that the tiger are recorded dominant at day time (06:00 AM-17:59 PM o'clock) are 31 tiger videos or 70,45% compared to 13 tiger videos or 29,55% at night time (18:00 PM -05:59 AM o'clock). Then the daily activity pattern of sumatran tiger in Way Kambas National Park based on camera trap results in 2021 are *Diurnal* or more/dominant lebih banyak/dominan active at the day time.

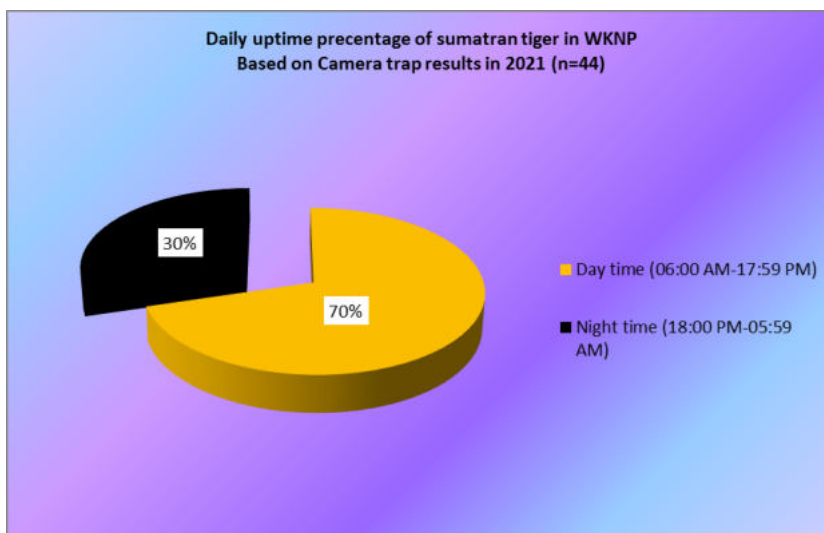


Figure 10. Time activity Presentage of tiger at WKNP in 2021

If describe in more detail, known that the sumatran tiger are recorded in all dar except in mid night (22:00 PM-01:59 PM). And most time recorded in morning timei (06:00 AM-11:59 AM) and afternoon (14:00 PM-18:59 PM).

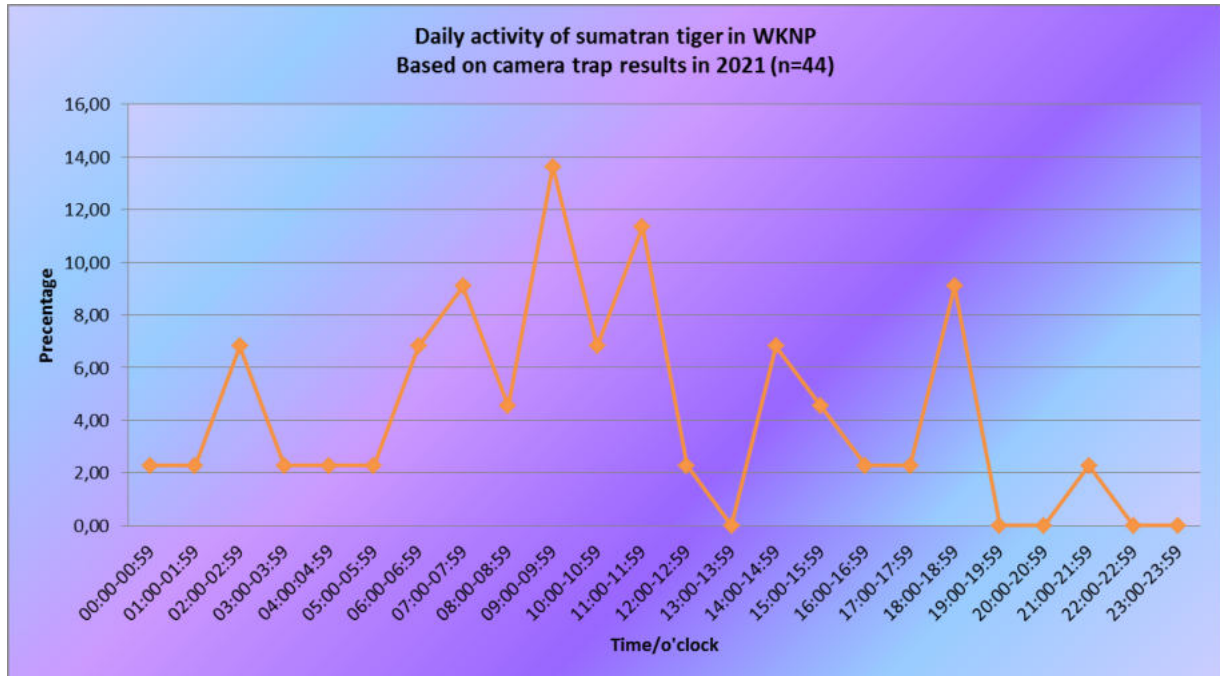


Figure 11. Graph of daily activity pattern of sumatran tiger in WKNP, based on camera trap result 2021

The Sumatran Tiger Preys

Have recorded 1.175 preys videos with 1.140 preys independent videos. Identified 6 preys species come from 2 ordo that are common wild pig, barking deer, mouse deer, and sambar deer (*ordo artiodactyla*), so long tailed macaque and pig tailed macaque (*ordo primata*). Presentation of number of prey video are 65% of number of all wildlifes videos.

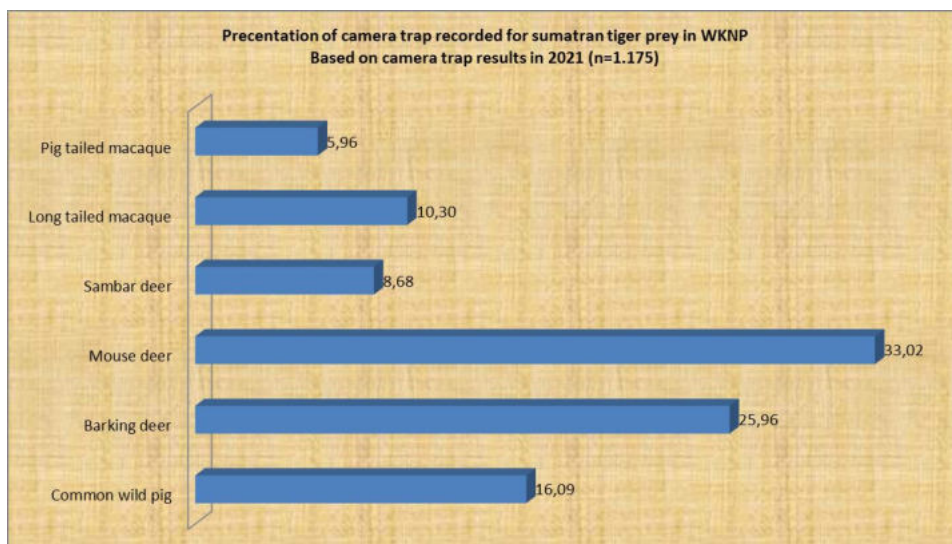


Figure 11. Graph of number of video of prey tiger in WKNP, based on camera trap results in 2021

The encounter rate (ER) and relative abundance index (RAI) of six species of sumatran tiger preys have been recorded by camera trap are quite high, with 3 species *artiodactyla* that are mouse deer, barking deer, and common wild pig included in over abundance category; whereas long tailed macaque, sambar deer, and pig tailed macaque included in quite abundance category.

Table 5. The encounter rate (ER) and relative abundance index (RAI) of sumatran tiger prey in WKNP based on camera trap results in 2021.

Class/Ordo	Species	Number of Video			ER	RAI
		Total	Independent	Percent %		
Artiodactyla	Common wild pig	189	183	16,1	10,68	10,345
	Barking deer	305	300	26,0	17,24	16,959
	Mouse deer	388	381	33,0	21,93	21,538
	Sambar deer	102	99	8,7	5,77	5,596
Primata	Long tailed macaque	121	112	10,3	6,84	6,331
	Pig tailed macaque	70	65	6,0	3,96	3,674
Total of Video		1.175	1.140	100,0		
Total of Trap Day		1.769				

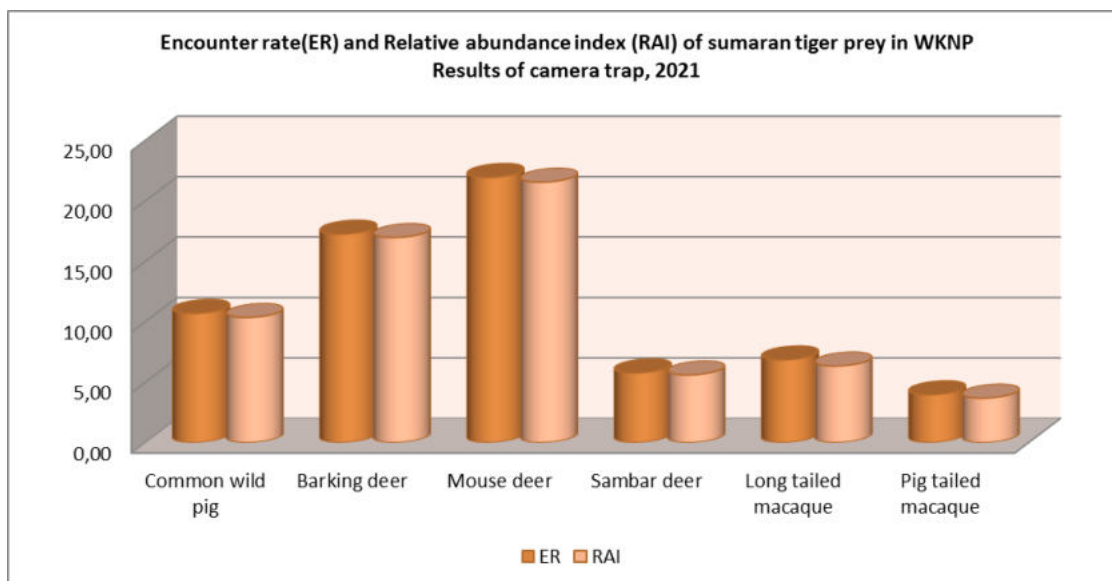


Figure 12. Graph of encounter rate (ER) and relative abundance index (RAI) of sumatran tiger prey in WKNP based on camera trap results in 2021.

B. HABITAT DEVELOPMENT IN THE RAWA KALI BIRU

Implementation of activity are;

- Carry out monitoring activities of sumatran tiger prey in the demplot of grazing area in the Rawa Kali Biru.
- Carry out maintenance of water sources (boreholes) in the inside of national park area.

The Sumatran Tiger Prey Monitoring in Demplot of Grazing Area in the Rawa Kali Biru

The monitoring activities have been done 2 trips. 2 camera traps are installed inside demplot of grazing area during 6 months. The others activities are monitored of grass condition especially Senggabi grass (*Melastoma malabathricum*) at start of rainy season and start of dray season as parameter to monitored of grown up of *melastoma malabathricum*. The conclusion are Senggani (*Melastoma malabathricum*) are grow back though not too close as previously especially in the edge of demplot.

Results of camera trap are recorded 259 wildlifes videos with 244 independent videos. Identified 15 species of wildlife consisting of 11 mammals species, 1 reptile species, and 3 aves species. Have been recorded 2 species of important wildlifes that are the sumatran elephant and the malayan sun bear. Also recorded 4 species of sumatran tiger preys that are sambar deer, common wild pig, barjng deer, and mouse deer. Sambar deer are spesies with highest encounter rate.

Table 6. The encounter rate (ER) and relative abundance index (RAI) of wildlifes in demplot of grazing area in the Kali Biru, based on canera trap results in 2021.

Class/Ordo	Species	Number of Video			ER	RAI
		Total	Independent	Percent %		
Mamalia						
Artiodactyla	Barking deer	4	4	1,5	2,16	2,162
	Mouse deer	21	21	8,1	11,35	11,351
	Common wild pig	60	54	23,2	32,43	29,189
	Sambar deer	80	76	30,9	43,24	41,081
Carnivora	Malayan sun bear	1	1	0,4	0,54	0,541
	Common palm civet	6	5	2,3	3,24	2,703
	Otter civet	1	1	0,4	0,54	0,541
	Small indian civet	4	4	1,5	2,16	2,162
	Short tailed mongoose	2	2	0,8	1,08	1,081
Primata	Long tailed macaque	36	34	13,9	19,46	18,378
Proboscidae	Sumatran elephant	2	2	0,8	1,08	1,081
Reptilia	Monitor lizard	3	3	1,2	1,62	1,622
Aves	Bird	11	10	4,2	5,95	5,405
	Junglefowl	5	4	1,9	2,70	2,162
	Lesser adjutant	23	23	8,9	12,43	12,432
Total Video		259	244	100,0		
Total Trap Day		185				

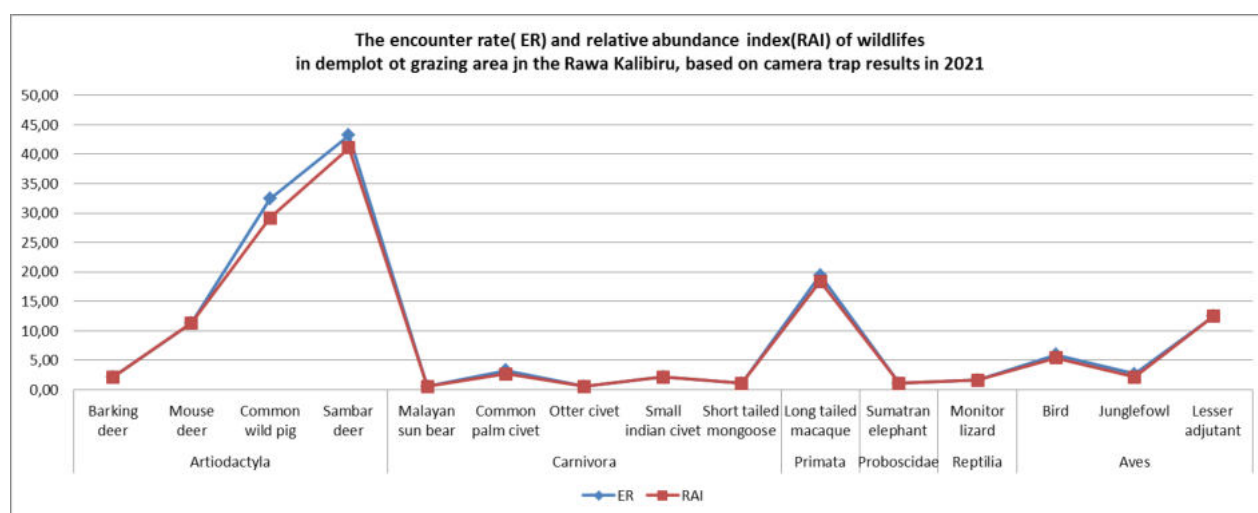


Figure 13. Graph of encounter rate (ER) and relative abundance index (RAI) of wildlifes in demplot of grazing area in the Kali Biru, based on camera trap results in 2021.

Maintenance of Water Sources (Drilled Wells) inside WKNP area

Has carried out maintenance on both drilled wells. The location of the well in the Mysterious Swamp has been checked (twice before the dry season and the beginning of the rainy season) by extracting water and checking the padlock safety device. Meanwhile, at the Dong C well location (one time checked). Currently the well is in normal condition again and can be used if needed.

Figure 14. *Documentation of Maintenance of Water Sources/drilled wells*



In this year the activity of providing drinking water tanks for wild animals, which is usually carried out almost every year, was not carried out. Because this year in the TNWK area there is no drought. There are still quite a lot of locations, both rivers and swamps that are inundated with water. So that it can still be used by wild animals as a source of their life. This condition occurs because the dry season this time is wet, marked by several rains, although with a small intensity.

C. THE AWARENESS CAMPAIGN ABOUT CONSERVATION ESPECIALLY CONSERVATION OF SUMATRAN TIGER

Some of the types of activities carried out are as follows;

- 1) Making leaflets/booklets, bulletins, correct and other teaching aids
- 2) Publication of activity results (presentations, exhibitions)

- 3) Conservation education. Efforts to increase public awareness in the field of biodiversity conservation and Sumatran tigers are carried out by creating information media, exhibitions, events, and digital publications (Instagram and YouTube).

Table 7. List of efforts to increase public awareness of Sumatran tiger conservation.

No	Type	Item	Number	Description
1	Information media	Leaflet	500 sheet/copies	
		Bag	20 bag	
		Sticker	100 sticker	100 small sticker
2	Digital publications	Instagram	4 videos	pkhs_pengawal_rajarimba
		Youtube	12 videos	Tiger Conservation

D. THE PARTICIPATORY AND COLLABORATIVE ACTIVITIES WITH WKNP AND OTHERS STAKEHOLDERS

In addition to implementing programs and activities that have been planned in the Year Work Plan (RKT) 2021, PKHS also participates in and supports programs and activities carried out by the WKNP. The following are activities carried out jointly between PKHS and WKNP during 2021.

Table 8. List of participatory and collaborative activities in 2021

No	Time	Activity	Description
1	January 2021	Community service and simulation of the opening of WKNP tourism	In Margahayu Resort
2	March 2021	Wildlifes inventory activities (WKNP is host)	In Kuala Kambas Resort and Way Kanan Resort area
3	May 2021	Forest fire fighting and forestry crime outreach	Forest fire ini Susukan Baru Resort, forestry crime outreach in Labuhan Ratu IX village
4	June 2021	Environment day commemoration ceremony	Rawa Bunder Resort
4	July 2021	Monitored of wildlifes by camera trap. Join work with WKNP	Follow up on finding the presence of tigers in Rawa Bunder resort
5	October 2021	Wildlifes inventory activities (WKNP is host)	Kuala Kambas Resort

Figure 15. *Documentation of participatory and collaborative activities in 2021*



Forestry crime outreach in Labuhan Ratu IX village



Wildlifes inventory activities



Community service in Margahayu Resort



Exhibition in opening simulation of WKNP tourism

2. BUKIT TIGA PULUH NATIONAL PARK (BTNP)

A. WORKSHOP OF GUIDANCE DOCUMENT OF MANAGEMENT AND CONSERVATION OF SUMATRAN TIGER IN THE BUKIT TIGA PULUH NATIONAL PARK

The workshop was held on December 7, 2021 at the Irma Bunda Hotel, Pematang Reba. Activities are carried out face-to-face/offline and online through Zoom Meetings. Participants come from various agencies related to and related to the management of the BTNP area, both central government institutions such as KLHK and BTNP; local government agencies in 2 districts in Riau (Inhu and Inhil) and Jambi (Tebo and Tanjabar) such as BPBD, Dinas Kehutanan, sub-district and village governments, and others; conservation NGOs such as FHK, KKI Warsi, FZS, and others; universities such as UNRI, UNILAK and UNJA; as well as companies that have concessions around the BTNP area. Total of participant in this workshop is 61 person.

The workshop was led directly by the Head of the BTNP with a facilitator from SS Pundi as the facilitator for TFCA Sumatra. The process and results of the workshop are described in the following minutes.

Figure 16. *Documentation of workshop*



Registration of offline participant



Singing of Indonesia national anthem



Conditioning of offline workshop



Conditioning of online workshop

B. SURVEY, PATROL AND MONITORING POPULATION OF SUMATRAN TIGER, PREYS AND HABITS

PKHS field team was done 5 trips or as long 72 days for patrol and monitoring tigers, preys and their habits in the 3 resort area in the SPTN 2 Belilas that are Lahai Resort, Siambul Resort, and Talang Lakat Resort. Distance of patrol track are 374 km, and coverage area of activities are 7.480 hectares. Number of camera trap are used are 15 units and installed in 9 locations. The camera trap installed in the field as long 842 *trap night*.

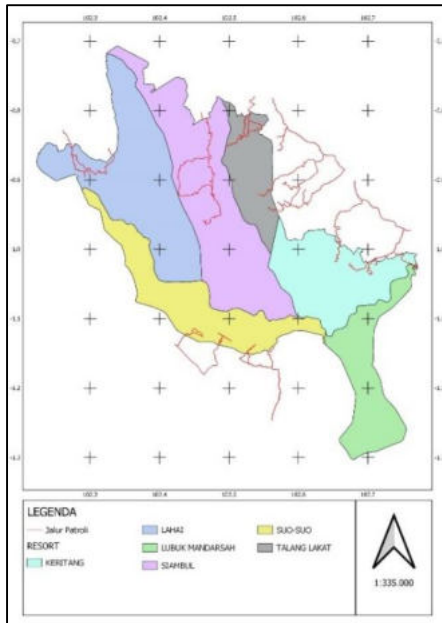


Figure 17. Map of patrol track in 2021.

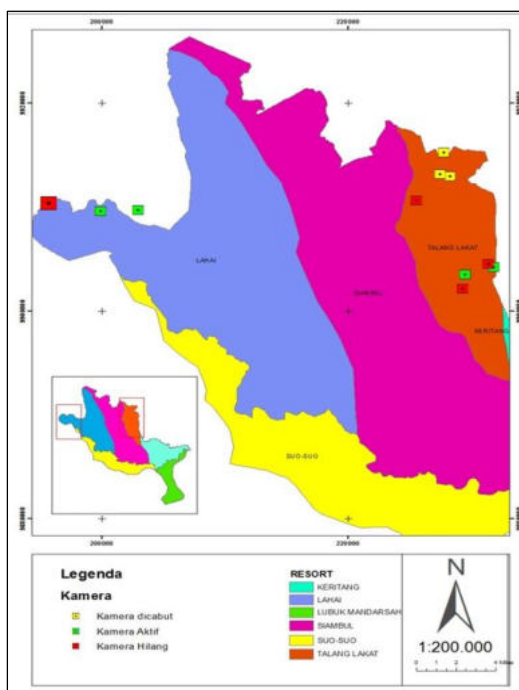


Figure 18. Map of camera trap distribution in 2021.

RESULT OF ACTIVITIES

Survey and Patrol

Temuan data Harimau sumatera dan satwa mangsa

During this year's activities, 2 secondary tiger markings were found. While the primary and secondary data found from 8 species, namely common wild pig/bearded pig (4 findings), sun bear (1 finding), wild cat (2 findings), tapir (1 finding), clouded leopard (3 findings). Sambar deer (1 finding), siamang (1 finding), and hornbill (4 findings).

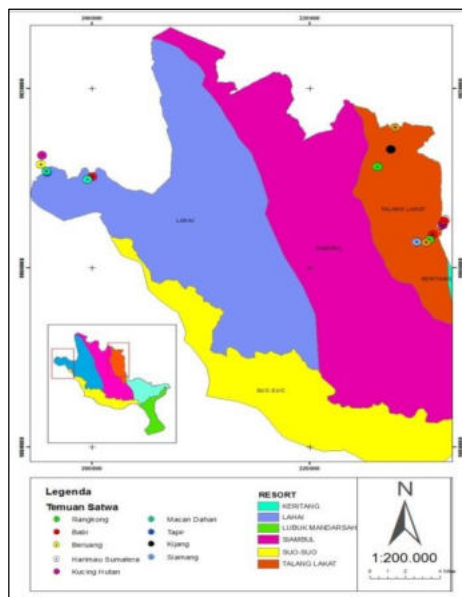
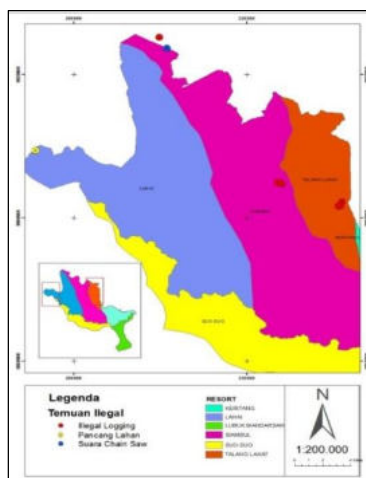


Figure 19. Map of distribution of sumatran tiger and preys presence found in 2021.

Forestry Crime Activities



Was found 1 type forestry crime that is illegal logging (7 findings) with evidence of processed wood about 30 m³, 2 wood stumps, former wood processing sites, land stakes, felling paths, and others.

Figure 20. Map of forestry crime activity is found in 2021.

The Camera Trap

The Wildlifes

Number of wildlifes video are recorded are 376 videos with 357 independent videos. Identified 24 species consistig of 21 mammals species and 3 aves species. Class of mammals consisting of 5 ordo with *carnivora* are most species that are 6 species. 5 species with highest encounter rate (ER) and relative abundance index (RAI) are barking deer, pig tailed macaque, rat, tapir, and bearded pig.

Table 9. Biodiversity, encounter rate (ER), and relative abundance index (RAI) of wildlifes in BTNP are recorded camera trap in 2021.

Class/Ordo	Species	N	IV	Percent	ER	RAI
<u>Mamalia</u>						
<i>Artiodactyla</i>	Barking deer	83	83	22,1	9,86	9,857
	Common wild pig	24	21	6,4	2,85	2,494
	Bearded pig	25	22	6,6	2,97	2,613
	Lesser deer	4	4	1,1	0,48	0,475
<i>Carnivora</i>	Malayan sun bear	14	13	3,7	1,66	1,544
	Sumatran tiger	7	7	1,9	0,83	0,831
	Marbled cat	1	1	0,3	0,12	0,119
	Clouded leopard	14	14	3,7	1,66	1,663
	Leopard cat	4	4	1,1	0,48	0,475
	Martin	1	1	0,3	0,12	0,119
<i>Perissodactyla</i>	Tapir	35	34	9,3	4,16	4,038
<i>Primata</i>	Pig-tailed macaque	68	60	18,1	8,08	7,126
	Long-tailed macaque	1	1	0,3	0,12	0,119
	Mitred leaf monkey	1	1	0,3	0,12	0,119
	Siamang	1	1	0,3	0,12	0,119
<i>Rodentia</i>	Malayan porcupine	21	21	5,6	2,49	2,494
	Stink badger	1	1	0,3	0,12	0,119
	Rat	36	34	9,6	4,28	4,038
	Moonrat	12	11	3,2	1,43	1,306
	Banded palm civet	1	1	0,3	0,12	0,119
	Squirrel	6	6	1,6	0,71	0,713
<u>Aves</u>	Great argus	9	9	2,4	1,07	1,069
	Lophura ignita	1	1	0,3	0,12	0,119
	Bird	6	6	1,6	0,71	0,713
Total of video		376	357	100,0		
Total of trap day		842				

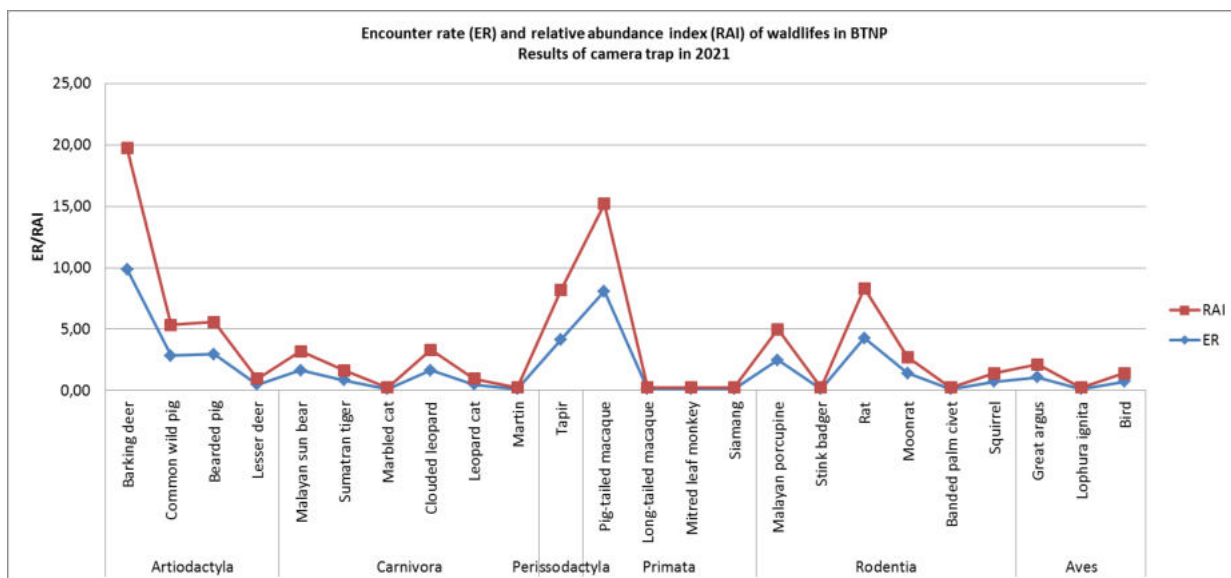








Figure 21. Graph of Biodiversity, encounter rate (ER), and relative abundance index (RAI) of wildlifes in BTNP are recorded camera trap in 2021.



The Sumatran Tiger

This year, total of 7 tiger videos were recorded, and 3 tigers were identified, that are 1 adult male with the name ID IAN; 1 adult female with name ID DEVI; 1 cub male with name ID NN. The encounter rate (ER) and relative abundance index (RAI) of tigers in BTNP are ER = 0.83 and RAI = 0.831.

Figure 22. Screen capture video and sumatran tiger identification, camera trap results in BTNP in year of 2021.

Video ID	Age	Sex	Name ID	Scen Capture Video
Bukit Langau	Adult	Male	IAN	
11-12-2020				
07:30:30 AM				

Tembulun Sempang	Un identified	Un identified	Un identified	
17-03-2021				
07:00 AM				
Tembulun Sempang	Adult	Female	Devi	
17-03-2021				
07:13 AM	Cub	Male	NN1	
Tembulun Sempang	Adult	Female	Devi	
17-03-2021				
07:13 AM				
Pardede	Adult	Male	IAN	
21-04-2021				
05:29:28 AM				

Pardede	Adult	Male	IAN	
21-04-2021				
19:46:39 PM				
Pardede	Adult	Male	IAN	
21-04-2021				
20:04:14 PM				

The Sumatran Tiger Preys

In this year, total of 207 videos of sumatran tiger preys were recorded with 193 independent videos. Identified 8 tiger prey species. 4 species with the highest encounter rate (ER) and relative abundance index (RAI) are barkingdeer, pig tailed macaque, bearded pig, and wild pig.

Table 10. Biodiversity, encounter rate (ER), and relative abundance index (RAI) of sumatran tiger preys in BTNP are recorded camera trap in 2021.

Class/Ordo	Species	N	IV	Percent	ER	RAI
<i>Artiodactyla</i>	Barking deer	83	83	40,1	9,86	9,857
	Common wild pig	24	21	11,6	2,85	2,494
	Bearded pig	25	22	12,1	2,97	2,613
	Lesser deer	4	4	1,9	0,48	0,475
<i>Primata</i>	Pig-tailed macaque	68	60	32,9	8,08	7,126
	Long-tailed macaque	1	1	0,5	0,12	0,119
	Mitred leaf monkey	1	1	0,5	0,12	0,119
	Siamang	1	1	0,5	0,12	0,119
Total of video		207	193	100,0		
Total of trap day		842				

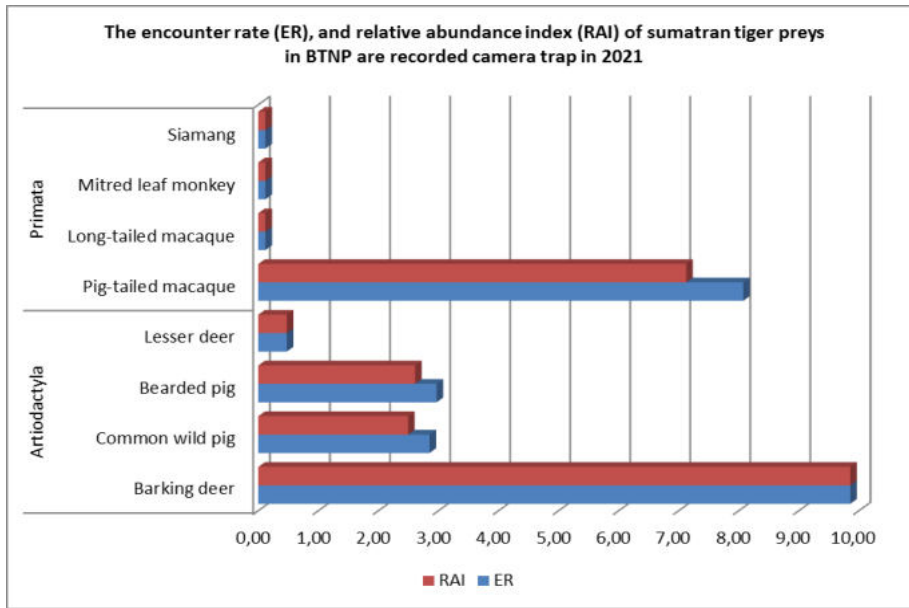


Figure 23. Graph of biodiversity, encounter rate (ER), and relative abundance index (RAI) of sumatran tiger preys in BTNP are recorded camera trap in 2021.

C. ACTIVITIES OF EDUCATION TO CHILDREN OF HINTERLAND IN BTNP AREA

Introduction

The inland community of BTNP is a marginal community group that lives traditionally and most of them still rely on forest resources to fulfill their daily needs such as fruit (durian, petai), jernang sap, rattan, and rubber. In the field of education they are also very lagging behind. The majority of rural people do not know (illiterate) letters and numbers. Only children under 20 years old are mostly able to write, read and count. This also happened after PKHS established learning lodges called learning studios in two hamlets, namely in Datai hamlet (started in January 2004) and in Sadan hamlet (started in May 2007). Meanwhile, in the health sector, people rarely receive health services because their settlements are difficult to reach by government medical personnel, resulting in low health rates and very high mortality rates.

So we need a concern to help improve people's lives in various aspects such as education, economy and health. This indirectly also has an impact on the sustainability of the TNBT area and the wildlife in it. Because if their dependence on nature decreases, their activities will decrease in harvesting the forest resources of BTNP. Meanwhile, in the field of education, it affects their ability to filter out bad influences from outside. Like the case of 2 community members who killed a tiger a few years ago. They are influenced by outsiders with the lure of huge monetary rewards. However, after they managed to kill the tiger, they did not get anything and even had to languish in prison.

Educational activities for tribal children have been initiated since January 2004, first in Datai Hamlet, and in May 2007 in Sadan Hamlet. The PKHS Study Center is in Sadan hamlet which is located in the middle of the Bukit Tiga Puluh National Park area. This school is a place for children in the interior of BTNP from 4 hamlets (Suwit, Sadan, Air Bomban and Tanjung Lintang) to get basic level knowledge just like other children outside the forest area. Currently the

status of this school is a Learning Group Primary School (Pokjar) which is based at SDN 04 Rantau Langsat.

Besides managing the school in Sadan hamlet, PKHS also helps manage the Marginal Private Elementary School in Datai hamlet. This school was originally a school that was built and managed by PKHS and in its development then continued its management by the Education Office by building a new, more appropriate building. PKHS participates in the management of this school by providing a teaching staff (PKHS staff). This is done because the teachers provided by the education office are very inactive in teaching (often not attending teaching) so that schools rarely carry out learning activities.

Currently, PKHS focuses on managing Sadan school, while schools in Datai are managed directly by the education office. And the management activities of Sadan school are now carried out by the Yayasan Pelita Talang Mamak (PETAMA) which is a non-profit institution initiated and formed by PKHS to manage and develop educational activities in the interior of the BTNP area. The management of the PETAMA Foundation are young people from rural areas who are alumni of Sadan school.

Purpose of Activity

The objectives of this activity are:

1. Optimizing teaching and learning activities at the Sadan school by involving local children as the spearhead.
2. Improving the human resource capacity of rural communities which will have a positive effect on the management and protection of the TNBT area and its ecosystem resources.

Implementation and Result

In 2021, teaching and learning activities cannot be carried out due to the Covid-19 pandemic. However, new students have been admitted. The following is the development of learning studio management that can be conveyed;

1. There have been limited teaching and learning activities (KBM).
2. The School Final Assessment Examination (PAS) for odd semesters and Class Promotion Examinations (UKK) for even semesters have been carried out.
3. The process of accepting new students for the 2021/2022 school year has been carried out.

Figure 24. *Documentation of learning activities*

		
<p>The student come in the class</p>	<p>Learning situation in the classroom</p>	<p>Learning situation in the classroom</p>
		
<p>Learning situation in the classroom</p>	<p>Learning situation in the classroom</p>	<p>Learning situation in the teacher home stay</p>
		
<p>Learning situation in the teacher home stay</p>	<p>The student are clearing of schoolyard</p>	<p>The student are playing at rest time</p>

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III. THE APPENDIXS

Appendix 1. *Documentation of survey, patrol, and monitoring of sumatran tiger, preys, and habits in WKNP.*

	
The patrol team are walking in wildlifes track	Checking a camera trap
	
Founding of a sumatran tiger scrape	Founding of a sumatran tiger scrape
	
Founding of a sumatran tiger scrath	Founding of a sumatran tiger scrath
	
Measuring of sumatran tiger footprint	Founding of a sumatran tiger footprint



Condition of demplot grazing area Kalibiru



Maintenance of drilled wells



The illegal fishesr are forced go back home by team



The illegal fishesr still fishing in Kalibiru












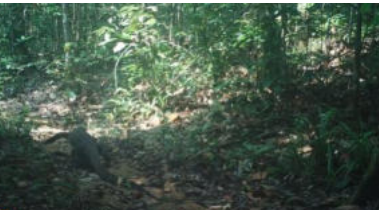




A camera trap losing out by theft












Savety key of camera trap house was broken by theft


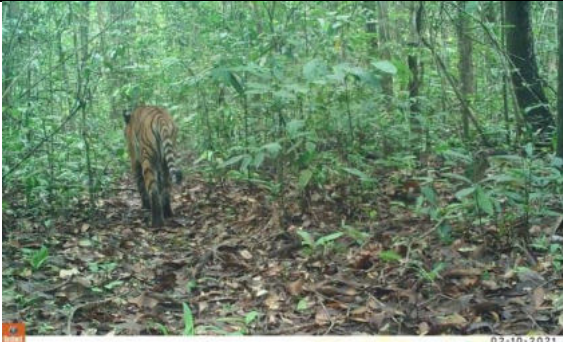



Appendix 2. Screen capture of wildlifes videos, camera trap results in WKNP.





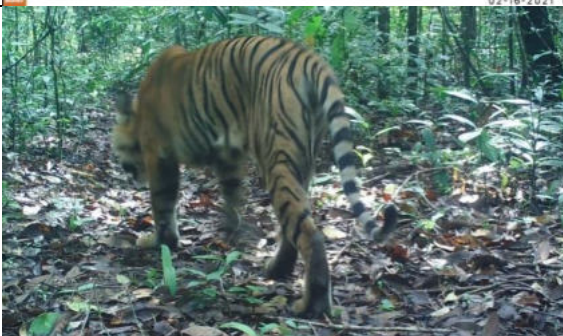
		
Common wild pig	Barking deer	Sambar deer
		
Mouse deer	Long tailed macaque	Pig tailed macaque
		
Marbled cat	Malayan sun bear	Clouded leopard
		
Sumatran elephant	Malayan porcupine	Jugle fowl
		
Indian palm civet	Monitor lizard	Cresred fireback
		
Masked palm civet	Short tailed mongoose	Lesser adjutant






Appendix 3. Screen capture of sumatran tiger videos and tiger individual identification, camera trap results in WKNP.





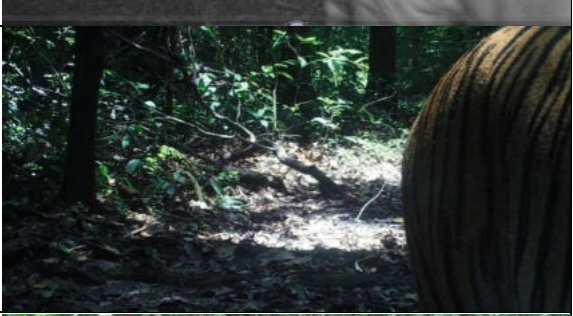

No	Capture ID	Age	Sex	Name ID	Screen Capture of Video
1	Jalur Camp C 01 December 2020 09:05''07 AM	Adult	Male	BAGASK ARA	
2	Jalur Camp C 10 December 2020 07:42''52 AM	Adult	Male	BAGASK ARA	
3	Jalur Seling 18 December 2020 10:21:12 AM	Adult	Male	APECE	
4	Jalur Seling 01 Januariy202 1 01:16''23 PM	Adult	Male	BAGASK ARA	





5	Jalur Seling 11 Januariy202 1 21:43”56 PM	Adult	Male	APECE	
6	Jalur Seling 12 January 2021 05:33”28 AM	Adult	Female	KARTINI	
7	Jalur Seling 15 January 2021 15:44”33 PM	Adult	Male	BAGASK ARA	
8	Jalur Seling 18 January 2021 14:17”09 PM	Adult	Male	BAGASK ARA	
9	Jalur Seling 20 January 2021 04:30”15 AM	Adult	Male	BAGASK ARA	






10	Jalur Seling 26 January 2021 02:21'03 AM	Adult	Female	KARTINI	
11	Jalur Seling 10 FebruarY 2021 09:27'11 AM	Adult	Feale	KARTINI	
12	Salak 07 December 2020 11:24'50 AM	Adult	Female	KARTINI	
13	Salak 09 DeCember 2020 16:12'47 PM	Adult	Male	BAGASK ARA	
14	Salak 29 DeCember 2020 18:16'31 PM	Adult	Male	BAGASK ARA	






15	Salak 05 January 2021 15:38”22 PM	Adult	Male	BAGASK ARA	 A tiger is seen from the side, walking through a dense forest with many thin trees and green foliage. The tiger's stripes are clearly visible against its orange fur.
16	Salak 13 JanuarY 2021 00:58”46 AM	Adult	Male	BAGASK ARA	 A tiger is seen in a dark forest at night. The tiger's body is illuminated, showing its stripes, as it moves through the dense undergrowth.
17	Salak 02 February 2021 08:07:42 AM	Adult	Male	BAGASK ARA	 A tiger is seen from the side, walking through a dense forest with many thin trees and green foliage. The tiger's stripes are clearly visible against its orange fur.
18	Jalur Seling 16 February 2021 07:41 PM	Adult	Male	BAGASK ARA	 A tiger is seen from a distance, standing in a forest with a ground covered in dry leaves and twigs. The tiger's stripes are visible against the lighter background.
19	Jalur Seling 16 February 2021 10:02 AM	Adult	Female	KARTINI	 A tiger is seen from the side, walking through a dense forest with many thin trees and green foliage. The tiger's stripes are clearly visible against its orange fur.

20	Jalur Seling 24 February 2021 11:00 AM	Adult	Male	BAGASK ARA	
21	Jalur Seling 5 March 2021 17:30 PM	Adult	Male	BAGASK ARA	
22	Jalur Seling 7 March 2021 08:31 AM	Adult	Female	KARTINI	
23	Jalur Seling 10 March 2021 09:27 AM	Adult	Female	KARTINI	
24	Jalur Seling 11 March 2021 18:29 PM	Adult	Male	BAGASK ARA	

25	Salak 16 February 2021 09:26 AM	Adult	Male	BAGASK ARA	
26	Salak 23 February 2021 07:30 AM	Adult	Male	BAGASK ARA	
27	Salak 19 March 2021 11:10 AM	Adult	Male	BAGASK ARA	
28	Salak 20 March 2021 18:52 PM	Adult	Male	BAGASK ARA	
29	Camp Sulastri 14 February 2021 11:47 AM	Adult	Un identi fied	Un identified	
30	Rumah Pohon 9 April 2021 12:47:12 PM	Adult	Male	BAGASK ARA	

31	Camp Sulastri 14 April 2021 06:32:31 AM	Adult	Female	KARTINI	
32	Camp Sulastri 20 May 2021 06:00:28 AM	Adult	Male	BAGASKARA	
33	Salak 12 April 2021 18:22:18 PM	Adult	Female	KARTINI	
34	Salak 14 April 2021 11:59:10 AM	Adult	Male	BAGASKARA	

35	Salak 03 May 2021 02:06:33	Adult	Male	BAGASK ARA	
36	Salak 03 Mei 2021 14:42:53 PM	Jantan	Dewasa	BAGASK ARA	
37	Salak 03 May 2021 14:44:01 PM	Adult	Male	BAGASK ARA	
38	Jalur Camp C 03 April 2021 03:19:31 AM	Adult	Male	BAGASK ARA	
39	Jalur Camp C 03 May 2021 07:21:12 AM	Adult	Male	BAGASK ARA	

40	ERU H 02 June 2021 10:00:57 AM	Adult	Male	NN	
41	Salak 29 May 2021 02:10:33 AM	Adult	Male	BAGASK ARA	
42	Salak 01 August 2021 09:59:43 AM	Adult	Male	BAGASK ARA	
43	Jalur Sulastri 31 July 2021 09:45:46 AM	Adult	Male	BAGASK ARA	
44	Rumah Pohon 02 October 2021 06:36:17 AM	Adult	Male	BAGASK ARA	

Appendix 4. Documentation of survey, patrol, and monitoring of sumatran tiger, preys, and habits in BTNP.

		
<p>Patrol team are recording data of founding</p>	<p>Illegal logging is founded</p>	<p>Instaling a camera trap</p>
		
<p>Chainsaw are evidence of illegal logging are found by team</p>	<p>Campaign about forestry crime for local people in BTNP border</p>	<p>The procesed wood of illegal logging activities was foind by team</p>
		
<p>A camera trap was broken by theft</p>	<p>Finding a sumatran tiger footprint</p>	<p>A camera trap is losed</p>

Appendix 5. Screen capture of wildlifes videos, camera trap results in BTNP.

		
Sumatran tiger	Tapir	Malayan sun bear
		
Clouded leopard	Marbled cat	Mouse deer
		
Barking deer	Malayan porcupine	Pig tailed macaque
		
Malayan stink badger	Squirrel	Martin
		
Mitred leaf monkey	Indian palm civet	Long tailed macaque



Appendix 6: Tiger Document Workshop

