

KERINCI SEBLAT

National Park



The World Heritage of Sumatra

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KERINCI SEBLAT NATIONAL PARK



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PREFACE

Appreciation and gratefulness to the God Almighty, Allah SWT, for finishing this 2018 Kerinci Seblat National Park guidebook. This guidebook is the first book from KSNP which explains the history of the national park, duties and functions, organization, location and accessibility, biodiversity, tourism, cultures, and many other information about the park.

Kerinci Seblat National Park is an area with high germplasms and ecosystem diversity which are combined with indigenous culture. Therefore, in 2004, this park is declared as a one of World Heritage Sites by UNESCO. This guidebook attempts to provide adequate information about this national park biodiversity as well as its tourist attractions which illustrate its harmonious relationship with the local people.

Finally, sincere appreciation to all contributors which make this book is possible to be produced. Kindly waiting for your sincere suggestions and criticisms for upgrading data, information and quality of this book.

The Head of Kerinci Seblat National Park Office



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Kerinci Seblat National Park Agency

General Directorate of Natural Resources and Ecosystems Conservation
Indonesian Ministry of Environment and Forestry



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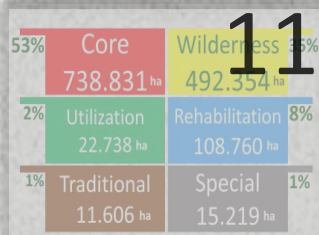
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Kerinci Seblat National Park (KSNP) holds an outstanding universal values in term of ecosystems and biodiversity conservation in Indonesia. This large park consists of almost 1.4 million ha which elongates in four provinces in Sumatra. Those four provinces are Jambi, West Sumatra, South Sumatra and Bengkulu. Various ecosystems and topography form a unique and beautiful view such as, Gunung Tujuh Lake, Mount Kerinci, Bento swamp, Kasah cave, etc.

Most of KSNP area is tropical rainforest which protect all flora and fauna within it. Several wildlife species are regarded as endemic and endangered such as Sumatran tiger, Sumatran elephant, Malayan sun bear, Asian tapir, *Rafflesia*, etc. Because of its critical values, UNESCO enacted KSNP as one of Natural World Heritage Site since 2004.

(HNK)



Ministry of Agriculture
declaration number
736/Mentan/X/1982
→ declared this 1,424,650 ha
area as national park nominee

1982

Ministry of Plantation and
Forestry decree number
901/Kpts-II/1999 in October
14th, 1999 about declaration
of KSNP area in 4 provinces

1999

General Director of Nature
Conservation and Forest
Protection number 07/IV-
KK/2007 in January, 16th, 2007
about KSNP zonation system

2007

1996

Ministry of Forestry decree
number 192/Kpts-II/1996 about
appointment and forest function
alteration

2004

Repatriation of 14.160 ha Sipurak Hook
area into KSNP through Ministry of
Forestry decree number 420/Menhut-
II/2004 in October 14th, 2004

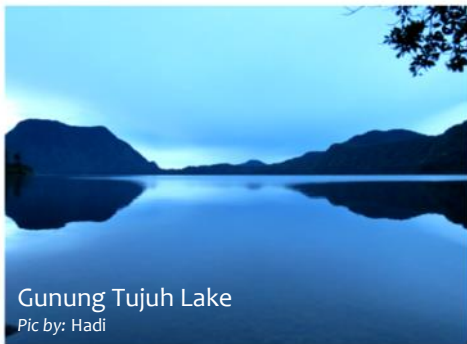
A. The National Park History

- In 1982, at the 3rd World National Park Conference in Bali, Indonesian Ministry of Farming declared an initial area of $\pm 1,424,650$ ha as a national park candidate. This initial area is a unification of several national forest areas such as game reserves, nature reserves, protected forests, tourism forests and production forests.
- In 1996, Indonesian Ministry of Forestry defined an area of $\pm 1,368,000$ ha as Kerinci Seblat National Park after series of researches and reorganizing. This is written on the Minister of Forestry decree number 192/Kpts-II/1996.
- In 1999, Indonesia Ministry of Plantation and Forestry stated that the area of Kerinci Seblat National Park is $\pm 1,375,349.867$ ha through Ministerial decree number 901/Kpts-II/1999.
- In 2004, Indonesian Ministry of Forestry enacted forest repatriation of Sipurak Hook production forest with $\pm 14,160$ ha into Kerinci Seblat National Park area with the Ministerial decree number 420/Menhut-II/2004. In this year, including the latter addition of Sipurak Hook area, the Park area becomes $\pm 1,389,509.867$ ha.



Mount Kerinci

Pic by: David



Gunung Tujuh Lake

Pic by: Hadi



Sumatran Tiger

Pic: BBTNS Doc

Thus, Kerinci Seblat National Park area is a unification of 17 forests within the protected forest register 1921-1926 and nature reserves forests and games reserves which were enacted in 1978-1981 as follows:

1. Jambi

- A part of Indrapura nature reserves, Gunung Tujuh Lake, Tapan Hill
- Protected forests: Sangir Ulu, Batang Tebo, Batang Sangir, Batang Bungo, Batang Merangin Timur and Mount Sumbing and Mount Masurai.
- Game reserves: Batang Merangin Barat-Majunto Hulu.

2. West Sumatra

- Protected forests: Bayang, Batanghari, Kambang, Sangir and Jujuhan
- Nature reserves: Indrapura (a part of it)

3. Bengkulu

- Games reserves: Kayu Embun hill and Gedang Seblat hill
- Protected forests: Reges hill and Hulu Sulap

4. South Sumatra

- Rawas Hulu Lakitan games reserves

In addition, a part of KSNP area also originated from reclassification of previously production forest into conservation forest. The last area which was added into KSNP area is Sipurak Hook area through repatriation process.



Tiger Footprints

Pic by: Agris



Percentage of KSNP area
per province

Jambi 32.4 %

Sumbar 25 %

Bengkulu 24.5 %

Sumsel 18 %



Padang

Painan

Lubuk Gadang

Muara-Bungo

Muara Tebo

Sungai Penuh

Bangko

Sarolangun

Mukomuko

Muara Aman

Arga Makmur

Curup

Bengkulu

B. Location and Area

Geographically KSNP elongates from north-west to southeast of Sumatra island in 100°31'18"E-102°44'01"E and 1°07'13"S-1°26'12"S. Meanwhile, administratively this park is located within 14 municipalities and 2 cities within 4 provinces as depicted in the following table.

Province	Regency/ City	KSNP Area (ha)	Area Percentage
JAMBI	Kerinci	197.233,552	14,19
	Merangin	166.635,170	11,99
	Bungo	35.321,867	2,54
	Sungai Penuh	39.811,635	2,87
	Sarolangun	499.258	0,04
SUMATERA BARAT	Pesisir Selatan	268.308,276	19,31
	Solok	11.037,870	0,79
	Solok Selatan	69.511,335	5,00
	Dharmasraya	3.613,425	0,26
BENGKULU	Rejang Lebong	26.281,121	1,89
	Bengkulu Utara	68.921,952	4,96
	Lebong	104.575,224	7,53
	Mukomuko	148.728,317	10,70
SUMATERA SELATAN	Musi Rawas*	242.313,033	17,44
	Lubuklinggau	6.717,833	0,48
TOTAL		1.389.509,867	100,00

* Musi Rawas regency/municipality currently becomes Musi Rawas and Musi Rawas Utara regency through regional proliferation process

C. Climate and Topography

Climate

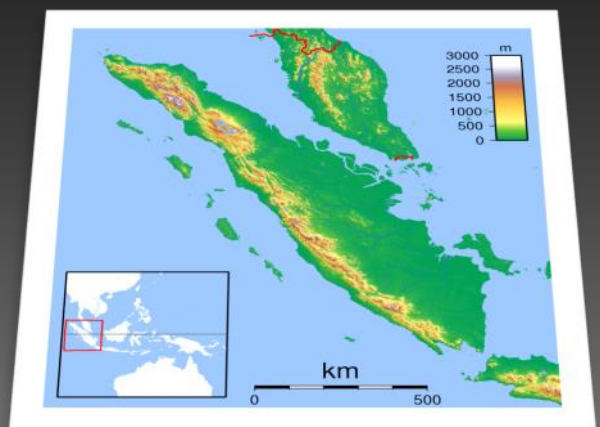
Despite variation because of topographic differences, generally KSNP area is categorized into A type (humid) in the Schmidt and Ferguson climate classification system with yearly average precipitation is 2,991 mm and no rain days less than 2 months a year. The average daily temperature is 16°-28° C with 77%-92% humidity index.

Topography

Kerinci Seblat National Park topography is steep valleys which divide Bukit Barisan mountains into two parallel parts. As a mountains range, this park is characterized by pretty steep slope ($\geq 60\%$) with elevation varies from 200-3,805 meter above sea level. Within which several mountains in KSNP area as follows:

- Mount Kerinci which is the highest mountain in Sumatra (3,805 m asl)
- Mount Tujuh (2,604 m asl)
- Mount Seblat (2,383 m asl)
- Mount Raya (2,543 m asl)
- Mount Nilo (2,400 m asl)
- Mount Masurai (2,600 m asl)
- Mount Sumbing (2,500 m asl)

Bukit Barisan Mountains forms a volcanic arch which elongated along Sumatra, Java and Nusa Tenggara islands. The middle part of Bukit



Sumatra Island Topography

Source: https://id.wikipedia.org/wiki/Berkas:Sumatra_Locator_Topography.png



Bento Swamp

Pic by: Dian IP

Barisan Mountains, with active volcanoes and becomes a part of KSNP area, is uniquely characterized by a 140,000 ha closed valley fault which surrounded by Mount Kerinci and other mountains and hills.

The scenery in the north center part of the valleys is dominated by the summit of mount Kerinci, while two caldera lakes which are Gunung Tujuh lake and Kerinci lake become the beautiful scenery in the north and west part.

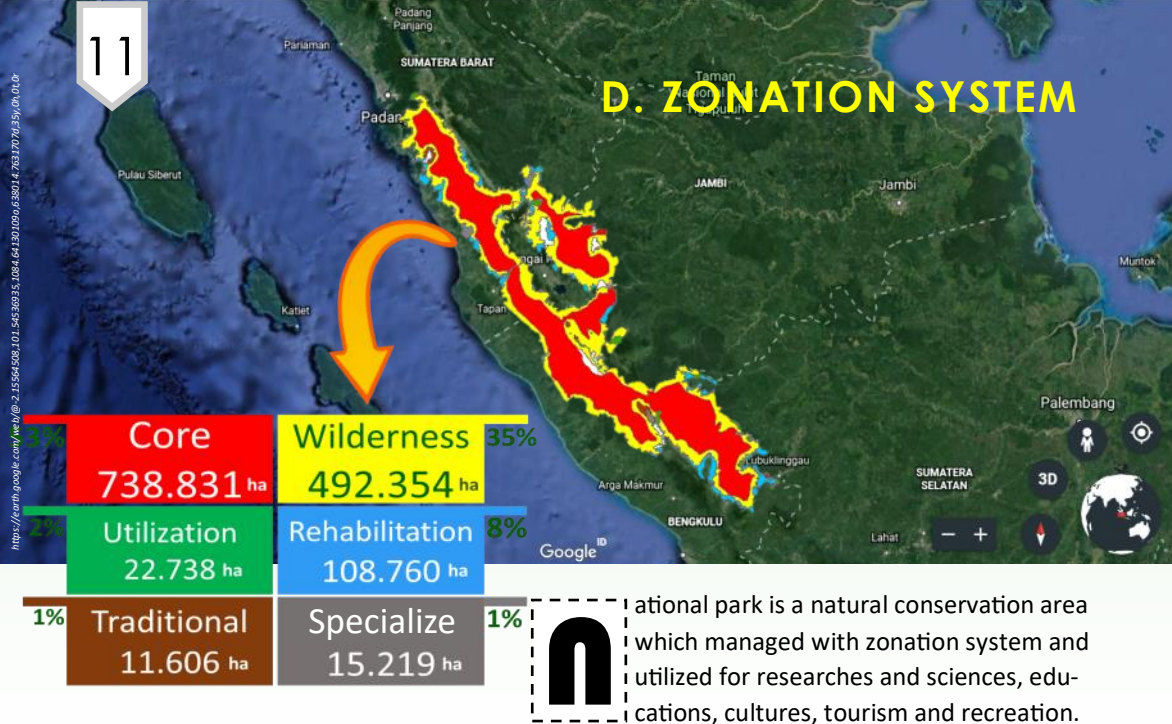
Generally, the topography of this area is steep with decreasing plateau toward the eastern and western side from the north to the south of Bukit Barisan. The end of this arising topography is the eastern part of middle Sumatra plains and the west coast area.



Pauh Lake

Pic by: Itno Itoyo

D. ZONATION SYSTEM



National park zonation is a spatial regulation which divided national park area into several zone based on series of studies and researches. The zonation process is done through series process such as preparation, data gathering and analysis, spatial plan drafting, public consultation, spatial planning, and borderlines regulation. This zonation system takes into account multiple aspects which may influence the management approaches such as ecology, social, economy, and indigenous culture.

The national park zonation is classified based on the degree of ecological sensitivity to any disturbances such as utilization, threats, spectacles and challenges.

According to the last zonation system in 2017, KSNP area is classified into:

1. Core zone
2. Wilderness zone
3. Rehabilitation zone
4. Utilization zone
5. Traditional zone
6. Specialize zone



NATIONAL level

Natural
conservation
area

Act number 5
year 1990

National strategic
area as natural
environment area

National tourism
strategic area



E. NP STATUS

GLOBAL level

ASEAN
Heritage
Park since Des
18th, 2003

World Heritage Site
(WHS) - Cluster Tropical
Rain Forest of Sumatera
with GLNP and BBSNP since 2004

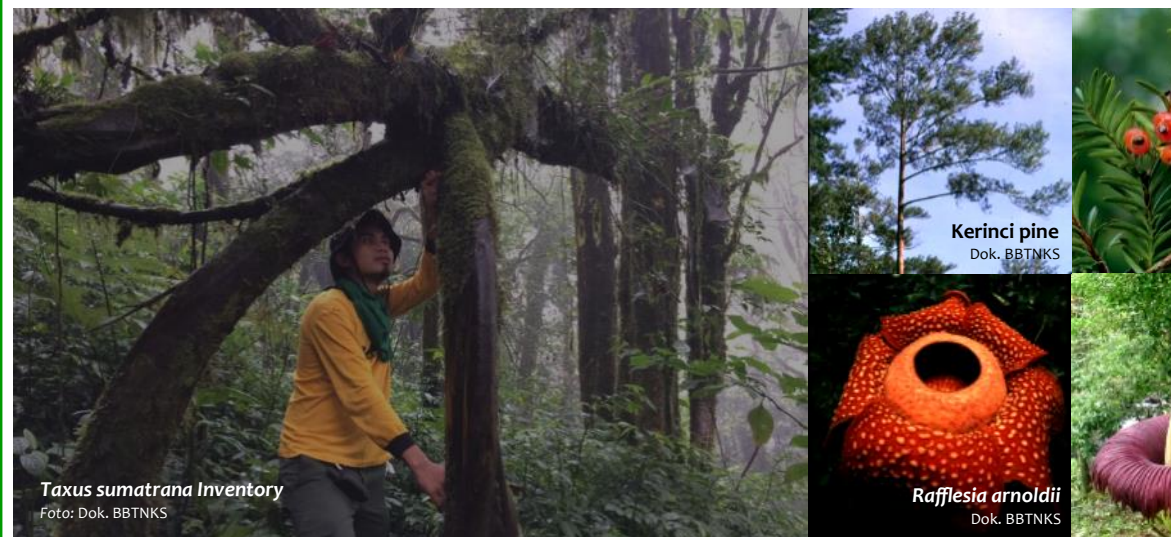
Tiger Conservation
Landscape Level I

"Management
of ecosystem
and natural
resources
conservation"

F. ROLE & FUNCTION

1. Formulize management plan, area organization and natural resources inventory
2. Forest protection and law enforcement
3. Natural resources damages impact management
4. Forest fire management
5. Non-commercial plants and wildlife species utilization and development
6. Flora and fauna, their habitat and indigenous and traditional knowledge preservation
7. Ecosystem services utilization and development
8. Area function, ecosystem rehabilitation and forest cover evaluation
9. Data and information provision, marketing and promotion of ecosystem and natural resources conservation
10. Ecosystems and natural resources conservation collaboration and cooperation development
11. Developing local people sense of belonging toward the national park and education on ecosystem and natural resources conservation
12. Community empowerment both within and at the fringe areas of the national park
13. Administrative, office works and public relations.

(HNK)



Flora

In this Park, there are at least 4,000 species of plants, in which 60% of it inhabiting the low land forest. Several families which are dominating this forest are dipterocarpaceae, fabaceae, lauraceae, myrtaceae, and bombacaceae. Within this forest there are also more than 300 species of orchids, various kind of bamboos, cinnamon trees, rattans, and the eternal flower, edelweiss. This park is also inhabited by the world largest flower (*Rafflesia*), the world tallest flower (*Amorphophalus titanum*), and the endangered pitcher plants.

Among all vegetation types mentioned above, the most important type is the dipterocarp forest in the low lands and hills up to 1000 m asl. Several dipterocarp trees which are inhabiting this forest are *Shorea parvifolia*, *Dipterocarpus* sp., *Parashorea* sp., *Koompasiana malaccensis*, and *Dialium* sp. The understory of this forest is important habitat for various palm species, *Rafflesia*, and *Amorphophallus*.





Kerinci Seblat National Park (KSNP) is a tropical rainforest area with various vegetation types from low land forest to mountain forest. Included into wet-land ecosystem, this area is widely known as high diversity forest.


Starting from 1000-1500 m asl is the low montane forest with various kind of dip-terocarp trees up to 1200 m asl, euphorbiaceae, and fabacaceae. The understory of this type of forest is inhabited by various kind of palm tree species such as *Livingstonia altissima* and *Areca catechu*, ferns, orchids, and pitcher plants (*Nepenthes*).

Montane forest starts from 1500 m asl and dominates by lauraceae and ericaceae family such as *Podocarpus amarus*, *Castanopsis* sp., *Ficus variegata* and *Cin-namomum parthenoxylon*.

Plants succession in mount Kerinci starts from 1800-2250 m asl where *Schima-Symingtonia* forest located. This succession part continues to the *Quercus-Engelhardtia* and *Symplocos-Myrsine* (2250-3000 m asl) up to the shrubs *Vaccinium-Rhododendron* forest above 3000 m asl. Besides, those which are mentioned above there is also secondary forest in the slopes of Kerinci valleys which is dominated by *Imperata cylindrica*.

One unique ecosystem which appears in Kerinci Regency is two swamp forest. There are Ladeh Panjang and Bento swamp which located in 1950 m asl. Those two swamps are the highest swamps in Sumatra Island. Bento swamp moreover, is the highest freshwater swamp in Indonesia. This swamp characterizes by *Leersia hexandra* which is called "bento" in the local language.

Several endemic species could also be found within the park such as, the Kerinci pine (*Pinus merkusii* strain Kerinci). Tulip wood tree (*Harpulia arborea*), jelutong (*Dyera costulata*), and Rafflesia flower (*Rafflesia arnoldii*).



Kerinci Seblat National Park is a continuous range of low land tropical rainforest until montane forest including several unique ecosystems such as natural tropical pine forest, peat swamp forest, and freshwater volcanic lake. This area is a pivotal habitat for many Sumatran birds as well as other wildlife. Previously recorded 371 species of birds (nine of them are hornbill species), more than 150 species of mammals (30 of them are large mammal), six species of primates, at least six species of amphibia, and at least ten species of reptiles.

Among flora and fauna species are the endemic ones as follows: .

English Name	Scientific Name
A. Endemic Wildlife	
Sumatran elephant	<i>Elephas maximus sumatranus</i>
Sumatran tiger	<i>Panthera tigris sumatrensis</i>
Asian tapir	<i>Tapirus indicus</i>
Schneider's pitta	<i>Hydrornis Schneideri</i>
Sumatran serow	<i>Capricornis sumatrensis</i>
Sumatran rabbit	<i>Nesolagus metschen</i>
Bronze-tailed-peacock-pheasant	<i>Polyplectron chalcurom</i>
Mountain scops owl	<i>Otus stresemanni</i>
B. Endemic Plants	
Kerinci pine	<i>Pinus merkusii strain kerinci</i>
Tulip wood tree	<i>Harpullia arborea</i>
Rafflesia Flower	<i>Rafflesia arnoldii</i>
Taxus sumatrana	<i>Taxus sumatrana</i>
Titan arum	<i>Amorphophallus titanum</i>

(HNK)



1. Sumatran elephant (*Elephas maximus sumtranus*); 2. Sumatran tiger (*Panthera tigris sumatrae*); 3. Asian tapir (*Tapirus indicus*); 4. Malayan sun bear (*Helarctos malayanus*); 5. Asiatic golden cat (*Pardofelis temnickii*); 6. Marbled cat (*Pardofelis marmorata*); 7. Sunda clouded leopard (*Neofelis diardi*); 8. Sunda pangolin (*Manis javanica*); 9. Sumatran porcupine (*Hystrix sumatrae*); 10. Bornean bread pig (*Sus barbatus*); 11. Indian muntjac (*Muntiacus muntjak*); 12. Sumatran serow (*Capricornis sumatraensis sumatraensis*); 13. The great argus (*Argusianus argus*); 14. Ajaal dhole (*Cuon alpinus*); 15. Horsfield's tarsier (*Tarsius bancanus*); 16. Sumatran surili (*Presbytis melalophos*); 17. Schneider's pitta (*Hydromis schneideri*); 18. Common flameback (*Dinopium javanense*); 19. Rhinoceros hornbill (*Buceros rhinoceros*); 20. Javan trogon (*Harpactes reinwardti*)
 Pic: BBTNKS doc., except number 17 by Dwi Wahyudi and 18, 19, 20 by Agus Setiawan.

Distribution Map of KSNP Tourism Destination

Mount Kerinci

The highest volcano in Sumatra with 3805 m asl. Located in Kerinci and Solok Selatan Regency, this mountain is 545 km from Sungai Penuh city center.



Lumpo waterfall

This waterfall is located in IV Jural sub district about 11 km from west coast shore. Along the trail to this waterfall is steep hills, old plantations, and dense natural forest.



Tapan hill

Before enacted as a part of KSNP area this area is part of Indrapura nature reserves which is a 721,130 ha tropical low land and hill forest. This place is an important habitat for primates, tapir, birds, etc.



Mount Masurai

Mount Masurai is an inactive 2980 m asl volcano which located in Merangin Regency, Jambi Province. This mountain is still considered as a pristine mountain, especially after entering the jungle gate.



Paul Lake

Located in Merangin Regency, Jambi Province, this lake have approximately 30 ha and located in 1200 m asl. This lake offers the beautiful scenery of pristine lake with the landscape of Mount Masurai as a faraway background.



Mount Sablat

This mountain is located in the border of Lebong Regency, Bengkulu province and Musi Rawas Utara Regency, South Sumatra province. The distance of this mountain from Muara Aman, the capital city of Lebong Regency is ± 21 km.



Batu Betiang waterfall

This 25 m waterfall is beautified with hundreds pole like rocks in the left part which construct chair-like structures and stairs way. In the right side, meanwhile, hundreds of pillar-like rocks densely arranged.



Madapi forest

Madapi is a tourist destination which consist of three homogenous forests, each of it is dominated by mahogany, damar or embayina pine, and pine. This cluster area is one of popular tourist destination in Bengkulu province. Visitor will be able to enjoy fresh air with each unique scent of those rare species.



Telun Berasap waterfall

Telun Berasap waterfall is a great waterfall with 50 m height of waterfall and three more waterfalls at the downstream. Visitors will be able to enjoy the foggy scenery from the water dews in the surrounding area.



Gunung Tujuh Lake

This lake named based on its location which are surrounded by seven mountains.



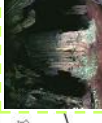
Bento swamp

This swamp is a freshwater swamp which dominated by bento grass (*Leersia hexandra*).



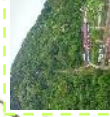
Napal Licin cave

This cave is inhabited by bats and swallow birds. Inside this cave is the outstanding natural architectural forms, stalactites and stalagmites.



Sulap hill

This hill is a secondary forest area which offers beautiful natural landscape as well as city landscape.





The Visitor of Danau Gunung Tujuh
Pic by: Dedi

Kerinci Seblat National Park is a national and international treasure which holds a strategic value for biodiversity conservation and sustainable development. Ecologically, KSNP is a natural preservation area which has complete pristine ecosystem from low land tropical rain forest to sub alpine forest. In addition, KSNP also has several unique ecosystem of highland wetlands such as peat forest, fresh water swamp, and volcanic lake. Thus, KSNP is very attractive tourist destination. Several tourist destinations which attract many tourists as follows.



Mount Kerinci

mount Kerinci is the highest volcano in Sumatra with 3805 m asl. This mountain is one of iconic tourism destination in Kerinci Seblat National Park and Kerinci Regency. Approximately 6000 people, both local tourists and foreigners, climb this mountain yearly. The peak climbing season is August, which is the Independence Day month of Republic Indonesia, and the end of December for New Year celebration. Despite of climbing and hiking activities, Mount Kerinci is also a favorite place for camping, birdwatching, jungle tracking, environmental education, and save and rescue training.

The attractiveness of Mount Kerinci lies on the very challenging hiking track which have to be conquered upon climbing the mountain, animals and plants biodiversity on its forest, and the unique and exceptional scenery which can only be seen from the high of this mountain. The peak of this mountain could be reach by hiking through two trails. The first trail, which is the old ones, is the hiking track through the forest gate in Kersik Tuo, Kerinci Regency. The second trail which is just publicly opened in 2016 by the government of Solok Selatan Regency, starts from Bontak hill, Padang Aro, Solok Selatan Regency.



Mount Kerinci Landscape

Pic by: Dian IP

Kersik Tuo hiking track has its own attractiveness toward many birdwatchers. This trail is a pivotal habitat for at least 41 bird species from 371 species which live within KSNP. Seven species of birds are the endemic one, one of which is the Schneider's pitta or *Hydrornis schneideri*. This bird once already stated as extinct in the wild but still inhabited Mount Kerinci.

In term of plants and ecosystem biodiversity, Laumonier (1994) classified Mount Kerinci into several types of ecosystem based on vegetation structure and elevation as follows:

1. Hill forest in 300-800 m asl is dominated by trees from Dipterocarpaceae, Fagaceae, and Burceraceae. The most dominant tree is *Hopea beccariana* in the east side and trees from Sterculiaceae in the west side;
2. Sub-montane forest in 800-1400 m asl is dominated by Myrtaceae and Fagaceae.
3. Low-montane forest in 1400-1900 m asl is dominated by Fagaceae, Lauraceae, Theaceae, Myrtaceae, and several of Sapotaceae. The understory of this forest is rich of shrubs and bushes from Myrsinaceae;
4. Mid-montane forest in 1900-2400 m asl is dominated by *Podocarpus*. The high canopy has 15-20 m tall trees from *Quercus odocarpa*, *Vernonia arborea*, *Symingtonia populnea*, *Drypetes subsymetrica*, *Gordonia buxyfolia*, *Weinmannia blumet*, and *Polysma integrifolia*.
5. High-montane forest in 2400-2900 m asl is dominated by *Symplocus*, *Myrsine*, *Ardisia*, *Meliosma lanceolata*, and *Cyathe trachypoda*;
6. Sub Alpine thicket in 2900 m asl and higher is dominated by Ericaceae (*Rhododendron retusum*, *Vaccinum miquellii*, and *Gaultheri nummularoides*), Symplocaceae (*Symplocos cochinchinensis*). (DIP)

Top of Mount Kerinci

Pic: Dok. BBTNS



Hiking Track of Mount Kerinci

Pic: Ronald



Camping Ground at Mount Kerinci Hiking Track Via Solok Selatan

Pic: David




Schneider's Pitta

Pic by: Dwi Wahyudi



Gunung Tujuh Lake



Gunung Tujuh Lake is a caldera lake which originates from the ancient volcanic activities. Located in 1996 meter above sea level this lake is one of the highest in South East Asia. Often, this lake is foggy with the average temperature 17°C. The area of the lake is approximately 960 ha with 4.5 km and 3 km in dimension. This lake is surrounded by seven mountains as follows, Mount Hulu Tebo (2525 m asl), Mount Hulu Sangir (2330 m asl), Mount Masura Besi (2418 m asl), Mount Lumut with various kind of bryophytes (2350 m asl), Mount Selasih (2230 m asl), Mount Jar Panggang (2469 m asl) and Mount Tujuh (2735 m asl).

Gunung Tujuh Lake is known as “Sakti” or Sacred Lake by the people of Kerinci. The water of this lake is always clear without a single fallen leaves although there is a lot of fallen tree in the edge of the lake. According to the local people a lot of unusual things often happen such as, the sudden change in the weather around the lake. In the time of lake land clearing, one of the worker said that the boat suddenly turning around in the middle of the lake without a specific reason. The villagers believe that Gunung Tujuh Lake is inhabited by a divine creature or forth dimensional creature which look like hu-



man. Their names is Lbei Sakti and Saleh Sri Menanti. These creature have several underlines which depicted as tigers.

Gunung Tujuh Lake is a pivotal livelihood for the villagers. There is several mount huts which are used by the fisherman as a temporary house while fishing using traditional boat and “lukah”, a kind of traditional tool for trapping the fish. In the morning the fisherman will sail and put the “lukah” in the middle of the lake and in the evening they will harvest it. The traditional boats which are used is constructed by one log of tree with 30-40 cm diameter which processed in a way until it become a boat. The “Lukah” used by the fisherman is made from woven bamboo. This “Lukah” is tied in the middle of the rope, in the end of the rope is weighted by used bottles (mineral water bottles) and rock on the opposite side.

This lake is located in Sungai Jernih village, Gunung Tujuh Sub-district with the approximate distance 56 km from Sungai Penuh. The visitors will be required to walk 2-3 hours along the trail before they can enjoy the beautiful scenery and the fresh air of the lake.

(HNK)

Kaco Lake is a natural lake which has an outstanding value because of its water color. This lake is cyan or blue tosca colored lake which has a clear and clean water that shine in the night time. This unique feature makes the depth of the lake is hard to measure. Up until now the deepest measurement which is successfully measured by the Lempur Mudik local guide is 20 m. The water temperature in this lake is also colder than the surrounding environment.

The unique color of this lake alone triggers curiosity of many researchers and visitors. They all want to know the reasons behind the cyan and clear color of this Lake. The most logic reason which is gathered from various resources like private travelling sites, private blogs, and interview with local people is that particular kind of minerals from the lake sediment are what makes the cyan color on the water. According to chemistry, the water molecule itself gives the intrinsic blue color to the water body. This color will intensified depends on the scale of the water body. Another hypothesis is that several chemicals like calcium carbonate and kaolin could also triggers cyan color. This natural blue color of the water body becomes one of indicators of ecosystem and watershed quality. Lake with bluish color is often more atrophic than the other color. This kind of lake indicates the still manageable and minimum human ecological footprint watershed areas which could also shape the quality of the neighboring area. This kind of lake, however, is often not very favorite place for biological organism such as fishes, zooplankton, and phytoplankton.

The latter description, on the hypothesis why the lake color is cyan, is on the opposite site with what happen in Kaco Lake. In Kaco Lake there are many population of *Tor douronensis*, “ikan semah” in local language or ray-finned fish or God’s fish. Because of this condition another hypothesis arises. Biologically, phytoplankton and algae from chlorophyceae and cyanophyceae also produce cyan color which is reflected to the surrounding environment. Moreover, several organism from diatoms also eradiate golden shine during night time. The ultimate truth of the reason why Kaco Lake color is cyan, however, is remain uncertain and need further scientifically scrutinizes. (DIP)

At the night time Kaco Lake will illuminates golden like color in such way that people who camp in the surrounding area would not need any additional light. The customary people of Lekuk 50 Tumbi or in general Lempur residents have their own belief about why the Kaco Lake color is bluish and clear. Once upon a time, there was a king who had a very beautiful princess. Because of the beauty of the princess many princes came in order to propose her. At the time of proposing, those princes brought many presents and gifts to appeal the King and the princess. Thus, the King felt a huge dilemma. He had to carefully consider whom to accept and if he made a mistake a war might arise and thus threaten the people of “Lekuk 50 Tumbi”. The King realized that his daughter beauty is double-edge swords it could become a blessing and a curse. Thus, the King decided to sacrifice his own daughter for the sake of his people safety. After killing his daughter the King went to a pilgrimage to look for his daughter eternal resting place. He brought all the presents and gifts which were brought by all the princes who propose to his daughter. In the middle of his pilgrimage, the King threw all of the presents and gifts, which mostly golds and diamonds to a lake. Up until today, local people belief that these golds and diamonds are behind the reason of the unique night shining illumination of Kaco Lake.





Kaco Lake

Foto : Dok. BBTNKS

Located in Sungai Penuh Resort, resort is the smallest management unit in KSNP, geographically Kaco Lake is located in 1229 m asl, 101.540402 E and 2.330258 S. Because of its remote location, deep in the wilderness zone of the park, this lake could not be reach by vehicles, instead jungle tracking is the only option. The distance between the furthest vehicles could go to Kaco Lake is ± 10 km. Trail to Kaco Lake itself is crossing KSNP area with a little swamp forest and the already converted production forest to customary forest. The path condition as depicted in the picture below.



Track Condition from Tugu Benteng to Kaco Lake

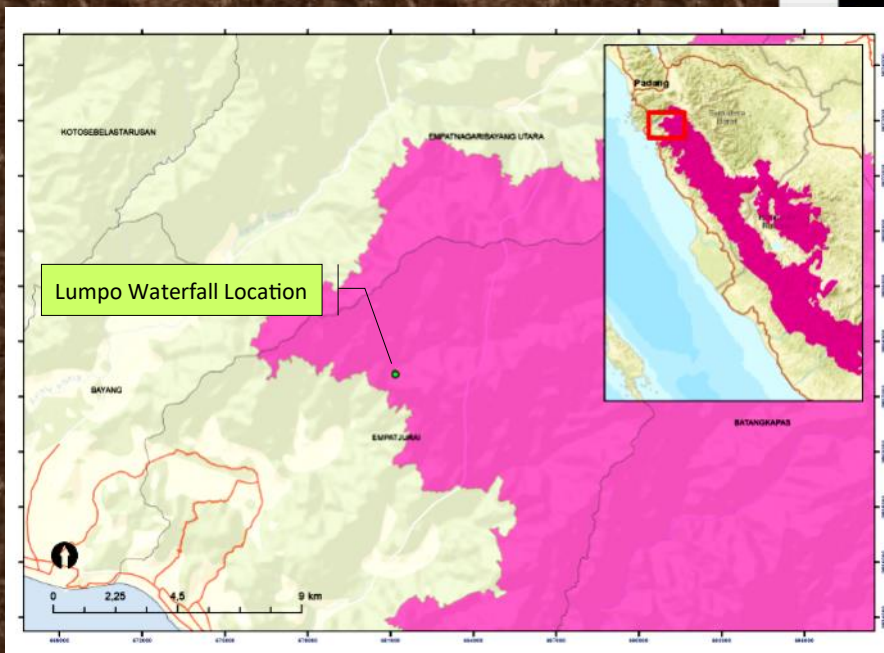
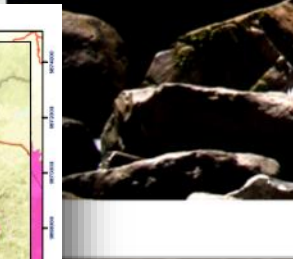
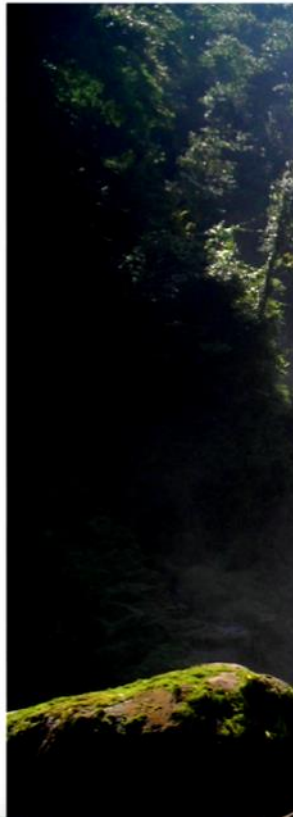
Pic by: Dian IP

Lumpo Waterfall

This waterfall is located in Limau Gadang Lumpo village, IV Jurai sub-district, Pesisir Selatan Regency. In terms of management, this waterfall is within the jurisdiction of third regional national park management division in Painan.

The nearest access from Padang, which is the capital city of West Sumatra province, to Lumpo waterfall is approximately 75 km. This waterfall could be reached from the edge of the last village by walking 4-5 hours through the natural and hilly trail. Along the trail the visitors can enjoy the beauty of the nature and several wild plants species such as various kinds of orchids and so on.

The height of this waterfall is approximately 80 m with 15 m width. The forest around the waterfall is one of the pivotal habitats for mountain goat. Occasionally in a good condition, the visitors might be able to encounter with this endemic animal. (HY)





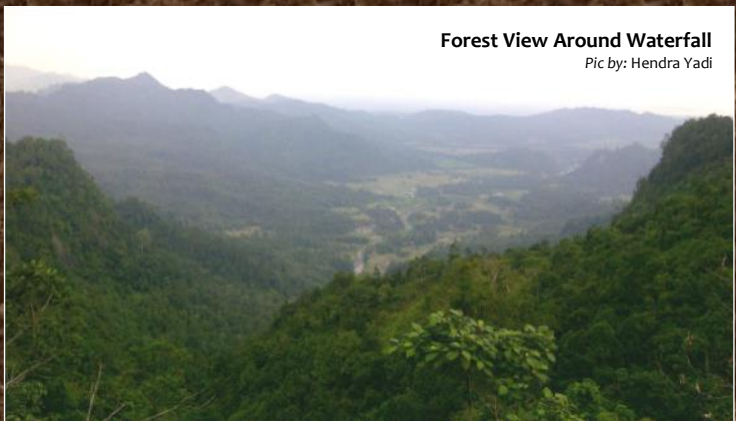
Lumpo Waterfall

Pic by: Hendra Yadi



Waterfall as Kids Playground

Pic by: Hendra Yadi



Forest View Around Waterfall

Pic by: Hendra Yadi



Located in 1375 m asl, Bento swamp is the highest fresh-water swamp in Sumatra.

This approximately 1000 ha swamp is a unique swamp forest ecosystem which consists of peat swamp grass, dwarf peat forest, and small swamp lake. The name of this swamp is taken from the name of grass, Bento (*Leersia hexandra*: Poaceae) that dominated the peat swamp grass area. The dwarf swamp forest consists of trees like *Eugenia spicata*, *Palaquium* sp., *Syzygium* sp., *Elaeocarpus* sp., *Ficus* spp., etc (Putra, 2011).

Bento Lake and river is rich with various kind of fishes such as ray-finned fish (*Tor douronensis*), mah-seer (*Tor tambroides*), yellow ras-bora (*Rasbora lateristriata*) and eel



Bento Swamp

(*Monopterus albus*) (Putra, 2011). The high number of fishes there makes this place an important livelihood for many fishermen in the neighboring area.

Moreover, Bento swamp is also a favorite place for bird-watchers. Research and inventory results show that this swamp is one of the habitats for water migrant birds such as wood sandpiper, common sandpiper, and Swinhoe's snipe. Apart from these migrant birds, there are ten more water birds which inhabit this swamp. In addition, there are also at least 36 other bird species within the dwarf swamp forest.

In the past, Bento River was a main transportation route which connected people in the neighboring area of Bento swamp prior before the road was constructed. The transportation mode which was used was a traditional boat which was made from log wood and driven by simple paddles. (DIP)

Bento Swamp Landscape With Mount Kerinci Behind
Pic by: Dian IP





The name MADAPI comes from the acronym of mahogany, damar or amboyna pine, and pine. These three kind of tress form three homogenous forest clusters which later unified as a Madapi forest.

The origin of this forest is from a part of the seventh register of Bukit Kelam preservation forest. The mahogany and amboyna pine here were planted by the people of Karang Anyar Pal VII village in the 1950 as much as 60-70 ha through reforestation program. Meanwhile, the 100 ha pine forest was planted during 1983 by the reforestation program of Forestry Bureau, Rejang Lebong Regency. This area is located in Pal VII village, Bermani Ulu Raya sub district, Rejang Lebong Regency, Bengkulu Province.

Despite of the three dominated tress, MADAPI forest also inhabited by several flora such as titan arum (*Amorphophallus* sp.), various kind of orchids (orchidaceae), candlenut (*Aleurites moluccana*), rukam (*Flacotria rukam*), Indian coral tree (*Erythrina variegata*), bayur (*Pterospermum javanicum*), *Artocarpus* sp., rattans (*Calamus* sp.), bamboos (*Bambusa* sp.), round cardamom (*Amomum compactum*), understory plant such as liana and ginger like plants (zingibereaceae).

This forest is also an important habitat for several wildlife species such as several kind of snakes, various kind of birds for example hornbill (*Buceros* sp.), eagle (*Ictinaetus* sp.), greater green leafbird (*Chloropsis sonerati*), soothy-headed bulbul (*Pycnonotus aurigaster*), blue-faced honeyeater (*Entomyzon cyanotis*), and typical white-eyes (*Zosterops* sp.). In addition to the previous animal list, MADAPI forest also inhabited by several kind of primates such as long-tailed macaque (*Macaca fascicularis*), Sumatran surili (*Presbytis melalophos*), siamang (*Symphalangus syndactylus*), wild boar (*Sus scrofa*), and Malayan sun-bear (*Helarctos malayanus*).

Madapi



Berbagai Atraksi di Hutan Madapi
Foto: Dok. BPTN III

Several tourism activities that could be done in this area are as follows:

RESEARCHES AND ENVIRONMENTAL EDUCATIONS

The environmental educations which are frequently held in MADAPI forest usually attended by students from elementary school until university. The lessons which are given are the introduction of Kerinci Seblat National Park, MADAPI plants species introduction and tree planting methodologies.

JUNGLE TRACKING

Another activities which is possible to conduct in MADAPI forest is jungle tracking. This activity usually starts from the amboyna pine forest to the pine and mahogany forests. There are several trails which are available The first one is the short trail which takes approximately 1 km through the amboyna pine forest to the pine forest. Secondly, the middle track through the same forest which is 3 km long. The last one is the complete long trail through three dominated forests.

OUTBOUND

In addition to the activities mentioned above, visitors could also do other outdoor activities such as cycling, jungle adventure, and hiking. This MADAPI forest is also one of favorite spot for photography, pre-wedding shoot, and filming site. For those who need a little challenge, MADAPI forest is also occupied by tree-house.

Bontak Hill

Bontak hill is a new tourism destination in which offer nature and unique attractions. This place consists of Bontak Lake, camping ground, natural forest with biodiversity richness. Several activities which are possible to do here such as jungle tracking, camping, birdwatching, agroforestry and flora diversity researches.

The main attraction in Bontak hill is Bontak Lake. This approximately 3 ha lake is located in 1250 m asl Golden Arm highland. Bontak Lake forest area is a sub montane forest (800-1400 m asl). To un-

derline, this lake is the only lake in Solok Selatan Regency.

Bontak hill entrance road and camping ground have a very strategic location near the main road therefore no tracking is needed. This access route is located along the road to Kembar or Twin waterfall and Mount Kerinci hiking trail via Bangun Rejo. The distance from the Mayor office of Solok Selatan regency is approximately 7 km or 157 km from Padang, the capital city of West Sumatra province. To be exact this Bontak hill is located in Jorong, a kind of sub-village system in traditional West Sumatra government system, Bangun Rejo, Lubuk Gadang Selatan village (Nagari), Sangir sub-district, Solok Selatan regency, West



Bontak Lake from Above

Pic: Nadzrun Jamil



Bontak Lake

Pic: Toni Anwar

Sumatra. In the national park management system, Bontak Hill is located in utilization zone, forth national park regional management section.

In order to support this new destination in Solok Selatan regency, in 2017 KSNP office built several tourism facilities and amenities such as visitor center, toilet, and clean water provision installation. This year, 2018, KSNP office also built a 12 m tower in the camping ground area.

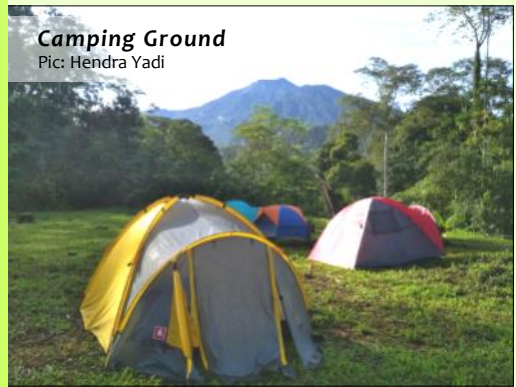
Flora

Bontak hill utilization zone has various vegetation types from slopes area until peak hill vegetation. Several plants which are dominated this area based on field data gathering for tourism destination design plan are as follow, schima (*Schima wallicii*), liana, Keppel apple (*Stelechocarpus burahol*), wild mango (*Mangifera* sp.), rattans, bamboos, understory species, and several plants from zingibera-ceae.

Basen on KSNP data on 2012, the forest area in Bontak hill has 45 orchid species which is dominated by *Bulbophyllum* and *Spa-toglottis*. The rarest and protected flora which were found there are *Rhizanthus lowii* from rafflesiaceae. This species inhabited the surrounding area of Bontak Lake as well as in the west hill's slopes with relatively abundance population.

Fauna

Several wild animal species which are found in Bontak Hill are crap-eating monkey (*Macaca fascicularis*), silvery lutung (*Trachypithecus cristatus*), Sumatran suruli (*Presbytis melalophos*), agile gibbon (*Hylobates agilis*), siamang (*Sympalagus syndactylus*), Sunda slow loris (*Nyctcebus caucang*). In spite of above primate species, there are also several animals which are regarded as pest by the local people such as wild boar (*Sus schrofa*) and Bornean breaded pig (*Sus barbatus*). Moreover, in the west side of Bontak hill, surrounding the peak and the west side of Bontak Lake with dense grass and shrubs species, natural feed of deer and muntjac, are inhabited by sambar deer (*Cervus unicolor*), Asian tapir (*Tapirus indicus*), clouded leopard (*Neofelis nebulosa*), Indian munjtac (*Muntiacus muntjak*). Adding to the diversity of fauna in Bontak hill are Malayan porcupine (*Hystrix brachy-ura*), snakes, Java mouse-deer (*Tragulus javanicus*), and several bird species such as hornbill and the great argus. This area is also one of Sumatran tiger (*Panthera tigris sumatrae*) home range in the KSNP landscape. (HY)



Camping Ground

Pic: Hendra Yadi

WATER AS ECOSYSTEM SERVICES



IUPEA Location of PT. Brantas Cakrawala Energi
Pic: BBTNKS Doc.

The natural resources richness of KSNP is not only in form of biodiversity richness and beautiful natural landscapes. KSNP area likes the other conservation forest holds a pivotal function in term of water resources management such as, preventing floods and water erosion, absorbing rainwater, and regulating water availability. KSNP is an important water catchment area for three main watershed in Sumatra which are Batanghari watershed, Musi watershed, and Pantai Barat Sumatra watershed. Thus, KSNP area hydrologically and ecologically contributes to the surrounding communities as a water source for 10 million ha agriculture system and clean water resources for approximately 5 million people (Purnajaya, 2001). Based on literature mentioned before, the score of water ecosystem services utilization in KSNP area can be estimated as follows.

Estimation of economic value of water utilization in KSNP

Domestic water utilization	5 million people x 60 l/day x 365 days= 109,500,000 m ³ /year 109,500,000 m ³ /year x 2884/m ³ = (IDR) 311,418,000/year
Agriculture utilization	10 million ha fields x (IDR) 172,637/ha/cropping season x 2 seasons/year= (IDR) 3,452,740,000,000/year

Notes :

* = water use standard is based on village community drinking water usage from National Standardization Agency 2002 SNI 19-6728.1-2002= 60 litre per day. Economic valuation of community water utilization is calculated based on water price from Kerinci Regency Regional Company for Water Provision in 2017= IDR 2844/m³

**= economic value estimation of agricultural water/ water rent based on Syaumat et al (2009) Indonesian Agriculture Journal page 201-210= IDR 172.637/ ha/ cropping season with the assumption 2 cropping season yearly.

The utilization of water as ecosystem services in KSNP is executed in the form permits which are categorized based on the form of water which is utilized, water mass or water energy, and commercial and non-commercial used. The progress status of water utilization permits and licenses process in KSNP until December 2018 is as depicted in the figure below:

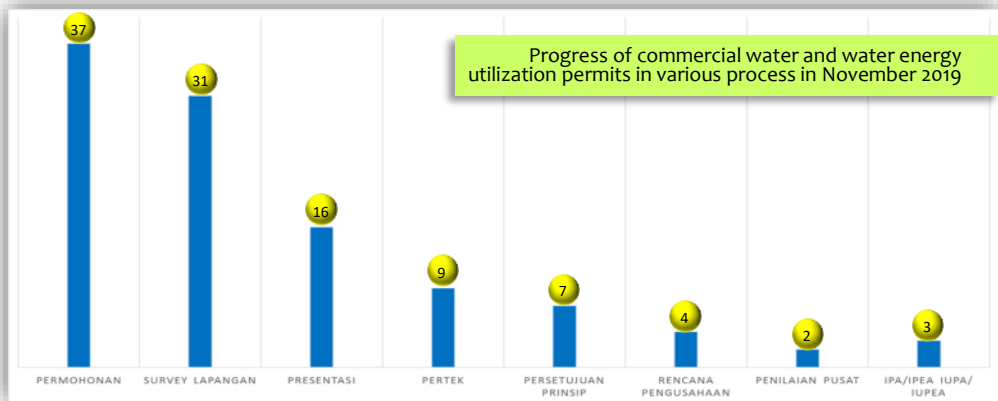
To the date, as illustrated in the figure, there are only one water business license (PDAM Tirta Sakti, the regional clean water provision company of Kerinci regency) and one water energy business license (PT. Brantas Cakrawala Energi) and one water utilization permit (SPN Bukit Kaba, one Police Academy in Rejang Lebong Regency). This data indicates that the permits issued

are still far beyond the real value of water resources in KSNP. For example, the commercial water energy permit for PT. BCE with only 6 MW production capacity, the other production capacity permits which are still in the process of submission reach 110.542 MW (data on December 2018). (DPS)



PDAM Tirta Sakti

Pic: BBTNKS Doc.



MANAGEMENT PRIORITIES



Management priority program of KSNP:

1. Area encroachment conflicts resolution.
2. Illegal logging law enforcement.
3. Wildlife trafficking and illegal hunting law enforcement.
4. Enhancement of conservation partnership program.
5. Ecotourism and ecosystem services development.

Tamen Sitorus, 2018

Encroachment area in Sipurak Hook

Pic: BBTNKS Doc.

Encroachment

Illegal Logging

Encounter with illegal logging during forest guarding patrol

Pic: BBTNKS Doc



Partnership

Wildlife Trafficking Evidence

Pic: BBTNKS Doc.

Illegal Hunting

Ecotourism

Madapi Forest

Pic: BBTNKS Doc.

TEN NEW WAYS FOR CONSERVATION AREA MANAGEMENT IN INDONESIA: BUILDING "LEARNING ORGANIZATION"



1 Local people as a subject

Local communities are regarded as main actors on conservation area management.

2 Respect for human rights

Various conflicts in the conservation area are resolved by upholding human rights and using conservation partnership programs.

3 Cooperation among Directorate Generals/ environment and forestry sectors

Optimization of conservation area management through forming cooperation with Directorate General (DG) of Social Forestry and Environmental Partnership and other DGs.

4 Cooperation between ministries

Conservation area management is also executed by communication, coordination and partnership with other ministries or institutions.

5 Respect cultural values and customs

Attempting to find conservation area management model based on local customs and cultural values, geopolitical, and social-economic condition of surrounding areas.

6 Multilevel leaderships

A strong leadership should be able to build multi stake holders cooperation and collaboration by upholding mutual respect principal, mutual trust and mutual benefits.

7 Scientific based decision support system

Conservation area management must be based on: 1) valid information, 2) Scientific based data gathering and analytical methods, 3) Application of high technology for finding the real benefit values of genetic resources for humanity.

8 Resort Based Management (RBM)

National Park area and Directorate General of Ecosystem and Natural Resources Conservation must be work at the resort level for area guarding and closer to the communities.

9 Rewards and mentoring

The base technical unit management of DG of Ecosystem and Natural Resources Conservation must give reward for successful staffs or managers and give mentoring for those who fail to adapt.

10 Learning Organization

Building a system which could ensure the learning process is documented and facilitated its spread to be learned.

Wiratno, 2018

Source: Ten (New) Ways For Conservation Area Management In Indonesia: Building "Learning Organization"

Author: Wiratno-General Director of Ecosystem and Natural Resources Conservation



From Top to Bottom: (1) the forth regional office of KSNP in Solok Selatan Regency, (2) Central figures of Bangun Rejo conservation group, Abdul Hadi and Edi Saptono, (3) Furnitures produced by the group, (4) Biogas that has been utilized by villagers.

National Park is not only identically related to protection areas but also beneficial areas which give benefits to local community who reside in the surrounding area. One of Ministry of Environment and Forestry Program which has been implemented since 2006 is conservation village model or in Indonesian language is “Model Desa Konservasi (MDK)”. This program is one of community empowerment programs for community within or in the fringe area of conservation forests. The success story of this program will become a model and be adapted in the different places of national park buffer zone.

One of successful conservation village model, based on community empowerment monitoring program in 2018, is Lubuk Gadang Selatan village or Nagari in the local language, West Sumatra with the name of the community group is Bangun Rejo Indeptent Conservation Group (Kelompok Konservasi Mandiri Bangun Rejo). This group is located in “jorong”, a kind of sub-village in the traditional West Sumatra government system, Pincuran Tujuh. This group have been proving that KNSP economic improvement program could really improve community incomes and living standard as well as supporting national park sustainability. This accomplishment is the result of implementing intensive assistance and effective and efficient grant program. Started from revolving loan for cow farming, to the date the people of Bangun Rejo already have various creative economic business such as mushroom farm, producing organic fertilizer and biogas from cattle manure, furniture workshop in which the raw materials come from their own planted trees. In the tourism sector, this group have already collaborated with KSNP to develop mountain hiking and camping in Mount Kerinci.

The community welfare enhancement gives an impact to the surrounding conservation forest sustainability.

Through area function strengthening cooperation agreement, the members of Bangun Rejo independent conservation group do routine patrol and independent forest guarding activity voluntarily. (HNK)

Role Model Tenurial Conflict Management

Initial conditions

1. The majority of people which are involved in the land tenure conflict is farmers.
2. Their field is located within KSNP area.
3. The majority of farmers is migrants.
4. The community complains unclear national park border lines.

Three Location

Giri Mulyo

- ◆ Encroachment area: 406.29 ha
- ◆ Number of families within NP: 80 KK

Kebun Baru

- ◆ Encroachment area: 663.99 Ha
- ◆ Number of families within NP: ±100KK*

Sipurak Hook

- ◆ Encroachment area: 5.285.45 ha
- ◆ Number of families within NP: 783 KK

*Inventory Processing

Present conditions

1. The resident of Giri Mulyo and Kebun Baru agree to support the role model program;
2. Four forest farmers group in Giri Mulyo (Karang Jaya and Danau Belibis) and Kebun Baru (Meranti Jaya and Sejahtera Bersama) already signed the conservation partnership agreement (Karang Jaya and Danau Belibis);
3. The people of Nilo Dingin (Sipurak Hook) decline role model program because of the fear form the ripple effect of the conflict;
4. The local people demand KSNP to enforce the migrant farmers;
5. The people who support role model program demand options for alternative livelihood;
6. Grant for economic improvement program was already distributed to forest farmers groups of Giri Mulyo;
7. Forest clearing activities in Nilo Dingin are still ongoing.

Precondition

Trials & Implementation

2017

2018

2019

2020

2021

2022

Strategy

- Encroachments identifications and inventories;
- The establishment of a special task force for land tenure conflict resolution;
- Stakeholders involved approach;
- Free, prior and informed consent;
- Building conservation village groups;
- Social forestry (Ecosystem Restoration);
- Community economic improvement programs.



1. The restoration of national park area that has been encroached
2. The community will not do forest clearing anymore
3. The community has alternative livelihood

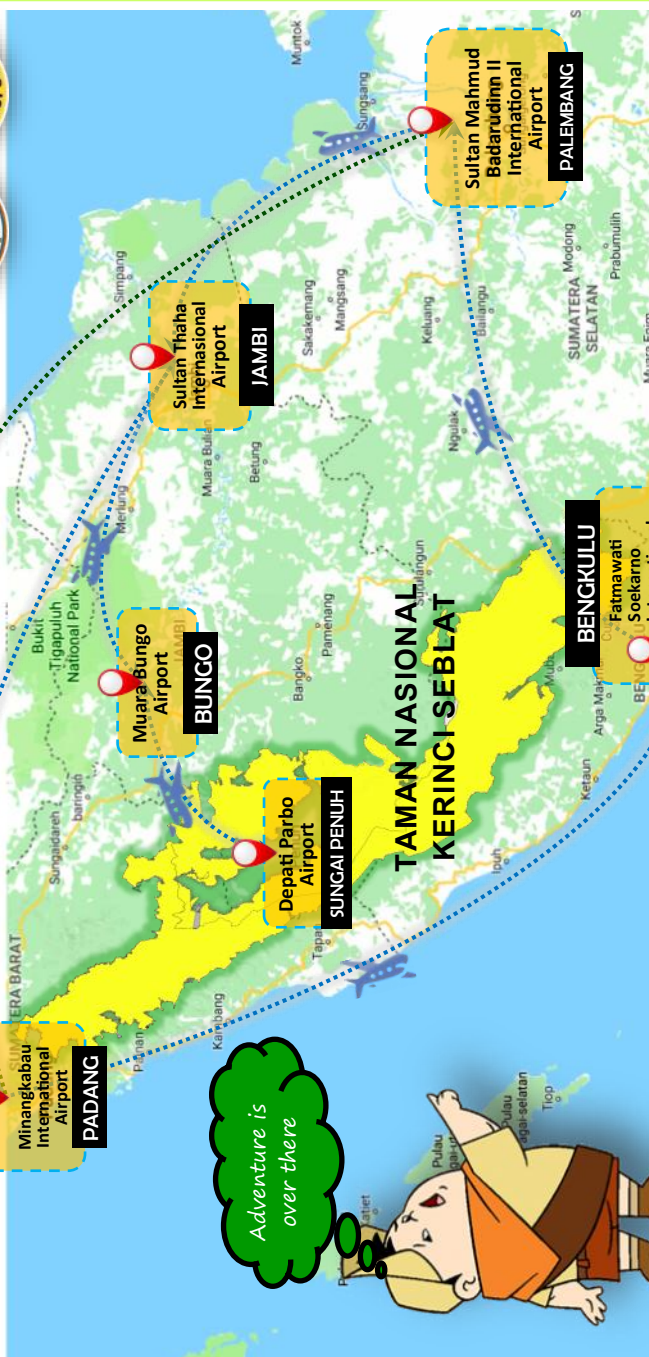
FLIGHT INFORMATION


ORIGIN AND DESTINATION TO KSNP OFFICE IN SUNGAI PENUH, JAMBI

Layout: Hadi



Google Maps



		DESTINATION					
							
		Sungai Penuh (Depati Parbo)	Bungo (Muara Bungo)	Jambi (Sultan Thaha)	Padang (Minangkabau)	Palembang (Sultan Mahmud Badaruddin II)	Bengkulu (Fatmawati Soekarno)
DEPARTURE	Sungai Penuh (Depati Parbo Airport)		11.00 – 11.45 (45mns)	11.00 – 12.50 (1H 50mns, 1 transit) 12.05 – 12.50 (45mns)	No Flight Available	No Flight Available	No Flight Available
	Bungo (Muara Bungo Airport)	09.55 – 10.40 (45mns)			12.05 – 15.35 (3H 30mns, 1 transit)	12.05 – 13.55 (1H 50mns, 1 transit)	12.05 – 18.00 (5H 55mns, 2 transit)
	Jambi (Sultan Thaha Airport)	08.50 – 10.40 (1H 50mns, 1 transit)	08.50 – 09.35 (45mns)		14.15 – 15.35 (1H 45mns)	13.10 – 13.55 (45mns)	14.15 – 18.00 (3H 45mns, 1 transit)
	Padang (Minangkabau Int. Airport)	No Flight Available	No Flight Available	16.00 – 17.20 (1H 20mns)		19.20 – 20.55 (1H 35mns)	16.40 – 18.00 (1H 20mns)
	Palembang (Sultan Mahmud Badaruddin II Int. Airport)	No Flight Available	No Flight Available	17.35 – 18.25 (50mns)	17.15 – 18.55 (1H 40mns)		06.00 – 07.00 (1H)
	Bengkulu (Fatmawati Soekarno Int. Airport)	No Flight Available	No Flight Available	07.30 – 09.45 (2H 15mns, 1 transit)	12.40 – 14.00 (1H 20mns)	07.30 – 08.25 (55mns)	