



NATURE RESERVE
* THAN SA PHUONG HOANG *
A TROPICAL FOREST EXPERIENCE



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FORE-WORD



Located in Vo Nhai district, Thai Nguyen province, and bordering Lang Son, and Bac Can provinces, Than Sa - Phuong Hoang Nature Reserve covers an area of almost 20,000 hectares. Stretching across eight communes and towns, the reserve is home to over 21,000 people, mainly from the Tay, Mong, Dao, and Nung ethnic groups.

An ecosystem that combines a unique rocky mountain forest with favourable climatic and topographic conditions makes Than Sa - Phuong Hoang Nature Reserve home to numerous rare species of flora and fauna that require strict protection. Notable species include: Marbled Jewel Orchid (*Anoectochilus spp.*), Brown pine (*Podocarpus neriifolius*), Trai ly (*Garcinia fagraeoides*), Nghien (*Excentrodendron tonkinense*), Talauma wood (*Vatica spp.*), Dinh (*Fernandoa collignonii*), Lim xanh (*Erythrophloeum fordii*), Sen (*Madhuca pasquieri*), the Great hornbill (*Buceros bicornis*) and Francois' langur (*Trachypithecus francoisi*).

This booklet introduces readers to the reserve's native heritage and indigenous culture and describes its remarkable natural landscapes and biodiversity.

We hope the information and knowledge contained herein inspires our visitors – whether tourists, students, or researchers – and evokes a passion to engage with and protect the reserve's invaluable cultural and natural resources.

I would like to express our gratitude to Mzung Nguyen for taking the time to learn, experience, and write with enthusiasm. We would also like to thank German Development Cooperation GIZ for supporting the compilation, design, and printing of the booklet. We trust that you, the reader, will be inspired by the words and images in the following pages.

Yours sincerely,

NGUYEN QUANG LICH
Director of Thai Nguyen
Special-use Forest and Protection
Forest Management Board

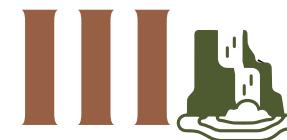
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The Than Sa - Phuong Hoang Nature Reserve Management Board (NR MB) was established on 7 December 1999 to carry out forest protection, scientific research, and environmental education activities. The reserve is also the site of genetic resource development projects, collaboration programmes, environmental services and development programmes for herbal plants under the forest canopy.

The Management Board of Thai Nguyen Special-use Forest and Protection Forest was established by Decision No. 1835/QĐ-UBND dated 25 June 2020 through a merger of the Nui Coc Lake Environmental Protection and Protection Forest Management Board, which belongs to the provincial forest protection department and the Than Sa - Phuong Hoang Nature Reserve Management Board under Thai Nguyen Provincial Agriculture and Rural Development.

INTRODUCTION

Just 135 kilometres from the busy capital city of Hanoi and 40 kilometres north of Thai Nguyen city lies a pristine forest known only to a few:

THAN SA - PHUONG HOANG NATURE RESERVE (NR)

From the air, the reserve consists of layer upon layer of mountains surrounded by a multitude of wide valleys covered by an immense green forest. The paths that wind around steep hills, the dazzling white waterfalls, and the streams hidden under the canopy of ancient trees are all embellishments to the contours of the landscape. In the background to this romantic picture are stilt houses' red-tiled roofs next to rice and corn fields lined in even rows.

It is rare to find people still living in the core zone of a nature reserve,

cultivating and protecting the forest together as they do in Than Sa - Phuong Hoang. The reserve's core zone and buffer zone lie across eight communes and towns with a population of more than 21,000, mainly from the Tay, Mong, Dao, and Nung ethnic groups. Than Sa - Phuong Hoang NR has its own unique ecology with a rocky mountain forest, that together with Ba Be National Park - Bac Kan forms the Than Sa - Bac Kan connected limestone habitat, home to many rare and precious fauna and flora species typical of the north-eastern rocky mountains.



FEATURES OF KARST TERRAIN

Than Sa - Phuong Hoang NR is located in Vo Nhai district, Thai Nguyen province, and borders Lang Son, and Bac Can provinces.



Vo Nhai district has a diverse terrain of hills and mountains with fields scattered here and there. Most of the area consists of low rolling hills and limestone mountains, as well as flatlands for small-scale agricultural production mainly along ravines, riverbanks, and valleys.

The reserve contains about 20,000 ha of special-use forest (87% of the forest) spread over seven communes and one town: Than Sa, Thuong Nung, Sang Moc, Nghinh Tuong, Vu Chan, Cuc Duong, and Phu Thuong communes, and Dinh Ca town.

The craggy mountainous terrain is separated by rocky mountains and located on the southern end of the Ngan Son Range that begins in Bac Kan province. An average altitude of 700 metres means that the reserve includes habitats of numerous rare fauna and flora species and numerous rocky mountain ecosystems, making it an ideal store of genetic resources. Several archaeological sites have been unearthed here, where valuable historical sites and spectacular landscapes intersect.

20,000 ha

special-use forest (87% of the forest)

700 metres

average altitude

II THE BEAUTY OF BIODIVERSITY

Habitats for all species

The tropical climatic conditions of tall mountains and a topographic location favourable for the development of forest have created an abundance of flora and fauna species. Than Sa - Phuong Hoang NR protects nearly 20,000 ha of tall ancient trees and the rare and precious genetic resources typical of large nature reserves.

Than Sa - Phuong Hoang NR contains 160 families and 1096 species of flora, including 319 species of trees, 574 species of medicinal plants, and 162 species of edible plants including rare and precious species such as: Jiaogulan (*Gynostemma pentaphyllum*), Ba kich (*Morinda officinalis*) and



several on the list of endangered species, such as: Marbled Jewel Orchid (*Anoectochilus spp.*), Brown pine (*Podocarpus neriifolius*), Trail y (*Garcinia fagraeoides*), Nghien (*Excentrodendron tonkinense*), Talauma wood (*Vatica spp.*), Dinh (*Fernandoa collignonii*), Lim xanh (*Erythrophloeum fordii*), Sen (*Madhuca pasquieri*), Tau Mat (*Vatica odorata*), etc.

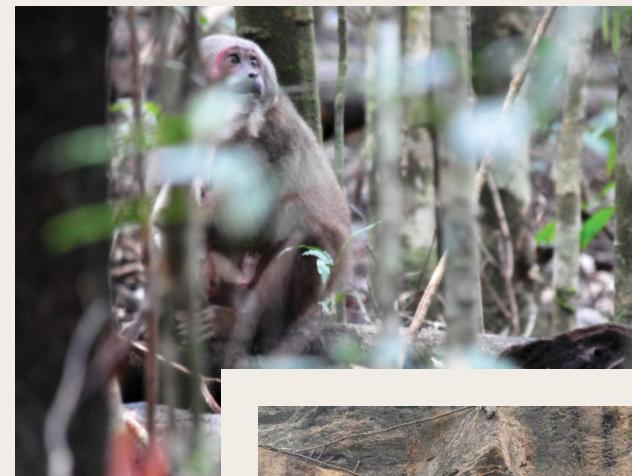
This precious flora is nurtured and preserved in special-use forests and

preserved forests, growing around streams, mountains, hills and villages. The old-growth forest here is the pride of Than Sa - Phuong Hoang. It is both a green lung regulating temperatures and providing oxygen for the surrounding metropolises, and a habitat for an entire ecosystem.



The diversity of animal species

According to research, Than Sa - Phuong Hoang NR is home to 295 species, 93 families and 80 orders of wildlife, of which mammals account for 56 species, 25 families and eight orders; and birds 117 species, 43 families and 15 orders. There are 28 species of reptile, 11 species of amphibians, and 77 species of fish. This is where species like primates, porcupine,



civets, squirrels, badgers, ferret badgers, antelopes, bears and leopards roam free. The reserve also has a topography suitable for reptiles, amphibians and rare and precious wild birds such as King cobras (*Ophiophagus hannah*), the Great hornbill (*Buceros bicornis*), Shikra (*Accipiter badius*), and Vac hoa (*Gorsachius magnificus*).

Thanks to their knowledge and keen observation, local people have found traces of endangered primates, such as the Stump-tailed macaque (*Macaca arctoides*), François' langur (*Trachypithecus francoisi*) and the gibbon (*Nomascus spp.*).

Traces of primates



Stump-tailed macaque

The Stump-tailed macaque (*Macaca arctoides*) used to be very common in the deep forest areas from northern to southern provinces, but today its sub-populations contain fewer than 50 individuals.

Due to habitat destruction and indiscriminate hunting, this species is now on the brink of extinction. Stump-tailed macaques (*Macaca arctoides*) are usually dark brown,

light yellow, light grey or black. Certain individuals can change their fur colour from black to red. Most of the facial skin is red, with long fur on the top of the head that radiates to the sides. They have a large, short tail, and a prominently large callus part of the buttock. This species usually lives in low forests, monsoon or dry forests, and dense forests on mountains up to 2000 metres. They sometimes move through mountain

settlements. Their food varies from fruit, seeds, young leaves, young shoots, and animals, including insects, birds and their eggs. This means they are constantly climbing trees and ranging across the ground. They are often seen in forests or along the banks of rivers and streams, moving in troops of five and sometimes up to 50 individuals with more males than females to each troop.

François' langurs

A group of 4-5 François' langurs (*Trachypithecus francoisi*) was spotted in the reserve in February 2021. This is good news but places great pressure on the reserve to conserve and research these primates. Because they are often considered an "aesthetic" symbol, they are hunted and killed.

François' langurs (*Trachypithecus francoisi*) live in groups and are mainly distributed in limestone forests. They feed in closed evergreen forest strips adjacent to limestone forests near their habitat and sleep in caves on high, precarious cliffs in winter and

on rocks in summer. These primates are vegetarian, eating a frugal diet of young shoots and wild berries.

They are famous for their thick, shiny black fur. The most recognisable feature is their white sideburns that grow down from their ears to their cheeks. The crown of the head has a pointed tip because of the way their long fur stands up and their long tails are as black as their bodies. Their young have orange-yellow fur and grey faces.

Like Stump - tailed macaques

(*Macaca arctoides*), François' langurs (*Trachypithecus francoisi*) suffer an equally grim fate and finding traces of them in the wild is not easy.

The fall in the numbers of primate species and the threat of extinction, especially in Than Sa - Phuong Hoang NR, is a challenge to the future of conservation in Viet Nam. Strict forest protection and the determination to conserve wildlife will be key to preserving biodiversity for future generations.





ATTRACTIVE DESTINATIONS



Nguom Rock Shelter - Vestiges of ancient peoples

Limestone mountain ranges and valleys around the Than Sa River System and underground structures formed the cave systems. Following numerous excavations in the 1970s and 1980s, Vietnamese archaeologists discovered a series of relics dating from the mid-Palaeolithic to the early Neolithic period, between 18,000 to 30,000 years ago. The archaeological project carried out in the Than Sa area covered Phieng Tung, Nguom, Na Ngun, Tham Choong, Ha Son Dao, and Ha Son Tay, but the most important discovery was Nguom Rock Shelter.

Nguom Rock Shelter is located on the northern slope of the Nguom Mountain Range. The huge cave is shaped like a frog's jaw at its opening, which is approximately 60 metres wide and 30 metres high. The cave has a floor surface of more than 70 square metres. It

is located at an altitude of about 30 metres above the surface of the Than Sa River, which runs across its front. This giant rock has a rugged surface and groundwater from the high cliffs above still trickles down its stalactites, which date back to ancient times. At the foot of the rock shelter is a sub-complex of three adjacent excavation pits with a total area of 56 square metres.

According to an analysis of soil layers and the combination of recovered relics, three distinct cultures can be determined according to the depth of separate excavation layers. The bottom layer, which is over 25,000 years old, contains tens of thousands of stone flakes and pebble tools. The middle layer is about 25,000 years old and the upper layer 20,000 years old. Thai Nguyen Museum also holds a large number of artefacts of the Than Sa culture, with more

than 12,000 specimens of different types: stones, rocks, pebble tools with chipped edges, flake tools, pointed tools, hand axes, and the bones and teeth of bison, wild boar, porcupines, and monkeys. The collection even includes an orangutan (pongo) jaw. Surrounded by stone revetments lay two ancient skeletons: a man around 75-80 years old and a woman of between 35-40. The discoveries have enabled archaeologists to identify a Palaeolithic archaeological culture – the Than Sa culture of ancient Homo sapiens.

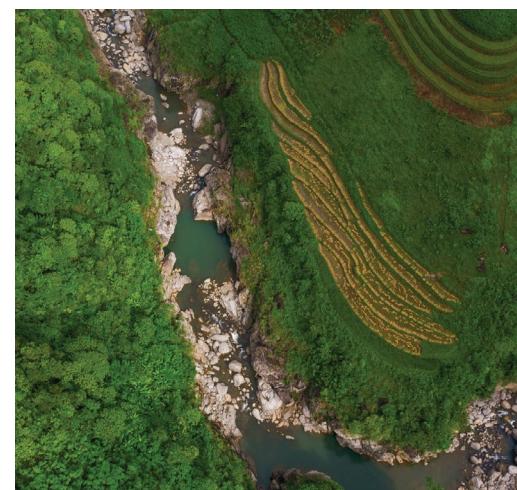
The Than Sa archaeological site was designated a national site in 1982 and included in the Special National Relics list by the Ministry of Culture and Information. Research is still being conducted to collect additional artefacts and historical data.

Mua Roi (Rain) waterfall

Mua Roi waterfall, locally known as Nam Dut waterfall, is named after its major source of water – rain. Mua Roi waterfall is located on the road to the H'Mong village of Nam Rut.

The cliffs are completely covered with ancient trees, moss and shrubs that form a cool, dark green covering. From a height of 20-30 metres, small streams pass through vegetation and flow down to the Than Sa River. The water pours down and stretches into a dazzling white strip, water mist flying into the forest as sheets of white crash into the river below.

Depending on the time of day and the season, the waterfall pours colours



onto the spectacular landscape. In the slither of light at dawn, the waterfall is pure white like a silk ribbon. When the sunlight shines through, the light refracts into a multitude of colourful rainbows. In the afternoon, the water turns a light shade of green. In the dead of night, the waterfall sends echoes into the dark and flickers in its hazy white trail. Hidden under the canopy on the banks of the river is a beach of sand mixed with rocks, a place for visitors to rest as they soak their feet in the cool water.

Phuong Hoang (Phoenix) Cave and Mo Ga Stream

Looking up from the foot of Phuong Hoang Mountain, you can see a rocky cliff that resembles two phoenixes nestling together. A climb of about 800 metres on a rugged rocky path will take you half way up the mountain and to a cave that bears its name – Phuong Hoang Cave. The cave has two large ten meter high arched entrances that open into a large cavern. Hundreds of stone steps and small bridges slope down the high rocky banks to a chamber with large stalactites of different shapes. Inside is a large cavern with three levels of splendour: the top level is Doi (Bat) Cave, the middle is called Sang (Light) Cave, and the bottom is called



Toi (Dark) Cave. The bottom of the cave has a clear, cold water body that gives the cave a cool and comfortable temperature. This cave is designated as a national scenic relic and is a popular place for young people from Thai Nguyen and the surrounding areas to explore.

At the foot of Phuong Hoang Mountain is Mo Ga Cave, named after the spring that flows from within. Mo Ga spring water, clear and cool, rushes out to create a small waterfall that pitches white water here and there. Mo Ga Stream has several sections of rapids, and each stretch creates a pond small and deep like a swimming pool. This is a favourite bathing place for visitors after climbing Phoenix Mountain. Ancient people engraved the cliffs of Mo Ga Cave with following words: "Mo Ga stream water is the vitality of heaven and earth, basking in the mysterious scent of wild ginseng and mountain flowers you will find tranquillity and contentment."

NUI COC (CORMORANT MOUNTAIN) LAKE



89 islands

bordering Tam Dao National Park

25 sqkm

water surface area

Approximately 9.5 kilometres from Thai Nguyen city centre lies Nui Coc Lake, a large artificial freshwater lake with 89 large and small islands. Bordering Tam Dao National Park, the lake is an ecotourism area associated with legends, such as the love story of Miss Cong (Peacock) and Mr. Coc (*Cormorant*) in the song “The Legend of Ho Nui Coc”.

Nui Coc Lake is part of the Cong (Peacock) River, one of the tributaries of the Cau River, which flows around Coc Mountain. Construction of Nui Coc Dam began in early 1972, creating the lake with a water surface area of 25 square kilometres. The lake, dam and its auxiliary works form the Nui Coc irrigation system. The system plays several key roles supplying water to thousands of hectares of rice fields, absorbing floods from the lower Cong River and supplying water for the Song Cau irrigation system (Bac Giang province) in the drought season. The waters of Nui Coc, a popular tourist

attraction throughout the year, also serve aquaculture development in the area.

Visitors have the opportunity to enjoy recreational, entertainment and sightseeing activities. Boat tours visit forested islands and islands where white storks live in large flocks. There is a water park and a fairy tale park, and visitors can even take a trip to the site of Mr Coc’s and Miss Cong’s legendary love story.

THE PATHS OF TRANQUILLITY

A trip from the management board’s headquarters along winding roads under the forest canopy is a great way to explore this poetic land. Narrow paths lead to Tay, Dao, and H’Mong ethnic villages along the outskirts of the forest.



below is a chasm, at its bottom the deep part of a river drifts along slowly like a shawl in a

breeze. From this perspective, the area is covered with tall, evergreen deciduous trees rising from the foot to the peak of the mountain. This place possesses an immense, deep tranquillity, stimulating all the senses.

On this route, visitors can stop along the river and choose the perfect spot to observe the ancient forest and watch the clouds wrap themselves around the top of the mountain as the villages teem with life in the valleys below.

At early dawn, the sun shines through the ethereal mist. Mountains and forests spring to life and people go about their work, cultivating and harvesting in the fields. Daylight shines through the forest, flooding the tiles on the stilt roofs with colour. The afternoon is probably the most beautiful time of the day; the sun shines through the trees and forms honey-yellow

patches that fill the forest paths. The road slopes up quickly and then suddenly slopes down, winding around the mountains and streams in their original, spotless beauty as if this place is untouched by the modern world.

On this stretch of road there are high rocky banks along Kheo Kheng Stream, which borders Sang Moc and Nghinh Tuong communes. Deep

IV

INDIGENOUS IDENTITY

Vo Nhai district has 14 communes and one town. Ethnic minority people account for more than 68% of the population. The province's ethnic people keep their long-standing cultural traditions in the architecture of their houses, in their way of life, and in their cultural traditions.



TAY PEOPLE'S CUSTOMS FOR BUILDING NEW HOUSES

In ancient times, Tay people built stilt houses from bamboo, wood, and palm leaves from the forest, with poles driven into the ground. The floor is used as a living space and the attic for drying and storing food. The space underneath the structure is used for keeping livestock, fuelwood, and agricultural tools.

The Tay do not assess the size of a house by the number of rooms, but by the number of poles. The walls are built with wooden boards or bamboo panels, and the roofs are thatched with palm leaves. These days, modern materials have replaced many of the traditional techniques, but in Than Sa many houses are built as they always have been, retaining the traditional structure and using natural resources.

For Tay people, building a new house is an important life event for the whole family. First of all, the location and orientation must be considered. Locations by the river are avoided because of the belief that water will impact negatively on their ancestors. Facing a mountain or a large rock should also be avoided as this makes it difficult to preserve wealth and



life. The first day of construction and the day the family moves into the new house must be auspicious days; days that conflict with age or the death anniversaries of ancestor should be avoided. On the first day of construction, a large tree is cut down for its trunk, which is used as a roof column. Using trees with broken tops or that have been struck by lightning is taboo; to do so would court disaster.

The ritual of moving to a new house begins with the selection of the two first two guests – a man from the paternal family and a woman from the maternal family who have satisfied certain conditions; for example, that they have harmonious families, their families are not in mourning, their families include both sons and daughters, and they are knowledgeable of traditional customs. The two chosen people take a bundle of torches and enter the house. The man goes first, followed by the woman. In the kitchen they put two sets of torches together to set a fire and wish their families good luck and prosperity. Following

the fire makers are the siblings who bring paddy rice, containers of water, fermented rice, and lime pots into the new house. The fire must be kept alight for three days and three nights. The ancestral altar is set up in the centre of the house and is considered the most sacred place in the home. In addition to worshipping their ancestors, Tay people also worship their kitchen god, the barn god and the god of love. Each village has a shrine to worship the land genie at its entrance.

With windows opening in various directions, the houses are very cool, and the scent of smoke, straw and dried agricultural produce often drifts through these traditional buildings. Tay people are very open and welcoming to visitors no matter where they are from. The villages are small with 30-60 households, often settled in clusters on the borders between the forests and the fields.

With their backs towards the mountain and facing the valley down below, the houses appear quite isolated.



A H'MONG WEDDING

The harvest season has just ended, the yard is full of rice and maize and the stables full of cattle. This is when H'Mong people hold wedding ceremonies for their children and grandchildren.

Custom dictates that the wedding ceremony begins the moment gifts are brought to the house of the bride in a proposal ceremony. After the proposal ceremony, the groom's family, accompanied by two matchmakers, bring wedding presents and wedding money to buy wedding dresses for the bride. The presents and money are offered to the bride's family in the presence of the two matchmakers.

The wedding ceremony takes place at the groom's house over three days and two nights. At the bride's house, the wedding ceremony lasts two days and one night. When they reach the gate of the bride's house, the groom's family sings songs asking for admission until the bride's family agrees to let them in. Before seeing off the bride, her parents give their daughter a dowry which in the H'Mong language is called "cho hau". At the door of the groom's house, the bride's entry ceremony is performed by her father-in-law with a rooster and a stick of firewood. The bride is then led into the wedding couple's room by the groom's younger sister. The wedding bouquet is arranged to last until the following day to congratulate the newlyweds.



EMBROIDERY OF THE DAO PEOPLE

Dao women's traditional clothing consists of many garments: A blouse – designed to almost reach the knee – trousers, a bodice (yem), a scarf, and a hat. The V-shaped collar is embroidered with patterns, as are the back and hem of the blouse. The triangular bodice (yem) has two long strips that extend to the back, each with two coins attached on the inside to keep the bodice (yem) flat. When worn, the coins make a joyful jangling sound characteristic of the Dao.



The embroidered patterns are meticulously crafted. The patterns appearing on the face perfectly even and very delicate. The embroidered sections accentuate the hem at the top of the trousers, the back, and the collar of the women's garments, and decorate the pockets of the men's shirts. The patterns draw images of plants, flowers, birds and animals using elaborate designs and motifs infused with the bold flavours of nature. They are spiritual and emanate the people's confidence in the forest.



FOREST SURVIVAL

In addition to forest protection, scientific research, environmental education and communications, the Management board of Thai Nguyen Special-use Forest and Protection Forest implements projects on genetic resources development, environmental services and for the development of medicinal plants under the forest canopy. The Management Board has been implementing several forest protection and development measures. For example, a project to protect and develop special-use forests in the period 2011-2020; a special-use forest management and protection plan to recover hunting weapons and animal traps in 2016-2020; and contracting with villages, households, military and police units for forest protection services; allocating the protection of lots, segments, and sub-zones to each local forest ranger; coordinating with the People's Committees of bordering communes, districts, and provinces on forest protection, forest fire prevention and fighting, wildlife protection, and implementing the plan for sustainable forest management of Than Sa - Phuong Hoang Nature Reserve in the period 2021 – 2030.

In addition to tourism development, Than Sa - Phuong Hoang Nature Reserve management board has also made great efforts to raise local people's awareness and increase their participation in forest protection.

With its abundance of forest resources and rare wild animals, Than Sa - Phuong Hoang Nature Reserve is the only precious forest left in Thai Nguyen province. However, with thousands of households dependent on forest products for subsistence, and illegal mineral exploitation occurring around the buffer zone, forest conservation remains a major challenge. Therefore, more attention and investment from the State and all sectoral agencies at central and provincial levels is essential for the sustainable development of special-use forests in Than Sa - Phuong Hoang Nature Reserve./.



THAN SA - PHUONG HOANG NATURE RESERVE

THAN SA - PHUONG HOANG NATURE RESERVE

Vo Nhai District, Thai Nguyen Province



Vo Nhai District, Thai Nguyen Province