

A Report on Wild Life Surveys in South and West India

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BY

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Wild Life Sanctuaries in Mysore State

(With two plates and three maps)

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I. INTRODUCTION

The princely state of Mysore, which became a part of the Indian Union after Independence in 1947, was world renowned for its abundance of wild animals. Primarily due to the numerous royal shoots for tiger and other big game, there was a state-wide interest in wild life. This led to the enactment of the Mysore Game and Fish Preservation Act of 1901, which helped to prevent the indiscriminate destruction of the State's wild life, and resulted in the organization of perhaps the first game or wild life staff in India. The Maharaja of Mysore, a devoted wild life enthusiast, was the first chairman of the Central Indian Board for Wild Life, which was organized in 1952. A Mysore State Wild Life Board to advise the State Government on matters pertaining to wild life preservation also was established in 1952. The Chief Minister is the chairman of this committee which meets annually, whereas the Central Board only meets every other year. Mysore became an integrated State in 1956 and the Mysore Wild Animals and Wild Birds' Act was enacted in 1963 to establish a uniform code for wild life for the integrated State.

The State's first wild life sanctuary was established in 1931 and consisted of a 35-square-mile area near Chamarajanagar in the District of Mysore. It was later realized that this sanctuary was too small to constitute a complete ecological unit. Therefore, the area was reverted back to the status of a wild life preserve and in 1941 a much larger area to the west was set apart as the Venu Gopal Wild Life Park, which includes the well-known Bandipur Sanctuary.

The large islands of Devaraja, Ranganathittu and Gandehosahalli, as well as a number of smaller islands in the Cauvery River, were constituted as Bird Sanctuaries in 1940. The Jager Valley and Baba Buddin Wild Life Sanctuary in Chikmagalur District was established in 1941.

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The Dandeli Wild Life Sanctuary in North Kanara District, which was originally in the State of Bombay, was established in 1945. The Nagerhole Wild Life Sanctuary in Coorg District, which was originally the Class 'C' State of Coorg, was established in 1955. Both the Dandeli and Nagerhole wild life sanctuaries came under the jurisdiction of Mysore when it became an integrated State in 1956 (Map 1). Mysore has the potential for presenting perhaps the best system of wild life sanctuaries and parks of any state in the Indian Union.

II. GENERAL ACCOUNT OF THE SURVEY

Two delegates from the Mysore Forest Department met me upon my arrival in Bangalore the evening of November 22, 1966. Because it was late and I planned to take the early morning train to the city of Mysore, we only briefly discussed the wild life situation in Mysore State. Mr. Monnappa, Wild Life Officer of Mysore, and members of his staff met me upon my arrival in the station of Mysore on the morning of the 23rd. The afternoon was spent visiting the Ranganathittu Bird Sanctuary and other points of interest in the vicinity of the city of Mysore.

We travelled to the Nagerhole Wild Life Sanctuary, approximately 50 miles north-west of Mysore, the morning of November 24. The afternoon was spent touring some of the sanctuary's interior roads by jeep. The entire day of the 25th was spent on elephant back west of the Nagerhole Forest Rest House. The following day we were accompanied by Mr. Syed Hussain (Coorg Divisional Forest Officer) to Thithimathi and also visited the Hebballa Elephant Camp, which is located on the banks of the Lakshmantirtha River in the heart of the Nagerhole Sanctuary. We then returned to Mysore via Hunsur.

Mr. Monnappa and I travelled to Chamarajanagar on November 27, where we met Mr. Alva (Chamarajanagar Divisional Forest Officer). Mr. Alva accompanied us on a tour of the Biligirirangan Hills and the Chamarajanagar Wild Life Preserve, which are located south-west of the town of Chamarajanagar. It has been proposed that this area be constituted as a wild life sanctuary, a distinction which it well deserves. The natural beauty and the wild life of this area are worthy of note and could readily establish it as an outstanding tourist attraction. In addition, the basic amenities for visitors, such as forest rest houses and a good network of roads, are present already and the establishment of the area as a wild life sanctuary and major tourist attraction would involve relatively very little capital investment. We returned to Chamarajanagar that night and Mr. Monnappa and I then continued on to the Venu Gopal Wild Life Park, arriving at Bandipur early the morning of the 28th.

November 28 was spent inspecting the Venuvihar Forest Rest House, located on the summit of a 4,769-foot high hill along the northern boun-

dary of the Venu Gopal Wild Life Park and adjacent to the Venu Gopal Temple. We also inspected a number of the tiger blocks north of the Park and toured some of the roads inside the Park and the Bandipur Sanctuary.

We toured the Park roads east of the Bandipur Forest Rest House the morning of the 29th and then spent the afternoon on elephant back to the west. Mr. Alva arrived from Chamarajanagar that evening and we discussed at length the problems confronting wild life in this area and some of the possible means by which the true value of wild life in both Mysore State and in India might be realized.

Mr. Monnappa accompanied me to the Mudumalai Wild Life Sanctuary in Madras State on the morning of November 30th. Mudumalai adjoins both the Venu Gopal Wild Life Park in Mysore State and an outstanding wild life area in Kerala State, which also has been proposed as a wild life sanctuary. With the establishment of the adjoining wild life sanctuary in Kerala, the Venu Gopal-Mudumalai-Kerala areas would constitute one of the most complete ecological units in India dedicated to the preservation of wild life. This completed my brief tour of some of the wild life areas in Mysore State.

III. THE RANGANATHITTU BIRD SANCTUARY

INTRODUCTION

The Ranganathittu Bird Sanctuary was established in 1940 and is the oldest existing wild life sanctuary in Mysore State. It received its name from the 66-acre Ranganathittu Island in the Cauvery River near the village of Palahalli, which is 12 miles north of the city of Mysore and two miles upstream from the railway station at Srirangapatna. Besides a number of lesser islands in the vicinity of Ranganathittu, also included in the sanctuary are the islands of Gandehosahalli and Devaraja. The two islands of Gandehosahalli are located about 8 miles downstream from Srirangapatna and include a total area of 86.23 acres. The 15-acre Devaraja Island is 6 miles upstream from Ranganathittu and about three-fourths of a mile downstream from the Krishnarajasagar Dam. Devaraja is a denuded island, which is submerged frequently by waters released from the Krishnarajasagar Dam. The major islands, including Ranganathittu, serve primarily as resting sites for birds, whereas the vast majority of the sanctuary's water birds nest on the lesser islands along the southern side of Ranganathittu. Therefore, although the sanctuary includes a total area of over 167.39 acres, nesting water birds may be observed only on a few small islands adjacent to Ranganathittu.

VISITOR FACILITIES

A metalled road, which is about three-fourths of a mile long, leads from the Paschimavahini-Krishnarajasagar Highway to the south bank of the Cauvery River. The turn-off is well-marked with an impressive sign, which both advertises and depicts the sanctuary's bird life. A 'pergola' or observation platform is located at the end of the road on a point overlooking the river and a footpath extends upstream along the south bank. From this well-camouflaged path, visitors may readily observe the nesting water birds and their young on the small islands about 75 feet off-shore. There is also an observation tower on the south side of Ranganathittu Island, but the birds can be observed better from the path on the opposite bank of the river.

A Forest Department Forester and a Watcher are stationed at Palahalli to guide or assist visitors to the sanctuary. A double boat (Plate I) and a coracle (a round, basket-like boat) are also provided. However, visitors are not permitted to approach the nesting birds closely. When disturbed, the parent birds fly away and the young birds are often attacked by crows and some fall out of their nests and either drown in the river or eventually starve.

There are no rest house facilities at the Ranganathittu Bird Sanctuary, but there are a number of good hotels in the city of Mysore. A first class hotel also is located below the Krishnarajasagar Dam, which is the site of the beautiful Brindavan Gardens. Coloured lights are played upon the numerous fountains in the garden on Wednesday, Saturday and Sunday evenings. As a result, the gardens have become a notable tourist attraction.

The nearest airport to Ranganathittu is at Bangalore, 86 miles north-east of the city of Mysore. The two cities are connected by both frequent train and bus services. The journey takes about four hours by meter-gauge train, but first class express buses take less than three hours. The Government Tourist Department also conducts bus tours of Mysore and its environment. Although Ranganathittu presently is not included in their itinerary, it is hoped that in the future it will be. Most of the tours pass near the sanctuary and at least a brief visit could be arranged very easily.

Major attractions within the vicinity of Ranganathittu include the Brindavan Gardens, which have been mentioned previously, the one and one-fourth mile long Krishnarajasagar Dam, which is constructed entirely of cut stone, and the 50-square-mile Krishnarajasagar Lake. Srirangapatna is an island in the Cauvery River about two and one-half miles below Ranganathittu. It served as the capital of the Mysore Rajas from 1610 until 1799 when Tippu Sultan died in the final battle with the British. Within the fort on Srirangapatna is a Hindu temple

(Sri Ranganath), which is over 500 years old, and a Muslim mosque (Juma Masjid). By climbing the minarets of the mosque one is able to view an impressive panorama of the fort and the surrounding countryside. Other attractions include Tippu Sultan's summer palace which is located outside the fort, and the mausoleum (Gumbaz) where he is buried, which is situated near the lower end of the island where the two forks of the Cauvery River rejoin.

Fauna

Water bird nesting activity begins in the Ranganathittu Bird Sanctuary by late May and is followed closely by egg laying. Hatching, which coincides with the main monsoon season, generally begins by mid-June. There are two monsoons in this area ; the south-west monsoon, which begins in June and lasts until September, and the north-east monsoon, which lasts from October until December. The young birds are full-fledged by the end of November and most of the birds then leave the sanctuary. Although a few birds are present throughout the year, the best time to observe the sanctuary's birds is between June and October.

Most common among the nesting water birds are : openbill storks, white ibis, little and cattle egrets, darters or snake-birds, paddy birds or pond herons and spoonbills. Night herons, river terns, lapwings, curlews, sandpipers, and other water birds, as well as several species of migratory waterfowl also are present. Numerous species of lesser birds, particularly the passerines, may be observed in the trees and bushes along the banks of the Cauvery. Nearby Srirangapatna is considered a Blue Rock Pigeon Preserve. There are numerous pigeon nests in the old ruins of the fort and particularly on the minarets of the mosque. This species is considered by many as the forerunner of our domestic pigeon.

A large colony of giant fruit bats or 'flying foxes' (*Pteropus giganteus*) also roosts in the large trees of a small island opposite the sanctuary's pergola. Although their numbers vary considerably during the year, I counted over 500 bats during our visit on November 23rd. These huge bats have an average wingspread of approximately three feet. They present an impressive spectacle, particularly to foreign visitors, when in the evening they drop from the branches and silently wing their way into the surrounding countryside to forage for food during the night.

DISCUSSION

The primary reason the water birds utilize the small islands in the Cauvery River for nesting sites undoubtedly is the protection they afford from man and predatory animals. Another factor which attracts them to this particular area is the abundance of food in the surrounding

agricultural lands. The sanctuary's birds feed extensively upon insects and aquatic organisms, many of which are harmful to crops. Their droppings or guano also help to maintain the fertility of the surrounding fields. Thus, the presence of these birds results in incalculable benefits to the economy of this area. Apart from aesthetic values, an additional benefit and potential source of revenue which has not yet begun to be realized, is the development of Ranganathittu as a major tourist attraction.

Ranganathittu Island has a fairly luxuriant tree growth along its margins. However, most of the island is severely overgrazed by domestic livestock from near-by villages. As a result, it is for the most part a barren area with only sparse scrubby vegetation. Herders, who accompany the livestock on the larger islands of the sanctuary, also disturb whatever birds that attempt to colonize them and have contributed to the almost complete absence of wild life in these areas.

Areas set aside and constituted as wild life sanctuaries should be maintained in as natural a condition as possible. It is to be hoped that the Government of Mysore will shortly take steps to ensure that this is done at the Ranganathittu Bird Sanctuary. Besides benefiting the people of the State as a whole, the surrounding villagers eventually would receive much greater benefits from the sanctuary than they presently receive from the grazing of some of their livestock within its confines. Without the disturbance by villagers and their livestock I believe that many of the water birds would eventually utilize some of the larger islands for nesting sites. Primarily this would be desirable for two reasons: (1) Greater numbers of water birds could reside in the sanctuary, which would benefit the surrounding agricultural lands and make the sanctuary an even greater attraction. (2) The nesting colony would not be as subject to the havocs of flood waters caused by heavy rains or the opening of the gates at the Krishnarajasagar Dam. Further, other birds such as peafowl, jungle fowl and partridges, which the Forest Department has attempted to introduce upon these islands with little success, would probably take hold and thrive if they were left undisturbed and sufficient natural cover and food were available.

A major problem confronting the nesting water birds of Ranganathittu is flooding. When there are exceptionally heavy monsoon rains the gates on the Krishnarajasagar Dam are opened, often with devastating effects upon the nesting colonies. This practice should be discouraged and an effort made to release excess waters from the dam as slowly as possible. Devaraja Island, about three-fourths of a mile below the dam, is almost completely barren of vegetation because of this practice. Also, on several occasions the entire season's production of young water birds has been destroyed by the sudden rush of waters released from the dam. It is realized that the protection of the dam is of primary importance, but

Ranganathittu's birds also should receive consideration and often with a little foresight their destruction could be lessened, if not averted completely.

The manner in which the Forest Department has established and maintained Ranganathittu is highly commendable. This is particularly true when it is realized that this is done on a very limited budget and that the Department presently realizes no revenue what so ever from this sanctuary. I was especially impressed by the path along the south bank of the river, which is well maintained and constructed in such a way that visitors may readily observe the nesting colony of birds without disturbing them. However, for the most part, the surrounding fields encroach upon the sanctuary to the extent that there is room for little more than a path along the bank of the river. Additional land in this area should be constituted as a part of the sanctuary. If nothing else, at least a few additional feet along the path should be acquired to help give it a park-like appearance. Space also is needed in the vicinity of the pergola to provide parking, particularly for buses. A small picnic area likewise would be desirable. Further, it is suggested that the Forest Department charge a very nominal fee to those visiting the sanctuary. Besides helping to provide funds for the maintenance of the sanctuary, this would perhaps impress upon visitors the value of wild life sanctuaries and the fact that many people would be willing to pay much to have the opportunity to see a spectacle such as the birds of Ranganathittu.

IV. THE NAGERHOLE WILD LIFE SANCTUARY

INTRODUCTION

The 111-square-mile Nagerhole Wild Life Sanctuary, which was originally in the State of Coorg, was established on July 19, 1955 by notification from the Chief Commissioner of Coorg. Included in the sanctuary are parts of three reserved forests : Arkeri, Hatgat and Nalkeri. The Thithimathi-Anechowkur road forms the northern boundary, demarcated forest lines the eastern and western boundaries and the Kerala State line the southern boundary (Map 2).

The Hunsur Divisional Forest Office and the Divisional Forest Officer in charge of the Nagerhole Sanctuary are located at Hunsur, 28 miles west of the city of Mysore. Hunsur also serves as a timber depot for forest operations in this area. Regretfully, the sanctuary is devoted primarily to the production of forest produce. Approximately 20,000 acres of the sanctuary presently are devoted to teak (*Tectona grandis*) plantations and about 2,000 acres of teak plantation are included in the sanctuary's 'sanctum sanctorum.' Also, 90 acres have been planted

with *Eucalyptus* and the parasitic Sandalwood (*Santalum album*) has been mixed with teak on 136 acres. Soil conservation schemes, which primarily involve the planting of trees on barren areas, were initiated in 1963 on an additional 1,080 acres in the sanctuary.

There are 12 villages in the Nagerhole Sanctuary. Nine of these are inhabited by tribal people resettled here by the Social Welfare Department and one of these villages is located in the sanctuary's 5-square-mile sanctum sanctorum. The total population of these villages exceed 4,000 people and their cultivated lands inside the sanctuary approximate 500 acres.

Livestock grazing supposedly is excluded from the sanctuary's sanctum sanctorum. However, with this exception, the entire sanctuary is open to the free and unrestricted grazing of domestic livestock. It is estimated conservatively that between 1,500 and 2,000 head of cattle and buffalo graze in the sanctuary on a year round basis. Other animals are seasonally grazed in the sanctuary or graze while passing through the area.

The western side of the sanctuary is bordered by extensive coffee plantations. Additional pressures are exerted upon the sanctuary, particularly from this side, for livestock grazing, firewood and other forest produce by those living along its borders. Although there are some beautiful areas of natural forest in the interior, travelling through the sanctuary from Murkal to Kutta or along the northern boundary, one gains the impression that the Nagerhole Wild Life Sanctuary is little more than an extensive teak plantation intermingled with forest villages.

VISITOR FACILITIES

Forest rest houses are located conveniently in the Nagerhole Wild Life Sanctuary at Murkal, Nagerhole and Thithimathi. The Murkal Forest Rest House is located along the eastern border and provides 4 suites (2 double and 2 single) with all facilities, i.e., bedding, cook, etc. Murkal is 18 miles south-west of Hunsur via a black-topped road and is served by daily bus service. Also located at Murkal are a Forest Department sawmill, seasoning kiln, carpenter training school and a carpentry section where furniture is manufactured.

The Nagerhole Forest Rest House is 12 miles south-west of Murkal and provides 2 double suites with all facilities. Six of the 12 miles of road between Murkal and Nagerhole are black-topped and the other 6 are metalled. Nagerhole, which means 'cobra stream' in Kanarese, may be reached by bus from Mercara via Gonegopal and Kutta, a total distance of 58 miles. There are some beautiful sylvan areas to the south and east of the Nagerhole Forest Rest House. These may be visited on riding

elephants, which are provided for visitors at Nagerhole by the Forest Department.

A small rest house with one suite, but no services, is available at Kalhalla, mid-way between Murkal and Nagerhole. The Thithimathi Forest Rest House with 2 double suites and all facilities is located along the northern boundary of the sanctuary. It is 22 miles west of Hunsur and 30 miles from Nagerhole via Kutta and Gonegopal.

There is an almost continuous forest belt along the eastern slopes of the Western Ghats in Mysore. However, the average width of this belt is only about 5 miles. In addition to the aforementioned forest rest houses in the Nagerhole Sanctuary, small forest lodges are located at approximately 8-mile intervals along the entire length of this forest belt. These are linked with fair-weather roads and may be used with prior permission from the Divisional Forest Officer in the area concerned. However, these lodges are for the most part unfurnished and only a few have modern facilities.

A site of particular interest for visitors to the Nagerhole Sanctuary is the Hebballa Elephant Camp located in the heart of the sanctuary along the north bank of the Lakshmanathirtha River. Although a 16-mile road runs north from Nagerhole to the Lakshmanathirtha, the camp is on the opposite side and the river can be forded by jeep only during the dry season. Therefore, the camp is generally reached by a metalled road from Thithimathi, a distance of 8 miles. The best time to visit Hebballa is before 08.00 in the morning when the elephants are taken into the forests to work or to graze or after 05.00 in the afternoon when they are brought back to the camp for the night.

Elephant kheddass (the driving and capturing of wild elephants in stockades) were formerly conducted at roughly 5-year intervals at Kakanakote. The kheddass are located along the north bank of the Kabini River, about 15 miles south of the Nagerhole Forest Rest House. After the khedda some of the captured elephants were then brought to Hebballa for training. However, due to the construction of a dam on the Kabini the backwaters of which will shortly inundate the khedda area, the final khedda operations were scheduled for the early part of 1967. Elephants for the training camp will now be caught by pit method in other areas between November and April on alternate years. There were 55 domestic elephants in the Nagerhole Sanctuary during my visit. Most were being used for forest operations, although a few were receiving their final stages of training at Hebballa. Thirty-five elephants were stationed at Hebballa, 11 at Nagerhole and the remaining 9 elsewhere in the sanctuary. There were no elephants in the early stages of training. Therefore, the large 'kraals' or pens at Hebballa were empty. However, it was very interesting to observe the elephants working in the forests bathing in the river and so forth.

I was also informed that the mahseer (*Tor tor*) is 'common' in particular stretches of the Cauvery, Kabini and Lakshmanathirtha rivers, as well as the Tunga, Bhadra, and Sharavati. This game fish is noted for its fighting ability and for the remarkable size which it often attains. A 121 pound mahseer is the record for this species in Mysore. Van Ingen and Van Ingen taxidermists in the city of Mysore also have an impressive collection of mahseer teeth, as well as other wild life specimens which are well worth making arrangements to see.

HABITAT

Flora

The Western Ghats are a narrow chain of hills running north and south along the western side of Mysore State, extending from Madras and Kerala in the south to Maharashtra in the north. They attain a maximum height of 8,000 feet in the Nilgiri Hills, but rarely exceed 5,000 feet in the western part of Mysore. Most of the forest areas and wild life sanctuaries of Mysore are located along their eastern slopes. Although the forests of this region vary somewhat with altitude and other factors, the natural moist deciduous forests remaining in the Nagerhole Wild Life Sanctuary are more or less typical for much of the Western Ghat region of the State (Table 1). Rainfall for most of this region varies between 60 and 70 inches per annum and occurs primarily between June and September, during the south-west monsoon.

Economic advisors claim that a modern nation must perpetually maintain an average of at least 1.0 acre of forest per person in order to maintain a basically sound national economy. The total area of Mysore State is 74,122 square miles, of which 18.4% or 13,575 square miles are classified as forest lands. However, many areas classified as forests are in actuality little more than barren wastes. Presently there is less than 0.54 acre of so-called forest lands per capita in India as a whole and only 0.46 acre per capita in the State of Mysore ! Nevertheless during recent years more and more forest lands, which are for the most part submarginal for agricultural use, have been cleared for crops. As these lands are eventually depleted they become deserts or barren wastes which are of little or no economic value. In addition, accelerated erosion upon these lands often results in the devastation of rich agricultural lands below and reforestation of these once prime forest areas becomes a slow and costly process. Therefore, the present trend should be reversed. India drastically needs an extensive and well-planned programme of reforestation and the emphasis should be placed on intensive rather than extensive agricultural land use.

TABLE 1. SPECIES COMPOSITION OF THE NATURAL MOIST DECIDUOUS FORESTS IN THE NAGERHOLE WILD LIFE SANCTUARY IN MYSORE STATE

Local or Common Name	Scientific Name	Percent of Stand or Remarks
TREES :		
Mathi	<i>Terminalia tomentosa</i>	40%
Teak	<i>Tectora grandis</i>	30
Rosewood	<i>Pterocarpus marsupium</i>	5
Honne	<i>Lagerstroemia lanceolata</i>	5
Nandi	<i>Terminalia tomentosa</i>	5
Uluve	<i>Terminalia paniculata</i>	5
Thadasalu	<i>Grewia tiliaefolia</i>	2
Arasinatega	<i>Adina cordifolia</i>	1
Noga	<i>Cedrela toona</i>	1
Nelagodda	<i>Garuga pinnata</i>	0.5
SHRUBS :		
Seeme Seege	<i>Lantana camara</i>	common
	<i>Desmodium pulchellum</i>	common in moist areas
Kowri	<i>Helicteres isora</i>	present
Mandalamari	<i>Cipadessa fruticosa</i>	present
CLIMBERS :		
Strangler Fig	<i>Ficus</i> sp.	fairly common
Muthaga hambu	<i>Butea superba</i>	present
Kadavave hambu	<i>Spatholobus roxburghii</i>	present
Seeye Kaye	<i>Acacia concinna</i>	present

Note :

1. All of the bamboo (*Bambusa arundinacea*) in the sanctuary flowered and died in 1965. Therefore, it presently does not enter into the sanctuary's floral composition.
2. Species listed as comprising the natural shrubs have been replaced to a great extent since 1960 by *Eupatorium glandulosum*.
3. Grasses and herbs were not identified.

Two methods of forest operation are used at present in the forests of the Nagerhole Sanctuary : (1) Selective cutting, which involves primarily the harvesting of mature trees in natural forests. (2) Clear felling, where entire forest blocks are cleared and then usually burned prior to plantation planting. The planting of teak is becoming increasingly common, although the planting of fast growing species such as *Eucalyptus* also is being advocated. The fast growing or soft wood species are in demand primarily by the paper pulp and rayon mills. Dead bamboo, which is being collected from the sanctuary, presently is being supplied to Kerala.

Big bamboo (*Bambusa arundinacea*) generally constitutes a conspicuous part of the sanctuary's floral composition. However, practically all of the bamboo in this area flowered, set seed and then died in 1965. It is claimed that this occurs every 40 to 50 years, after which it takes a few years for the seeds to germinate and establish the species once more. As a result of the 1965 bamboo die-off, there is at present a scarcity of fodder for elephants and to some extent for gaur in the sanctuary.

Theoretically pure stands of the same age and species of trees are desirable for efficient forest operations. However, in practice, plantations of pure teak present a number of major problems. Perhaps most important of these are : (1) the deterioration of soil and the lowering of site quality, and (2) the production of a lower quality of timber. Teak seedlings are intolerant of weeds and other plant growth. Thus, they are cultivated for at least the first three years after planting. After the canopy becomes established, there is little undergrowth and little accumulation of humus. Therefore, erosion often is very much in evidence. Also, due to increased competition from weeds and increased vulnerability to insects and other parasites generally the growth of pure stands of teak is retarded and the quality of the timber decreases.

An introduced plant (*Lantana camara*) formerly was an undesirable component of many teak plantation areas. However, since 1956 in many parts of Mysore it has been replaced to a great extent by the introduction of the even less desirable *Eupatorium glandulosum*. This shrub-like weed has woody stems, grows to a height of over 8 feet and appears to be unpalatable to almost all forms of endemic wild life. Its winged seeds, dispersed by wind, germinate and spread like wild-fire in disturbed open areas, such as along roadsides, plantations, and so forth. It was first noticed in the Nagerhole Sanctuary in 1956, but did not become a major problem until about 1960. Because of the presence of *Eupatorium*, the growth of teak has been retarded greatly in many plantation areas and in some cases a good number of the teak seedlings have died. The Forest Department presently is waging a costly and what appears to be futile battle in attempting to control this weed.

The Forest Department presently weeds its teak plantations by hand three times during the first year, twice in the second, and once during the third year and then hopes that the stand is established well enough to hold its own thereafter. Tending, thinning and the cutting of climbers, however, is needed at various intervals before the tree crop may be harvested at an age of between 80 and 100 years. The point is this, such a crop may be devastated at any time during its 80 to 100 year rotation period and practically the entire investment may be lost. A natural or mixed crop of trees generally lessens this vulnerability, although to some extent it may complicate the forest operations.

The Forest Department should note that *Eupatorium* is almost completely absent in the natural forests of the sanctuary and a parasitic growth (*Loranthus sp.*) of teak is much more in evidence in plantation areas than in natural forests. Because of two moths, *Hyblaea puer* a defoliator and *Hapalia machaeralis* a leaf skeletonizer, the trees in many of the teak plantations of Nagerhole were almost completely defoliated at the time of my visit in November. Little growth can be expected from trees in such a state even under ideal climatical conditions.

Epidemic outbreaks of such pests also are more prevalent and more serious in pure rather than mixed stands.

Fauna

The mammalian fauna of Nagerhole is very similar to that of the Venu Gopal Wild Life Park (see Table 3). In fact, elephant and perhaps gaur appear to have seasonal movements or migrations between the two areas. Just what effect the construction of the dam on the Kabini River, the impounded waters of which will cross their migratory route, remains to be seen.

Mammals observed during my visit to the Nagerhole Wild Life Sanctuary include the following : chital (33), gaur (14), Malabar squirrel (6), numerous common langur and a small bright coloured squirrel, which may have been a flying squirrel. All but one of the male chital observed had shed their antlers recently or had antlers in velvet. Chital often keep company with the common langur, which drop leaves and fruit from the trees upon which the chital feed. Seven of the gaur were adult males. One was a magnificent beast with an estimated horn spread of about 38 inches, even though the tips of both horns were broken. A solitary bull, which we met on the trail while returning to camp one evening, challenged our elephant and rather than calling the old fellow's 'bluff' we finally made a detour and let him rule the trail. The bird life of Nagerhole also is similar to that of Venu Gopal (see Table 4). One exception is that peafowls appear to be very rare in Nagerhole, while relatively common in Venu Gopal.

DISCUSSION

A 'sanctum sanctorum' may be defined as an area maintained in as natural a state as possible—free from the encroachment of man. Originally a 5-square-mile 'sanctum sanctorum' was established in the Nagerhole Wild Life Sanctuary. This area surrounds the Nagerhole Forest Rest House, east of the Murkal-Nagerhole road. However, this so-called 'sanctum sanctorum' has been repeatedly desecrated. About 2,000 acres or over 3/5's of the area is devoted to teak plantations and a village has been located here. The entire area is disturbed almost continually by forest operations. Presently it is proposed that the 'sanctum sanctorum' be enlarged to include a 35-square-mile area south and east of the road between Murkal and Nagerhole, and although there are some teak plantations along the road, after the mature trees have been removed the area be kept inviolate for 30-35 years.

I realize that the revenue from the sanctuary's forest produce is considerable. Nevertheless I would like to suggest that a core area of

at least 5 square miles be perpetually maintained in its natural state and the plantations be excluded from the surrounding forests of this core area for at least 35 square miles, although the mature trees or the forest produce of this surrounding area may be systematically exploited.

Because of the forest villages and the numerous labourers who enter from the coffee plantations to the west, poaching is a major problem in the Nagerhole Wild Life Sanctuary. Jeeps and lorries, especially those that ply the roads at night, contribute to the problem of wild life conservation. The stealing of forest produce is a fairly common practice. It appears that the most logical steps to curtail such violations would be the following : (1) Resettle elsewhere the tribal villagers residing in the sanctuary. Or, if this is not possible, at least consolidate the villages so that illegal activities within the sanctuary may be minimized. The Social Welfare Department is advocating that crop protection guns be issued to the tribal colonies which it has established in the sanctuary. If this is permitted, Nagerhole would no longer justify the name of ' Wild Life Sanctuary.' (2) Both establish and publicize rules and regulations prohibiting unauthorized personnel to enter the forests of the sanctuary. Only bona fide visitors or those engaged by the Forest Department should be allowed off the sanctuary's main roads. (3) Vehicles should be prohibited from travelling on the sanctuary's roads at night. Periodic checks should be made of all vehicles leaving the sanctuary.

Domestic livestock grazing in the Nagerhole Wild Life Sanctuary, except in areas adjacent to villages, does not appear as yet to be excessive. Nevertheless, now is the time for definitive measures to be taken to ensure that this sanctuary does not become a victim of the almost universal practice in India of overgrazing. All too many of this nation's wild life sanctuaries and areas once abundantly rich in wild life have been almost completely devastated by this abuse, often within the space of a few short years. By no means whatever should livestock grazing be permitted in an area designated as a 'sanctum sanctorum.' In fact, a sanctuary devoted to the preservation of wild life ideally would have no domestic livestock whatsoever within its confines. However, if it is not possible to maintain an area inviolate to such use, grazing and livestock numbers at least should be controlled so as to ensure that suitable forage is produced on a sustained yield basis. There is no excuse for land abuse through overgrazing by domestic livestock. Proper land management will benefit both the wild life and the livestock, as well as the people concerned and the nation as a whole.

V. THE VENU GOPAL WILD LIFE PARK (BANDIPUR SANCTUARY)

INTRODUCTION

The 22-square-mile Bandipur Sanctuary, which forms a part of the 310-square-mile Venu Gopal Wild Life Park, is undoubtedly the best known of the wild life areas in Mysore State. This notable park was established in 1941 and the Bandipur Sanctuary was constituted as its 'sanctum sanctorum'—an inviolate sanctuary within a sanctuary. The northern and eastern boundaries of the Park are formed by demarcated forest lines. The Park extends to the Kabini River on the west and the southern boundary is formed by a number of streams and the Kerala and Madras State lines (Map 3). The adjoining portion of Kerala, which is in the Wynaad District, also has been proposed as a wild life sanctuary. With the necessary action being taken by the State of Kerala, this tri-State region could become one of the most notable, as well as most extensive, wild life conservation areas in India.

The village of Bandipur is the main tourist centre in the Venu Gopal Wild Life Park. It is situated on the main road midway between the city of Mysore and Ootacamund, approximately 50 miles from either place. The nearest airport is at Bangalore, 86 miles north-east of the city of Mysore. The journey from Bangalore to Mysore may be made by bus or train and frequent buses are available to Bandipur from either Mysore or Ootacamund. A truck, which seats 12 passengers, and two riding elephants are provided at Bandipur by the Forest Department to take visitors into the sanctuary. Visitors with their own vehicles must be accompanied by a member of the staff before they are permitted on the Park's roads.

Over 80 miles of Forest Department roads connect the waterholes, salt licks and game paths within the 22-square-mile Bandipur Sanctuary. The remainder of the Park is served by an additional 80 miles of fair-weather roads. A network of fair-weather roads also connects the Venu Gopal Park with the Nagerhole Wild Life Sanctuary north of the Kabini River. During the dry season one may travel on forest roads all the way from Bandipur to Nagerhole, a distance of approximately 70 miles, and forest lodges are situated conveniently at 8 to 10-miles intervals along the entire route.

The wild life seasonally migrates from Venu Gopal to the lower or greener areas in Kerala and the Mudumalai Wild Life Sanctuary in Madras. Most of the larger mammals, such as elephant and gaur, generally leave the Park during November and December. Depending upon the onset of the south-west monsoon rains, they generally begin their return journey in late May or early June.

The best time to see wild life in Venu Gopal or the Bandipur Sanctuary is from late June through October, which is the rainy season. Nevertheless, the Sanctuary is open and accessible throughout the year and generally some wild life may be seen all the year round. If a visitor is disappointed in the number of wild animals seen in Bandipur area, he may always visit the adjoining Mudumalai Wild Life Sanctuary. The poorest time to see wild life in Venu Gopal is the best time to see wild life in Mudumalai and vice versa.

Bandipur is the only village within the confines of the Venu Gopal Wild Life Park. This village was formerly little more than a forest camp in which were located quarters for the Park staff and forest rest houses for visitors. The Social Welfare Department, however, recently established a tribal village and has constructed school buildings at Bandipur. There is little work available inside the Park for the more than 200 tribal people presently living at Bandipur. Also, there are schools four miles north and five miles east of Bandipur, which are both outside the Park. It is regrettable that the Social Welfare Department has intruded upon the Park, especially when facilities such as schools in nearby areas could have been utilized and when the people resettled here must be maintained on welfare.

The Mysore State Wild Life Board has moved that a township be not established at Bandipur and that the tribal people be resettled elsewhere outside the Park. Action on the Board's proposal is pending and it is to be hoped that measures will soon be taken to correct the present situation. The buildings thus vacated could be utilized to accommodate the ever-increasing numbers of visitors to Bandipur. For example, in 1963 the Bandipur Sanctuary had a total of 2,521 visitors, but in 1965 there were 5,406. An even greater increase in the number of visitors could be realized if suitable facilities were made available so that bus tours could be regularly scheduled to the Park and large groups could be accommodated.

Domestic livestock grazing is not permitted in the Bandipur Sanctuary. Inroads are being made, however, in the northern part of the Park by ever-increasing numbers of livestock. Herders are encroaching deeper and deeper into the Park. As a result, the northern part of the Park is already severely overgrazed and almost completely devoid of wild life. Now is the time to take definitive measures to ensure that Venu Gopal does not meet the same fate as all too many other wild life sanctuaries in India. Limits and boundaries must be set and defined, as well as strictly maintained. Also, number of livestock must be controlled in those areas where grazing is permitted. Otherwise, the Venu Gopal Wild Life Park faces a very bleak and barren future and very shortly it may become almost impossible to maintain even the Bandipur Sanctuary inviolate to the cancerous blight of overgrazing.

Domestic livestock grazing in the vicinity of Bandipur village also is a problem. This would be reduced considerably if the tribal people inhabiting the village were resettled elsewhere. Nevertheless, measures should be taken to control grazing in this area and to maintain livestock numbers at a minimum. Hundreds of head of decrepit, mangy and famished cattle are driven regularly through Venu Gopal to Kerala, where they are slaughtered. These animals supposedly, are restricted to the main road and are not permitted to remain inside the Park overnight. However, the passage of these animals causes a disturbance inside the Park, and possessing daily grazing licences, it is not uncommon to observe them grazing inside the forest, and all along the roadsides. One group was observed to spend the night on the southern boundary of the Park, near the State border at Kakkanahalla. Permitting of such cattle to graze should be discontinued.

In addition to habitat destruction, the poisoning of wild life also has become associated during recent years with domestic livestock grazing in many parts of India. Villagers have found that certain pesticides are very effective for killing wild animals. Generally these pesticides are distributed to farmers by the Agriculture Department for the control of insects. However, they are often used for purposes other than that which they were intended. When a domestic animal dies or is killed by a large carnivore such as a tiger, the carcass is often sprinkled with toxic materials. 'Folidol', for example, is both tasteless and odourless, as well as extremely toxic. Therefore any animal feeding upon a bait containing this chemical usually dies a very agonizing death within a few hours.

Two tigers (a male and a female) were killed by a poisoned bait along the northern boundary of the Venu Gopal Wild Life Park in October, 1965. The skin of the tigress is presently on display in one of the forest rest houses at Bandipur. The hide of the male had spoiled before the carcass was found. A leopard was similarly killed on Chamundi Hill outside the city of Mysore in 1963, and a few tigers were poisoned in the Chennagiri area in the Shimoga District of Mysore in 1962. In all these cases the culprits were not traced, nor did the owners come forward to claim the poisoned carcasses. No prosecution, therefore, could be attempted. Besides these confirmed reports, there are undoubtedly many more cases where pesticides have been used to poison wild life in Mysore and other states. Measures must be taken soon to halt such practices or an important part of India's once rich wild life heritage may become extinct in perhaps less than a decade.

Sixteen tiger blocks, varying in size from 50 to 100 acres each, are maintained north of the Venu Gopal Park. Prior to 1962 an average of 5 or more tigers were shot each year on these blocks. However, with the widespread use of toxic pesticides, only one tiger has been shot in this

entire area since 1962. Mysore once was world renowned for its vast numbers of tigers and its elaborate tiger shoots. But in 1965 even the Maharaja of Mysore, who is also the Governor, had to go outside the State in order to bag a tiger.

The mating season for tigers in the Venu Gopal Park is during November and December. The Park staff claimed that in former years tigers frequently could be heard roaring during these months. However, no roaring of tigers has been heard in the Park since 1964. Not even pug marks had been observed in the Park during the months prior to my visit in November, 1966.

Immediate steps should be taken to ensure that toxic materials are used only for the purpose for which they were originally intended. Farmers should be given specific instructions as to the use of all pesticides made available to them, as well as severe penalties imposed upon those who misuse them. Also, whenever possible, materials which are less toxic to wild life should be used in preference to highly toxic ones. In fact, less toxic pesticides are often superior in all ways to the more toxic ones presently being used in India. For example, Malathion is considered superior in many ways to the more toxic Enderin and Parathion. Enderin is considered so highly toxic that in many modern countries its distribution and use are prohibited. Finally, pesticides should be treated with additives that give them both a distinct odour and an undesirable taste. This would help to protect both man and beast, as pesticides also have been used in an ever-increasing number of homicides in India.

VISITOR FACILITIES

Visitor activities in Venu Gopal generally centre at the village of Bandipur and the Bandipur Sanctuary, although there are forest lodges situated throughout the Park. The four Forest Rest Houses at Bandipur (2 with 3 suites and 2 with 2 suites) provide full board and lodging and can accommodate a total of 20 people. The Forest Department plans to provide additional facilities in the near future so that groups of up to 50 people may be accommodated at Bandipur. Reservations for accommodation may be made through either the Divisional Forest Officer, Mysore Division, Mysore, or the Wild Life Officer in Mysore.

Besides the rest houses at Bandipur, there are nine forest lodges in or near the Venu Gopal Wild Life Park. Although some of these lodges are fully furnished, boarding and other facilities are not provided. Others provide only shelter and some of the basic amenities for visitors wishing to remain inside the Park. Forest lodges are situated at the following locations: Gopalswami Betta along the northern boundary, Chammanhalla on the western edge of the Bandipur Sanctuary, Mulehole

on the bank of the Nugu River on the State border near the southern boundary of the Park, Kalkere and Choudahalli near the south-western limits in the interior, Gundre in the south-western corner of the Park near the Kabini River, Chiekbergi in the centre of the Park, Hediya along the central part of the Park's northern outskirts on the Sunnadabegur-Hunsur road, and Begur on the banks of the Kabini River near the north-eastern corner of the Park.

The Venuvihar Forest Lodge is located at Gopalswami Betta, a hill station 13 miles north-west of Bandipur. The lodge has two fully furnished suites, but other facilities are not provided. The Venu Gopal Temple, from which the Park received its name, is adjacent to the lodge. Venu Gopal literally means flute—(Venu), Krishna (Gopal). Krishna is one of the major Hindu deities or gods. A priest is stationed at the temple and people frequently come here to worship. The lodge and temple are situated on top of a 4,769-foot hill, which offers visitors an impressive panorama of the Park, the 8,000-foot Nilgiri Hills to the south and the lowlands to the north. There are a number of paths leading from the lodge, a pleasant juniper grove, and during certain seasons the surrounding hills are covered with the blossoms of wild flowers.

The Chammanhalla Forest Lodge is 11 miles west of Bandipur. Although it is in need of renovation, it provides shelter and some of the basic amenities for visitors. The Mulehole Forest Lodge is 18 miles west of Bandipur and the Forest Department has proposed that it be renovated and established as a tourist centre similar to Bandipur. Mulehole is on the main road between Gundlupet and Calicut and is reached easily from either Mysore or Ootacamund.

The Kalkere Forest Lodge is 10 miles west of Mulehole, the Choudahalli Forest Lodge another nine miles, and the Gundre Forest Lodge an additional eight miles or a total of 27 miles west of Mulehole. The Hediya Forest Lodge is 16 miles north of Mulehole and is located outside the Park's boundaries. The Begur Forest Lodge is eight miles north of Choudahalli or nine miles north of Gundre and also is outside the Park.

There are a number of machans or observation towers overlooking water holes or salt licks in the Bandipur Sanctuary. Some of these are constructed so that visitors may spend the night in them in relative comfort. Inside the sanctuary, about a mile west of Bandipur next to the Tavarekatte Tank, is a well laid-out tiger block with a comfortable hide. A bare sandy road surrounds the block and whether or not a tiger is inside the block can be determined by examining the road for pug marks. Some excellent results were obtained in photographing tigers from the hide in this block in years past. However, with the introduction of toxic pesticides outside the sanctuary and the accidental burning of the

block by those removing the bamboo, which died in 1964, there has been little evidence of tiger in this area during the past two years.

HABITAT

The terrain consists primarily of rolling hills covered with open or park-like dry deciduous forests. The altitude varies between 3,100 feet (945 metres) above sea-level along the Moyar River on the southern boundary to 4,769 feet (1,454 metres) at the Gopalswami Betta Hill Station along the northern boundary. Bandipur village is 3,366 feet (1,026 metres) above sea-level. Temperatures vary from a monthly minimum mean of 60° F. (15.6° C.) in January to a monthly maximum mean of 95° F. (35.0° C.) during April and May. April and May are also the driest and the poorest months to observe wild life. Late June through October (the rainy season) is the best time to see wild life in Bandipur. Total rainfall averages about 35 inches per annum, most of which occurs during July, August and September.

Flora

The trees of Bandipur Sanctuary are spaced in a relatively uniform manner and form an open, pole-type, mixed dry deciduous forest with a maximum height of between 50 and 60 feet. Visibility varies between 100 and 200 yards and the understory is mostly grasses with a few scattered shrubs. The grass attains a height of three to six feet and controlled burning by the Forest Department is done each year between the third week of December and the second week of January. This prevents the dry grass from becoming a major fire hazard during the drier months of the year and also helps to return the nutrients from the unpalatable dry grass to the soil.

Eupatorium glandulosum, the noxious weed that has taken over much of the Nagerhole Wild Life Sanctuary to the north, has not yet invaded the Bandipur area. However, its counterpart, *Lantana camara*, is fairly common. A breakdown of the dominant tree species in the forest of Venu Gopal is given in Table 2.

Both species of bamboo in the Park (*Bambusa arundinacea* and *Dendrocalamus strictus*) flowered during July and August 1964 and then died. Big bamboo usually flowers every 40 to 50 years, while small bamboo flowers every 10 to 20 years. It was claimed that normally about 60% of the bamboo in the Park is big bamboo and the remaining 40% small bamboo, but there were only scattered sprouts present during my visit. After the die-off, the bamboo presented a fire hazard. Therefore the Forest Department decided to sell the dead bamboo to the rayon mills in Kerala. However, besides causing considerable disturbance, the

workers removing the bamboo accidentally set fire to the area. Consequently, rather than realizing a profit the Forest Department suffered a considerable loss. As a result, parts of the sanctuary which were formerly under bamboo, such as the Tavarekatte Tiger Block west of

TABLE 2

SPECIES COMPOSITION OF THE MIXED DRY DECIDUOUS FORESTS OF BANDIPUR
SANCTUARY IN THE VENU GOPAL WILD LIFE PARK IN MYSORE STATE

English Name	Local or Kanarese Name	Scientific Name	Percent of Stand (Estimated)
TREES :			
Axlewood	Dindaga, Dindal, Bejjalu	<i>Anogeissus latifolia</i>	60%
Teak	Tega, Sagavani	<i>Tectona grandis</i>	5
	Bende	<i>Kydia calycina</i>	5
	Jalari	<i>Shorea talura</i>	5
Wild Gooseberry	Nelli	<i>Phyllanthus emblica</i>	3-4
	Challe (fruit)	<i>Cordia myxa</i>	2
	Doddi	<i>Mymenodictyon excelsum</i>	2
Bobbinwood	Yethyaga, Yethaga	<i>Adina cordifolia</i>	2
	Muthuga	<i>Butea monosperma</i>	2
	Alale	<i>Terminalia chebula</i>	2
	Hunnal (Hunal)	<i>Terminalia paniculata</i>	2
	Mathi	<i>Terminalia tomentosa</i>	2
	Kakke	<i>Cassia fistula</i>	2
Rosewood	Beete	<i>Dalbergia latifolia</i>	1
	Nelagodda, Godda (fruit tree)	<i>Garuga pinnata</i>	1
Jamun tree	Nerale	<i>Eugenia jambolana</i>	1
	Jagalaganti (edible fruit)	<i>Diospyros montana</i>	1+
	Tadusalu, Tadsal (bark eaten by elephants)	<i>Grewia tiliaefolia</i>	1
	Kuli, Sivani (fruit)	<i>Gmelina arborea</i>	1
	Kadusige (fodder)	<i>Acacia intsia</i>	1
	Basavan apuda	<i>Bauhinia racemosa</i>	1
Silk Cotton	Buruga	<i>Salmaalina malabaricum</i>	1
	Tare	<i>Terminalia belerica</i>	1
UNDERSTORY :			
Big Bamboo	Bombu	<i>Bambusa arundinacea</i>	1
Small Bamboo	Kiribidaru	<i>Dendrocalamus strictus</i>	1
	Seema-seege	<i>Lantana camara</i>	common

Note :

1. Both the big and small bamboo flowered and died during the fall of 1964. Therefore, the numerous shoots present were considered as a part of the understory.

2. Grasses, herbs, and shrubs were not identified.

Bandipur, have been replaced by weeds and dense thickets of *Lantana camara*.

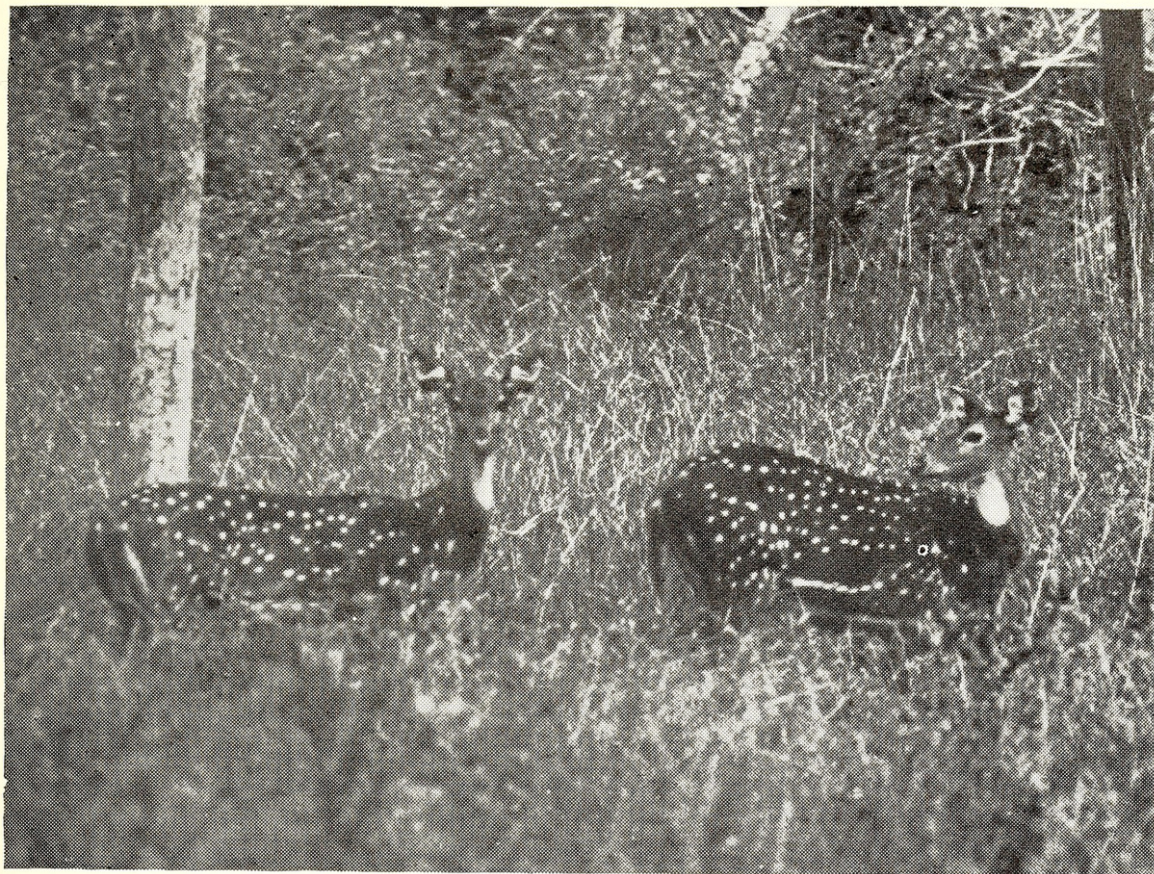
Fauna

The fauna of the Venu Gopal Wild Life Park is notable both for its diversity and abundance. Although the mammalian fauna is similar to that of much of the Western Ghat region, in India one rarely sees greater concentrations of wild animals than in Bandipur and the adjoining Mudumalai Wild Life Sanctuary. Herds of 20 or more gaur, the largest and most impressive of the world's wild bovines, are common. The forest dwelling sambar may be encountered in groups of up to a dozen, whereas generally they are considered a somewhat solitary animal. Groups of over a hundred chital may be observed even in the vicinity of the forest rest houses at Bandipur (Plate I). Wild elephant, particularly solitary males, are observed by most visitors (Plate II). It appears that Venu Gopal serves as a breeding ground for most of the large mammals of this region. This is due perhaps to the Park's relative immunity to the disturbances of man. Some of the mammals inhabiting Venu Gopal and the forests in western Mysore are given in Table 3.

TABLE 3

NAMES OF SOME OF THE MAMMALS INHABITING THE VENU GOPAL WILD LIFE PARK (BANDIPUR SANCTUARY) AND THE FORESTS IN THE WESTERN PART OF MYSORE STATE

English	Local or Kanarese	Scientific	Relative Abundance
Tiger	Hebbuli	<i>Panthera tigris</i>	rare
Leopard or Panther	Kiruba	<i>Panthera pardus</i>	rare
Jungle Cat	Kādubekku	<i>Felis chaus</i>	frequent
Striped Hyena	Kathekiruba	<i>Hyaena hyaena</i>	rare
Wild Dog or Dhole	Seelunayi	<i>Cuon alpinus</i>	occasional
Jackal	Gullenari	<i>Canis aureus</i>	common
Indian Fox	Kankanari	<i>Vulpes bengalensis</i>	frequent
Little Indian Civet	Punagina bekku	<i>Viverricula indica</i>	occasional
Mongoose	Mungusi	<i>Herpestes</i> spp.	common
Sloth Bear	Karadi	<i>Melursus ursinus</i>	rare
Wild Boar	Kādhandi	<i>Sus scrofa</i>	common
Sambar	Kadave	<i>Cervus unicolor</i>	common
Chital or Spotted Deer	Saraga	<i>Axis axis</i>	common
Barking Deer or Indian Muntjac	Khānkuri or Kādukuri	<i>Muntiacus muntjak</i>	infrequent
Mouse Deer or Indian Chevrotain	Burkanabekku or Burka	<i>Tragulus meminna</i>	frequent
Chousingha or Four-horned Antelope	Chyale	<i>Tetracerus quadricornis</i>	rare
Gaur or Indian 'Bison'	Kāti or Kādukōna	<i>Bos gaurus</i>	common
Indian Elephant	Ane	<i>Elephas maximus</i>	common
Common Hare	Mola	<i>Lepus nigricollis</i>	frequent
Indian Porcupine	Mulluhandi	<i>Hystrix indica</i>	common
Small Travancore Flying Squirrel	Hāranabekku	<i>Petinomys fuscicapillus</i>	frequent
Giant or Malabar Squirrel	Kendalilu (Karrat)	<i>Ratufa indica</i>	common
Common Langur	Musiya	<i>Presbytis entellus</i>	common
Bonnet Macaque	Kapi	<i>Macaca radiata</i>	common along the road from Mysore, but not inside the Park.



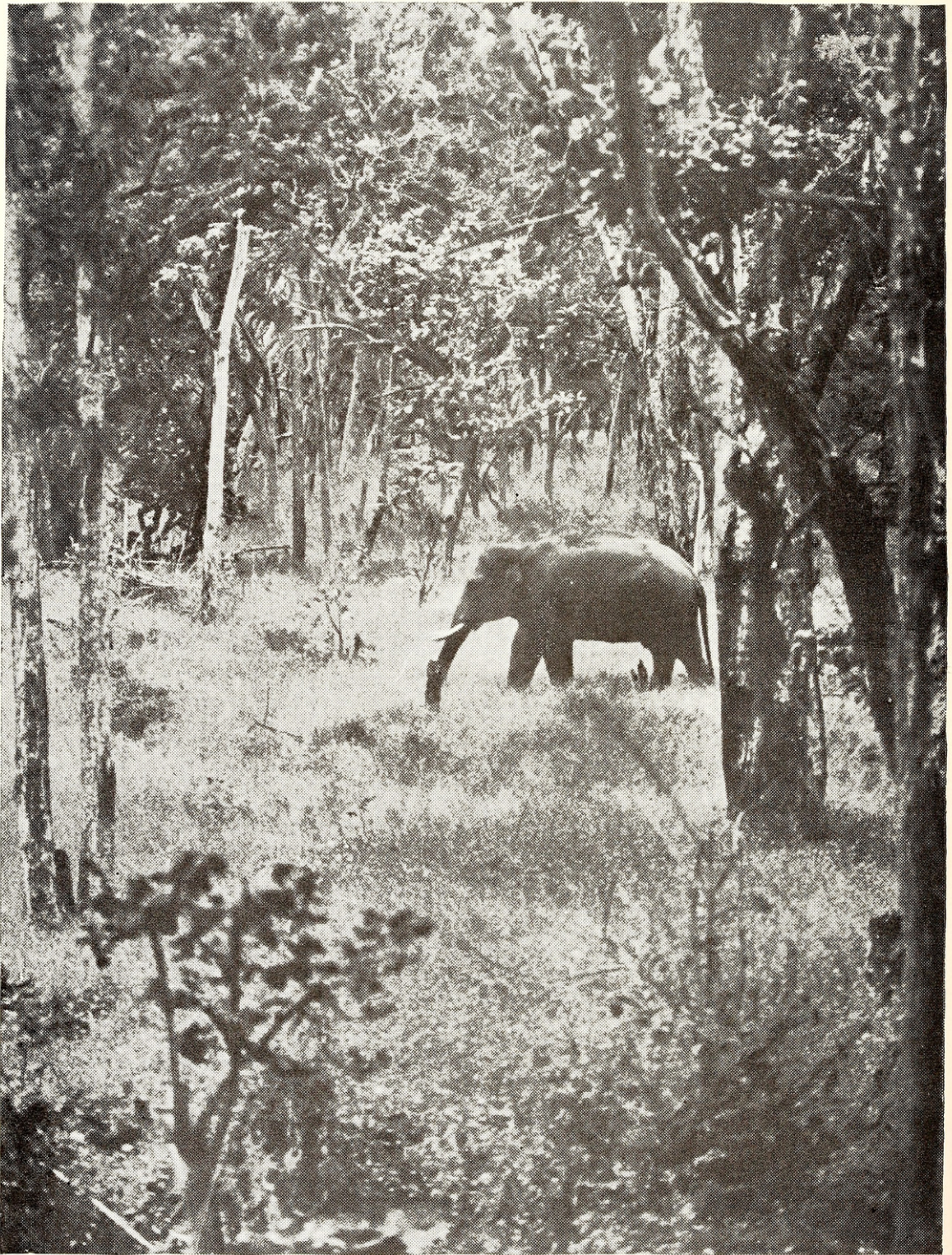
Two female spotted deer or chital in the vicinity of the Bandipur Forest Rest House in the Venu Gopal Wild Life Park in Mysore State.



The Cauvery River, site of the Ranganathittu Bird Sanctuary. The double boat is provided for visitors by the Forest Department.

(Photos : Author)

Spillett : Wild Life Surveys



A solitary tusker in the forests of the Bandipur Sanctuary of the
Venu Gopal Wild Life Park in Mysore State.

(Photo : Author)

The possibility of seeing the much maligned dhole or Indian wild dog is better perhaps in Venu Gopal than anywhere in India. This beautiful, bright red animal runs in packs and is infamous for wantonly attacking almost any animal which it may encounter, including even tiger according to some claims. Because of its notoriety the dhole has been persecuted unmercifully throughout India and as a result has become exceedingly rare. Although I have visited a good number of India's wild life areas, I had the unforgettable experience of seeing the dhole for the first time during my visit to Venu Gopal.

We were travelling along the roads in the Bandipur Sanctuary the morning of November 29 when we suddenly heard the repeated belling and squeals of sambar. Two adult females and a fawn of about two months were standing in a couple of feet of water in the middle of an artificial waterhole or tank. A pack of about 15 dhole had surrounded the tank and their heads kept bobbing up through the high grass as they attempted to observe their prey. Although the wild dogs appeared to be very excited, they did not utter a sound. Upon seeing us the sambar bolted, but they had no more than reached the bank before one of the dogs was upon the fawn and pulled it down into the grass. The fawn was emitting high pitched squeals and the two does repeatedly belled nearby. Still we heard no sound from the dholes. We ran towards the fawn, which was kicking and struggling in the grass. When the wild dogs saw us, they immediately took flight and the last we saw of them were their black-tipped tails as they bounded through the grass. The fawn had only a few superficial wounds, but was too weak to stand. Therefore, we took it back to Bandipur with us. Within a short time it appeared to have fully recuperated and was released back into the forest the following day.

The bird life of the Venu Gopal Park also is abundant and diversified. Water birds such as ducks, egrets and herons are found in some of the tanks but the vast majority of the birds in the Park are perching or passerine forms. Some of the more common or obvious birds which I observed during my visit are listed in Table 4.

DISCUSSION

The Venu Gopal Wild Life Park and the Bandipur Sanctuary constitute one of India's outstanding wild life attractions. The Forest Department and the Park staff are to be commended for their management and development of this notable area. Granted there are problems to overcome and much to be done before the Park will begin to realize its full potential. The Forest Department and those concerned are aware of these, but oftentimes they lack the means and/or the support to accom-

plish the desired goals involved in the conservation of this great nation's wild life resources.

TABLE 4

SOME OF THE MORE COMMON BIRDS OBSERVED IN NOVEMBER, 1966 IN THE
VENU GOPAL WILD LIFE PARK IN MYSORE STATE

English Name	Scientific Name
Cattle Egret	<i>Bubulcus ibis</i>
Little Egret	<i>Egretta garzetta</i>
Lesser Whistling Teal	<i>Dendrocygna javanica</i>
Spotbill Duck	<i>Anas poecilorhyncha</i>
Common Pariah Kite	<i>Milvus migrans</i>
Brahminy Kite	<i>Haliastur indus</i>
Grey Partridge	<i>Francolinus pondicerianus</i>
Jungle Bush Quail	<i>Perdica asiatica</i>
Red Spurfowl	<i>Gallus spadicea</i>
Grey Junglefowl	<i>Gallus sonneratii</i>
Peafowl	<i>Pavo cristatus</i>
Redwattled Lapwing	<i>Vanellus indicus</i>
Green Pigeon	<i>Treron phoenicoptera</i>
Blue Rock Pigeon	<i>Columba livia</i>
Ring Dove	<i>Streptopelia decaocto</i>
Spotted Dove	<i>Streptopelia chinensis</i>
Parakeets	<i>Psittacula</i> ssp.
Crow-Pheasant	<i>Centropus sinensis</i>
Spotted Owlet	<i>Athene brama</i>
Whitebreasted Kingfisher	<i>Halcyon smyrnensis</i>
Bluecheeked Bee-eater	<i>Merops superciliosus</i>
Green Bee-eater	<i>Merops orientalis</i>
Blue Jay or Roller	<i>Coracias benghalensis</i>
Common Gray Hornbill	<i>Tockus birostris</i>
Goldenbacked Woodpecker	<i>Dinopium benghalense</i>
Golden Oriole	<i>Oriolus oriolus</i>
Racket-tailed Drongo	<i>Dicrurus paradiseus</i>
Common Myna	<i>Acridotheres tristis</i>
Jungle Crow	<i>Corvus macrorhynchos</i>
Redwhiskered Bulbul	<i>Pycnonotus jocosus</i>
Whitecheeked Bulbul	<i>Pycnonotus leucogenys</i>

The mixed dry deciduous forests of the Bandipur area are of little commercial value for timber. Although they are of some value for firewood, demands for such products can be met from forest areas closer to market or by the planting of fast growing species on submarginal lands. Therefore, it has been proposed that the Park's 'sanctum sanctorum'—the Bandipur Sanctuary—be enlarged from 22 square miles to 60 square miles. This would include the entire portion of the Park east of the Gundulupet-Calicut road. It has been further proposed that the Mulehole Forest Lodge, which then would be on the western end of the sanctuary, be renovated and established as a tourist centre similar to Bandipur.

The best time for observing wild life in Bandipur is during the rainy season. However, it is during this season that it is most difficult to travel

the fair-weather roads in the Sanctuary. Thus it has been proposed that the major roads in the Sanctuary, as well as the main forest road from Bandipur to the Nagerhole Wild Life Sanctuary, be metalled. I would not suggest tar roads or that major thoroughfares be developed, but only that two metalled tracks be constructed. Grass in the centre, as well as along the sides of such roads, would present a natural setting while helping to minimize maintenance. Concrete aprons also should be provided at stream beds wherever possible.

The construction and maintenance of a good network of all-weather roads also would result in increased use of the Park's forest lodges. Plans should therefore be formulated for the renovation and maintenance of these. Additional accommodations likewise are needed at Bandipur. I would suggest that the present forest rest houses be maintained as first class facilities, but that a dormitory be provided for the accommodation of large groups. The attractions and amenities of Bandipur should be extensively advertised through posters, pamphlets, and so forth. Arrangements also should be made through the Tourist Department to provide regularly scheduled bus tours to Bandipur. Care, however, should be taken to avoid commercialism within the Park.

The Mysore and Madras Forest Departments have jointly approved the construction of a dam on Kakkanahalla, which forms a part of the boundary between the Bandipur and Mudumalai sanctuaries. The impounded waters would form about a 1-mile-square lake. This would provide a source of water for wild life and perhaps would encourage animals to remain in this area the year round. Although fair numbers of chital and sambar remain in Bandipur throughout the year, most of the other animals move out of the Sanctuary when the streams and artificial water holes become dry.

Major problems presently confronting the Venu Gopal Park and its wild life are : The establishment of a tribal colony at Bandipur, increased pressures upon the Park from domestic livestock grazing, and the use of pesticides for poisoning wild life. These have been discussed at some length in the Introduction. Poaching does not appear to be a major problem in the Park. This perhaps is attributable to the wise practice of not allowing vehicles on the Park's roads unless they are accompanied by a member of the staff. The checkpoint on the Mysore-Madras line along the main road passing through Bandipur also probably helps to deter illicit activities.

VI. THE CHAMARAJANAGAR WILD LIFE PRESERVE

Chamarajanagar was established in 1931 as Mysore's first wild life sanctuary. However, with the establishment of the Venu Gopal Wild Life Park in 1941, the status of Chamarajanagar was reverted to that of

a wild life preserve. It has since been realised that Chamarajanagar forms a very important link in the chain of wild life sanctuaries extending along the southern and western boundaries of Mysore State. Thus, the Forest Department has proposed that a wild life sanctuary again be established in this area.

Mr. P. M. Monnappa accompanied me from Mysore to Chamarajanagar, a distance of 38 miles, on the morning of November 27. *En route* we passed through Somnathpur and saw the impressive Hoysala Temple. We were met in Chamarajanagar by the Divisional Forest Officer, Mr. Alva, who accompanied us on a tour of the proposed wild life sanctuary.

I was much impressed with what the Chamarajanagar area has to offer. East of the town of Chamarajanagar the Biligirirangan Hills suddenly jut out from the plains below. Winding up into the hills on a well-constructed road, one passes from a scrub forest into a dry deciduous forest, to a moist deciduous forest and from there into a semi-evergreen forest. In addition, pure stands of evergreen forest were observed along the streams and on the slopes near the crests of some of the higher hills.

We stopped briefly at Kyathadeveraguda, which is situated in a saddle of the Biligirirangan Hills 18 miles east of Chamarajanagar. There are two large rest houses at Kyathadeveraguda : a Forest Rest House with three suites, reservations for which can be obtained by writing to the D.F.O. in Chamarajanagar, and a Public Works Department Rest House with four suites. The view from both rest houses is magnificent. The green plains, bejewelled with numerous shimmering tanks, extend north and west to the horizon. One can even see the Kabini River and Chamundi Hill in the distance. To the south and east are rows of verdant, mist covered hills.

The Biligiri Ranganaswamy Temple is 12 miles east of Kyathadeveraguda. This approximately 900-year-old temple is located on a rocky pinnacle, which has a sheer face with a drop of several hundred feet. A modern sericultural research station is located in the forests below. Also *en route* from Kyathadeveraguda to the Biligiri Temple one passes the ancient Gangadeswara Temple, which is situated along a forest stream and is inhabited by a troop of bonnet macaques.

The Government is attempting to establish the Biligiri Ranganaswamy Temple as a tourist centre. Electric power lines were brought through the forest in 1966 and several rest houses have been built adjacent to the temple. The forest roads on both sides of the temple are being metalled and a new road is being constructed from Yalendur to the north-west.

The establishment of a true wild life sanctuary in this area, adjoining Chamarajanagar Wild Life Preserve, would greatly add to the attraction of the Government sponsored tourist centre at the Biligiri Ranganaswamy Temple.

swamy Temple. In addition to the rest houses already mentioned, there are forest lodges located in the proposed sanctuary area at Beduguli and Budipadaga. The area is served by a good network of roads, which are being maintained and improved. Also, what is most important is that the area has the potential of becoming one of India's outstanding wild life sanctuaries.

The Biligirirangan Hills form a natural passageway for elephant herds moving to and from the hill areas to the east and the Bandipur and Mudumalai wild life sanctuaries to the west. J. P. Sanderson recognized this fact and it was here in the mid-1800's that he developed the khedda method for capturing wild elephants. The dense forests, lush grass, and numerous plots of bamboo also make this area a rendezvous site for elephant, as well as a choice habitat for gaur, sambar, chital, and other wild life species. Even during our short visit we saw gaur, chital, and sambar while driving along the main roads.

The Forest Department's proposal to establish Chamarajanagar and Biligiri Ranganaswamy Temple Forests as a wild life sanctuary should be enacted as soon as possible. Not only should this approximately 40-square-mile area be constituted as such, but it should also be maintained as an inviolate wild life sanctuary—a true sanctum sanctorum in which people may enjoy nature in as much a pristine state as possible. Most of the forests in this area are of relatively little commercial value, especially when compared to the revenue potential from tourism. Therefore, there is little justification for continued forest operations or other forest exploitation. It is further suggested that the Government and the Forest Department jointly sponsor the development and publicity of both the Government Tourist Centre at the Biligiri Ranganaswamy Temple and the proposed wild life sanctuary.

VII. OTHER WILD LIFE SANCTUARIES IN MYSORE STATE

THE DANDELI WILD LIFE SANCTUARY

The almost 73-square-mile Dandeli Wild Life Sanctuary was established in 1945 in what was then a part of the State of Bombay, but which is now the North Kanara District of Mysore. The sanctuary, however, has been extensively exploited for forest produce and further disturbed by manganese mining operations. The nearest railway stations are located at Dharwar, about 40 miles from the sanctuary, and at Belgaum, which is about 50 miles away. Buses which pass through the sanctuary, may be taken from these points. There are four forest rest houses in the sanctuary, each with two double suites.



Spillett, J J. 1968. "A Report on Wildlife Surveys in South and West India Sanctuary." *The journal of the Bombay Natural History Society* 65, 296–325.

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