

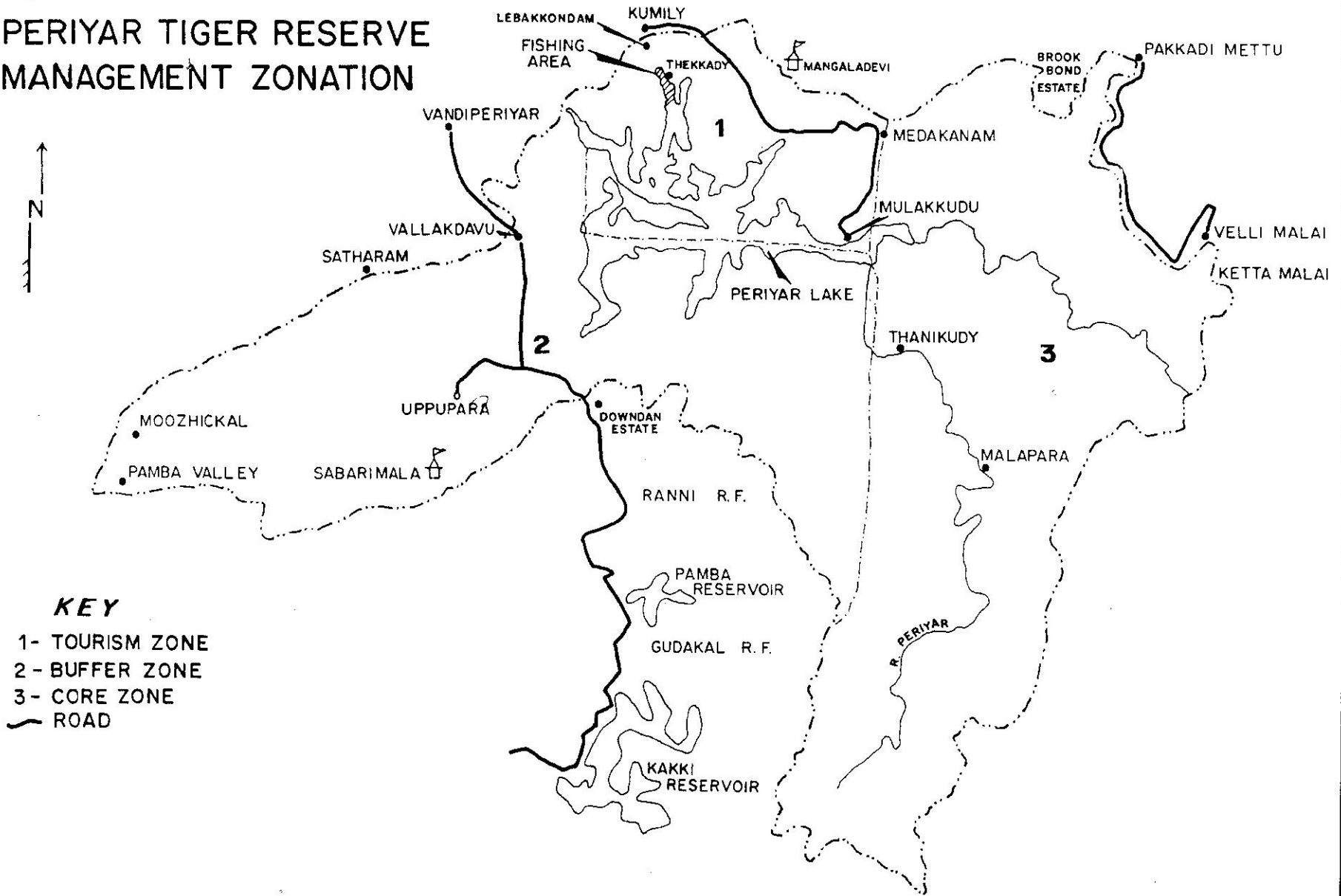
Periyar Tiger Reserve: An Assessment

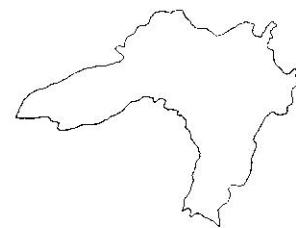


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1995

PERIYAR TIGER RESERVE MANAGEMENT ZONATION

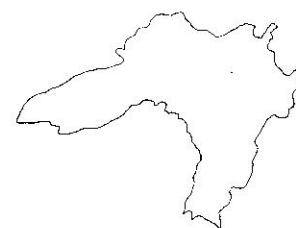




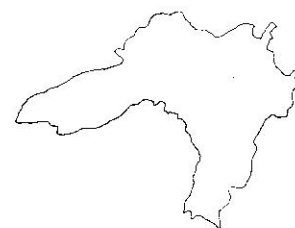
Executive Summary:

The Periyar Tiger Reserve is, broadly speaking, a well conserved area with large tracts within its boundaries having little or no disturbance. This, in itself, is very creditable, especially considering its location in Kerala with among the highest population densities in the country. However, some major lapses in its management need to be urgently rectified. A summary of these management issues is summarised below.

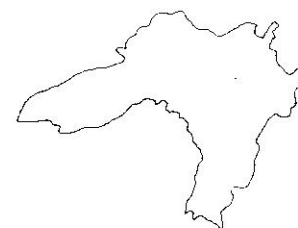
PARAMETERS	DESCRIPTION/ CURRENT STATUS	RECOMMENDATIONS
Legal Status	<ul style="list-style-type: none"> # An area of 777 sq km was declared Periyar Sanctuary in 1950. # In 1982, intention to constitute a national park for an area of 350 sq km out of the Periyar Sanctuary was declared. # Earlier, in 1978, the Periyar Sanctuary was declared a Project Tiger Reserve. 	<ul style="list-style-type: none"> # The intended park should be finally notified immediately by taking advantage of the 1991 amendment to the Wildlife Protection Act, since it is comprised completely of reserved forests. # The portion of the Ranni Reserved Forest east of the Vandiperiyar-Kakki Reservoir road, should be included in the Periyar Sanctuary, excluding only the small area under Eucalyptus plantations or being used for reed collection. # Ranni and Gudakal Reserved Forests west of the Vandiperiyar-Kakki Reservoir road should be included in Periyar Tiger Reserve, without at present including them into the Periyar Sanctuary.



PARAMETERS	DESCRIPTION/ CURRENT STATUS	RECOMMENDATIONS
Offences	<ul style="list-style-type: none"> # Ganja Cultivation is reported to take place in the remote areas of the Periyar Tiger Reserve (PTR). # Various people enter into PTR for illegal NTFP collection. 	<ul style="list-style-type: none"> # The services of the Indian Air Force and Navy should be requested for aerial surveys. In addition, the local people also need to be involved in the patrolling and other protection activities. # Jeep tracks should be constructed to facilitate patrolling. # Initiating ecodevelopment activities.
Personnel	<ul style="list-style-type: none"> # The number of staff posted in PTR is inadequate. # At present, the staff which is posted in PTR is recruited by the High Range Circle (territorial wing) of the Forest Department. 	<ul style="list-style-type: none"> # The existing posts need to be filled up and, after an assessment, new posts need to be created. In future, junior staff appointments should be made by the Wildlife Circle, of which PTR is a part.
Threats to the Habitat	<ul style="list-style-type: none"> # <i>Lantana camara</i> has come up in PTR. There is also infestation of <i>Eupatorium</i>. # Forest fires are accidently caused by people who come into PTR for NTFP Collection. 	<ul style="list-style-type: none"> # The weeds inside PTR should be uprooted/cut by employing local people on daily wages. # Additional fire watchtowers need to be constructed at strategic points in PTR. Also, alternatives to people entering PTR for their livelihoods need to be identified.

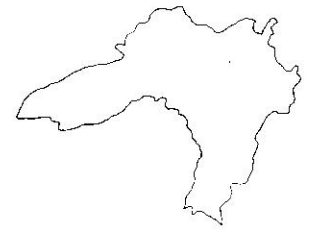


PARAMETERS	DESCRIPTION/ CURRENT STATUS	RECOMMENDATIONS
Plantations and Collection of Timber	# During the 1960s, Eucalyptus was planted in PTR. In addition, some of the plantations have been replanted between 1990 and 1993.	# The Eucalyptus plantations inside PTR should be harvested immediately in a manner in which the Eucalyptus trees do not regenerate. No further plantation should be permitted.
Habitation	# There are three tribal and one non-tribal human settlements in PTR.	# Where rights exist, these habitations can be regularised. Otherwise, the boundaries of Periyar Sanctuary can be redrawn to exclude the human settlements located within it.
Grazing	# 2000 cattle are reported to enter PTR for grazing.	# Divert the grazing pressure. Improve the quality of livestock and encourage stall feeding.

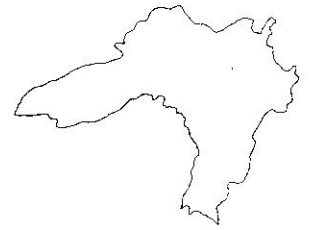


PARAMETERS	DESCRIPTION/ CURRENT STATUS	RECOMMENDATIONS
Religious Yatra	<p># The Sabarimala Shrine is located within PTR. About 10 million visit the shrine every year. This causes deforestation, pollution and other disturbance.</p>	<p># The Sabarimala Shrine and an area around it should be excluded from the Periyar Sanctuary (but maintained within the Periyar Tiger Reserve), and in its place the Dowladan Cardamom Estate (Pachakanam), should be acquired and included into the Sanctuary.</p> <p># There should be:</p> <ol style="list-style-type: none"> a. restrictions on the movement of pilgrims. b. supply of fuelwood from outside PTR.
Tourism	<p># Total number of tourists per annum estimated to be 3,50,000. Most neighbouring hotels and restaurants use fuelwood which is mostly extracted from PTR.</p> <p># Various tourist facilities in PTR are under the control of agencies other than the PTR authorities.</p>	<p># Efforts should be made to bring all tourist facilities under the control of the PA authorities.</p> <p># A regular supply of LPG cylinders should be ensured for the neighbouring hotels and restaurants. A ban should be imposed on the use of fuelwood. Income generation alternatives should be found for the headloaders.</p>

Apart from this, despite a specific requirement of Project Tiger, PTR has almost no buffer zone management programme. This is, perhaps, one of the greatest failings of the reserve



management. Another priority under Project Tiger, that of research, also is poorly implemented in the PTR. However, one of the most disturbing aspects of the management of PTR is the continued use of some of the best habitats within the Reserve for Eucalyptus plantations. Whereas there was some justification for harvesting those of the Eucalyptus trees that had been planted in 1960's and 70's, there appears to be no justification for re-planting this area with Eucalyptus as recently as in 1993. This one act of the State Government raises serious questions on whether they are taking the conservation of biodiversity within this Tiger Reserve seriously.



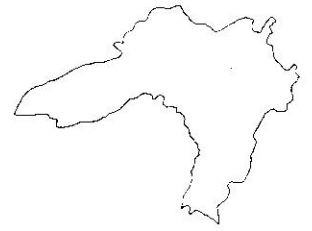
PERIYAR TIGER RESERVE

1.1 Location and Approaches: The Periyar Tiger Reserve (PTR) is situated in the Peermade Taluk of Idukki District, Kerala, between latitudes 9°18' to 9°40' north and longitudes 76°55' to 77°25' east. The office of the Field Director (FD) PTR, is located at Kottayam, which is also the nearest railhead (115 km from Thekkady). There is also a Wildlife Protection Officer (WLPO) of the rank of DFO who is posted in Thekkady, and is the local officer in-charge. The nearest airport is at Madurai which is located about 140 km from PTR. The best way to approach PTR is to either take a train to Kottayam, or fly to Cochin or Madurai, from where one has to get to the reserve by road.

1.2 Area, Zoning, and Legal Status: An area of 777 sq km was declared Periyar Wildlife Sanctuary in 1950 vide notification no. F1. 2854/49/DD dated 11 August. In 1978, the Periyar Wildlife Sanctuary was declared a Project Tiger Reserve vide letter no. J.110025/34/75 FRY(PT), dated 29 August 1978. The sanctuary is demarcated into three zones:

- Core Zone (350 sq km)
- Buffer Zone (377 sq km)
- Tourism Zone (50 sq km).

In 1982, the intention to constitute the Core Zone into a national park was declared vide notification no. G.O. (P) 310/82/AD dated 27 October 1982 [mp]. A



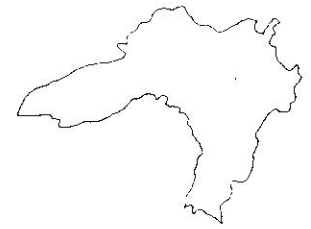
reservoir, popularly known as the Periyar Lake, is also located within the buffer and tourism zones. It was created in 1895 after the damming of River Periyar. PTR is administratively divided into two ranges, viz. Thekkady and Vallakadavu. While the core zone of PTR is contained entirely within Thekkady Range, the buffer zone and the tourism zone are contained within Vallakadavu Range.

The headquarters of Thekkady Range are located at Thekkady, which is located in the tourism zone of PTR just inside its northern boundary, while the headquarters of Vallakadavu Range are located at Vallakadavu, which is located on the northern fringe of the buffer zone of PTR.

- 1.3 Description of the Ecosystem: The terrain in PTR is highly undulating, especially in the core zone. The highest point in PTR is Ketta Malai (2016 msl) on the eastern boundary of the Reserve. There are several perennial streams and rivers in PTR, of which the prominent ones are Periyar, Pamba, and Azhuda. The Periyar Lake is another perennial water source.

The forest types occurring in PTR, as per the Champion and Seth classification are:

1. Tropical Evergreen Forests (IA/C4)
2. SemiEvergreen Forests (2A/C2)
3. Moist Deciduous Forests (3B/C2)
4. Grasslands (IIA/C1/DS2)

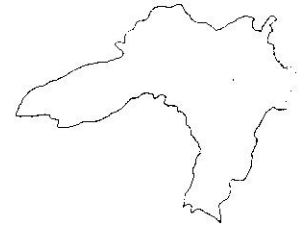


So far, 49 species of mammals, 243 species of birds, 28 species of reptiles, 8 species of amphibians, 22 species of fish, and 112 species of butterflies have been identified in PTR. In addition, 70 species of grasses, 75 species of herbs, 130 species of shrubs, and 132 species of trees have been identified [Anon. undated(a)].

1.4 Population: There is no human habitation within the core zone of the reserve. Some tribal villages were relocated from the core zone to the buffer zone during the 1950s. The details of these are:

1. The Mannans (236 families) and the Paliyans (105 families) are settled in Lebbakondam near Thekkady, within PTR on its northern edge, in its tourism zone, and are occupying an area of 88.40 ha. The total population of this settlement is 1185.
2. The Uralis (38 families) are settled in Vanchivayal near Vallakadavu, within and close to the northern edge of the buffer zone of PTR, and are occupying an area of 39.39 ha. The total population of this settlement is 174.
3. The Arayans (186 families) are settled in Moozhickal, within and on the western tip of PTR, and are occupying an area of 112 ha. The total population of this settlement is 677.

In addition to the above, 692 landless families were allotted land within the Periyar Wildlife Sanctuary near Moozhickal, in 1962, under the "Grow More Food



Scheme". They now occupy an area of 460.50 ha. The total number of people living in this area is 1820.

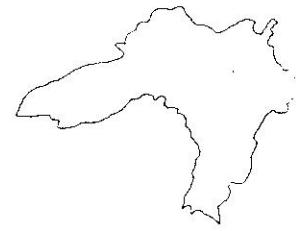
Also, some families have reportedly encroached forest land within PTR, in Moozhickal and Satharam [Anon. Undated(b)]. Satharam is situated near Vallakadavu, just outside the northern edge of the buffer zone of PTR.

1.5 Land Use: The area of PTR is being used for/occupied by the Periyar Lake reservoir (2600 ha), habitation and cultivation by tribals (700 ha), tourism (the tourism zone is 5000 ha), and the Sabarimala temple complex, occupying about 20 ha, near the southern edge of the buffer zone of PTR. There are also paths inside the Reserve which are used by pilgrims. In addition, there are Eucalyptus plantations in about 5500 ha of the buffer and tourism zones, from where Eucalyptus trees are being supplied to the Hindustan Newsprints Company Limited, in Vellore.

1.6 Staff and Equipment: Apart from the FD and WLPO mentioned in section 1.1 above, there is 1 research officer, 5 range officers, 2 deputy rangers, 8 foresters, and 79 forest guards posted in PTR. In addition, there are 56 other personnel posted for various field and office posts in the reserve [Anon. undated(a)].

There are 5 jeeps, 1 minibus, 4 boats, 6 motorcycles, 1 night viewing device, 1 VCR, 1 VCP, 2 film projectors, 1 slide projector, 2 TVs, 5 generators, a few wildlife films, and camping equipment available in PTR [Anon. undated(a)]

1.7 Management Plan: There is a management plan, valid from 1986 to 1996.



1.8 Major Management Issues: Major management issues are:

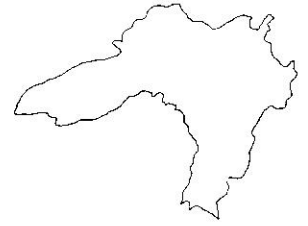
1.8.1 **Pilgrimage**

1.8.1.1 The Problem: The Sabarimala Shrine, dedicated to Lord Ayyappa, is located within PTR. The number of people visiting the shrine is now reported to be about 10 million per annum. The bulk of pilgrims visit the shrine during a two month period between 15 November and 15 January. To provide fuel to this massive influx of pilgrims, hundreds of trees are cut for firewood. The presence of such a large number of people, most of whom stay over night in the PTR, results in pollution due to accumulation of solid wastes, air and noise pollution due to the movement of vehicles, especially on unmetalled roads, accidental fires, and disturbance to animals.

1.8.1.2 Management Response: Kerala Forest Department has set up the Rudravanam Development Authority (RDA) to oversee the management of the shrine. An area within PTR has been handed over to the RDA for providing pilgrims with civic amenities which will at the same time reduce the impact of pilgrimage on the Reserve.

1.8.1.3 What More is Needed: The following options are available for minimising the impact of pilgrimage on the Reserve:-

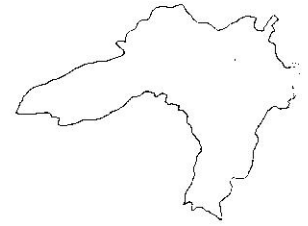
- a. To completely stop all pilgrim activity in PTR



- b. To allow pilgrims to visit Sabarimala, but not allow them to use routes within PTR.
- c. To allow pilgrims to use routes within PTR, but to regulate their movement inside the Reserve.
- d. To develop the Sabarimala Temple complex in a way in which the demand for forest resources is minimised.
- e. To supply the fuelwood requirements of Sabarimala, during the pilgrim season, from outside PTR.

Of the options listed above, a. and b. are not viable, since their implementation would lead to a great deal of protest from not just local people, but probably people from all over the country. Options c. and d. are much more viable, both administratively as well as socially, and in the long run, will result in a considerable reduction in the negative impacts of pilgrimage in PTR. Option e. can be implemented after consulting the State Government and identifying an alternate area for supply of fuelwood to the Sabarimala complex during the pilgrim season.

In addition, the Sabarimala Shrine and an area around it should be excluded from the Periyar Sanctuary (but maintained within the Periyar Tiger Reserve), and in its place the Downdan Cardamom Estate (Pachakanam), should be acquired and included into the Sanctuary. This is because the existence of the



shrine and the ongoing pilgrimage is not compatible with the provisions of the Wildlife Protection Act.

1.8.2 **Ganja Cultivation**

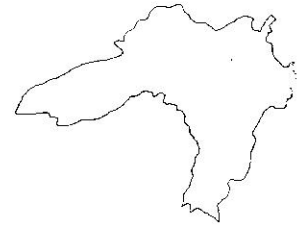
1.8.2.1 The Problem: Ganja cultivation plots are reportedly located in the remote parts of the core zone (eastern side of PTR) in areas bordering Tamil Nadu.

1.8.2.2 Management Response: Patrolling of vulnerable areas is undertaken by the PTR staff. However, in a vast and inhospitable area, patrolling itself is not sufficient unless the location of ganja plots is known.

1.8.2.3 What More is Needed: The services of the Indian Air Force and Navy should be requested for carrying out aerial surveys including infrared photography over PTR, for detecting ganja cultivation plots in order to pinpoint their location in the Reserve. This will increase the effectiveness of patrolling inside PTR. Besides, the communication infrastructure has to be improved. In addition, the local people also need to be involved in the patrolling and other protection activities in PTR. Also, the protection infrastructure and network needs to be further strengthened (see also section 1.8.8.3 below).

1.8.3 **Extraction of Wood for the Hindustan Newsprints Company Limited (HNCL)**:

1.8.3.1 The Problem: During the 1960s, Eucalyptus was planted by the Forest Department in the Periyar Sanctuary. Now that these plantations have



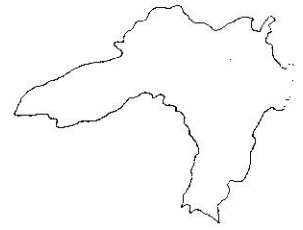
matured, they are being harvested for the HNCL. Some of the plantations which were earlier harvested, have been replanted between 1990 and 1993.

1.8.3.2 Managament Response: None.

1.8.3.3 What is Needed: The Eucalyptus plantations inside PTR should be harvested immediately in a manner in which the Eucalyptus trees do not regenerate, so that steps can be taken to allow the habitat to come back to its normal state of being. Not only are timber operations inside a sanctuary illegal under the Wildlife (Protection) Act (1972), these plantations are also detrimental to the natural ecosystem and are modifying the grassland ecosystem of the park.

1.8.4 Tourism:

1.8.4.1 Tourism: In 1991-92, around 2,50,000 people were reported to have taken boat rides at PTR, while in 1986-87, around 2,00,000 people were reported to have taken boat rides [Anon. undated (a)]. These figures show a 25% increase in about 6 years. The PA authorities believe that the total number of tourists visiting PTR (not counting the pilgrims to Sabrimala) might well be close to 3,50,000. The influx of so many people in the area, apart from exerting a direct pressure, also exerts an indirect pressure. Almost all the hotels and restaurants in Kumily town, all of which cater to the tourists visiting PTR, use fuelwood for cooking and heating. This is extracted from



the forests of PTR. Kumily is a town situated adjacent to the northern boundary of PTR near Thekkady.

1.8.4.2 Management Response: The PTR management has plans to establish a tourism interpretation centre so that apart from the boat ride they have other things to do. The management also has plans to build nature trails in the tourism zone.

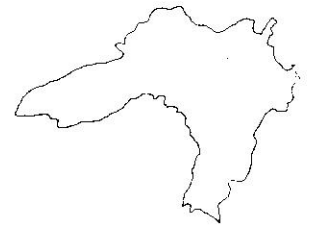
1.8.4.3 What More is Needed: Efforts should be made to bring all tourist facilities under the control of the PA authorities. A related pressure of tourism is the extraction of fuelwood for sale to restaurants in Kumily. A regular supply of LPG cylinders should be ensured for the restaurants in Kumily and other areas around PTR, after which, a ban should be imposed on the use of fuelwood in the restaurants around PTR. Simultaneously, income generation alternatives should be found for people who are presently doing headloading of fuelwood from PTR to supply Kumily.

1.8.5 **Habitation**:

1.8.5.1 The Problem: As already mentioned in 1.4 above, there are three tribal and one non-tribal, human settlements in PTR.

1.8.5.2 Management Response: None.

1.8.5.3 What More is Needed: The human settlements inside PTR are all on the edge of the PA, and cover only about 7.5 sq km of the 377 sq km of the Periyar Sanctuary. It should first be determined whether these communities have rights



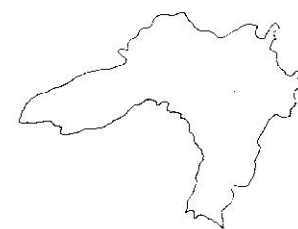
of habitation. If so, they should be allowed to stay on in the sanctuary, as provided for in the Wildlife (Protection) Act, as amended in 1991. However, if these people do not have rights than the boundaries of the Periyar Sanctuary need to be redrawn and the human settlements within it excluded. There will not be any significant reduction in the area of the Sanctuary, and the people will also not have to go through the trauma of relocation. At the same time, legal requirements stipulated under the Wildlife Protection Act will also be fulfilled. These areas should, never the less, remain within the Tiger Reserve.

1.8.6 **Grazing:**

1.8.6.1 **The Problem:** 2000 cattle are reported to enter PTR for grazing from Kumily, from estates adjoining the northern boundary of the buffer zone of PTR, and from areas around Vallakadavu. They graze in the reserve along a length of about 40 km [Anon. undated(b)].

1.8.6.2 **Management Response:** The PTR authorities have constructed a wall along the boundary of the Reserve around Lebbakondam and Rosapokondam to stop the entry of cattle.

1.8.6.3 **What More is Needed:** An attempt should be made to divert the grazing pressure inside the PTR by identifying grazing land outside the PA. Efforts should be made to improve the quality of livestock in the area, while at the same time encouraging people to stall feed their cattle. Limited grazing can,



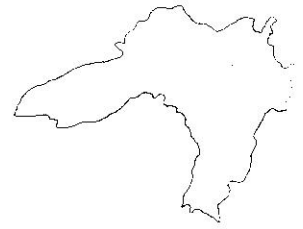
as a short term measure, be permitted in the sanctuary till the suggested measures become effective.

1.8.7 **Fuelwood Extraction:**

1.8.7.1 The Problem: Fuelwood is collected by the people living within PTR (see section 1.4 above). In addition, there is also extraction of fuelwood for use by people living adjacent to the reserve. "Nearly 300 bundles of firewood are collected and sold in Kumily town alone." [Anon. undated(b)]. Most of these bundles are consumed by the hotels/restaurants which cater to tourists visiting PTR. These bundles are supplied by the Paliyans of Lebbakondam, this being their main source of income. In addition, in 1992-93, 400 metric tonnes of fuelwood was supplied by PTR authorities to the Sabarimala authorities during the pilgrim season.

1.8.7.2 Management Response: Same as in 1.8.6.2 above.

1.8.7.3 What More is Needed: Alternative income generation activities need to be identified for people who collect fuelwood for sale. In addition, land outside PTR should be identified in order to raise fuelwood plantations to meet local people's bonafide requirements. Also, alternate and sustainable fuel sources like biogas plants, solar cookers etc, and fuel efficient devices like smokeless chulhas should be promoted.

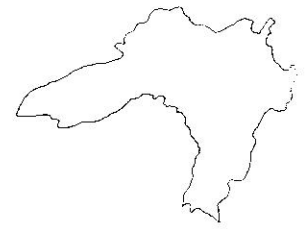


1.8.8 **NTFP Collection:**

1.8.8.1 **The Problem:** Various non timber forest products like Cinnamon bark, Thelli Powder (also known as **black diamar**, which is extracted from Cannarium strictum, and Vateria indica trees and used as incense), and honey are collected by the people, living in the settlements inside the reserve, and also by those living in adjacent villages. The Thevans, who are tribals, and who come from the Gudalur area in Tamil Nadu, are reported to extract NTFP even inside the core zone of PTR [Anon. undated(b)]. An impact of these activities is the accidental setting of forest fires, mainly due to the carelessness of people collecting NTFP inside the PTR.

1.8.8.2 **Management Response:** The PTR authorities carry out extensive patrolling in order to stop the illegal entry of people into the Reserve.

1.8.8.3 **What More is Needed:** Since NTFP collection is done by people for earning cash, one of the solutions to this problem is to provide people with income generation alternatives. In addition, in order to strengthen the protection network, jeep/motorcycle tracks should be made between Thanikudy and Malapara in the core zone, and Uppupara and Moozhickal in the buffer zone, so that the PTR staff can be mobile and effectively patrol these areas. A through jeepable road is not recommended in the core zone since Thanikudy is already connected to Thekkady by boat.



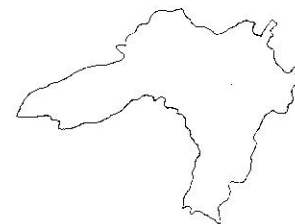
Also, a jeepable road should be made to link up Medakanam, a check post close to the northern boundary of the core zone, with the road existing in the Brooke Bond Tea, Estates across the border in Tamil Nadu, to the north of the core zone of PTR. This road is connected to another road starting from Pakkadi Mettu which runs along the north-eastern boundary of PTR on the Kerala-Tamil Nadu border, all the way till Velli Malai. This will result in increased mobility, and therefore more effective patrolling of the PA staff along the northern boundary of PTR. Since most of the people who enter PTR for illegal activities do so from this part of the Kerala-Tamil Nadu border, more effective policing in this sector will help in curbing a significant proportion of the poaching, NTFP collection, and ganja cultivation.

1.8.9 **Fishing:**

1.8.9.1 **The Problem:** The Mannans of Lebbakondam are reported to fish in one small portion of the Periyar Lake, fishing being their main source of income [Anon. undated(b)].

1.8.9.2 **Management Response:** None.

1.8.9.3 **What More is Needed:** Possibilities for providing people who fish inside PTR with alternative income generation activities need to be explored.



1.8.10 **Weeds:**

1.8.10.1 The Problem: Lantana camara has come up in PTR, all along the edge of the Periyar Lake, as well as along many of the paths and roads in the Reserve. There is also infestation of Eupatorium [Anon. undated (b)].

1.8.10.2 Management Response: None.

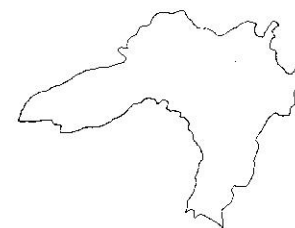
1.8.10.3 What More is Needed: The only option available here is to get rid of Lantana camara from inside PTR by uprooting/cutting it. This will also generate employment within PTR for the local people. Making clip boards from Lantana could pay for the cost of uprooting.

1.8.11 **Presence of other Government Agencies:**

1.8.11.1 The Problem: The Kerala Tourism Development Corporation (KTDC) has hotels and boats in the tourism zone of PTR. The Public Works Department(PWD) also has a rest house inside. At present, the PA authorities do not have any control over these.

1.8.11.2 Management Response: None.

1.8.11.3 What More is Needed: All tourist facilities inside PTR should be brought under the control of the PA authorities.



1.8.12 **Forest Fires:**

1.8.12.1 The Problem: Forest fires are mostly reported to occur from December till May. Most of these fires are caused accidentally due to the presence of humans who come into PTR for NTFP collection. Between 1990 and 1993, a total of 38 fires was reported to have broken out in PTR, damaging a total area of 679.5 ha.

1.8.12.2 Management Response: Fire watchers are employed during the fire season. Some fire lines and watchtowers have also been made.

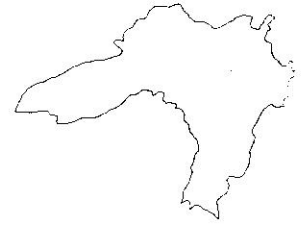
1.8.12.3 What More is Needed: Additional fire watch towers need to be constructed at strategic points in PTR. In addition alternatives to people entering PTR for their livelihood need to be identified (See 1.8.8.3 above).

1.8.13 **Staff:**

1.8.13.1 The Problem: According to the PA management, the number of staff posted in PTR is inadequate for providing effective protection to such a large area. Also, often the quality of staff posted to PTR is not upto the mark.

1.8.13.2 Management Response: None.

1.8.13.3 What More is Needed: The existing posts need to be filled up, and an assessment should be done to determine the additional staff requirements. Based on this, new posts should be created. Also, at present, the staff which is posted in PTR is recruited by the High Range Circle of the Forest



Department. It is recommended that, in future, junior staff appointments should be made by the Wildlife Circle, of which PTR is a part.

SOME ADDITIONAL POINTS

- A. The portion of the Ranni Reserved Forest east of the Vandiperiyar-Kakki Reservoir road, should be included in the Periyar Sanctuary, excluding only the small area under eucalyptus plantations or being used for reed collection.
- B. Ranni and Gudakal Reserve forests west of the Vandiperiyar-Kakki Reservoir Road should be included in PTR, without at present including them into the Periyar Sanctuary.
- C. At present, the Field Director of PTR does not exclusively look after the Reserve, and is engaged in managing several other sanctuaries as well. It is desirable that the Field Director be relieved of his other duties so that he can concentrate exclusively on PTR.
- D. It is recommended that for making buildings or doing any other kind of construction inside PTR in future, the services of a qualified architect should be used in order to make buildings which are not eyesores, but blend into the surroundings.

