

BEFORE THE NATIONAL GREEN TRIBUNAL

SOUTHERN ZONE, CHENNAI

Original Application No. 240 of 2024 (SZ)

In the matter of:

Tribunal on its own motion SUO MOTU based
on the News Item in The Hindu Chennai Edition
Dt. 19.08.2024 titled "Invasive fish species in
Korattur lake pose threat to native breeds, ecosystem " ... Applicant(s)

Versus

The Chief Secretary to the Government of Tamil Nadu,
Chennai and ors. ...Respondent(s)

INDEX

S. No.	Date	Description	Page No.
1	09.09.2025	Report filed by the 4 th Respondent- The Commissioner of Fisheries and Fishermen Welfare.	1-2
2	-	Annexure	3-19

(Note: The page numbers are at the top centre of every page)



Through

Dr. D. Shanmuganathan

Standing Counsel of Government of Tamil Nadu

National Green Tribunal

Southern Zone, Chennai

DATE:06.01.2026

**BEFORE THE NATIONAL GREEN TRIBUNAL
SOUTHERN ZONE, CHENNAI
Original Application No. 240 of 2024 (SZ)**

Tribunal on its own motion SUO MOTU
based on the News Item in The Hindu
Chennai Edition Dt. 19.08.2024 titled
"Invasive fish species in Korattur lake
Pose threat to native breeds,
ecosystem",

versus

The Chief Secretary to Govt. of Tamil
Nadu, Chennai and Ors..

.....Respondents

**STATUS REPORT IN RESPECT OF
ORDER OF THE HON'BLE NATIONAL GREEN TRIBUNAL
SOUTHERN ZONE, CHENNAI DATED 28.03.2025 IN O.A. No. 240 of
2024**

I K.V. Muralidharan, IAS., being the Commissioner of Fisheries and Fishermen Welfare, 3rd Floor, Integrated Animal Husbandry and Fisheries Building, Nandanam, Chennai - 600 035 do hereby solemnly affirm and sincerely state as follows:-

I am the respondent herein and I am well acquainted with the facts of this case as per records. I swear this affidavit is filed on my behalf.

1. It is respectfully submitted that Korattur Lake with an extension of 990 acres is one among the three waterbodies including Ambattur and Madhavaram Lake and is a western suburb of Chennai bordered by Madhananguppam in the north, Kolathur in the east, Pattaravakkam/Ambattur in the west and Padi in the south. This lake falls under Kosasthalaiyar Division of Water Resources Department.
2. It is respectfully submitted that in continuation of publication of article in 'The Hindu' Chennai edition dated 19.08.2024, the Korattur Aeri Padukappu Makkal Iyakkam, moved the National Green Tribunal (NGT) and obtained stay on industrial effluents being let into the

waterbody and a survey of korattur lake undertaken by a group of native enthusiast and inland fishermen found multiple invasive fish species in the water body. According to the survey, these invasive species have been affecting the native species.

3. It is respectfully submitted that a survey was conducted on 26.09.2024 at Korattur lake with the assistance of inland fishermen by the Fisheries department.
4. In the survey, it was observed that Tilapia fishes were found predominantly while other species such as flower horn, Gambusia in lesser numbers in the said water body.
5. During survey, algal-bloom was noticed which may be due to sewage discharge by industries and domestic waste dumping in the lake, that affects the ecology of the lake.
6. It is submitted that though Tilapia and Gambusia are exotic species, Tilapia is one of the fishes regularly caught for human consumption and Gambusia supports in mosquito control for many years.
7. It is respectfully submitted that a detailed study is required to identify specific invasive species and their abundance in the waterbody, availability of indigenous fishes, properties of waterbody, impact of exotic species such as Tilapia and Gambusia on native species and other specific invasive species on native species and strategies to restrict proliferation of the invasive species.
8. It is submitted that the study will be conducted by Fisheries college and Research Institute. A letter in this regard has been communicated to Fisheries college and Research Institute to conduct study on the above said subject on 09.09.2025.

Based on the above facts, it is humbly prayed that the status report may kindly be accepted and pass suitable order.

DATE: 09.09.2025


Director

Fisheries and Fishermen Welfare



FIELD STUDY REPORT ON

Invasive Fish Species in Korattur Lake



Submitted to

Fisheries and Fishermen Welfare Department
Nandanam, Chennai – 35.

Prepared by

Dr. M.G.R. Fisheries College and Research Institute
Tamil Nadu Dr. J. Jayalalithaa Fisheries University
Ponneri-601204

October 2025

Background

Korattur Lake, a 600-acre urban lake in western Chennai, plays a key role in groundwater recharge, flood control, and supporting local biodiversity. However, in recent years, the ecosystem has been severely affected by invasive species such as non-native fish like plecos, tilapia, and Midas cichlids that outcompete native species. Combined with sewage inflow and nutrient enrichment, these invasions have led to habitat degradation, loss of native fauna, and increased flooding risks during the monsoon season.

Invasive fish species affecting natives in Korattur lake



Concepts Based about Invasive Species in Korattur Lake

A recent survey conducted by a group of native fish enthusiasts and island fishermen has revealed the presence of multiple invasive fish species in Korattur Lake. These non-native species such as plecos, tilapia, and Midas cichlids, are threatening the native Indian fish species and destabilizing the ecosystem.

The survey highlights the urgent need for preservation efforts to protect the lake's biodiversity. The invasive species are not only affecting the native fish populations but also preventing birds from feeding on them, due to their armored plating.

The group is calling for action to declare the lake a bird sanctuary and has already obtained a stop on industrial effluents being released into the lake. The fishermen are also keen on protecting the lake and its native species.

Let's work together to preserve our natural resources and protect the native species.
#KoratturLake #InvasiveSpecies #Fishermen #Biodiversity #Chennai

With reference to the SUO MOTO case registered [Ref: National Green Tribunal (NGT) South Zone (SZ) Q.A. No. 240 of 2024 (SZ), Dated: 04.07.2025] based on the news article published in the Hindu, Chennai Edition, Dated: 19.08.2024, titled "***Invasive Fish Species in Korattur Lake Pose Threat to Native Breeds, Ecosystem***", it has come to light that the proliferation of invasive fish species in Korattur Lake is causing significant harm to native fish populations and overall aquatic ecosystem. In this regard, the Director, Fisheries and Fishermen welfare Department, Chennai has requested to conduct a comprehensive scientific study (R.C. No. 25145/t/2024, Dated: 09.09.2025 of the Director, Fisheries and Fishermen Welfare Department, Chennai - 35) covering the following aspects.

1. Identify and document the invasive fish species currently present in the Korattur Lake ecosystem
2. Assess the extent of their spread and population density
3. Evaluate the ecological impact and the degree of threat posed to native fish species and the aquatic environment
4. Eradication or control measures to control their spread in the ecosystem

Further it is also informed that, the findings of such a study will be instrumental in formulating appropriate conservation and management strategies for protecting the native aquatic biodiversity of the lake. Based on the direction, Tamil Nadu Dr. J. Jayalalithaa Fisheries

University, Nagapattinam [Ref. U.S.O. No. 829/TNJFU/C3/2025, R.C. No. 3767/TNJFU/C3/2025, Dated: 10.09.2025] the orders are issued for the constitution of committee to conduct the scientific study covering the above aspects as proposed by the Director, Fisheries and Fishermen Welfare Department, Chennai are as follows,

S.No.	Name of the Faculty	Designation
1.	Dr. S. Aruna, M.F.Sc., Ph.D. (AEM)	Assistant Professor and Head i/c., Department of Aquatic Environment Management, Dr. M.G.R. FCRI, Ponneri - 04
2.	Mr. P. Pavinkumar, M.F.Sc. (FRM)	Assistant Professor and Head i/c., Department of Fisheries Resource Management, Dr. M.G.R. FCRI, Ponneri - 04
3.	Dr. C. Sudhan, M.F.Sc., Ph.D. (FRM)	Assistant Professor, Department of Fisheries Resource Management, Dr. M.G.R. FCRI, Ponneri - 04

Introduction

A team of experts from Dr. M.G.R. Fisheries College and Research Institute, Tamil Nadu Dr. J. Jayalalithaa Fisheries University, Ponneri – 601 204 consists of Dr. S. Aruna, Assistant Professor and Head i/c., Department of Aquatic Environment Management and Mr. P. Pavinkumar, Assistant Professor and Head i/c., and Dr. C. Sudhan, Assistant Professor, Department of Fisheries Resources Management, along with Fisheries Department officials conducted field sampling and fishing trails at Lake Korattur, Chennai on 26.09.2025 (3 fishing trails) & 27.09.2025 (2 fishing trails).

During the field sampling, water samples, soil samples, plankton samples & fish samples were collected with the help of local fishers at Korattur Lake. A total of 15 water parameters and 15 soil parameters were analyzed, Plankton samples were identified and counted; Fish Samples are identified up to species level using standard keys.



Field observation by the team at Korattur Lake on 26.09.2025



Field Visit conducted by the expert team along with fisheries department representatives and fishers on 26.09.2025



Fishing trails conducted by the fisher on 27.09.2025

1. Water and Soil Quality Parameters of Korattur Lake

Water and soil samples were collected from Korattur Lake to assess the required environmental parameters. The sampling was carried out systematically from selected locations across the lake to obtain representative data on the physico-chemical and biological characteristics of the ecosystem. These samples were analyzed to evaluate the status of water and sediment quality, providing insights into the environmental condition.

Table 1: Water and Soil Parameters of Korattur Lake

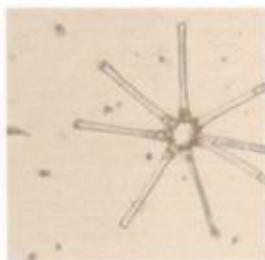
S. No	Water Parameters	Values	Soil Parameters	Values
1.	pH	7.76	pH	7.98
2.	Calcium hardness (mg/l)	72	EC (mS/cm)	0.543
3.	Hardness (mg/l)	182	Organic Carbon (%)	0.76
4.	Magnesium hardness (mg/l)	110	Available Phosphorus (ppm)	64

5.	Salinity (ppt)	0.4	Available Potassium (Kg/ha)	169.4
6.	Carbonate alkalinity	Nil	Available Nitrogen (Kg/ha)	224
7.	Total Alkalinity(mg/l)	150		
8.	Ammonia (mg/l)	0.315		
9.	Nitrite (mg/l)	0.261		
10.	Nitrate (mg/l)	0.502		
11.	Phosphate (mg/l)	0.124		
12.	Iron (mg/l)	0.104		
13.	TDS (g/l)	0.58		
14.	TS (g/l)	0.63		
15.	TSS (g/l)	0.05		

2. Phytoplankton diversity in Korattur Lake



Ankistrodesmus sp.



Asterionella sp.



Chlamydomonas sp.



Chlorella vulgaris



Chlorococcus sp.



Oscillotaria sp.



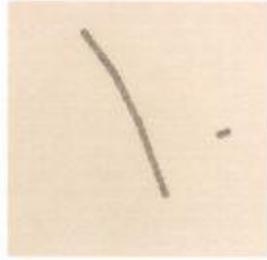
Closterium sp.



Euglena sp.



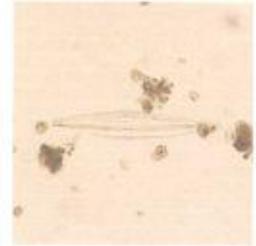
Fragilaria sp.



Melosira sp.



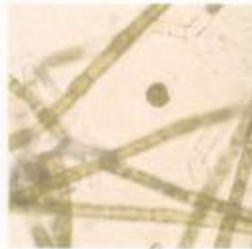
Microcystis sp.



Navicula sp.



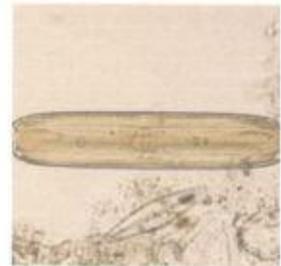
Nitzschia sp.



Oedeogonium sp.



Pediastrum sp.



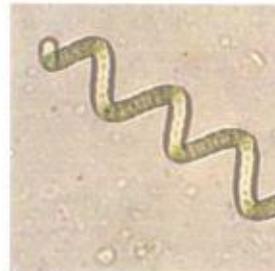
Pinnularia sp.



Scenedesmus sp.



Spirogyra sp.

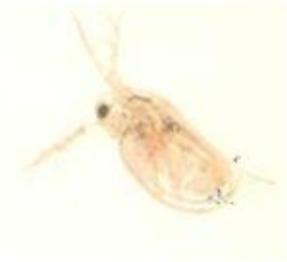


Spirulina sp.



Triceratium sp.

3. Zooplankton diversity in Korattur Lake



Daphnia magna



Moina macrocopa



Cyclops



Acartia



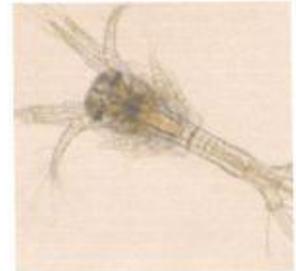
Brachionus quadridentatus



Karatella sp.



Branchionus calyciflorus



Shrimp larvae

Water sample was filtered through conical-shaped plankton-net mesh size with 64 μm and 200 μm , respectively. Then, the samples were kept in the laboratory and preserved with 5% formalin. The plankton species were studied under the light microscope, and the identification was made by referring the standard works (Battish, 1992; Murugan et al., 1998; Altaff, 2004; Manickam et al., 2017). The sample (1 ml) was taken with a wide mouthed pipette and poured into the counting cell of the Sedgwick Rafter.

After allowing for settlement, they were counted. The total number of plankton present in 1 L of water sample was calculated using following formula (Santhanam et al., 2019)

$$N = n \times v / V$$

A total of 28 species of plankton were identified from the Korattur lake water sample. In this total plankton, 20 species of phytoplankton and 8 species zoo plankton were identified. In

phytoplankton group, *Oscillotaria*, *Microcystis*, *Spyrogyra*, *Navicula* and *Pediastrum* was the most abundance. Overall phytoplankton abundance was 18.5×10^3 cells/ L. Meanwhile, in zooplankton group, *Daphnia magna*, *Moina macrocopa* and *Brachionus calyciflorus* were the most abundant. Overall zooplankton abundance was 130 ind/ L.

Table 2: Abundance of Phytoplankton species in Korattur Lake

S. No.	Phytoplankton Species	cells / L
1	<i>Oscillotaria sp.</i>	2500
2	<i>Microcystis sp.</i>	2200
3	<i>Spyrogyra sp.</i>	2000
4	<i>Navicula sp.</i>	1700
5	<i>Pediastrum sp.</i>	1500
6	<i>Chlorella vulgaris</i>	1200
7	<i>Scenedesmus sp.</i>	1000
8	<i>Euglena sp.</i>	900
9	<i>Melosira sp.</i>	800
10	<i>Fragilaria sp.</i>	700
11	<i>Nitzchia sp.</i>	600
12	<i>Ankistrodesmus sp.</i>	560
13	<i>Pinnularia sp.</i>	440
14	<i>Closterium sp.</i>	320
15	<i>Asterionella sp.</i>	480
16	<i>Spirulina sp.</i>	290
17	<i>Chlamydomonas sp.</i>	310
18	<i>Odeogonium sp.</i>	300
19	<i>Chlorococcus sp.</i>	200
20	<i>Triceratium sp.</i>	100
	Total phytoplankton count	18,500

Table 3: Abundance of Zooplankton species in Korattur Lake

S. No.	Zooplankton Species	Ind. / L
1.	<i>Daphnia magna</i>	40
2.	<i>Moina macrocopa</i>	32
3.	<i>Brachionus calyciflorus</i>	28
4.	<i>Cyclops</i>	17
5.	<i>Acartia</i>	6
6.	<i>Brachionus quadridentatus</i>	4
7.	<i>Karatella sp.</i>	2
8.	<i>Shrimp larvae</i>	1
	Total zooplankton count	130

4. Identification and Documentation of Invasive Fish Species in Korattur Lake

Fishes were collected by local fishers of Korattur Lake using gill nets and also by our team using hand nets, mosquito nets for documenting the native fish diversity of the lake ecosystem.



Fisher operating fishing nets in Korattur Lake on 26.09.2025



Fish collection using hand nets in Korattur Lake on 26.09.2025

Table 4: List of native species recorded in Korattur Lake

S.No.	Common Name	Scientific Name	Ecological Role
1.	Spiketail Paradise Fish	<i>Pseudosphromenus cupanus</i>	Small indigenous fish, contributes to biodiversity, prey for larger fishes
2.	Striped Snakehead	<i>Channa striata</i>	Apex predator, controls small fish populations, important food fish
3.	Dwarf Snakehead	<i>Channa gachua</i>	Predator, part of native fish diversity, valued in local fisheries
4.	Spotted Snakehead	<i>Channa punctata</i>	Predator and food fish, ecologically significant
5.	Pool Barb	<i>Puntius sophore</i>	Small cyprinid, important forage fish for predators
6.	Rohu	<i>Labeo rohita</i>	Native carp, contributes to fisheries and ecosystem productivity



Pseudosphromenus cupanus



Channa striata

*Channa punctata**Puntius sophore***Table 5: List of exotic species recorded in Korattur Lake**

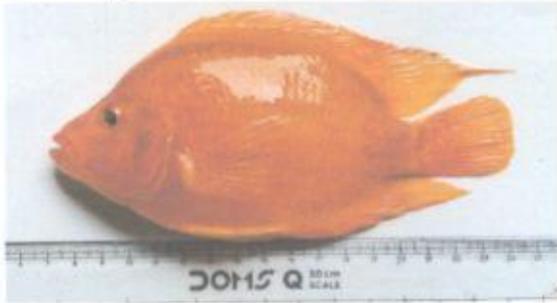
S.No.	Common Name	Scientific Name	Origin	Ecological Concern
1.	Mozambique Tilapia	<i>Oreochromis mossambicus</i>	Africa	High reproductive rate, competes with natives, habitat modification
2.	Nile Tilapia	<i>Oreochromis niloticus</i>	Africa	Widely invasive, rapid population growth, displaces indigenous fishes
3.	Red Devil Cichlid	<i>Amphilophus labiatus</i>	Central America	Aggressive predator, territorial, disrupts native fish community
4.	Sail fin Sucker mouth Catfish	<i>Pterygoplichthys disjunctivus</i>	South America	Alters benthic habitats, damages aquatic vegetation, overgrazes algae
5.	Three-spot Gourami	<i>Trichopodus trichopterus</i>	Southeast Asia	Competes with native small fish for food and breeding niches
6.	Flower Horn Cichlid	Flower Horn Cichlid	Man-made (Aquarium trade)	Aggressive, predated on juveniles, introduced via ornamental releases
7.	Mosquito Fish	<i>Gambusia affinis</i>	North America	Introduced for mosquito control, but competes with native small fish and preys on their larvae



Oreochromis niloticus



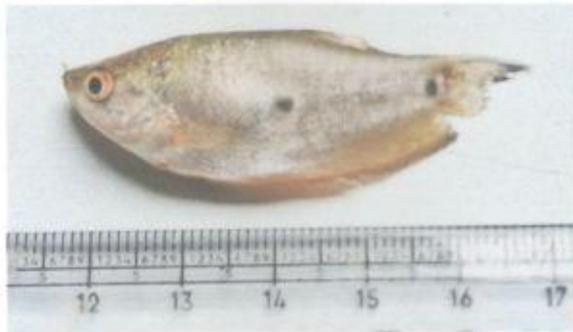
Oreochromis mossambicus



Amphilophus labiatus



Amphilophus sp.



Trichopodus trichopterus



Flower Horn Cichlid



Gambusia affinis



Pro-larvae of Tilapia

5. Extent of Spread and Population Density of Invasive Fishes in Korattur Lake

The species composition of the fishes observed in Korattur Lake revealed that the lake harbours six native species and seven exotic species. The fishing trails documented species type (Native / Exotic), occurrence (In Nos.), and abundance (in kg) with their respective percentage contribution. The dominant exotic species are Mozambique Tilapia (51.55%), Nile Tilapia (21.48%), Red Devil Cichlid (17.18%) recorded during the study. The fisher reported that they found pleco fishes (Sail fin Sucker mouth Catfish) and Flower Horn Cichlid in different size ranges from larval to adult.



Catch observation during the fishing trials by the Korattur fisher on 26.09.2025



Catch observation during the fishing trials by the Korattur fisher on 27.09.2025

Table 6: Species composition of Korattur Lake

S.No:	Common Name	Scientific Name	Species Type	Occurrence Data (In Nos.)	%	Abundance Data (in Kg)	%
1.	Spiketail Paradise Fish	<i>Pseudosphromenus cupanus</i>	Native	14	7.78	0.02	0.09
2.	Striped Snakehead	<i>Channa striata</i>	Native	3	1.67	0.20	0.86
3.	Dwarf Snakehead	<i>Channa gachua</i>	Native	2	1.11	0.13	0.56
4.	Spotted Snakehead	<i>Channa punctata</i>	Native	3	1.67	0.12	0.52
5.	Pool Barb	<i>Puntius sophore</i>	Native	25	13.89	0.098	0.42
6.	Rohu	<i>Labeo rohita</i>	Native	1	0.56	0.7	3.01
7.	Mozambique Tilapia	<i>Oreochromis mossambicus</i>	Exotic	25	13.89	12	51.55
8.	Nile Tilapia	<i>Oreochromis niloticus</i>	Exotic	32	17.78	5	21.48
9.	Red Devil Cichlid	<i>Amphilophus labiatus</i>	Exotic	14	7.78	4	17.18
10.	Sail fin Sucker mouth Catfish	<i>Pterygoplichthys disjunctivus</i>	Exotic	7	3.89	0.2	0.86
11.	Three-spot Gourami	<i>Trichopodus trichopterus</i>	Exotic	12	6.67	0.01	0.04
12.	Flower Horn Cichlid	Flower Horn Cichlid	Exotic	16	8.89	0.8	3.44
13.	Mosquito Fish	<i>Gambusia affinis</i>	Exotic	26	14.44	0.001	0.001

A preliminary field assessment of Korattur Lake indicates that invasive fishes have established stable and reproducing populations, some showing high abundance and wide spatial

distribution across the lake. The extent of spread and approximate density status of each invasive species is summarized below based on the species composition during the study.

Table 7: Exotic fish species with their population density and ecological threat

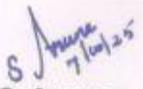
Species	Spread in Lake	Population Density (Relative Status)	Ecological threat
<i>Oreochromis mossambicus</i> (Mozambique tilapia)	Found throughout the lake, especially in shallow littoral zones	High – observed in large shoals, dominating catch composition	Major competitor with native carps; highly prolific breeder
<i>Oreochromis niloticus</i> (Nile tilapia)	Widespread, often mixed with <i>O. mossambicus</i>	High – dense populations recorded	Rapid growth and spawning, threatens native species recruitment
<i>Amphilophus labiatus</i> (Red devil cichlid)	Patchy distribution, mostly near vegetated margins	Moderate to High – individuals encountered frequently but not in large shoals	Aggressive, predatory behavior limits coexistence with smaller natives
<i>Pterygoplichthys sp. cf. disjunctivus</i> (Sailfin catfish)	Found mainly in benthic habitats; concentrated near muddy substrates	Moderate to High – multiple size ranges were encountered by fisher in their regular fish catches	Alters benthic community, burrowing damages embankments
<i>Trichopodus trichopterus</i> (Three-spot gourami)	Distributed in weedy shallow areas and vegetated margins	Low to Moderate – small groups observed	Competes with native small fishes for space and resources
Flower horn cichlid (<i>Hybrid</i>)	Abundant along lake margins and stagnant weedy patches	High – dense populations in shallow waters	Outcompetes native small indigenous fishes, predated on their fry
<i>Gambusia affinis</i> (Mosquito fish)	Localized, recorded mainly near lake inlets and adjoining ornamental release points	Low – scattered individuals detected	Indicates recent ornamental releases; risk of expansion

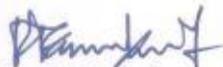
6. Ecological Impacts of Invasive Fishes in Korattur Lake

- a. **Tilapias:** Major ecological disruptors through competition, prolific breeding, and habitat alteration.
- b. **Red devil cichlid & Flower horn:** Localized but ecologically damaging due to predation and aggression.
- c. **Sailfin catfish:** Strong benthic modifier, causing habitat degradation.
- d. **Mosquito fish:** Though small, has a disproportionate impact on native fry survival.
- e. **Three-spot gourami:** Contributes to competition in vegetated zones, further marginalizing small native fishes.

7. Management and Control of Invasive Fishes in Korattur Lake

- a. **Immediate Action:** Intensive fishing and biomass reduction of tilapias, sailfin catfish, and mosquito fish.
- b. **Medium Term:** Habitat restoration and restocking of native fishes.
- c. **Long Term:** Public awareness, regulation of ornamental fish release, and continuous monitoring


Dr. S. Aruna


Mr. P. Pavinkumar


Dr. C. Sudhan