

**BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL**  
**Southern Zone Bench, Chennai**  
**Original Application No. 97 of 2020 & I.A. No. 49 of 2020 (SZ)**

**IN THE MATTER OF:**

**Bharathi Raja. M**

....Applicant

**Versus**

**1) The State of Tamil Nadu,**

Rep by its Director, Department of Environment,  
No. 1, Jeenis Road, Panagal Building,  
Ground Floor, Saidapet, Chennai – 600 015.

**2) Arignar Anna Zoological Park,**

Rep by its Director,  
Vandalur, Chennai – 600 048

... Respondent

**Counter response to the Report submitted to the Hon'ble National Green Tribunal,  
South Zone Bench, Chennai by the Joint Committee**

I, V. Karunapriya, IFS., daughter of Thiru. V. Raghunadha Rao, Hindu aged about 47 years, employed as Additional Principal Chief Conservator of Forests and Director, Arignar Anna Zoological Park, Vandalur, Chennai, do hereby solemnly affirm and sincerely state as follows:-

It is respectfully submitted that an application was filed at this Hon'ble National Green Tribunal (SZ) with a grievance that the 2<sup>nd</sup> respondent Arignar Anna Zoological Park (AAZP) have planted several species of alien, non-native exotic trees in the premises of the Zoological park by clearing native shrubs and climbers. In order to substantiate the allegation, the applicant has submitted a list of 13 plant species as exotic trees planted in the premises of AAZP as tabulated below:

**Table. A list of 13 species alleged as exotic tree species planted in AAZP**

S.No.	Species Name	Country or Place of Origin	Propagation
1	<i>Spathodea campunalata</i>	Africa	Wing seeds through Air
2	<i>Tabebuia rosea</i>	South America	Wing seeds through Air
3	<i>Tabebuia argentea</i>	South America	Wing seeds through Air
4	<i>Swietenia mahagoni</i>	South America	Wing seeds through Air
5	<i>Millingtonia hortensis</i>	South east Asia	Wing seeds through Air, Root
6	<i>Markamia lutea</i>	South America	Wing seeds through Air
7	<i>Cordia sebestena</i>	South America	Gravity
8	<i>Muntingia calabura</i>	South America	Edible fruits
9	<i>Kigelia africana</i>	Africa	Edible fruits through animals
10	<i>Bauhinia sp. variegata</i>	South east Asia	Gravity
11	<i>Terminalia cadappa</i>	Moluccana island, South east Asia	Edible fruits through birds and animals
12	<i>Couroupita guianensis</i>	South America	Gravity
13	<i>Simarouba glauca</i>	South America	Edible fruits through birds and animals

It is submitted that, in order to ascertain facts on the ground, the Hon'ble NGT (SZ) vide its Order dated 15.07.2020 in Application No 97 of 2020 & I.A.No. 49 of 2020 has appointed a Joint Committee comprising of a Senior Officer from Ministry of Environment, Forest and Climate Change (MoEF&CC), Regional Office, Chennai, a Senior Officer as nominated by the Chief Wild Life Warden not below the rank of the Chief conservator of Forest, the Director of Arignar Anna Zoological Park and a Botanist or Taxonomist deputed by the Chairman from National Biodiversity Authority, Chennai to inspect the area in question and submit a factual report regarding the allegations in the application and also impact of such exotic plantation on forest, wildlife and biodiversity of that area and, if any damage has been caused what is the remedial measures to be taken to restore the same, including assessing the environmental compensation, if any required.

It is submitted that, the Hon'ble NGT further directed that the committee shall also consider as to, whether this is in violation of the Wild Life Management Plan in that area in executing the present project by the 2nd respondent, AAZP. Ministry of Environment, Forests and Climate Change (MoEFCC), Regional Office, was appointed as the nodal agency for co-ordination and for providing all necessary logistics for this purpose. MoEFCC, Regional Office, Chennai as the nodal agency organized a video conference (VC) among the Members of the Joint Committee on 26.08.2020 (3pm-5pm) to discuss matter with a view to understand the subject and plan the way forward.

It is submitted that, on 02.09.2020, the Joint Committee visited AAZP, Vandalur and undertook a physical verification of the planting activities undertaken by the 2<sup>nd</sup> respondent, AAZP. Inspection was also carried out in both the 'operational area' which is about 60% of the AAZP and 'natural vegetation area' which is about 40% of the AAZP. Following due consultation process, physical verification and consideration of scientific merits of the case, the Joint Committee had submitted the Report to Hon'ble NGT.

It is submitted that, it was presented in the Joint Committee Report that 'native vs non-native' is a geographical-evolutionary view that identifies non-natives as species that did not evolve in a particular area and that non-native species are frequently identified as human-introduced species. It was also submitted that the 13 plant species alleged as exotic in the application are widely planted as avenue trees through the length and breadth of our country for their aesthetic and other values, particularly in human dominated urban and other spaces.

It was also submitted that the science and understanding of 'non-native species' which are invariably described as "exotic" or "alien" species itself is a young and evolving discipline in biology. Literature on the subject is scant. It was also submitted that, at country level, there are no 'prescriptions' or 'guidelines' available as to how to identify invasive alien species.

It was submitted that non-native species, such as the above mentioned 13 species (**see Table**), alleged in the application are typically viewed by generalist on the subject as human-introduced, invasive species that harm local ecosystems and economies with an assumption that non-native species should be controlled or eradicated to protect native ecosystems, species, and human interests.

It is submitted that, now the applicant has filed a reply in response to the report of the Joint Committee stating the report is liable to be rejected as it is unscientific, misleading, contrary to the zoo's own master plan and has been authored by a committee comprising the Zoo's Director and hence cannot be accepted.

It is submitted that, the applicant has relied heavily on internet sources. It must be noted that any species becoming successfully invasive is a rare event. This is because, a species arriving in a new community faces a series of filters. Invasion usually occurs in three stages. A species is first transported to a new habitat. It must then establish itself there: a base population must manage to successfully reproduce itself. Naturalized in this way, the species population have to explode to become invasive. Further, a plant must have the following traits to become invasive:

- i. It has long-lived seeds for discontinuous germination
- ii. It grows rapidly from vegetative to reproductive stage
- iii. It is capable of very high seed output when environmental conditions are favourable
- iv. It produces seed continuously throughout the growth period and in a range of environmental conditions
- v. It is built to disperse seeds over short and long distances
- vi. It has a strong potential to compete with other species.

It is submitted that, the ecological paradox usually is, if a species is present in small numbers, particularly when planted as avenue trees, its breeding options are low. This genetic bottleneck might cause it to become extinct rather than becoming invasive.

It is submitted that, the successful invasion depends not only on the traits species have, but also on how susceptible the habitat is. Three generally accepted models to understand this susceptibility have emerged viz.,

- i. Fluctuating resource availability model,
- ii. Enemy release hypothesis
- iii. Niche opportunity model

The first proposes that invasiveness depends on excess resources (energy) being available to be consumed. Such availability fluctuates over time; so, therefore, does a habitat's vulnerability to invasion. Enemy release hypothesis suggests that when a plant species is introduced to an alien habitat, herbivores and other natural enemies pay it a little less attention. So it is able to literally bloom. This hypothesis is predicated on three principles: natural enemies are important regulators of populations; they impact native species more than exotics; and plants capitalize on less regulation by the enemy. Lastly, the Niche opportunity model defines conditions that promote invasions, interactions between resources, natural enemies and the physical environment, and how these vary in time and space. In a human controlled environment like AAZP, such scenarios are unthinkable.

It is humbly submitted that, besides, pertaining to India, so far, our country does not have any exclusive national policy, strategies and legal framework to control and manage the IAS. In order to initiate such measures, the Centre for Biodiversity Policy and Law (CEBPOL), National Biodiversity Authority (NBA), has developed a strategy and compiled the details available on the control of the five worst invasive plant species reported in India [*Lantana camara*, *Prosopis juliflora*, *Mikania micrantha*, *Parthenium hysterophorus*, and *Eichhornia crassipes* ; copy of the Report enclosed]. None of the 13 species as alleged by the applicant are listed here.

It is humbly submitted that, every effort is made by the Arignar Anna Zoological Park to maintain the forest character. Exotic species like Eucalyptus and Prosopis are being removed in a phased manner and indigenous species like *Aegle marmelos*, *Azadirachta indica*, *Atalantia monophylla*, *Ficus religiosa*, *Ficus benghalensis*, *Madhuca indica*, *Mimusops elengi*, *Pithecellobium dulce*, *Manigifera indica*, *Barringtonia* etc., have been planted in the animal enclosures. Very few species which are naturalized to Indian conditions have been planted near the entrance and avenue areas to ensure green and fast growth in addition to improving aesthetic value.

It is respectfully submitted that Zoological parks are mainly focused on education and conservation of wild animals. That way Arignar Anna Zoological Park, Vandalur is considered as one of the well scientifically managed zoos in India. The zoo has animal species that are native to both Indian and foreign countries. In order to provide comforting environment to the zoo animals, the zoo management takes up several management activities like enclosure enrichment, display enrichment, natural barricading, maintaining vegetation etc., Planting trees are also a part of this. The species are selected based on the animal requirement and display purpose like Flowering or shade tree.

There was no violation with respect to the planting carried out by the Arignar Anna Zoological Park and the planting was done to compensate the tree cover loss following the Cyclone Vardhah. There was an immediate need to plant and to choose fast growing trees considering the rise in temperature during 2018 & 2019. Similarly, drought resistant species has to be selected considering the water shortage prevailing due to drought in Chennai during these years. Accordingly, the tree species listed in Para 4 was selected based on previous year plantings also. It is humbly submitted that people should also learn about different types of tree species. Not all tree species whose origin is outside Asia continent is dangerous or invasive. There are many benefits drawn from these floral species too. So a tourist place like zoo should have both different types of animals and plants species to serve these purpose.

It is humbly submitted that, the area in the zoo has not been cleared to undertake planting. However, planting has been undertaken in the gaps and along avenues. The entire exercise is aimed at conservation and improving the green cover in the zoo by planting species based on animal requirement, flowering and shade.

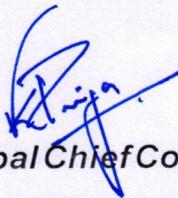
It is respectfully submitted that the matter dealt by the applicant requires highest levels of scientific competency and qualification on matters of plant sciences in particular on plant taxonomy and invasive biology.

It is humbly prayed before the Hon'ble NGT to reject the reply response submitted to the Hon'ble National Green Tribunal, South Zone Bench, Chennai by the applicant.

Solemnly affirmed at Chennai  
On this the day of 10<sup>th</sup> November 2021  
And signed his name in my presence

BEFORE ME

  
**Deputy Director**  
**Arignar Anna Zoological Park**  
**Vandalur, Chennai-600 048**

  
**Additional Principal Chief Conservator**  
**of Forests & Director**