

**THE HON'BLE NATIONAL GREEN TRIBUNAL,
SOUTHERN ZONE, CHENNAI
ORIGINAL APPLICATION NO.162 OF 2023 (SZ)**

IN THE MATTER OF:

Tribunal on its own motion - SUO MOTU based on the News item in The Hindu E-paper, web edition dated 24.09.2023, "Kole wetlands of kerala face threat of alien plants".

Vs.

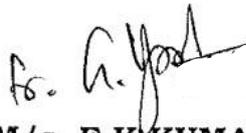
The Principal Secretary to Govt of Kerala, Dept of Environment,
Thiruvanthapuram and Ors.

...Respondents

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Dated at Chennai on this 30th day of November, 2023



M/s. E.K.KUMARESAN

Standing Counsel for State Government of Kerala - NGT(SZ) Chennai Bench



Report filed by the 1st Respondent before the Hon'ble National Green Tribunal (South Zone) in OA No. 162 of 2023 Sou Motu (Kole Wetlands of Kerala face threat of Alien Plants)

It is submitted that this Hon'ble Green Tribunal (SZ) Suo Motu took cognizance (OA No.162/2023) on 18/10/2023, on the subject concerning the Kole Wetlands, as highlighted in 'The Hindu' E-Paper on 24.09.2023, draws attention to the biodiversity challenges in the Kole wetlands, emphasizing the need for collaborative efforts against the invasive plant species *Cabomba furcata*, in addition to water hyacinth, and *Salvinia molesta*. These threats have disrupted the delicate ecological balance, posing risks to the aesthetic appeal and native flora and fauna. The paper report based on the observation made by Dr.T.V. Sajeev, Chief Scientist, Kerala Forest Research Institute highlights the invasive nature of *Cabomba furcata*, an alien species proliferating mainly due to the aquarium trade.

2. It is submitted that kole lands is part of the largest Ramsar wetland site of Kerala, the Vembanad Kole. Kole lands are seen in Thrissur and Malappuram districts of Kerala, total area being 13,632 ha; of which 10,187 ha is in Thrissur district and 3,445 ha in Malappuram District. Presently, rice is being cultivated in about 9000 ha of Kole lands.

3. It is submitted that the emergence of invasive species is a consequence of human activities such as trade, agriculture, habitat destruction, degradation, and over exploitation of flora and fauna as well as global climate change. Once these invasive plants enter the ecosystem, they can trigger extensive adverse impacts, including biodiversity loss, competition with indigenous species, obstruction of water bodies, changes in water quantity and quality, decline in fish populations, and other influences on the cultural and aesthetic aspects of ecosystems.

4. *Cabomba furcata*, also known as pink forked fanwort, native to the Southern United States, is a submerged invasive aquatic plant species introduced in India. The species entered natural waterways, including islands, lakes, rivers, and wetlands. The Species can spread quickly through stem fragment propagation and develop thick stands in water bodies; the high risk of spreading is because even small stem fragments with only one


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node can survive. The spread of *Cabomba furcata* in the local ecosystem has significant and far-reaching impacts, posing a threat to native biodiversity and ecological balance. Its rapid establishment and proliferation in water bodies can lead to the displacement and competition with indigenous aquatic species, resulting in a loss of native flora and fauna. The plant's dense growth patterns lead to the obstruction of waterways, impacting water flow and causing ecological imbalances. Moreover, the presence of *Cabomba furcata* can modify water quality and quantity, impacting the overall well-being of aquatic ecosystems, contributing to a decline in the diversity of native aquatic plants and causing economic losses through its effects on freshwater fish output.

5. Managing biological invasions is a significant challenge to global biodiversity conservation, requiring a comprehensive approach. Major management strategies based on the previous studies in this regard are risk assessments to evaluate the impacts of introducing species, international cooperation to regulate trade, strict import regulations and robust quarantine to prevent unintentional introductions, public awareness and education, establishing monitoring and surveillance programs for early detection and rapid response, biological control, manual removal, revival of the riparian vegetation, water treatments, etc. For example, biological control using a weevil (*Cyrtobagous salviniae*) is very successful against *Salvinia molesta* in Kerala. Similarly, for managing *Cobomba furcata*, application of Calcium Oxide has been reported.

6. It is submitted that the Vembanad-Kol wetland complex is a designated Wetland of International Importance under Ramsar Convention by the Government of India since August 19, 2002. State Wetland Authority Kerala (SWAK) had identified the presence of alien plants and animal species in the Vembanad-Kol Wetland area during the preparation of Integrated Management Plan (IMP) and Brief Document of the Wetland Complex. The major invasive species identified as the threat to the wetland complex are *Eichhornia crassipes*, *Monochoria vaginalis*, *Limnocharis flava*, *Ipomoea carnea*, and *Cabomba caroliniana*. These are identified as 'medium' level threat in a 'high-medium-low' measurement scale as part of the revision of the Integrated Management Plan of Vembanad-Kol wetland complex. Activities are envisaged for mechanical removal and commercial utilization of invasive plants in the IMP of Vemabanad-Kol wetland for the next five years, especially for water hyacinth.

Initiatives by Kerala State Bio diversity Board (KSBB) for the regulation of biological invasion including aquatic aliens

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- (a) The Kerala State Biodiversity Board (KSBB) in its commitment to public awareness and education programmes, published a handbook on Invasive Plants of Kerala during 2013 in order to provide a fundamental understanding of bioinvasion for the benefit of the general public, researchers, and authorities. Additionally, KSBB, in collaboration with Pampa Parirakshana Samithy, conducted an in-depth study in 2014 titled "Management of aquatic invasive species in Pampa riverine system with a special focus on Cabomba." This study aimed to assess the potential impact of Cabomba on the water bodies within the state. In 2016, KSBB created a brochure consolidating the findings of the study to raise awareness among stakeholders and the public regarding the potential threat and effective management practices of Cabomba.
- (b) KSBB conducted a post-flood impact assessment on various water bodies, including the Kole wetlands, in the year 2018. It was observed that there was a significant increase in invasive species in the flood-affected areas. Based on the findings of the study, KSBB initiated a step-by-step process to remove major invasive plants and aquatic weeds from the major water bodies with the help of Local Self Governments.
- (c) KSBB is actively promoting research by offering essential financial support to R&D institutes to develop control measures of invasive species, with a particular focus on water bodies and the development of innovative value-added products from these species.
- (d) As part of the Central Government's 'Amrit Darohar' project for the health and protection of wetlands, and following the instructions of the National Biodiversity Authority, information on the flora and fauna of 93 BMCs in Kollam, Alappuzha, Kottayam, Ernakulam, and Thrissur districts which fall within the scope of the three Ramsar sites of the State, namely Shastamkotta, Ashtamudi and Vembanad-kole wetlands were collected and updated in the People's Biodiversity Registers.
- (e) KSBB recognizes the significant challenges posed by bioinvasion to biodiversity and emphasizes the crucial need for effective management. To address this issue, KSBB is actively working on formulating a comprehensive policy for bioinvasion management in Kerala, including all water bodies. In this regard, KSBB conducted a national-level workshop in Thiruvananthapuram from December 3rd to 4th, 2022 under three different themes 1) Biological Invasions in Forest ecosystems, 2) Invasive species threat in Marine and Fresh water ecosystems and 3) Invasions in Agriculture and managed systems. The workshop featured brainstorming sessions and group discussions where ideas from distinguished scientists and researchers

were documented. A detailed draft policy has been prepared and is set to be shared with various stakeholders including line Departments.

Dated this 30th day of November 2023

Tinku Biswal



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