

Item No.1:-

**BEFORE THE NATIONAL GREEN TRIBUNAL
SOUTHERN ZONE, CHENNAI**

Wednesday, the 29th day of April, 2026.

[Through Physical Hearing (Hybrid Option)]

Original Application No.152 of 2023 (SZ)

IN THE MATTER OF

Kumaresan Sooluran

Aged about 44 years,
Kathivakkam, Ennore Thermal Station,
Thiruvallur – 600 057.

...Applicant(s)

Versus

1) The Tamil Nadu Coastal Zone Management Authority

Rep. by its Member Secretary
No.1, Jeenis Road, Panagal Building,
Ground Floor, Saidapet,
Chennai – 600 015.

2) The District Collector

Tiruvallur District,
First Floor, Collectorate,
Tiruvallur – 602 001.

3) The Department of Fisheries and Fishermen Welfare

Rep. by Commissioner of Fisheries and Fishermen Welfare
3rd Floor, Integrated Animal Husbandry and Fisheries Building,
Nandanam, Chennai – 600 035.

4) Tamil Nadu State Wetlands Authority

Rep. by its Member Secretary
Panagal Maligai,
Saidapet, Chennai – 600 015.

5) The Public Works Department

Government of Tamil Nadu,
Rep. by its Secretary,
Fort St. George,
Chennai.

6) Ministry of Ports, Shipping and Waterways

Parivahan Bhawan,
1, Parliament Street,
New Delhi.

(R6 – Suo Motu impleaded as per order dated 18.12.2023)

...Respondent(s)

For Applicant (s): M/s. A. Yogeshwaran, Poongkhulali. B, Sasi,
Iraiyanbu and A. Asfaq Ahmath.

For Respondent(s): Dr. D. Shanmuganthan for R1 to R5.

Judgment Reserved on: 17th April, 2026.

CORAM:

HON'BLE Smt. JUSTICE PUSHPA SATHYANARAYANA, JUDICIAL MEMBER

HON'BLE Dr. PRASHANT GARGAVA, EXPERT MEMBER

J U D G M E N T

Delivered by Smt. Justice Pushpa Sathyanarayana, Judicial Member

1. The present Original Application has been instituted by the Applicant seeking directions against the alarming spread of the invasive South American mussel species, ***Mytella strigata*** (***Kaakka Aazhi / Charru Mussel***), in the Ennore–Pulicat wetland ecosystem, including the Kosasthalaiyar River.

2. The Applicant contends that the unchecked proliferation of this invasive species has resulted in severe ecological imbalance and poses an imminent threat to commercially important fisheries such as prawns, yellow clams (*Manja Matti*), and green mussels (*Pachai Aazhi*), thereby adversely affecting the livelihood of traditional fishing communities.

3. It is the specific case of the Applicant that *Mytella strigata* forms dense, carpet-like colonies along the riverbed, preventing prawns and other benthic organisms from burrowing into the sediment or accessing food sources. The infestation has led to depletion of phytoplankton and deterioration of water quality, rendering the habitat unsuitable for native aquatic species and disrupting the ecological balance of the wetland system.

4. The Applicant has further raised a significant concern regarding the probable introduction and spread of the invasive species through ballast water discharge from ships operating

around the Ennore Port region. It is submitted that ballast water, if not properly treated, serves as a major vector for the transboundary movement of invasive aquatic organisms. The failure to effectively regulate and monitor ballast water discharge in accordance with established environmental norms has, according to the Applicant, contributed to the introduction and proliferation of *Mytella strigata* in the subject water bodies.

5. The grievance of the Applicant is further aggravated by the alleged inaction and non-compliance of State authorities. Despite an undertaking recorded by this Tribunal on 29.11.2024 to commence dredging operations at Kattupalli, Puzhuthivakkam, and Ashipattu from 30.11.2024, the same has not been effectively implemented. Subsequent reports filed by the authorities indicate that such works are contingent upon administrative approvals and financial allocation, resulting in continued delay and unchecked spread of the invasive species.

6. It is further contended that the limited dredging presently undertaken is neither targeted at highly infested zones nor carried out in a scientific and uniform manner. Critical fishing grounds (*paadu*) identified as heavily infested have been ignored, while dredging is being conducted in stretches connected with separate proceedings relating to fly ash removal. This has resulted in uneven depths across the river, ranging from 1.29 feet to 14.75 feet, thereby obstructing navigation of artisanal fishing boats and severely affecting fishing activities.

7. The Applicant has also highlighted the continuing impact of illegal dumping of debris in Coastal Regulation Zone (CRZ) areas by Tamil Nadu Transmission Corporation, despite findings and penalties imposed by this Tribunal. The said debris is stated to provide a conducive substrate for the colonization and further spread of *Mytella strigata*, thereby exacerbating the infestation.

8. In the aforesaid circumstances, the Applicant seeks appropriate directions from this Tribunal for immediate and coordinated intervention, including strict regulation of ballast

water discharge, systematic dredging of affected areas, removal of conducive substrates, and implementation of a comprehensive eco-restoration programme to control and prevent the further spread of *Mytella strigata* in the Ennore–Pulicat ecosystem.

9. Considering the gravity of the issue involved in the present matter, this Tribunal issued notice to the respondents, who have entered appearance through their respective standing counsel and filed their pleadings.

10. The 5th Respondent/Water Resource Department (WRD), has filed its **report dated 13.12.2023,** stating that the Kosasthalaiyar River approximately 136 km in length, originating near Pallipattu in Thiruvallur District and ultimately draining into the Bay of Bengal. The invasive mussel species, *Mytella strigata*, has spread across the Kosasthalaiyar backwaters, Buckingham Canal, Ennore Creek, and the Pazhaveerkadu (Pulicat) mouth region. The infestation is reported to extend up to a height ranging between 0.15 meters to 0.30 meters below the water surface level, forming dense clusters along the riverbed. The spread of the Charru mussel has been observed over a stretch of approximately 6 kilometers from the Kosasthalaiyar backwaters to Ennore Creek and the Pazhaveerkadu mouth.

11. The 5th Respondent has further attributed the introduction and proliferation of the said invasive species through the unchecked discharge of ballast water from ships entering Indian coastal waters. The ballast water carried by vessels originating from the South and Central coasts of America acts as a vector for the transfer of exotic aquatic organisms, including *Mytella strigata*, into local ecosystems. In this regard, the Respondent has specifically contended that inadequate regulation and monitoring of ballast water discharge by port authorities has contributed significantly to the spread of the invasive species. It is submitted that the failure to strictly enforce ballast water management norms in vessels entering Kamarajar Port Limited has resulted in the introduction and establishment of *Mytella*

strigata in the Kosasthalaiyar backwaters and the Buckingham Canal.

12. With respect to remedial measures, the **5th Respondent**, in its **report dated 23.07.2024**, has submitted that an estimate has already been prepared for dredging operations in the Kosasthalaiyar backwaters up to a stretch of 700 meters, at an estimated cost of Rs. 8.5 Crores. The said proposal has been forwarded on 12.05.2023 to the Additional Principal Chief Conservator of Forests and Member Secretary of the Tamil Nadu Wetlands Authority, Chennai, for necessary approval and further action. It was also stated that they have identified the cause and spread of the invasive species into the Kosasthalaiyar backwaters and the Buckingham Canal is due to the unchecked discharge of ballast water from ships entering Kamarajar Port Limited and suggests that the Port Authority ought to contribute a sum of Rs. 160 Crore towards the eradication of the exotic invasive species.

13. The **3rd Respondent/Department of Fisheries and Fisherman Welfare**, has filed a **report dated 04.06.2025**, stating that, pursuant to complaints received from fishermen of Ennore in December 2022 regarding the rapid spread of the invasive mussel *Mytella strigata*, which was adversely affecting native prawn and oyster populations, a preliminary meeting was convened on 30.12.2022 by the Joint Director of Fisheries and Fishermen Welfare (Regional), Chennai, with experts from the Dr. M.G.R. Fisheries College and Research Institute and scientists of the Central Marine Fisheries Research Institute. In the said meeting, it was resolved to undertake scientific studies to assess the extent, biological characteristics, and control measures of the invasive species. The M.G.R Fisheries College and Research Institute, Ponneri undertook studies including plankton analysis, gut content analysis, fecundity studies, proximate composition, and utilization of shell, while the Fisheries College at Thoothukudi conducted analysis of micro and macro elements along with water and sediment quality. The Central Marine Fisheries Research Institute was entrusted with studying the biology and environmental impact of the species.

14. It is further stated in the report that, a joint field inspection was conducted on 03.01.2023, during which it was observed that *Mytella strigata* exhibits wide environmental tolerance, attains maturity at a small size of about 1.25 cm, and rapidly colonizes both hard and soft substrates, facilitating its accelerated spread in brackish water ecosystems. The *Mytella strigata* reduces the density of phytoplankton, this affects the availability of other fauna including prawns. The mussels were found to have formed dense, carpet-like layers on the riverbed, adversely impacting bottom-dwelling organisms. However, analysis indicated that heavy metal concentrations (Hg, Cd, Ni, Pb) in mussel tissue were below the maximum permissible limits. It was also noted that mussel meat could be utilized as an alternative ingredient in fish feed and that shells could be used for industrial purposes such as lime production.

15. Based on the aforesaid findings, the Expert Committee recommended manual or mechanical removal of the mussels, followed by drying away from coastal areas to prevent re-entry into the ecosystem, along with utilization of the biomass for fish feed and industrial purposes. Further inspections and studies were conducted by the authorities. The Central Marine Fisheries Research Institute, upon sampling from seven stations of estuary, reported that *Mytella strigata* was the predominant species in the estuary and estimated the biomass at approximately 14.64 tonnes over a surveyed area of 18,000 sq. metres. The mussels had extensively colonized hard substrates such as bridge pillars and mudbanks formed due to fly ash and sediment deposition. The study also indicated that proliferation of mussels was affecting water quality, including dissolved oxygen levels and light penetration, thereby impacting aquatic life.

16. The studies conducted by Dr. M.G.R. Fisheries College and Research Institute revealed that the spread of the mussel extended approximately 7 to 10 kilometres from Ennore Creek towards Kattupalli and that density ranged between 150 to 200 individuals per 25 sq. cm. A reduction in density compared to earlier observations was noted, which was attributed to mass mortality caused by reduced salinity due to freshwater influx. It

was observed that mussel populations were more concentrated towards the seaside and that their size had reduced due to seasonal variations. The Fishing Harbour Project Division reported that the spread extended 5km from Ennore barmouth up to 12 kilometres into the Kosasthalaiyar River and that dredging would be required to remove accumulated mussel beds and sediments. Reduced sunlight penetration and depletion of dissolved oxygen due to mussel proliferation were affecting aquatic species.

17. The report further states that a Sub-Committee constituted by the Fisheries Department conducted a field inspection on 05.08.2024 observed that the infestation was severe, with extensive accumulation of live mussels and dead shell debris forming mounds across the riverbed, obstructing fishing activities and affecting livelihoods. The Sub-Committee opined that large-scale dredging was the only viable mechanism for removal and recommended that dredging be undertaken over a stretch of 23 kilometres from Ennore Creek to Pulicat, with safe disposal of dredged material away from coastal areas. It was recommended that dredging operations be carried out immediately after the monsoon season, taking into account that freshwater influx reduces mussel survival. The Sub-Committee also recommended continuous post-dredging monitoring by scientific institutions including the Central Marine Fisheries Research Institute and the Fisheries College, and suggested biological control measures such as introduction of mud crabs, which are natural predators of the mussel. Additionally, restoration of native species such as prawns, mullets, milkfish, green mussels, and oysters was proposed.

18. The 4th Respondent/Tamil Nadu State Wetland Authority, has filed the **status report dated 28.07.2025,** stating that, pursuant to the directions of this Hon'ble Tribunal on removal of the *Mytella strigata* from identified locations, Kattupalli, Puzhuthivakkam and Athipattu, a meeting was convened under the Chairmanship of the Chief Secretary to the Government of Tamil Nadu on 11.11.2024. In the said meeting, the Chief Secretary directed the Water Resources Department (WRD) to

immediately commence dredging operations in the aforesaid locations in consultation with TNSWA.

19. The **report dated 09.10.2025** submitted by the **4th Respondent** states that a comprehensive large-scale proposal amounting to approximately Rs.90 crores has been prepared by the Water Resources Department for dredging and removal of Charru Mussel infestation across Ennore Creek. However, sanction and release of funds for the said proposal is awaited. In compliance with the directions, joint field inspections were carried out including the National Centre for Sustainable Coastal Management, Water Resources Department, and Dr. MGR Fisheries College and Research Institute, along with participation of local fisherfolk. Based on such inspections, the extent of infestation was assessed and areas requiring dredging were demarcated for immediate intervention. Dredging operations were initiated in the Ashipattu stretch (1.7 km between Ennore Creek flyover and the North Chennai Thermal Power Station main gate) commencing from 28.11.2024, and the work is being undertaken using mechanised dredgers and poclains. Approximately 2,00,000 cubic meters of mixed material, consisting of fly ash and aggregated mussels, has already been removed from portions of the stretch. The dredging activity forms part of a broader strategy, and additional proposals have been formulated for extending dredging operations to Kattupalli (1.7 km stretch) and Puzhuthivakkam (0.5 km branch channel), at an estimated cost of Rs. 20.85 crores. However, initiation of these works is contingent upon sanction and allocation of necessary financial resources from the competent authorities.

20. It is further stated in the report that the State has adopted a two-pronged strategy for addressing the invasive species problem, consisting of: (i) Physical removal through dredging in identified hotspots; and (ii) Scientific assessment and development of biological control measures, including pilot studies in dredged areas to prevent recurrence. In furtherance of the above strategy, the Respondent has commissioned multiple scientific studies through reputed institutions. These include:

- i. Mapping of the spatial extent and density of infestation by NCSCM using GIS-based analysis and field surveys;
- ii. Pilot studies on recurrence assessment, eradication strategies, and ecosystem restoration by Dr. MGR Fisheries College; and
- iii. Research on value addition of invasive biomass for conversion into biofertilizer and mineral mix, thereby promoting circular economy and livelihood opportunities.

21. The report further states that the pilot projects have been sanctioned with financial support to the tune of Rs. 22.63 lakhs and Rs. 11.11 lakhs for ecological control and value addition studies respectively. These initiatives are aimed at developing long-term sustainable solutions, including prevention of recurrence, restoration of native biodiversity, and enhancement of livelihood opportunities.

22. The field studies conducted by NCSCM reveal that the invasive species is present in approximately 40% of surveyed sites, with densities ranging from 4 to 2,440 mussels per square meter and biomass from 10 to 6.124 g/m². The infestation is predominantly concentrated near bridges, estuary mouths, mangroves, and industrial discharge zones, indicating that environmental factors such as pollution and ballast water discharge may have contributed to its spread.

23. The ecological impact of the infestation has been severe, including degradation of habitat, displacement of native bivalves, and a drastic reduction in fishers' income from approximately Rs. 30,000–50,000 per month to Rs. 5,000–10,000 per month, thereby forcing several fishing families to abandon their traditional occupation.

24. The study undertaken by the National Centre for Sustainable Coastal Management recommended that a multi-pronged strategy for managing the invasion. Immediate measures include identification and prioritization of high-density infestation zones for removal, particularly prior to the monsoon season, and implementation of post-removal monitoring. The report strongly

advocates for community-based management involving local fishers, including training, incentivization, and participatory monitoring. It further recommends the use of freshwater flushing strategies leveraging monsoonal inflows and controlled discharge from upstream reservoirs to reduce mussel populations. Long-term measures include continuous monitoring, strengthening of biosecurity protocols to prevent further introductions, and scientific studies to understand invasion dynamics and develop sustainable control methods.

25. The study also cautioned that dredging is necessary for removal of invasive species, it may have ecological impact such as disturbance of benthic habitats, increased turbidity, release of sediments and contaminants and long-term ecosystem imbalance, Improper or repeated disposal of dredged material in nearshore areas may lead to long-term ecological impacts, including alteration of sediment composition, accumulation of heavy metals, and disruption of aquatic food chains. Accordingly, scientific management of dredged material and spacing of disposal activities, planned regulated approach is required to prevent any further environmental damage.

26. The 4th Respondent has also undertaken initiatives to convert the invasive species into a resource through value addition. In the **Interim Progress Report dated 28.07.2025** titled "*Value addition of Invasive Charru Mussel from Ennore Creek as Biofertilizer and Mineral Mix*" submitted by **Dr. MGR Fisheries College and Research Institute, Tamil Nadu Dr. J. Jayalalithaa Fisheries University**, made the following observation:

Objective of the Project: *A scientific project aimed at converting the invasive Charru mussel from Ennore Creek into value-added products, namely organic biofertilizers and mineral mixes for agricultural and aquaculture applications. The project is motivated by the dual objective of addressing the ecological threat posed by the invasive species and promoting sustainable bioresource utilization.*

Nutritional Analysis and Characterization: The Charru mussel indicates that the shell constitutes approximately 60.7% and the meat 39.25% of the total body weight. The mussels are relatively small in size, with an average length of 4.24 cm and average body weight of 4.05 grams. The biochemical composition of the mussel meat reveals a high moisture content of 84%, protein content of 9.2%, carbohydrate content of 4.2%, mineral content of 1.8%, and negligible fat.

The mussel meat exhibits a high organic matter content of 82.73%, total nitrogen of 10.88%, and appreciable levels of phosphate (3.26%), potash and micronutrients. The C:N ratio of 5.4:1 indicates high nitrogen content, thereby requiring blending with carbon-rich material for effective use in biofertilizer formulation.

Mineral Composition and Safety Assessment: The shell powder analysis reveals high calcium content (26.37%), along with phosphorus (3.68%) and magnesium, in addition to trace minerals such as selenium, zinc, copper, sodium and manganese, thereby demonstrating its suitability as a mineral supplement for aquaculture applications. Heavy metals including arsenic, lead, chromium and nickel are found to be within permissible limits as per the Fertilizer Control Order, 1985, thereby establishing environmental safety. Although higher concentrations of aluminium and strontium have been recorded in certain samples, the same are not considered hazardous at the observed levels, though continuous monitoring is recommended.

Plan of Action – Mussel based Organic Fertiliser: The mussel meat, rich in nitrogen with low carbon to nitrogen ratio, is proposed to be utilized as core ingredient for organic fertilizer production. To balance the C:N ratio, carbon-rich compost will be added, along with clay to improve texture and facilitate granule formation. The mixture will be processed into pellets or granules, followed by drying and curing. Field trials will be conducted at TNAU-KVK, Tiruvallur plots to

evaluate the effectiveness of the fertilizer in enhancing plant growth, crop yield and soil health. Based on the results, the formulation will be optimized and standardized, and Standard Operating Procedures (SOPs) will be developed.

Plan of Action – Mineral Mix for Aquaculture: *Mussel shells will be processed into fine powder and utilized as a base material for mineral mix preparation. Since the shell lacks certain essential micronutrients, external supplementation with zinc, potassium and copper will be undertaken to create a balanced formulation. The mineral mix will be incorporated into shrimp feed and tested through controlled feeding trials to assess its impact on growth, survival rate, shell strength and overall health of aquaculture species.*

Technology Transfer and Livelihood Promotion: *Upon successful validation of the products, the developed technologies will be transferred to local user groups in the Ennore region. It is further submitted that if the mussel biomass attains a market value of approximately Rs. 5–10 per kilogram, it would incentivize fishermen to actively collect and remove the invasive species, thereby contributing to both livelihood enhancement and ecological management.*

Findings and Environmental Significance: *The project establishes that the invasive Charu mussel is a nutrient-rich bioresource, with meat suitable for biofertilizer production and shells suitable for mineral mix applications. The absence of toxic levels of heavy metals ensures environmental safety, while the presence of beneficial micronutrients enhances its utility. The project adopts a sustainable and circular approach by converting an ecological threat into economically valuable products, thereby contributing to invasive species control, ecosystem restoration, and socio-economic upliftment of local communities.*

27. In view of the above, it is stated that substantial steps have been initiated in compliance with the directions of this Tribunal, including dredging, scientific studies, pilot interventions,

and policy-level coordination. Further progress is contingent upon timely financial approvals and continued support from all concerned authorities, and the Respondent remains committed to adopting a comprehensive and science-based approach for the control and management of *Mytella strigata* in the Ennore–Pulicat wetland ecosystem.

28. The learned counsel appearing for the Water Resources Department (WRD) has filed a **memo dated 16.04.2026** enclosing a copy of the detailed report on Ennore Creek dredging operations and a copy of the G.O. Ms. No.31 Energy (B1) Department dated 03.03.2026. From the above documents, it is seen that a detailed assessment was carried out by the National Centre for Sustainable Coastal Management (NCSCM) identifying five major hotspots of infestation in the Ennore–Pulicat region, namely Ennore, Athipattu, Puzhuthivakkam, Kattupalli and Kalanji, were found to be severely affected by dense colonisation of the invasive species. The stretch from LS 0 to 1700 metres, including the Ennore–Athipattu reach and the Snake Head region, was particularly impacted due to accumulation of fly ash deposits coupled with mussel infestation and that the said stretch has already been addressed through fly ash removal works wherein the mussel–fly ash composite was dredged and removed. The Water Resources Department (WRD) has taken steps to address the initial points of infestation, particularly in the fisheries paadu areas of Karukkamaram, Kandancheri, Munkondamudakku, Kattupalli and Puzhuthivakkam, by submitting proposals for dredging operations to the Finance Department, Tamil Nadu State Wetland Mission, Tamil Nadu State Pollution Control Board (TNPCB) and Tamil Nadu Power Generation Corporation Limited (TNPGL), in accordance with the directions of the Principal Chief Secretary to Government of Tamil Nadu. It is stated that, in response thereto, TNPGL has sanctioned a sum of Rs. 20.85 crores under its Corporate Environmental Responsibility (CER/CSR) initiative from the Ennore SEZ (Supercritical Thermal Power Project), vide G.O.(Ms.) No.31, Energy (B1) Department, dated 03.03.2026, for undertaking dredging of the Kosasthalaiyar backwater area. A specific proposal has been formulated for removal of charru mussels from LS 6300

metres to 8000 metres in Kattupalli village and the branch channel in Puzhuthivakkam village of Ponneri Taluk, Thiruvallur District, which constitute heavily infested stretches. The WRD has already taken up execution of the dredging works and that preliminary activities are presently in progress, with the project scheduled for completion prior to the onset of the North-East Monsoon, 2026. Continuous efforts are being undertaken to secure funding for the remaining affected reaches and that the WRD is extending full support to all line departments in ensuring systematic removal and effective management of the invasive mussel species across the Ennore–Pulicat region.

29. Considered the pleadings, submissions made by the learned counsel appearing for the applicant as well as the respondents and also perused the materials available on record.

30. It is an admitted fact that serious environmental concerns were raised regarding the rapid and uncontrolled spread of the invasive mussel species *Mytella strigata* in the Ennore–Pulicat wetland ecosystem, including the Kosasthalaiyar River, which prompted this Tribunal to take suo motu cognizance of the matter.

31. It is evident from the reports filed by the various authorities that the said invasive species has established dense, carpet-like colonies along the riverbed, thereby obstructing benthic activity, reducing phytoplankton availability, affecting dissolved oxygen levels and ultimately disrupting the aquatic food chain and ecological balance. It is observed that the infestation has had a direct and adverse impact on traditional fishing communities, whose income has drastically reduced due to depletion of commercially important species such as prawns, clams and green mussels.

32. The scientific studies conducted by institutions, including the Dr. M.G.R. Fisheries College and Research Institute, and the National Centre for Sustainable Coastal Management (NCSCM), consistently establish that *Mytella strigata* is a highly adaptive and fast-reproducing invasive species with the ability to

colonize both hard and soft substrates. The studies further indicate that the infestation extends across significant stretches ranging from 6 km to 12 km and in certain assessments up to 23 km from Ennore Creek to Pulicat, with substantial biomass accumulation and ecological degradation.

33. It is also noted that the introduction and proliferation of the invasive species is likely attributable to ballast water discharge from ships operating in and around Kamarajar Port, which, if not regulated in accordance with environmental norms, serves as a vector for transboundary movement of invasive aquatic organisms. The failure to effectively monitor and regulate such discharge raises serious concerns regarding compliance with environmental safeguards. Though WRD alleges the invasion of Charru mussel is due to the discharge of ballast water from ships operating in and around the Kamarajar Port, it has not taken any steps to fix the liability on them. The WRD has not even sent a letter of concern to the port authorities in this regard.

34. It is not out of place to mention that **Section 356A(b) of the Merchant Shipping Act, 1958**, applies to incidents of marine casualty, including acts connected therewith, which pose a grave and imminent threat to the Indian coastline or its related interests arising from pollution or the threat of pollution in the sea due to the release of oil, ballast water, noxious liquid substances, or other harmful substances, whether such release is deliberate, negligent, or accidental, and extends to incidents occurring on the high seas.

35. While remedial measures such as dredging have been initiated in limited stretches, the same has not been carried out in a uniform, scientific and comprehensive manner across all heavily infested zones. The Tribunal notes that critical fishing grounds (paadu areas) remain inadequately addressed and uneven dredging has resulted in variation in river depth, thereby affecting navigation and fishing activities.

36. The delay in implementation of dredging works despite earlier undertakings recorded before this Tribunal, have been attributed to administrative approvals and financial constraints. At the same time, it is evident from the record that substantial steps have been initiated, including sanction of Rs.20.85 crores under CSR funds, commencement of dredging in Kosasthalaiyar backwater area, preparation of large-scale proposals and undertaking of pilot scientific studies for long-term control and ecosystem restoration.

37. The presence and rapid spread of *Mytella strigata* in the Ennore–Pulicat ecosystem is established and constitutes a significant environmental threat affecting biodiversity, water quality, and livelihood of local communities.

38. As per the Circular dated 09.04.2025 issued by the Ministry of Ports, Shipping and Waterways (Transport Research Wing), the total length of the Indian coastline is 11,098.81 km. Of this, the southern coastal States falling within the jurisdiction of this Tribunal comprise Andhra Pradesh (1,053.07 km), Karnataka (343.30 km), Kerala (600.15 km), Tamil Nadu (1,068.69 km), the Union Territory of Puducherry (42.65 km) and the Lakshadweep Islands 144.80, summing to a total of 3,252.66 km, which constitutes more than one-fourth of the total coastline of India.

39. Given the substantial extent of coastline falling within these States, **it is of utmost importance, as a proactive environmental measure, to address the growth of any invasive species at the earliest stage, as it is always prudent to nip the evil in the bud**. The present case itself demonstrates the consequences of delay. Though the issue concerning Kaka Aazhi was brought to the notice of the authorities at a stage when the infestation had spread to approximately 7 km, the delay in taking effective action has resulted in a significant escalation. As recorded in the report of the National Centre for Sustainable Coastal Management, the spread of the invasive species had extended up to 24 km as of June 2025. The remedial measures undertaken by the respondent authorities, including dredging and scientific studies, though initiated, remain partial

and delayed, and are not commensurate with the magnitude and urgency of the problem.

40. The recommendation of the Expert Committee and Sub-Committee that large-scale dredging over approximately 23 kilometres from Ennore Creek to Pulicat is necessary, appears to be a scientifically sound and viable mechanism for removal of the infestation.

41. In view of the foregoing discussions, the following directions are issued:

- I.** The Water Resources Department (WRD), shall undertake comprehensive dredging operations over the identified stretch from Ennore Creek to Pulicat, in a phased and time-bound manner, strictly in accordance with scientific guidelines.
- II.** The dredging shall be targeted at identified high-density infestation zones, including paadu areas, carried out in a uniform manner to avoid uneven river depths Completed, to the extent feasible, before the onset of the North-East Monsoon.
- III.** The disposal of dredged material shall be undertaken only at scientifically identified locations away from coastal and ecologically sensitive areas, ensuring that there is no re-entry of mussel biomass into the water body.
- IV.** The TNSWA, NCSCM, CMFRI and Fisheries and Fishermen Welfare Department shall jointly establish a continuous monitoring mechanism, including pre- and post-dredging ecological assessment.
- V.** The Fisheries and Fishermen Welfare Department shall implement biological control measures, including promotion of natural predator such as mud crabs. After dredging, necessary steps be

initiated to restore the native species such as prawns, mullets, milkfish, green mussels and oysters, for betterment of marine ecosystem.

VI. The Port Authorities, including Kamarajar Port Limited, shall ensure strict compliance with ballast water management norms, and the Tamil Nadu Pollution Control Board (TNPCB) shall conduct periodic inspections and enforce penalties for any violations.

VII. The concerned authorities shall take immediate steps to remove debris in CRZ areas which facilitate colonization of the invasive species, and ensure strict compliance with CRZ regulations.

VIII. The State Government shall ensure expeditious sanction and release of funds for the comprehensive proposal submitted by WRD.

IX. The ongoing pilot studies for eradication of this invasive species and scientific research for sustainable utilization of the invasive species shall continue.

X. A Joint Committee is constituted comprising representatives of (a) the Water Resources Department; (b) the Tamil Nadu State Wetland Authority; (c) the Tamil Nadu Pollution Control Board; (d) the National Centre for Sustainable Coastal Management; (e) the Central Marine Fisheries Research Institute; (f) the Fisheries and Fishermen Welfare Department; and (g) Dr. MGR Fisheries College and Research Institute.

XI. The said Joint Committee shall file periodical status reports before this Tribunal every three months. However, the first of such reports shall be filed **on or before 30th September, 2026.**

XII. All the coastal States under the jurisdiction of this Bench namely, Tamil Nadu, Kerala, Karnataka, Andhra Pradesh and the Union Territories of Puducherry and Lakshadweep, are directed to undertake systematic identification and assessment to ascertain the presence of any invasive species in coastal, backwater and other water bodies and if any such species are identified, it is necessary to ensure their immediate removal by the Water Resource Department, along with continuous monitoring and preventive measures to avoid their recurrence.

XIII. The Chief Secretary to Government of Tamil Nadu is directed to monitor the above-said exercise and ensure that the directions issued by this Tribunal are strictly complied with.

42. With the above directions, the Original Application [O.A. No.152 of 2023 (SZ)] is disposed of.

43. The Registry is directed to list the matter on **05th October, 2026**, for considering the compliance report to be filed by the authorities, as directed above.

Sd/-
Smt. Justice Pushpa Sathyanarayana, JM

Sd/-
Dr. Prashant Gargava, EM

Internet – Yes/No

All India NGT Reporter – Yes/No

O.A. No.152/2023 (SZ)
29th April, 2026. Mn.

Note:

Let a copy of this judgment be communicated to the above-mentioned authorities by e-mail for compliance.