

9th Global Conference on Gender in Aquaculture And Fisheries

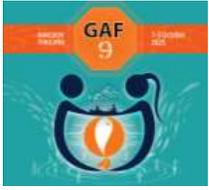
1-3 October 2025, AIT Campus, Bangkok Thailand



Theme: Counting and discounting: Men's and women's work in fisheries and aquaculture

TS 512 Gendered Impacts of Bioinvasion of the Alien Mussel (*Mytella strigata*) in Ennore Creek: Livelihood Disruption, Drudgery, and Occupational Health Hazards

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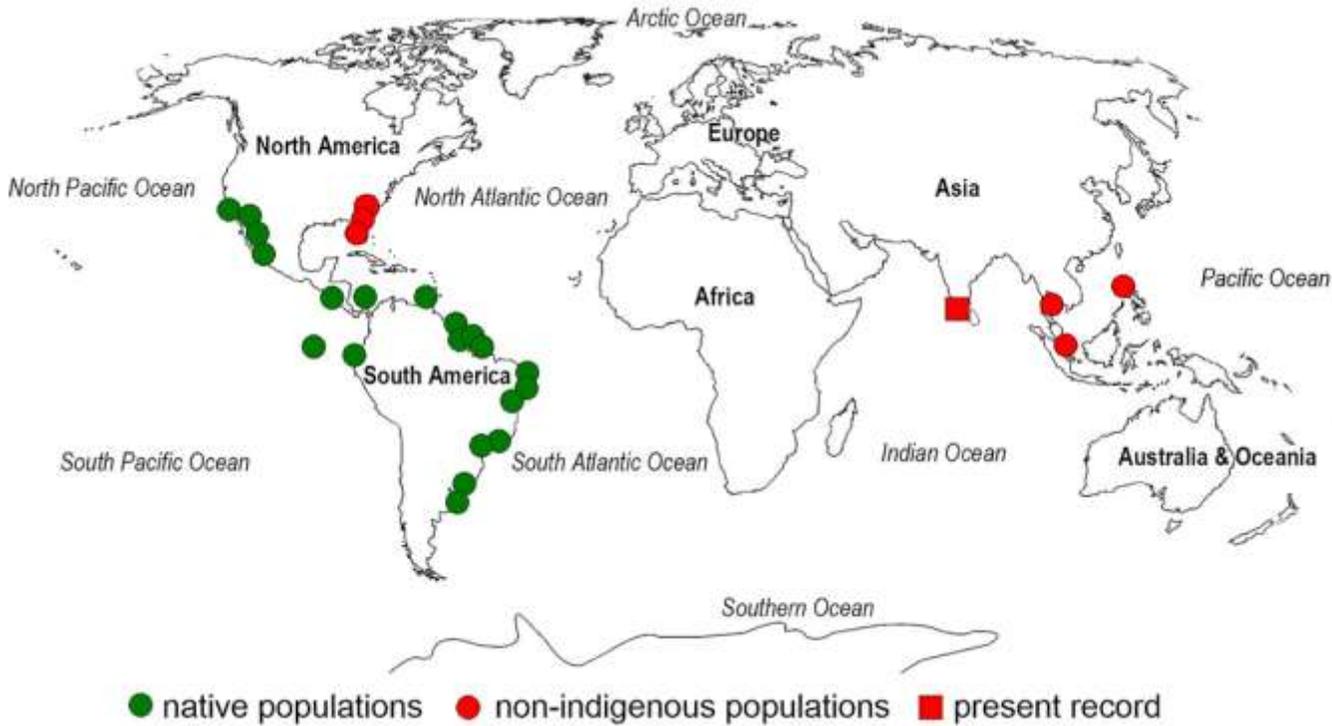
Introduction



Mytella Strigata (Hanley, 1843)

- 01** Biological Invasion: An exotic species, either arriving naturally or introduced by human activities, establishes itself and rapidly expands within a new ecosystem
- 02** 60% of global biodiversity extinctions & ~85% of cases in declining quality of human life & health risks (IPBES, 2023)
- 03** \$423 billion economical losses in 2019 (IUCN)
- 04** Euryhaline (2 – 40 ppt) & temperature (6 to 36°C), and size of 60 - 70 mm
- 05** High Fecundity, Fast Growth Rate, Broad Environmental Tolerance, 100% Strong Dispersal Ability

History of Invasion



Mode of spread: Ballast water discharge from ships operating in Kamarajar & Kattupalli port and ship hull fouling



**Native Species
Central and South America
from Mexico to Ecuador.**



**1st Invaded in USA,
1980's
Florida and Georgia**



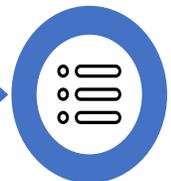
**Luzon Island, the
Philippines, 2016**



**Singapore and inner
Gulf of Thailand ,
2018**



**Vembanad, Kerala
& Gulf of Mannar,
2019**





Research Objectives



01

Bioinvasion of *Mytella strigata* and ecosystem effects in Ennore Creek

02

To assess the gendered impacts of *Mytella strigata* bioinvasion, specifically examining its effects on livelihood disruption, increased drudgery, and occupational health hazards

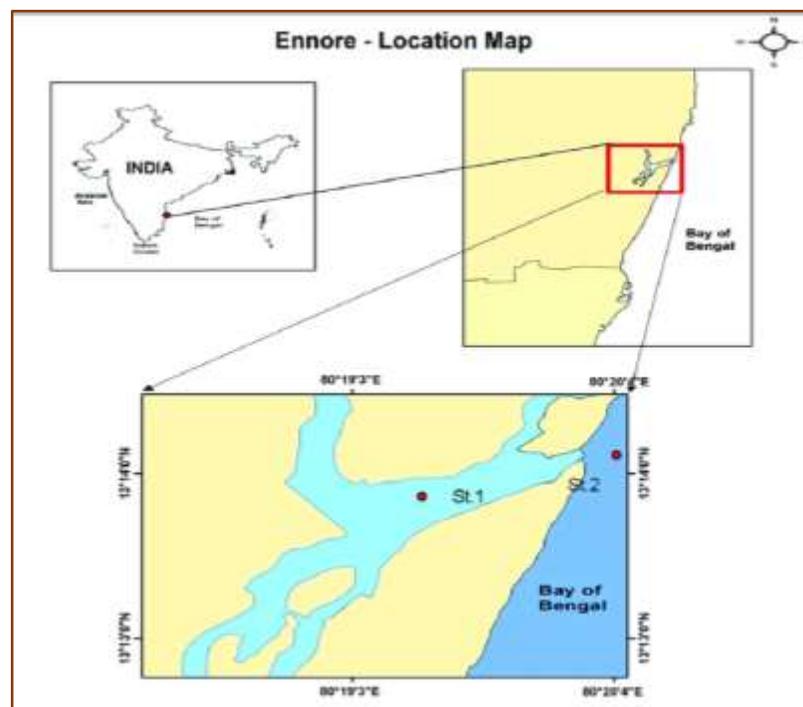


Study area: Ennore Creek

Fishermen (n – 45)

1. Kattukuppam
2. Mugathuvarakuppam
3. Ennorekuppam

Sample Size (n) = 90



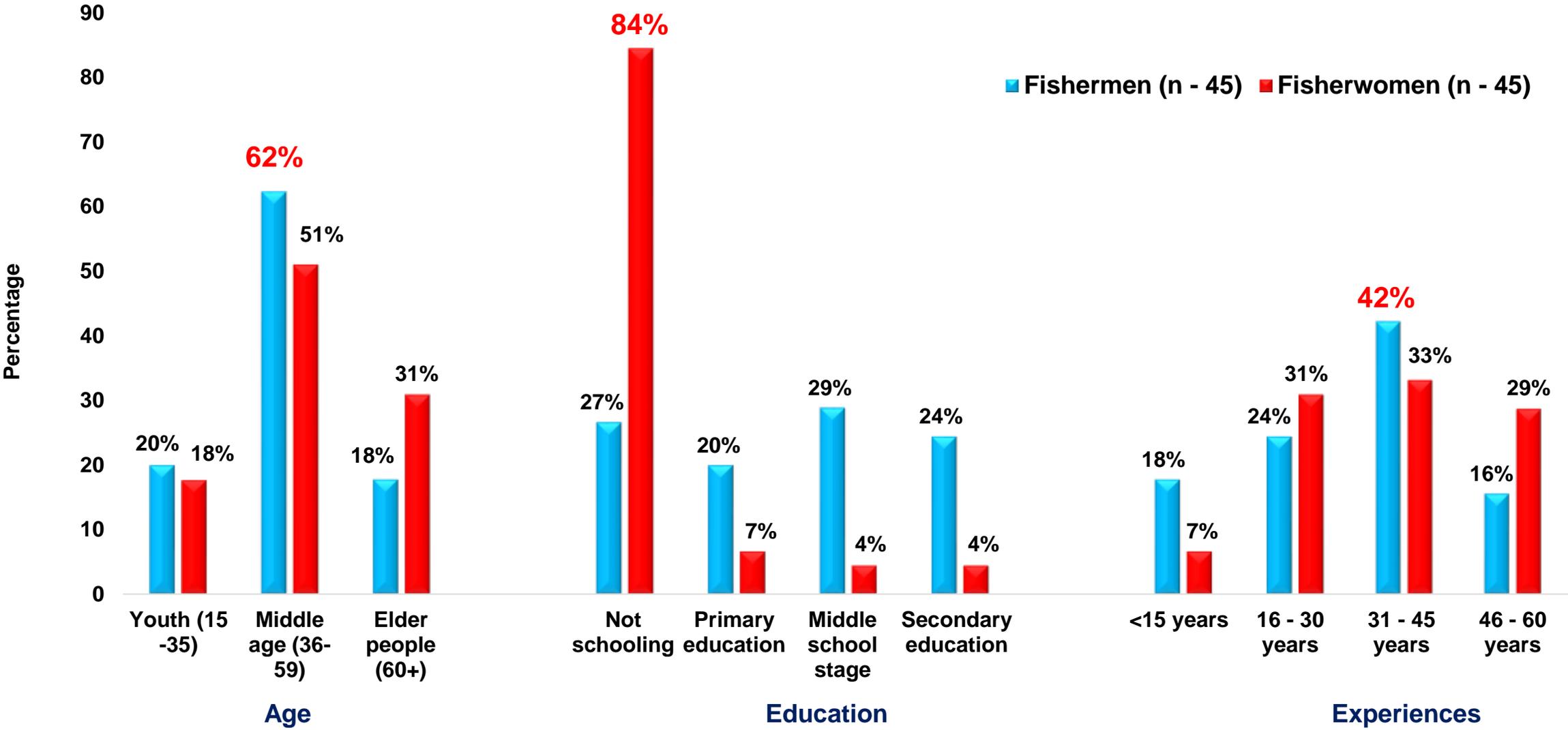
Fisherwomen (n – 45)

1. Athipattu Pudu Nagar
2. Athipattu Arunodhayam Nagar
3. Nandiyambakkam Irular Colony

Stratified Random Sampling Method

Results & Discussion

General Profile of the Respondents



Obj 1. Bioinvasion of *Mytella strigata* & Ecosystem Effects in Ennore Creek



Infested sites in Ennore Creek



FGD with Athipattu Fisherwomen

- 1** Infested Sites: *Mytella strigata* use byssus thread for attachment to hard & soft substrates: coastal rocks and even man-made infrastructures, including cages, fishing boats and sea walls etc.
- 2** Reduced Water depth: Gradually declined water depth less than 1 feet due to the charru mussels sucks 100 litres of every day
- 3** Fisheries Affected in Ennore: Handpicking of *Asian green mussel P. viridis* and rock oyster (Crossostrea madrasensis) – **now completely wiped out due to the invasion**
- 4** Crab Fattening in Ennore: Generally, crab released in the creek, which generated value Rs. 1500 per kg from Rs. 300/- per kg within 20 days. Presently, crab fattening has vanished due to the reported high mortality after the invasion



IIA. Livelihood impact on Fisherwomen

The practice of handpicking or "scrambling" for shrimp is **“gendered and caste-influenced”**

Involves careful movements squatting on their haunches, women graze the floor beneath the shallow water feeling for the shrimp. As they sense their sharp tentacles, they pick and deposit shrimp in a Palmyra leaf bags (“Pari Panai Olai”) with a capacity of 3 kg/bag.

Fishing Time: 8:00 am to 2:00 pm (6 hours)

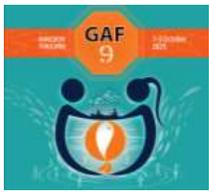
Catch Reduction: Significantly 80% shrimp catch has been reduced from approximately 5 – 6 kg to only about 1 kg of shrimp following the invasion.

Decline in Daily Income: Income has been gradually declined 70% from Rs. 1500 per day to only just around Rs. 300 – Rs. 500 per day due to Charru mussel's invasion.

The financial constraints leads to the forced half of the fisherwomen (from 300 to 150) have migrated to Pulicat Lake in search of alternative work.



Athipattu fisherwomen catching shrimps



IIA. Livelihood impact on Fishermen



Catch Reduction:

- 90% of decline in shrimp catch (*P. indicus*, *P. monodon*), & Giant Mud Crab / Mangrove crab (*Sylla serrata*) in Ennore Creek - *primary catch for livelihood*.
- 75% decline in non-target finfish species: Sardine (*Sardinella spp.*), Seabass (*Lates calcarifer*), Mullets (Mugilidae), Lady Fish (Elopidae), Anchovies (Engraulidae), Trevally (Carangidae), Grouper (Serranidae), and Moon-Tail Bullseye (*Priacanthus hamrur*)

Decline in Fishing Days:

- Active **fishing days reduced by 60%** from 180 days (15 days/month) to only about 6 days per month (72 days per year)

Decline in Daily Income:

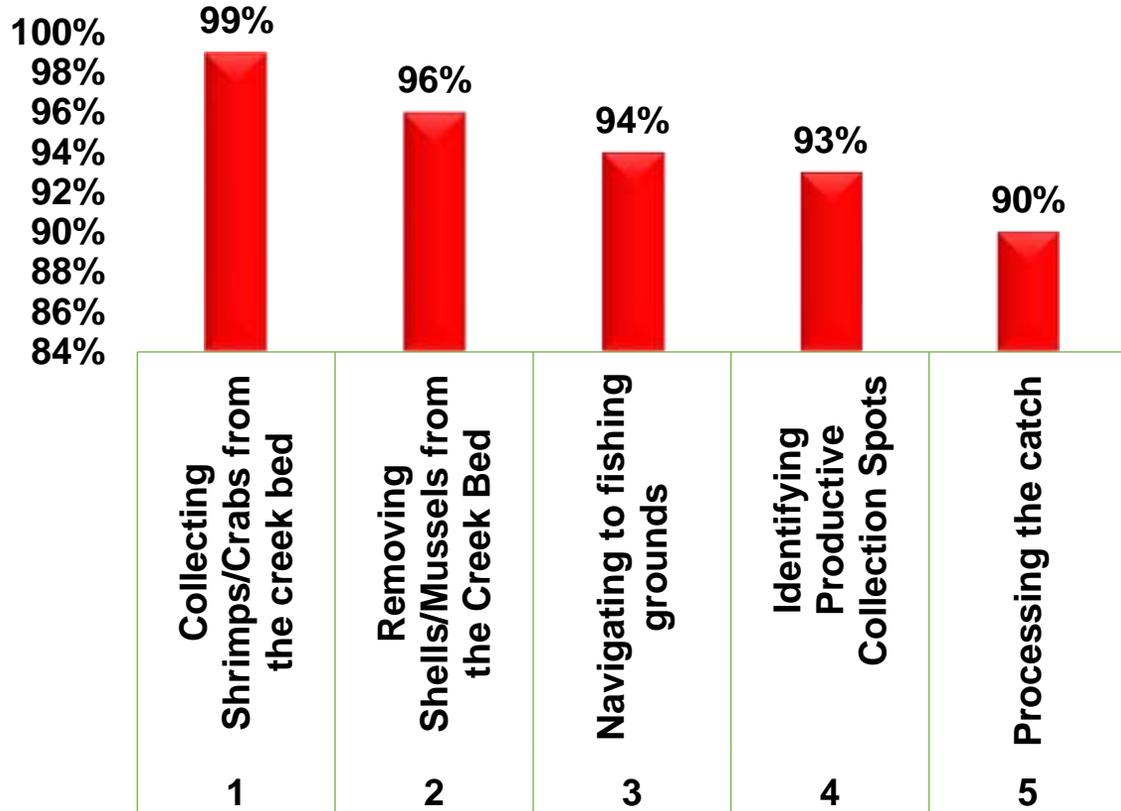
Income has been gradually declined 85% from Rs. 3000 per day to only about Rs. 500 per day following the invasion of *M. strigata*

Nearly 90% of fishers' have been compelled to shift from their traditional occupation to wage-based labor

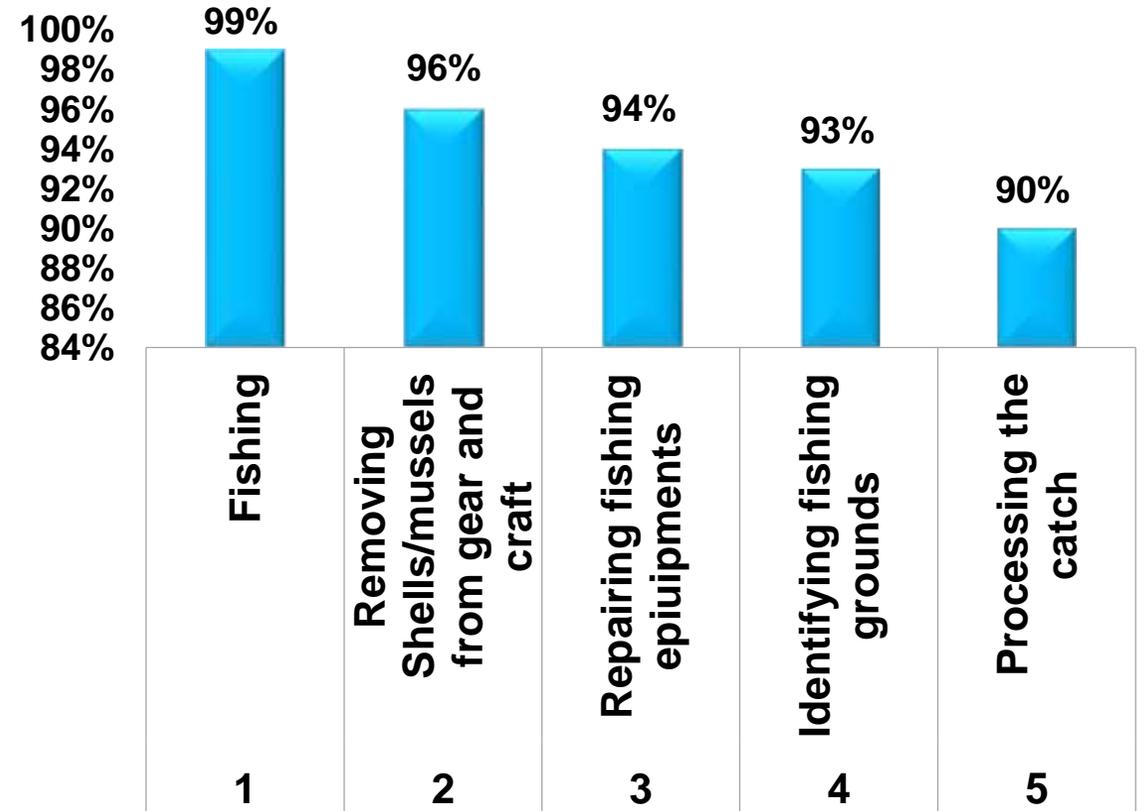
IIB. Drudgery Impacts of Bioinvasion

Drudgery is conceived being experienced as physical and mental strain, fatigue, monotony and hardships while doing job (Borah et al., 1998; Dudhal, 2017)

Fisherwomen

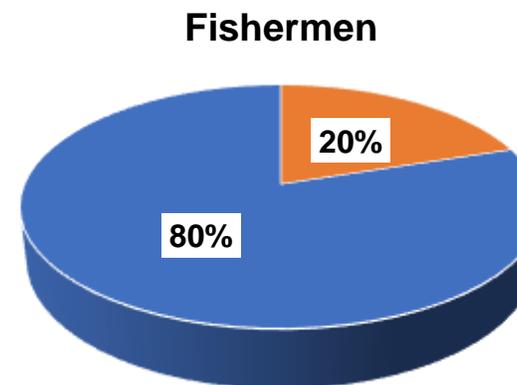


Fishermen



IIC. Occupational Health Hazards

Health hazards in the course of your work (minor cuts and scrapes, injuries, sunburns, skin burns, sprains, fractures, headaches due to Invasion of Charu Mussel



■ Moderately affecting ■ Severely affecting



Atthipattu Fisherwomen injured due to mussel

Kaatukuppam fishermen injured due to mussel



Conclusion



- **Fisherwomen are disproportionately affected by bioinvasion compared to fishermen, as they have fewer opportunities to adapt their fishing practices or shift to alternative wage-based occupations.**
- **Significantly, 91% of fisherwomen reported injuries resulting from snake bites, insect stings, and shrimp tentacles during harvesting activities.**
- **Management & Strategies through utilization: Promoting *Mytella strigata* as an alternative feed for ducks and aquaculture around the globe including around Ashtamudi Lake, Kerala as an experimental basis.**
- **Many studies suggest that stricter ballast water regulations for ships entering in the Indian waters**
- **Due to meagre meat content (average of 2.0 g only), and for the reasons yet to be found out, Charru mussels have not been tried as food.**

thank
you!

The text "thank you!" is written in a cursive, handwritten style. "thank" is in orange and "you!" is in teal. There are five small, light orange stars scattered around the text: one above the 'h', one to the right of the 'k', one to the left of the 'y', one below the 'o', and one below the 'u'.