

EFFECTS OF GROWTH AND SPREAD OF INVASIVE SPECIES IN KOLE WETLANDS: A GEOSPATIAL ANALYSIS OF THE ALIEN AQUATIC INVASIVE SPECIES *CABOMBA FURCATA* IN KOLE WETLANDS OF THRISSUR DISTRICT, KERALA

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The one of the Ramsar sites, Kole Wetlands in Thrissur, Kerala, are essential to the ecosystem's health because they sustain agriculture, biodiversity, and the area's ability to withstand climate change. A vital component of Kerala's natural heritage, these wetlands serve as a flood buffer, a centre for rare biodiversity, and a major source of agricultural output, especially from paddy cultivation. However, the sustainability of native species and the ecological balance of the wetlands are seriously threatened by the invasion of alien species *Cabomba furcata*. The spread of this invasive species is endangering the livelihoods of nearby communities that rely on fishing and agriculture. Furthermore, by affecting water quality, reducing resources for native plants and animals, and decreasing the effectiveness of ecosystem services like carbon sequestration and water regulation, invasive species worsen the deterioration of the wetlands. The study focuses on the mapping of major invasive species such as *Cabomba furcata*, *Eichhornia crassipes* (water hyacinth), *Ipomoea carnea*, and *Salvinia molesta*. For the study purposes, selected nine panchayats named as, Adat, Arimboor, Anthikkad, Thaniyam, Chazhoor, Venkitangu, Manalur, Tholur, and Mullassery in the Thrissur district, Kerala. This study emphasizes the importance of taking preventative action to protect the Kole Wetlands and maintain their contribution to Kerala's economy and environment. A field survey conducted within the study area, 86 GPS coordinates were marked to assess the distribution and density of invasive species. Using GIS software such as ArcGIS, the distribution and kernel density of these species were mapped, supported by visual interpretation from ground observations and GPS points. *Cabomba furcata* demonstrates superior invasive potential in densely populated regions, contrasting with the lower to medium densities of *Salvinia molesta*, *Eichhornia*, and *Ipomoea* in the same areas, indicating its greater propensity for dominance and invasion. Socio-economic surveys were also conducted to understand perceptions of the impacts of *Cabomba furcata* among different gender groups and occupational groups working in the Kole Wetland, including farmers, tractor drivers, duck farmers, fishermen, and motor drivers.

Keywords: *Cabomba furcata*, Kole Wetlands, water quality, invasive species, wetland conservation