Table 3 Ecological characteristics and epidemiological relevance of major mosquito vectors of Lymphatic filariasis in West Bengal

Vector species	Main breeding habitat	Urban/Rural predominance	Seasonality	Relevance to West Bengal	Control implications
Culex quinquefasciatus	Polluted stagnant water, open drains, septic tanks, wastewater channels, urban containers	Predominantly urban and peri-urban, but also present in rural areas	Peak during monsoon and post-monsoon; present year-round	Principal vector of *Wuchereria bancrofti*; most dominant species in West Bengal and India	Drainage management, larval source reduction, insecticide use, biological control (BTI), improved sanitation
Mansonia annulifera	Water bodies with aquatic vegetation (ponds, swamps, marshy areas)	Mainly rural and semi-rural	Higher during monsoon and post-monsoon due to vegetation growth	Primary vector of *Brugia malayi* in India; limited but locally important transmission	Removal of aquatic vegetation, larvicidal treatment, environmental modification
Mansonia uniformis	Similar to *M. annulifera*; prefers weed-infested water bodies	Rural and wetland areas	Seasonal increase in rainy season	Secondary vector of *Brugia malayi*; contributes to localized transmission pockets	Control of aquatic weeds, habitat modification, larval control strategies
Anopheles spp. (e.g., *An. subpictus*, *An. annularis*)	Clean or slightly polluted water bodies, ponds, rice fields, temporary collections	Predominantly rural	Seasonal, often monsoon-dependent	Minor or secondary vectors in some regions; contribute to transmission under specific ecological conditions	Use of insecticide-treated nets (ITNs), environmental management, larval habitat reduction
Aedes spp. (limited relevance in India LF context)	Clean water containers, artificial containers	Mainly urban	Seasonal (rainy season)	Important globally but minimal role in LF transmission in West Bengal	Container management, source reduction, community awareness

Source: Compiled and synthesized from World Health Organization (2022, 2023), National Vector Borne Disease Control Programme (Government of India, 2022; 2023), Chatterjee et al. (2019), Dinesh et al. (2019), and Mitra et al. (2021)