

AN ENVIRONMENTALLY-FRIENDLY AND PARTICIPATORY APPROACH TO THE MANAGEMENT OF AN INVASIVE AQUATIC WEED

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ABSTRACT

Biological control of water fern, *Salvinia molesta* was studied in concrete tanks of area 4m² each at the insectary of the Department of Animal Biology and Conservation Science (DABCS), University of Ghana, Legon and Jewi Wharf in the Western Region. The impact of *Cyrtobagous salviniae* on *S. molesta* was studied in Legon and Jewi Wharf. Results show that there was damage inflicted on *S. molesta* by the *C. salviniae* which manifested with increase in percentage and area damage of *S. molesta* with time in both locations (correlation coefficient=0.99 in both cases). The damage became evident when leaves turned brown due to infestation, with the leaves being more likely to fall off during handling. The rate of multiplication of *C. salviniae* was also studied through the numbers recovered per quadrat. Population estimation using a 0.25m x 0.25m quadrat during sampling yielded up to 525 adult weevils in the tank at Legon in two months, giving a 6.4 fold increase in population and a density of 131 adult weevils per square meter, that of Jewi Wharf yielded 608 adult weevils in the tank by the third month giving a 16.4 fold increase in population and a density of 152 adult weevils per square meter. The results indicated that *C. salviniae* was able to survive and reproduce on *S. molesta*. The results also indicated that *S. molesta* reduced in area coverage due to damage and the population of *C. salviniae* also reduced in a predator-prey relationship pattern. Assessment of biological control potential of a closely related species, *Salvinia nymphellula* in a large plastic pool at DABCS and on the lower Volta (Big Ada) in the Greater Accra Region was also carried out. The impact of *C. salviniae* released was monitored over a five month period in Legon and in the lower Volta. Sampling was done to determine the percentage damage of *S. nymphellula* by *C. salviniae*. The result indicated the *C. salviniae* could not survive and reproduce on *S. nymphellula*. As a result, there was no damage characterized by *C. salviniae*. The results confirm the fact that *C. salviniae* is host-specific to *S. molesta* and will not even feed on a closely related species, *S. nymphellula*. The results of the community perceptions on the invasive weeds and their control indicated that the communities prefer manual control of weeds to any other method. The Jewi Wharf community was aware of biological control of weeds but not that of the lower Volta. Jewi Wharf community however had mixed perceptions of biological control and did not prefer the method. It was again indicated that perceptions on the invasive water weeds were based on the

socioeconomic effects which they encounter from the spread of the weeds, as it has always been the case in other parts of the world where the weeds are prevalent.

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