Movement Patterns of *Chironomus rifarius* in Response to Treatments of Diazinon (0.001 mg/L)

Inn-Sil Kwak, Chang-Woo Ji, Sang-Gul Lee[1] and Tae-Soo Chon

Division of Biological Sciences, Pusan National University, Pusan, Korea

[1]Division of Electronics Engineering, Pusan National University, Pusan, Korea

Specimens of a chironomid was observed continuously through an automatic image recognition system before and after treatments of an anti-cholinesterase insecticide, diazinon (0.001 mg/L), for 5 days in semi-natural conditions (2 days before treatment and 3 days after treatment). During the observation period, larvae of chironomids were placed individually (volume of water; 5 cm ×5 cm ×2 cm), and their position was continuously monitored in vertical view at 0.25 second intervals during the observation period.

Although variations occurred in individual specimens, the 'short' and 'shaking' movement tracks were frequently observed before the treatments, while the 'smooth' and 'long' movement tracks were increased after the treatments. Selected parameters such as stop duration, stop number, angle acceleration and angle change, appeared to be in general higher before treatments. Parameters characterizing patterns were given as input to a multi-layer perceptron with backpropagation algorithm for recognition. After training, it was possible to recognize the 'short' and 'long' movement patterns.