Prozac effect on a predator-prey system (mosquito fish-egret): an experimental approach

Sara Villa1, Claudia Ferrario1, Antonio Finizio1, Marco Parolini2, Nicola Saino2, Marco Vighi1
1 University of Milano Bicocca, Department of Earth and Environmental Sciences (DISAT), Piazza della Scienza 1, 20126 Milano, Italy
2 University of Milano, Department of Biosciences (DBS), Via Celoria 26, 20133 Milano, Italy

Aims of the project

Prey’s population indirect effects Dynamics of predators populations

Changes in the ecology and behavior of the prey, induced by changes in ecological conditions or in the interactions with other species of the same community, can then have indirect effects on predator, as modifying the mean Darwinian fitness and, accordingly, productivity.

How does Prozac change swimming ability of mosquito fish? Medium speed, distance, route, frequency and duration of freezing bouts

Area of study

Milano-Nosedo Wastewater Treatment Plant

The plant is the end phase of a complex system that collects wastewater from the central and eastern part of Milano. Processing capacity ~ 1,250,000 population equivalents[1].

Contaminant assessed

Prozac

Antidepressant: selective serotonin reuptake inhibitors (SSRI)
Active ingredient: fluoxetine (FLX)[2]

Phase I: test on prey

Phase II: test on predatory efficiency

FLX concentration Danio rerio dose-effect[3] Conc in Milano-Nosedo wastewater Control
100 μg/L Medium measured Max measured

Type of test Flow-through chronic
Test duration 21 days
T (°C) 19 ± 2
Length of orgs 3 cm
No. orgs per tank 20

After exposure the behavior of fishes will be analysed through video-tracking.

FLX-exposed (chronically fed with exposed mosquito fishes before the starting of the test) and unexposed egrets.

After 12 hours fasting little egret will be placed above a tank full of fishes. The hunting behavior of heron will be analysed through video-tracking.

References