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Eventual stability properties in a non-autonomous model of population dynamics. (English)

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Author's abstract " We prove that $(\lambda^*, C/\lambda^*)$ is eventually uniform-asymptotically stable point in the large of the system

$$\frac{dL}{dt} = C - LG \quad , \quad \frac{dG}{dt} = (L - \lambda(t))G$$

on the quadrant $\{(L, G) : L \geq 0, G > 0\}$. The function $\lambda(t) \to \lambda^* > 0$ as $t \to \infty$. The study was inspired by observations of distributions of peculiar carnivore and herbivore fish species in Lake Tanganyika . "

Fozi Dannan (Damascus)

Keywords : eventual uniform asymptotic stability in the large; invariance principle; asymptotically autonomous system; Lyapunov function
Classification :
∗34D20 Lyapunov stability of ODE
93D05 Lyapunov and other classical stabilities of control systems
93D20 Asymptotic stability of control systems
93D30 Scalar and vector Lyapunov functions
34C60 Applications of qualitative theory of ODE