Oral Communication (Mathematics and Medicine)

Dynamics for the mosquito's population: a battle against malaria

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Abstract

Throughout the years, malaria has afflicted humankind, leading even to death in the more severe cases. At present time, it is known that *Plasmodium* parasites are the cause for this infectious disease, the most common being the *Plasmodium vivax*. The transmission of the *Plasmodium vivax* parasites occurs between female *Anopheles* mosquitoes and human individuals. The study of the mosquito's dynamics has been shown to be very important in the control of this potentially fatal infectious disease.
In this talk, we extend some previous results obtained in [1] where a model for the evolution of the mosquitoes - larvae and adult - is considered. The larvae is divided into two types: the ones that inhabit ponds with predatory fish and the ones that inhabit ponds without predatory fish. Furthermore, vegetation grows in these ponds and it is assumed that cleaning occurs periodically. Using the concept of offspring number for periodic dynamics, we will give some preliminary results on the dynamics of the system.

References

[1] Antunes, Felipe J. P. and Aronna, M. Soledad and Codeço, Cláudia T.: *Modeling and control of malaria dynamics in fish farming regions*. SIAM J. Appl. Dyn. Syst., **22**, 2123–2149 (2023)