

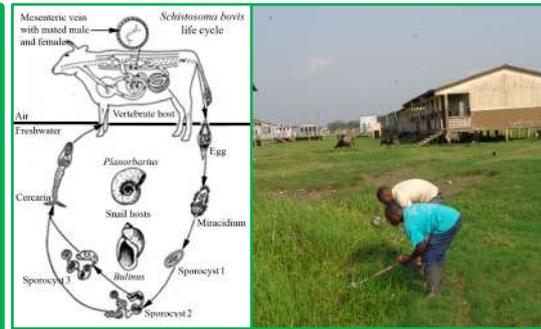
Schistosome cercarial emission as a tool to face rising challenges: parasite hybridizations, reservoir hosts and climate change for disease control using the One Health paradigm



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1.Introduction. Schistosomiasis is a human neglected tropical parasitic disease affecting more than one billion people. It is due to a flatworm, the schistosome, which lives in the venous vessels of vertebrates. Transmission to the vertebrate host is due to free-swimming larvae, the cercariae, which emerge from the snail host each day during a specific period coinciding with the aquatic activity of the target vertebrate host.



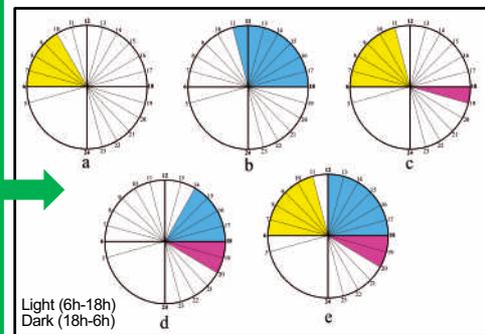
Freshwater snail collection in the field

2.Methodology. Cercarial emergence pattern was used as a tool to identify hybridization and implication of reservoir hosts in the field.



Filtration, staining and counting of cercariae

3.Results. Hybridization between schistosomes gives rise to hybrid forms capable of simultaneously having several chronobiological profiles allowing them to infect several hosts whose behaviors with respect to water are different. a. *Schistosoma bovis* early morning profile, adapted to cattle (yellow); b. *Schistosoma haematobium* midday and afternoon profile, adapted to Human (blue); c, d and e. Hybrid combination profiles simultaneously adapted to bovine, Human and/or nocturnal rodents (purple).



Savassi et al. 2020; 2021, Par Res

4.Conclusion. Schistosomiasis control is challenged by **three major rising phenomena which will imply a huge changing approach, that of One Health.** We can no longer consider each species of schistosome as a separate entity. **Hybrid forms** lead us to treat schistosomiasis as a zoonotic parasitic disease involving **humans, animals** and **changes in the environment.**



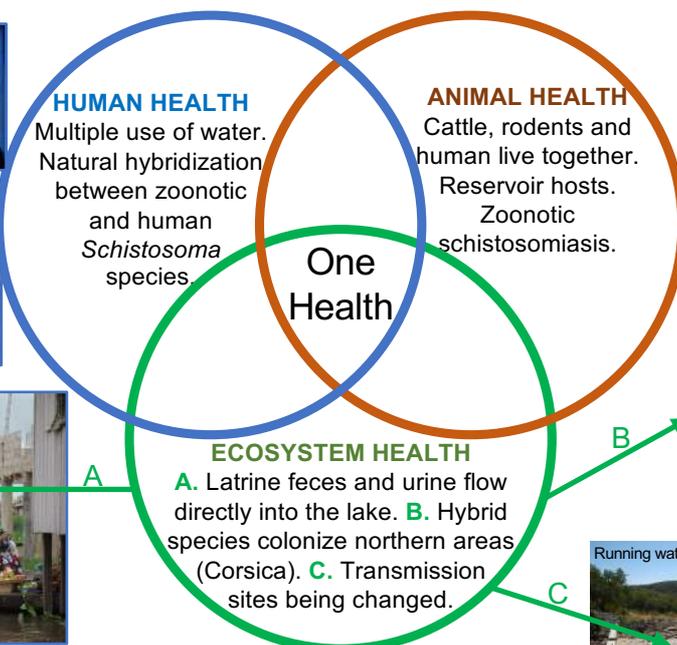
Sand extraction from the river in Benin



Children recreational activities in Benin



Women commercial activities in Benin



Cattle near houses in Benin



Mastomys natalensis



Snail prospection in Corsica

Holtfreter et al. 2014, Eurosurveillance
Moné et al. 2015, Par Res



Running water in Oman

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