Preliminary assessment of landuse – parasitism relationship in savanna anurans: A need for enhancing diagnostic method

S. Gilles A. NAGO, Ir MSc, PhD

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Plan

- Introduction
- Research questions
- Study area and Methods
- Results
- Conclusion and outlook

- Much is known in amphibian parasites in many countries
- Worldwidely amphibian are decreasing
- Habitat alteration (*e.g.* agriculture) impact amphibians and perhaps infection rates
- landscape alteration for agricultural purposes increased the transmission of certain parasites in amphibians

- The opposite effect with regard to avian malaria transmission

- There is a possible link between parasitic infections and amphibian population decline

- Need of more amphibian parasites research activities in Benin, lack of investigations

1. What is the helminth fauna of amphibians in Pendjari region?

2. To what extent human land use have an effect on the helminth parasite burden of amphibians?

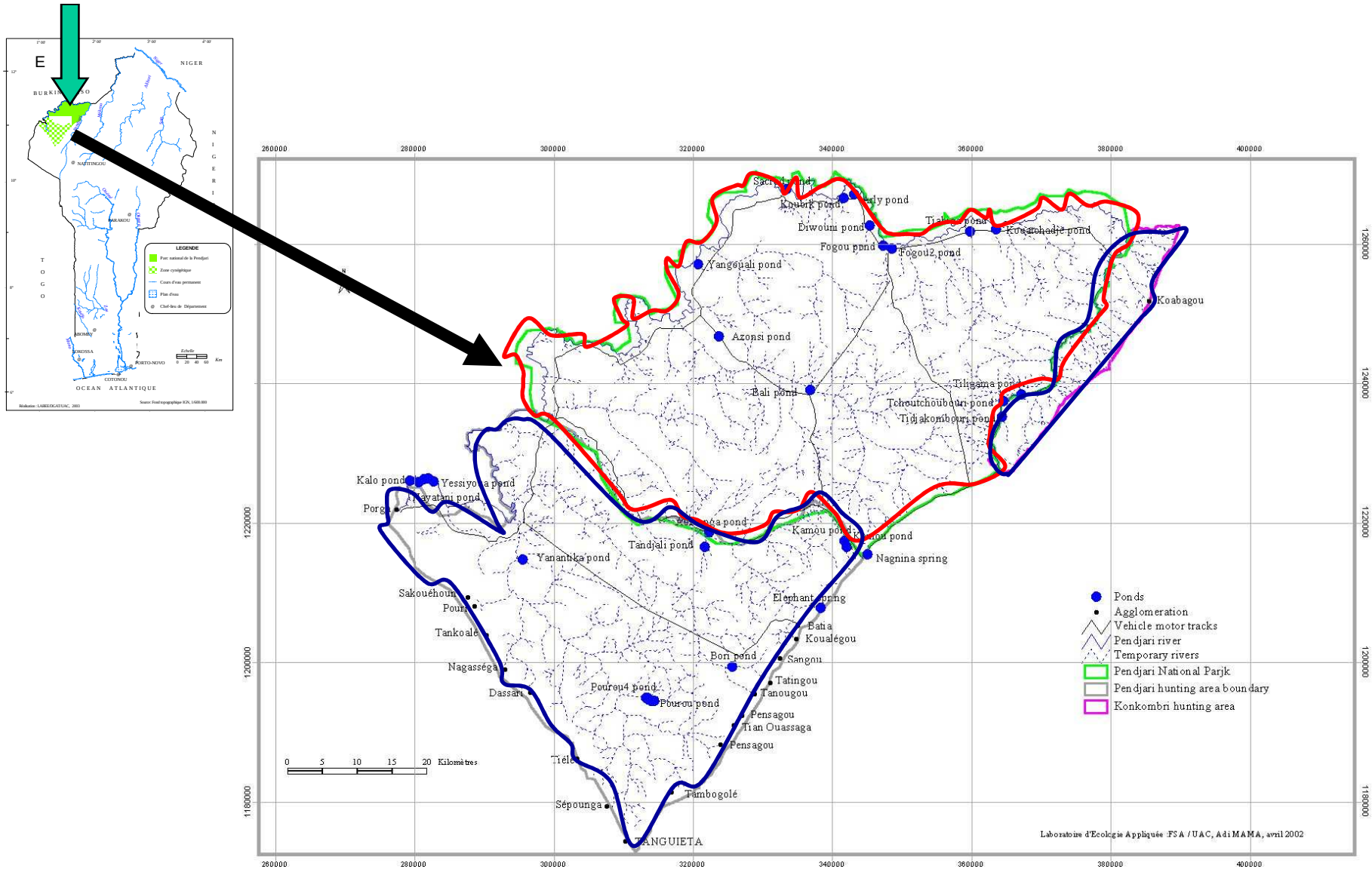

Figure 1: Map of Pendjari Biosphere Reserve


Cotton field, disturbed area

- Design of the Biosphere Reserve allows having a core and pristine zone, a buffer area and a human disturbed part
- Sampling sites selection is based on finding anuran breeding pools with different type of human land uses in surroundings
- Amphibians collected daily and nightly during their breeding and feeding activities with VES and AES methods
- Identification based on Rödel (2000), Rödel & Spieler (2000) and Frost (Online)
- Some vouchers conserved locally

- Anurans killed and postmortems carried out on them in the field within 18hrs of collection

- Digestive, urinary tracts and body cavity were examined

Figure 3: Part of instruments used

• Nematode parasites were fixed and preserved in 70% alcohol. Monogeneans, trematodes and cestodes were flattened

•Infestation parameters calculated: Prevalence rate and mean intensity of infestation

• *P. latifrons* and *Amietophrynus maculatus* as indicator species

•145 amphibian specimens belonging to 8 families were examined

•Parasites encountered included 2 monogeneans, 1 encysted acanthocephalan, 2 cestodes, 4 trematodes and 8 nematode species

as Aisien et al. (2003, 2004)

•Many of the hosts examined were either free of infestation with helminth parasites or when infested, it was with 1 or 2 parasites. The hosts that carried significant levels of infestation were *A. maculatus*, *H. occipitalis* and *P. latifrons*

Overall **prevalence rates** were generally **low**

Monogenean were only encountered in the **AZ** albeit at very low rates

Infestations with **trematodes** were confined to hosts collected in AZ

as Christin et al. (2003)

King et al. (2008)

Nematode parasites although, were recorded in the **NP, BZ and AZ** but some of the nematodes **thrived better in the NP and BZ**

Contrary to Christin et al. (2003)

King et al. (2008)

But in general decisions are not so clear statistically

Nematoda	Host	National Park	Buffer zone	Agric. zone
Rhabdias bufonis	*A. maculatus*	-	-	10
Rhabdias sp.	*P. latifrons*	-	82.4	6.1
Oswaldocruzia hoepplii	*A. maculatus*	-	-	25
Cosmocerca ornata	*A. maculatus*	42.9	-	65
	P. latifrons	-	50	-
Amplicaecum sp.	*A. maculatus*	57.1	-	15
	P. latifrons	- -	23.5	25.8

Figure 7: *A. maculatus and P. latifrons*

Helminthes parasites recovered from the amphibians of the Pendjari Biosphere Reserve are similar to those reported in other African countries

Agricultural pesticides can alter the immune response of frogs and affect their ability to deal with parasite infestation

Expectation is not clearly revealed. Parasite community composition was fewly associated to pesticides and may be masked by a strong impact of land use on parasite transmission

The small samples of amphibian could also explain the fickleness of the infestation parameters

- Limited knoweldge on Benin amphibians parasites
- Potentials like others countries
- Dahomey gap need to be more understood for interest in life history, physiology, climate adaptation, its genetic consequences, etc

- Parasite infection determination through PCR screening
- Look to the sensitivity of PCR to detect amphibian parasite DNA, host specificity
- Taxonomic and systematic investigations of parasites included DNA barcoding for example
- Strenghen the local collections with trainings, materials, etc

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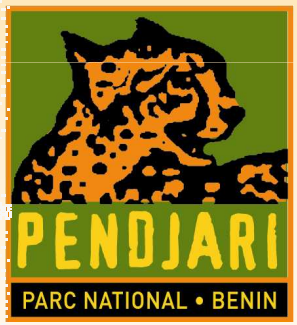


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