

# Malagasy threatened wild birds are exposed to West Nile Virus

## West Nile Virus seroprevalence and risk factors in wild birds in Madagascar

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### INTRODUCTION

- West Nile virus (WNV) emerging zoonotic virus.
- Wild birds natural reservoirs of WNV
- Only two studies report WNV circulation in wild birds in Madagascar.

### Aims :

With a focus on wild birds in Madagascar:

- Estimate its seroprevalence
- Identify risk factors of infection

### METHODS

- **Sites:** selected based on abundance / diversity of birds and presence of forest / wetland within 500m
- **Catches:** Japanese mist nets;
- **Period:** May 2016 – Apr 2017
- **Serological analysis:** competitive ELISA (ID-Vet® kit) for IgG antibody detection
- **Statistical analysis:** logistic regression models to identify risk factors associated with bird serological status

### CONCLUSION

- High seroprevalence (12.5%) of WNV in Malagasy wild birds; 3/19 are threatened species
- Need to assess the clinical impact of WNV in wild birds, especially among threatened species.
- WNV monitoring program in birds could help address conservation issues and act as an early warning tool

### RESULTS

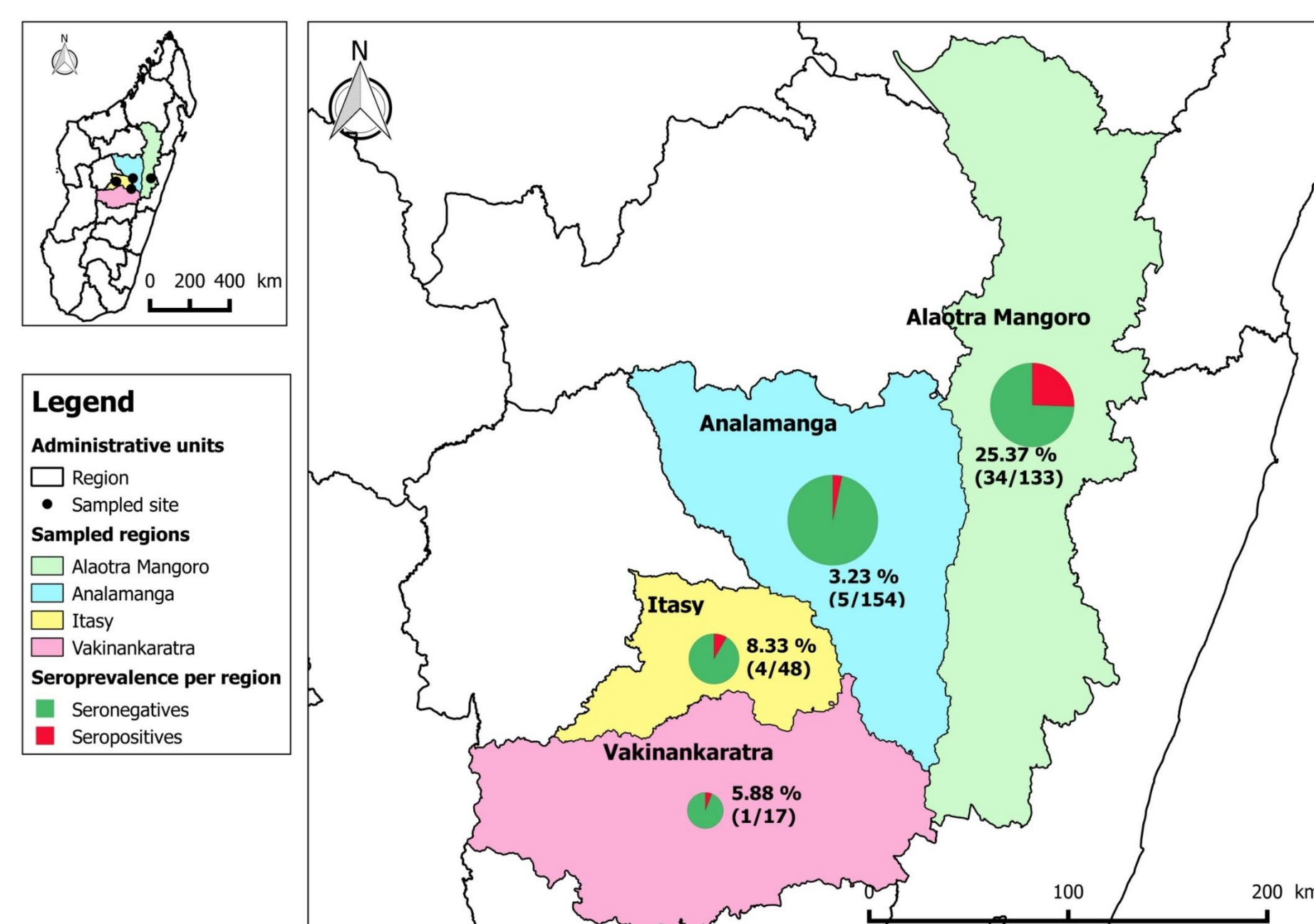


Fig. 1: Seroprevalence of birds per region

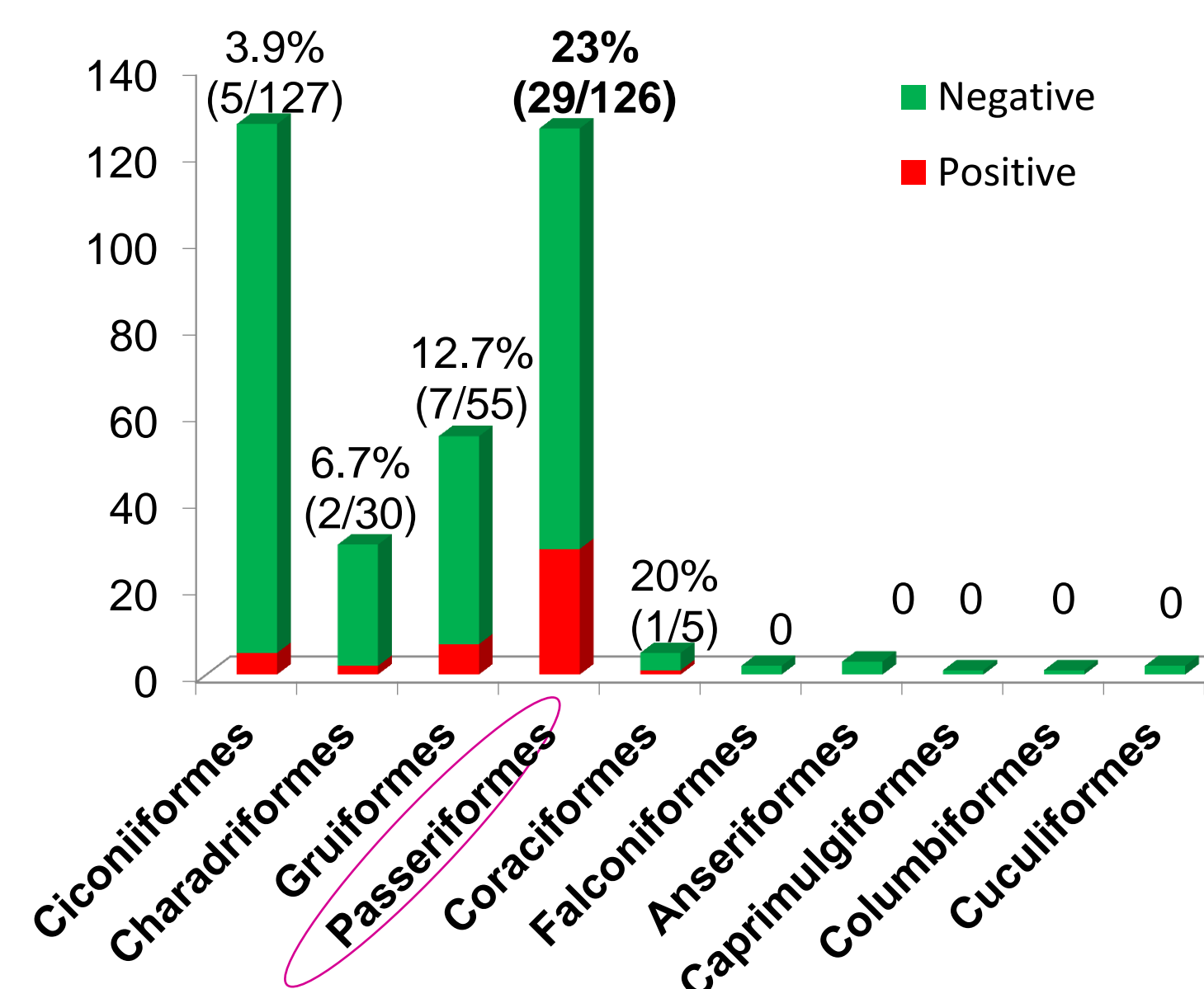


Fig. 2: Seroprevalence by taxonomic order



Fig. 3: *Hypsipetes madagascariensis*. Spp. with highest seroprevalence

Variables		Odds Ratio	95%CI OR	p
Proximity to wetlands	Yes	1		0.021
	No	8.19	[1.2 - 165.1]	*
Order	Other orders	1		0.023
	Ciconiiformes	2.53	[0.26 - 29.52]	
	Passeriformes	4.99	[1.58 - 16.25]	*
Distribution area	Widespread	1		
	Africa	31.90	[5.47 - 313.11]	
	Endemic to Madagascar	1.07	[0.29 - 4.79]	0.0002 ***
	Endemic to Indian Ocean	2.57	[0.54 - 14.31]	
Region	Analamanga	1		
	Alaotra Mangoro	41.44	[6.16 - 610.69]	5E-06 ***
	Itasy	9.19	[1.17 - 115.29]	
	Vakinankaratra	1.56	[0.03 - 41.64]	

Table 1: Risk factors

ORDER	Family	Genus species	Nb of + /tested
CHARADRIIFORMES	Scolopacidae	<i>Gallinago macrodactyla</i>	2/26
CICONIIFORMES	Ardeidae	<i>Ardeola idae</i>	1/5
		<i>Egretta ardesiaca</i>	2/13
		<i>Egretta dimorpha</i>	2/7
CORACIIFORMES	Meropidae	<i>Merops superciliosus</i>	1/3
GRUIFORME	Rallidae	<i>Rallus madagascariensis</i>	6/42
		<i>Sarothrura insularis</i>	1/11
PASSERIFORMES	Dicruridae	<i>Dicrurus forficatus</i>	1/1
	Nectariniidae	<i>Nectarinia notata</i>	3/3
		<i>Nectarinia somanga</i>	2/5
		<i>Foudia madagascariensis</i>	2/30
	Ploceidae	<i>Ploceus nelicourvi</i>	1/2
	Pycnonotidae	<i>Hypsipetes madagascariensis</i> *	10/14
		<i>Phyllastrephus zosterops</i>	1/2
		<i>Acridotheres tristis</i>	3/19
	Sturnidae	<i>Hartlaubius auratus</i>	1/2
		<i>Saxicola torquata</i>	1/1
Vangidae	<i>Vanga curvirostris</i>	1/2	
Zosteropidae	<i>Zosterops maderaspatana</i>	3/7	

Table 2: Seropositive species. 19/41 spp. had been in contact with WNV



Fig. 4: Seropositive birds classified as Threatened