

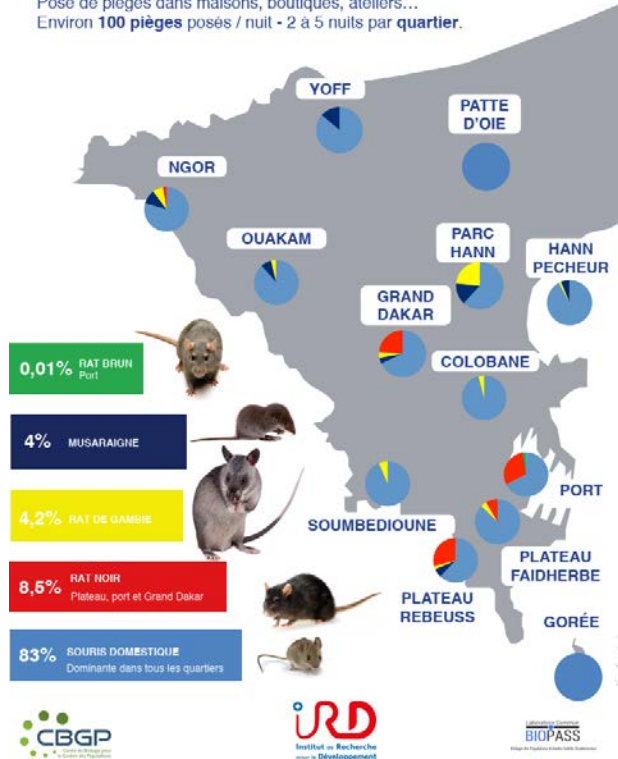
ObsMiCE in Senegal: rapid assessment and monitoring of "Great Green Wall" sites

L. Granjon, K. Bâ, C. Brouat, C. Diagne, M. Diallo, M. Kane, J. Le Fur, A. Ndiaye, R. Ndour, Y. Niang, M. Sall, A. Sow...



LES PETITS MAMMIFÈRES À DAKAR

Pose de pièges dans maisons, boutiques, atollers...
Environ 100 pièges posés / nuit - 2 à 5 nuits par quartier.



DAKAR
Stragier et coll.
2016

Peer Community Journal

Section: Ecology

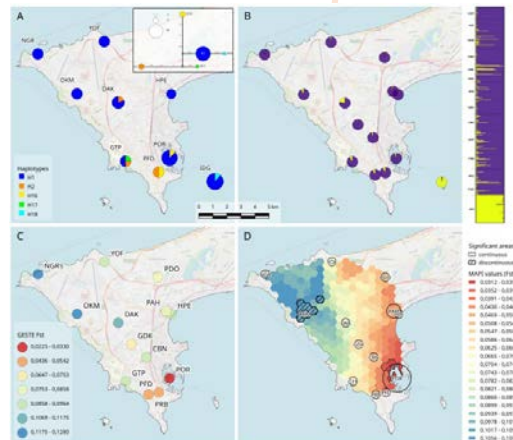
RESEARCH ARTICLE
Published 2022-01-19

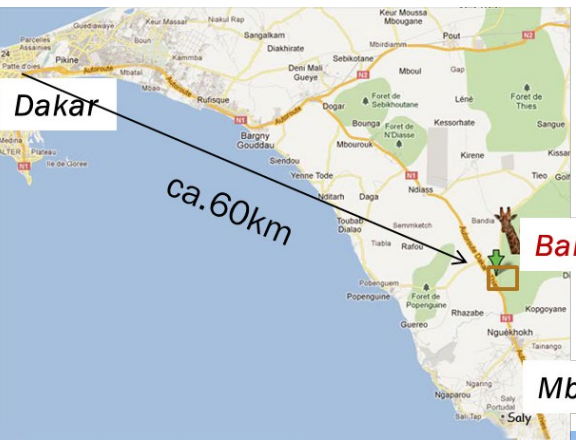
Cite as
Claire Stragier, Sylvain Piry, Anne Loiseau, Mamadou Kane, Aliou Sow, Youssoupha Niang, Mamoudou Diallo, Arame Ndiaye, Philippe Gauthier, Marion Borderon, Laurent Granjon, Carine Brouat and Karine Berthier (2022) Interplay between historical and current features of the cityscape in shaping the genetic structure of the house mouse (*Mus musculus domesticus*) in Dakar (Senegal, West Africa), Peer Community Journal, 2: e11.

Correspondence
carine.brouat@ird.fr

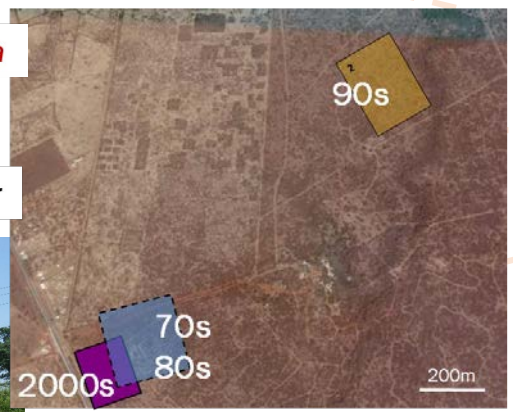
Volume 2 (2022), article e11

Observatoire ouest-africain des petits Mammifères Indicateurs des Changements Environnementaux





BANDIA
(since the 70s')



Observatoire ouest-africain des petits Mammifères Indicateurs des Changements Environnementaux

ObsMiCE

Senegal

Gambie

Guinée-Bissau

Guinée

Sierra Leone

Liberia

Côte d'Ivoire

Ghana

Mali

Niger

Benin

Togo

Yamoussoukro

Accra

Lomé

Porto-Novo

Neuquhoff

Niamby

Ouzadougou

Burkina Faso

Corakry

Freetown

Monrovia

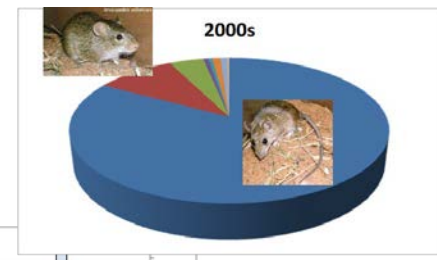
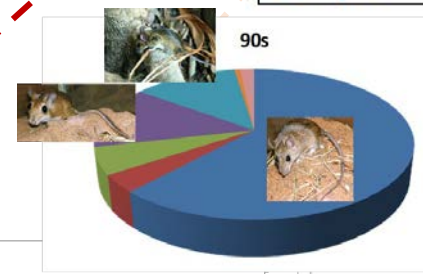
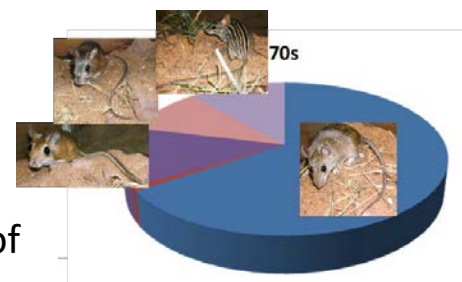
Yamoussoukro

Accra

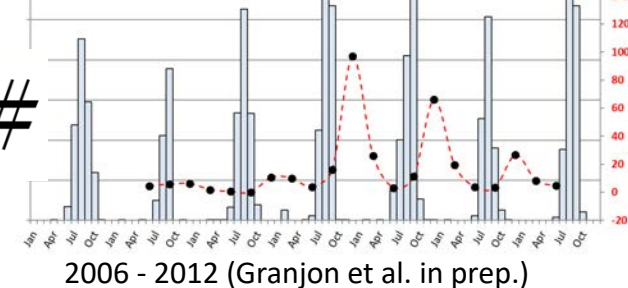
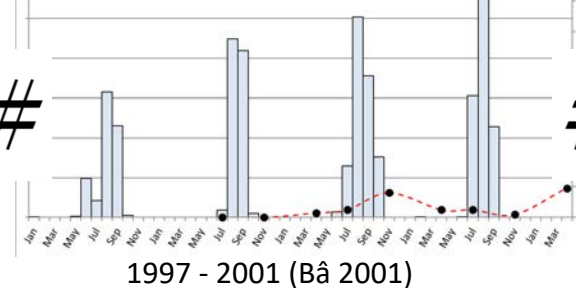
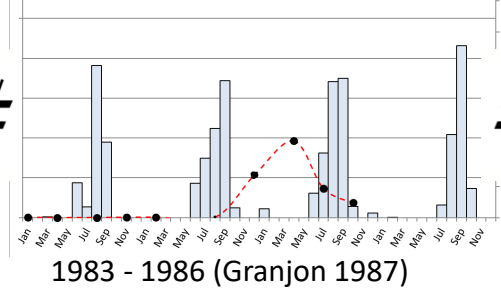
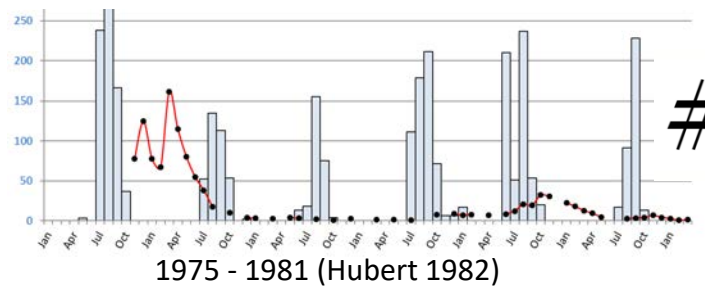
Lomé

Porto-Novo

Diversity



Pop. dynamics of
M. erythroleucus



Observatoire ouest-africain des petits Mammifères Indicateurs des Changements Environnementaux



ObsMiCE

Delta et basse
Vallée du fleuve
Sénégal

Dalecky & coll.,
this meeting



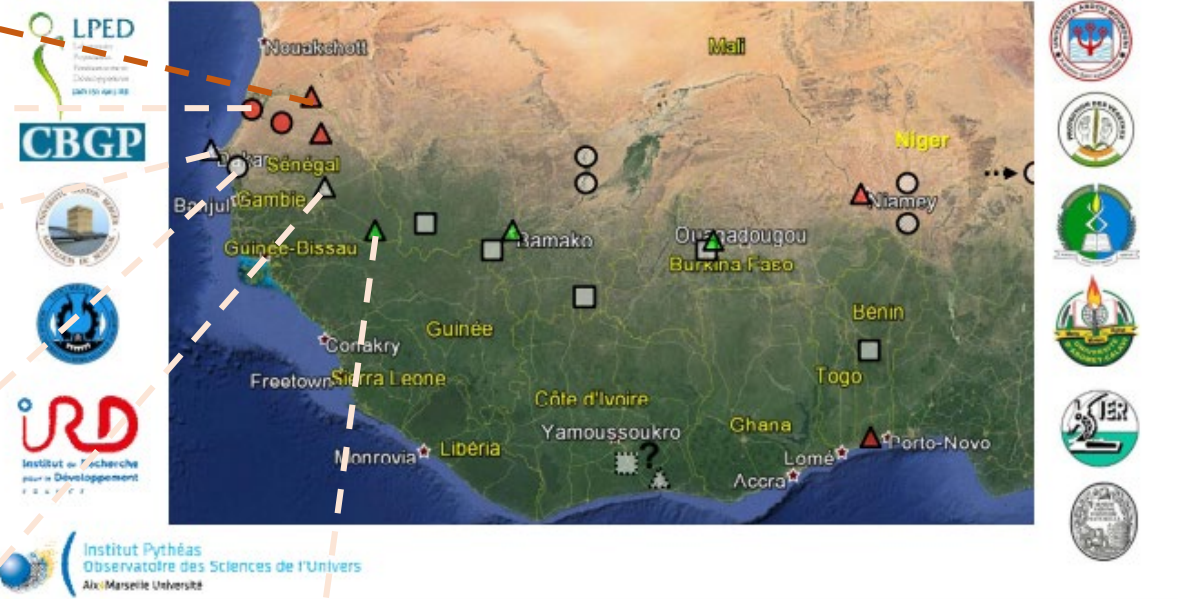
Moyenne Vallée
du fleuve Sénégal
(& Dodel)

Brouat & coll.
Le Fur & coll.,
this meeting

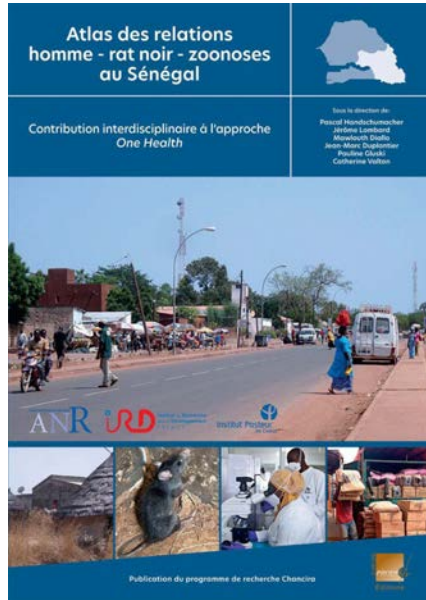
Observatoire ouest-africain des petits Mammifères Indicateurs des Changements Environnementaux



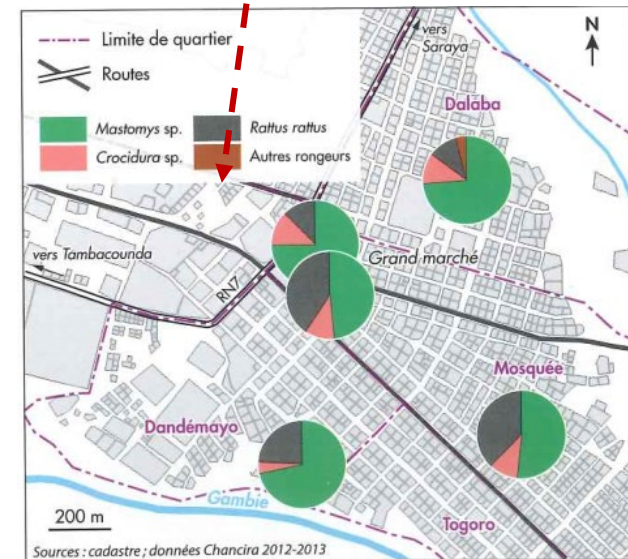
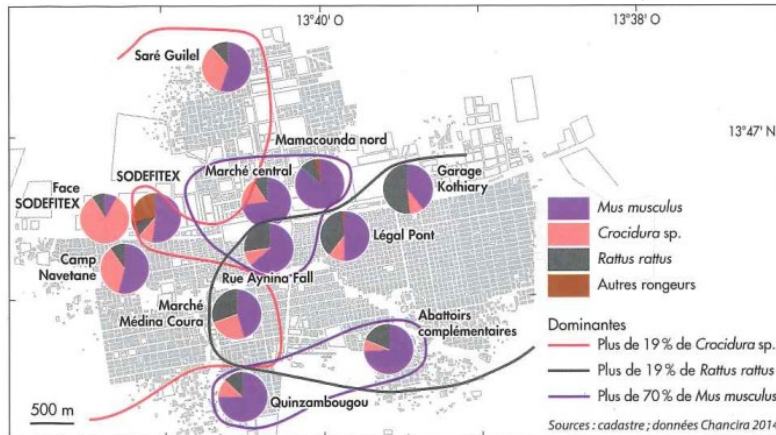
ObsMiCE



Tambacounda & Kédougou



Perspectives:
 The Kedougou area = major study site of the PREZODE/AFRICAM project in Senegal



+ information on pathogens (virus, bacteria...) harbored by small mammals
 Diagne Bro's, 2017-2021

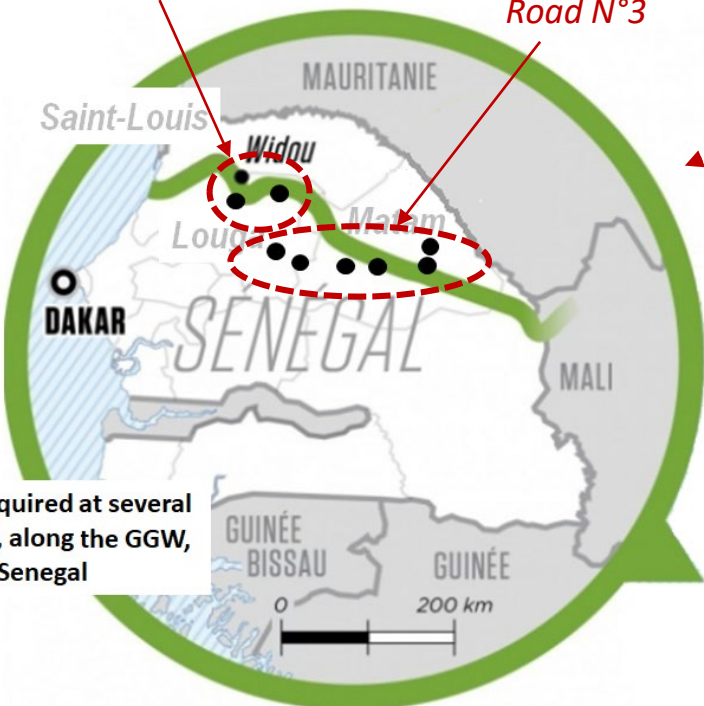
In Senegal, fenced areas / reforestation / promotion of human activities (ASERGMV / OHM Tessekere)



Observatoire ouest-africain des petits Mammifères Indicateurs des Changements Environnementaux

ObsMiCE

Central Ferlo National Road N°3



Results acquired at several Ferlo sites, along the GGW, Senegal



GREAT GREEN WALL

aims to:

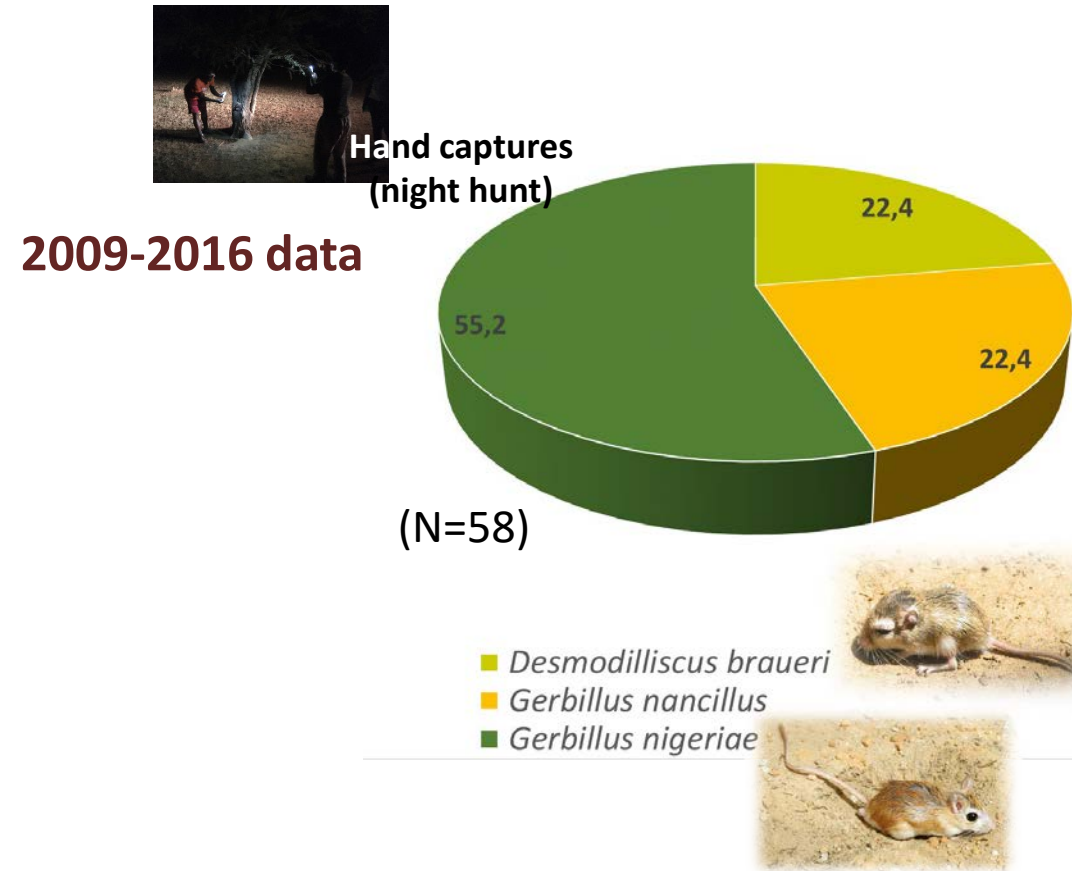
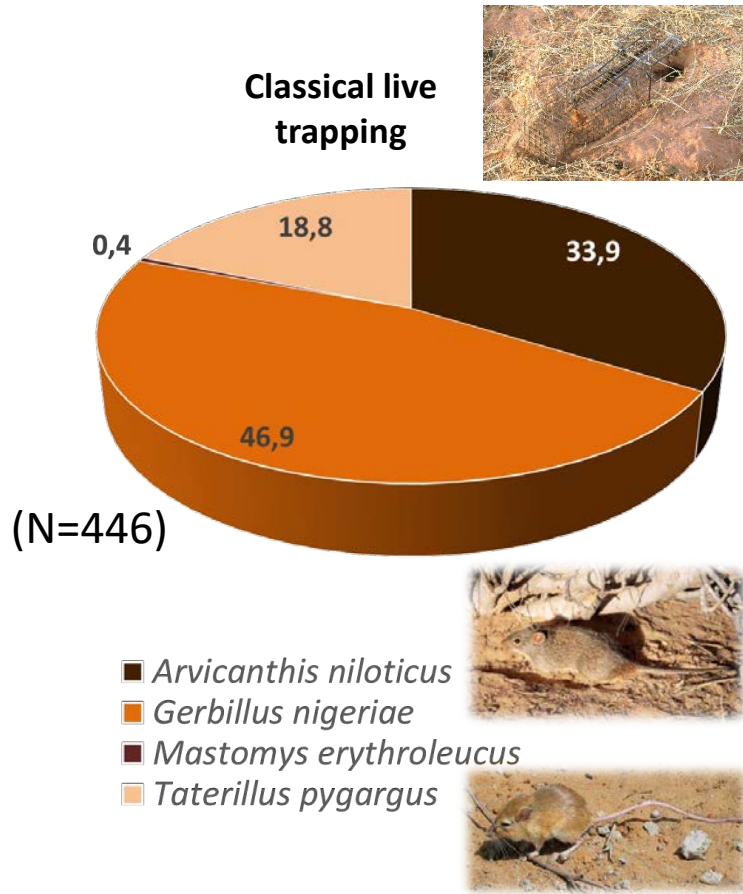
- restore 100 million ha of degraded land
- sequester 250 million tonnes of carbon
- create 10 million jobs in rural areas.



Observatoire Hommes-Milieus international Tébékéré (Widou-Thiengoly – Tébékéré – Labgar, central Ferlo)

No	Nom du porteur	Unité du porteur	Titre Projet	Millésime APR de début	Année de fin
1	THIAM Massamba	UCAD-IFAN, Dakar	Evolution of communities of small mammals and their intestinal parasites in the Senegalese Sahel	2010	2011
2	THIAM Massamba	UCAD-IFAN, Dakar	Diversity changes in communities of small mammals	2011	2012
3	THIAM Massamba	UCAD-IFAN, Dakar	Genetic study of a polymorphic and invasive rodent species in Senegal (<i>Gerbillus nigeriae</i>)	2013	2014
4	DIAGNE Christophe	CBGP (IRD), Montpellier	Modeling the expansion dynamics of the Nigerian gerbil (<i>Gerbillus nigeriae</i>) in Senegal	2015	2016
5	GRANJON Laurent	CBGP (IRD), Montpellier	Environmental changes and evolution of parasite communities and their native and invasive rodent hosts in northern Senegal	2016	2017
6	GRANJON Laurent	CBGP (IRD), Montpellier	Invasion of the Ferlo by the house mouse (<i>Mus musculus domesticus</i>)	2017	2018
7	GRANJON Laurent	CBGP (IRD), Montpellier	Commensal rodents and bacterial pathogens hosted in the Ferlo region: comparison of differentiated situations	2018	2019
8	GRANJON Laurent	CBGP (IRD), Montpellier	Communities of small mammals associated with temporary pools at Ferlo	2019	2020
9	DIAGNE Christophe	CBGP (IRD), Montpellier	Biological invasion of the house mouse (<i>Mus musculus domesticus</i>) in the eastern Ferlo	2022	2023

Small rodent diversity in outdoor habitats, OHM Tésékéré area




INEE
RÉPERTOIRE
DES RONGEURS
DE LA GRANDE
MURAILLE VERTE
(SAHEL SÉNÉGALAIS)
FICHES PRATIQUES DE L'OBSERVATOIRE
HOMMES-MILIEUX INTERNATIONAL TESSEKERE
SERIE B (ÉCOLOGIE ANIMALE) NUMERO 3 AVRIL 2020



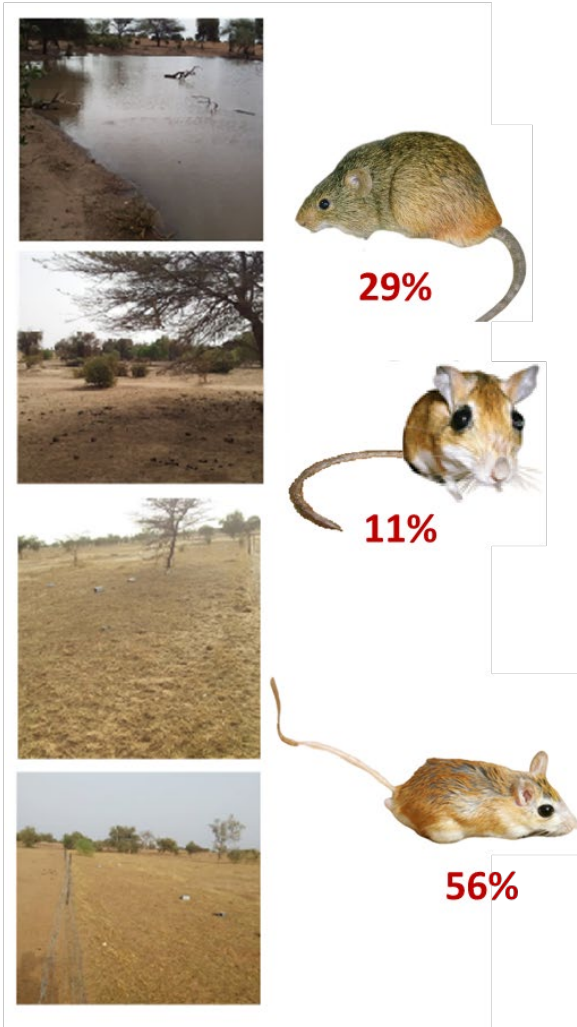


Dominance of Gerbillinae species and among them an invasive species in Senegal (*G. nigeriae*), harmful to crops. Coexistence with Murinae, mainly *A. niloticus*, species of herbaceous environments and hedgerows

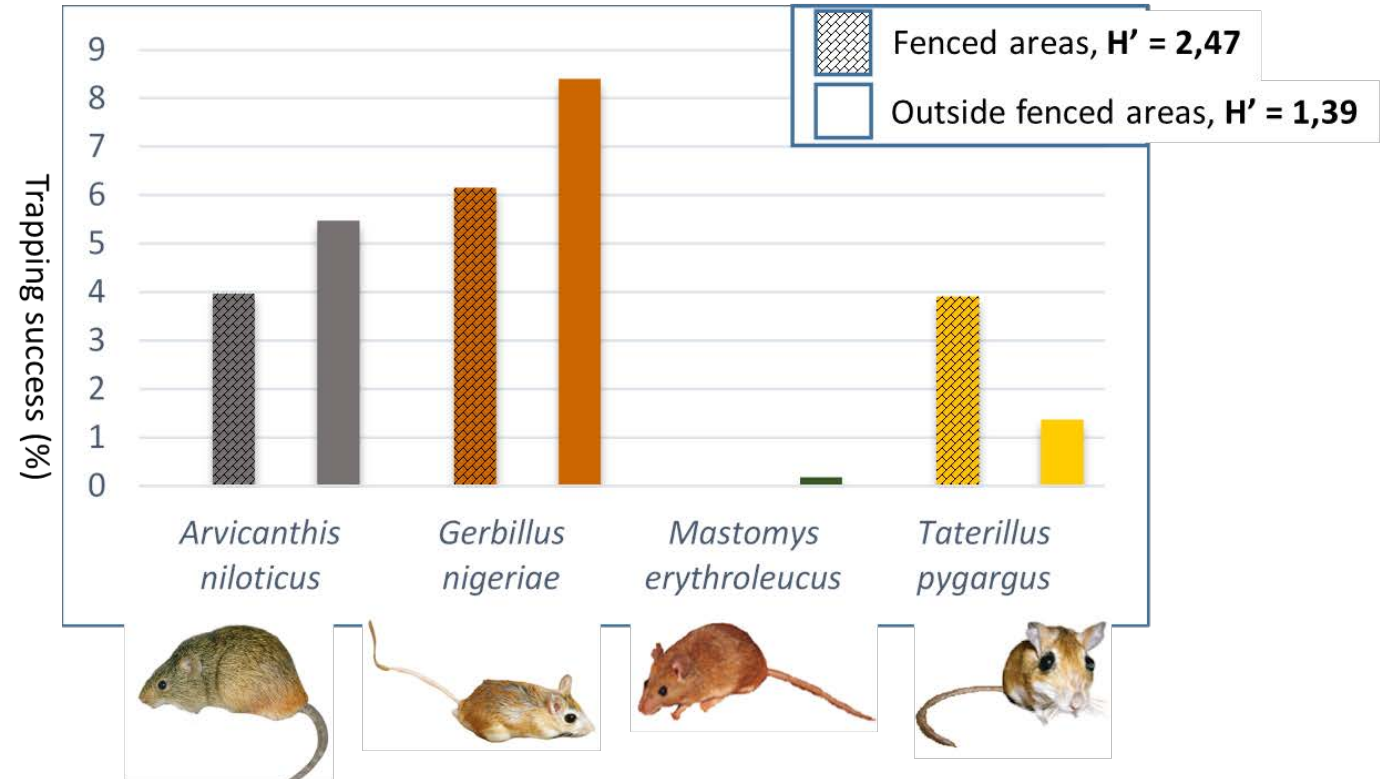
Patterns of habitat selection by small rodent in outdoor habitats, OHM T  ss  k  r   area

a.

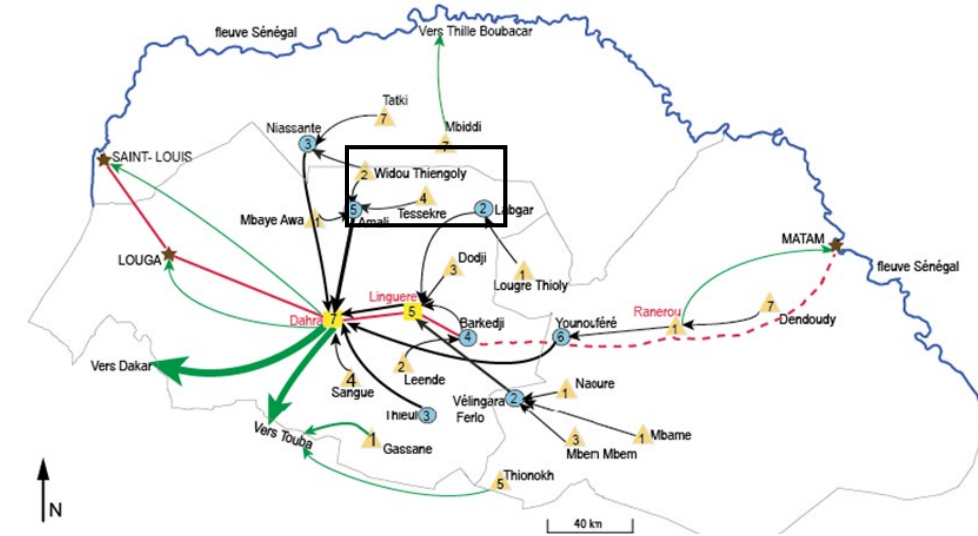
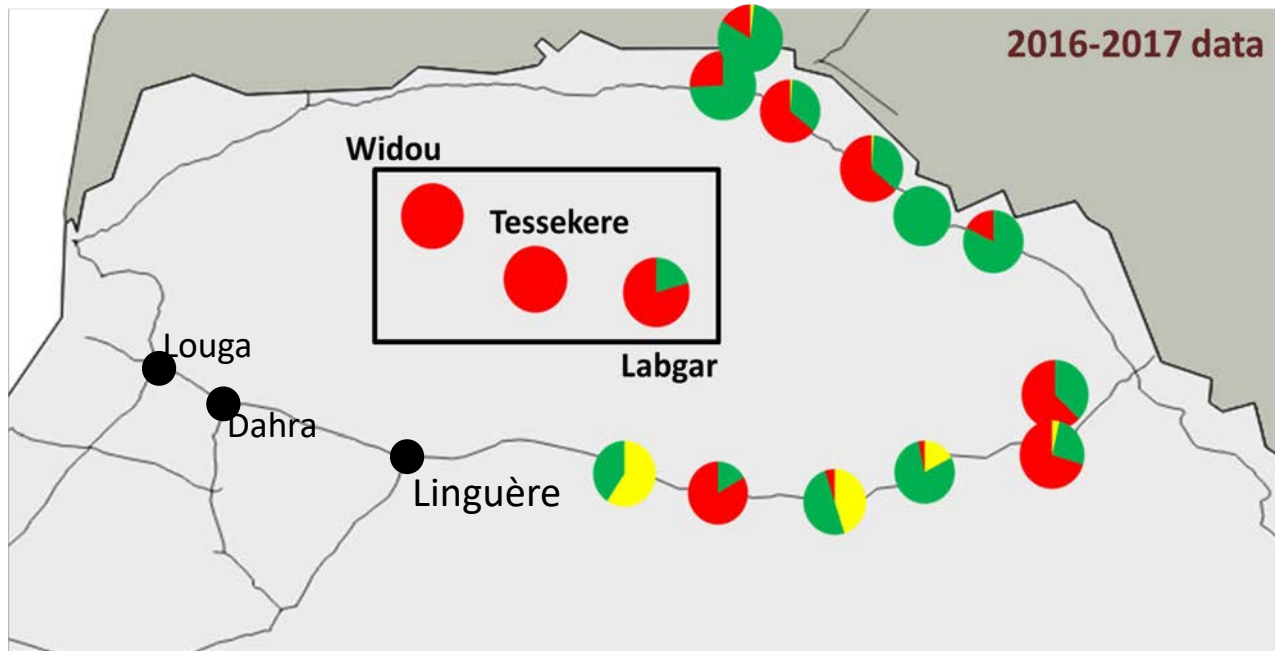
clayey



b.



Small rodent diversity in indoor habitats, OHM Téssekéré area and surrounding regions



--Invasive species--

-----Native species-----



Mus musculus
(n = 251)



Mastomys erythroleucus
(n = 194)



Arvicanthis niloticus
(n = 39)

Transportation streams (Ninot et coll.)

Hyper-dominance of the mouse in the OHM Téssekere localities compared to the more eastern localities located on the main roads



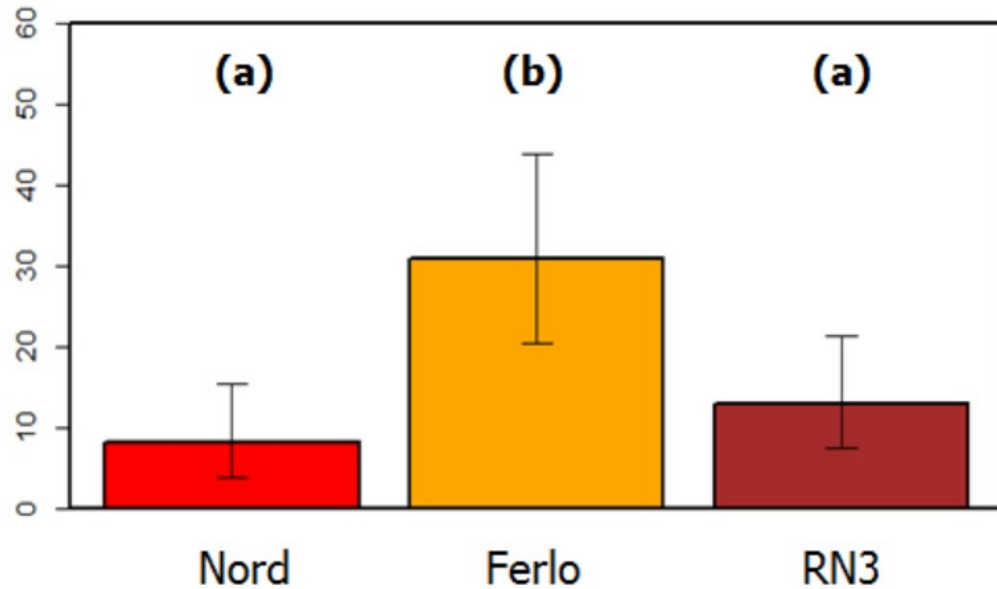
- Old / intense flows of goods and people?
- More favorable commensal habitat?

Parasitological studies on *Mus musculus*, OHM Tésékéré area

Gastrointestinal helminths



Prévalence of *Aspiculuris tetraptera* in *Mus musculus* (% infected ind.)



Diagne et al. 2021

Prevalence in rodents of parasitic bacterial taxa identified by qPCR

Taxon	prévalence (en % sur 171)	hôte rongeur
Piroplasmida	2,3	<i>A. niloticus</i> , <i>M. erythroleucus</i> , <i>Taterillus</i> sp.
Bartonella	9,4	<i>A. niloticus</i> , <i>M. erythroleucus</i> , <i>Taterillus</i> sp.
Anaplasmataceae	18,1	<i>A. niloticus</i> , <i>M. erythroleucus</i> , <i>M. musculus</i> , <i>G. nigeriae</i> , <i>Taterillus</i> sp.
Hepatozoon	2,3	<i>A. niloticus</i> , <i>M. erythroleucus</i> , <i>M. musculus</i>
Trichostrongyloidea	3,3	<i>M. erythroleucus</i> , <i>G. nigeriae</i> , <i>Taterillus</i> sp.
Kinetoplastidae	3,5	<i>M. erythroleucus</i> , <i>G. nigeriae</i> , <i>Taterillus</i> sp.
Borrelia	15,2	<i>A. niloticus</i> , <i>M. erythroleucus</i> , <i>M. musculus</i> , <i>G. nigeriae</i> , <i>Taterillus</i> sp.

Zoonotic bacterial genera potentially pathogenic for humans
Supragénéric taxa including zoonotic bacterial genera potentially pathogenic for humans

Mice heavily parasitized (prevalence=33%) by their “ancestral” helminth *Aspiculuris tetraptera* in OHM Tessekere → ancient invasion?

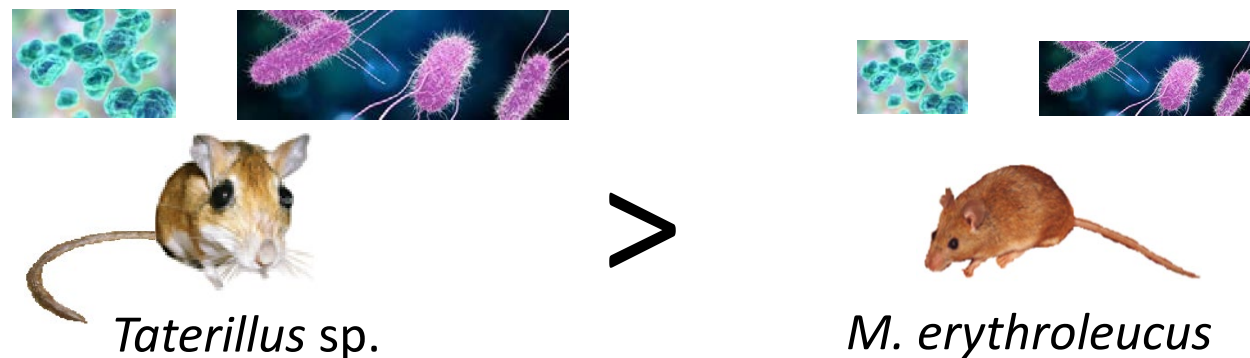
Pathogen prevalence trends, OHM T  ss  k  r   area

Between-species difference in prevalence globally significant (Kruskal-Wallis $X^2=24,633$, 4ddl, $p<0.001$)

Prevalence in invasive species **lower** than in native species (K-W $X^2=12,259$, 1ddl, $p<0.001$)

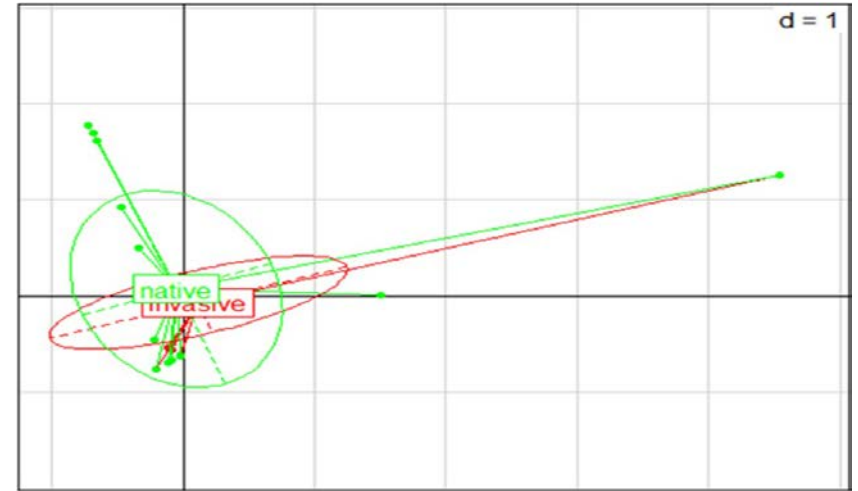


No difference of infection rates between native rodents except between *Mastomys erythroleucus* and *Taterillus* sp. (Wilcoxon, $p = 0,0056723$).

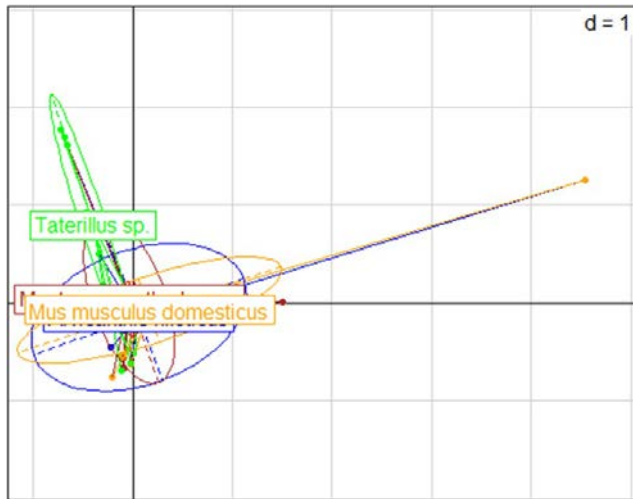


Pathogen prevalence trends, OHM T  ss  k  r   area

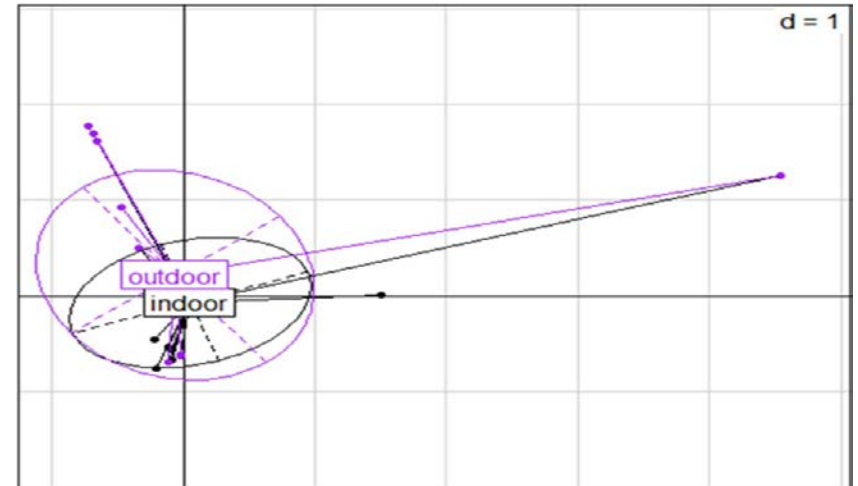
Is there any structure in the pathogen community according to various parameters (at the current level of taxonomic determination of pathogens, i.e. genus or supra-generic taxon) ?



No structure according to host native or invasive status



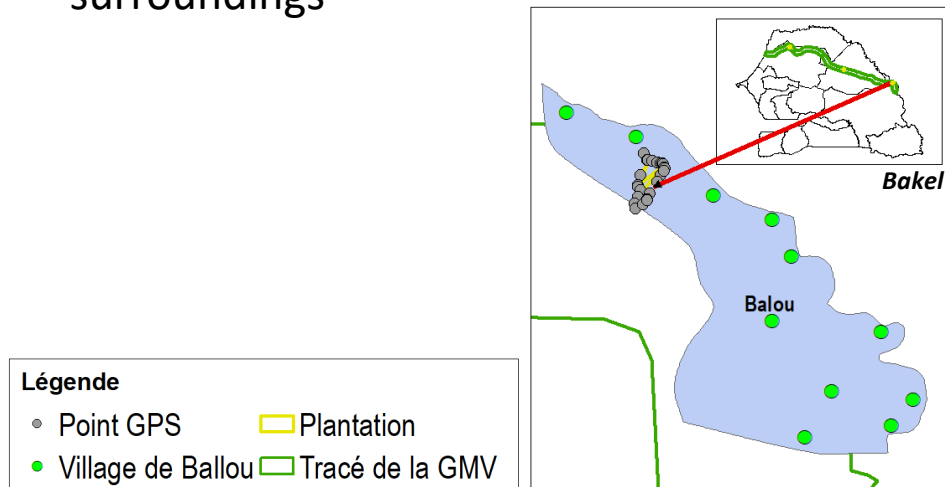
No structure according to host identity



No structure according to habitat

Perspectives

- Comparative studies on new GWG plots set up in Eastern Senegal (1st field trip October 2022 in Bakel and surroundings)



- CBGP's involvement in the *International Research Network (IRN/GDRI-Sud) RESET – GMV "Recherche, expertises scientifique et savoirs pour la gestion durable des terres et des territoires de la Grande Muraille Verte"*; coord. Oumarou MALAM ISSA, submitted June 2022)
- CBGP / LPED involvement in BIODIVERSA Project ADDRESS "A holistic approach to biodiversity dynamics and restoration of Sahelian socio-ecosystems" coordinated by Priscilla Duboz, IRL "Environnement – Santé – Société", submitted November 2022.