



Résultats préliminaires sur les communautés de parasites de rongeurs dans un contexte de modifications hydro-agricoles dans la vallée du fleuve Sénégal

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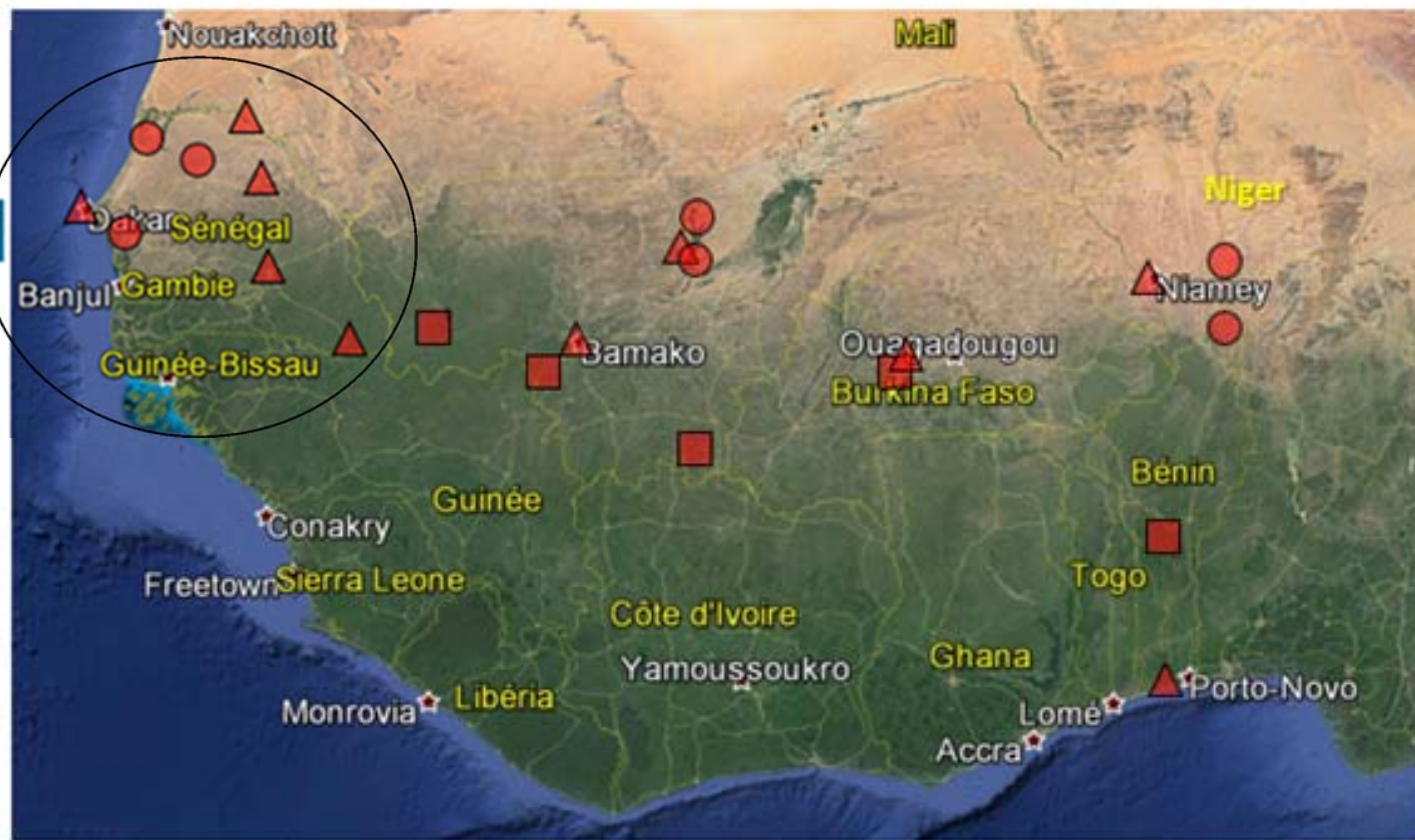
JOURNEES RONGEURS du CBGP 2010 !!!



West African Observatory for Small Mammals Indicators of Environmental Change



ObsMiCE



Network of observation sites

△ : town & villages, □ forests, ○ : agroecosystems & pastoral areas

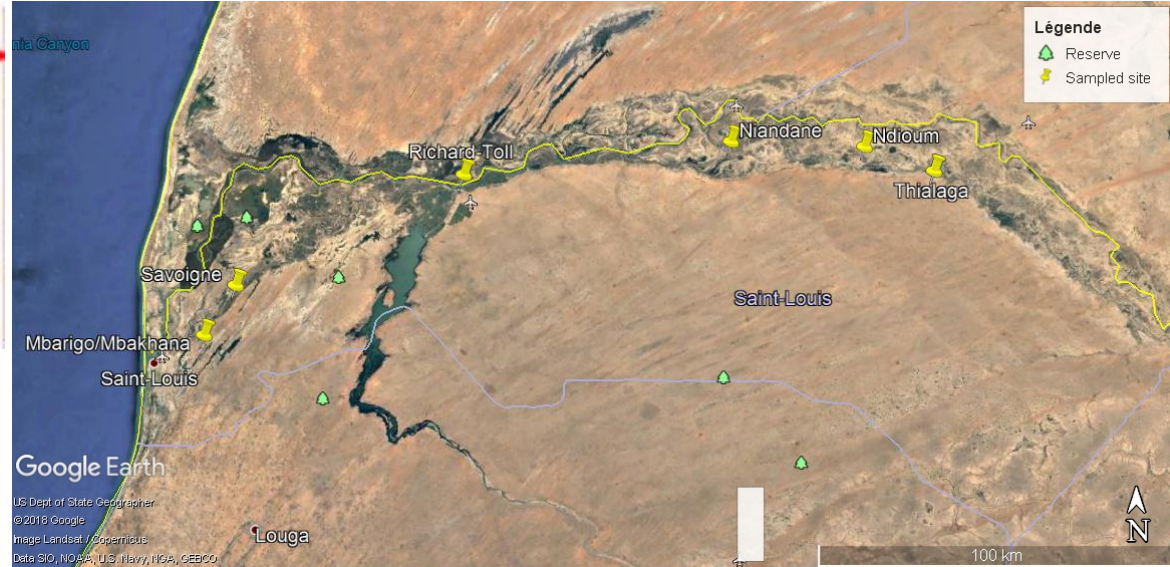


SUBJECT CONTEXT (1/2)

❖ OBSERVATION SITE

In SENEGAL

✓ North of Senegal, in the river valley



✓ More than 5 sites

✓ Sites monitored since 2007

✓ Rodents trapping in rice fields and orchads, fallowland, houses, storage buildings, etc..

SUBJECT CONTEXT (2/2)

- ✓ Senegal depends on large rice importation
- ✓ Several major hydro-agricultural developments
 - Construction of dams
 - PNAR : National Rice Self-Sufficiency Program
 - MCA : Millennium Challenge Account (USA)
- ✓ Increasing Production of rice in the river valley
- ✓ Rice cultivation throughout the year
- **Risks of outbreaks of rodents and their parasites !!!**



Harvest of rice after rainy season, Mbarigo

AIMS

Evaluate the impact of environmental changes in the Senegal River valley on rodent communities and their interactions with their parasites : fungi and gastrointestinal helminths

describe host and parasite communities, by morphological and molecular identification to the species

analyze their spatio-temporal variations in the context of major hydro-agricultural developments

assess damage caused by rodents to stocks and crops

METHODOLOGY (1/2)

❖ DATA COLLECT

- ✓ Trapping & Morphological identification of rodents in the field

- ✓ Sampling
 - Blood ; digestive tract ; liver ; spleen ; kidney; spores of fungi (fur)...

- ✓ Dissection of digestive tract to collect helminth parasites (1021 DT from 2011 to 2018) at BioPASS-Senegal



Processing of rodents on dissection table in Mbarigo, April 2017

METHODOLOGY (2/2)

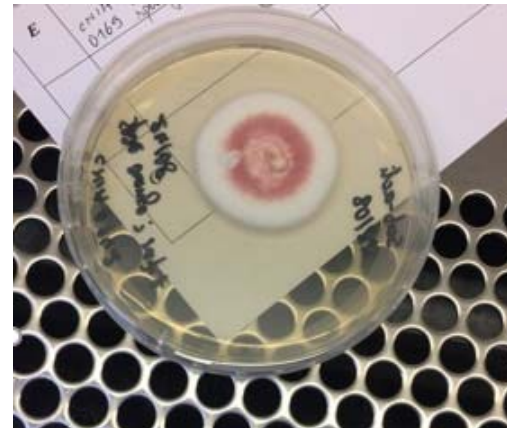
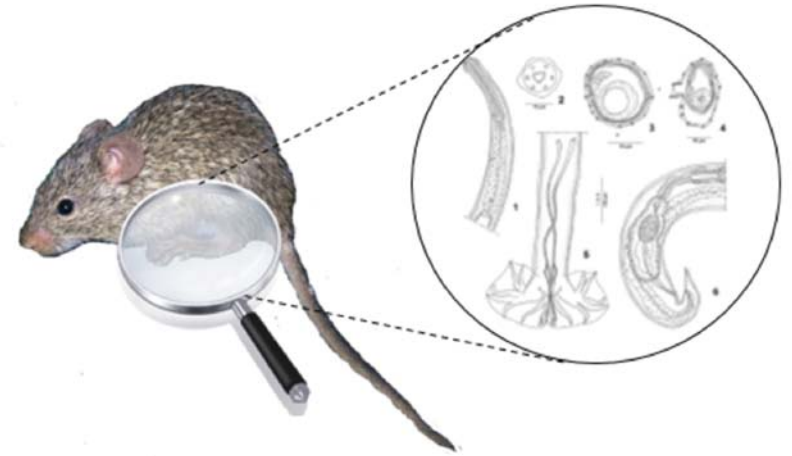
❖ Morpho & Molecular identification

✓ Morphological identification of helminths

- ❑ At Barcelona University

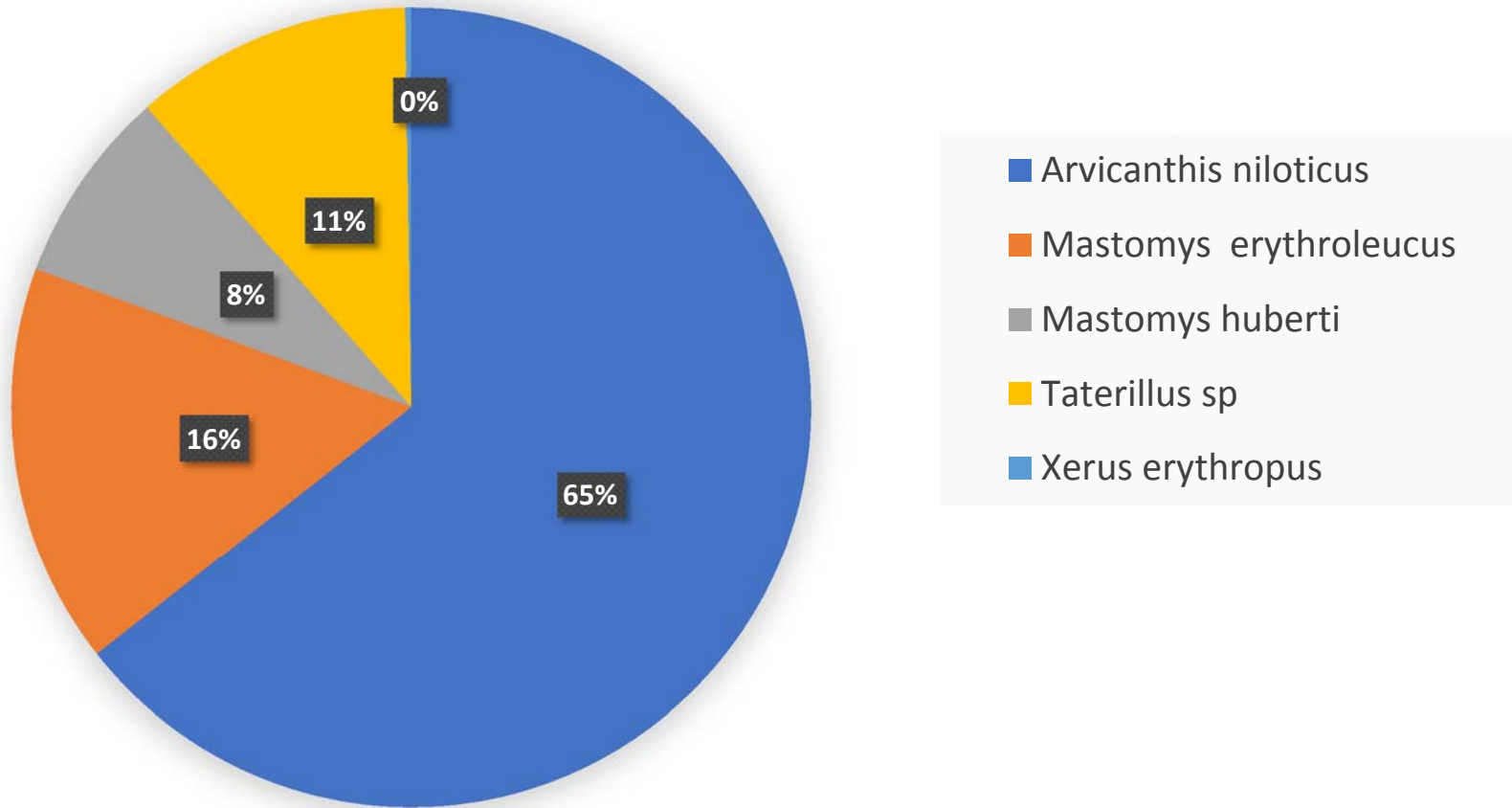
✓ Molecular identification

- Sequencing Cyt b for rodents (*Mastomys* species) at CBGP Montpellier
- Sequencing CO1 & NAD1 for helminths at CBGP Montpellier
- MALDI-TOF & Sequencing ITS for fungi, at VITROME-Marseille



PRELIMINARY RESULT (1/5)

Structure of rodents communities



➤ From 2007 to 2018

PRELIMINARY FUNGI RESULT (2/5)

- 270 samples collected in 2018
 - 14 genera identified
 - ✓ *Aureobasidium*
 - ✓ *Macrophomina*
 - ✓ *Ochroconis*
 - ✓ *Scedosporium*
 - ✓ *Penicillium*
 - ✓ *Scopulariopsis*
 - ✓ *Talaromyces*
 - 35 species
 - ✓ *Alternaria*
 - ✓ *Aspergillus*
 - ✓ *Auxarthron*
 - ✓ *Chrysosporium*
 - ✓ *Cladosporium*
 - ✓ *Emericella*
 - ✓ *Gymnascella*
 - Many colonies no identified
- Gymnascella dankaliensis* the more common fungus
- MAINLY FUNGI OF THE SOIL !!!
- Identification in progress !!

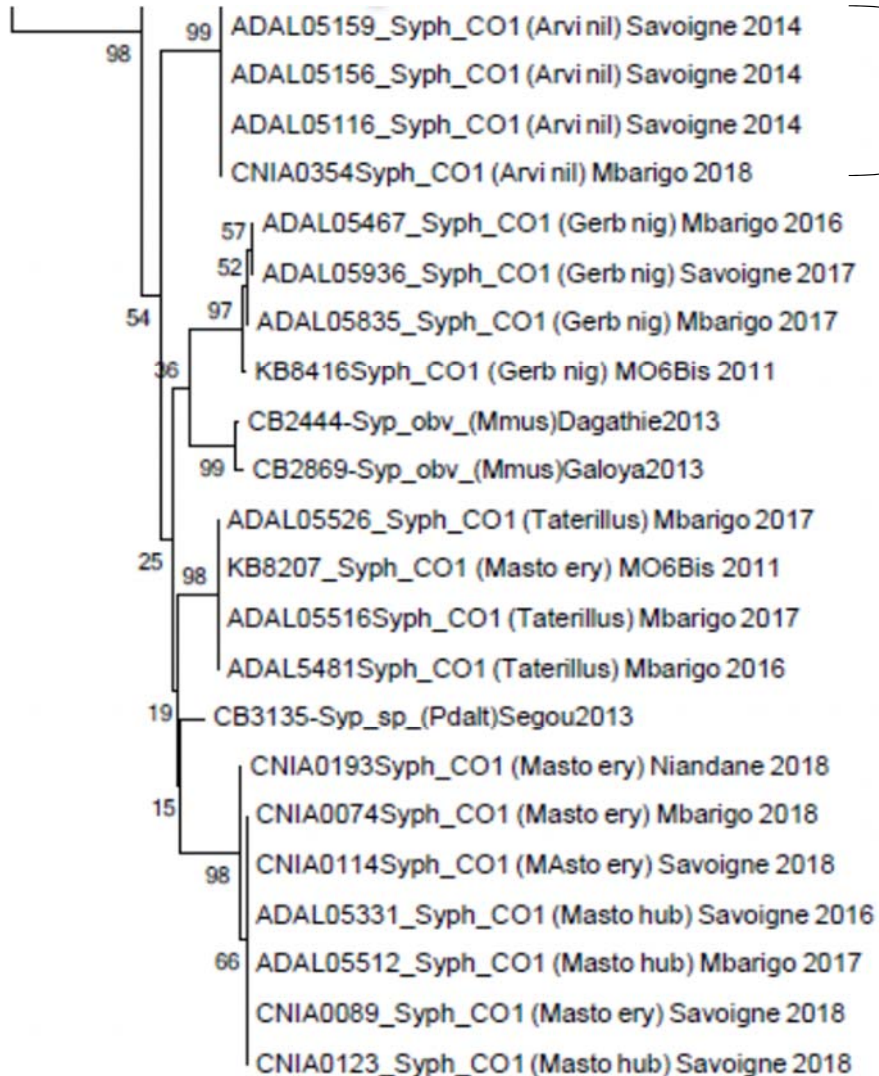
PRELIMINARY HELMINTHS RESULT (3/5)

❖ Morphological identification

- ✓ Nematodes (7 genera) →
 - Trichostrongylid only on *Arvicanthis* → Not morpho-identification for trichos
 - Syphacia* spp ; *Aspicularis tetraptera*
 - Pterygodermatites* spp ; *Protospirura* spp ; *Physaloptera* spp ;
Oxynema spp ;
- ✓ Trematodes (2 genera) → Echinostomes ; To identify (work in progress)
- ✓ Cestodes (5 genera) → *Hymenolepis* ; *Inermicapsifer* ; *Raillietina* ; *Taenia* ;
Catenotaenid
- ✓ Acanthocephalans (2 genera?) → To identify (work in progress)

PRELIMINARY HELMINTHS RESULT (4/5)

❖ NEMATODES



Syphacia sp2 (*Arvicanthis niloticus*)

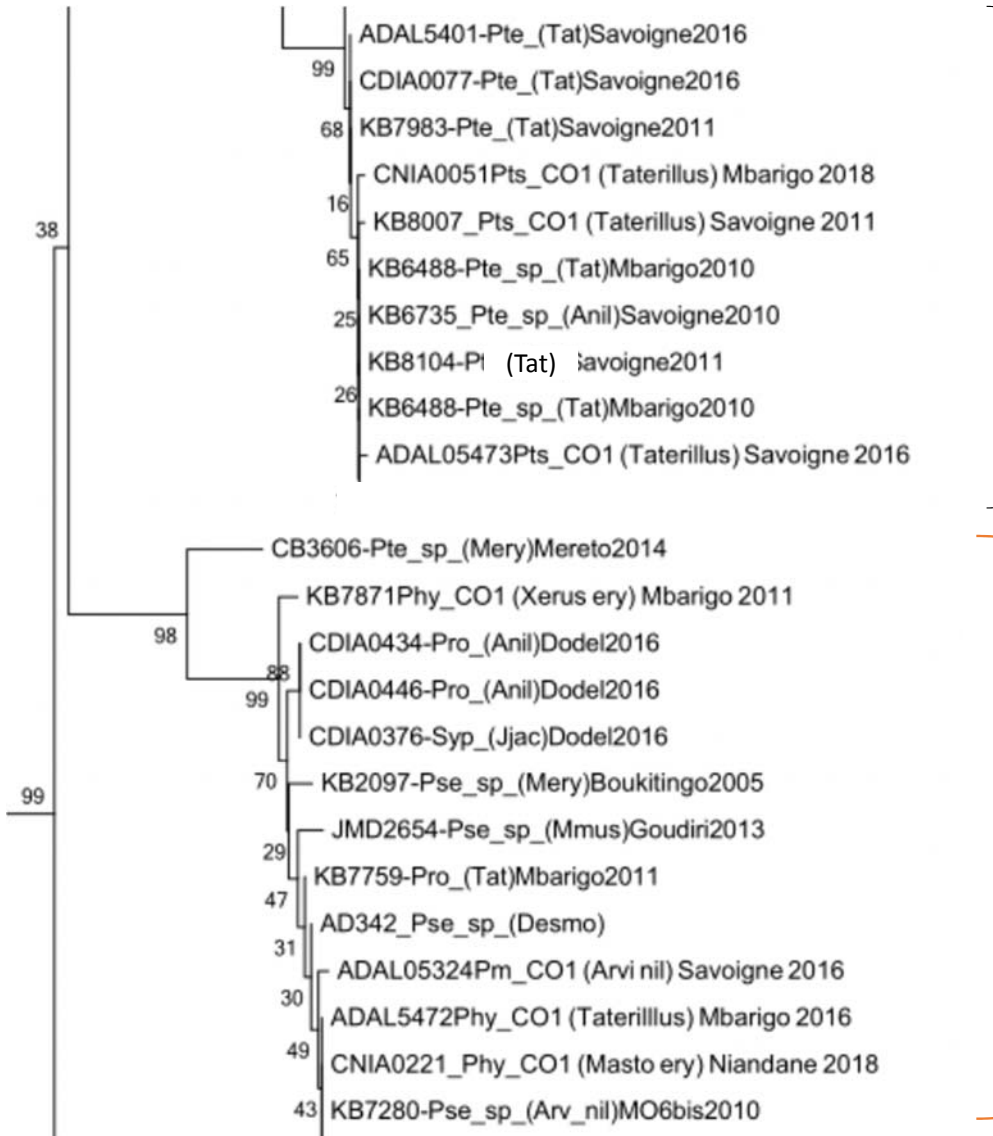
Syphacia sp3 (*Gerbillus nigeriae*)

Syphacia obvelata (*Mus musculus domesticus*)

Syphacia sp4 (*Taterillus* sp)

Syphacia sp5 (*Mastomys* sp)

PRELIMINARY HELMINTHS RESULT (5/5)

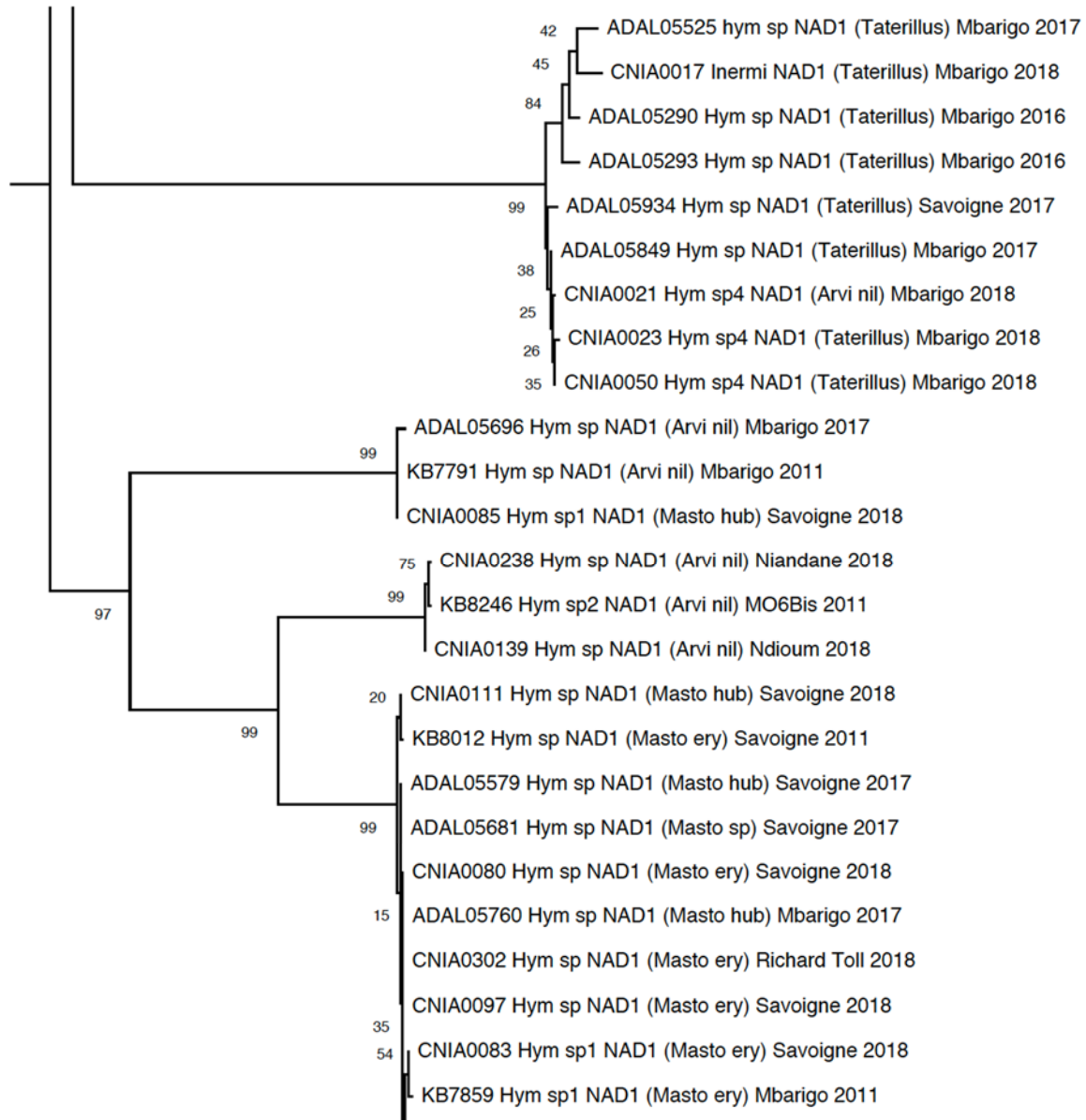


Pterygodermatites sp2 (*Taterillus* sp)

- Not Clear
- Mix of many genera (*Physaloptera*, *Protospirura*, *Pseudophysaloptera*)
- CO1 gene is not adequate for this group ?
- Just spill-back or spill over

Work in progress !!

❖ Cestodes



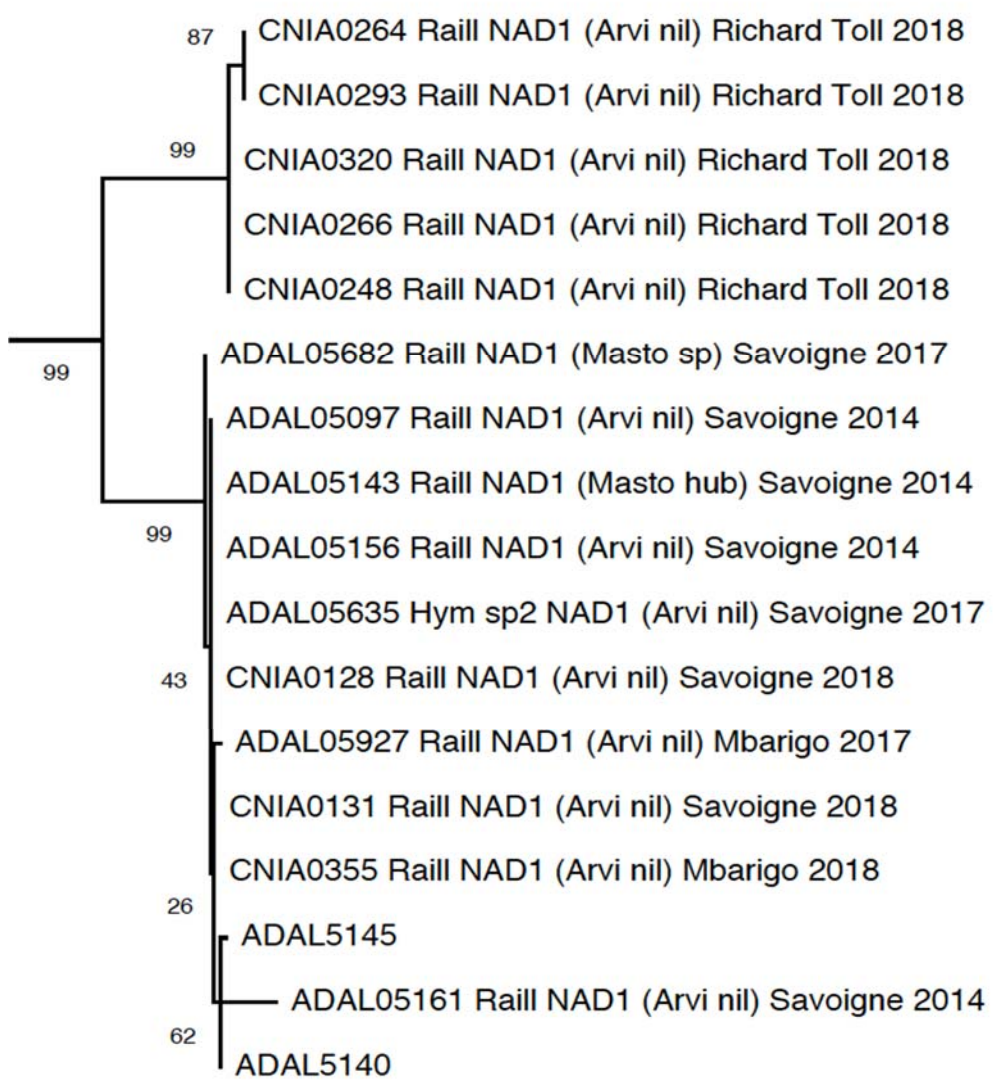
Hymenolepis sp4 (*Taterillus*)

Hymenolepis sp1 (*Arvicanthis niloticus*)

Hymenolepis sp2 (*Arvicanthis niloticus*)

Hymenolepis sp5 (*Mastomys* spp ?)

❖ Cestodes



Raillietina sp2
(*Arvicanthis niloticus*)

From Richard Toll

VS

Raillietina sp1
(*Arvicanthis niloticus*)

From Mbarigo & Savoigne

PERSPECTIVES

➤ Availability of a large agricultural farm in UGB (30ha)



➤ February to July 2020



➤ Opportunity of training

❖ assess damage caused by rodents to stocks and crops





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Thanks for your attention

