



# Benin: A Profile of Malaria Control and Epidemiology,

November 2015

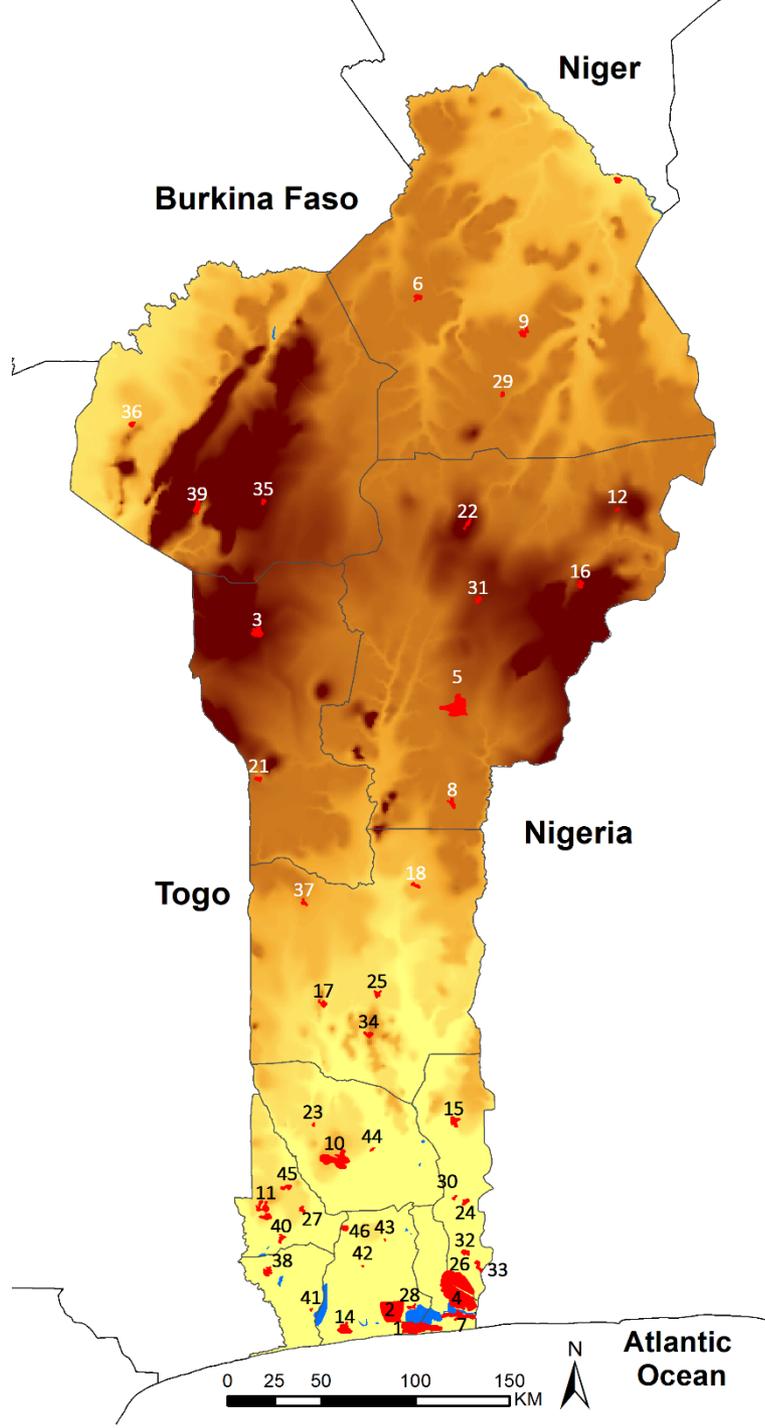


INFORMATION FOR MALARIA

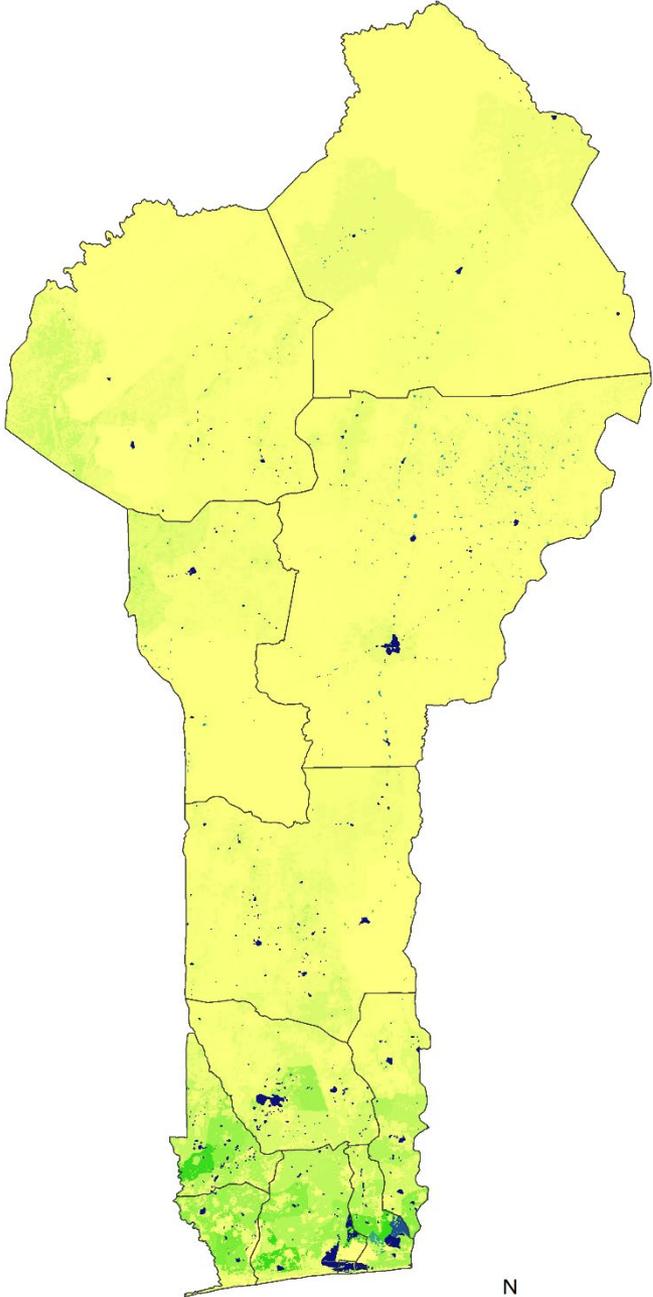


**Context: topography,  
population and health  
services**

# Benin: Major city/town extents and elevation



# Benin: Population Distribution at 100 x 100m<sup>2</sup>



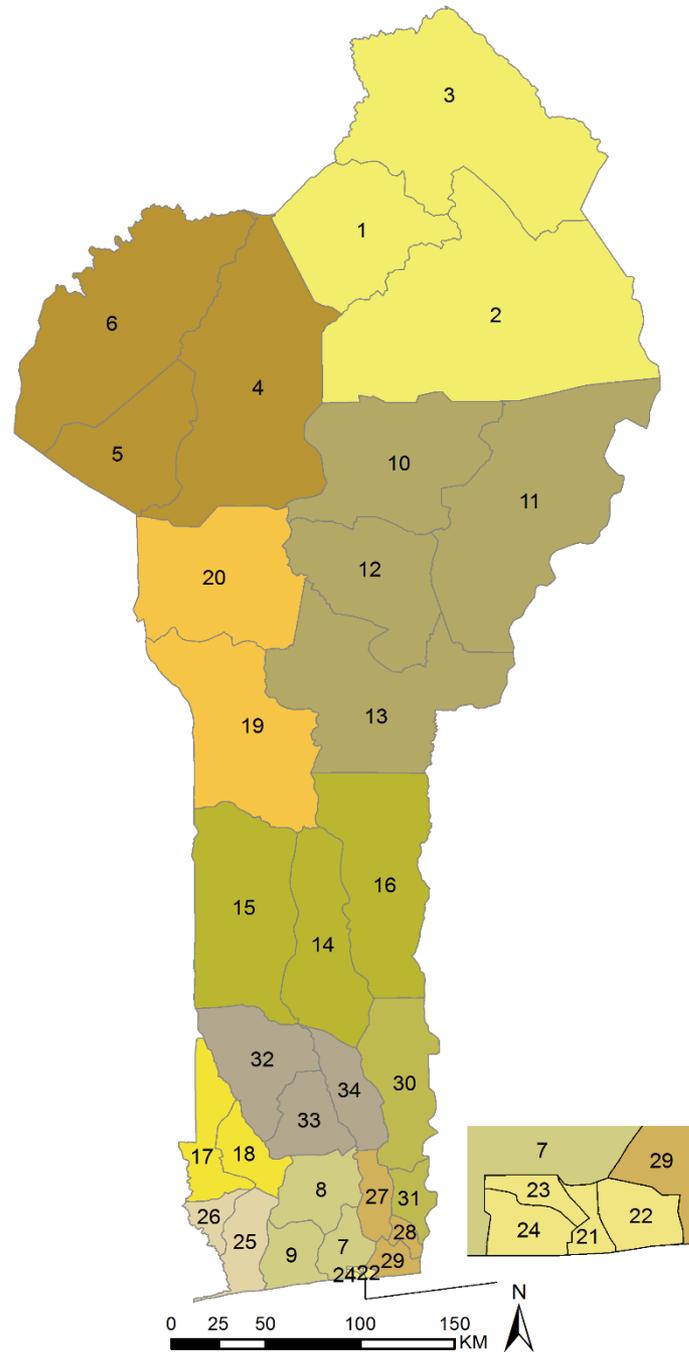
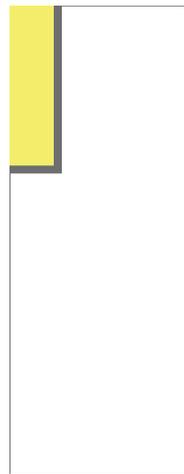
Population (Persons per 100m grid square)

0 405

0 25 50 100 150 KM

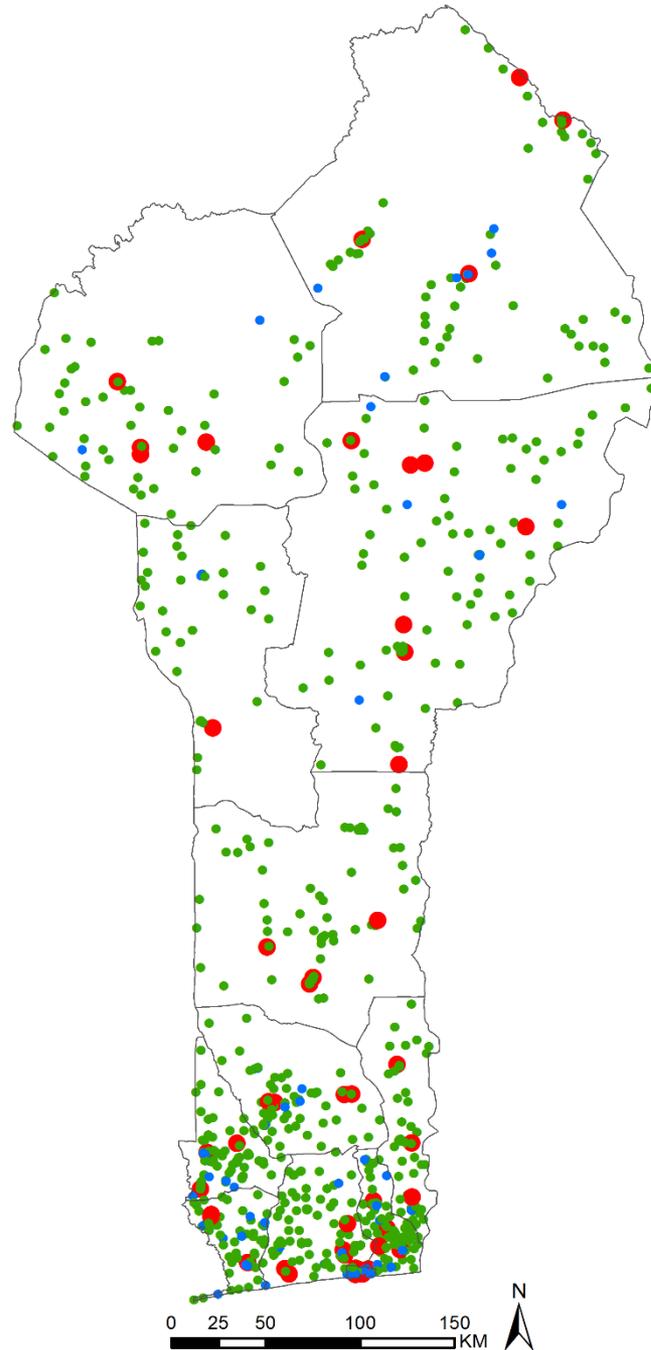


# Benin: Health Departments (color code shown in legend) and Health Zones



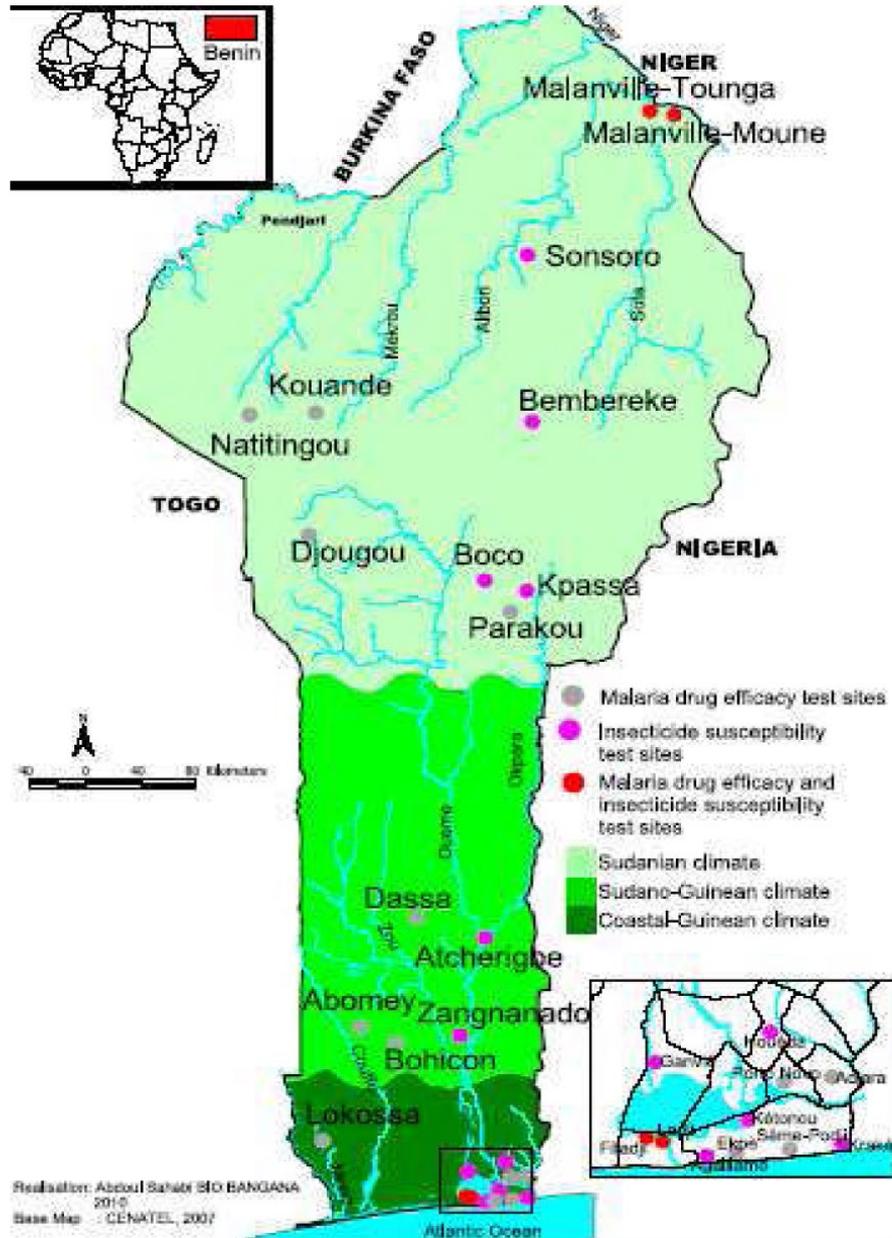
Map Code	District	Map Code	District
	<b>Alibori</b>		<b>Donga</b>
1	Banikoara	19	Bassila
2	Kandi	20	Djougou
3	Malanville		<b>Littoral</b>
	<b>Atacora</b>	21	Cotonou 1 Et 4
4	Kouande	22	Cotonou 2 Et 3
5	Natitingou	23	Cotonou 5
6	Tanguieta	24	Cotonou 6
	<b>Atlantique</b>		<b>Mono</b>
7	Abomey-Calavi	25	Come
8	Allada	26	Lokossa
9	Ouidah		<b>Oueme</b>
	<b>Borgou</b>	27	Adjohoun
10	Bembereke	28	Avrankou
11	Nikki	29	Porto-Novo
12	Parakou		<b>Plateau</b>
13	Parakou	30	Ketou
	<b>Collines</b>	31	Sakete
14	Dassa		<b>Zou</b>
15	Savalou	32	Abomey
16	Save	33	Bohicon
	<b>Couffo</b>	34	Cove
17	Aplahoue		
18	Klouekanme		

**Benin:** Distribution of 824 public health facilities: 51 Hospitals (national, departmental, and zonal) (**red**) Health centres (CSA, CSC, CCS, CSSP) (**green**); 27 medical centres and 42 dispensaries (UVS, clinics) (**Blue**)

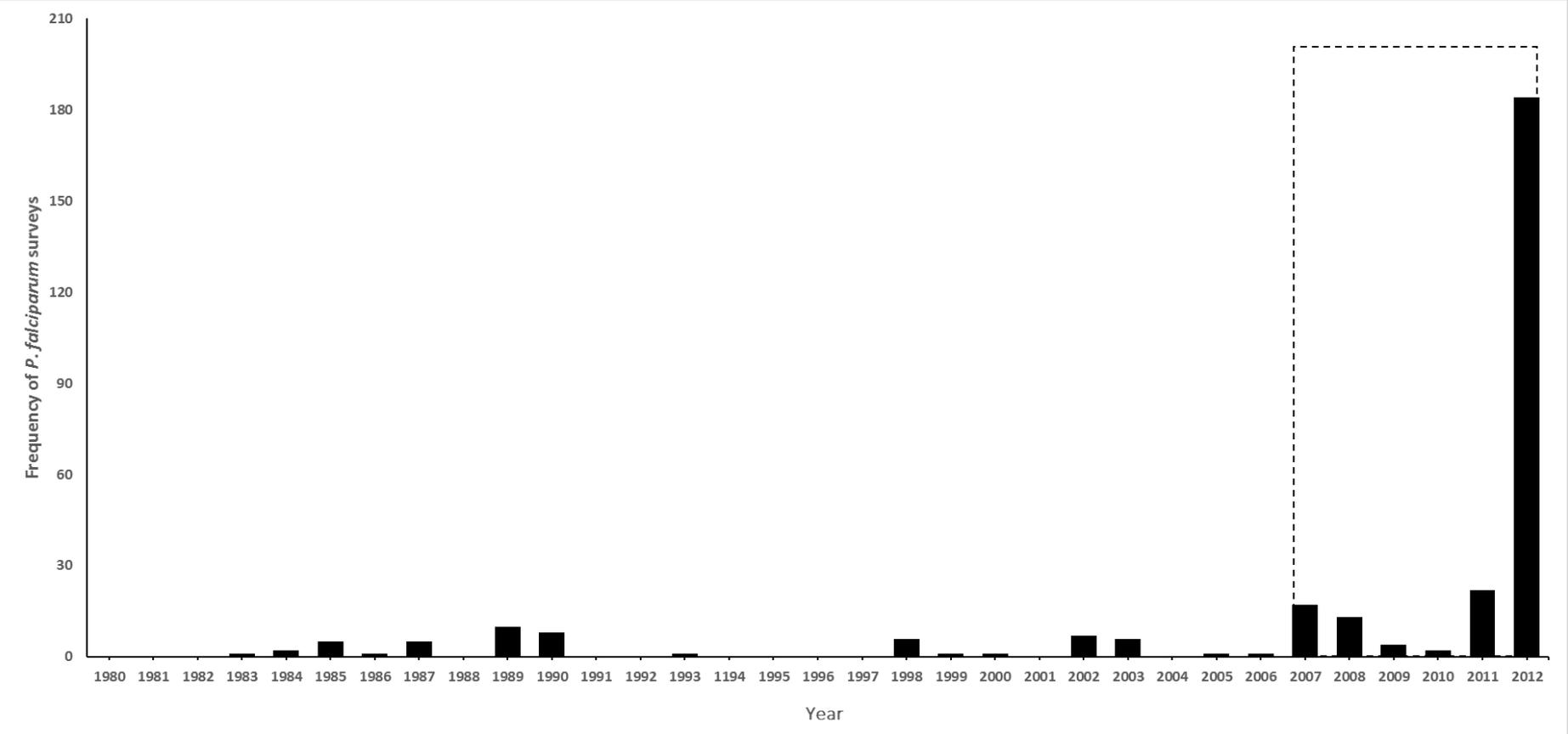


# **Malaria risk mapping**

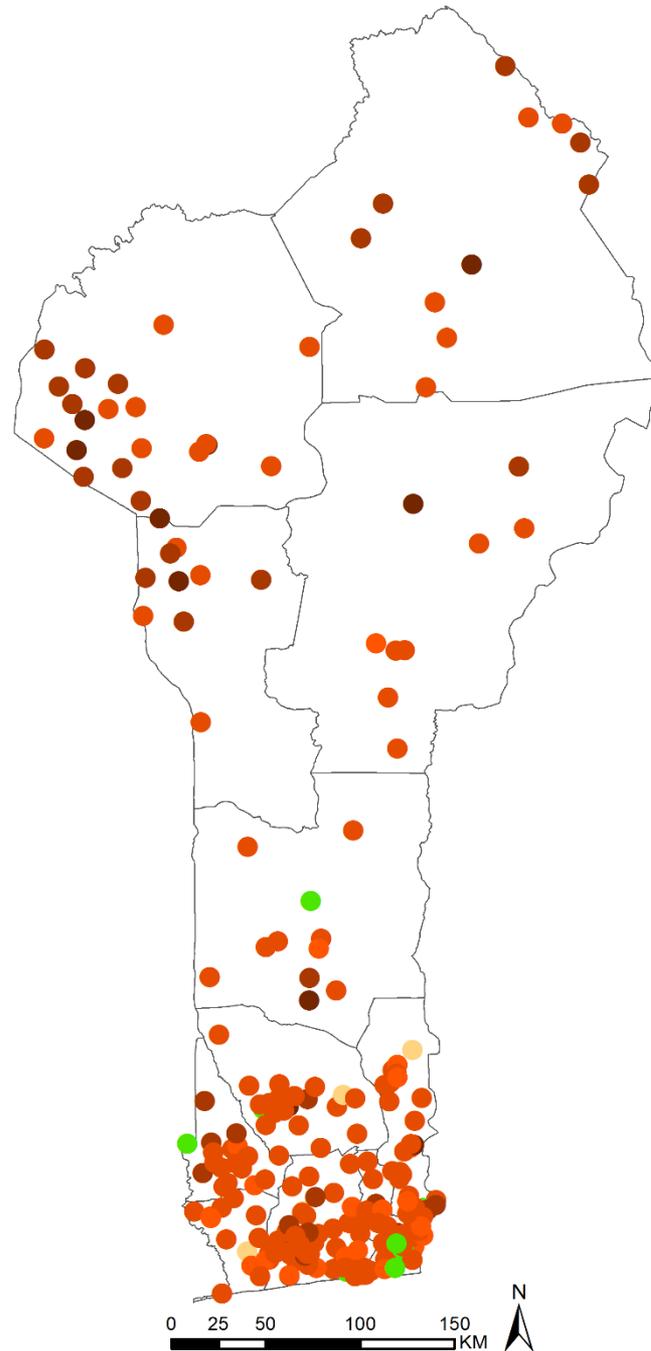
# Benin: Previous Malaria risk maps used by PNLP



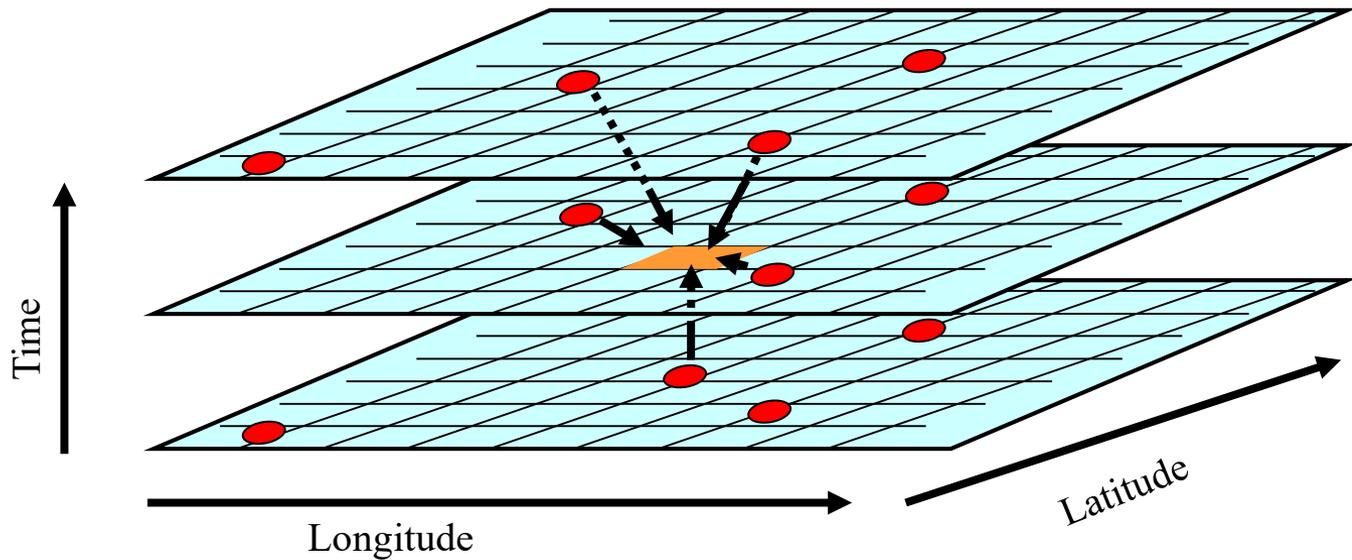
# Benin: Malaria parasite prevalence surveys by year 1980-2012



**Benin:** Location of 242 age-corrected parasite prevalence data ( $PfPR_{2-10}$ ) between 2007-2012



# Space-time geostatistical models of *P. falciparum* transmission intensity



# **Using routine data to map malaria risk**

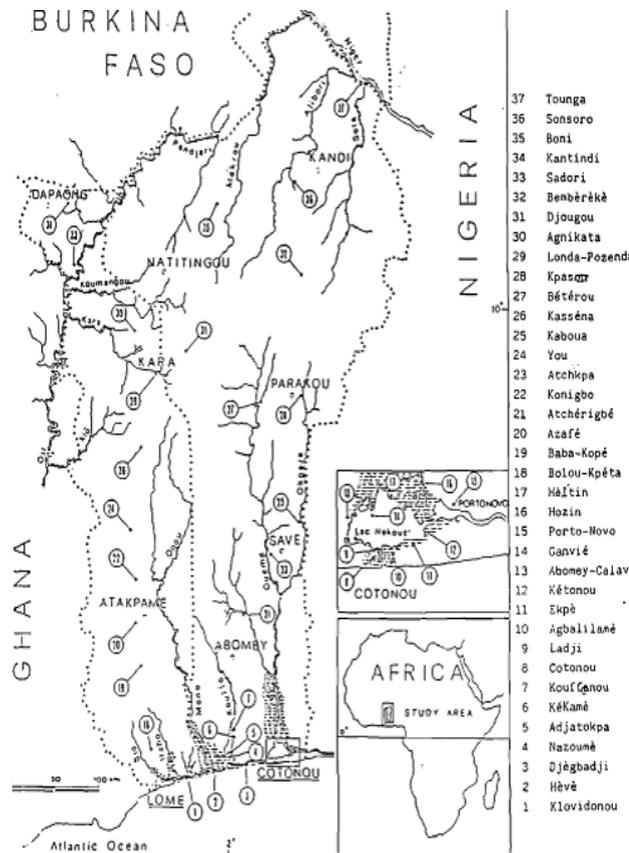
# **Malaria Vector Mapping**

# Benin: Previous national malaria vector mapping

1995-1997 (Akogbéto & Yakoubou, 1999)

1989 (Akogbéto, 1992)

Localités prospectées et répartition des populations d'*An. gambiae* s.s. sensibles et résistantes à la perméthrine à 0,25%, sur le transect sud-nord Bénin.  
 Prospected sites and distribution of *An. gambiae* s.s. populations sensitive and resistant to permethrin 0,25% on the north-south axis of Benin.



1: Zone d'étude du complexe *An. gambiae*:  
 Carte du Bénin et du Togo montrant les localités suivant un transect sud-nord.

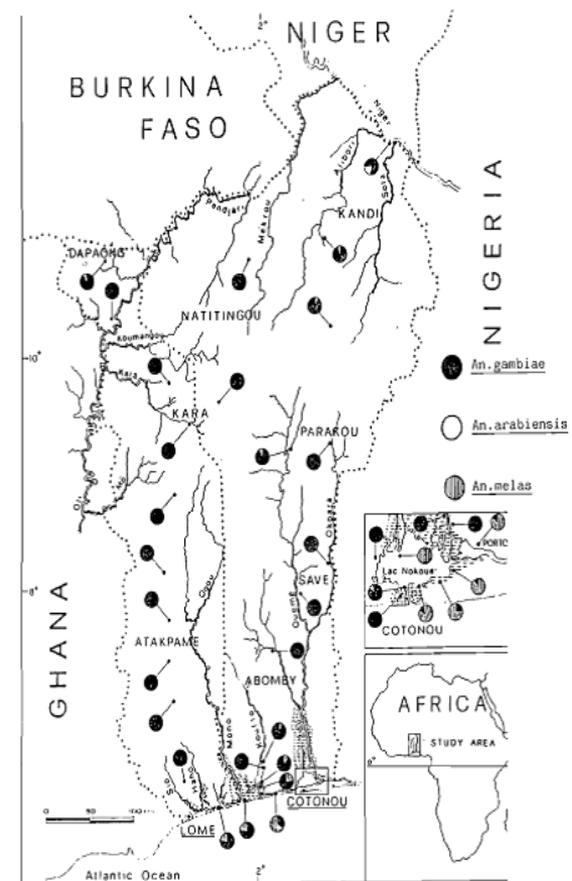
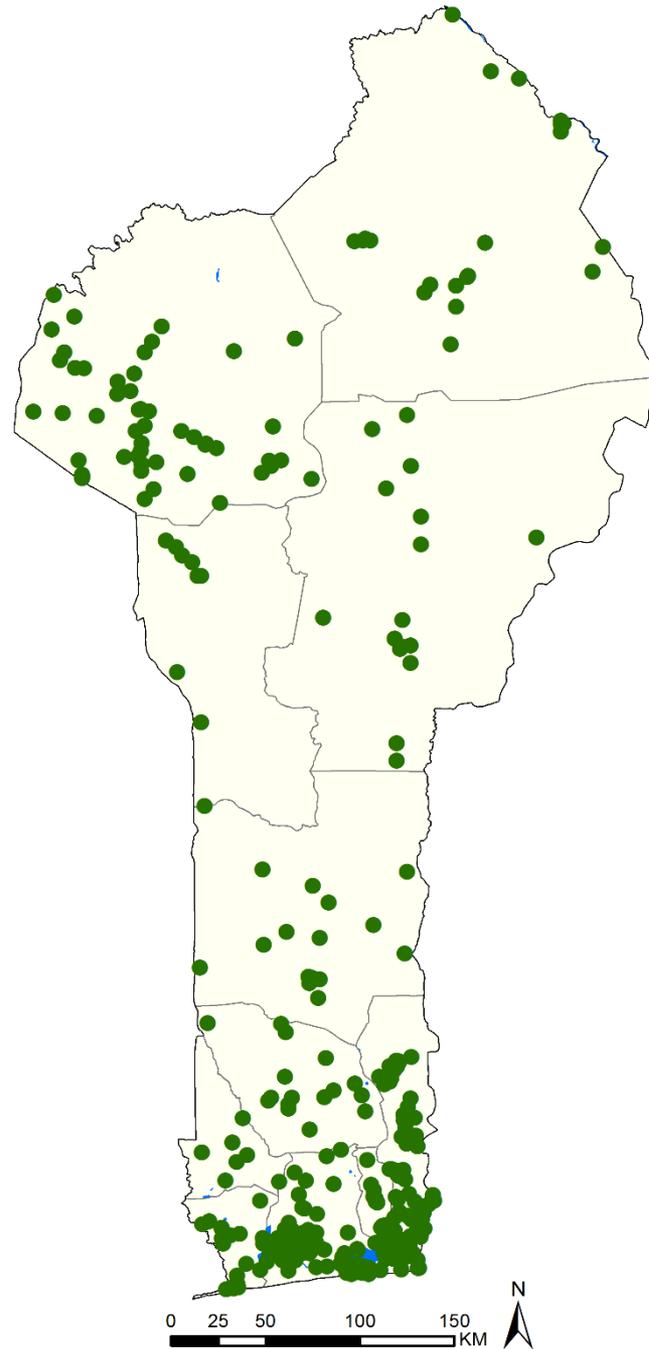
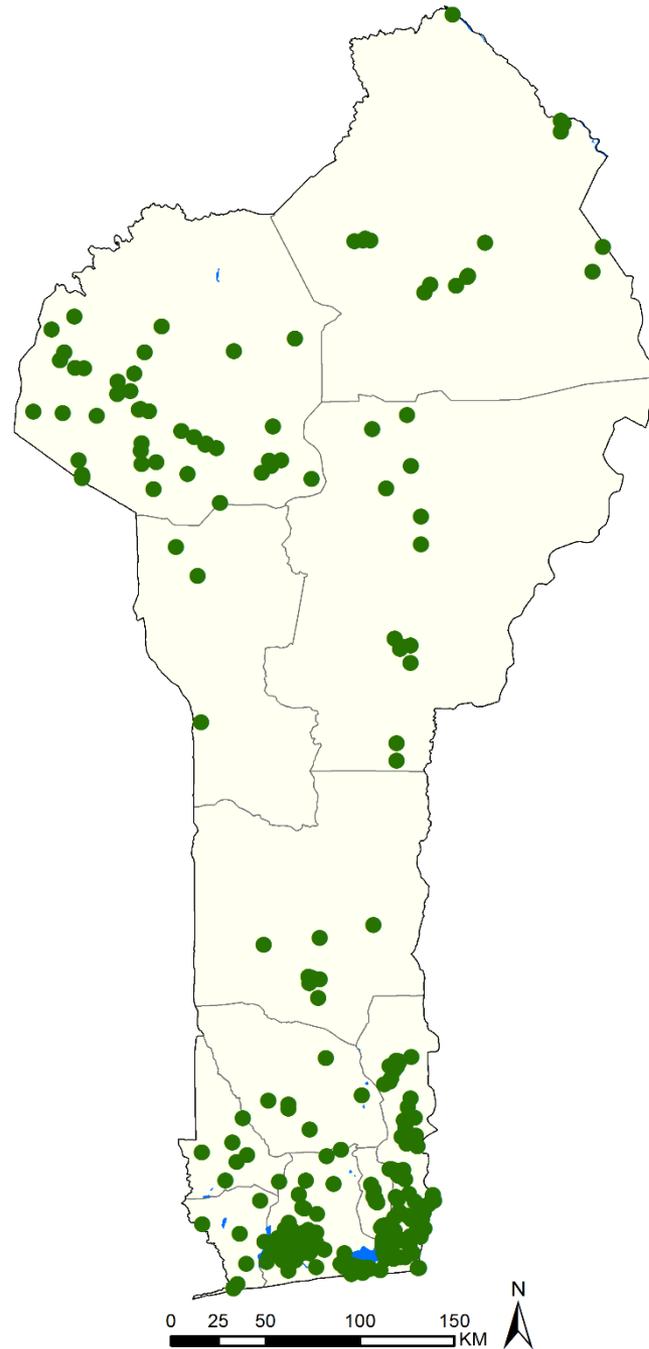


Fig. 2: Distribution géographique des espèces du complexe *An. gambiae* récolté de septembre 1983 à novembre 1987 suivant un transect sud/nord Bénin/Togo.

**Benin:** location of mosquito sampling sites for 369 surveys undertaken between 1905 and 2014

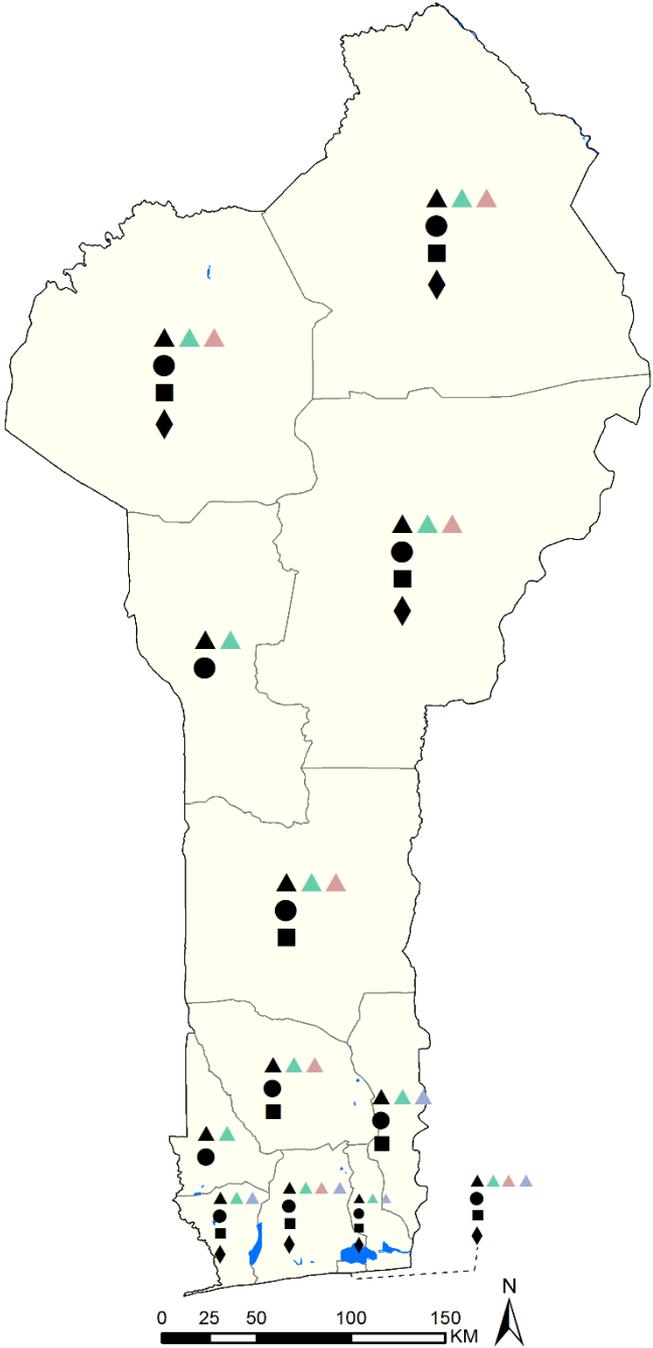


**Benin:** location of mosquito sampling sites for 285 surveys undertaken since 2005



# Benin: Recorded species identifications across all surveys by province

- ▲ *An gambiae sl*
- ▲ *An gambiae ss*
- ▲ *An arabiensis*
- ▲ *An melas*
- *An funestus*
- *An pharoensis*
- ◆ *An nili*

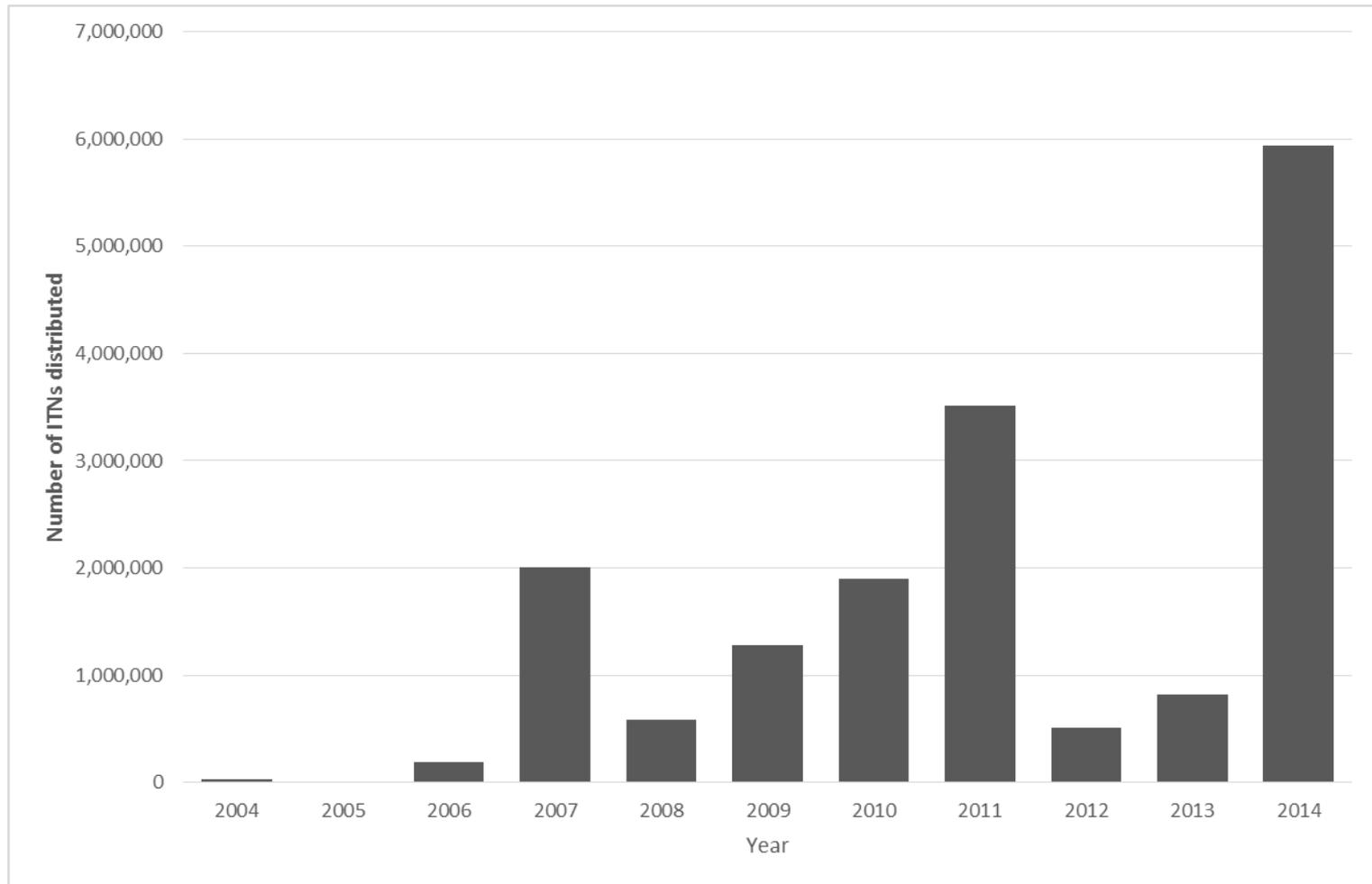


**Benin:** Records of other anopheline species,  
either non-vectors or considered incidental  
vectors of malaria since 1905

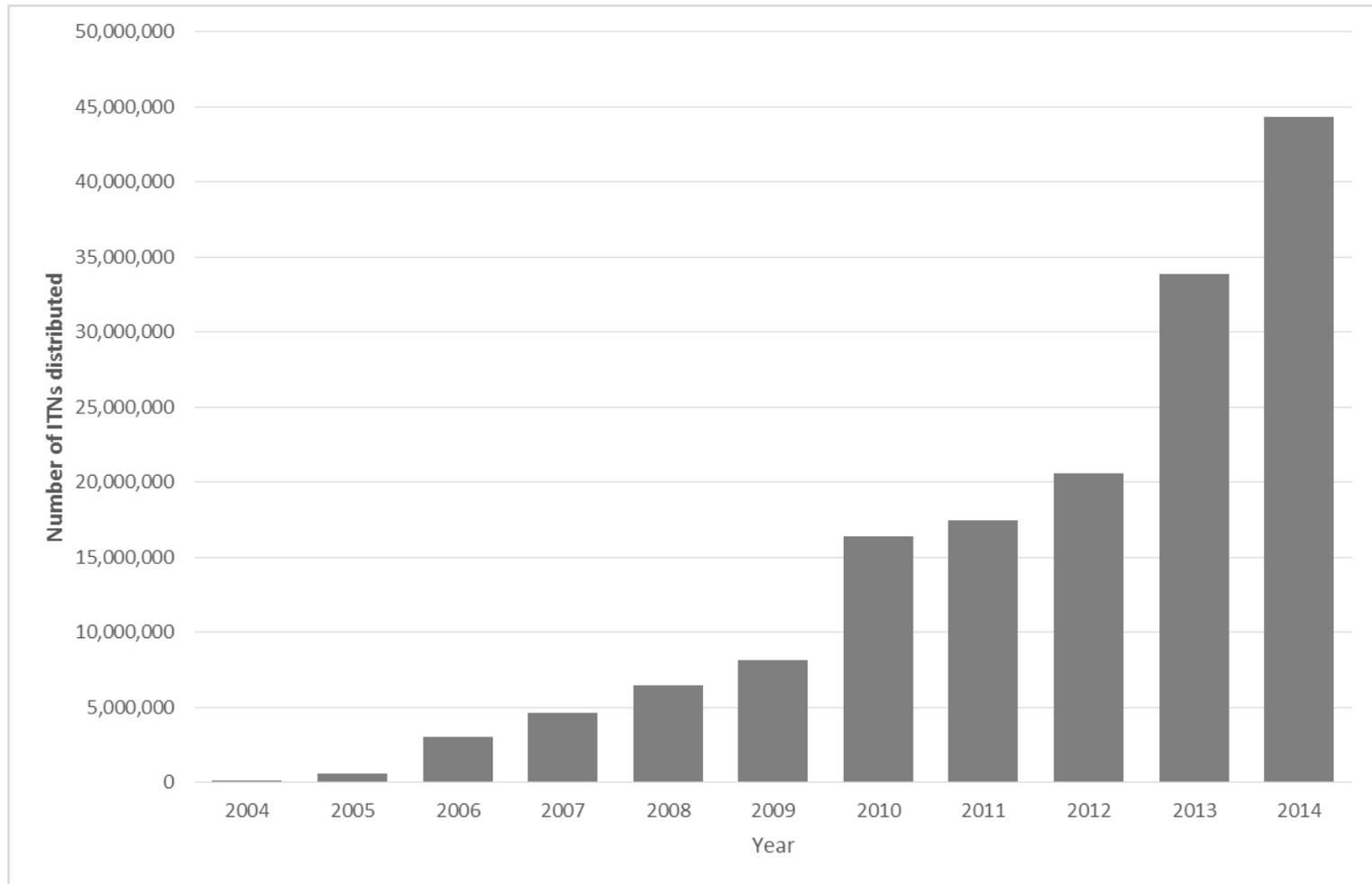
*An. brohieri, An. brunnipes, An. coustani, An. domicolus,*  
*An. flavicosta, An. fuscicolor, An. hargreavesi, An. lesoni,*  
*An. maculipalpis, An. obscurus, An. paludis,*  
*An. pretoriensis, An. rhodesiensis, An. rufipes,*  
*An. squamosus, An. wellcomei, An. ziemanni*

# **Malaria Vector Control Mapping**

# Benin: Annual national importation of ITN/LLIN



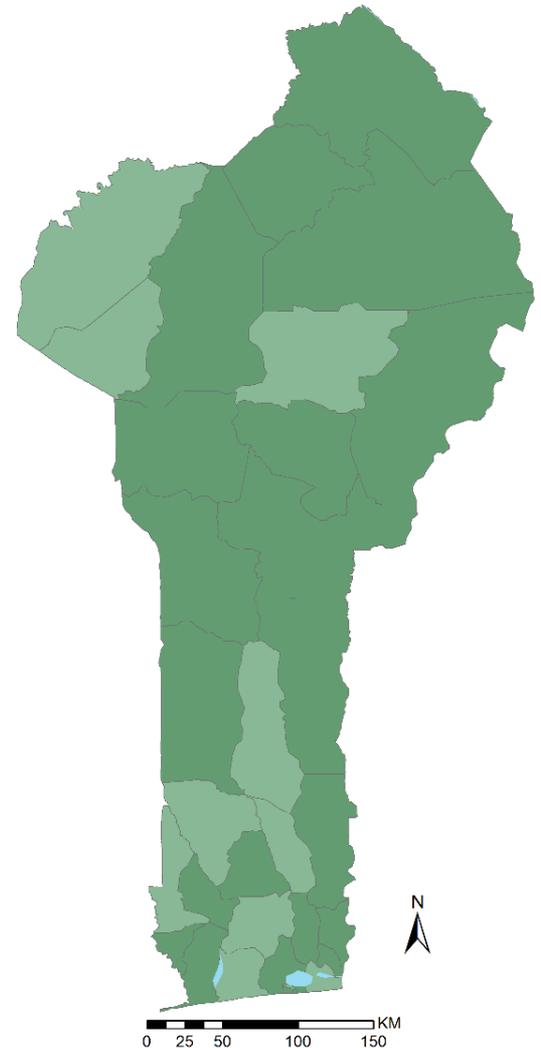
# Benin: Cumulative national importation of ITN/LLIN



**Proportion of population  
sleeping under ITN in 2011-2012**



**Proportion of households with at  
least one ITN for every two persons  
in 2011-2012**



# Benin: IRS Districts

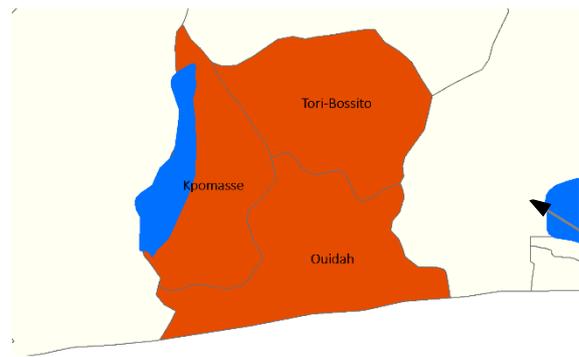
## Atacora Department:

2011: 7 communes (bendiocarb)  
2012-2015: 9 communes (bendiocarb)  
2014: 9 communes (Pirimiphos methyl )



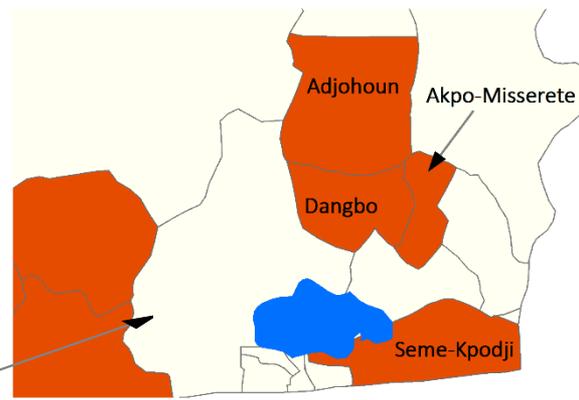
## Atlantique : (2009)

3 communes (bendiocarb)



## Ouémé: (2008-2010)

4 communes (bendiocarb)



# **Provisional conclusions and recommendations**

# Acknowledgements

We acknowledge all those who have generously provided unpublished data, helped locate information or the geo-coordinates of data necessary to complete the analysis of malaria risk across Benin:

**Césaire Damien Ahanhanzo, Alexandre Biao, Emile Bongo, Vincent Corbel, Umberto D'Alessandro, Georgia B Damien, Yves Eric Denon, Virgile Gnanguenon, Marie-Claire Henry, Florence Kouadio, Florence Migot-Nabias, Christian Lengeler, Alain Nahum, Mariam Oke, Razack Osse, Christophe Rogier, Peter Thomas**