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# Flora and Vegetation of East African Wetlands in the Context of Land Use Changes

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## Introduction

**Wetlands in East Africa** are increasingly **converted to cropland** due to growing food demand and high fertility of wetland soils

Intensification of **land use** affects **biodiversity** and **ecosystem functions** as well as provision of **ecosystem services**.

**Total number of species** however **rises** as agriculture creates **new habitats** which are occupied by **pioneer species**, some of them introduced.

**Disturbance** also creates **opportunities** for **invasive species**.



## Biodiversity and Ecosystem Services



Tall **grasses** and **sedges** of **largely unused lands** Used as **building** and **thatching material**, also for mats, baskets etc.

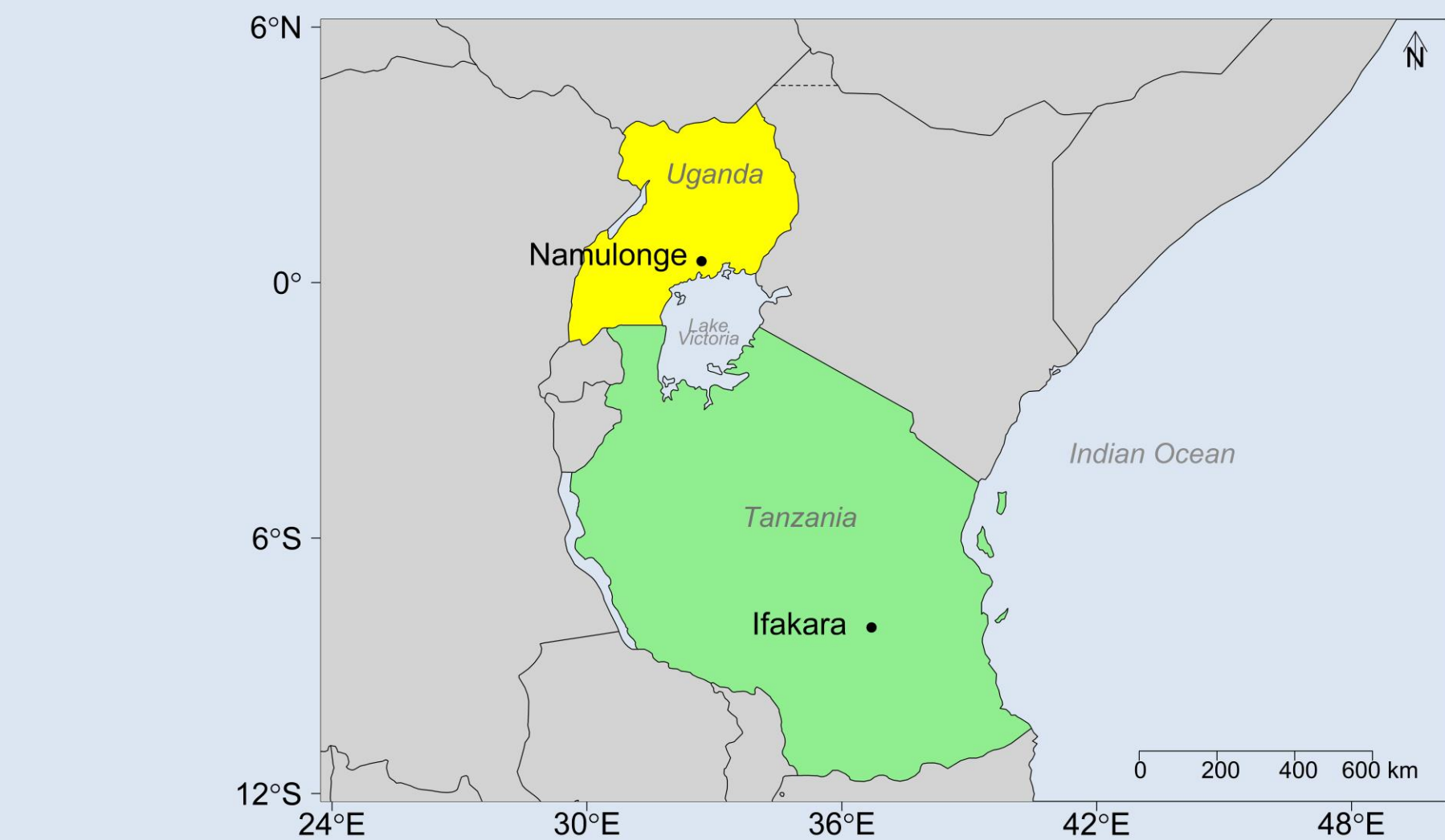
Temporary fishermen's hut built with the grass *Vetiveria nigriflora*



**Weeds on cropland with medical properties:**

Native *Acmella caulirhiza* (left): E.g. against toothpain  
Introduced *Bidens pilosa* (middle).  
E.g. to stop bleeding

## Study Area

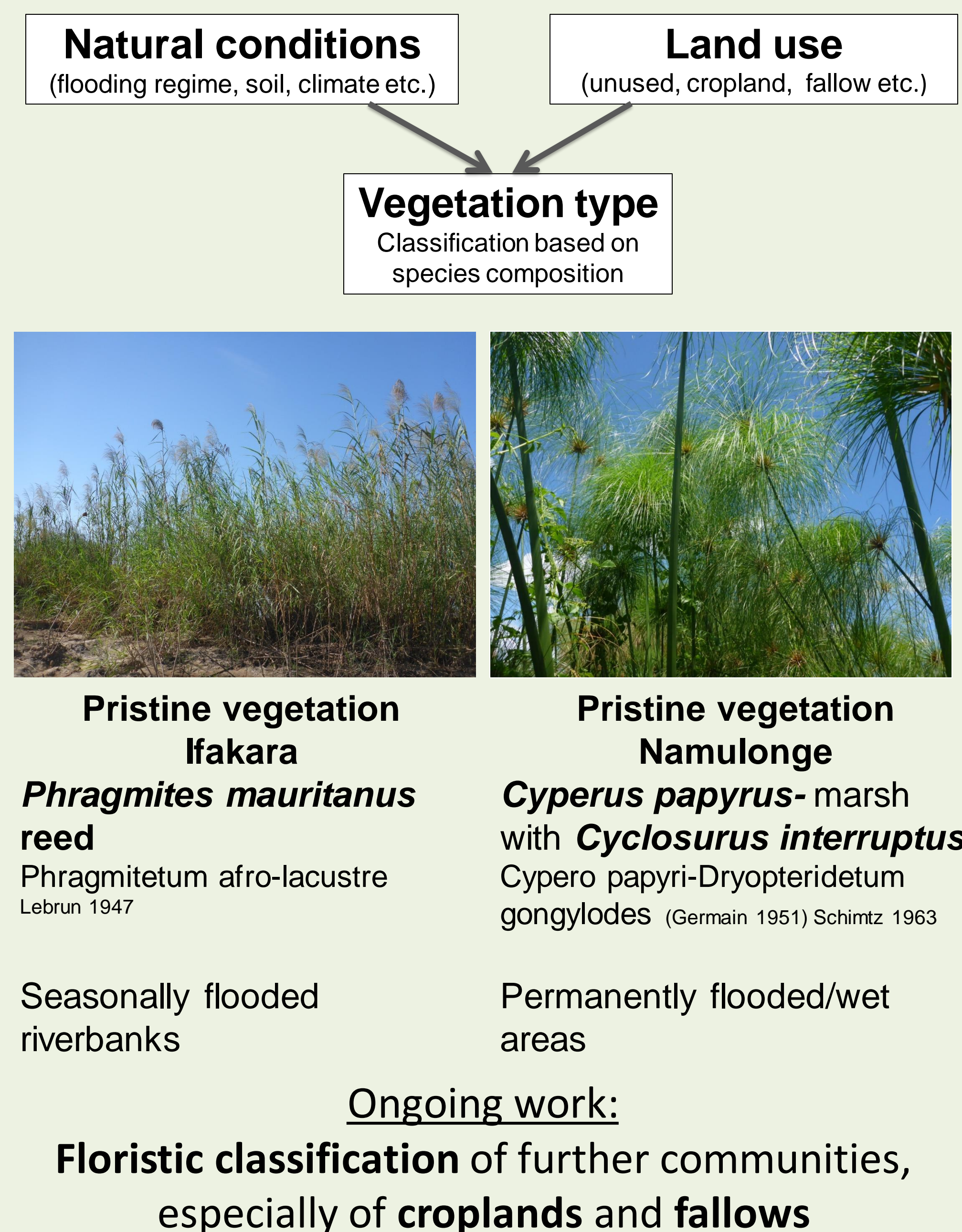


	Ifakara, Tanzania	Namulonge, Uganda
<b>Wetland type:</b>	Floodplain of the Kilombero river	Inland valleys
<b>Altitude:</b>	Around 250 m	Around 1110 m
<b>Climate:</b>	Tropical savanna bioclimate (Aw)	Tropical rainforest to Tropical monsoon climate with bimodal rainfall distribution (Af / Am)
<b>Natural Vegetation:</b>	Edaphic grasslands in the long and frequently flooded area, bushland in the fringe of the wetland	Papyrus marsh in the wetter, bushland and forest in the drier parts of the wetland

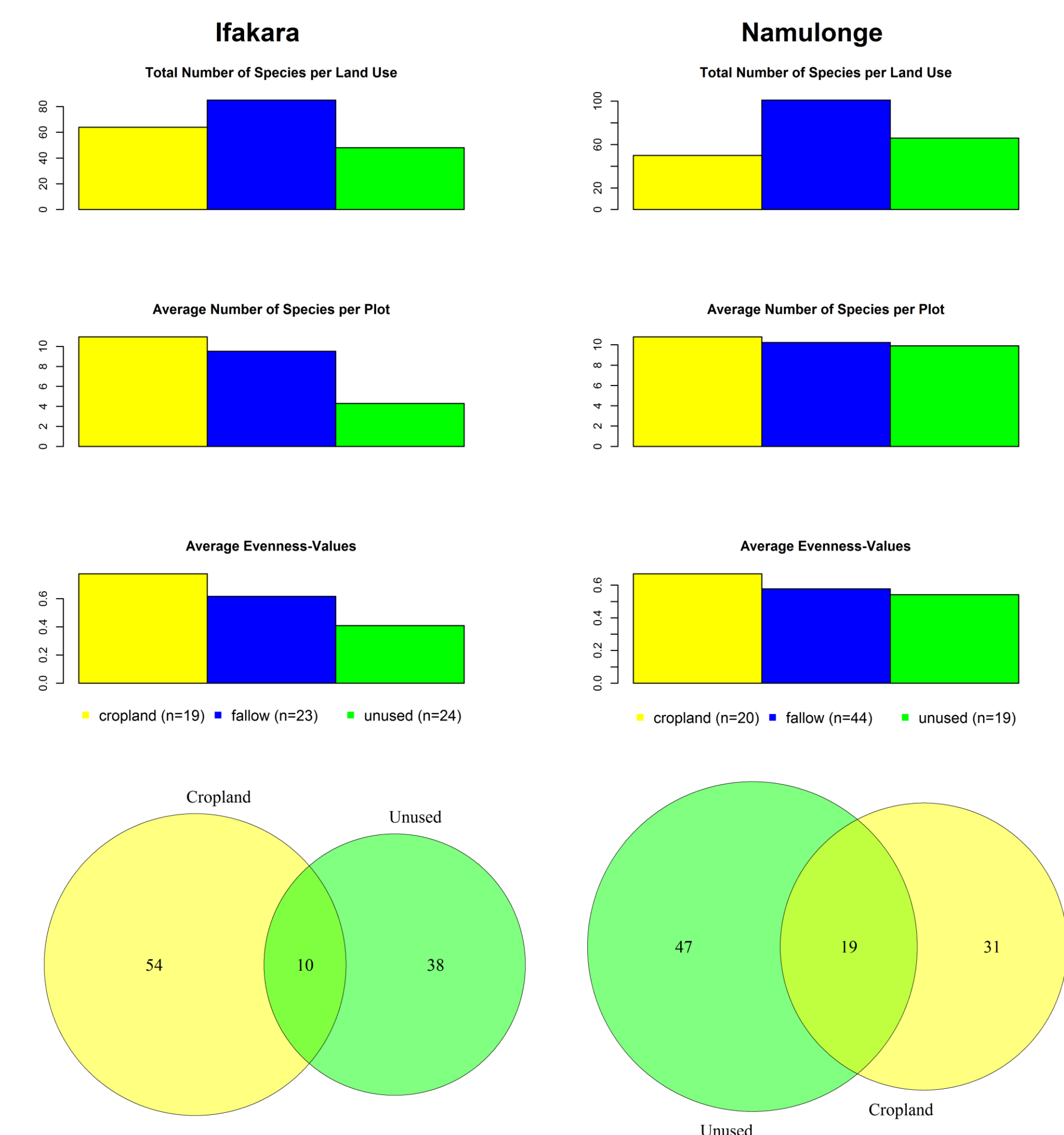
## Key Findings

- Land use changes increase the overall floristic diversity of the wetlands**
- Many species are however only found in little disturbed environments**
- Most introduced species are restricted to croplands and recent fallows, except invasive *Mimosa pigra***
- Specific ecosystem services are only provided by natural vegetation**

## Classification



## Diversity and land use



Number of species in cropland and unused plots and their overlap

## Introduced species

***Mimosa pigra*** (Fabaceae)

Origin: South America  
**Invasive** in parts of Africa, Asia and Australia

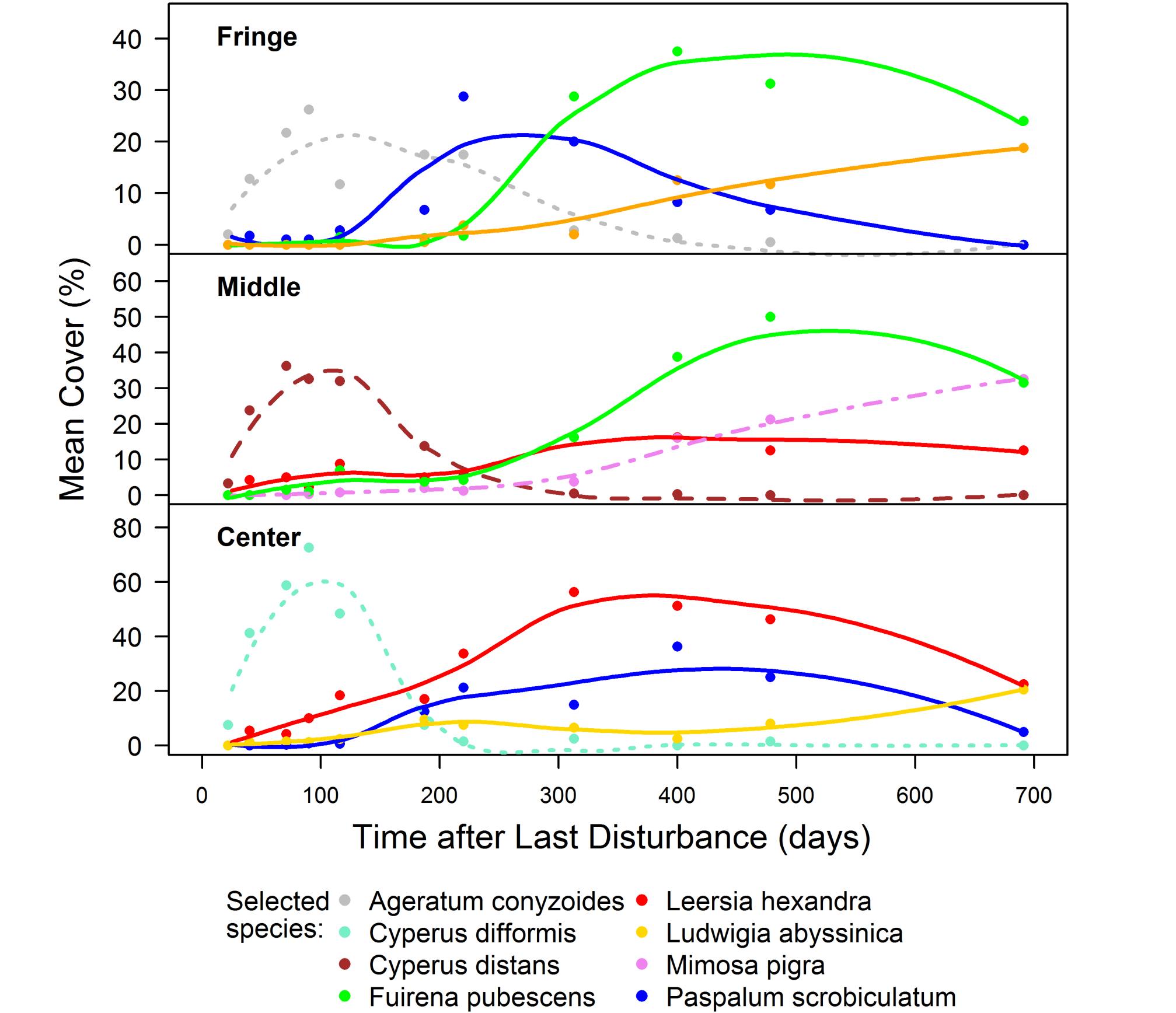
**Frequent in Namulonge**  
Esp. on fallows from 2nd year.

**Frequency (%) of selected neophytes in relation to land uses**

Species	Origin	Ifakara			Namulonge		
		crop	fall	unuse	crop	fall	unuse
Ageratum conyzoides	America	16	13	-	90	50	5
Bidens pilosa	America	-	4	-	40	41	-
Hyptis spicigera	America	21	35	-	-	-	-
Ischaemum rugosum	Asia	37	13	-	-	-	-
Mimosa pigra	America	-	-	13	5	27	11

crop: cropland, fall: fallow, unuse: unused plots with (semi-)natural vegetation

## Regeneration Dynamics



**Dynamics of Species Abundances in Namulonge:**  
Experiment at different positions in the wetland.  
Values are mean values of 4 plots (2x2m) each.