INTERVENTIONS FOR WETLAND CONSERVATION IN THE PAMPANGA RIVER BASIN AND CANDABA WETLANDS

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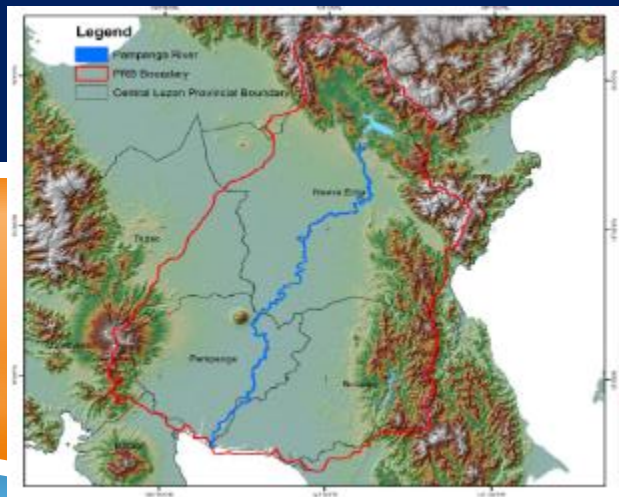


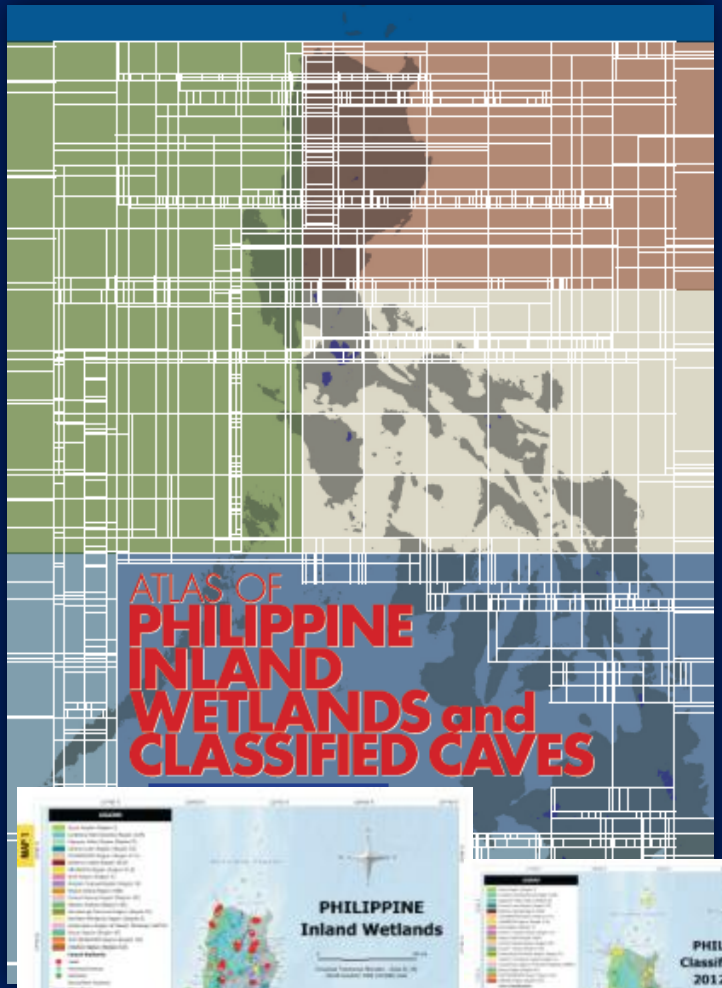
OUTLINE

1) Description of the Area
2) Exemplary Values
3) Vulnerabilities/Disaster Risks
4) Interventions
    a. Infrastructures
    b. Non-infrastructure
    c. Climate change adaptation
5) Conclusion
6) Potentials for the Future

THE PHILIPPINE BIOGEOGRAPHIC REGIONS

- Philippines=MEGAdiversity country (Ong *et al.*, 2002)
- Center of the center of marine biodiversity (Carpenter & Springer, 2005)
- High endemism

WETLANDS IN THE PHILIPPINES



221 Lakes

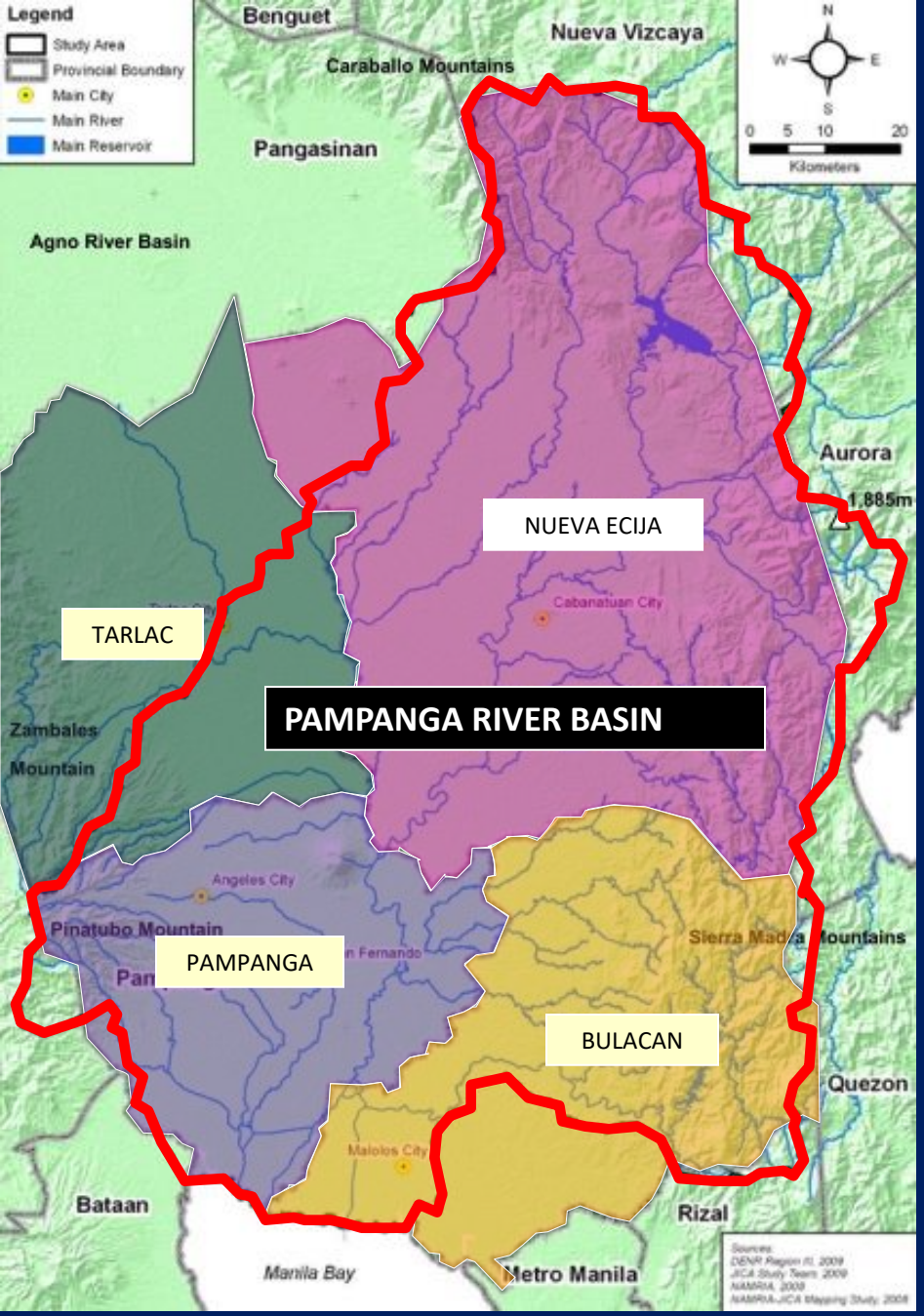
9 Peatlands

14 Marshes/Swamps

2,487* Rivers and river systems

*not included in total, indicative due to naming convention

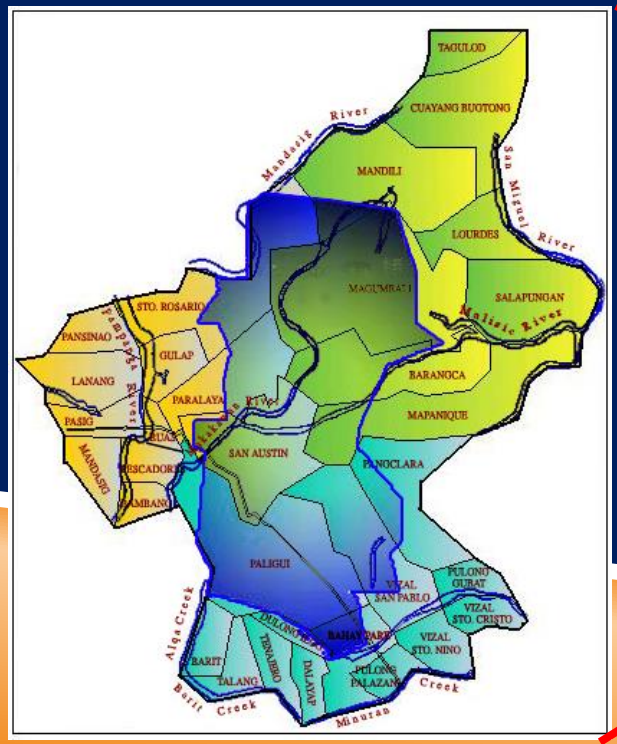
THE PAMPANGA RIVER BASIN

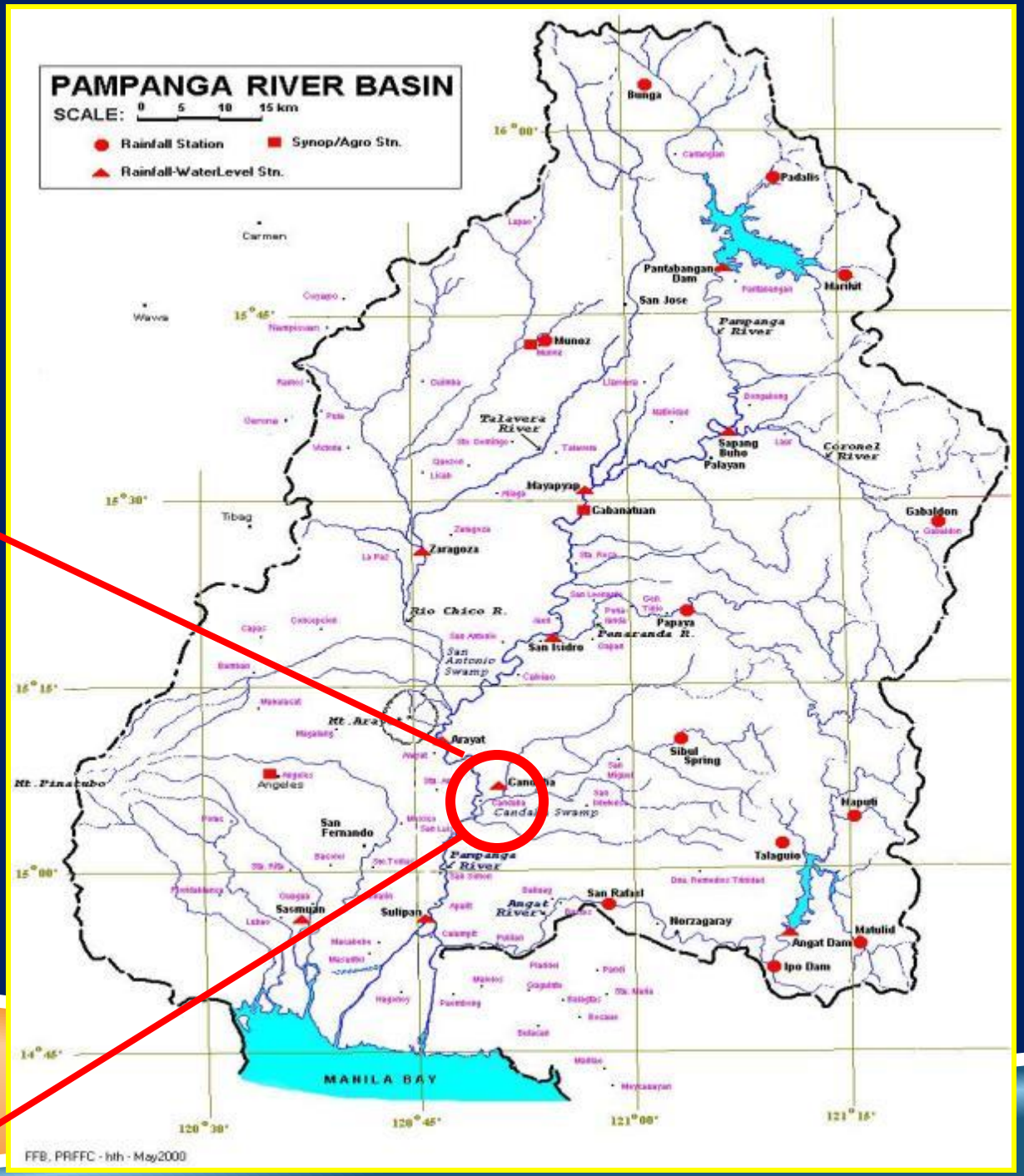


- Total catchment area of 10,434 sq.km.
- Covered by the provinces of Pampanga, Tarlac, Bulacan and Nueva Ecija.
- 4th largest river basin in the Philippines; 2nd in Luzon next to Cagayan River Basin
- Total potential water supply of 18.34 MCM/day
- Dependable Surface Water supply of 8.91 MCM/day

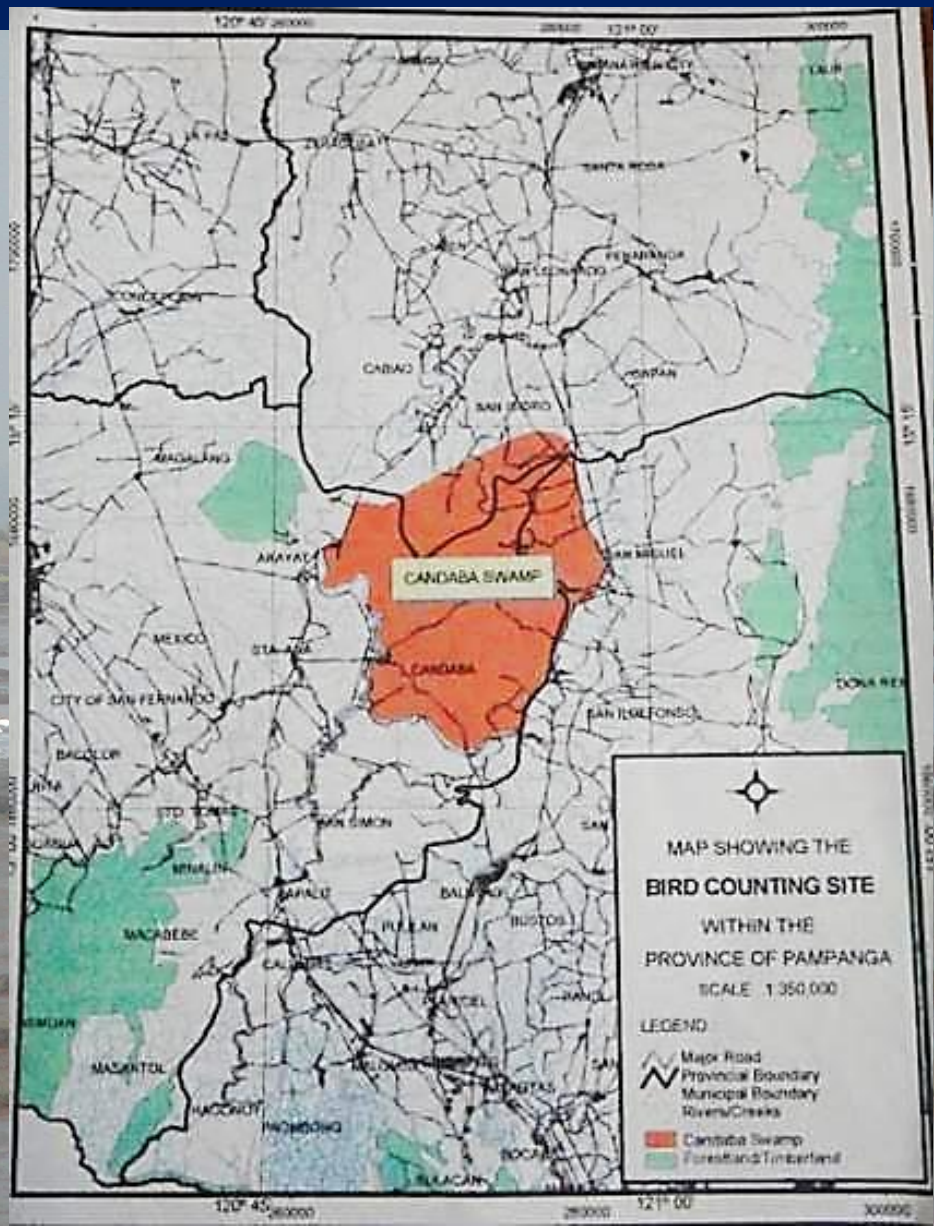
Candaba Wetlands:

Critical part of the Pampanga River Basin for a floodwater management strategy for calamity mitigation, biodiversity conservation and water supply.





The Candaba Wetlands



Candaba Wetlands: RESIDENT BIRDS

Barred Rail
Black Bittern
Blue-Tailed Bee-Eater
Bright-Capped Cisticola
Buff-Banded Rail
Cattle Egret
Chestnut Munia
Cinnamon Bittern
Clamorous Reed-Warbler
Common Moorhen
Crested Myna
Eurasian Tree Sparrow
Glossy Swiflet
Grass Owl
Greater Painted-Snipe
Grey-backed Tailorbird
Island Collared-Dove
Island Swiftlet
Lesser Coucal
Little Grebe
Little Ringed-Plover
Long-Tailed Shrike
Olive-Backed Sunbird
Oriental Skylark
Oriental Hobby
Osprey
Pacific Swallow
Peregrine Falcon
Pheasant-Tailed Jacana
Philippine Coucal
Philippine Duck (Vulnerable)
Pied Bushchat
Pied Fantail
Pied Harrier
Plain Bush-Hen
Plaintive Cuckoo
Purple Heron
Purple Swamphen
Richard's Pipit
Scaly-Breasted Munia
Spot-Billed Pelican (Extinct)
Spotted Dove
Striated Grassbird
Tawny Grassbird
Wandering Whistling-Duck
Watercock
White-Breasted Waterhen
White-Breasted Wood-Swallow
White-Browed Crake
White-Collared Kingfisher
Yellow Bittern
Yellow-Vented Bulbul
Zebra Dove
Zitting Cisticola

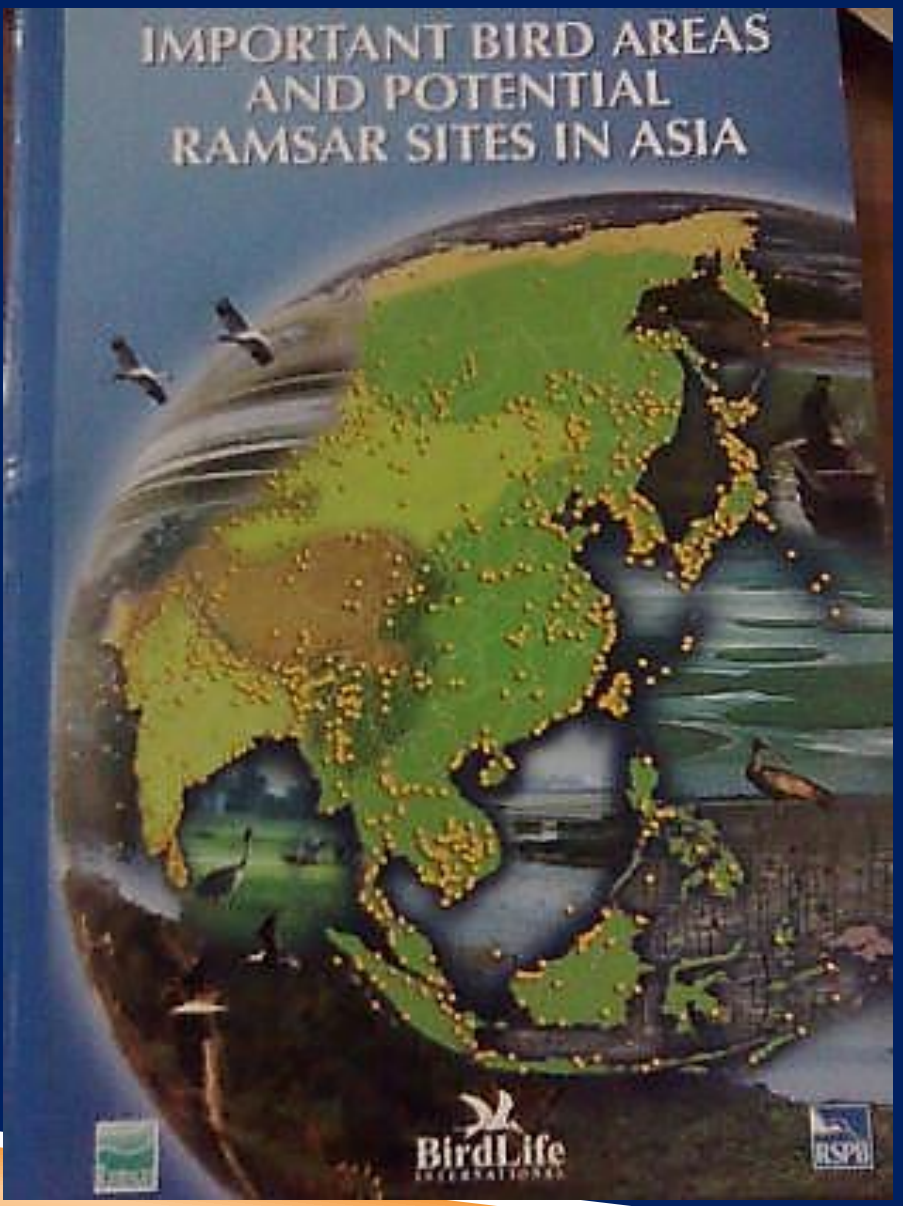
There are about 54 species of Resident Birds recorded in Candaba Wetlands since 1940

Candaba Wetlands: MIGRATORY BIRDS

American Wigeon
Arctic Warbler
Asian Golden-Plover
Baer's Pochard
Baillon's Crake
Barn Swallow
Bean Goose (Rare)
Black-browed Reed Warbler
Black-Crowned Night-Heron
Black-faced Spoonbill (Endangered)
Black-Winged Stilt
Brown Shrike
Chinese Pond-Heron (Rare)
Common Greenshank
Common Kingfisher
Common Pochard (Rare)
Common Redshank
Common Sandpiper
Common Snipe
Common Teal
Eastern Marsh-Harrier
Eurasian Spoonbill
Eurasian Coot
Eurasian Wigeon
Garganey
Great Bittern (Rare)
Great Cormorant (Rare)
Great Egret
Greater Sand-Plover
Greater Scaup
Grey-headed Lapwing(Rare)
Grey Heron
Grey Wagtail
Green-Winged Teal
Intermediate Egret
Javan Pond Heron (Rare)

Kentish Plover
Little Egret
Long-Toed Stint
Long-tailed Dowitcher
Mallard (Rare)
Marsh Sandpiper
Middendorff's Grasshopper-Warbler
Northern Pintail
Northern Shoveler
Oriental Pratincole
Oriental Reed Warbler
Osprey
Pacific Golden Plover
Pied Avocet (Rare)
Pintail Snipe
Red-necked Phalarope (Rare)
Ruff
Sand Martin (Bank Swallow)
Schrenck's Bittern (Rare)
Sharp-Tailed Sandpiper
Siberian Rubythroat (Rare)
Singing Bushlark (Rare)
Spot-billed Duck (Rare)
Streaked Reed-Warbler (Threatened)
Swinhoe's Snipe
Tufted Duck
Whiskered Tern
White-Shouldered Starling (Rare)
White-Winged Tern
Wood Sandpiper
Yellow Wagtail

There are about 68 species of Migratory Birds recorded in Candaba Wetlands since 1940



Satisfies Ramsar Criteria:

 # 2, it supports vulnerable, endangered, or critically endangered species or threatened ecological communities.

 # 4, it supports plant and/or animal species at a critical stage in their life cycles, or provides refuge during adverse conditions.

 # 6, it regularly supports 1% of the individuals in a population of one species or subspecies of waterbird.

Globally threatened wetland-dependent bird species*

Philippine Duck, V
Baer's Pochard, V
Streaked Reed Warbler, V

*BirdLife International

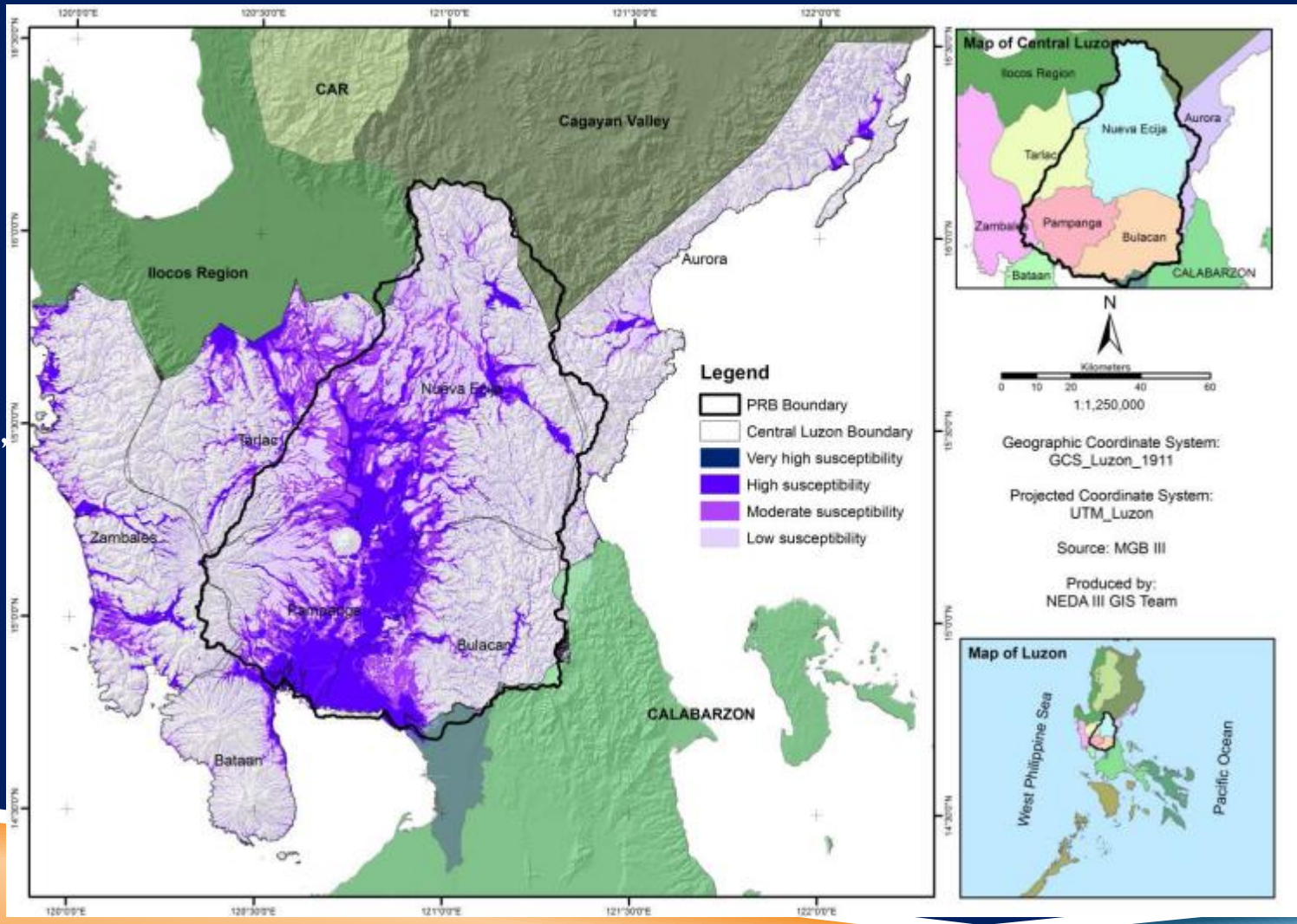
VULNERABILITIES

- Increased rainfall
- Typhoons
- Volcanic Eruptions

  - Floods
  - Siltation

FLOODING

- 43 floods
- 12 years from 1994-2006 (PRFFWC)
- Mostly flooded are low-lying areas such as Pampanga Delta, Candaba Swamp, along Pampanga river and its tributaries



2016 Flooding Susceptibility Map

Source: NEDA III (2016)

VULNERABILITIES

Flooding is exacerbated by:

- Limited flood control and local drainage structures;
- Denuded watershed cover
- Lahar deposition and siltation;
- High and massive fishpond embankments;
- Solid wastes and garbage in creeks and drainage systems;
- Illegal built-up in in water zones and channels;
- Road rehabilitation and upgrading activities with embankment heightening
- Land subsidence due to groundwater over-extraction.

=> Industrialization

http://newsinfo.inquirer.net/files/2013/06/floods1.jpg

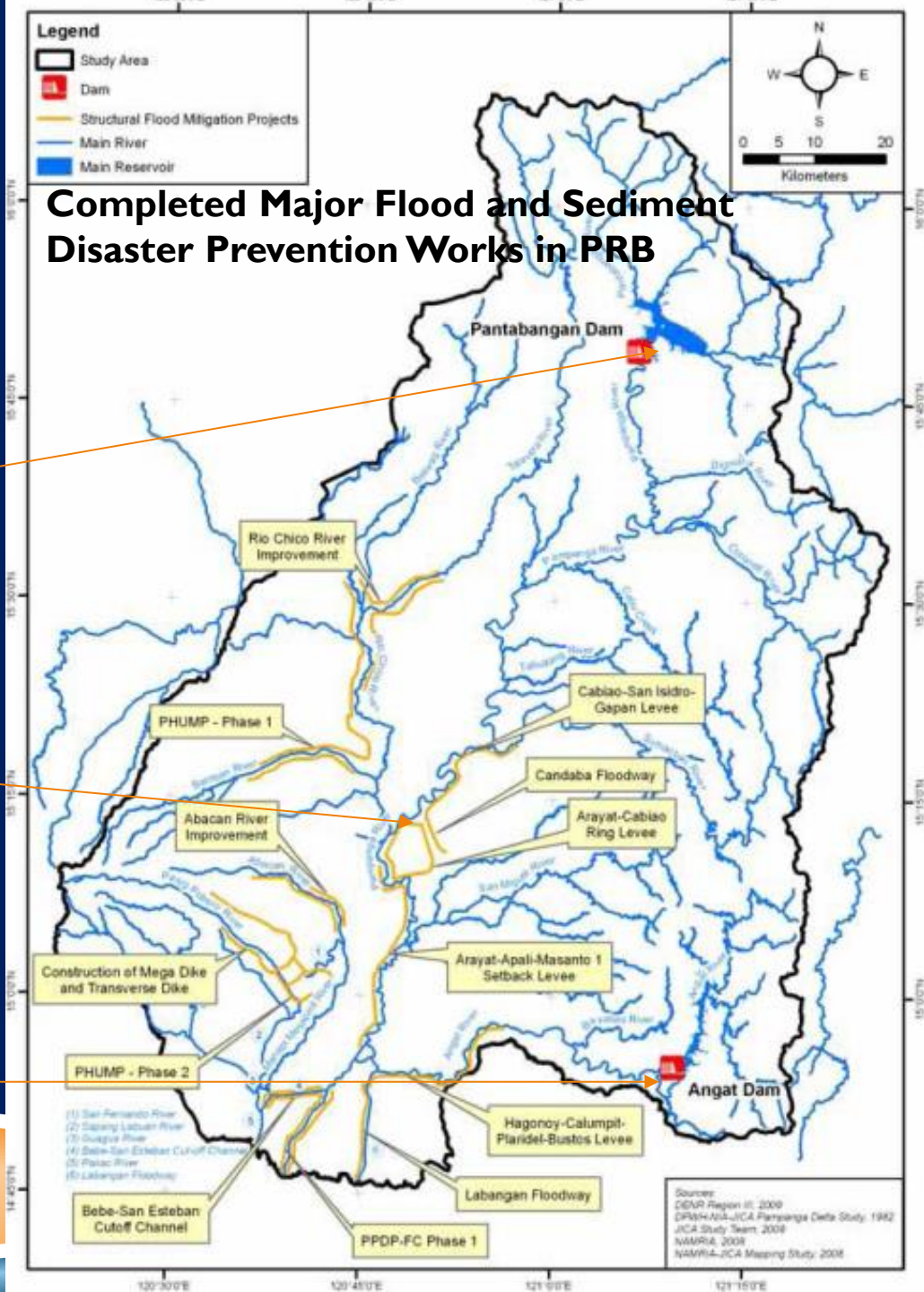
INFRASTRUCTURE-BASED INTERVENTIONS

Pantabangan Reservoir

San Luis Levee

Angat Reservoir

Source: NEDA III (2016)



INFRASTRUCTURE-BASED INTERVENTIONS

Pampanga Megadike project

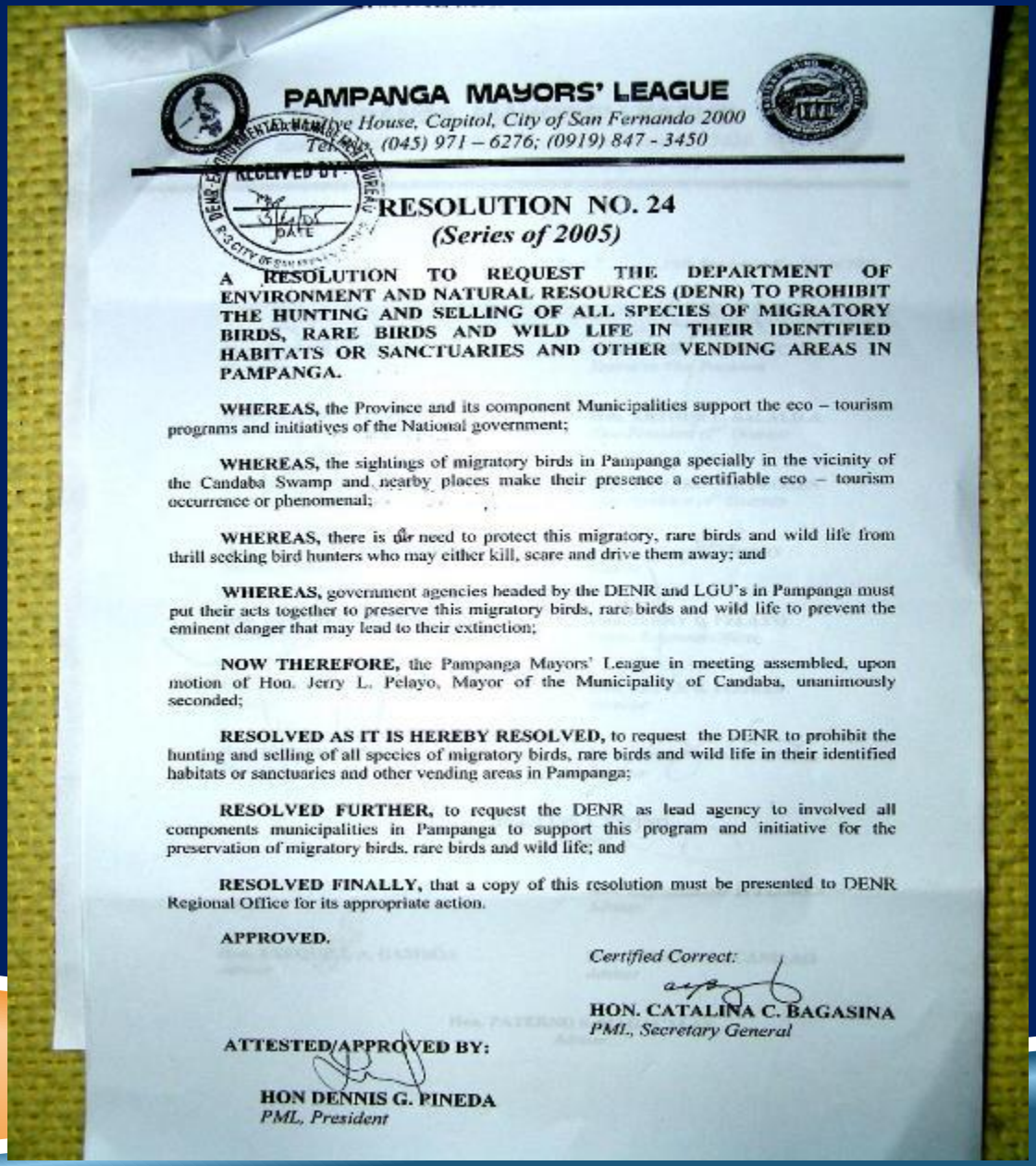
NON-INFRASTRUCTURE INTERVENTIONS

- Policies
- Community-based monitoring

CANDABA LGU: CONSERVATION EFFORTS

By virtue of Sangguniang Bayan Resolution No. 51, series of 2004, the entire Candaba town has been declared a bird sanctuary, thereby banning hunting of all kinds of wild birds.

The Resolution led to the adoption by the Pampanga Mayors League of a province-wide campaign against illegal hunting of birds.



PAMPANGA MAYORS' LEAGUE

Legislative House, Capitol, City of San Fernando 2000
Tel. No. (045) 971 – 6276; (0919) 847 - 3450

RECEIVED BY: DENR-EMB R-3 CITY OF SAN FERNANDO DATE

RESOLUTION NO. 24
(Series of 2005)

A RESOLUTION TO REQUEST THE DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES (DENR) TO PROHIBIT THE HUNTING AND SELLING OF ALL SPECIES OF MIGRATORY BIRDS, RARE BIRDS AND WILD LIFE IN THEIR IDENTIFIED HABITATS OR SANCTUARIES AND OTHER VENDING AREAS IN PAMPANGA.

WHEREAS, the Province and its component Municipalities support the eco – tourism programs and initiatives of the National government;

WHEREAS, the sightings of migratory birds in Pampanga specially in the vicinity of the Candaba Swamp and nearby places make their presence a certifiable eco – tourism occurrence or phenomenal;

WHEREAS, there is the need to protect this migratory, rare birds and wild life from thrill seeking bird hunters who may either kill, scare and drive them away; and

WHEREAS, government agencies headed by the DENR and LGU's in Pampanga must put their acts together to preserve this migratory birds, rare birds and wild life to prevent the eminent danger that may lead to their extinction;

NOW THEREFORE, the Pampanga Mayors' League in meeting assembled, upon motion of Hon. Jerry L. Pelayo, Mayor of the Municipality of Candaba, unanimously seconded;

RESOLVED AS IT IS HEREBY RESOLVED, to request the DENR to prohibit the hunting and selling of all species of migratory birds, rare birds and wild life in their identified habitats or sanctuaries and other vending areas in Pampanga;

RESOLVED FURTHER, to request the DENR as lead agency to involved all components municipalities in Pampanga to support this program and initiative for the preservation of migratory birds, rare birds and wild life; and

RESOLVED FINALLY, that a copy of this resolution must be presented to DENR Regional Office for its appropriate action.

APPROVED.

Certified Correct:

HON. CATALINA C. BAGASINA
PML, Secretary General

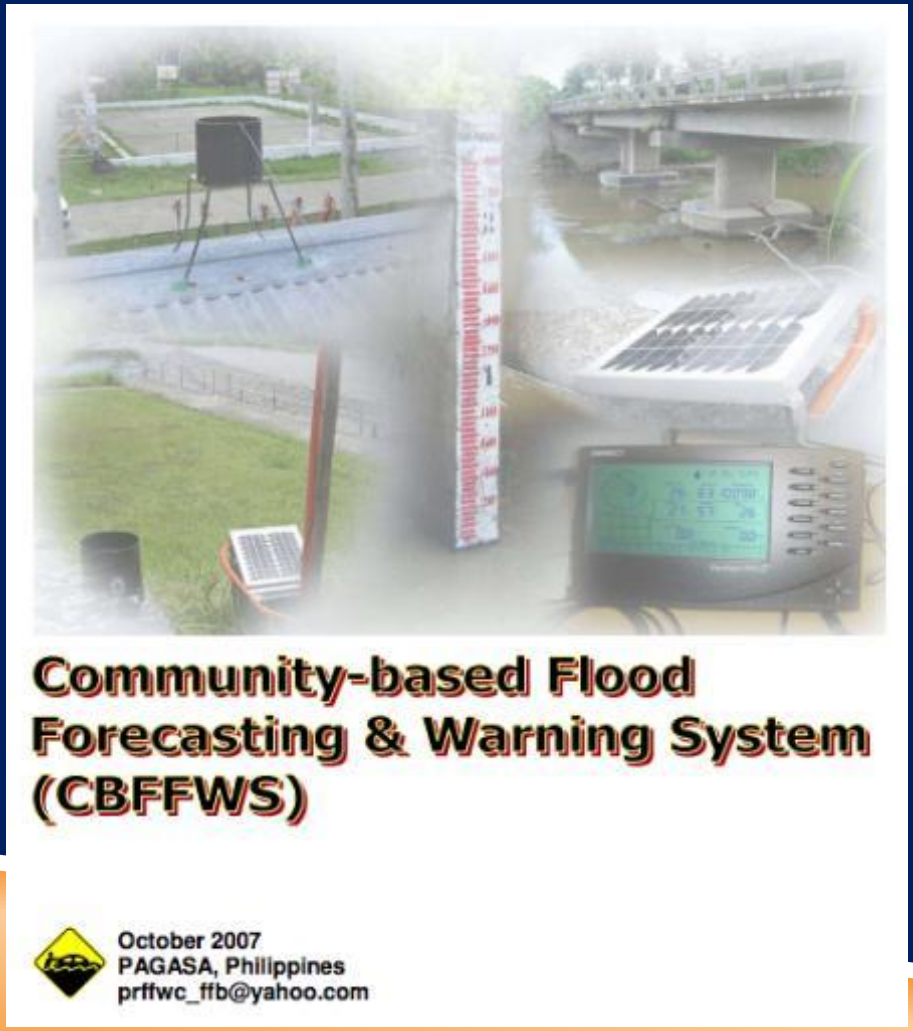
ATTESTED/APPROVED BY:

HON DENNIS G. PINEDA
PML, President

CANDABA SWAMP WILDLIFE RESERVE

- 72-ha
- Found in Sitio Simang, Barangay Vizal San Pablo
- Private-initiated protected area
- Abundant migratory, resident and endemic birds
- Observatory Deck
- 4-kilometer perimeter-dike walktrail
- MAY BE SOLD

NON-INFRASTRUCTURE INTERVENTIONS



SYSTEM COMPONENTS

Monitoring tools

TOOL	LOCATION
Staff gauges	River channel
Rain gauges	Watershed area
Flood markers	Flood hazard area

Community members acting as hydrological observers;

Communication Equipment

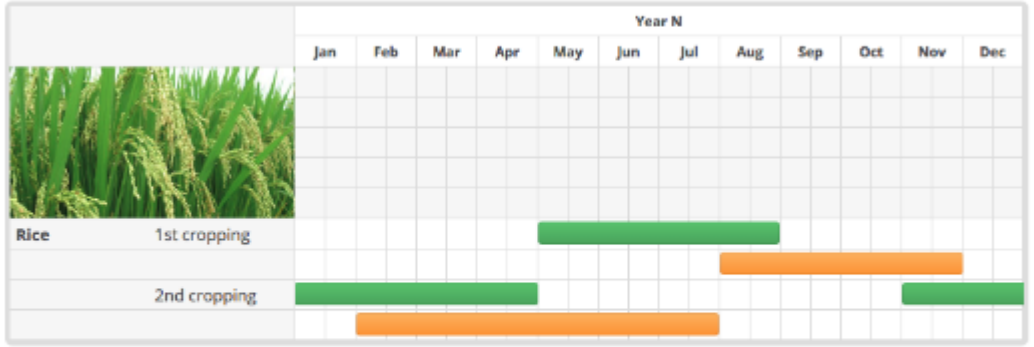
Radio / phone sets for:

- exchanging data/info
- transmitting warnings to appropriate (disaster) agencies

http://prffwc.webs.com/

Cropping Calendar-Pampanga

Click on the image representing the crop to view additional info.

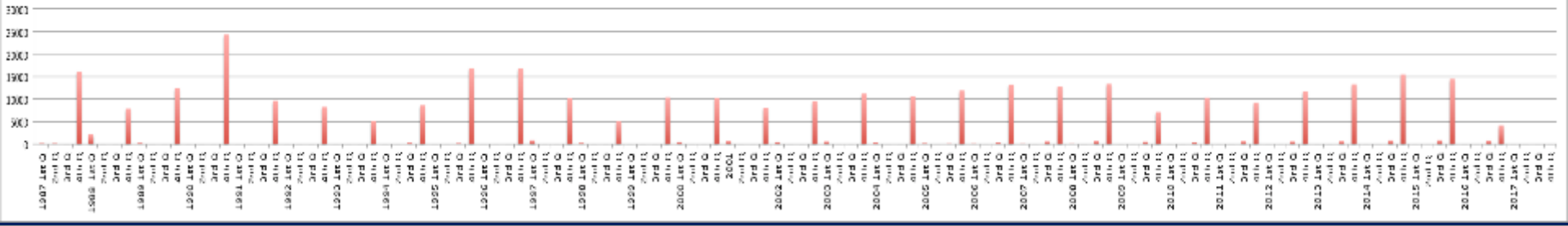


Data available on this site can be freely used, reused and redistributed by anyone OPEN DATA

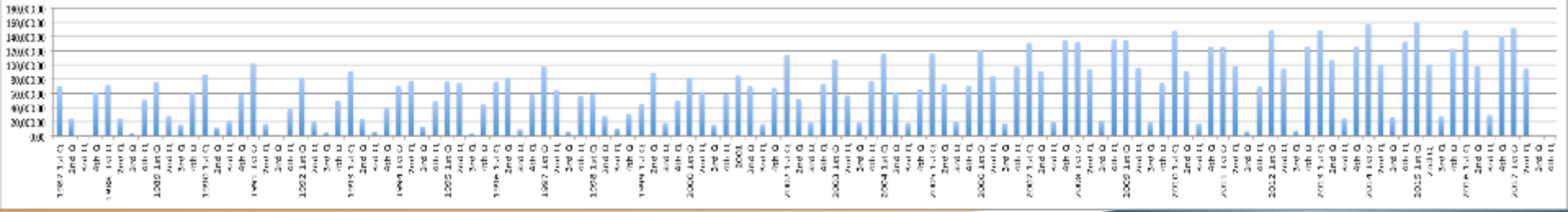
Additional Info for Rice

Crop	Rice
Scientific Name	Oryza sativa
Botanical Family	Poaceae
Local Names	Palé
Agro-ecological zone	Moist zone
Sowing/Planting Period	1st cropping: Beginning of May - End of August 2nd cropping: Beginning of November - End of April
Harvesting Period	1st cropping: Beginning of August - End of November 2nd cropping: Beginning of February - End of July

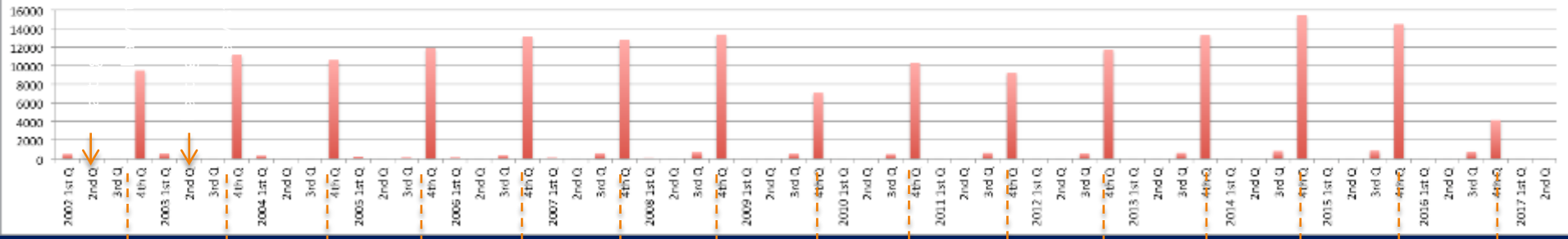
Rainfed Palay



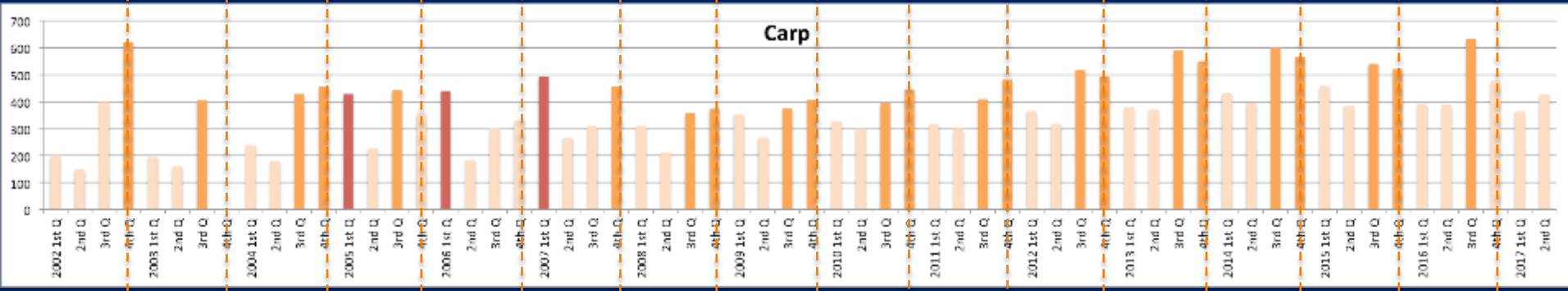
Irrigated Palay



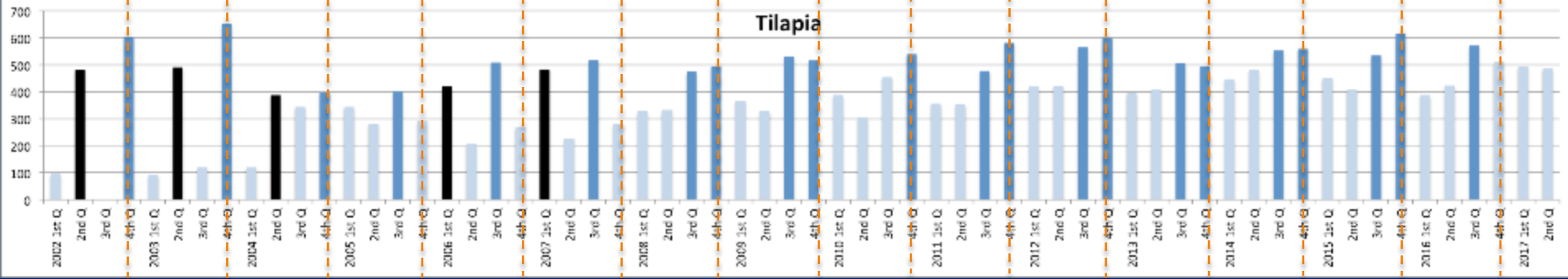
Rainfed Palay



Carp



Tilapia



CONCLUSIONS

- Utility of Pampanga River Basin and Candaba Wetlands in Disaster Risk Reduction (DRR) and Climate Change Adaptation (CCA)
- Mixing infrastructure and non-infrastructure interventions
- Heightening appreciation for Candaba Wetlands through discussion

DRY SEASON (OVERVIEW)

WET SEASON (OVERVIEW)

CHALLENGES

- **Approval of the Pampanga Integrated River Basin Master Plan (IRBMP) leading towards strict enforcement & sustained implementation**
  - LGUs to anchor their individual plans (CLUP, CIP, CDP etc) in the IRBMP
- **Appreciation for Candaba Wetlands means** to also consider the ecosystem values of the wetlands, including its biodiversity
- Most of the land are Privately-owned
  - Need for alternative livelihood during wet season
  - Limited activities for conservation since focus is food production & economic benefit

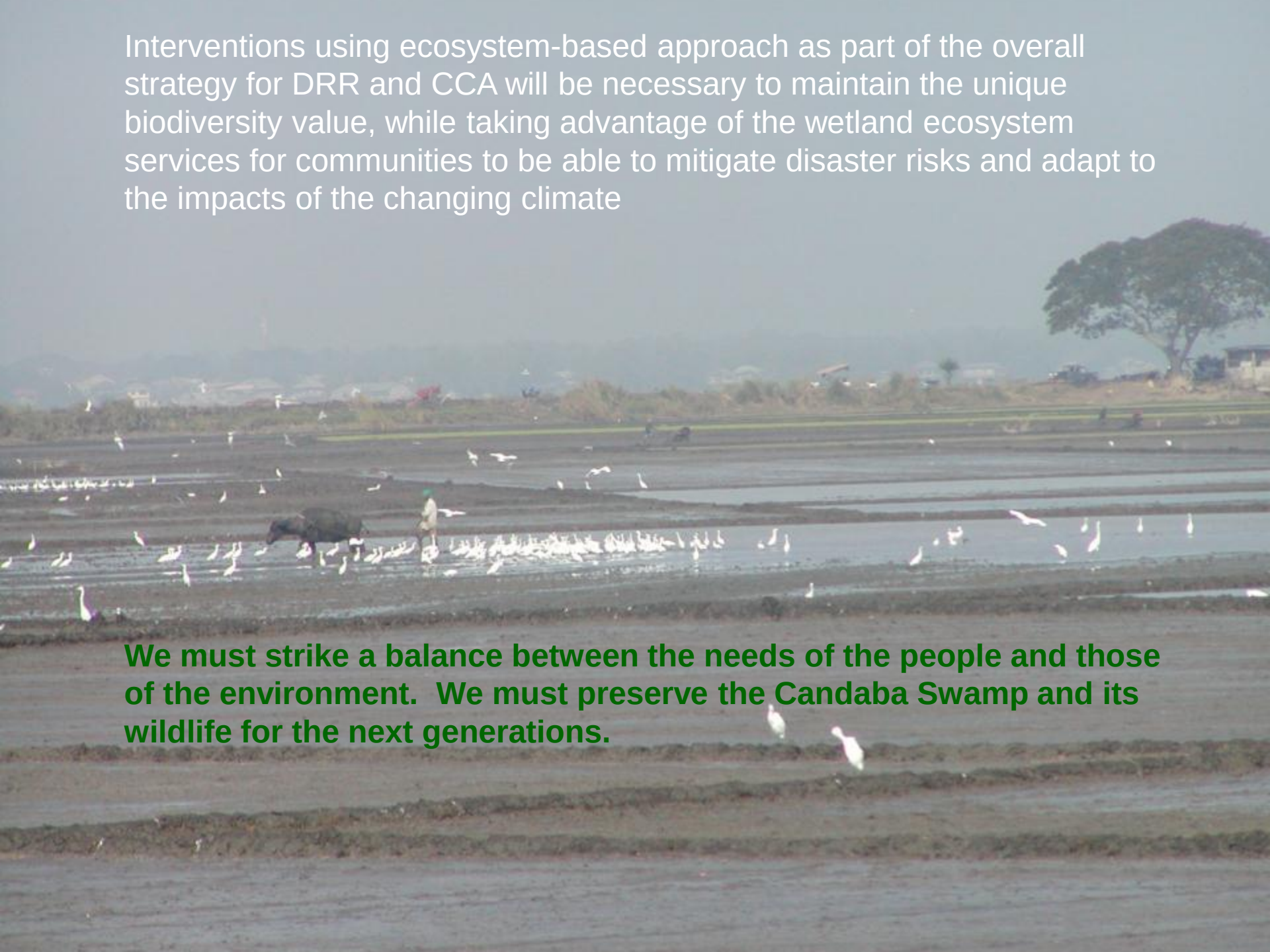
POTENTIALS FOR THE FUTURE

- Rehabilitation of the Pampanga River basin watershed
- Riparian stabilization by planting of native species
  - Studies on which species would be best to stabilize the soil and produce protective cover,
- River channel improvement
  - Science-Based dredging
- Construction of flood retarding basins
  - Conduct of study to determine natural capacity to store floodwater

POTENTIALS FOR THE FUTURE

- **Rehabilitation of the protective dikes using ecologically-sound engineering measures**
  - **EIA system had mainstreamed DRR and CCA**
- **Projects useful for flooded areas**
- **Bringing back the wilderness areas**
  - **Buying back the private lands**
  - biodiversity-friendly agricultural practices

Interventions using ecosystem-based approach as part of the overall strategy for DRR and CCA will be necessary to maintain the unique biodiversity value, while taking advantage of the wetland ecosystem services for communities to be able to mitigate disaster risks and adapt to the impacts of the changing climate



We must strike a balance between the needs of the people and those of the environment. We must preserve the Candaba Swamp and its wildlife for the next generations.

THANK YOU VERY MUCH!
(MARAMING SALAMAT PO!)

ACKNOWLEDGEMENT

- Asian Wetland Symposium Secretariat
- Wetland International Japan
- DENR Region 3
- DENR Region 3 Conservation and Development Division
- BMB-DENR, Caves, Wetlands and Other Ecosystems Division

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