

Birds from Ashes: The Story of a Flyash Pond

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INTRODUCTION

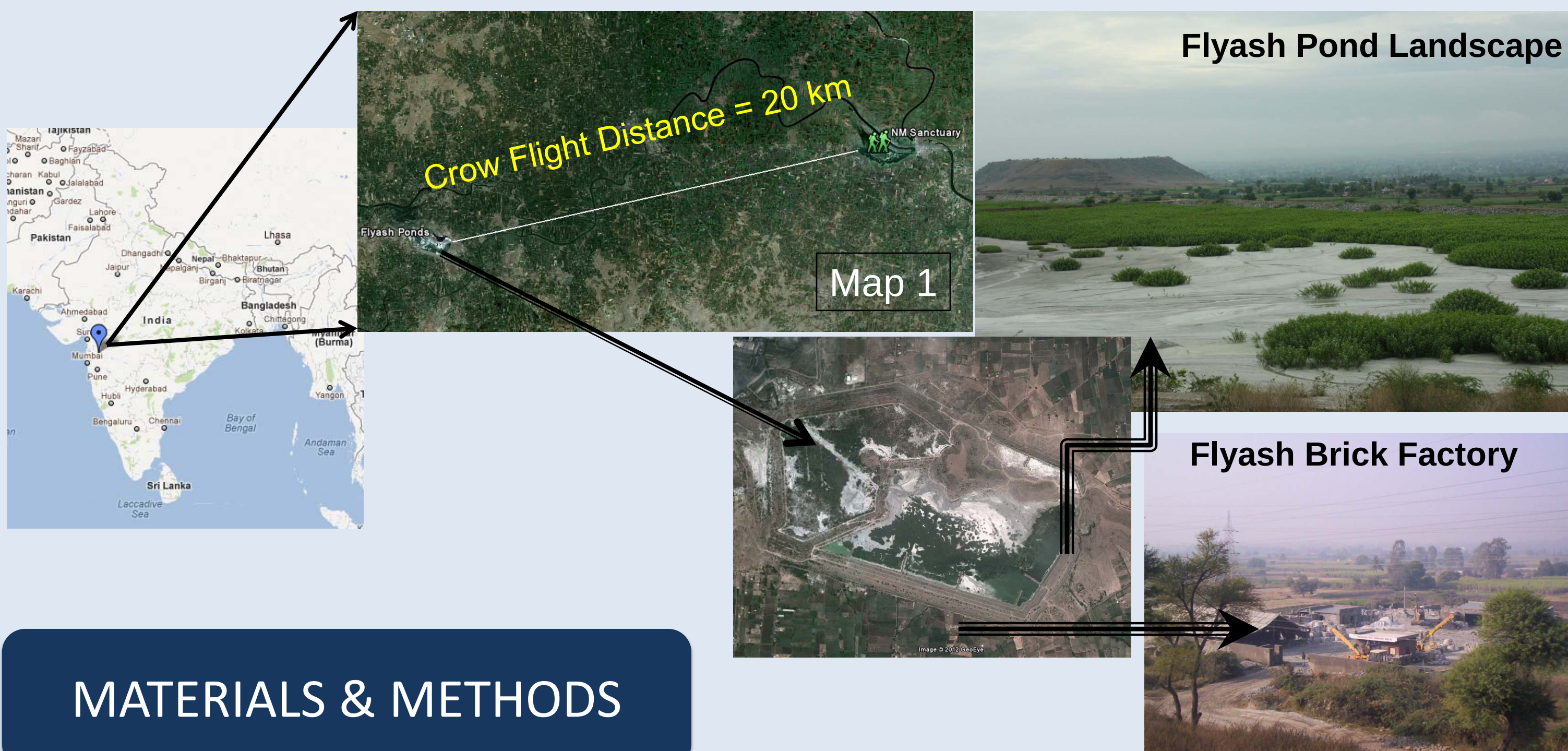
■ Fly ash (FA) is coal combustion product, generated from coal based power generation. It is toxic in nature. *Pollution due to FA is a universal problem*, affecting human health and agriculture; directly and indirectly.

■ Around 68% of power generation in Maharashtra is coal based, contributing to India's annual FA production which is 112 metric tons plus. *Many of the thermal power stations are located near important wildlife areas.*

■ FA Ponds of Nashik are situated around 1 km away from main power station and around 40 kms by road and ~20 kms by crow flight distance from Nandur-Madhyameshwar bird sanctuary (NMS) (Map 1)

■ NMS is an ideal habitat for migratory birds. On the other hand *FA ponds being toxic in nature, still act as breeding ground for many resident and several migratory birds.* Information on such smaller toxic wetland systems is scarce in scientific literature .

Our work shows that owing to the fact that FA is a toxic system, it has comparable species diversity with that of NMS and that if it is developed into an ecopark, it may provide alternative employment option for those affected by FA.

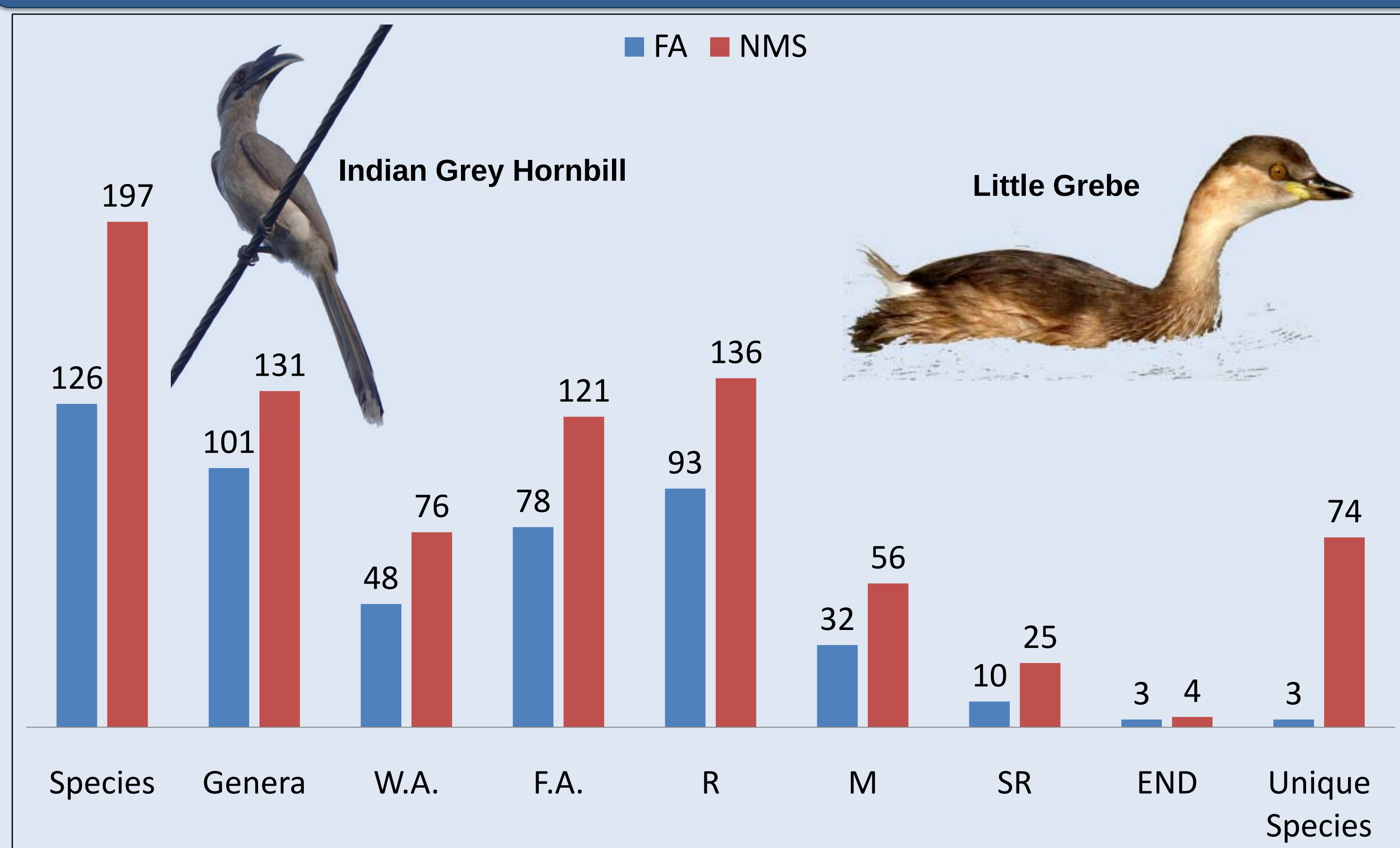


MATERIALS & METHODS

- Line Transect; Point Count
- Study Period: From 2007 to 2011
- Secondary data was obtained through interviews with locals and birdwatchers

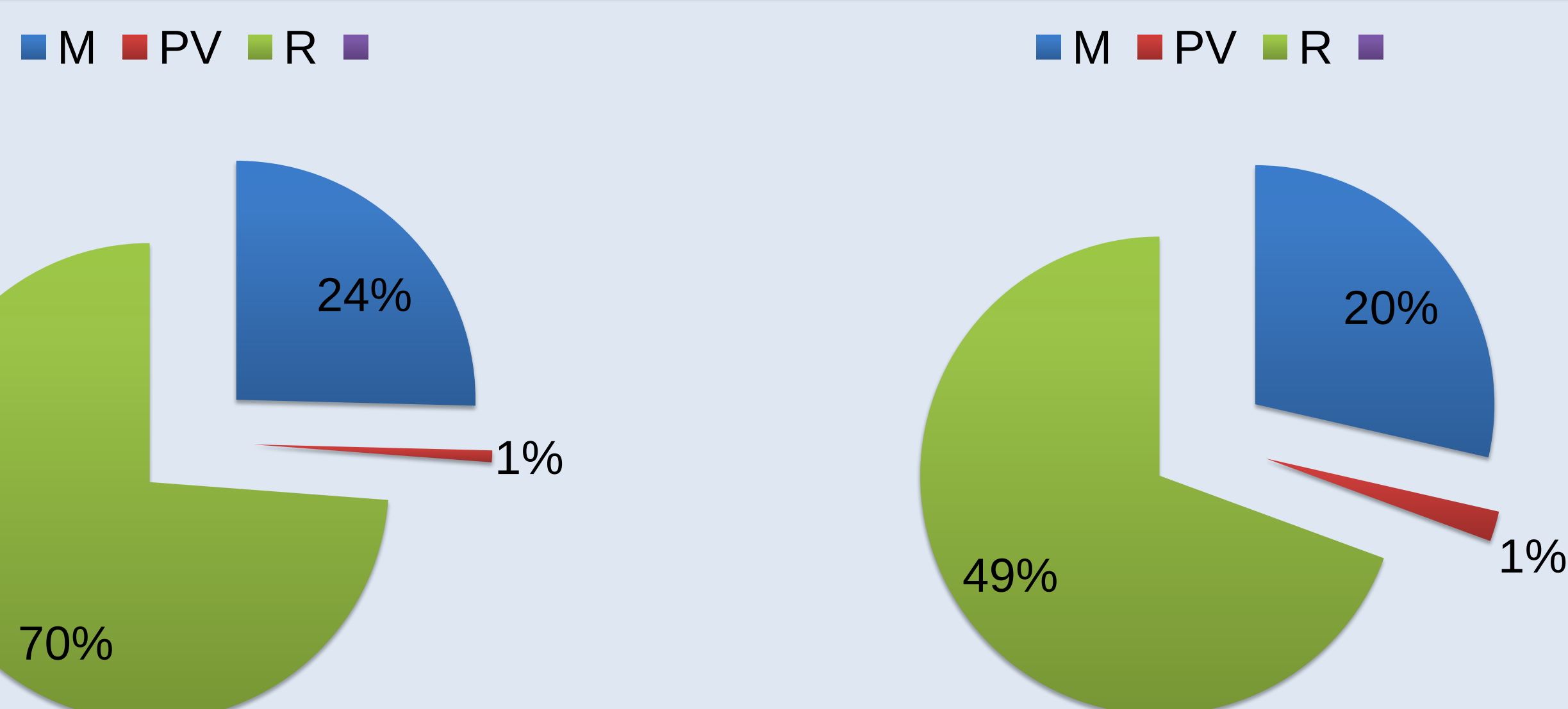
OBSERVATIONS & RESULTS

Species Distribution : A Comparative Account



W.A.: Wetland associated; F.A.: Forest associated; R: Resident; M: Winter migratory; PV: Passage visitor; S: Summer Visitor; SR: Scarce Records; END: Near threatened/Critically endangered

Distribution of Species Based on Residential Status



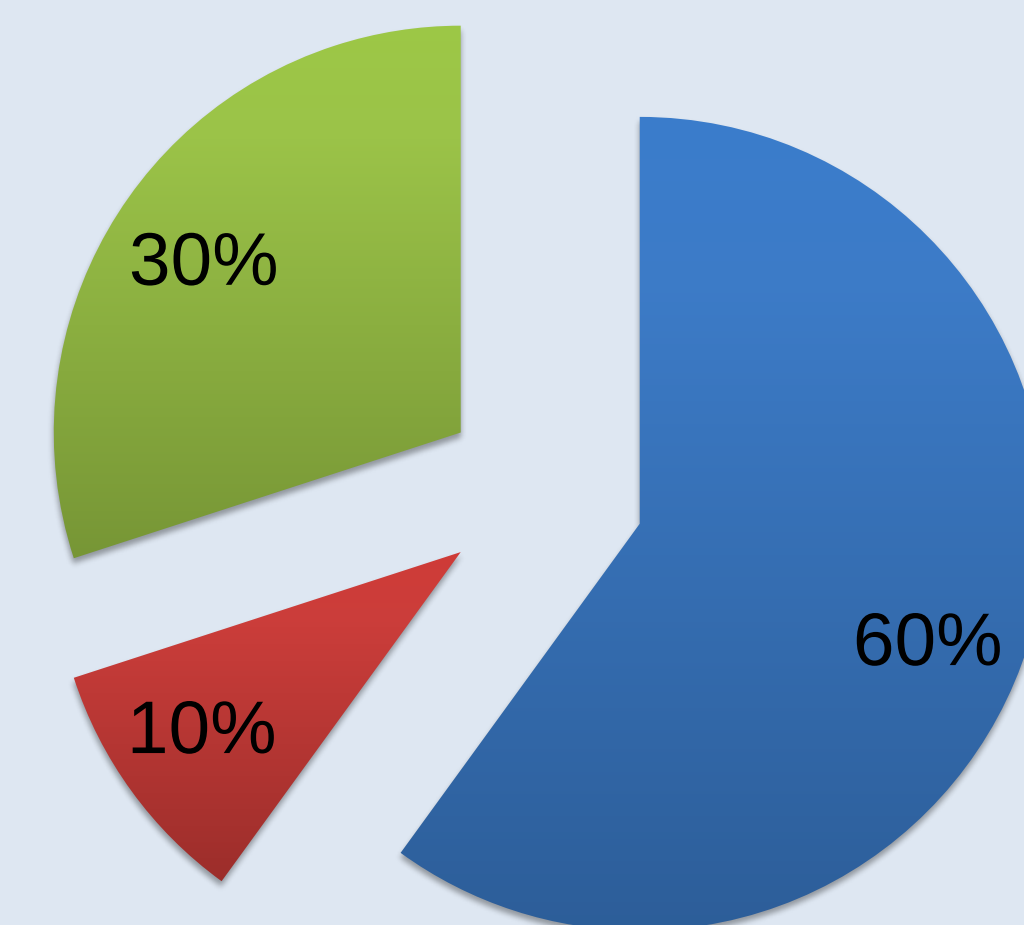
FA Pond Species Distribution based on Residential Status

NMS Species Distribution based on Residential Status

Distribution of Species Based on Scarce Records

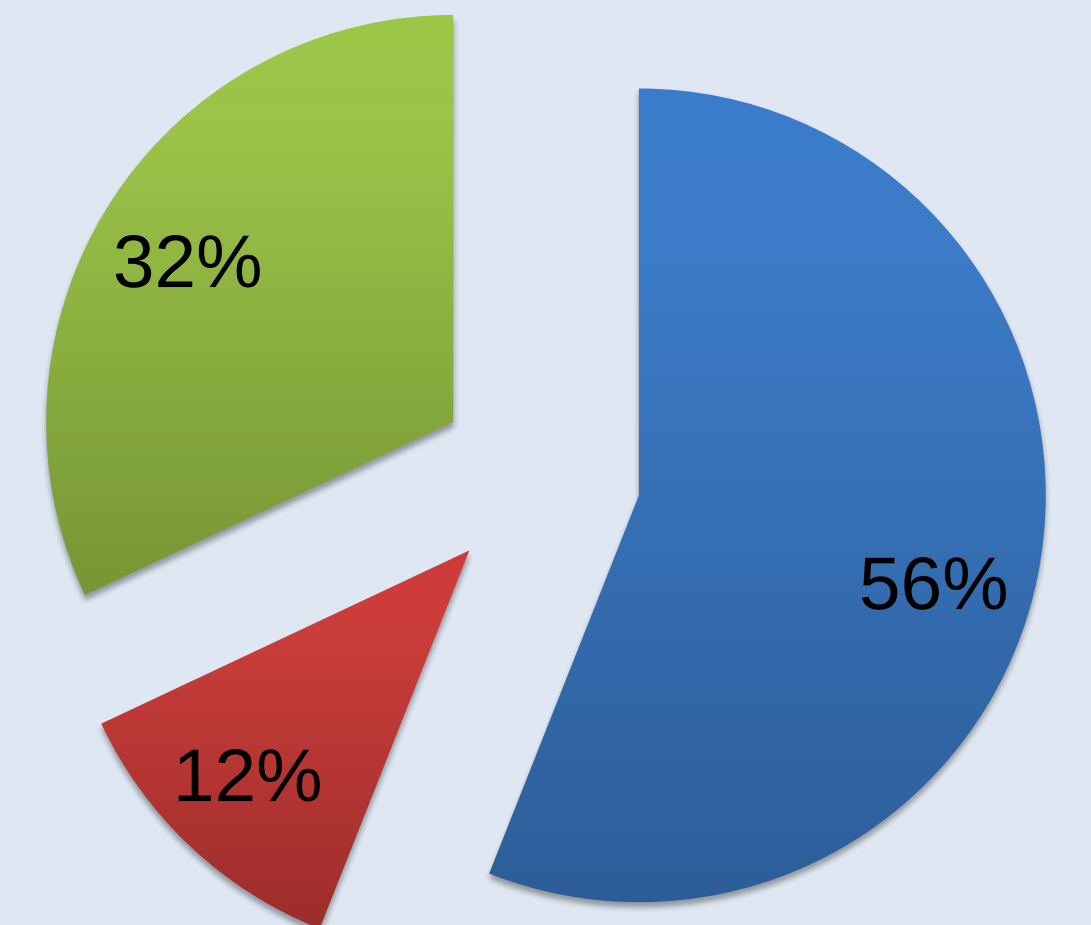
FA Species Distribution based on Scarcity Records

■ Migratory ■ Passage ■ Resident



NMS Species Distribution based on Scarcity Records

■ Migratory ■ Passage ■ Resident



Eurasian Marsh Harrier

Sorensen Index

To understand similarity between both these systems Sorensen index was calculated.

$$QS = 2C / (A+B) = 2(122)/(126+197)$$

C = Number of species shared by the systems, A = Number of species in System I (FA), B = Number of Species in System II (NMS)

$$QS = 0.75$$

This index value shows that there is **moderately high** similarity between both the systems (*habitat diversity and space is not considered here*).

Desert Wheatear



Coot



Citrine Wagtail



Rufous Tailed Lark



Ruddy Shelducks



Other Taxa

A total of 7 mammalian (includes wild boar, fox & leopard), 9 reptilian (includes monitor lizard) and 23 Odonata species are known from flyash ponds.



Banded Kukri



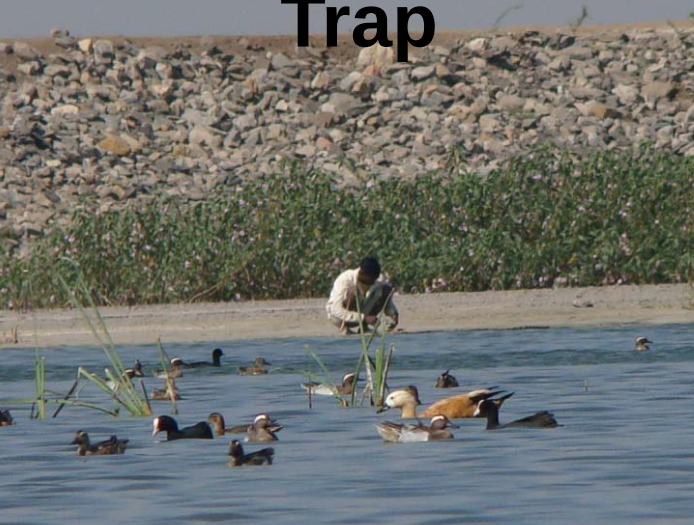
A Dead Representative Civet Road kill



Senegal Golden Dartlets Mating



A Pocher Setting a Trap



Black Winged Stilts



Common Stonechat



Shovelers Flying High



An Ashiete Arachnid

DISCUSSION

It seems that although a toxic system, FA ponds represent a wetland ecosystem similar to NMS. Surprisingly, FA ponds have 3 unique bird species than NMS.

Birds for People

FA floods have ruined down fields which are nearby to FA deposition sites. This has resulted in the decrease of land prizes. Eco parks can be a good employment option for those affected by FA. If properly studied and managed then FA sites can be converted into eco parks for nature education, bird watching and scientific research. This may seem difficult but developing something on a potentially hazardous waste land can be of experimental use. FA pond system is of great research potential. Pond to Pond movement of migratory birds and factors affecting the choice of breeding ground are some of the most complex questions in bird migration which are not much resolved. Owing to the toxic nature of FA, these questions become much more complex than earlier thought!



References: 1.Grimmett R. et al. (1998) *Birds of the Indian subcontinent*. Oxford, UK 2. Dhadase S. et al. (2008): Flyash characterization, utilization and Government initiatives in India- a review. *J. Sci. Ind. Res.* 67:11-18.

Acknowledgements

Dr. Mahesh Shindikar, Mr. Anil Mali, Prafull Sawarkar & *Our Novice Efforts to Explore Wilderness*

