Preliminary Observations on the Population Structure of *Hemidactylus prashadi* Smith, 1935 using Individual Photo Identification Technique

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Introduction

• Mainly **saxicolous**.

• Earlier thought to be rare but several recent records from Maharashtra, Goa and Karnataka (Giri & Bauer, 2006). Also observed from **Kannur (Madaipara) and Kozhikode (Narayankulam and Turuthamala)** district of Kerala.

• In Turuthamala- **found in houses** away from their preferred saxicolous habitats.

• Suggests dispersal of individuals.

• But understanding dispersal requires an understanding of the population structure.
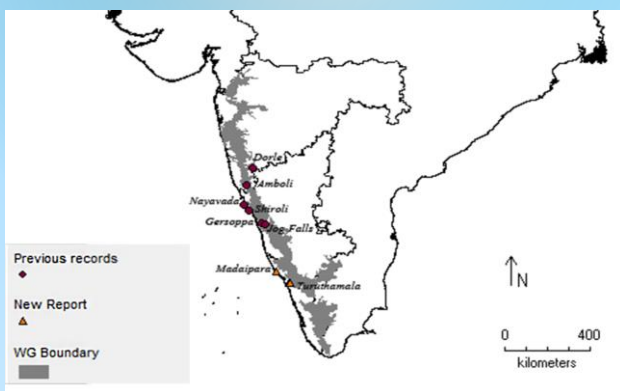
Objective

To explore the potential of using natural markings of these lizards to identify individual geckos to study the demography of a population of *Hemidactylus prashadi*.

Materials and methods

1. Study Site

1. Turuthamala, (N 11.5064, E 75. 8394), in Kozhikode District consists of
   • several patches of reeds and large open rock structures towards the mid elevations
   • slowly transforms to a moist deciduous and semi-evergreen type of habitat.
   • 8-10 houses towards the top of hill. Observations restricted to workers residence in Odayil plantation.

2. Individual Identification

1. Software I^{3}S Manta (© Hartog and Reijns, 2008)

2. Compares spots (natural markings) from the pictures that were previously added in the database with the spots from a new picture

3. Population Estimation

1. Capture-recapture - 5 capture occasions during April (after peak breeding season)

2. Population Structure – Characterized by four groups – adult males and adult females (SVL of 85mm or more), sub-adults (SVL of 60-84mm) and juveniles (SVL of 35-59mm).

3. Population structure analyzed between July - November 2012 and April-June 2013

Results

Figure 1: Spot matching in *H. prashadi* using the software I^{3}S. The reference points are marked by a red dot, one on the tip of the snout and one on each knee

Table 1: Capture history of different individuals of *H. prashadi* in the workers residence in Turuthamala

Session	Gecko ID	Age	sex	Occasions				
				1	2	3	4	5
1	HP1	SA	UN	1	0	0	1	1
1	HP5	A	F	1	0	0	1	0
1	HP7	A	M	1	1	0	1	1
1	HP8	A	F	1	0	1	0	1
1	HP9	A	F	0	1	0	0	1
1	HP10	A	F	0	1	1	0	1
1	HP11	J	UN	0	0	1	0	0
1	HP14	SA	UN	0	0	1	0	1
1	HP15	A	M	0	0	0	1	0

Fig. 2: Population curve of *H. prashadi* in Turuthamala during 5 sampling occasions
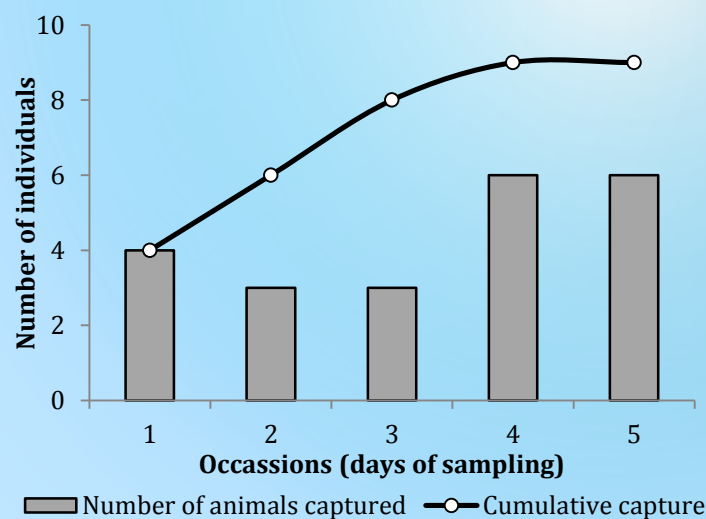
• **22 captures of 9 individuals in 5 sampling occasions.**

• Considered as a **Closed Population**.

• Model selection task selected **Null model** as most appropriate followed by **heterogeneity model**

• Estimated population size was **9.0.0±1.027** with confidence interval of **10.0-17.0** for null model and **11±2.1390** with confidence interval **11.0-20.0** for the heterogeneity model.

Figure 3: Population Structure of the focal sub group of *H. prashadi* during two seasons between 2012-2013 in Turuthamala
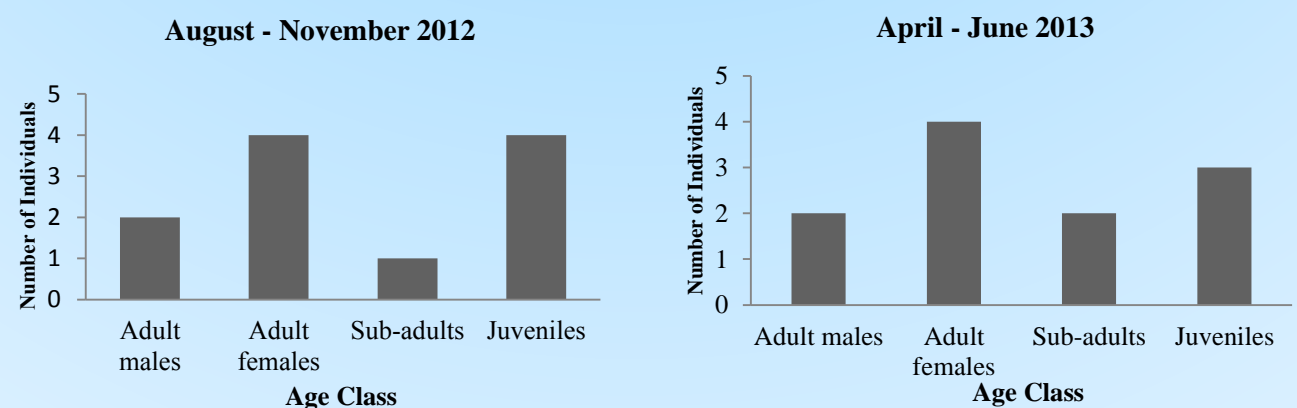
Conclusion

• The software I^{3}S provides a good platform to use natural markings to identify and mark individuals for population and behavioral studies.

• The population seemed to be dominated by adult females (N=12). Adult males (N=4) and sub-adults (N=3) were considerably low.

• The disproportionately low numbers of sub-adults suggests that sub-adults could be the ones that are dispersing.

Literature

1. Giri, V. B. and Bauer, A. M. 2006. Notes on the distribution, natural history and variation of *Hemidactylus prashadi* Smith, 1935. *Hamadryad*. **30**: 55-60.
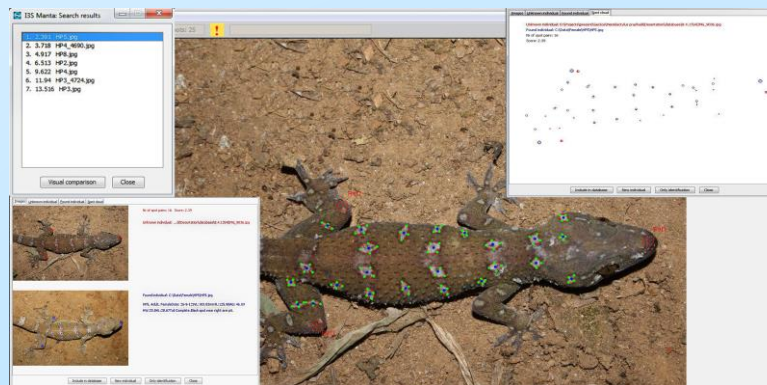2. Smith, M. A. 1935. The fauna of British India, including Ceylon and Burma: Reptilia and Amphibia. Volume II (Sauria). Taylor & Francis, London, xiii + 440 pp. + 1 plate.