

Status and Trends of the Land Bird Avifauna on Saipan

2008 Hawai`i Conservation Conference

Based on a report to the
U.S. Fish and Wildlife Service by
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Outline

- Introduction
- Sampling
 - Population estimation
 - Trend estimation
- Estimates
- Threats
- Focal Species – Nightingale Reed-Warbler

Introduction

- Mariana Islands identified as an Endemic Bird Area by BirdLife International
 - Increasing human population & rampant habitat transformation
 - Brown Tree Snake (*Bogia irregularis*) eliminated most birds on Guam
 - Brown Tree Snake now reported from Saipan
- Faced with large-scale habitat change and an imminent new predator, how are land birds on Saipan fairing?

The Birds



B. Kumiū

Yellow Bittern



E. VanderWerf

White-throated Ground-Dove



T. Shears

Mariana Fruit-Dove



J. Yue

Collared Kingfisher



T. Pete

Micronesian Myzomela

The Birds



A. Leishman

Rufous Fantail



E. VanderWerf

Nightingale Reed-Warbler



S. Vogt

Bridled White-eye



T. Pete

Golden White-eye



E. VanderWerf

Micronesian Starling

The Birds



S. Vogt

Micronesian Megapode



E. VanderWerf

Micronesian Swiftlet



T. Rosell

Island Collared-Dove



L. Kee

Eurasian Tree Sparrow



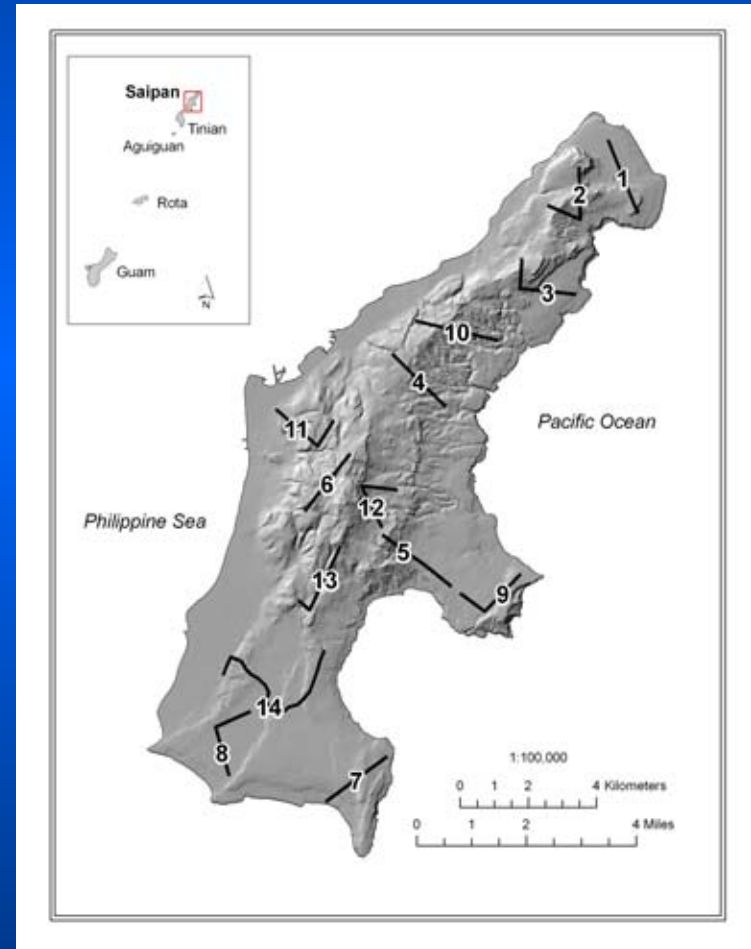
T. Pete

Orange-cheeked Waxbill

Sampling

- 1982 (Engbring et al.)
- 1997 (USFWS)
- 2007 (USFWS)

- Standard point-transect sampling
 - 14 transects
 - 244-248 stations
 - 242 resampled



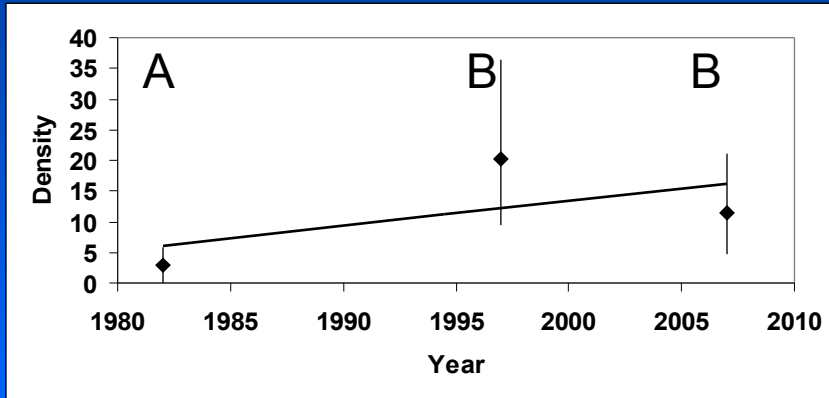
Estimation

- Fit a species specific detection function to account for birds present but missed
- Estimate density and variance by species
 - Global detection function
 - Account for covariates (eg weather)
 - Annual estimates generated

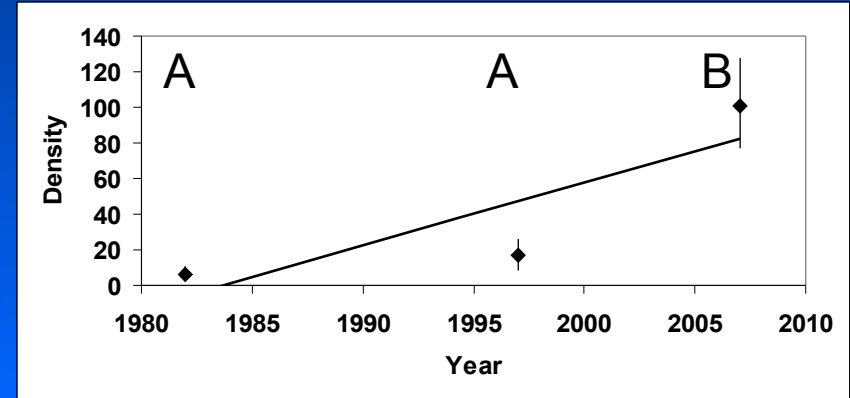
Trends

- Determine trend with repeated measures ANOVA
 - Densities were log + 1 transformed
 - Compound symmetry variance-covariance structure
 - Kenward-Roger adjustment to df
 - Tukey's adjustment for multiple-comparisons
- Increasing, stable or declining trends

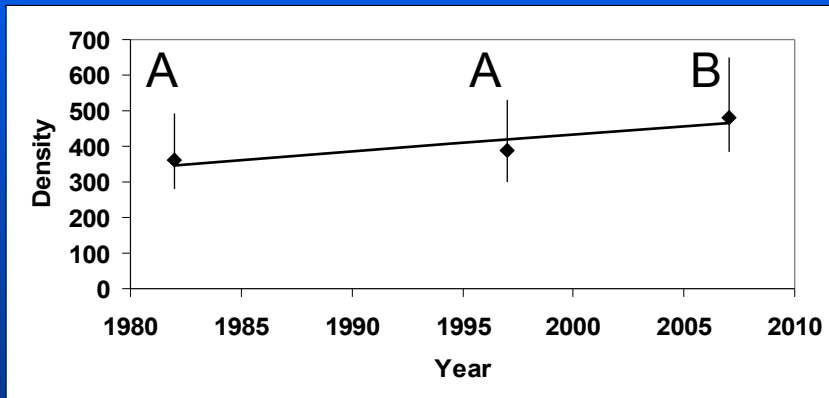
Increasing Densities



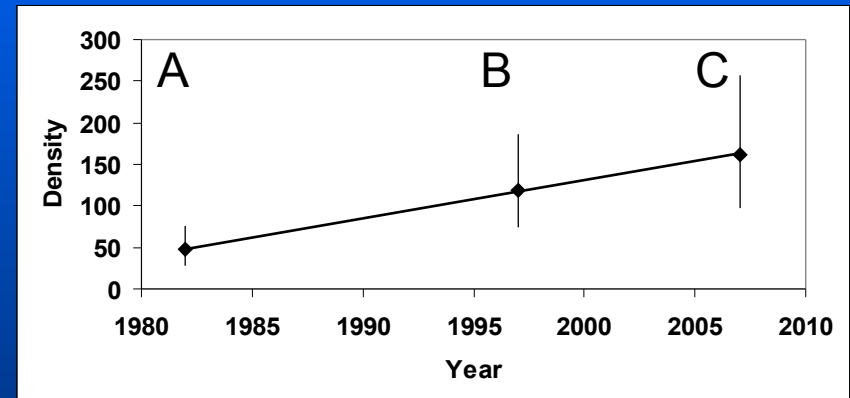
Yellow Bittern



White-throated Ground-dove

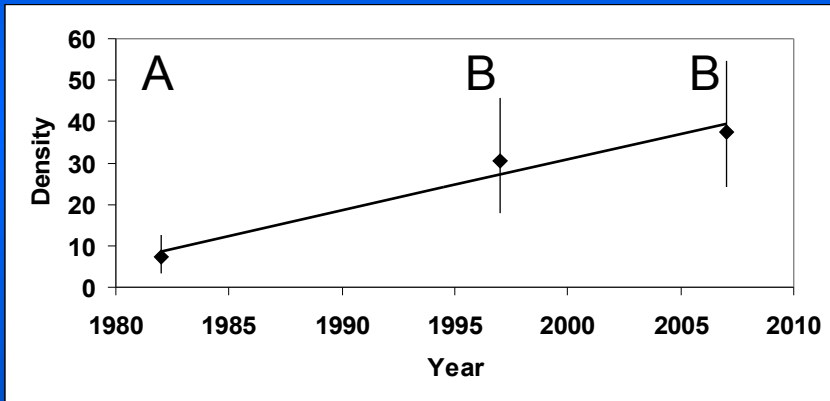


Micronesian Myzomela

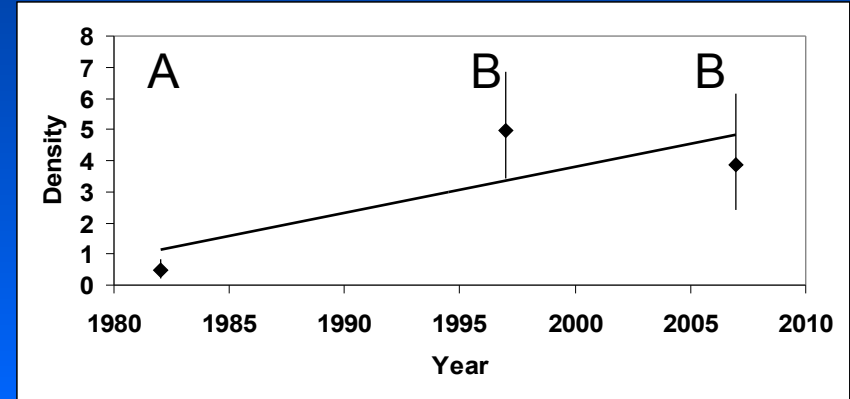


Micronesian Starling

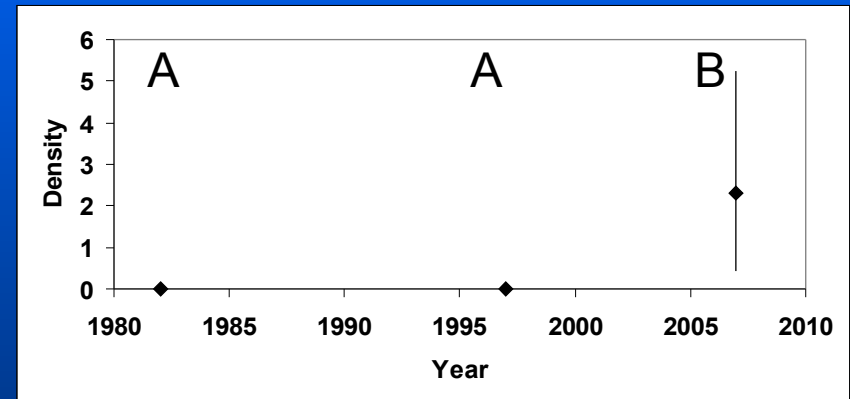
Increasing Densities



Island Collared-dove

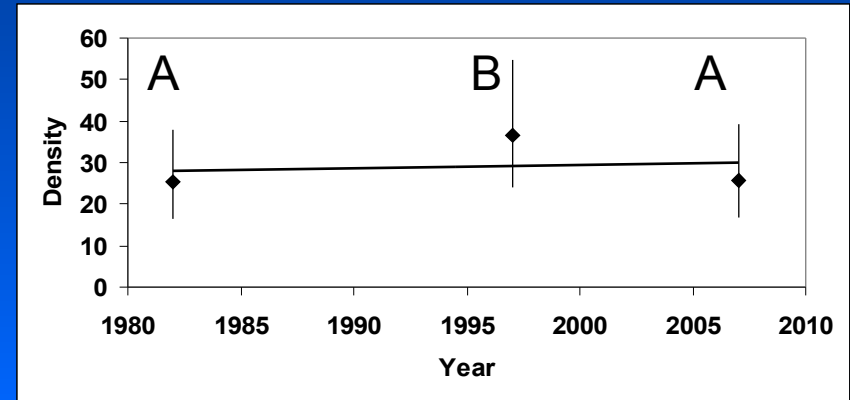


Eurasian Tree Sparrow

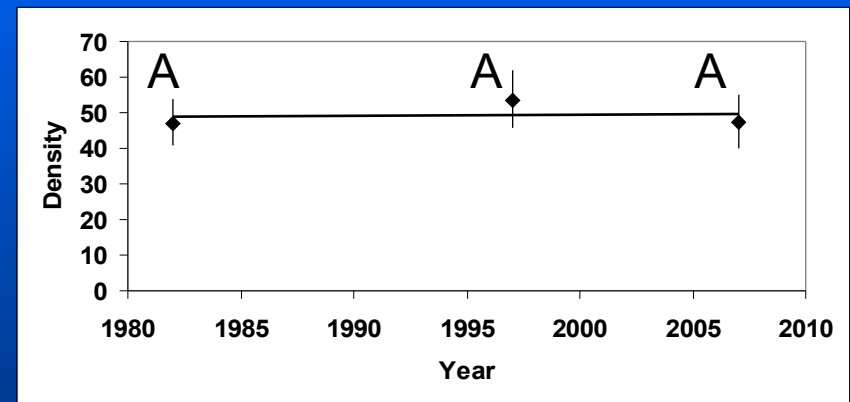


Orange-cheeked Waxbill

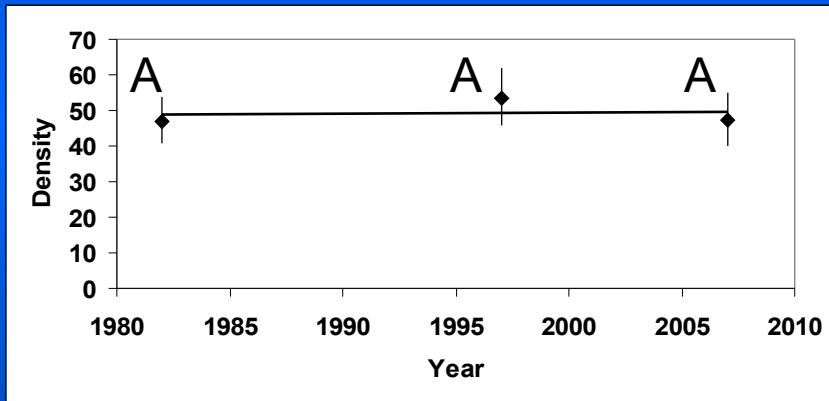
Stable Densities



Collared Kingfisher

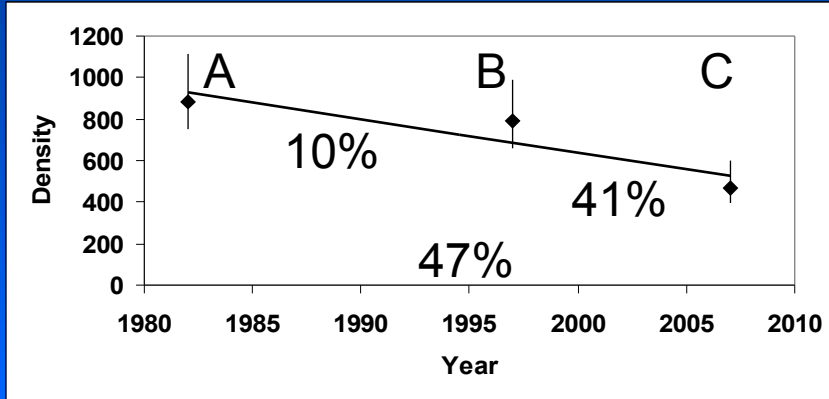


Bridled White-eye

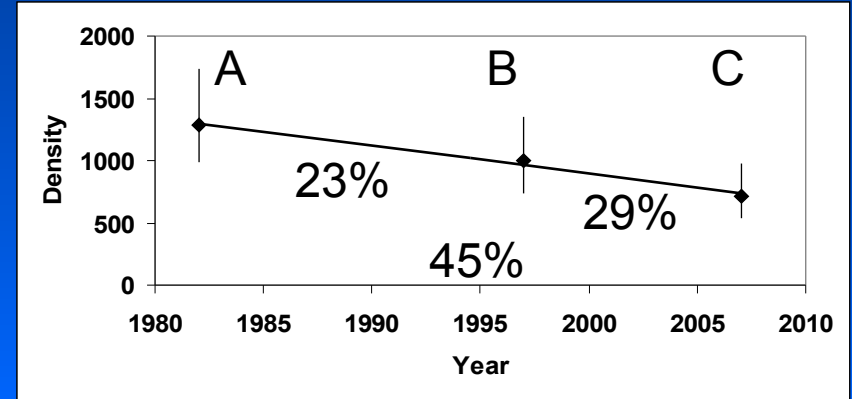


Mariana Fruit-dove

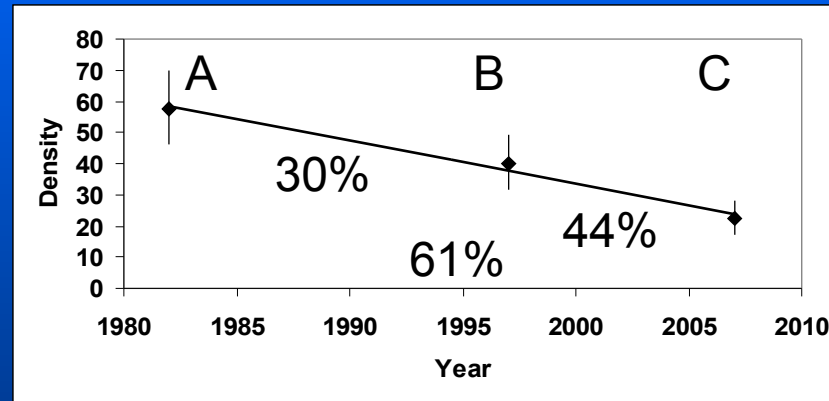
Decreasing Densities



Rufous Fantail



Golden White-eye

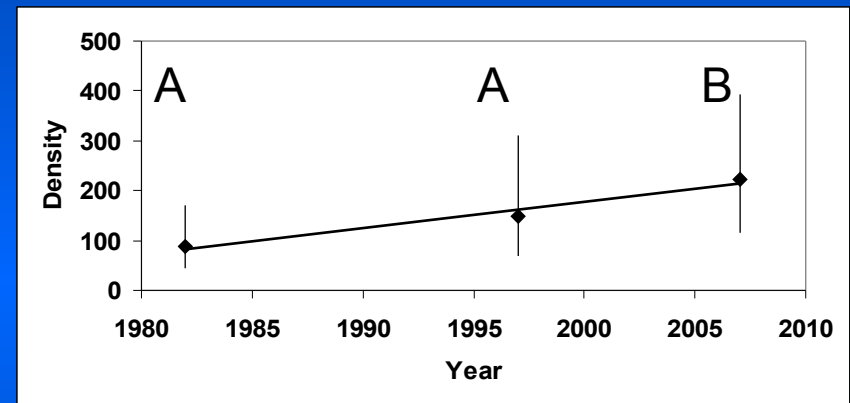


Nightingale Reed-Warbler

Other Birds

Micronesian Megapode

- Very rare species
- Detected 5 1 0
- Saipan population declining
- Although more common on other Mariana Islands

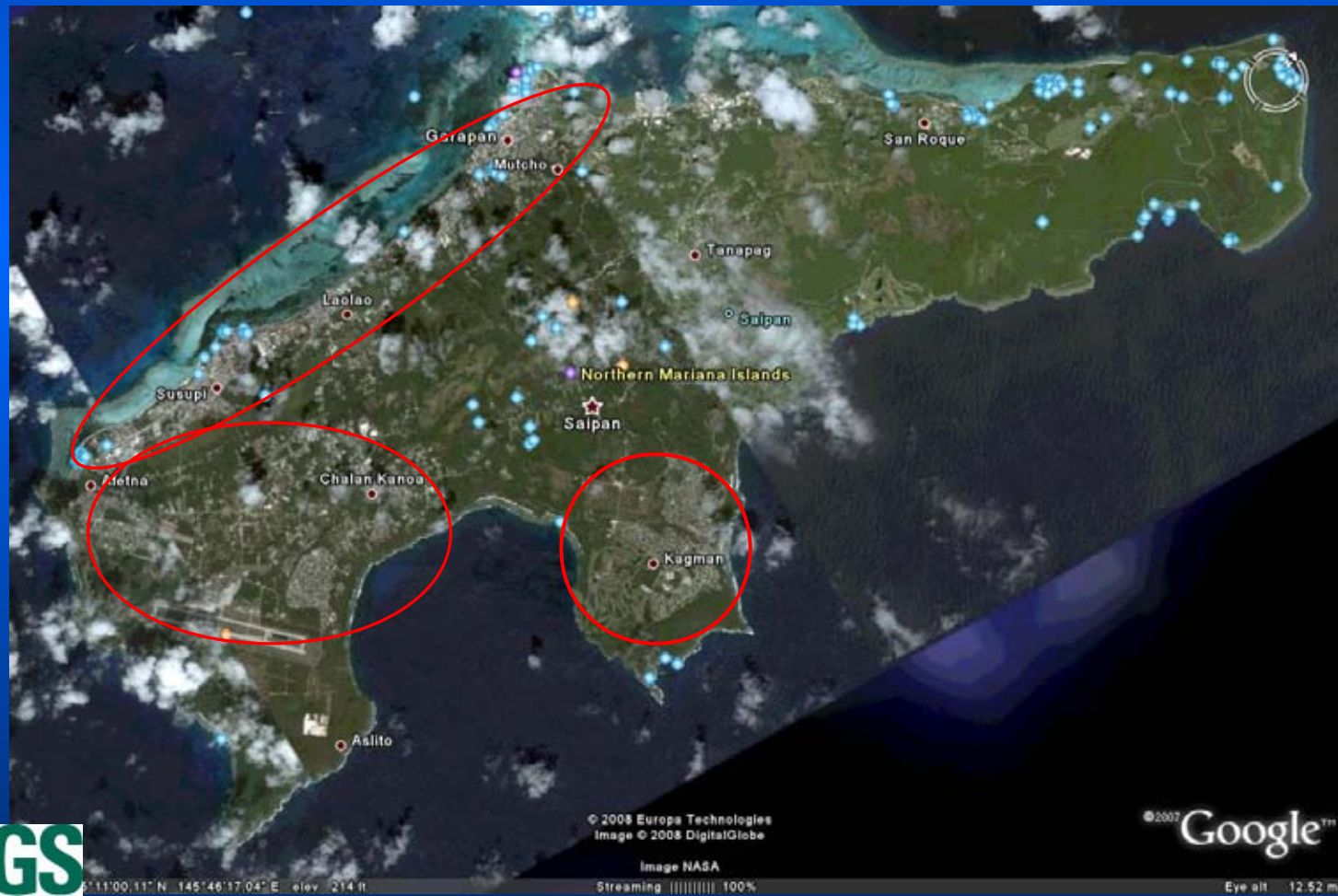


Micronesian Swiftlet

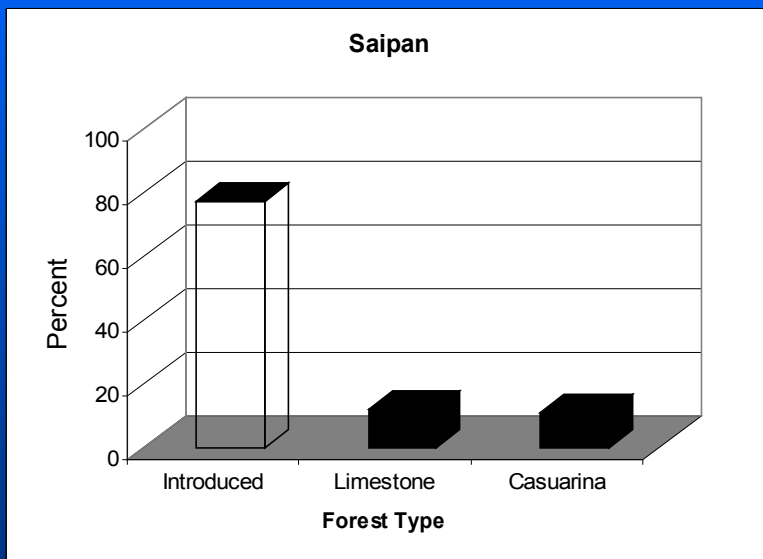
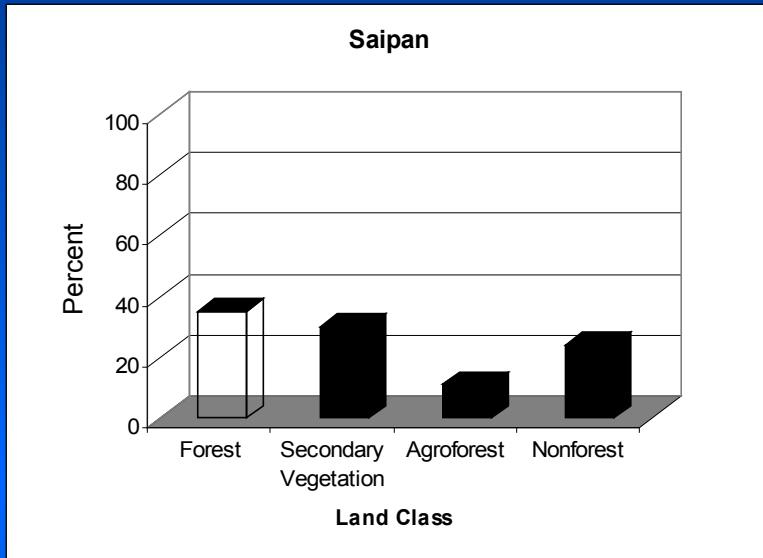
- numbers a magnitude smaller
- no movement assumption violated
- preferentially record near point
- distances biased low > overestimates

Rapid human development

- 429% increase between 1980 & 2000; subsequent decline
- Coastal plain, southern plateau, Kagman peninsula (70%)



Land class & disturbance



- Introduced Forest
– 27%
- Secondary Forest
– 30%
- Agroforest
– 11%
- Minimum Disturbed
– 68%

Falanruw et al. 1989

Nightingale Reed-Warbler

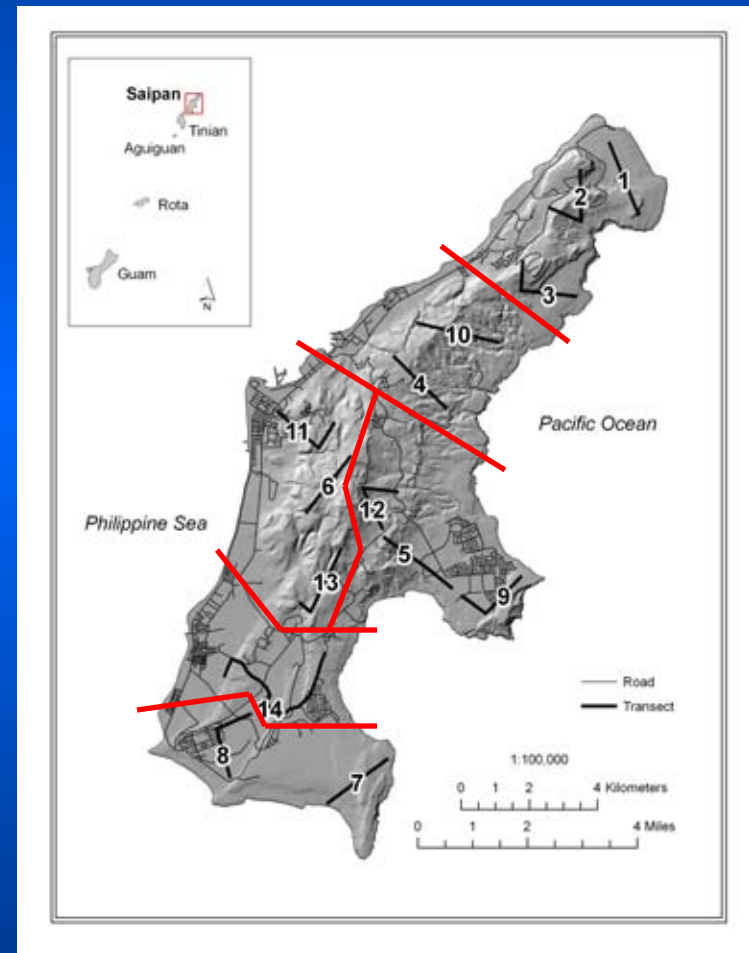
- Regional Comparisons
- Habitat Associations



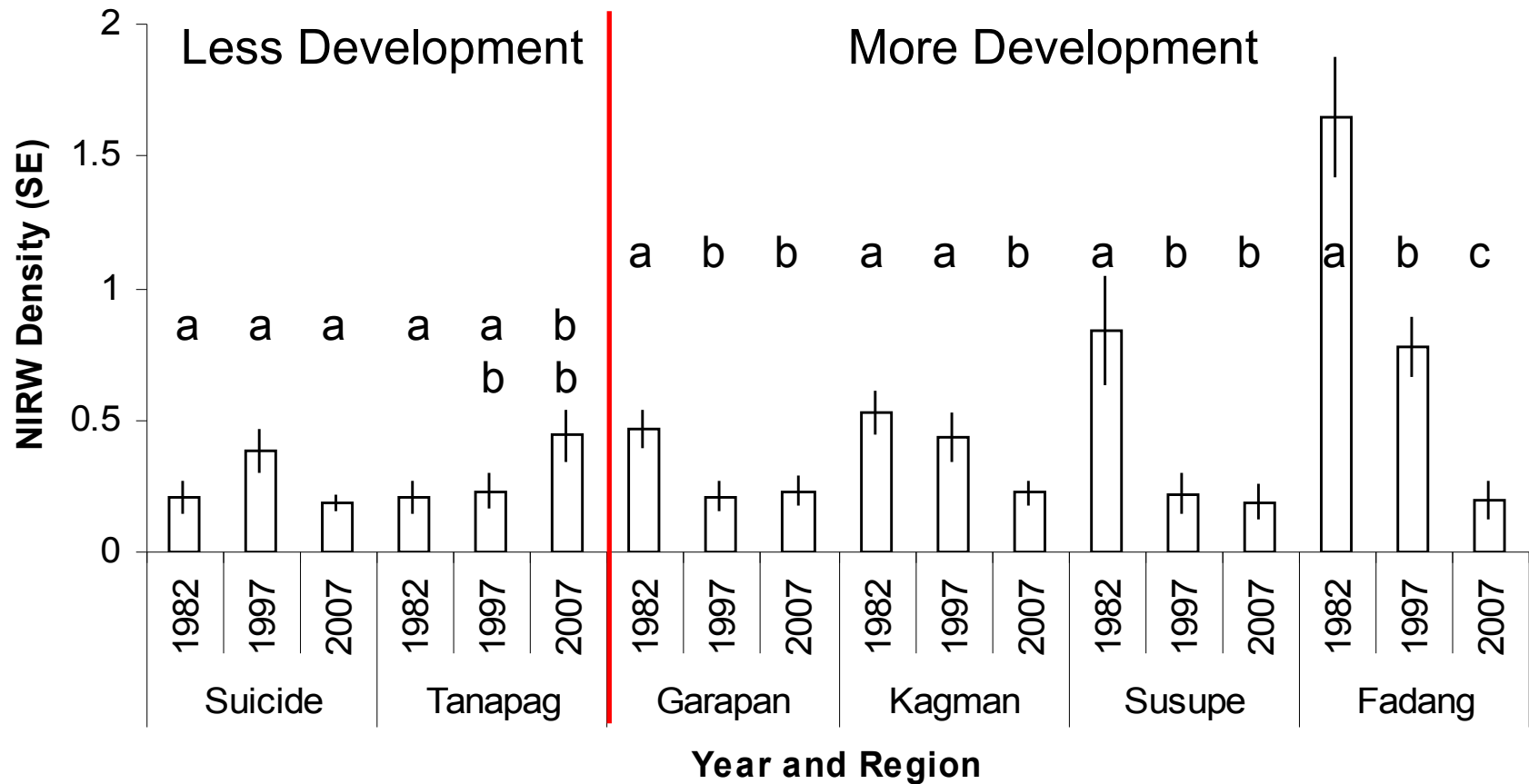
Photo by CNMI-DFW

NIRW Regional Comparisons

- Little development
 - Suicide
 - Tanapag
- More development
 - Garapan
 - Kagman
 - Susupe
 - Fadang
- Repeated measures ANOVA



NIRW Regional Comparisons



NIRW Habitat Associations

- Suitable habitat
 - Open, Secondary forest and Tangantangan thicket
- Less suitable habitat
 - Golf course, Limestone forest and Residential
- 2-way repeated measures ANOVA

NIRW Habitat Associations

- 58 to 22 birds/km²
- Year & Habitat effects
- Large-scale habitat change
- Imminent new predator – brown tree snake
- Saipan Upland Mitigation Bank (2002)
- Surveying frequency
- Surveying effort
- Demographic studies

Habitat	1982	2007
Suitable		
Open	37	22
SF	31	25
TT	40	27
Less Suitable		
GC	38	4
LF	18	8
Res	60	5

Acknowledgements

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 - CNMI Division of Fish and Wildlife
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