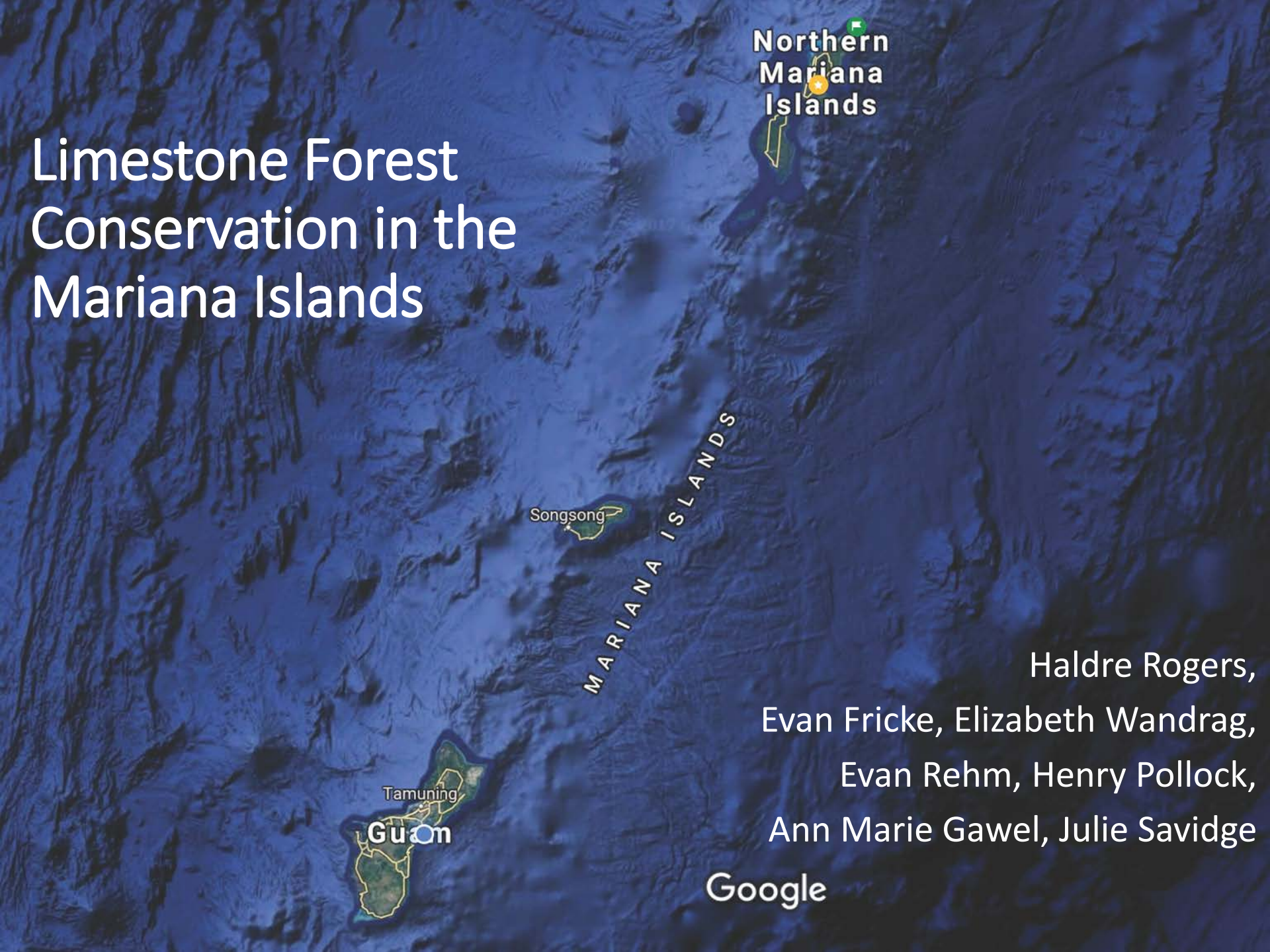
Limestone Forest Conservation in the Mariana Islands



Haldre Rogers,
Evan Fricke, Elizabeth Wandrag,
Evan Rehm, Henry Pollock,
Ann Marie Gawel, Julie Savidge

Why are limestone forests important?

Species extinctions and declines

Loss of ecological function

What are the ecological challenges to conserving limestone forest?

Non-native species

Habitat destruction

… but a lot of tools and strengths to draw upon

- Island with distinct borders and large swaths of public land
- Partially intact remnant forests; few recent extinctions
- Nearby islands with similar ecology & species
- An increasingly connected community of researchers and managers
- Increasingly engaged public
- Significant body of knowledge & research to draw upon
- Funding for restoration

How do we achieve our vision for conservation of limestone forest?

1. Rebuild a functioning system
   - Stop habitat destruction and restore degraded areas
   - Remove or control detrimental non-native species
   - Restore ecological function
2. Restore species diversity

1a. Stop habitat destruction and repair degraded areas

- Identify key intact forest areas to protect.
- Enact policy to protect these areas.

Vegetation Mapping of the Mariana Islands: Commonwealth of the Northern Mariana Islands and Territory of Guam

August 2017 DRAFT REPORT

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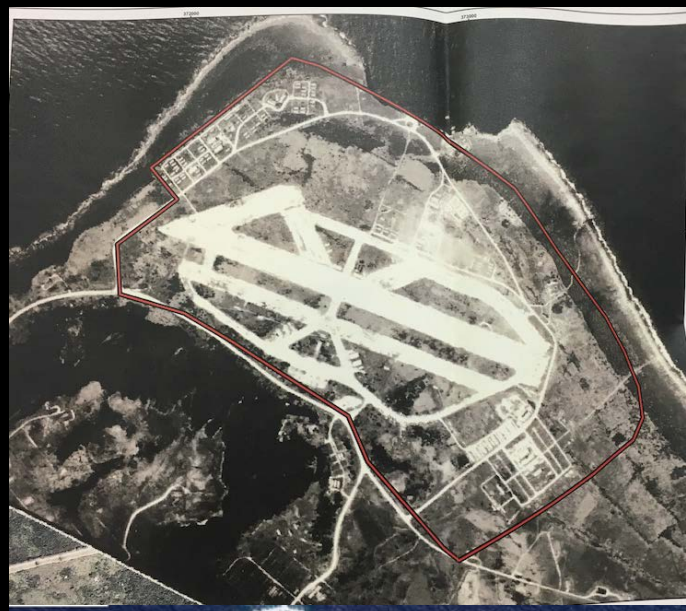
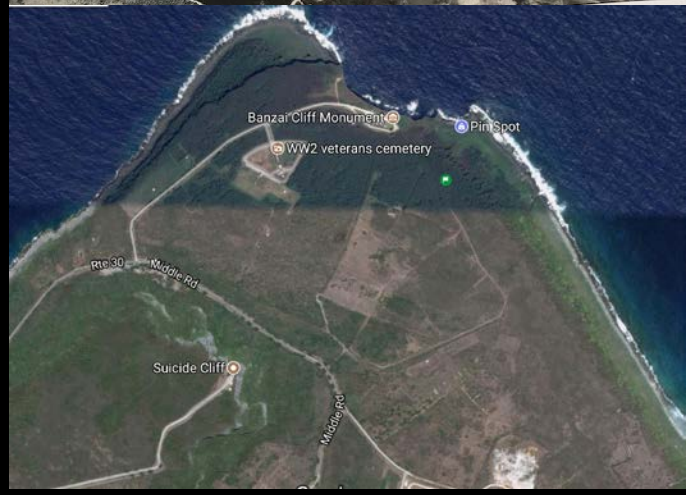
1a. Stop habitat destruction and repair degraded areas

<u>Restore degraded limestone forest</u>

- Identify key areas for restoration
  - Prioritize areas with karst remaining
  - Take a landscape perspective
- Test methods for restoring highly degraded areas
  - If left alone, how does forest succession occur?
  - What techniques restore diversity in highly degraded areas?





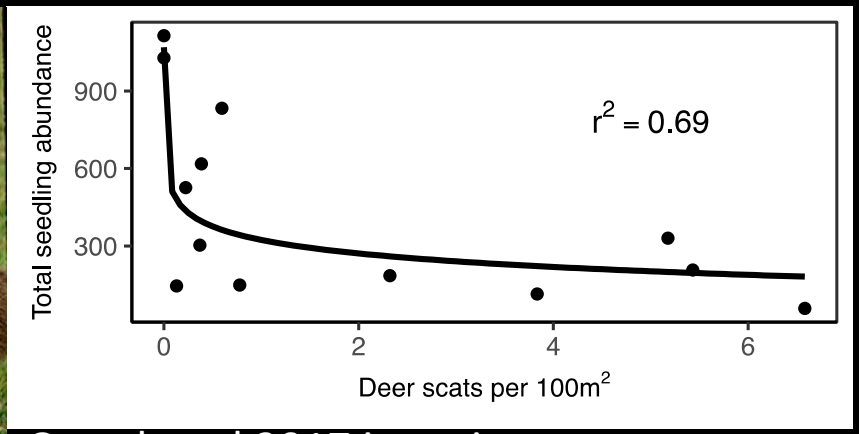
1b. Control detrimental non-native species

Currently limiting bird and bat population recovery on Guam

Many control methods exist.

Need to understand level of snake suppression needed for bird and bat persistence

1b. Control detrimental non-native species



Gawel et al 2017 in review

1b. Control detrimental non-native species

- Address species-specific threats
  - Cycad scale
- Tackle emerging threats early
  - Little fire ants
  - Plant pathogens (*Phellinus noxius*)
- Anticipate future threats
  - Invasive vines, rodents

1c. Restore ecological function

*Pollination

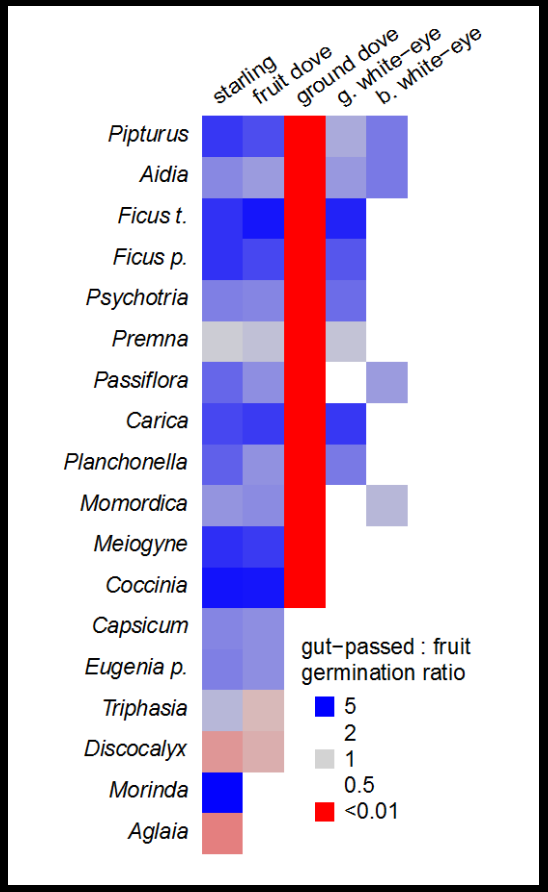
Seed dispersal

*Predation

*See posters tonight for more info!

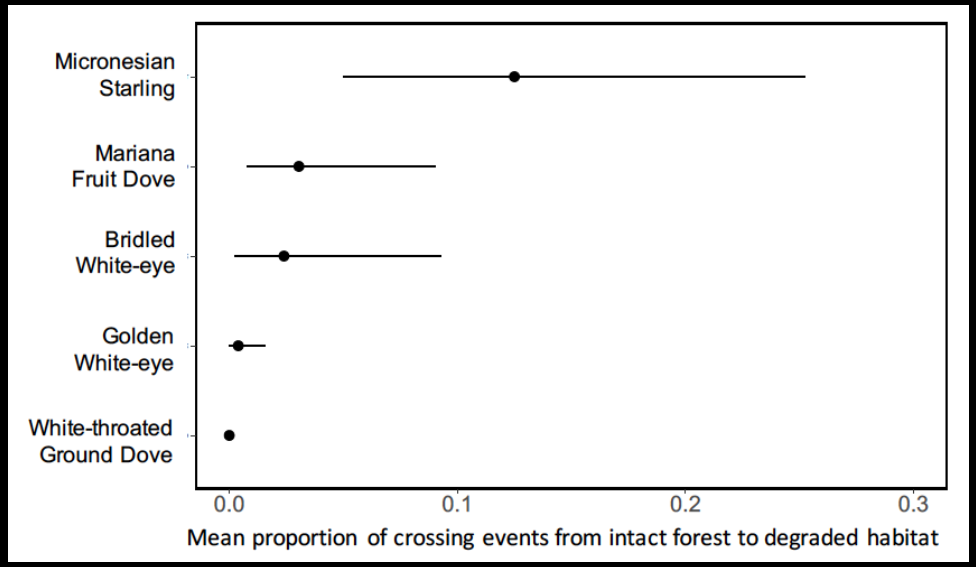
1c. Restore ecological function

- Seed dispersal
  - Sali, Totot
  - Fanihi



Gut passage effects on germination

Seed dispersal to degraded forest



1c. Restore ecological function

- Small birds largely missing on Rota
- Non-native species serving as a stopgap measure on Guam?
  - Pigs and rats?
- Guam: Prioritize areas for predator control and bird reintroduction

2. Re-wild the Marianas!

- Build habitat first, particularly on Guam
  - Protect high quality areas & restore others
  - Identify and control most detrimental invasives
  - Prioritize species to recover ecosystem function (Sali, Totot, Fanihi)
- Reintroduce or recover populations of threatened and endangered species
  - Sihek, Ko'ko, Fanihi, Aga

Research needs

- At what level can snakes and birds coexist?
- Can we re-establish birds within fenced areas on Guam?
- Can we extend the range of the starling?

Policy needs

- Protect intact forest areas across the Marianas

Societal needs

- What is your vision for the future of the Marianas?
- How can the entire community be part of the solution?

Thanks to:

- University of Guam
- CNMI Div. of Fish and Wildlife, CNMI Forestry
- Rota DLNR, Tinian DLNR
- Guam Forestry, Guam DAWR
- Rota Crow Project
- Ritidian National Wildlife Refuge

EBL
ECOLOGY OF BIRD LOSS

IOWA STATE UNIVERSITY

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