

# Conservation Introduction as a Preemptive Management Strategy for the Avifauna of the Commonwealth of the Northern Mariana Islands



**ASSOCIATION  
OF ZOOS &  
AQUARIUMS**

*and*

**Pacific Bird Conservation**

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# Conservation Introduction

Removal of a species from overwhelming local threat or to create satellite, “insurance” populations elsewhere

Successful for species conservation management on other islands including the Seychelles, New Zealand, and Hawaiian Islands

Efforts in Mariana Islands – translocation of Guam Rails to Rota



Photo: Safari Consultants



Photo: R. Kohley



Photo: Guam DAWR

# Historical Synopsis

## WWII

Saipan, Tinian and Guam the scene of intense fighting

Associated battles on landmasses around the Philippine Sea

US military materiel delivered to southern Guam post-war:

- Equipment arrived from Northern Australia or New Guinea



# The Purpose

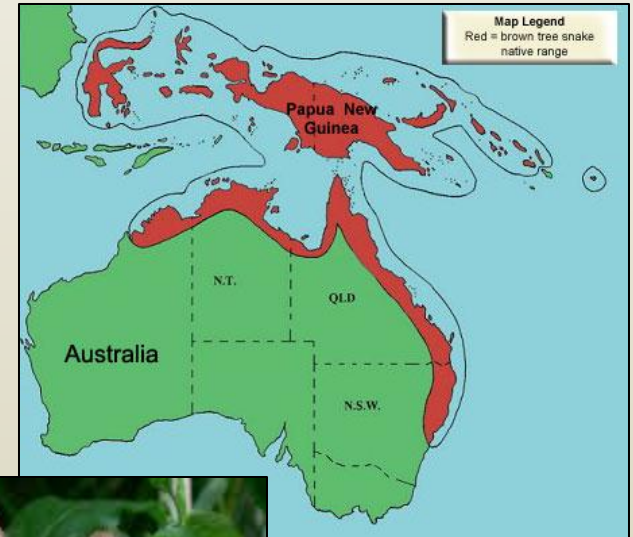
## The Brown Tree Snake (*Boiga irregularis*) / BTS

Native to N. Australia and New Guinea

Likely a passive stow-away in military equipment

Deposited prior to 1950 on U.S. Navy lands on southern Guam

By 1988, BTS responsible for extinction or extirpation of 9 of 12 species of native forest birds on the island



Photos: *Wildlife Qld*

# The Purpose

## The Brown Tree Snake (*Boiga irregularis*) / BTS

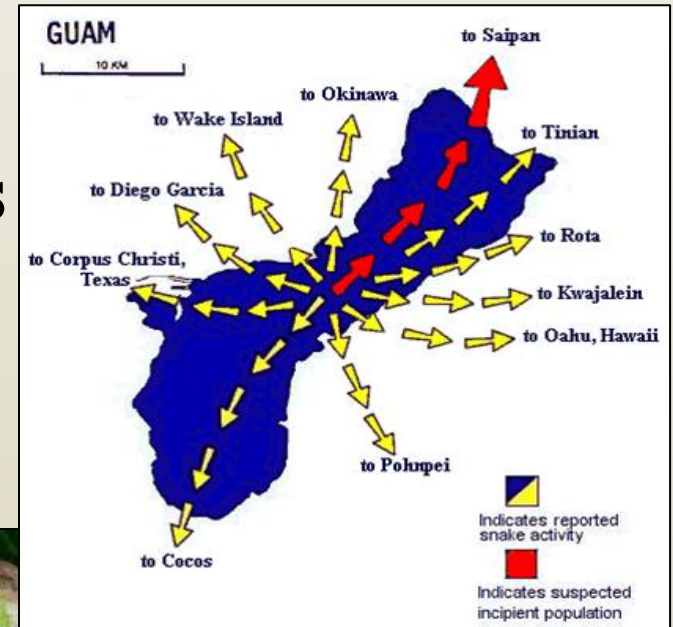
Mechanism for spread of BTS to other islands – transportation of goods

To date – 90 credible encounters of BTS in the CNMI

- Rota = 4
- Tinian = 10
- Saipan = 76

11 captured on Saipan, 3 from different villages outside port areas

2004 – US DOI determined that Saipan supports an “incipient” population of BTS



Photos: *Wildlife Qld*

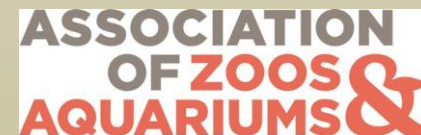
# The Response

## 2005: Meeting of CNMI DFW, USFWS, and AZA

RE: captive management program for CNMI's unique avifauna

Conclusion: long-term species survival requires establishment of satellite, insurance populations on islands in the Mariana archipelago safe from BTS

End result: the Marianas Avifauna Conservation (MAC) Program or Project



# The MAC Project

## Captive Propagation Program

An integral part of MAC Program  
but not funded by WSFR

All participating institutions are  
AZA affiliated

Agree to provide funds and  
personnel when they join captive  
propagation team



# The MAC Project

## Conservation Introduction Program

Funded by WSFR – both Wildlife Restoration and State Wildlife Grants

All capture and prep work undertaken and overseen by AZA biologists

Actual translocation efforts overseen and executed by CNMI DFW Wildlife staff





# The MAC Project

## Species of Concern

23 species of landbirds resident to CNMI, 10 of which are endemic

7 species of focal interest to the project



Photo: Baumgartner



Photo: L. Berry



Photo: Baumgartner



Photo: Baumgartner



Photo: tropical.pete/wikipedia



Photo: E. VanderWerf

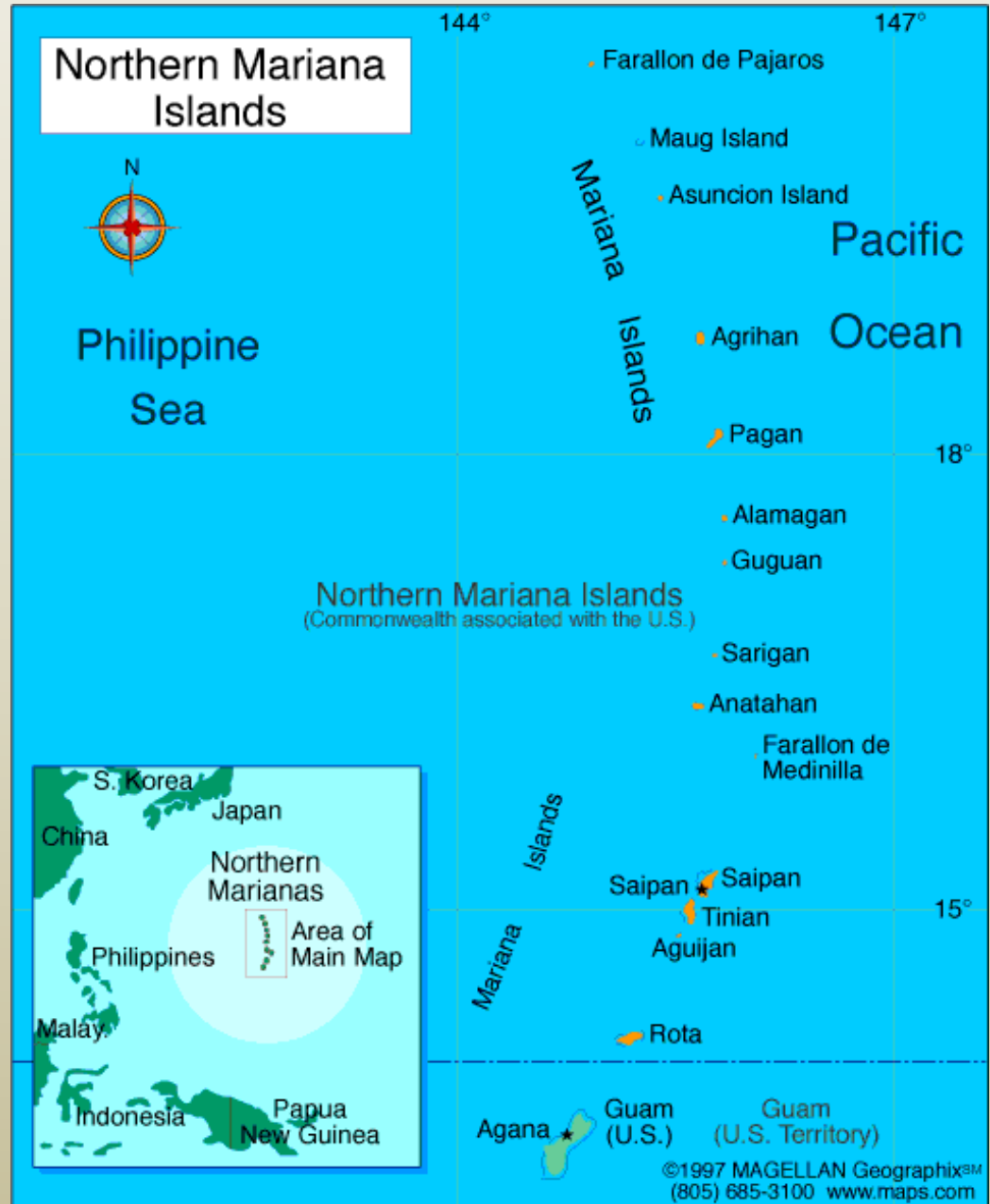
# The Place

Mariana Archipelago – 15 islands, stretching over 749 km north to south

Age = 5 million years in north, 25-30 million years in south

Climate – marine tropical, hot and humid, 83° yearly mean temp

Comprised of the US Territory of Guam and the CNMI



# The Place

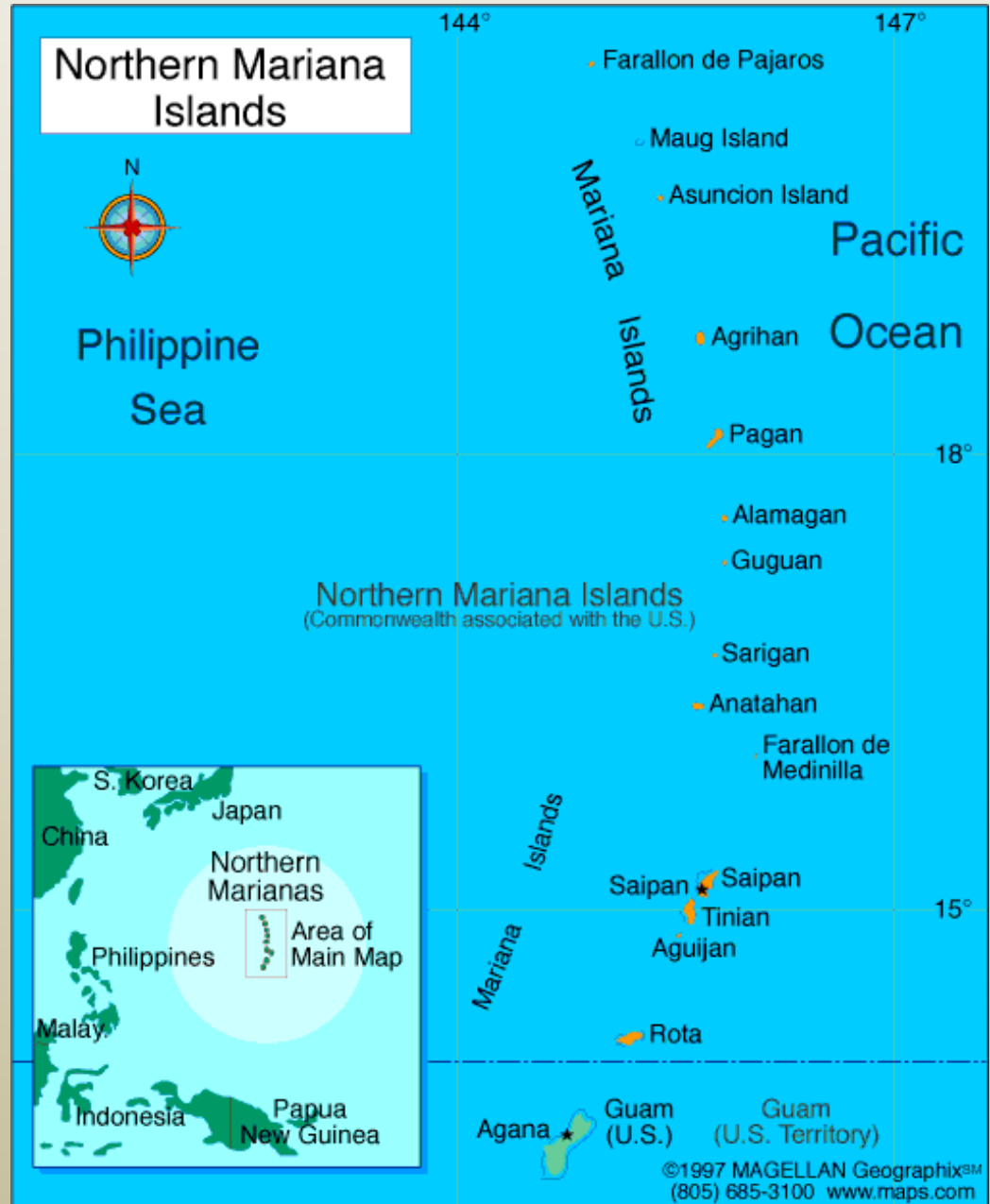
## CNMI

Comprised of the 14 islands north of Guam

Three populated islands – Rota, Tinian, and Saipan

Population 2,527, 3,136, and 48,220, respectively

Saipan serves as the seat of government



# The Place

## The “Northern Islands”

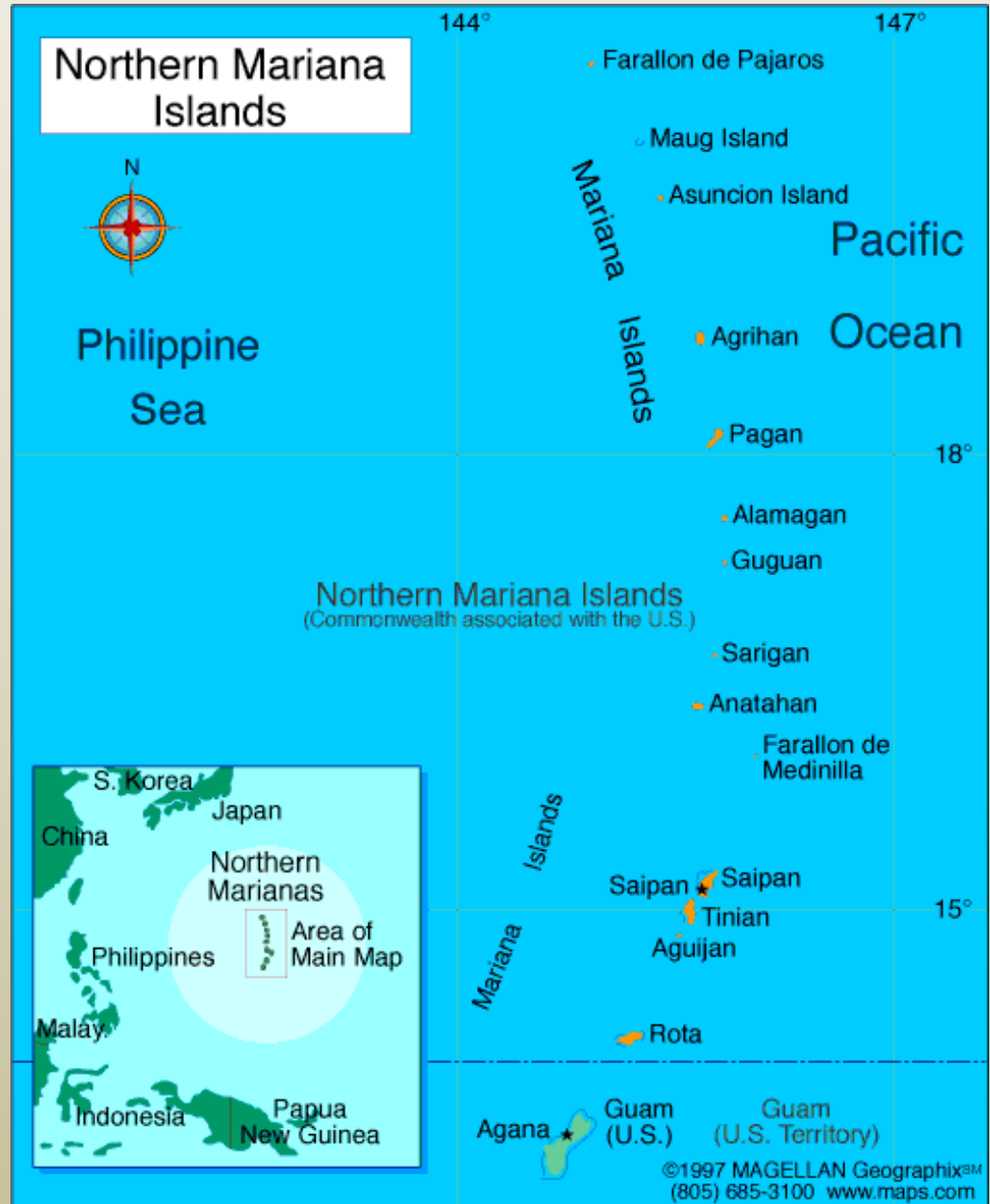
Rugged, remote, and mostly unpopulated

- ~210 – 4770 ha in area

Some are currently or historically volcanically active

The ultimate destination of all current and future translocation efforts

The focus primarily on Sarigan to Asuncion



# The MAC Project

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	Sarigan	Guguan	Alamagan	Pagan	Agrihan	Asuncion
<i>Marianas Fruit Dove</i>	X	X			X	
<i>Rufous Fantail</i>	X	X	X			
<i>Tinian Monarch</i>		X		X	X	
<i>Nightingale Reed-warbler</i>				X	X	
<i>Bridled White-eye</i>	X	X		X		
<i>Rota White-eye</i>					X	X
<i>Golden White-eye</i>	X		X			

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# Efforts and Results

## Initial Target Island - Sarigan

An uninhabited, “extinct” volcano 171 km north of Saipan

Approximately 500 ha (5 km<sup>2</sup>) in area, 549 meters at highest elevation

45% (223 ha) is covered by forest

- ~34% to 40% (75-90 ha) native forest
- ~60% (133 ha) old coconut or agro forest



# Efforts and Results

## Translocations: 2008-2012

All capture events took place in late April

All birds assessed for disease and health issues

Most vigorous and robust chosen for translocation

All birds color banded and a subset radio-tagged

All translocations occurred in early May

Year	Species	No. Intro	Source	No. Bnd/Tg
2008	BRWE	50	Saipan	50/14
2009	BRWE	50	Tinian	50/14
2010		<i>No Translocation</i>		
2011	GOWE	24	Saipan	24/0
2012	GOWE	50	Saipan	50/24
	MAFD	10		10/0

# Efforts and Results

## Post-Release Monitoring: 2008

Executed 3 – 11 May

Of 14 deployed transmitters:

- 10 detected (1-5 days)
- 5 of these recovered
- 5 = fate unknown
- Remaining 4 = never detected

No mortality documented

10 to 15 Bridled White-eyes  
observed or detected foraging in  
mid-to-upper canopy





# Efforts and Results

## Pre-Release Monitoring: 2009

Sarigan visited on 23-24 March to determine outcome of the 2008 Bridled White-eye translocation

Observed: banded and unbanded birds and adults feeding fledged young

Found: recently used Bridled White-eye nest

2008 Conservation Introduction deemed successful



# Efforts and Results

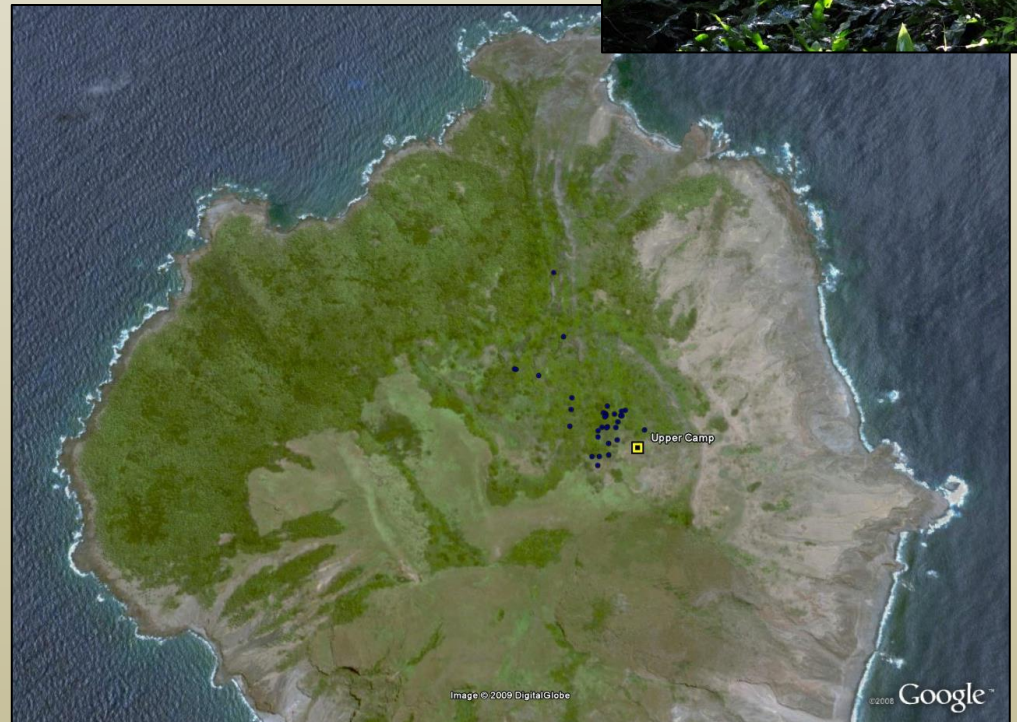
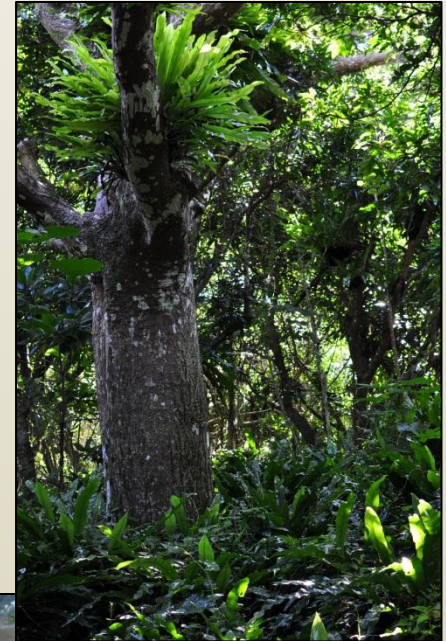
## Post-Release Monitoring: 2009

Transmitter attachment malfunction: monitoring consisted of transect based surveys

Monitoring executed 7 – 13 May

Small flocks of 1 – 6 ( $n = 86$ )  
Bridled White-eyes detected in 33 separate locations on the island

- 7 birds from 2008
- 9 birds from 2009
- 8 unbanded birds



# Efforts and Results

## Post-Release Monitoring: 2011

No monitoring performed

Navy booked *Amercopters* for month of May to clear FDM of UXOs

Complications with CNMI contract with *Americopters* precluded later visits that year



# Efforts and Results

## Post-Release Monitoring: 2012

Executed 1 – 7 May

Tracking radio-tagged birds and resight color banded individuals

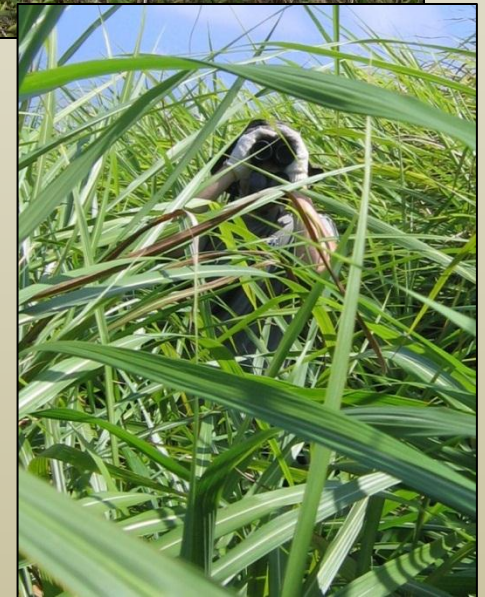
Telemetry – inconclusive at best

- 3 transmitters detected as active
- 3 recovered
- No mortality documented

At least 5 banded birds resighted

- 4 introduced in 2010

Singing and nest building documented



# Efforts and Results

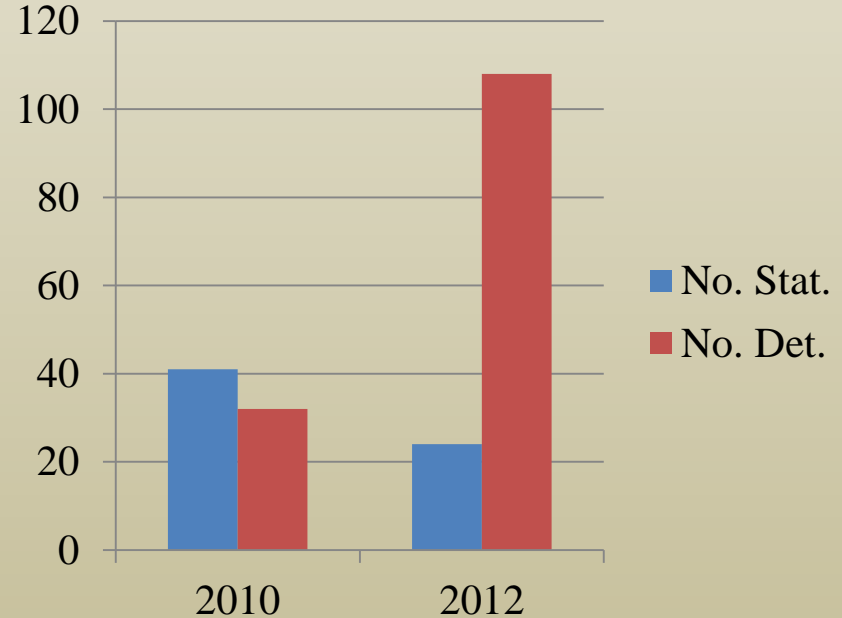
## Post-Release Monitoring: 2012

*Bridled White-eye Point-transect  
Distance Surveys*

2010 results: 32 detections from 41  
stations (range = 0-8 det/st.)

2012: executed 4-5 May

Results: 108 detections from 24 stations  
(range = 0-9 det/st.)



# Efforts and Results

## Post-Release Monitoring: 2012

### *Bridled White-eye Point-transect Distance Surveys*

2010 results: 32 detections from 41 stations (range = 0-8 det/st.)

- relative abundance = 0.37

2012: executed 4-5 May

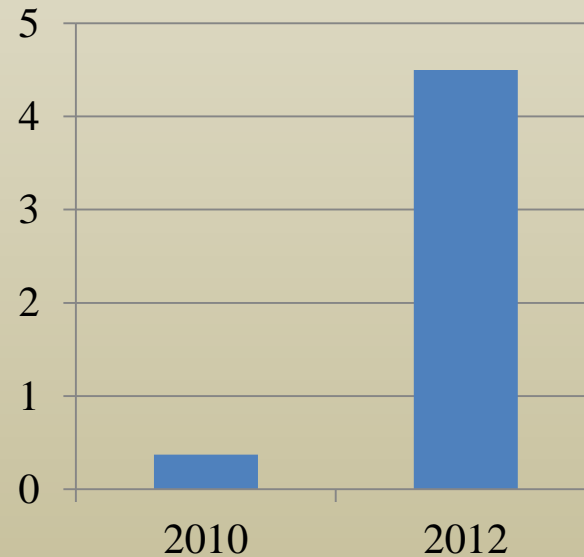
Results: 108 detections from 24 stations (range = 0-9 det/st.)

- relative abundance = 4.5

12.2 fold increase in relative abundance from 2010 to 2012



### Rel. Abundance



# Efforts and Results

## Post-Release Monitoring: 2012

Analysis, Program DISTANCE 6.0

### 2010 Results

$D = 1.3/\text{ha}$  (95% CI: 0.4 – 2.8)

$N = 234.2$  (95% CI: 77.0 – 495.0)

### 2012 Results

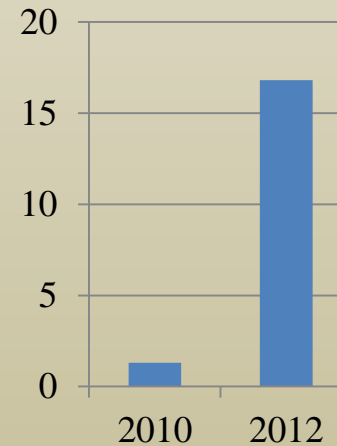
$D = 16.8/\text{ha}$  (95% CI: 10.6 – 24.0)

$N = 3004.5$  (95% CI: 1897.0 – 4302.0)

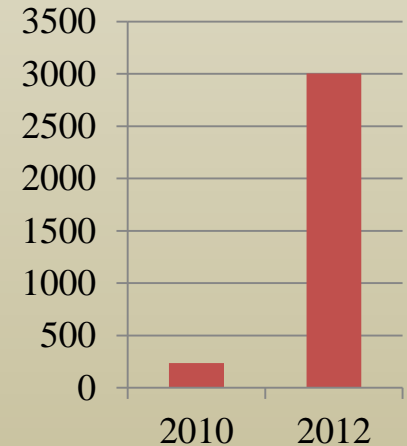
12.8 fold increase in DISTANCE  
generated abundance from 2010 to 2012



**Density**



**Abundance**



# Efforts and Results

## Were We Successful???

Evidence of breeding – Bridled and/or Golden White-eyes:

- Unbanded individuals present
- Used nests and nest building observed
- Adults observed feeding recently fledged young
- Other breeding behavior detected (e.g., singing, territorial disputes)

Bridled White-eyes – all of the above is reflected in their notable increase in numbers





# Efforts and Results

Our efforts have been successful in the short-term

Further monitoring will be necessary to determine long-term success and longevity

Documented evidence of breeding, recruitment, and increase in numbers are promising for long-term success

Indicates that Conservation Introduction as an effective preemptive management or conservation strategy for the CNMI



# Acknowledgements

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