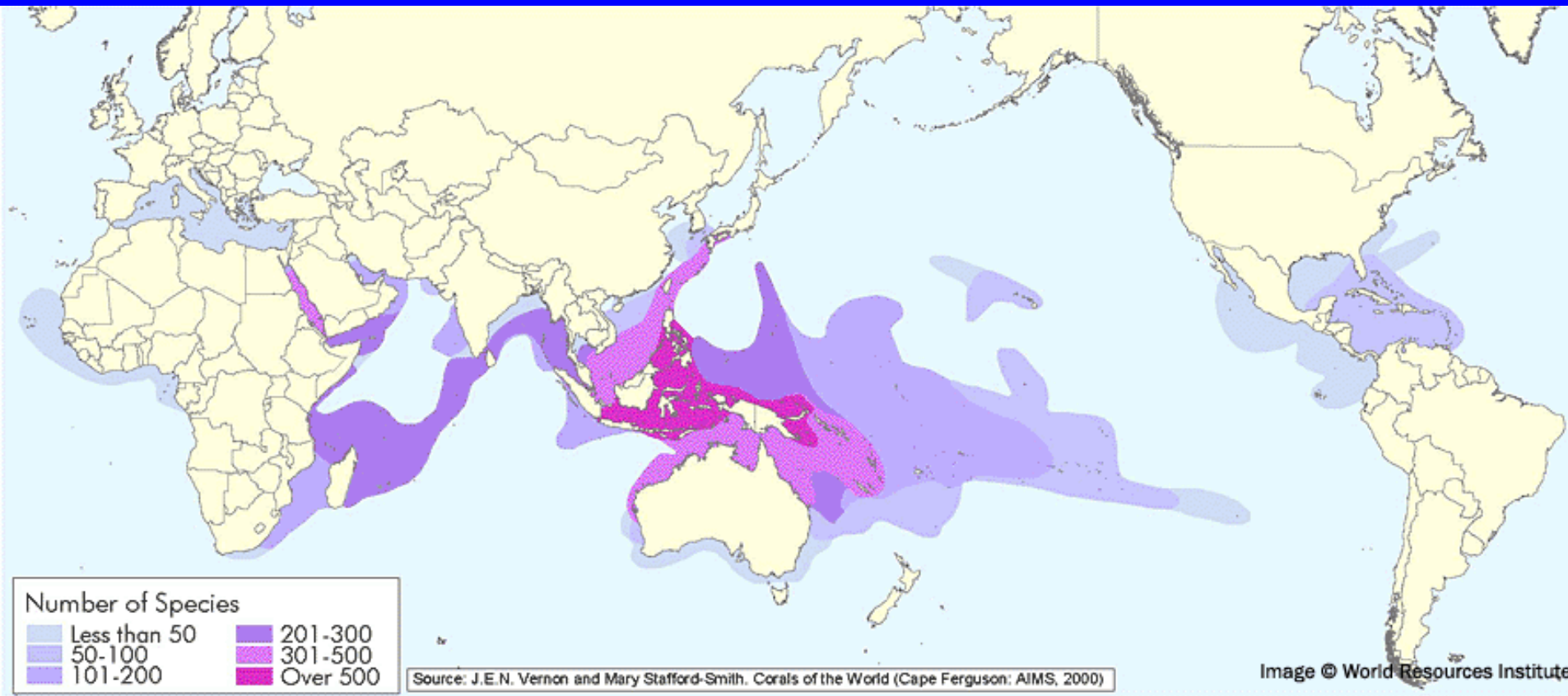


PICRC's Research Program



Yimnang Golbuu
Palau International Coral Reef Center



Unique and Diverse Habitats



Fringing Reef - East Coast



Barrier Reef - West Coast

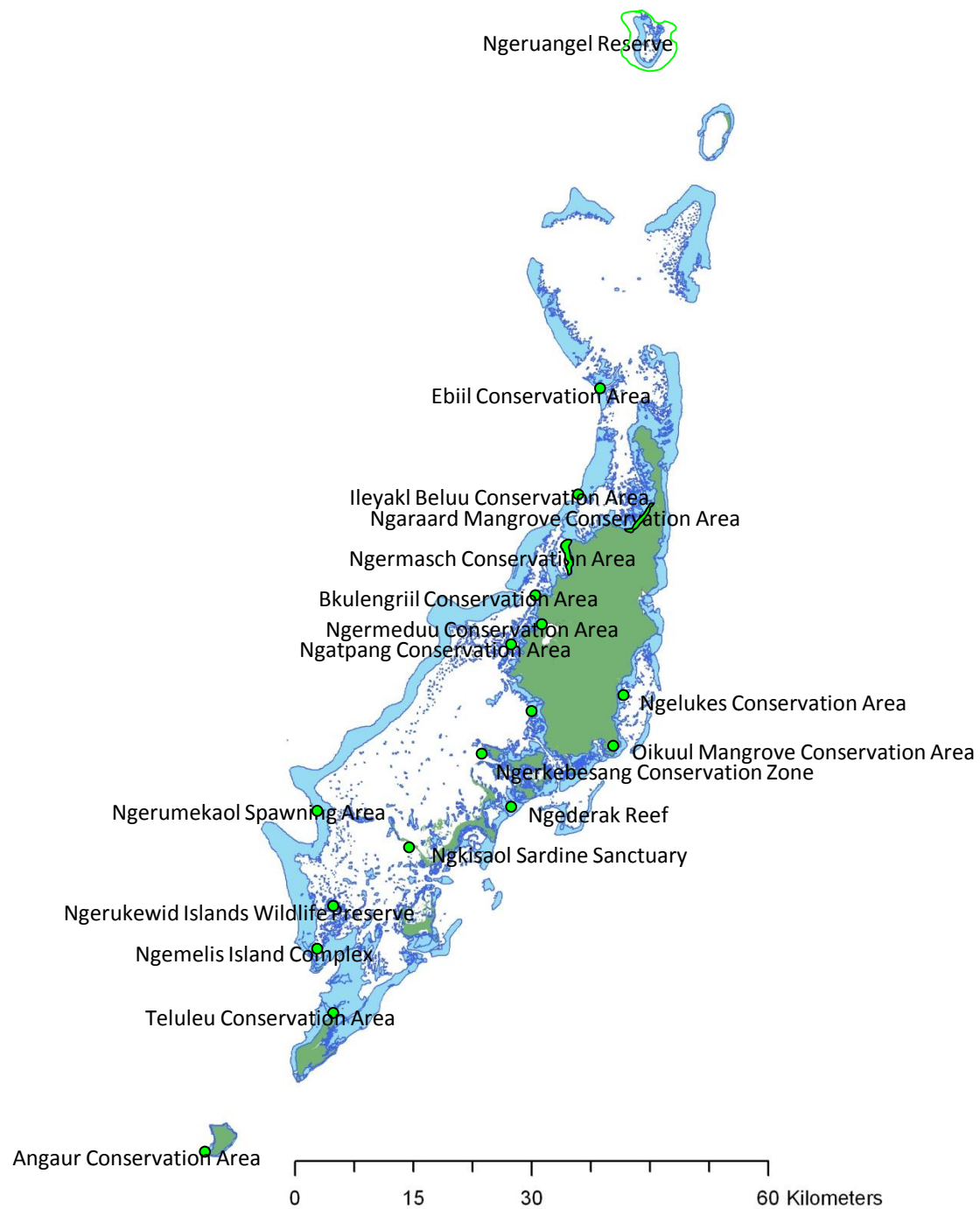


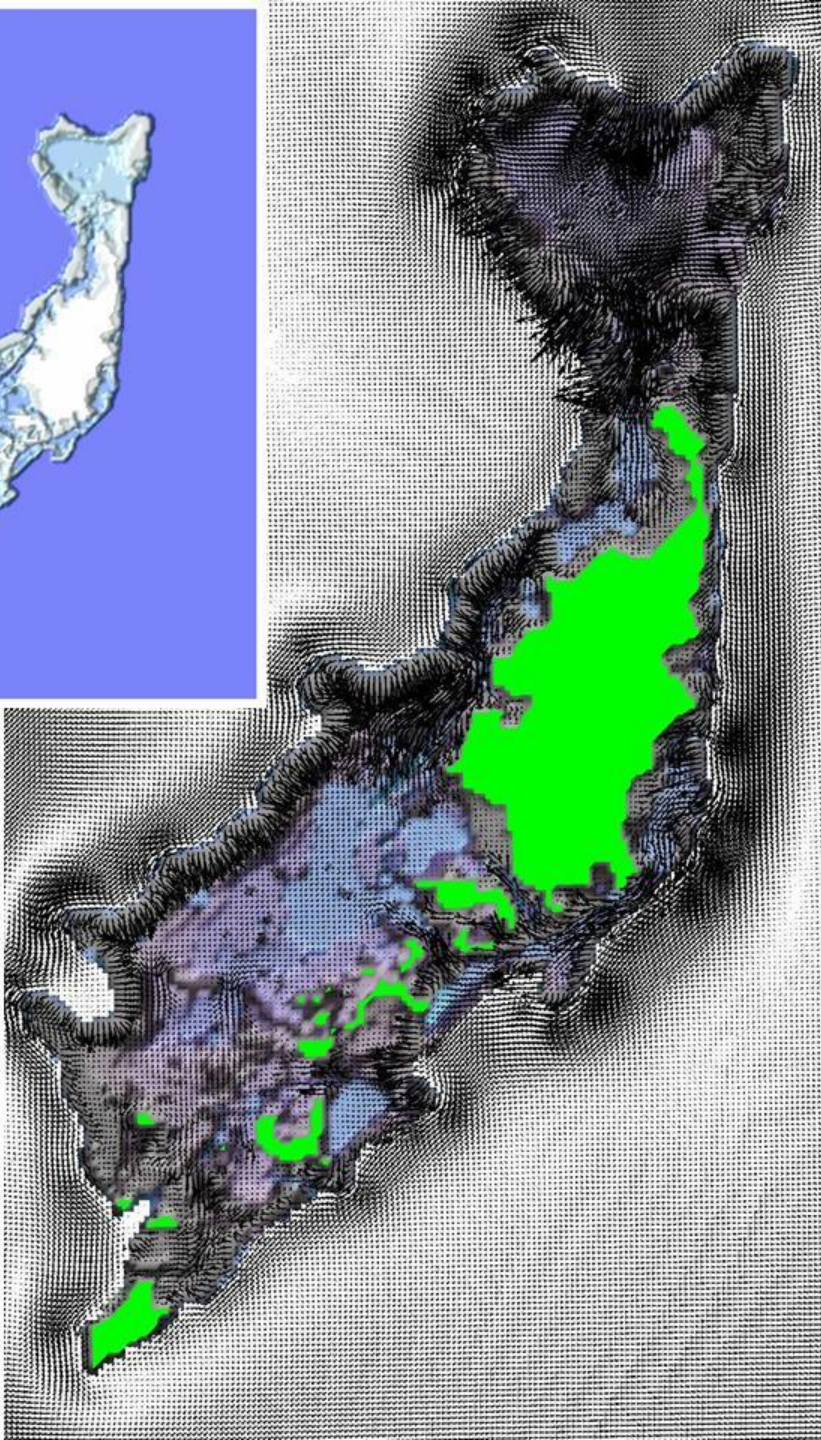
Atoll Reef - Kayangel



Patch Reef







Well-designed Protected Areas Network

Monitoring of PAN sites and PAN network

1. Numerous studies on impacts of increased sedimentation
2. Few looking at an ecosystem scale
3. Babeldaob allows quantification and analysis of watersheds with varying level of land-use

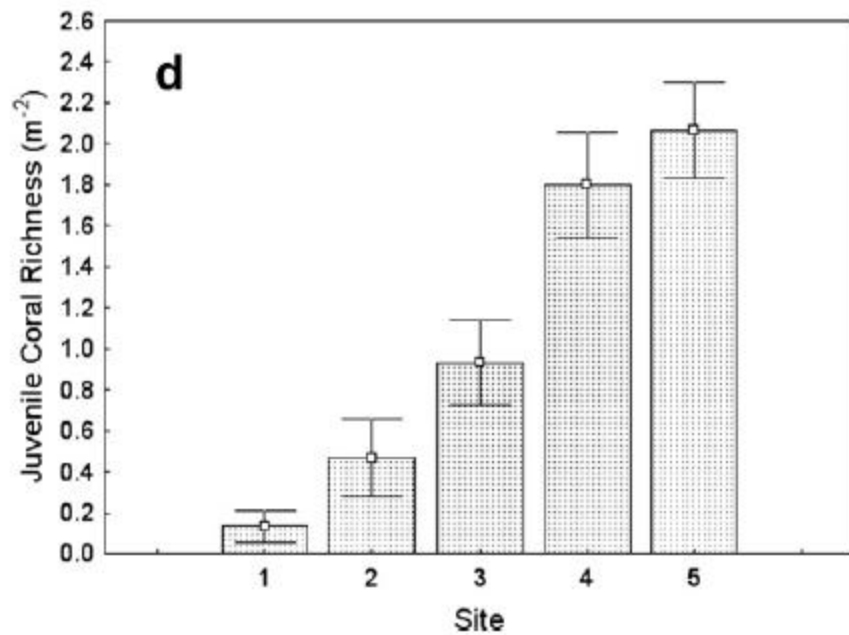
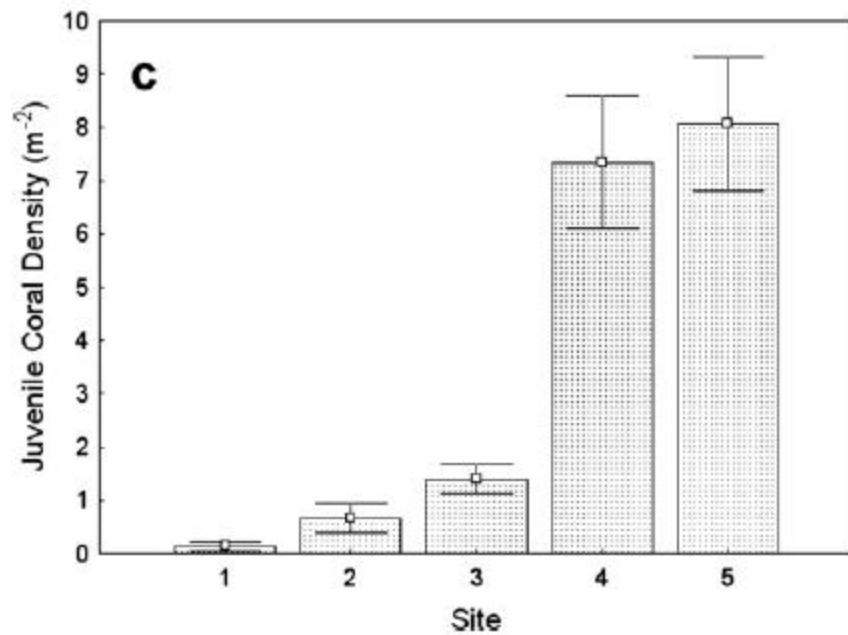
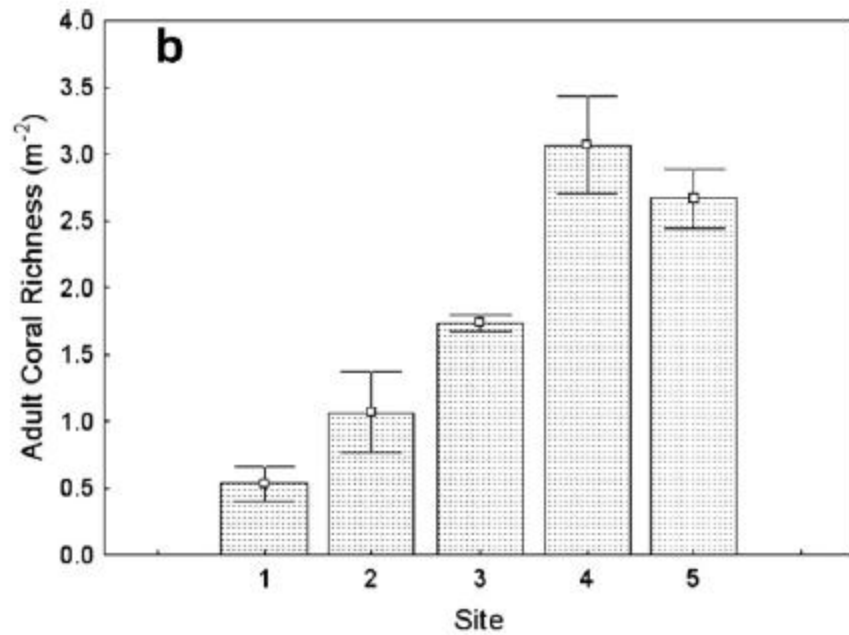
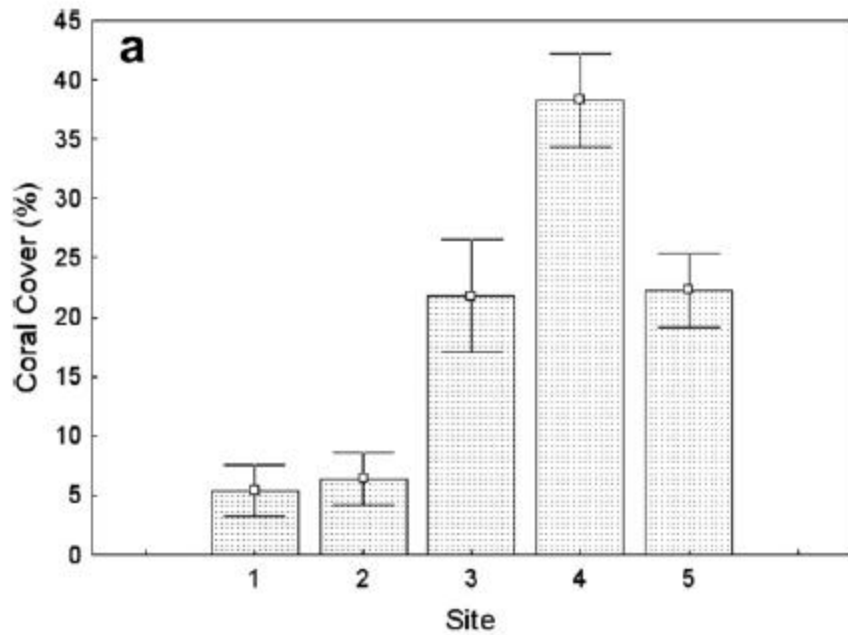


Diongradid
20.6 km²

Ngermeduu
86.3 km²

Ngerdorch
47.4 km²

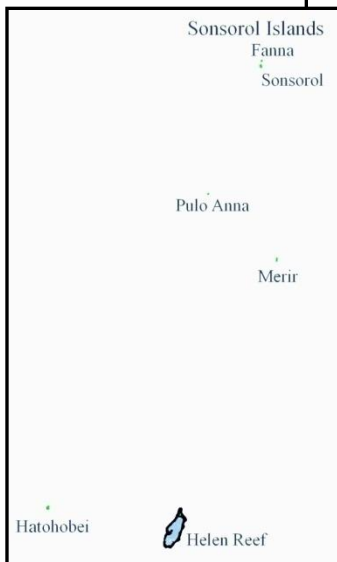
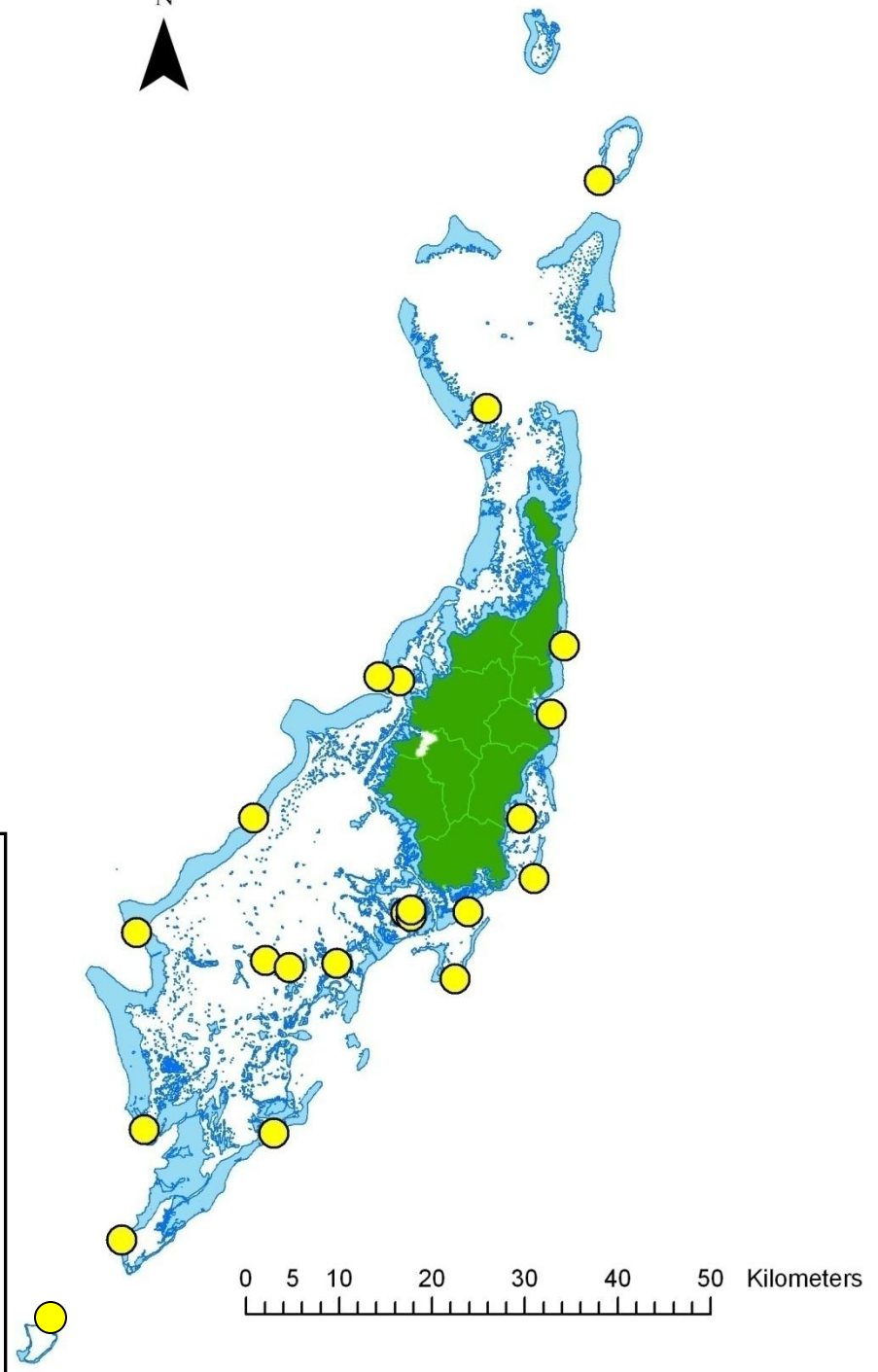
Ngerikiil
28.5 km²

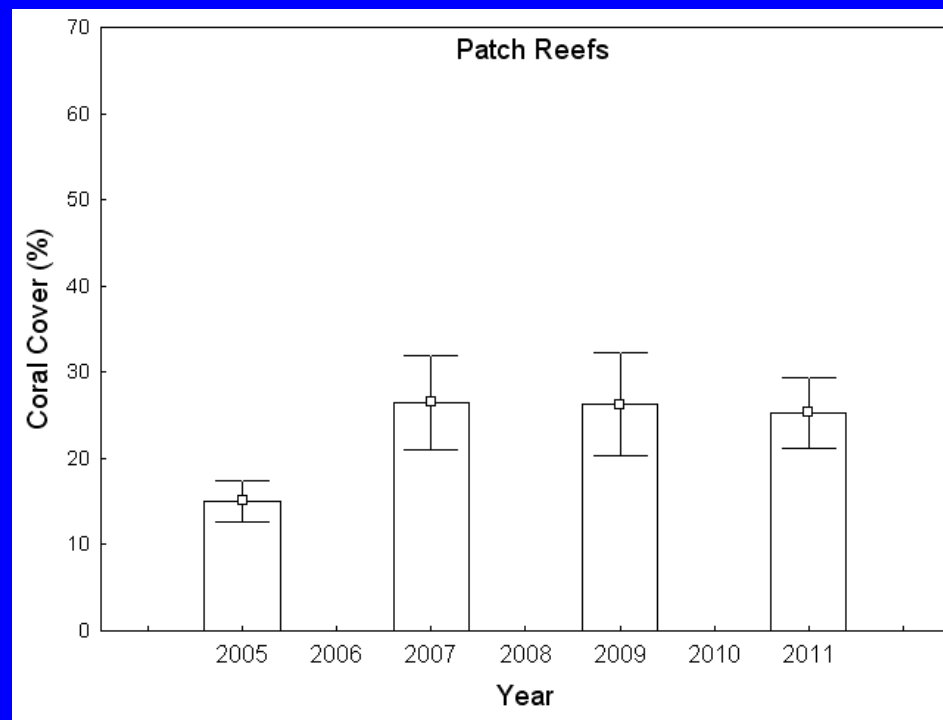
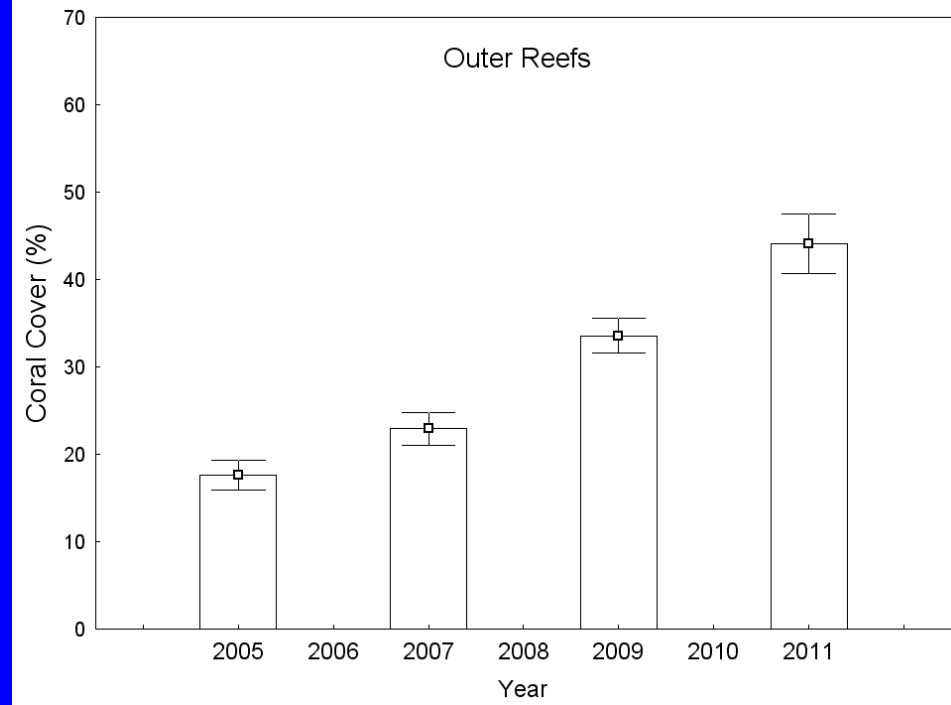
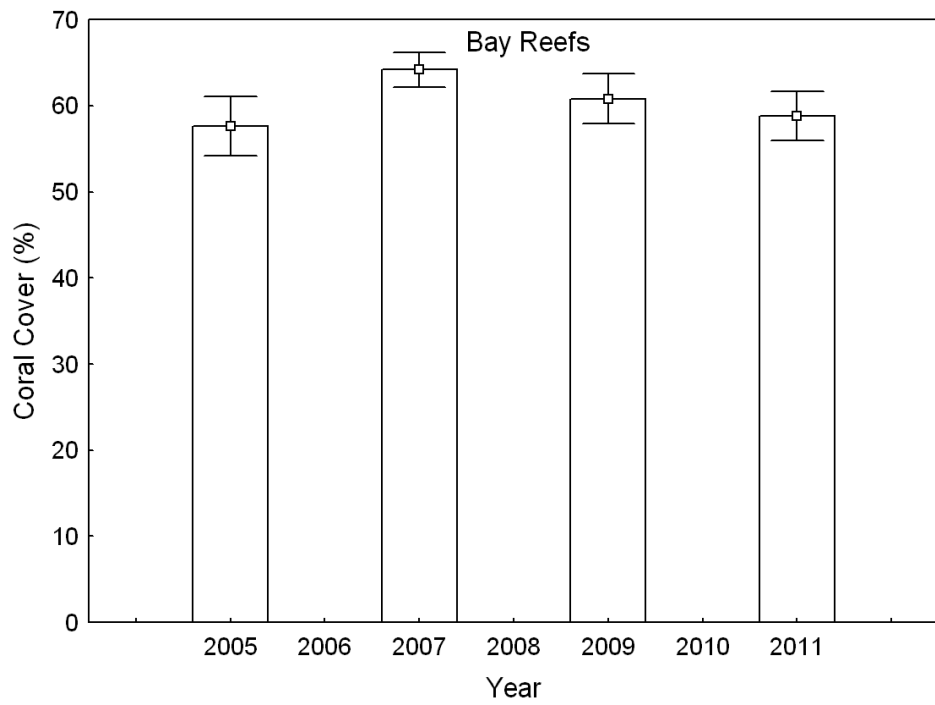


Linear Regression Models

		Multiple R ²	F	p-level	Slope \pm s.e.
(a) Coral cover	SSC (mean)	0.34	22.1	<0.001	-2.6 \pm 0.6
(b) Coral diversity	Sedimentation (terrestrial)	0.54	51.2	<0.001	-0.53 \pm 0.07
(c) Density of juvenile corals	Sedimentation (terrestrial)	0.33	21.2	<0.001	-0.49 \pm 0.11
(d) Diversity of juvenile corals	Sedimentation (terrestrial)	0.47	38.4	<0.001	-0.41 \pm 0.07

N

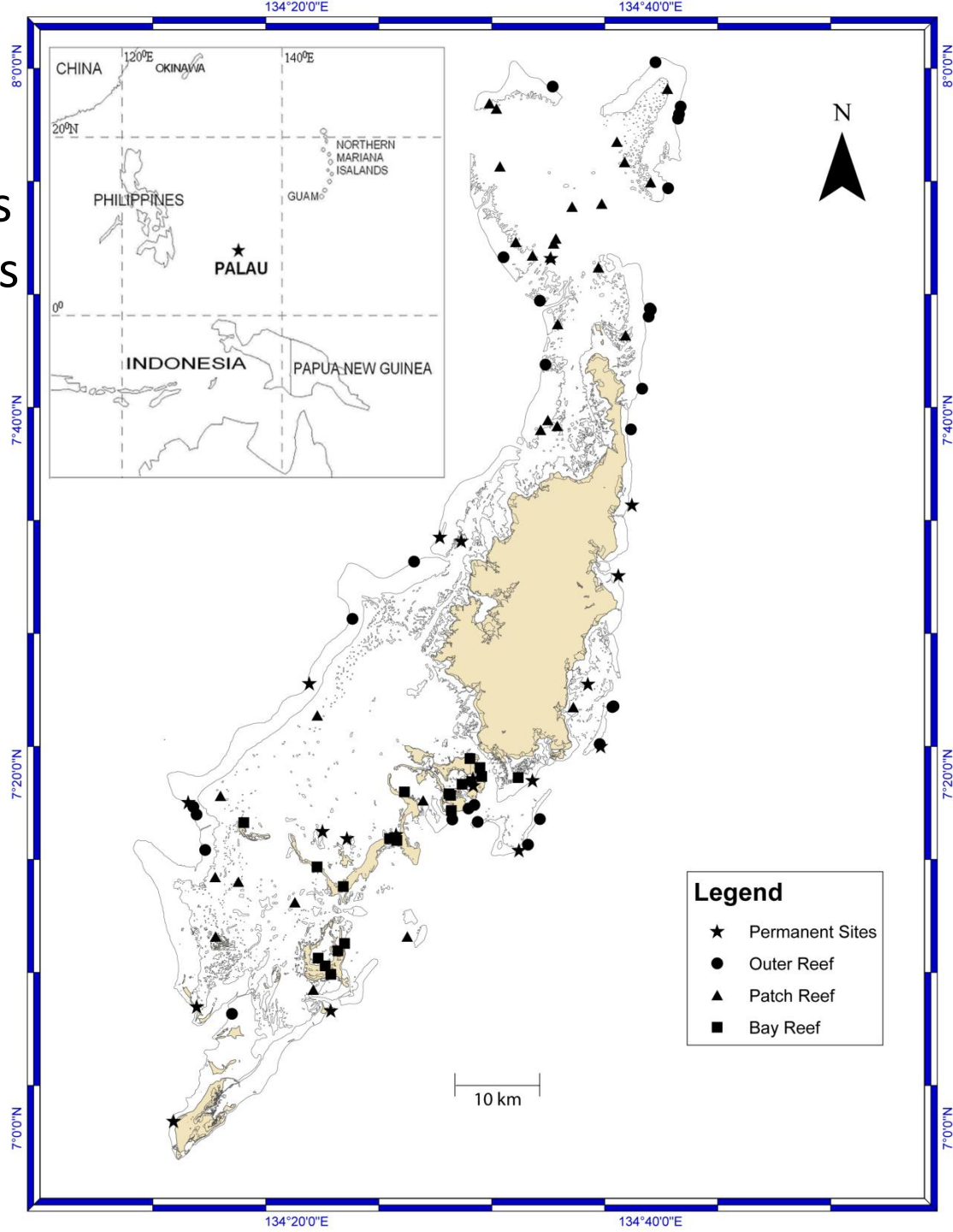


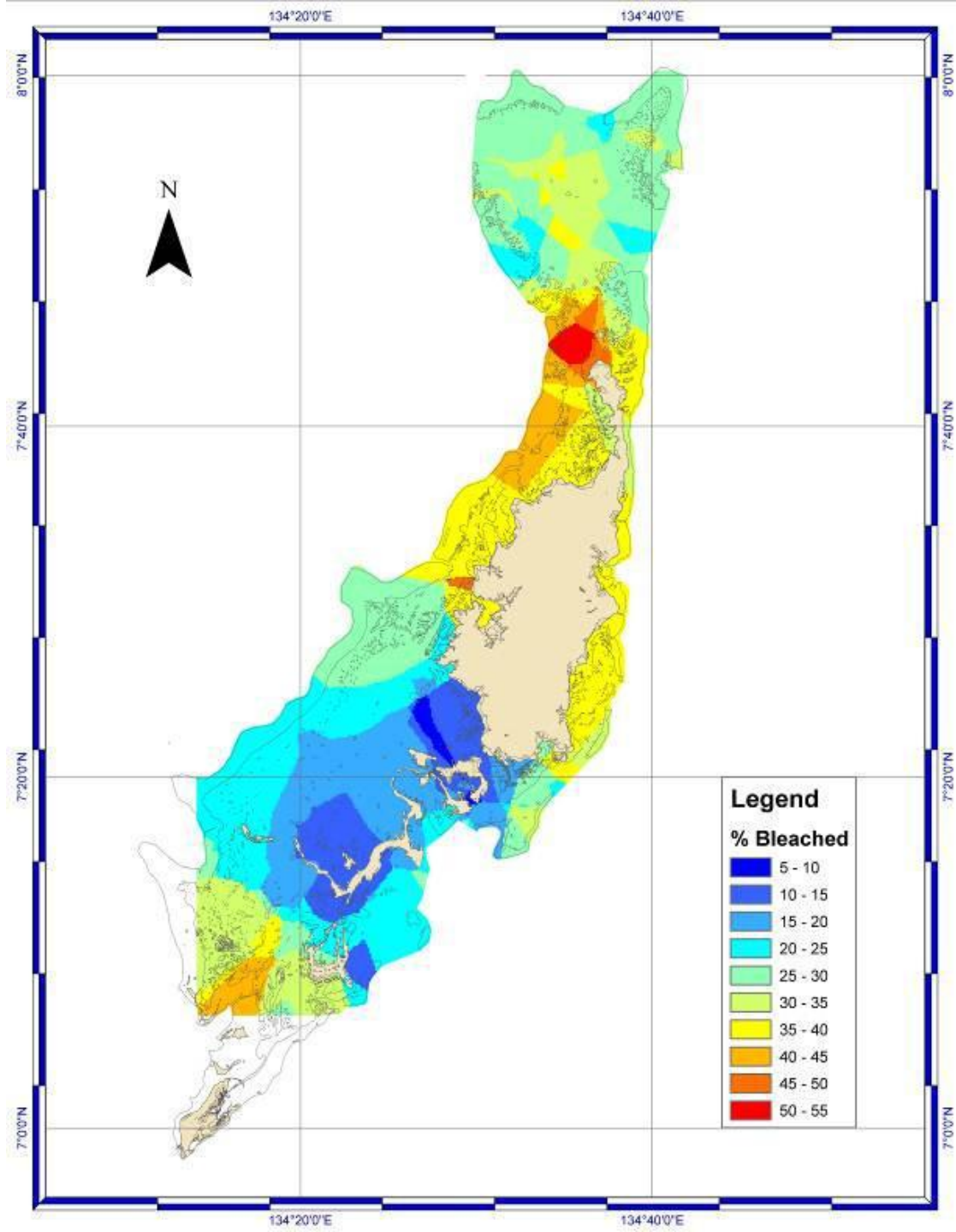


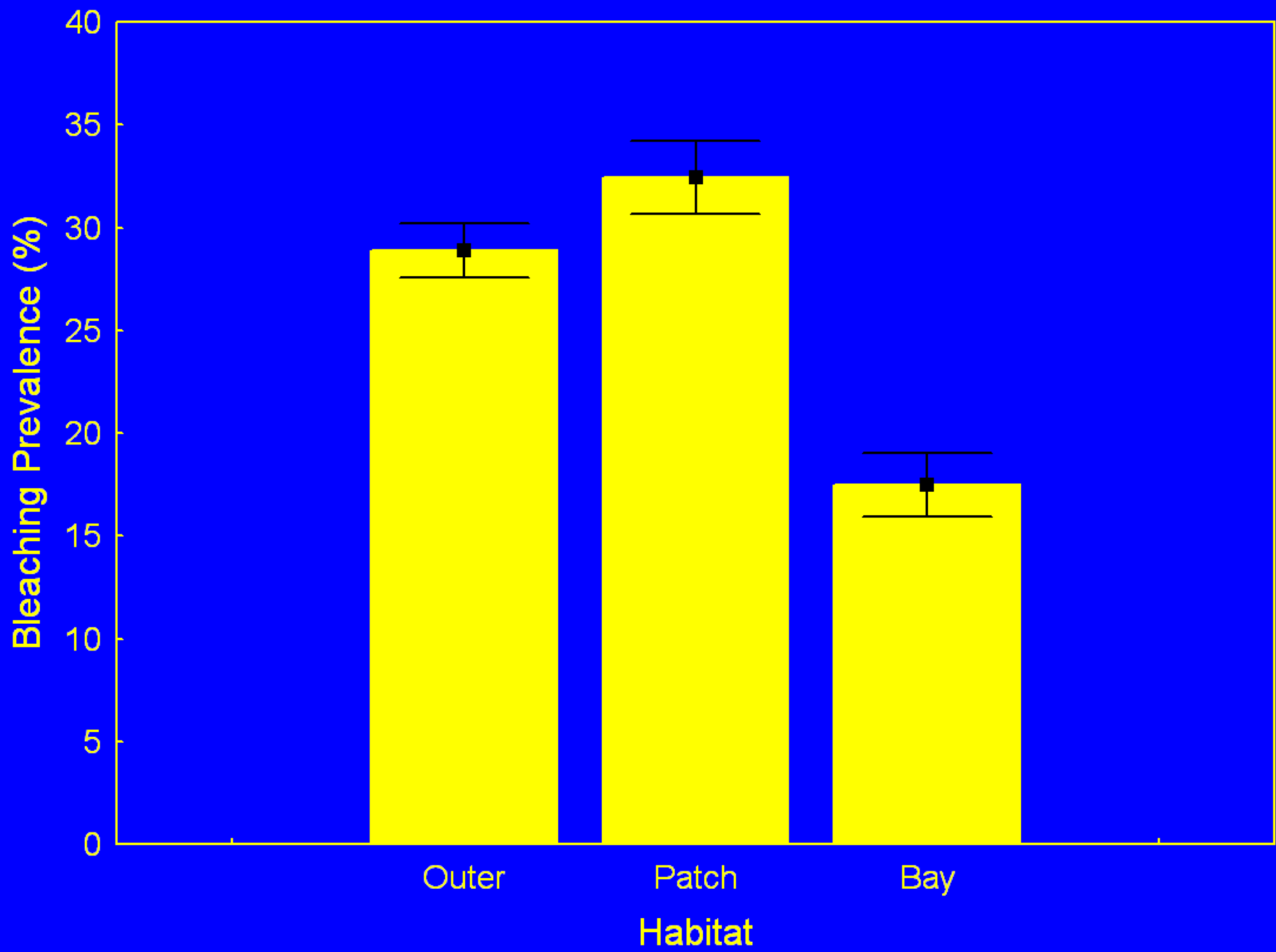
Coral Bleaching



80 sites
240 transects
34,397 corals









Bay

pH=7.8-7.9

Ω arg=2-2.5

temp =30

Open Ocean

pH=8.05

Ω arg=3.6-3.7

temp =29

Resistance/Refugia

Coral bleaching 2010

(van Woesik et al 2012)

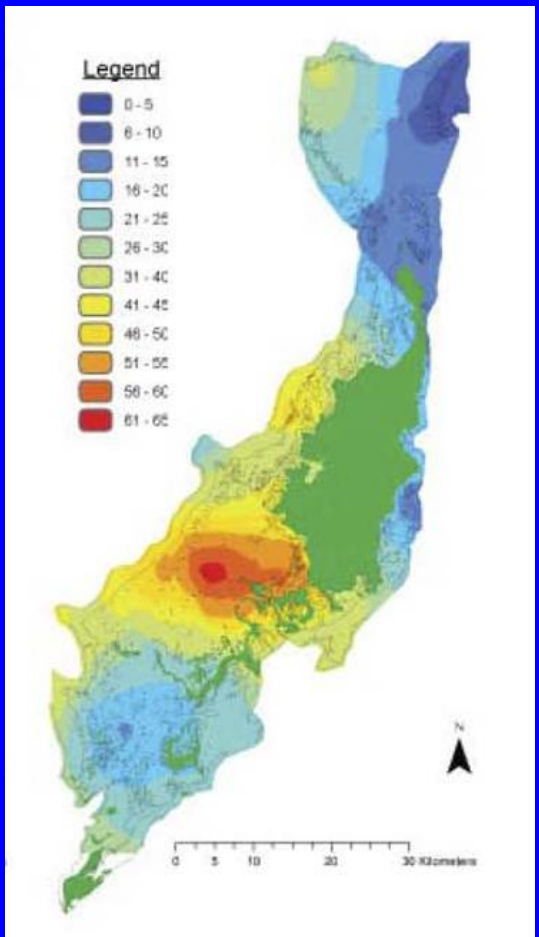
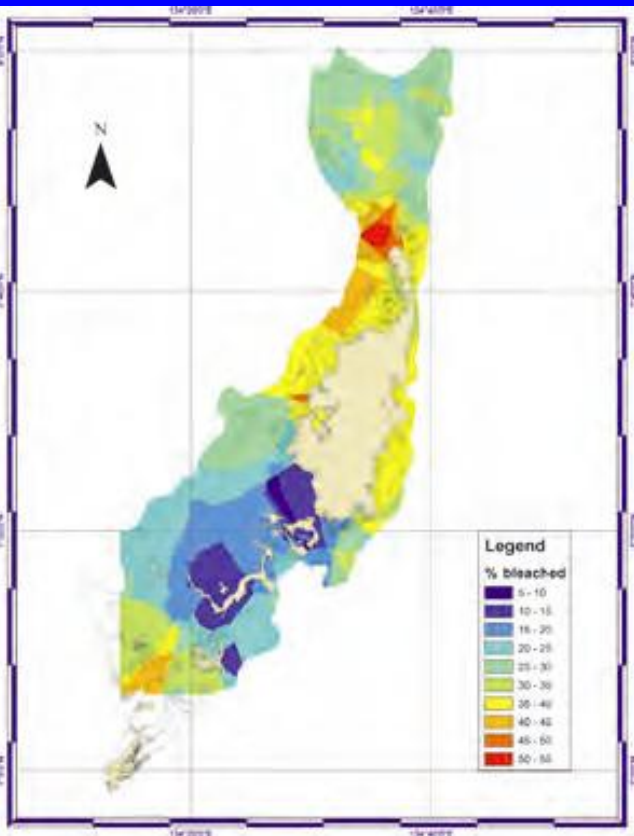
Resilience/Recovery

From 1998 bleaching

(Golbuu et al. 2012)

Resistance/Refugia

Acidification



TAKE CONNECTIVITY INTO ACCOUNT IN MPA NETWORK DESIGN

OCEANOGRAPHIC MODEL OF CORAL LARVAE DISPERSAL (GOLBUU ET AL 2012)

3 Temporal & Spatial Scales:

- Local & yearly self seeding, enhanced by high reef density
- Archipelago wide, yearly from other areas (high reef density)
- Regional, decadal from Yap

Coral populations may be maintained by a MPA network in each zone

Use finer scale info in the model?

