HYPERSTABILITY IN CATCH DATA CAN COMPLICATE FISHERIES MANAGMENT
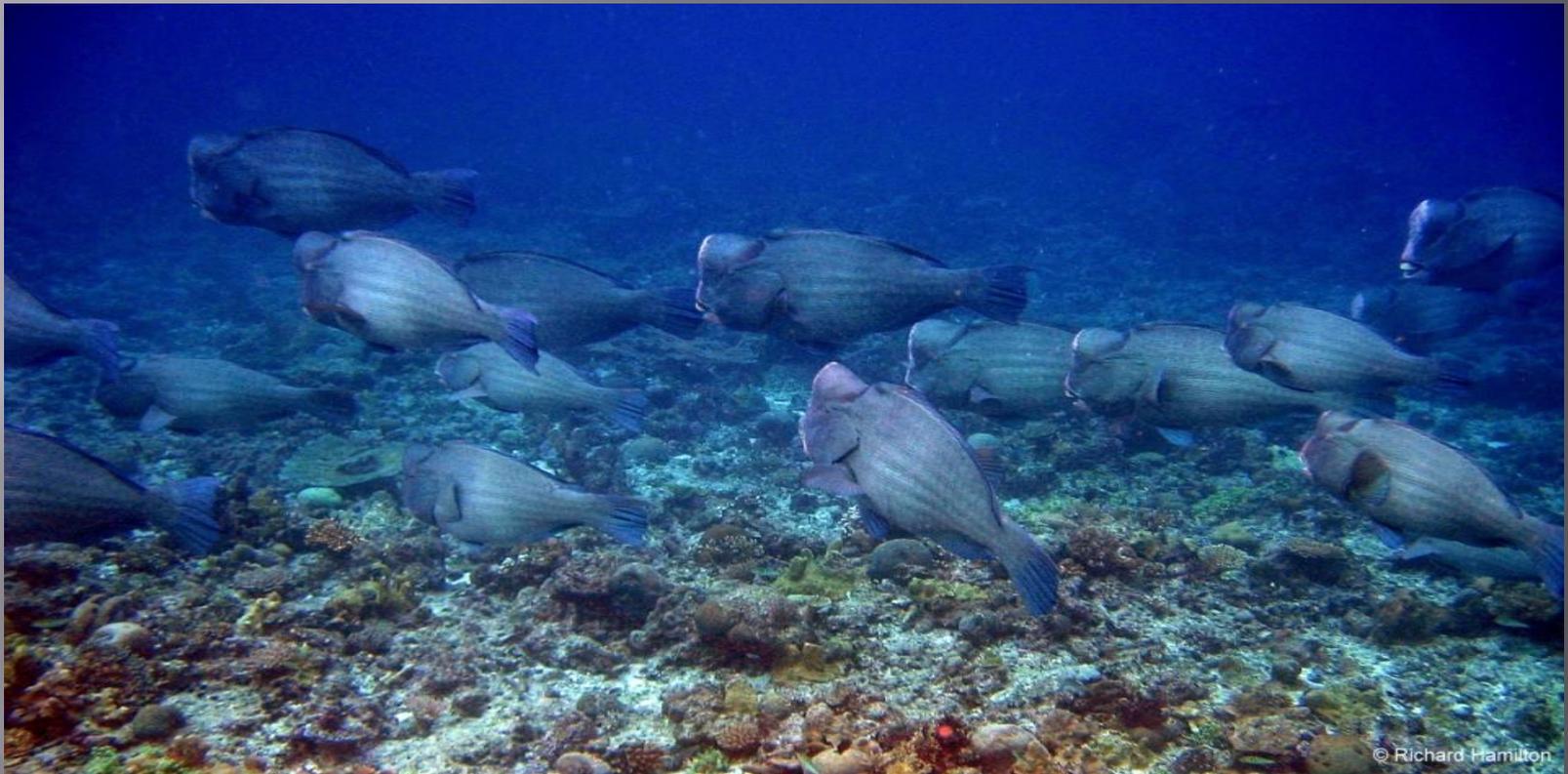

By Richard Hamilton, Glenn Almany, Don Stevens and Howard Choat

KIRIBATI

Equator

PAPUA NEW GUINEA

SOLOMON ISLANDS

Port
Moresby

Honiara

VANUATU

Cairns

Port
Vila

AUSTRALIA

Townsville

NEW CALEDONIA

Map by Nate Peterson
npeterson@tnc.org
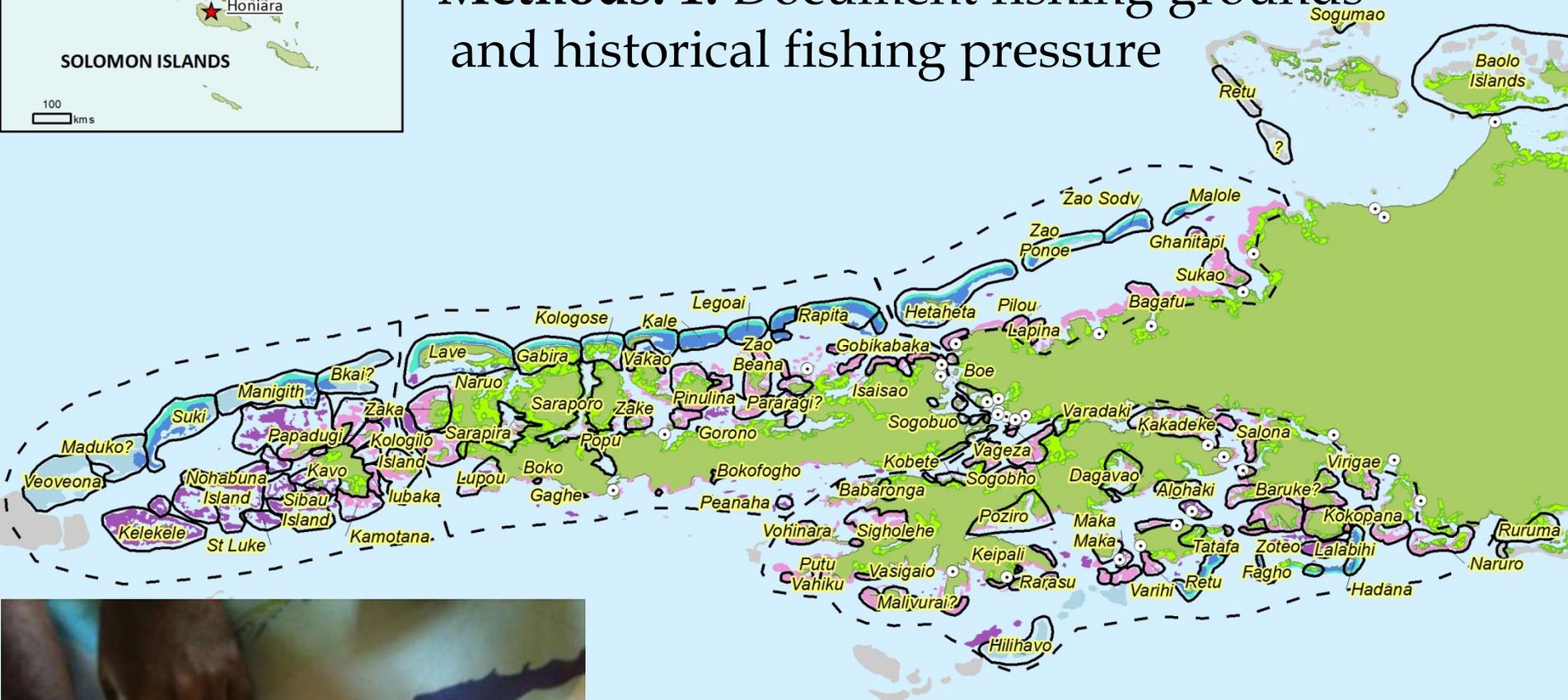5 Feb 2014

Noum'ea

Bumphead Parrotfish Fishery

- Topa *(Bolbometopon muricatum)* - largest of the parrotfish.

- Forms schools for feeding & reproductive purposes.

- Inactive at night

Photo credit: Tony Wu

Methods: 1. Document fishing grounds and historical fishing pressure

Map by Nate Peterson
npeterson@tnc.org
5 Feb 2014

SOLOMON ISLANDS

100 kms

Honiara

Zone 1b. Low fishing pressure

Zone 1a. Heavy fishing pressure

Zone 2: Heavy fishing pressure

Zone 3. Low fishing pressure

Arnavon Community Marine Conservation Area

10 Kilometers

Legend

- ⊙ Villages
- Fishing Zones
- Fishing Grounds
- Mangroves

- fore reef (reef slope)
- back reef (reef flat)
- subtidal reef flat
- fringing reef
- patch reef
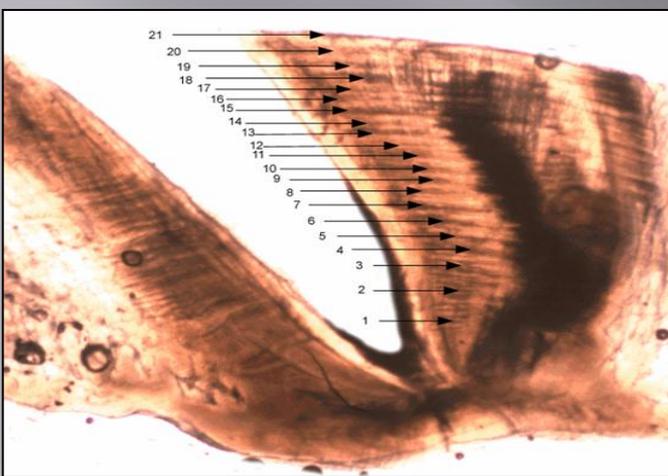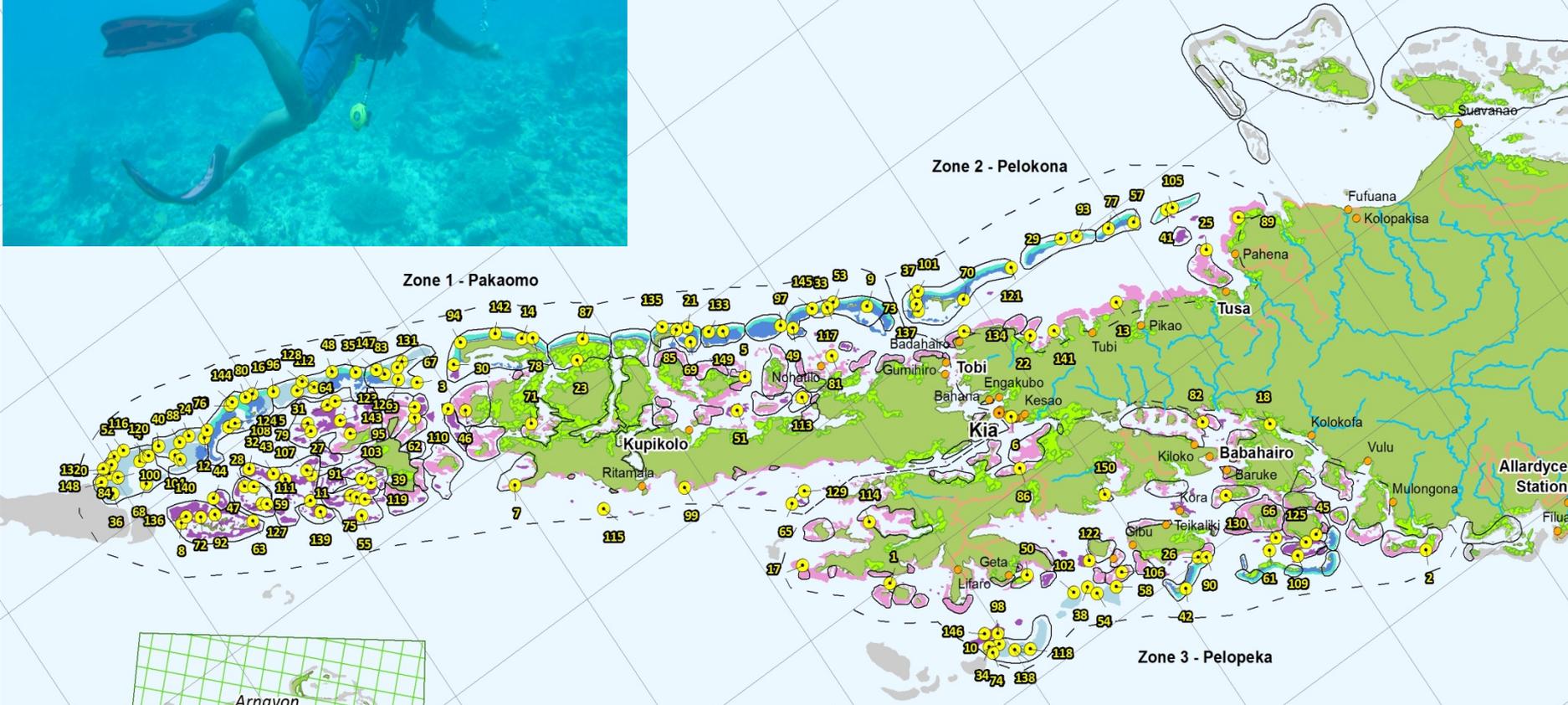- other reef

Methods: 2. Determine catch composition

Methods 3. Determine Age based demographics

Methods: 4. Fisheries Independent Survey: 150 sites: Generalized Random Tessellation Stratified (GRTS) variable probability design

RESULTS:
ADULT ABUNDANCE: 29,006 (95% CI: 18,286-39,725)

Field Survey map for Bumphead Parrot Fish Survey

Zone 1A High Fishing pressure.

Zone 2 High fishing pressure

Zone 1B Low Fishing Pressure

Zone 2 - Pelokona

Zone 1 - Pakaomo

Zone 3 Low fishing pressure

Zone 3 - Pelopeka

UVC
Topa_adu_1

- 0
- 1-5
- 6-15
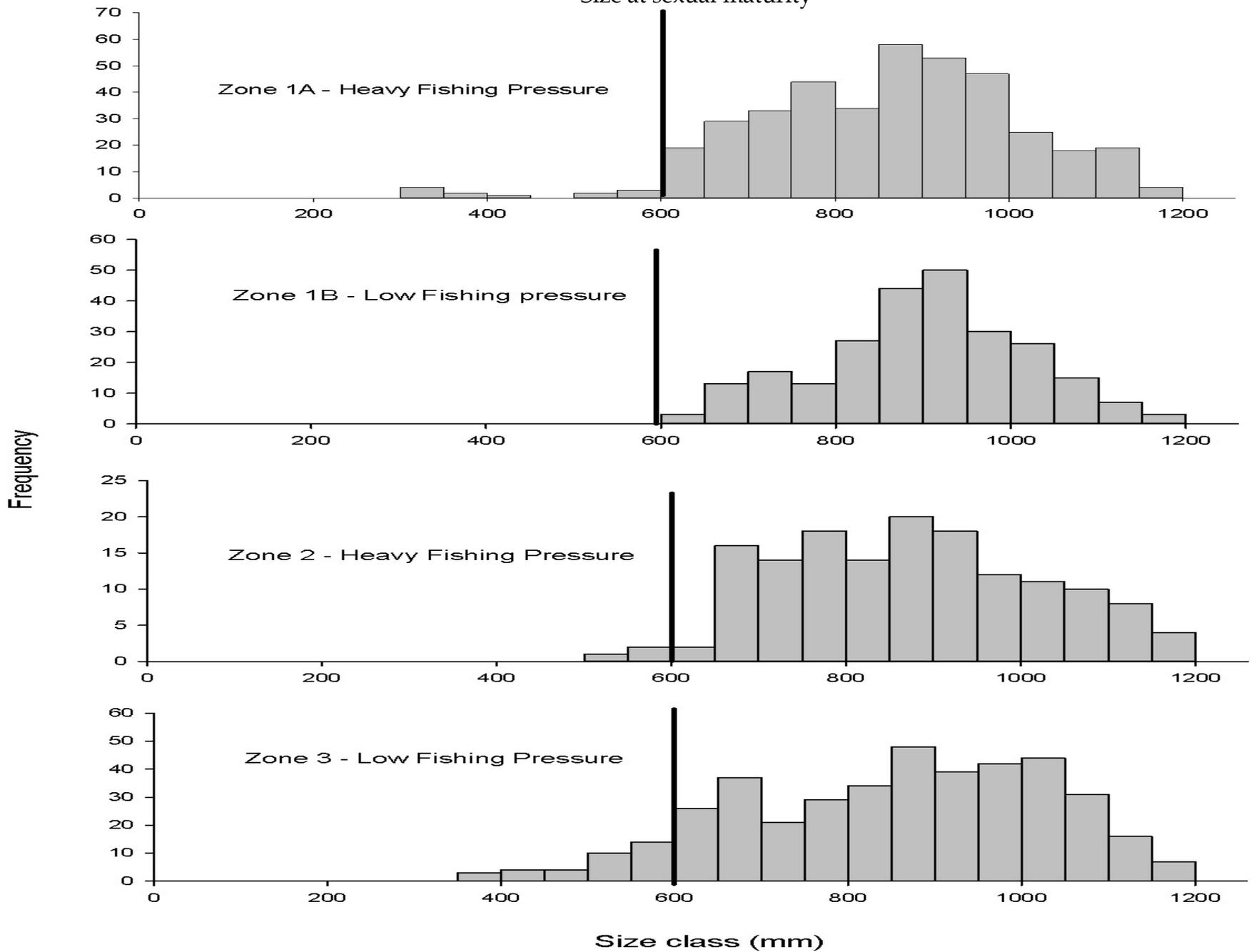- 16-25
- 26-40
- UVC$ Events

SOLOMON ISLANDS
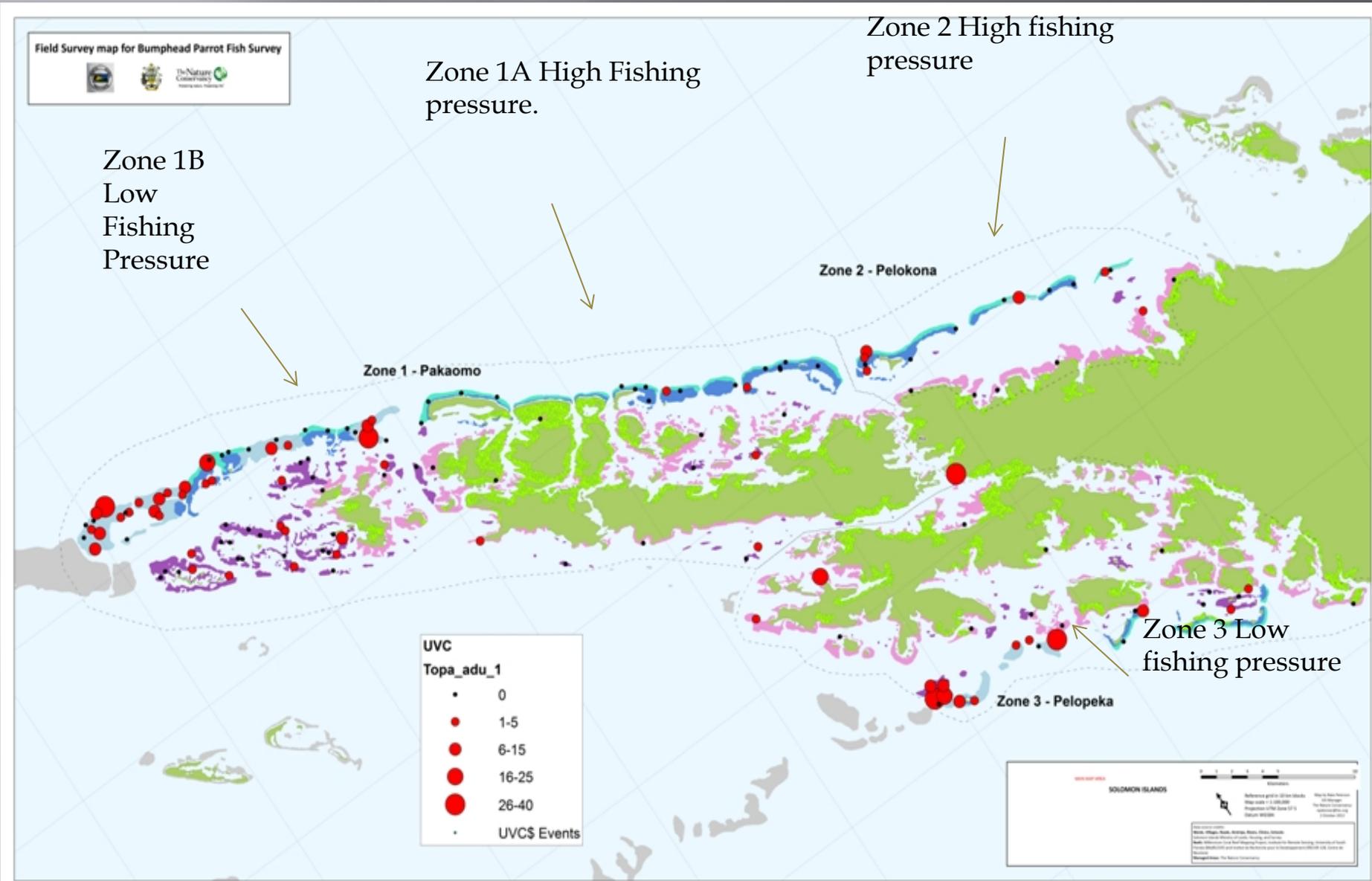
Results 2. Fisheries Data: Hyperstability in catch
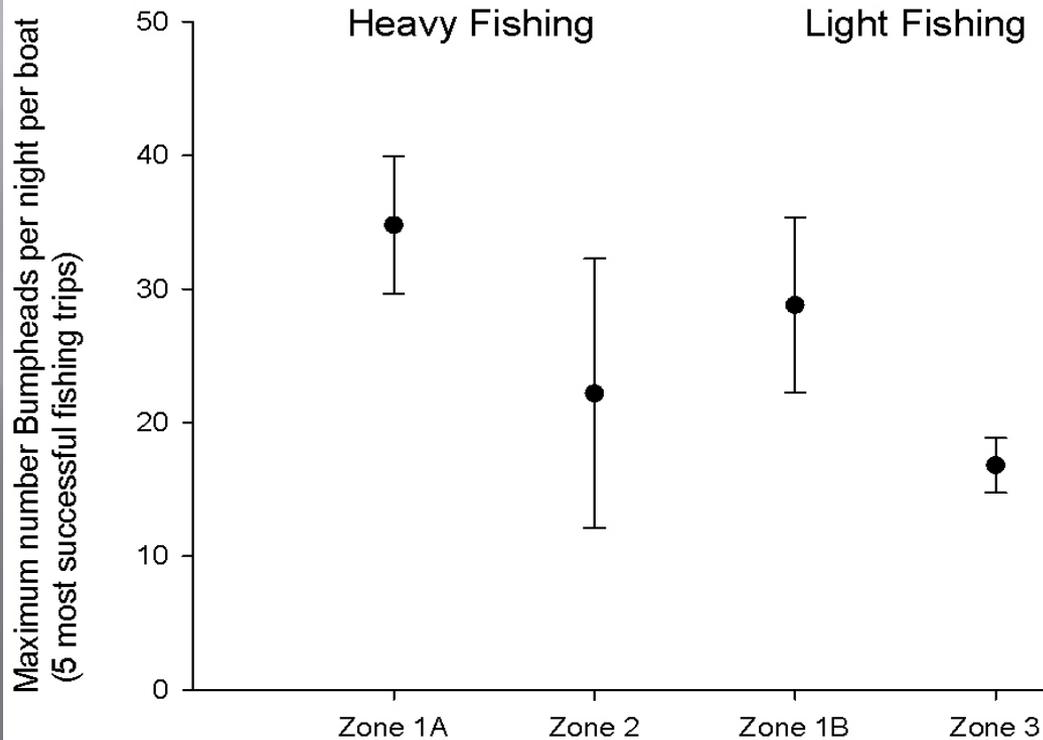
Results 2 continued: mean size of catch the same by zone
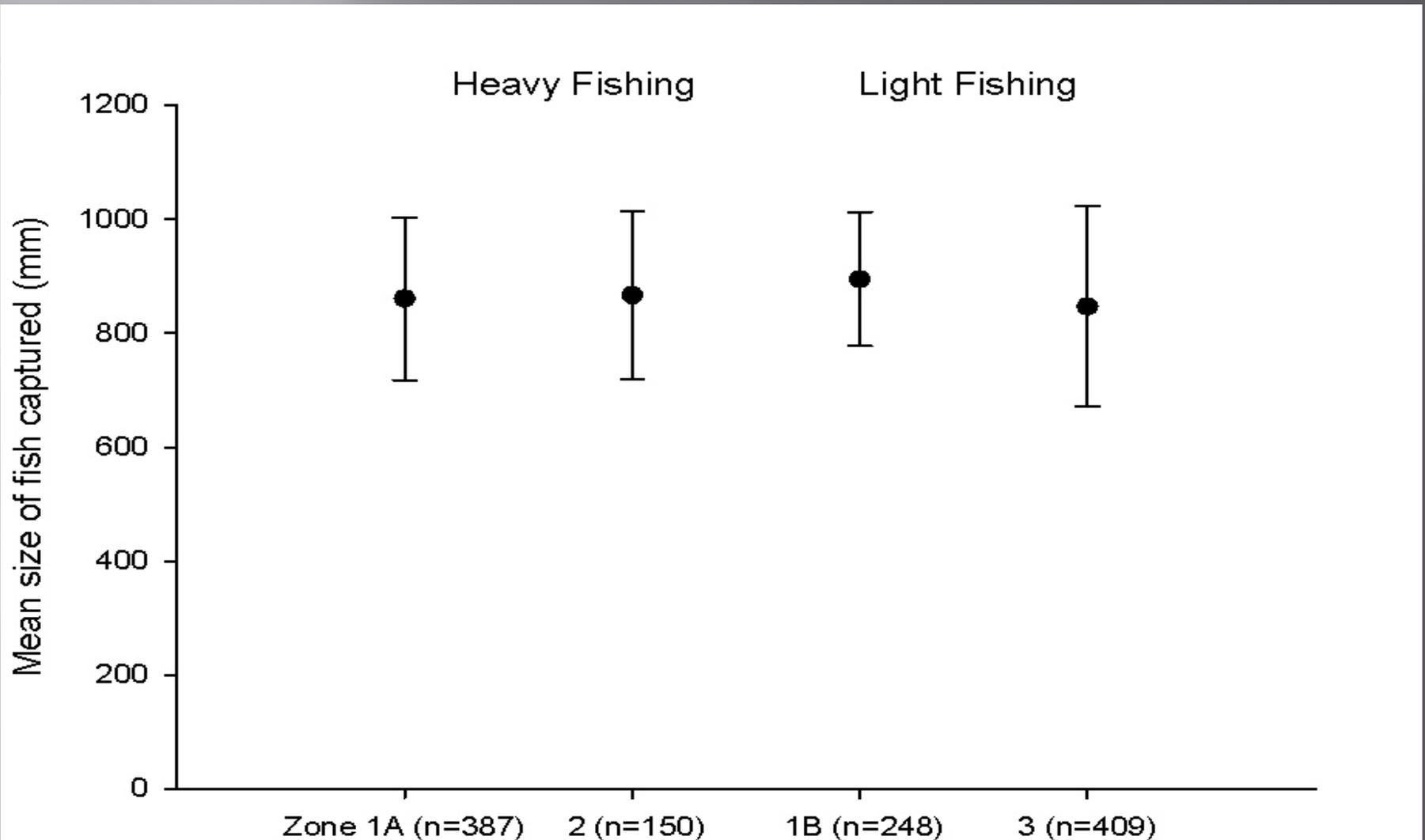
Size at sexual maturity

TAKE HOME POINTS

1. Fisheries independent UVC survey showed lower abundances in zones that have experienced greater historical fishing pressure

2. These differences were not reflected in extensive fisheries dependent data -which indicates a very healthy fishery in all zones

3. Hyperstablity in the catch – a consequence of schooling behaviour and ease of capture - has the potential to complicate fisheries dependent stock assessments

Sadovy and Domeier (2005)