

# FWC Lobster Monitoring Using Timed Surveys

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# Why Timed Surveys?

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Relative density = number lobsters per unit time

Lobsters gregarious – patchy distribution

Lots of 0's with area surveys

Larger area searched w/timed surveys

- more lobsters sampled
- better size-frequency, sex ratio, reproductive data

More time spent sampling

Less time spent deploying/retrieving gear

# Projects

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- **MARFIN 518**  
**1996-1998**
- **FKNMS Marine Reserves**  
**1997-2001**
- **Biscayne National Park Lobster Monitoring**  
**2001-2003**
- **COP Lobster Monitoring**  
**2002-2004**

# Data Sets

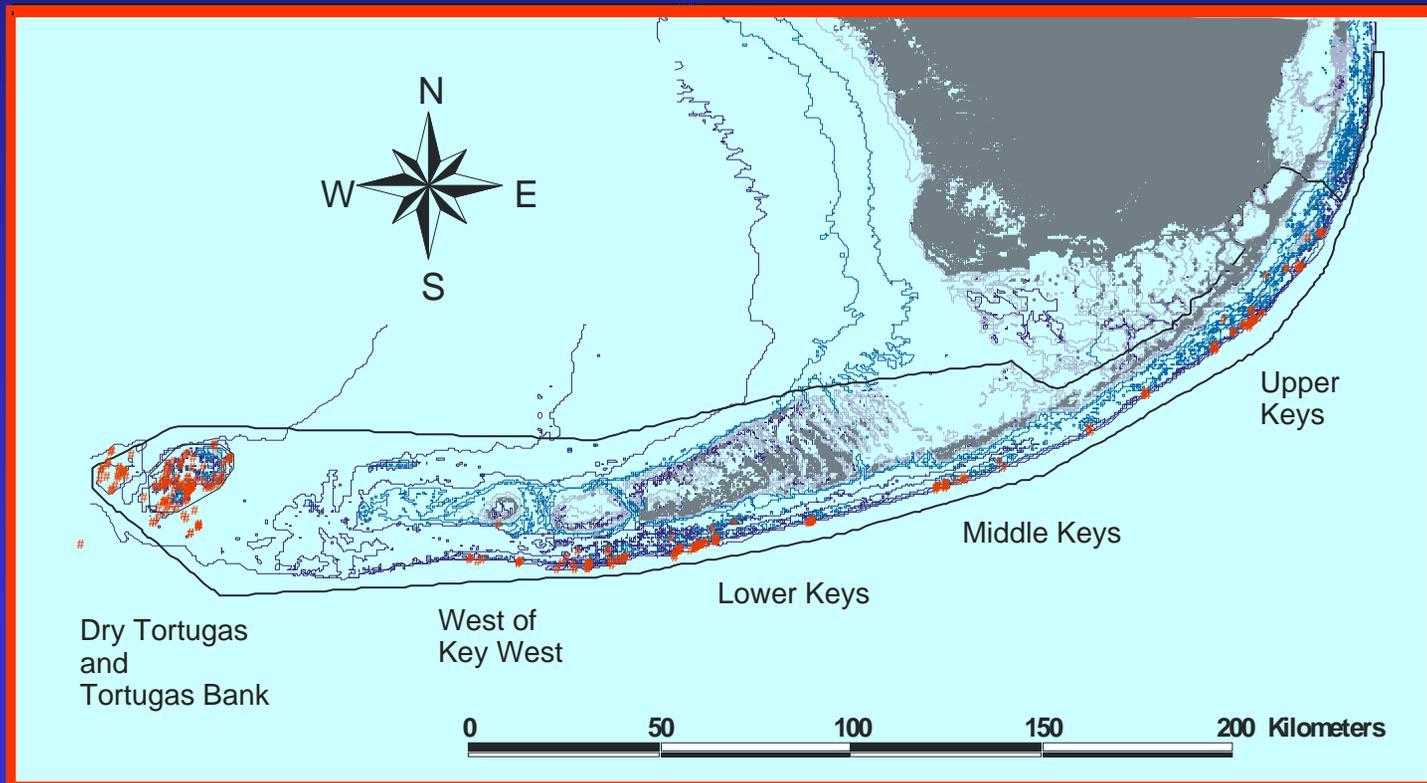
Study	Duration	Frequency	Zones	Habitats	Replicates
<b>MARFIN 518</b>	Spring 1996- Fall 1998, plus additional Dry Tortugas excursion 1999	6-Week Cycles from Feb/March through Sept/Oct for 3 years	Upper Keys: Carysfort - Tennessee; Middle Keys: Tennessee - 7-mile bridge; Lower Keys: Moser Channel - Western Sambo; W. of Key West: Eastern Dry Rocks - Marquesas Rock; DTNP; Dry Tortugas Fishery; Looe Key NMS	Forereef, backreef, patch reef (dropped in year 2), deep reef (added in year 2)	Two different, haphazardly selected sites per zone/habitat combination each sampling period
<b>FKNMS Marine Reserves</b>	1997-2001	Two times per year - once in July during the closed fishing season, and once in September/October during the open fishing season	Thirteen marine reserves and paired fishery sites - Carysfort reef to Western Dry Rocks	Forereef, backreef, offshore patch reef nearshore patch reef	Western Sambo/ Pelican : 3 replicate samples/habitat/ season; Carysfort /Pacific: 3 replicates forereef & backreef/ season; Other sites: replicate per season
<b>Biscayne National Park Lobster Monitoring</b>	2001-2003	2 times per year – 1x in June during the closed fishing season, & 1x immediately following 2-day lobster sport dive season	Biscayne Bay lobster sanctuary and Atlantic waters of Biscayne National Park	Forereef, patch reef, hardbottom	Year 1: 3 forereef, 3 patch reef, and 3 hardbottom sites per season; Years 2&3: 5 foreef, 5 patch reef and 3 hardbottom sites per season
<b>COP Lobster Monitoring</b>	2002-2004	Once per year - during July - closed fishing season	Marine Reserves and paired fishery sites: Western Sambo/Pelican Shoal; Eastern Sambo/Middle Sambo; Looe Key/Maryland Shoal	Forereef, backreef, offshore patch reef	Western Sambo/Pelican Shoal : 3 replicate samples per habitat; Other sites: one replicate

# MARFIN518

Diver surveys: 288

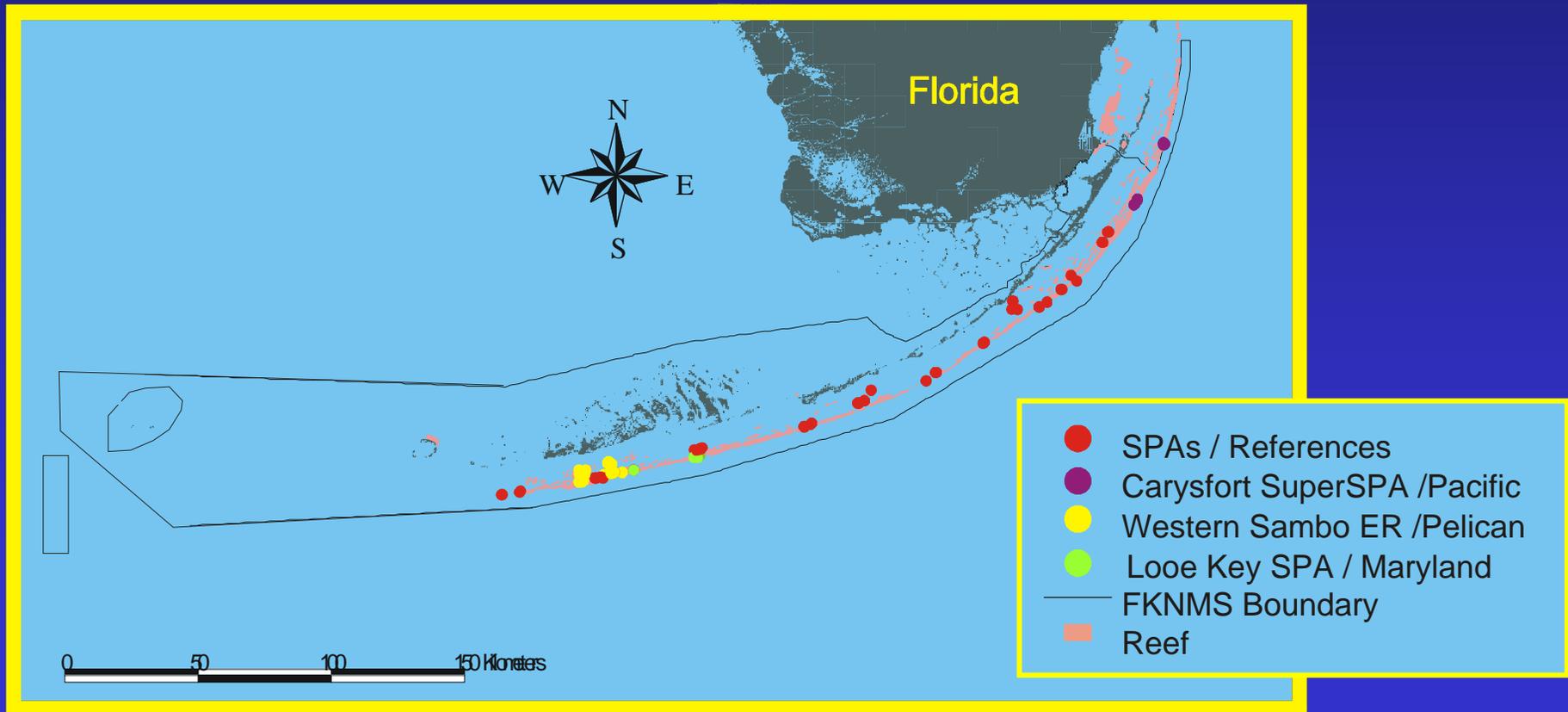
Lobsters observed: >3,600

Depth range: surface to 28 meters



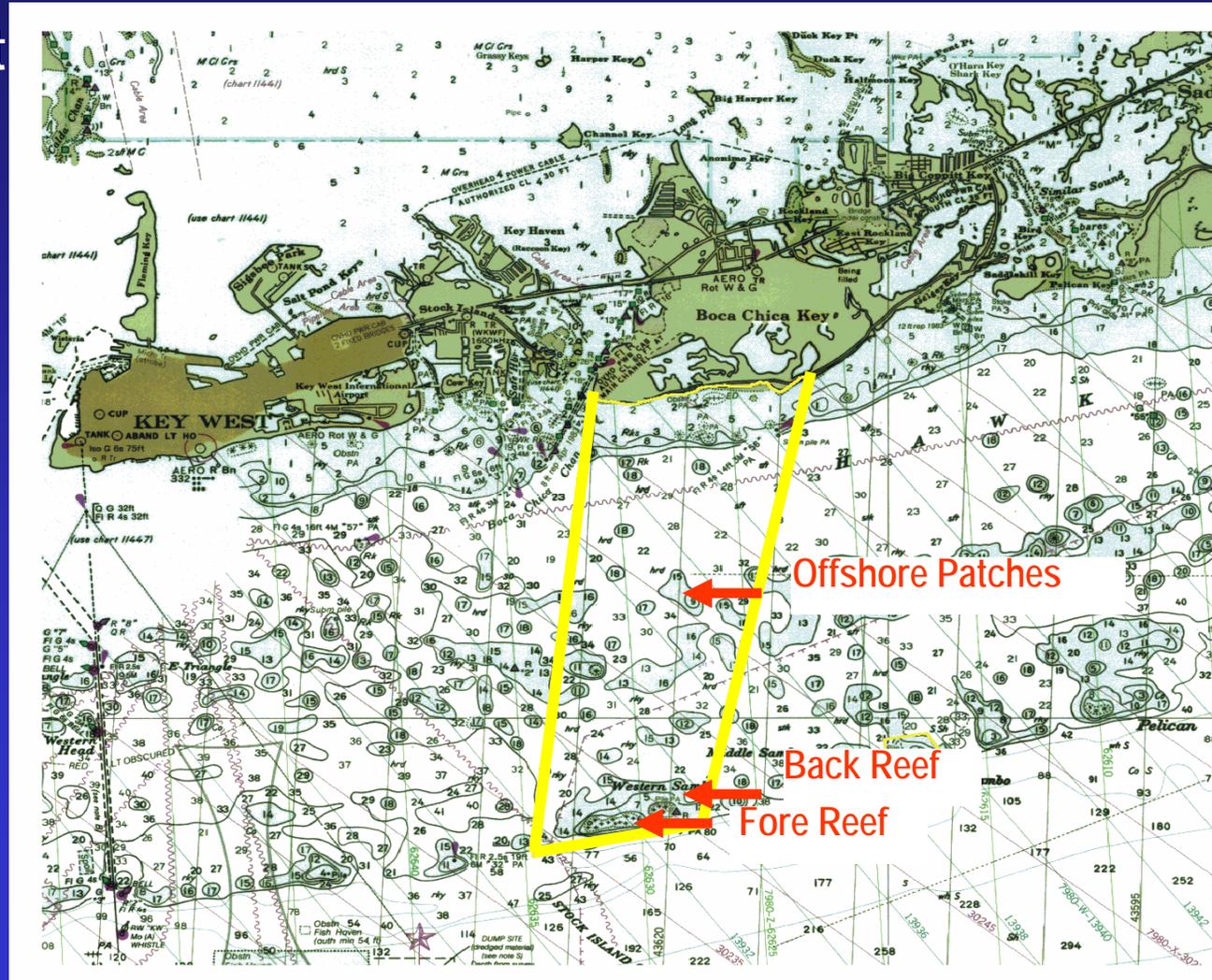
# FKNMS Marine Reserves

- Reference area for each of 13 Reserves
- Sampled Closed (July) and Open (Sept/Oct) fishing seasons 1997-2001



# COP Lobster Monitoring

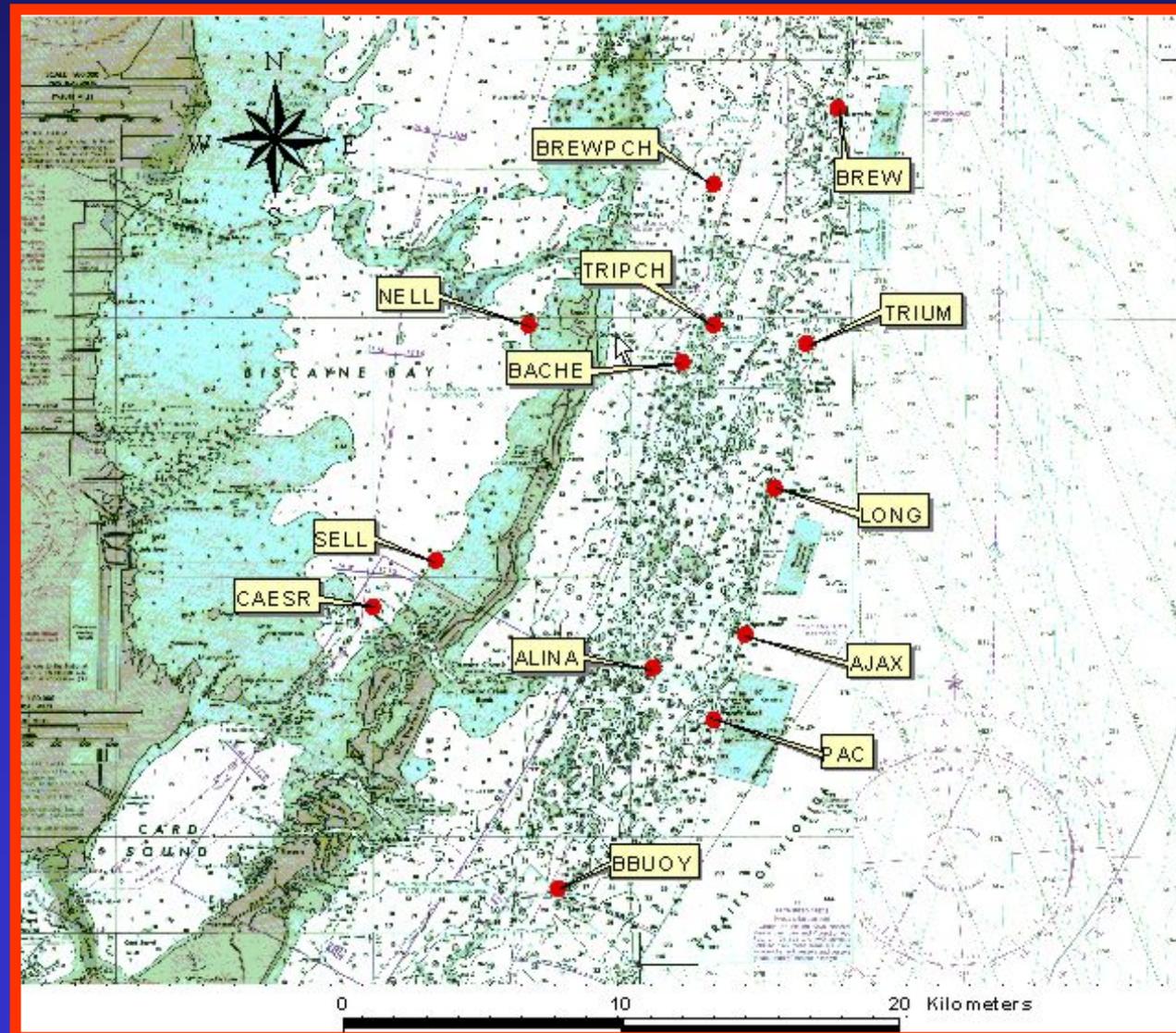
- stratified by habitat
- 3 surveys / habitat
- closed season



# Biscayne National Park

13 sites

Pre- and  
post sport  
season



# Sampling Methods

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- abundance = number of lobsters observed during a 60-minute timed search



- recorded sex and size of all captured lobsters

# Timed Surveys

# Size Range

10 mm CL

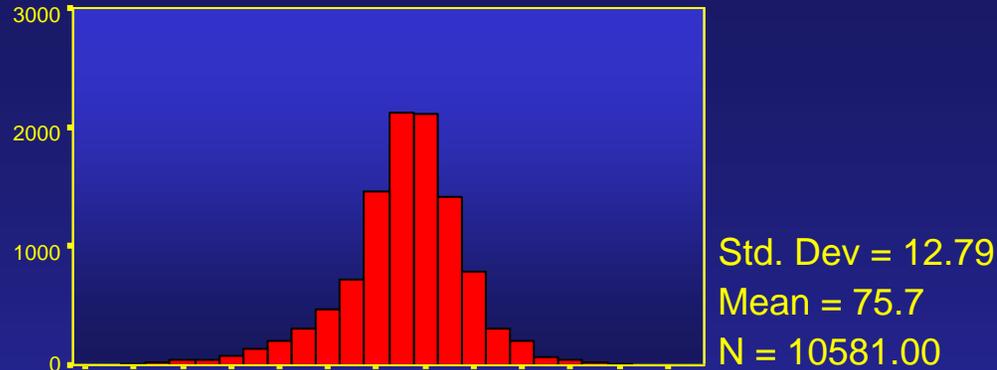


188 mm CL

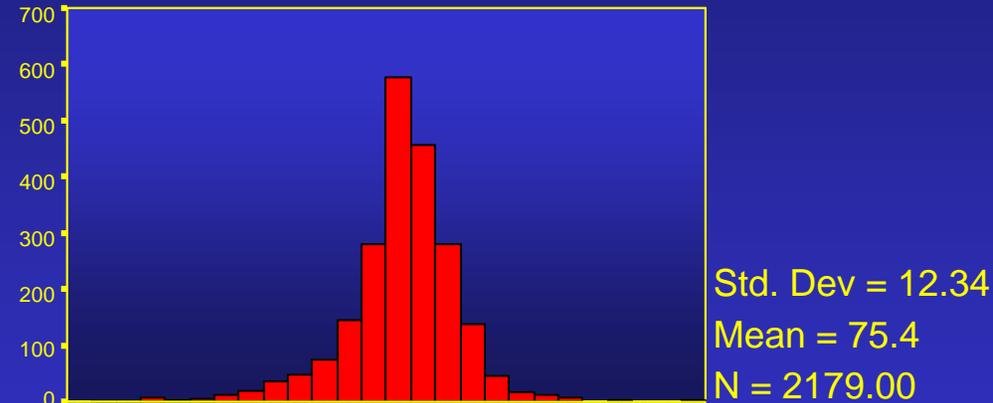


# Size-Frequency

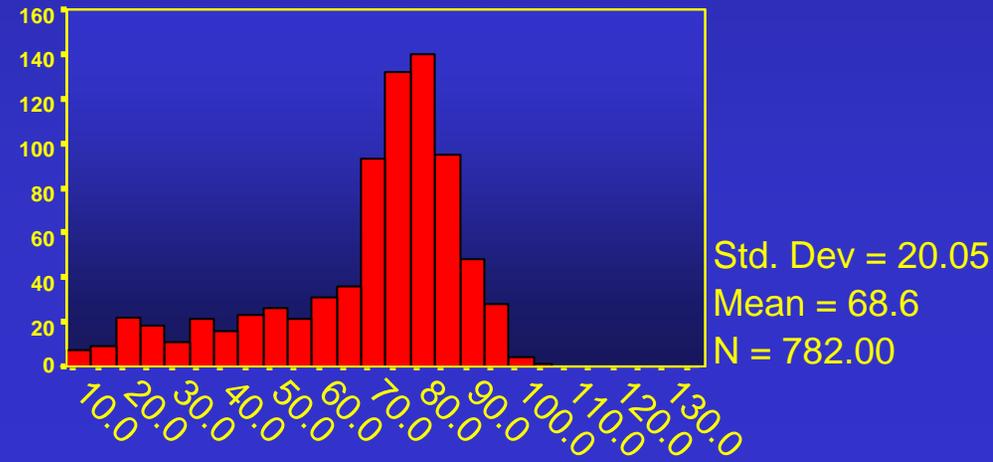
**FKNMS  
Marine  
Reserves**



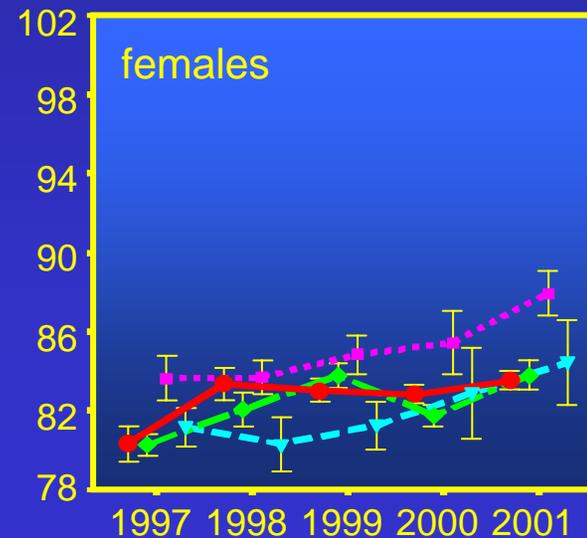
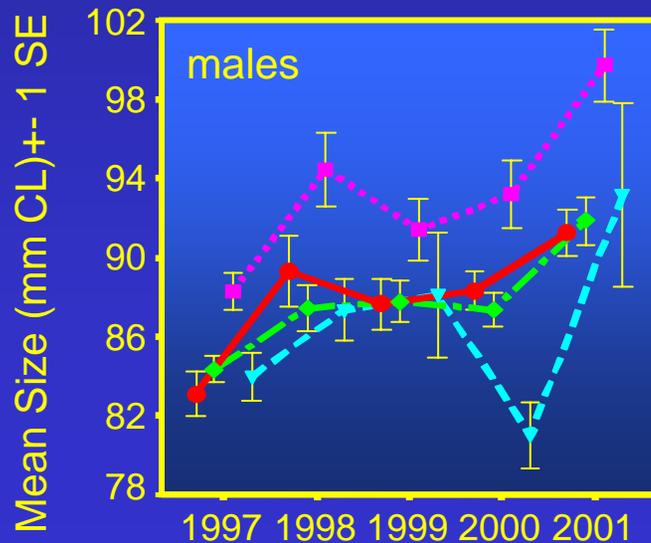
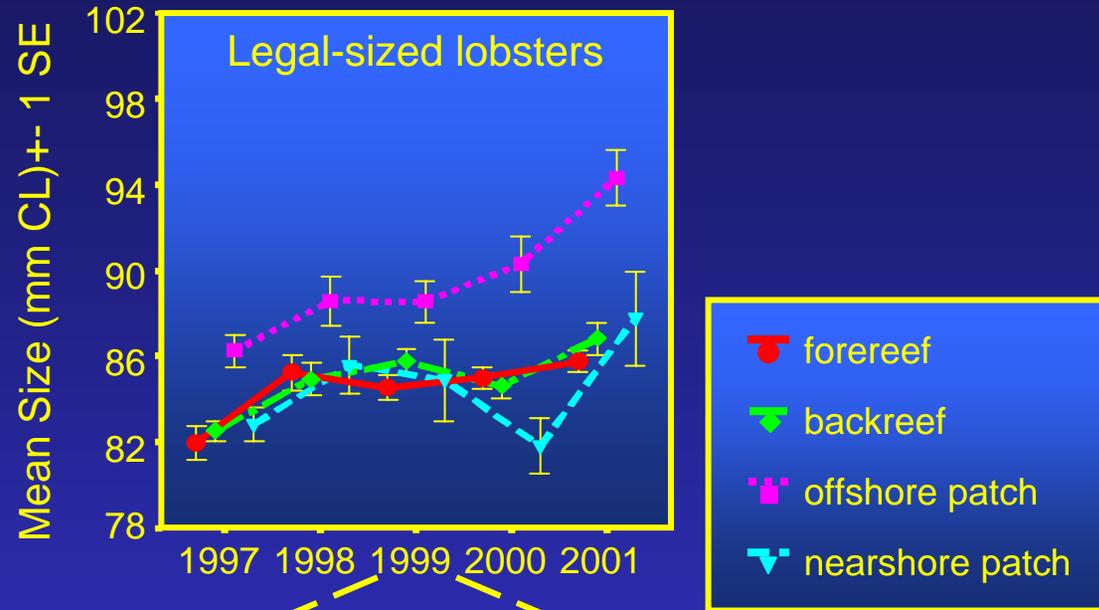
**MARFIN518  
- keys only**



**BNP Lobster  
Monitoring**

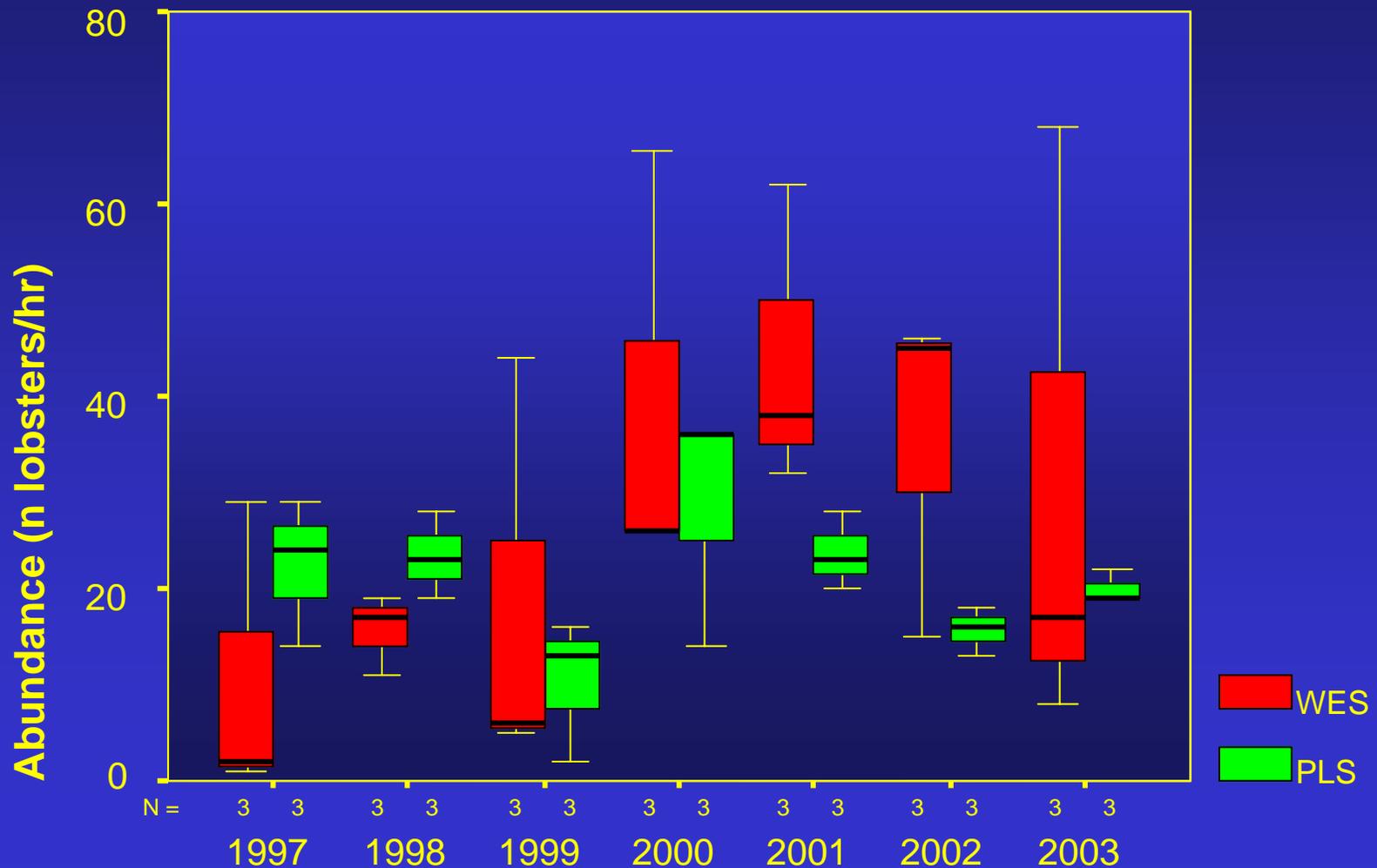


# Western Sambo - Size by Habitat



# Legal-sized Lobster Abundance

Closed Season  
Forereef



# How Data Can be Parsed

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- by year
- by fishing season (closed/open)
- by region
- by habitat
- by sex
- by size class
- by reproductive state of females
- by Reserve/Exploited
- Etc.