

**Jackpot Recruitment and
Conservative Management
Effects on Rockfish
Abundance Inside and
Outside Marine Reserves in
Puget Sound**

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Robert Pacunski, Tony Parra,

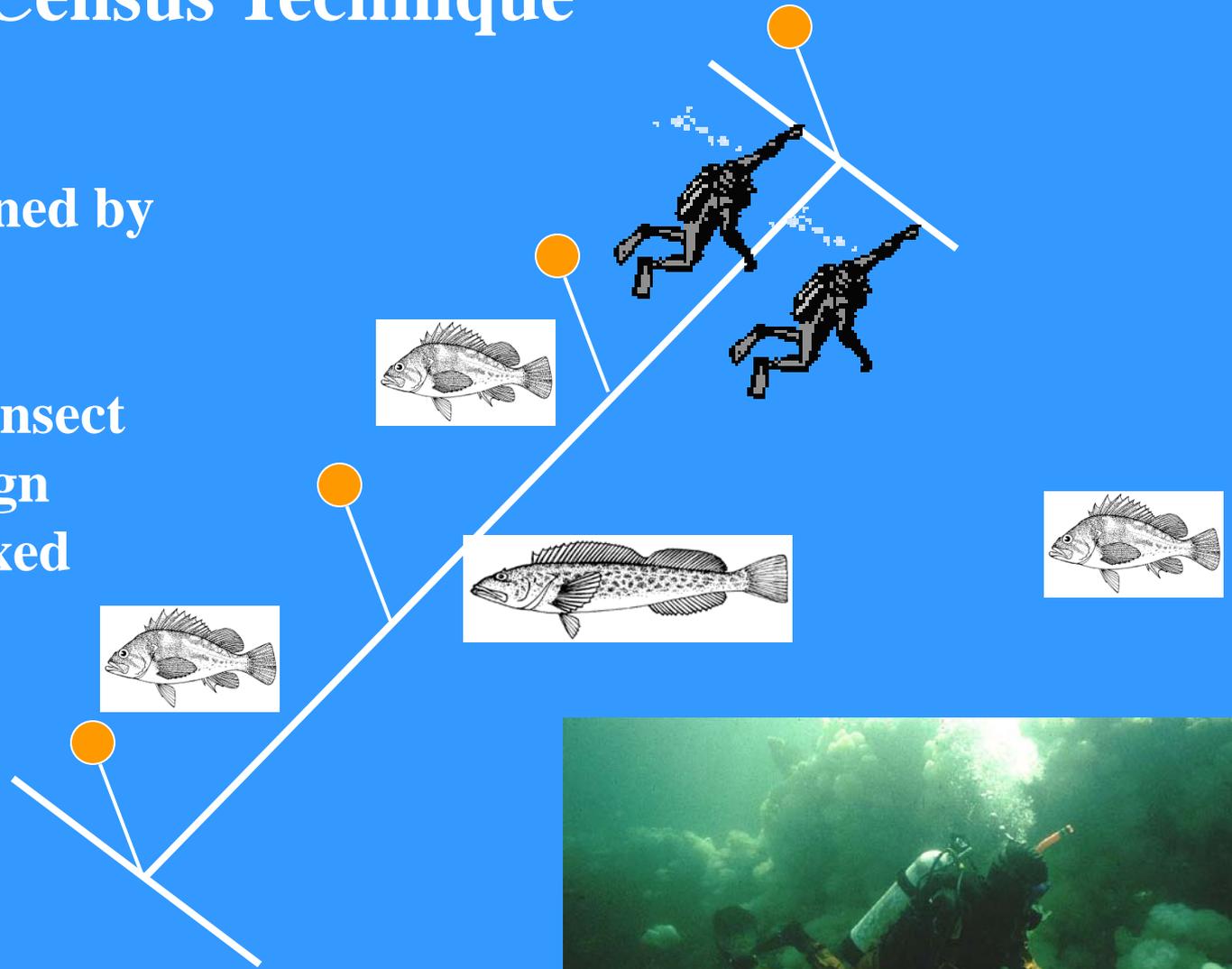
Jim Beam, Larry LeClair





Visual Census Technique

Width determined by
Census
Strip
Line transect
Length by design
Random vs. Fixed

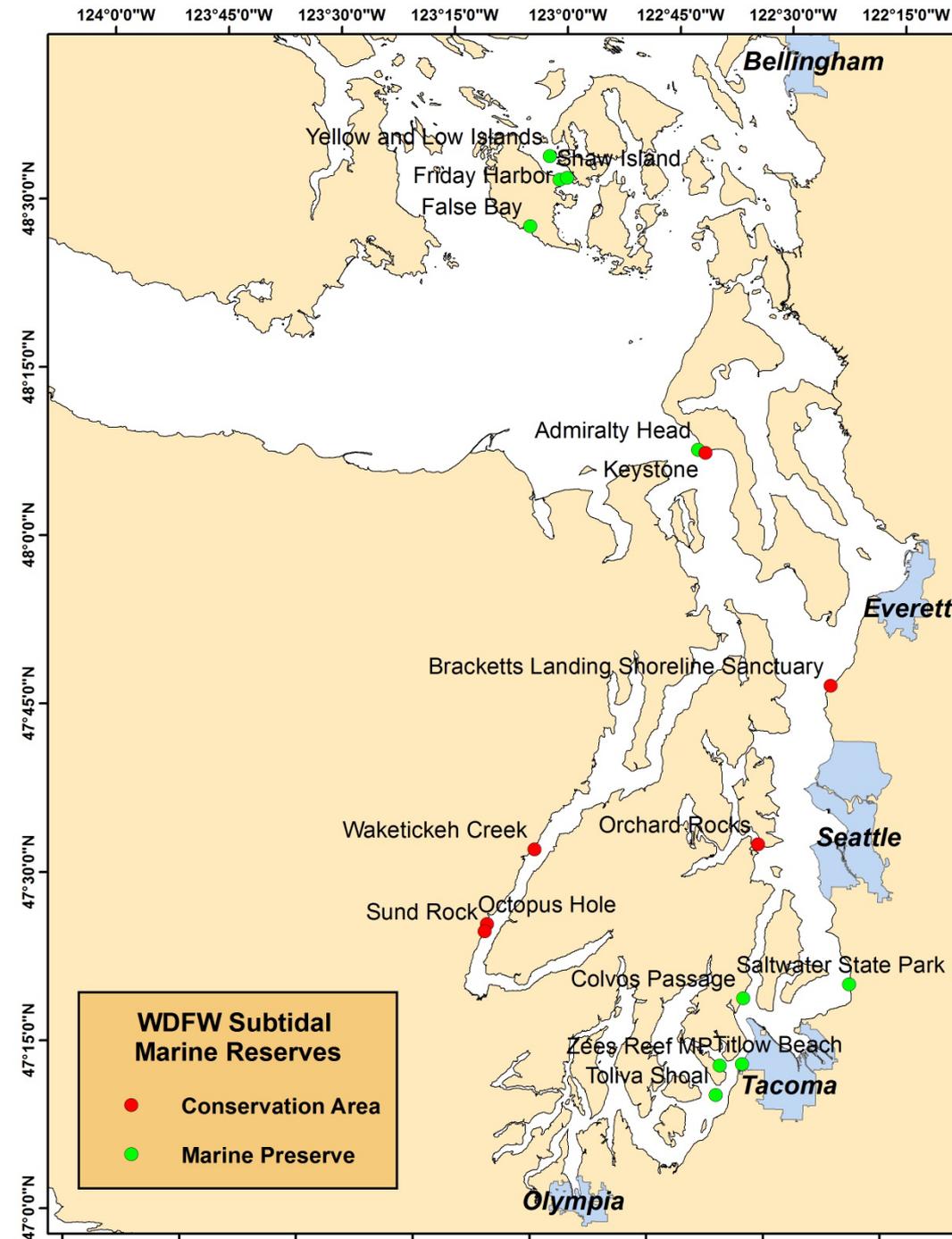


WDFW's Reserve System

Non-tribal

Enacted as:

- Conservation Areas (no-take)
- Marine Preserves (partial take)
- All protect bottomfish and most shellfish



Brackett's
Landing
Shoreline
Sanctuary

Edmonds

Boeing Creek
Fished Area

Seattle

Port Blakely
Fished Area

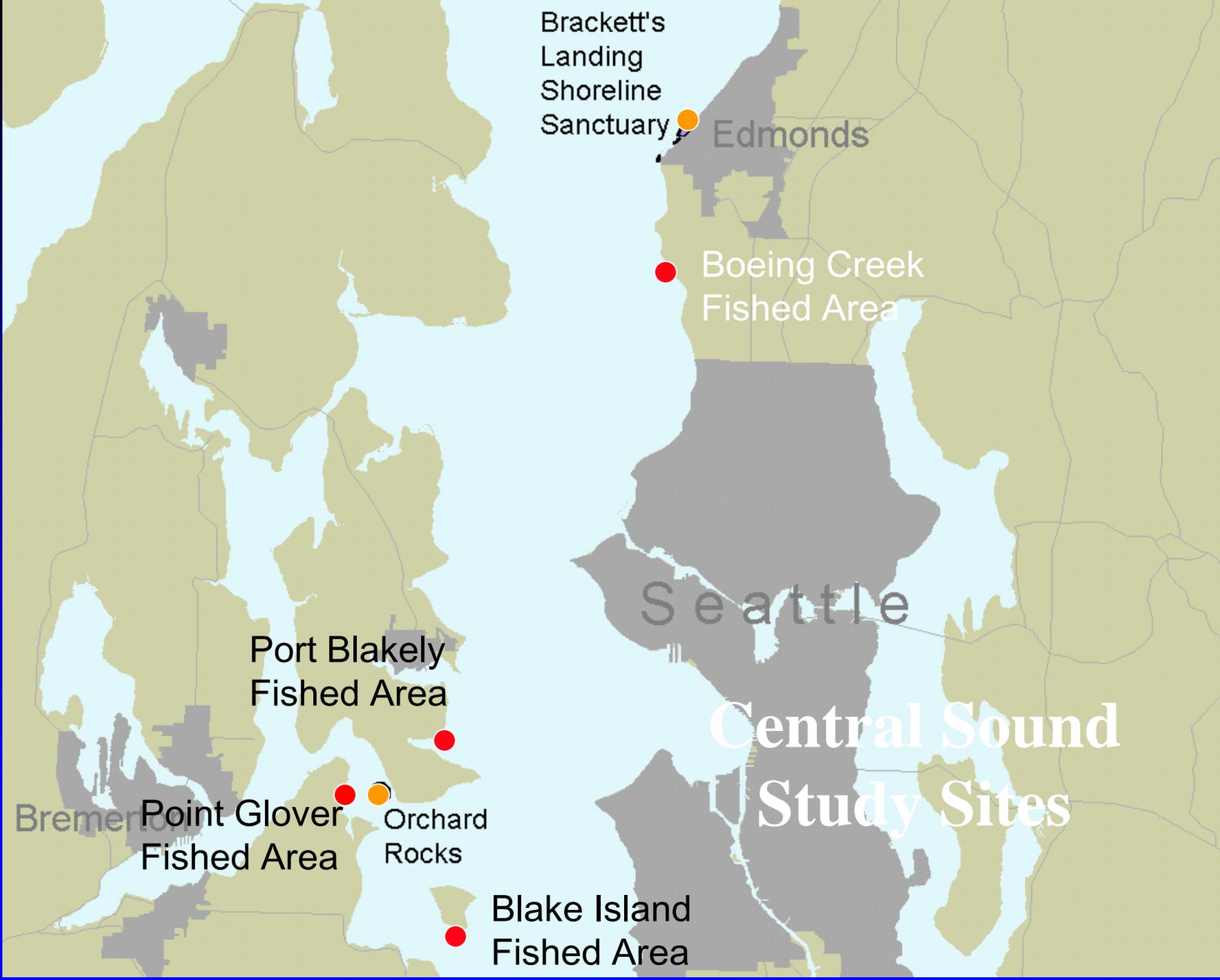
Central Sound Study Sites

Bremerton

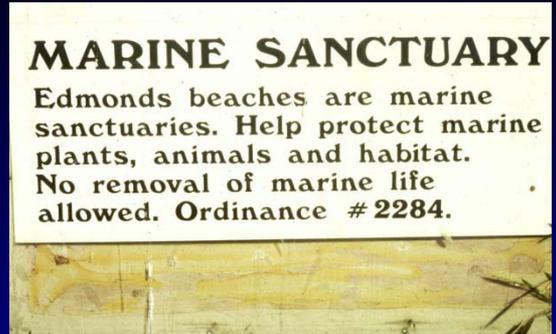
Point Glover
Fished Area

Orchard
Rocks

Blake Island
Fished Area



Reserve Study in Main and Southern Basin



Reserves

- Edmonds (Brackett's Landing) -1970
- Orchard Rocks-1998
- Colvos Marine Preserve-2000
- Z's Reef-2002

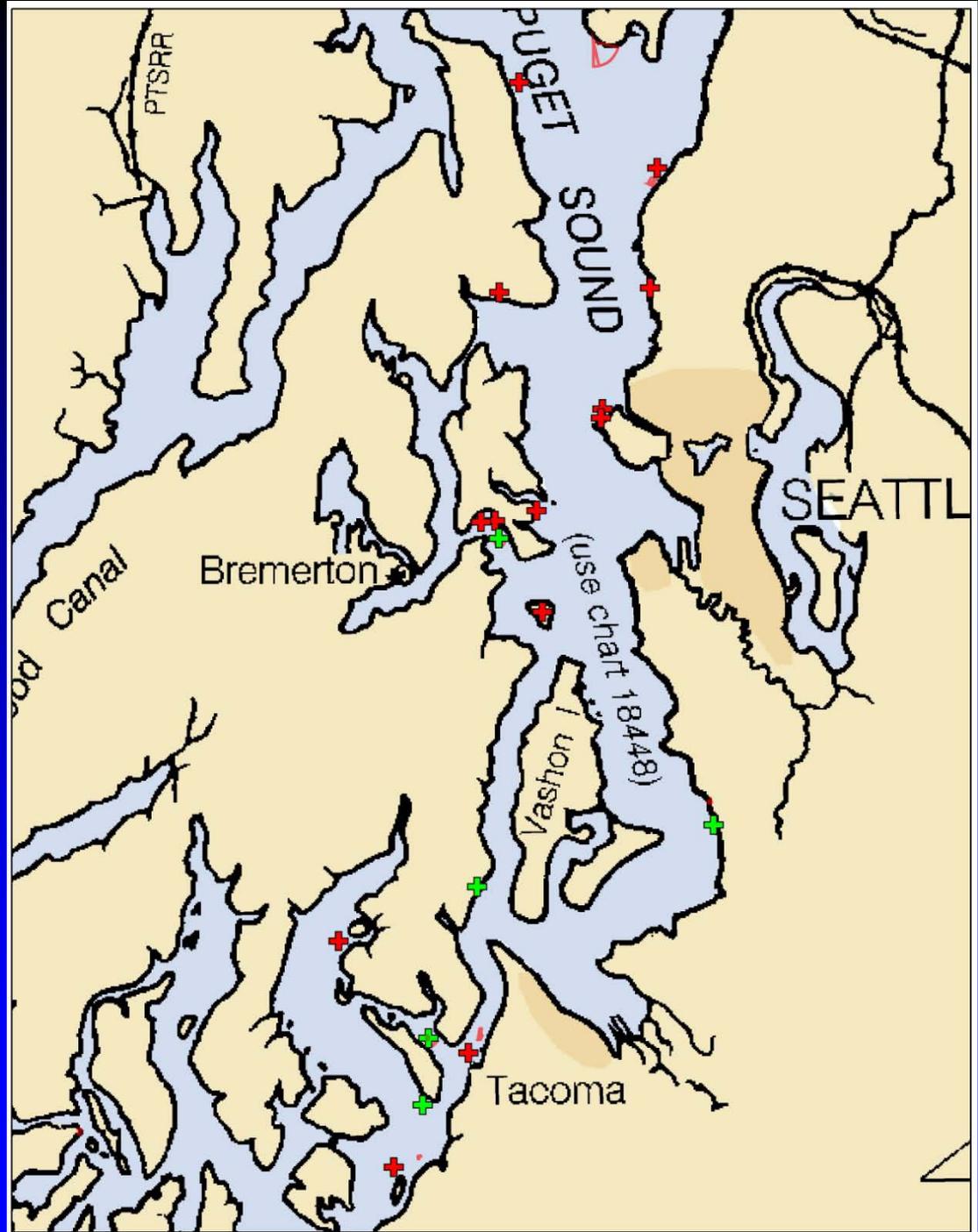
Fished

Port Blakely, Blake Island, Orchard Rocks (<1998), Point Glover

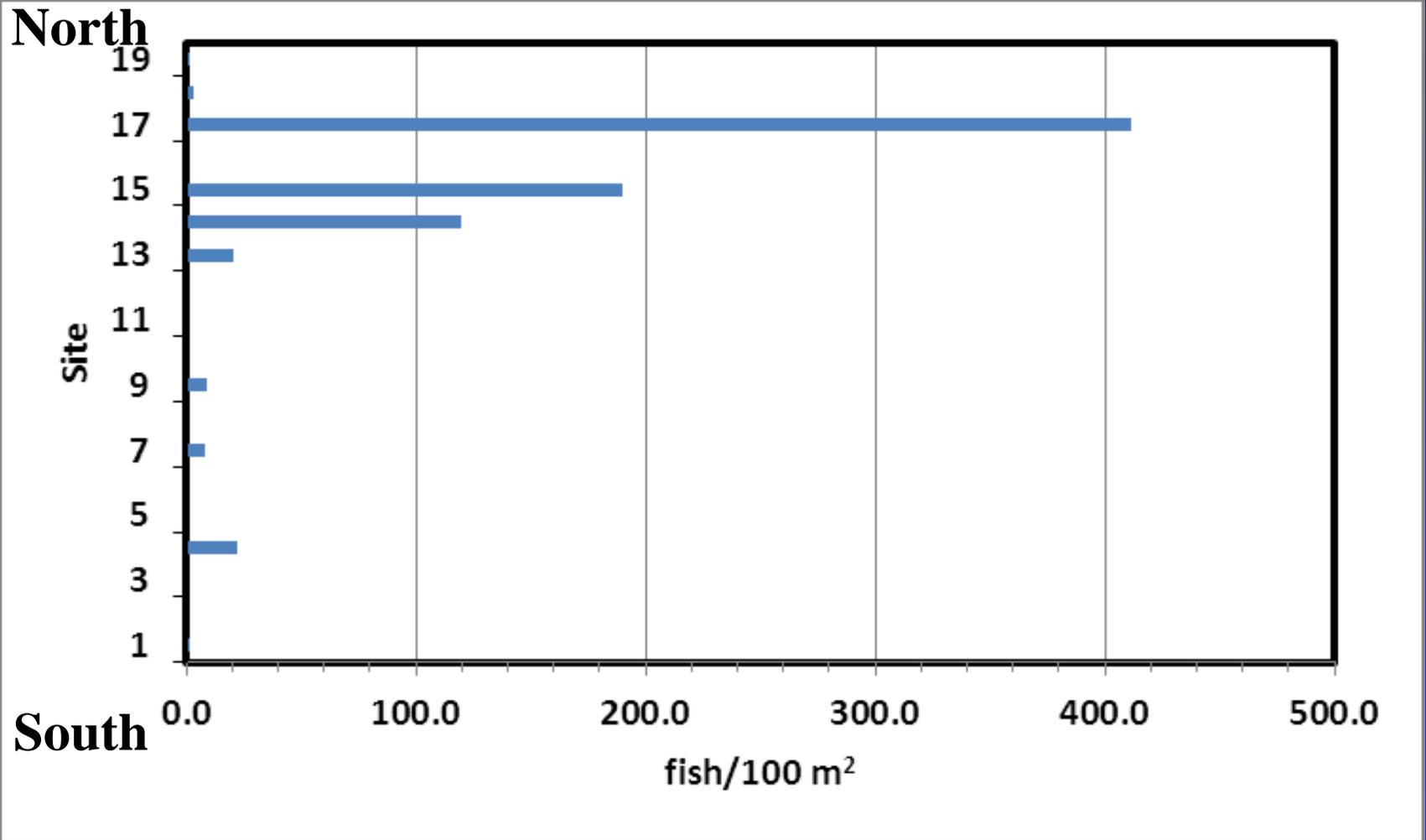
Dive Transects 6 times per year (spring/fall)

YOY Index Sites

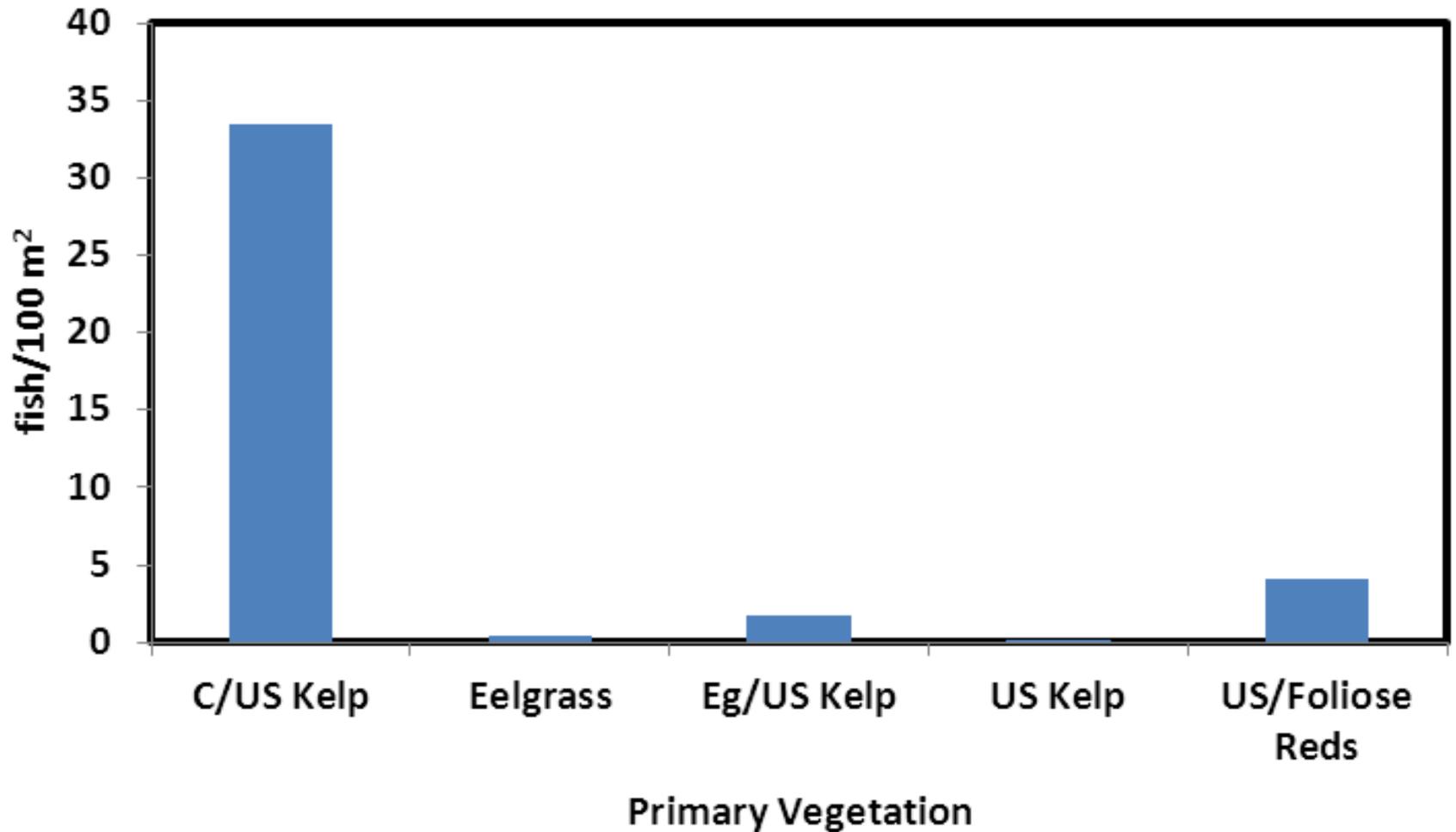
- 19 sites
- Varied Vegetation
- 7 in or near MRs
- Most <10 m depth
- Most 300 m²



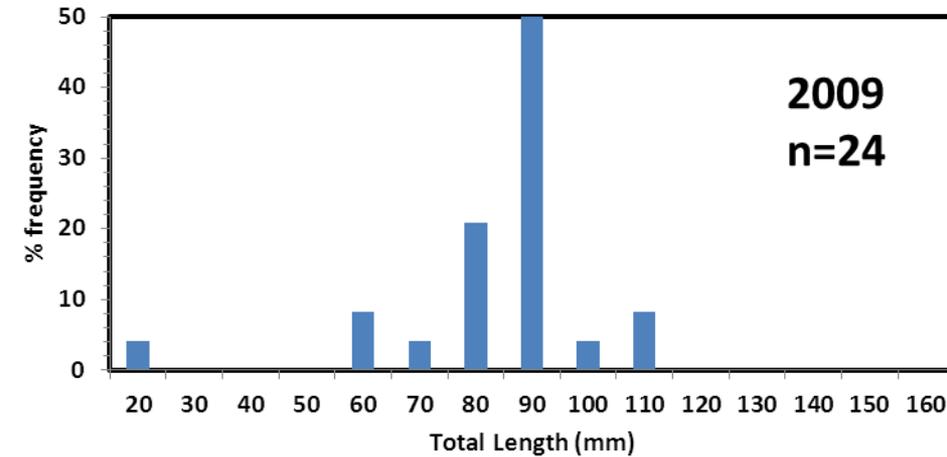
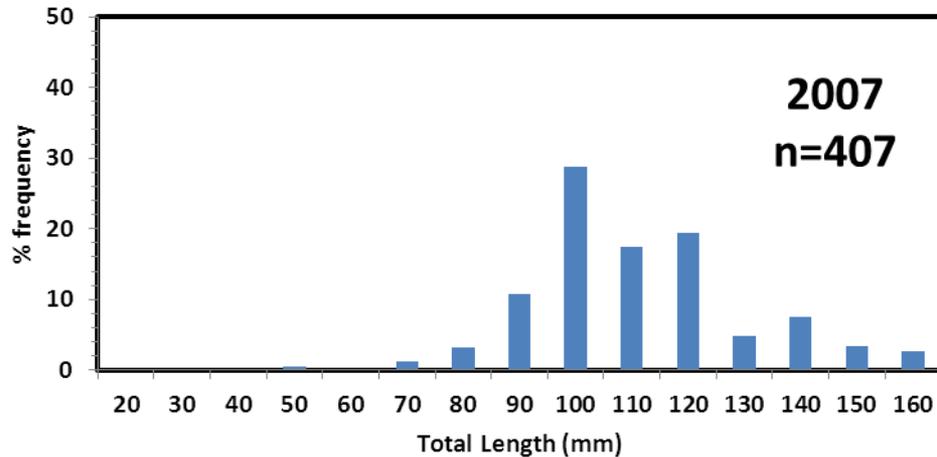
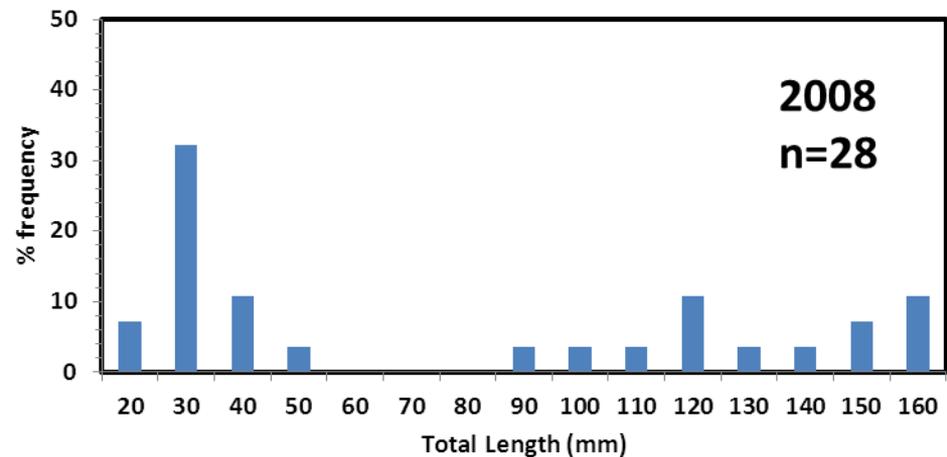
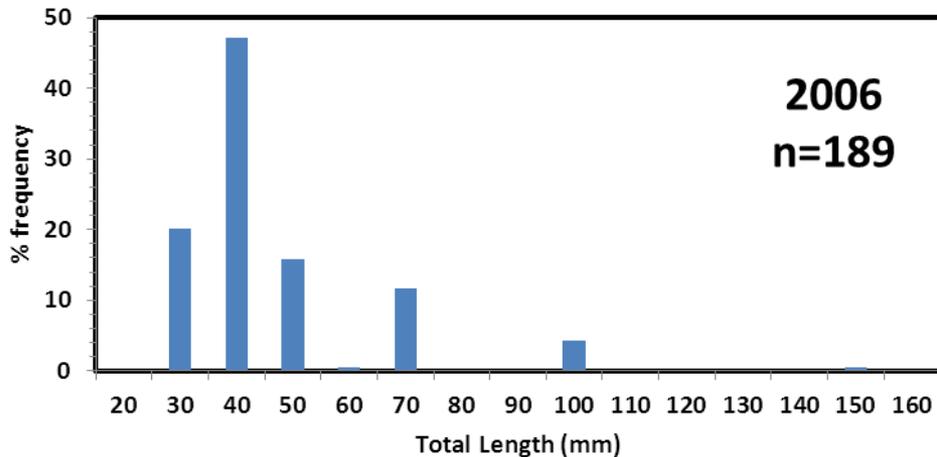
2006 YOY Density



2006 YOY Vegetation Association

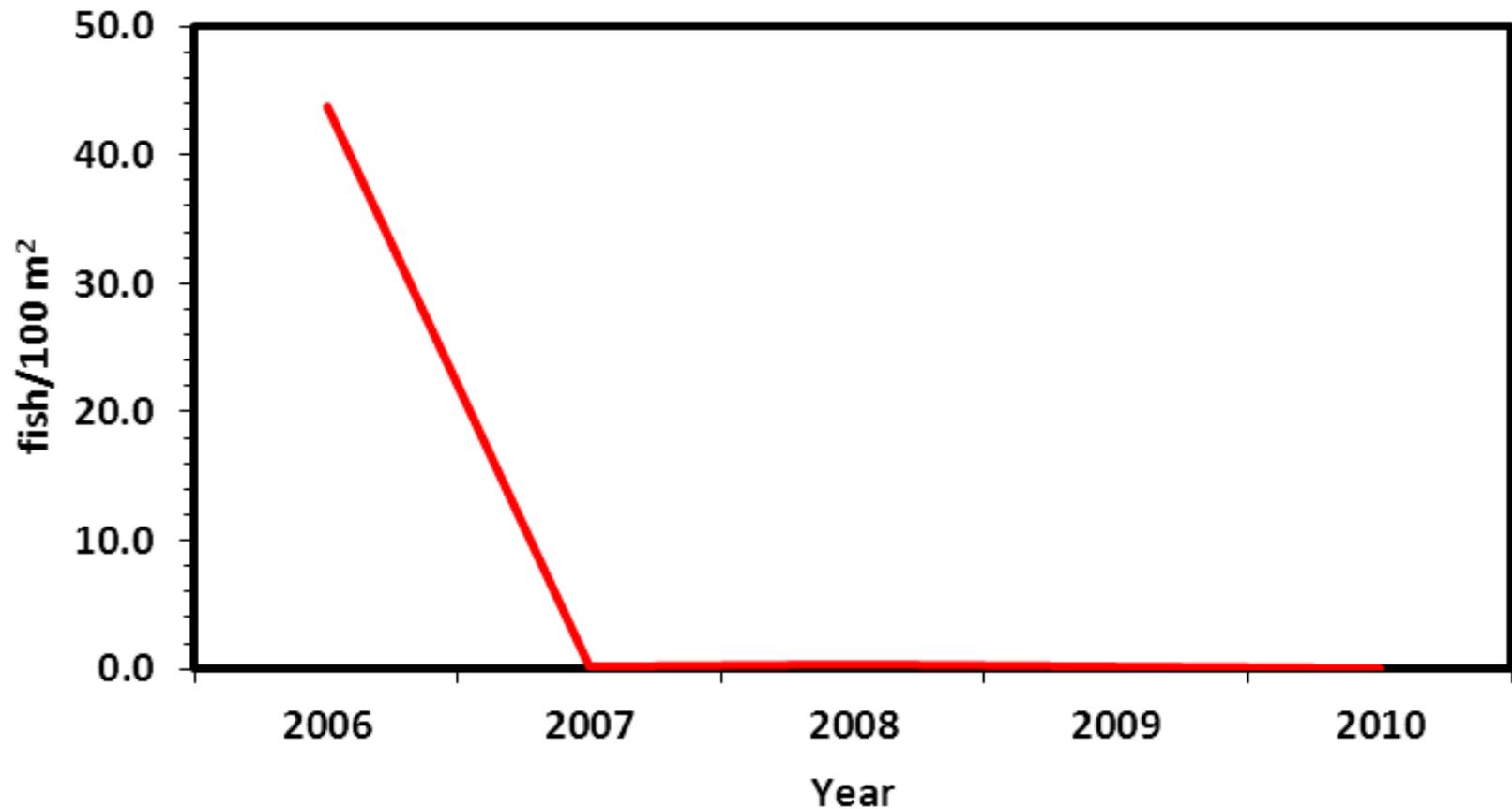


YOY Size Frequency-All Sites



YOY Annual Index

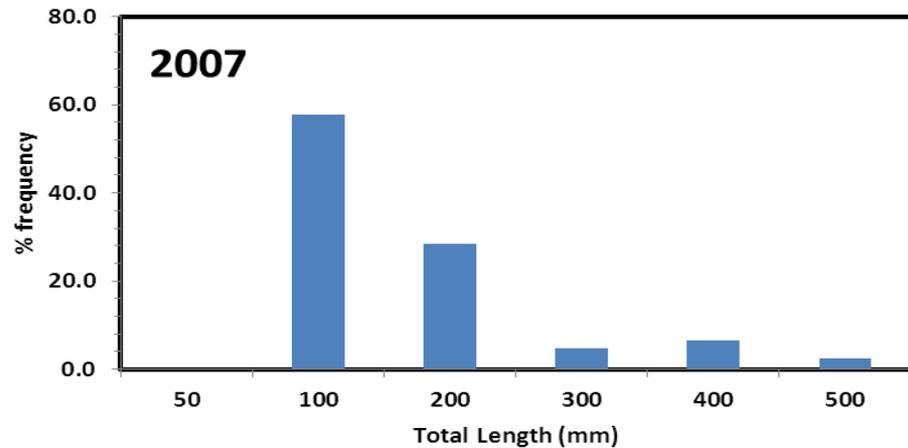
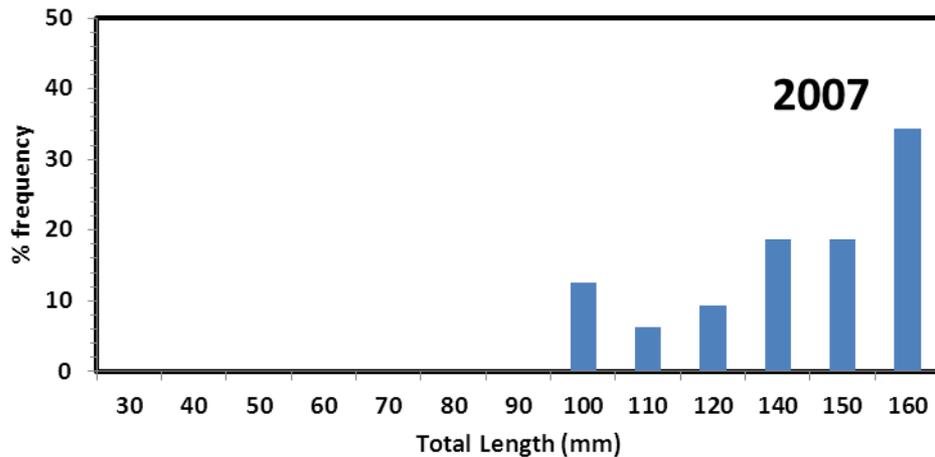
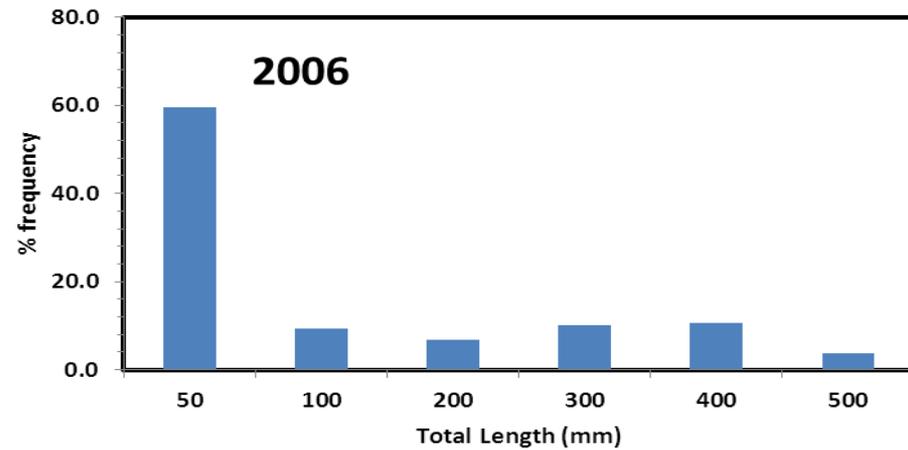
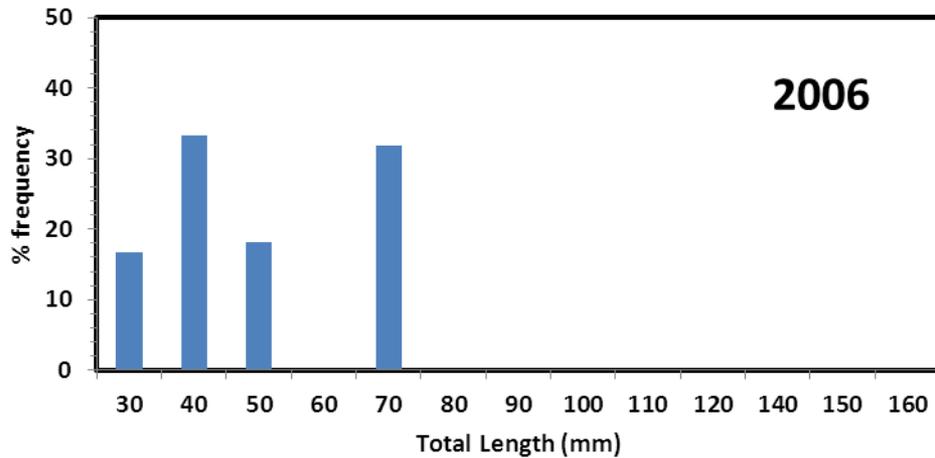
18-19 Sites/yr



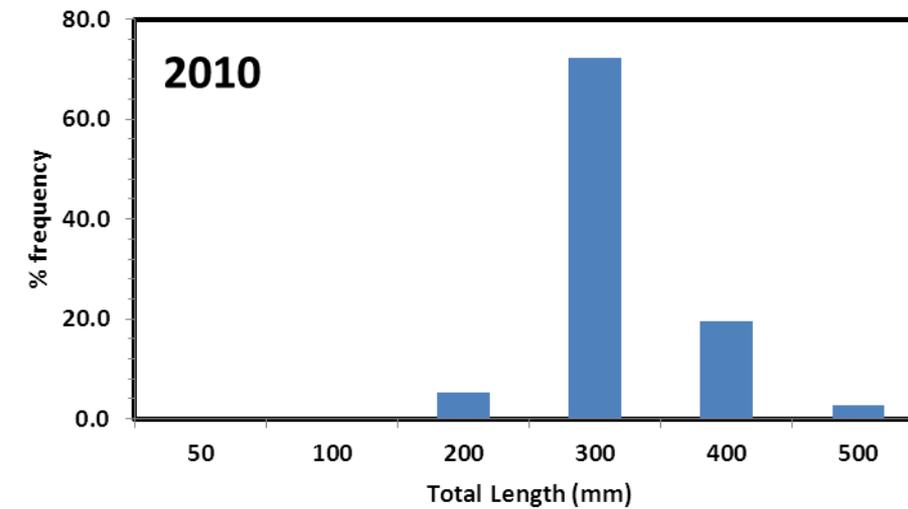
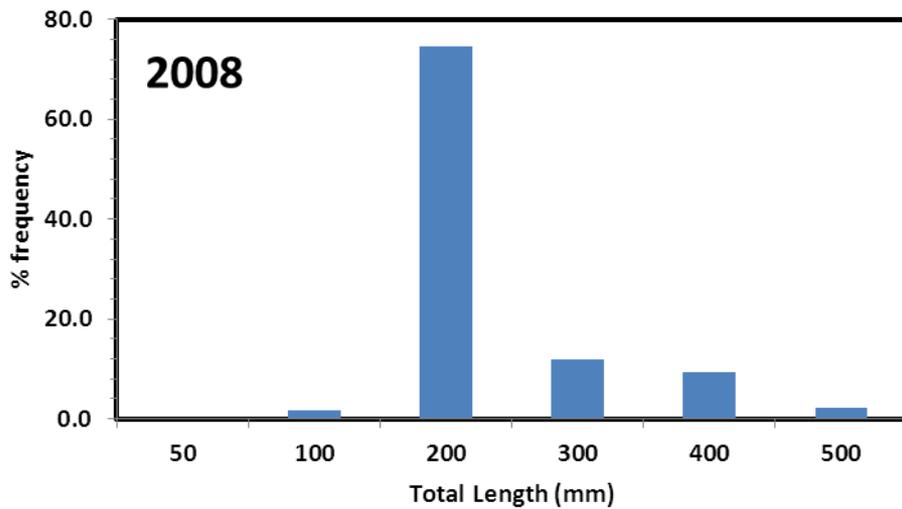
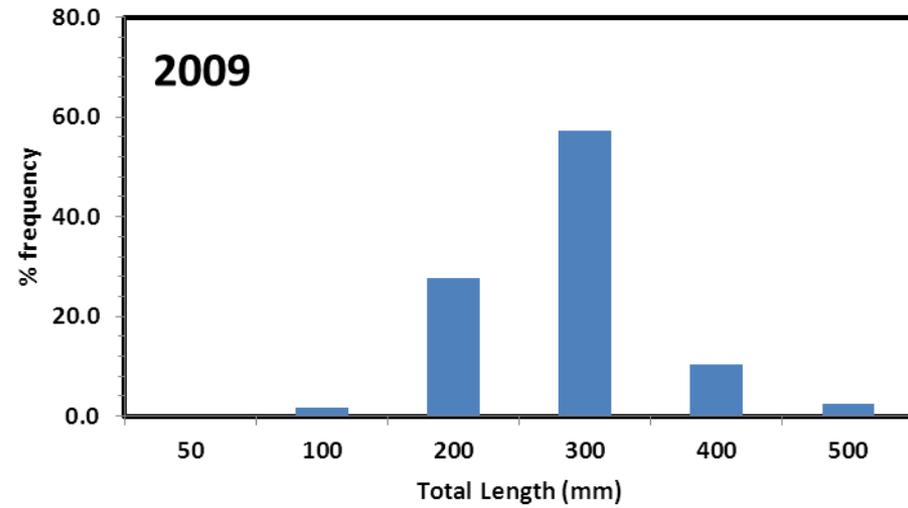
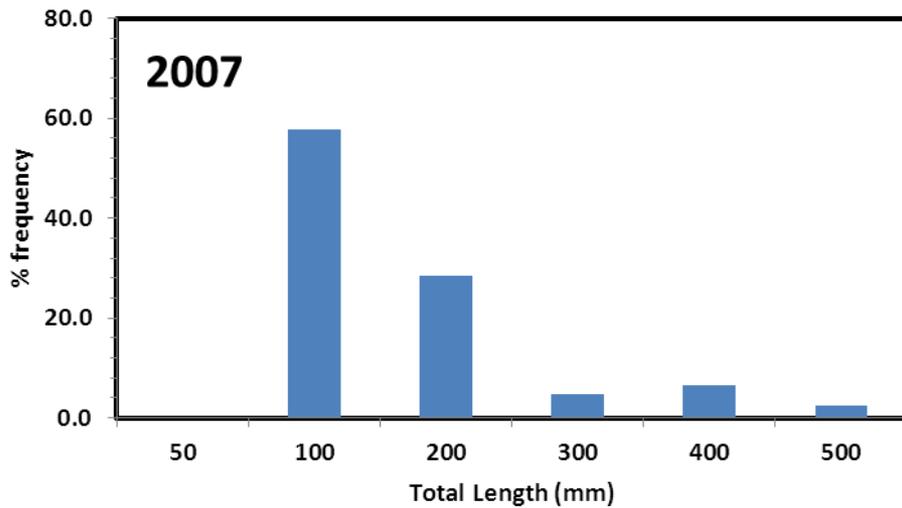
South Sound Length Progression

Nearshore

Offshore



Progression of Year Class

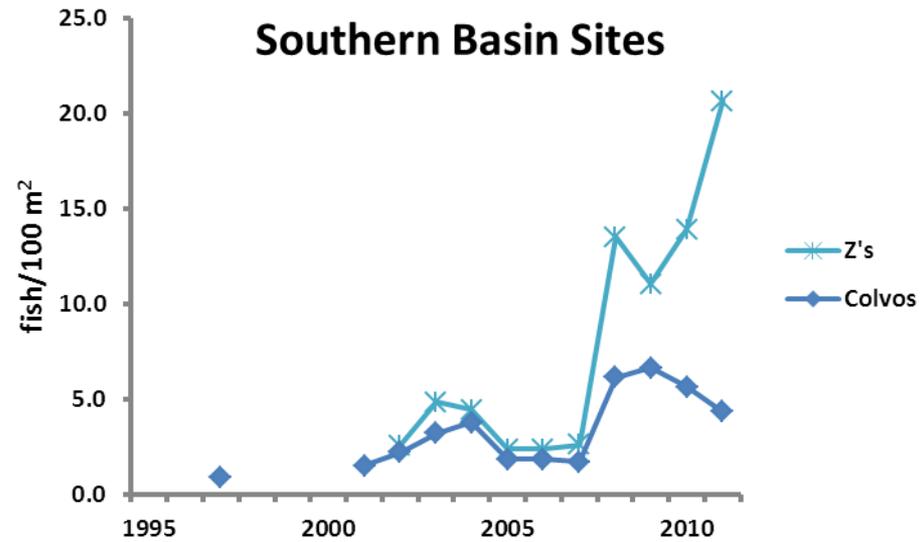
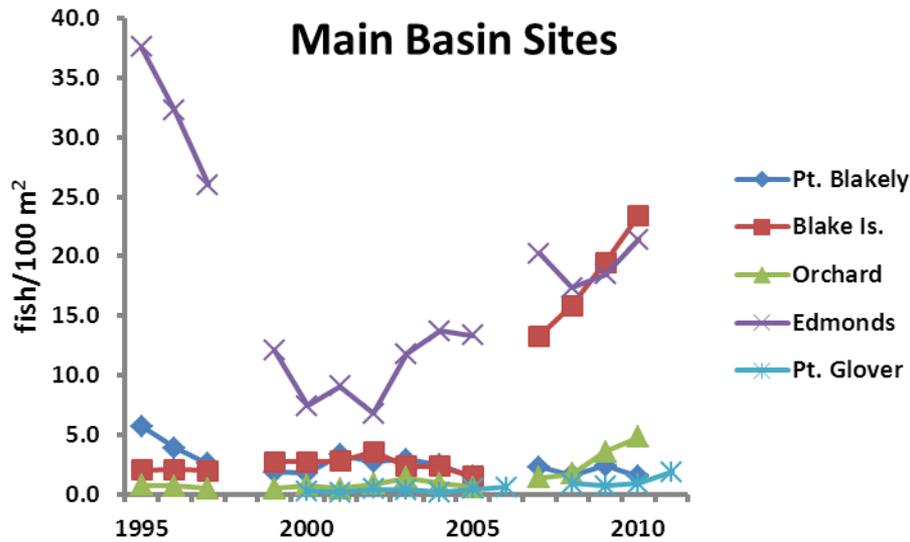


Average Fish > 10 cm / 100 m²

Site	1995-97	2000-06	2007-10
Port Blakely	4.1	2.5	2
Blake Is.	2	2.5	17.8
Point Glover		0.4	1.1
Orchard Rocks	0.6	0.8	2.8
Edmonds	31.9	10.7	19.4
Z's		3.3	14.8
Colvos		2.3	5.7

Red = Marine Reserves

Adult and Sub-adult Copper Rockfish



Recruitment Response

Site	Reserve?	YOY?	>2006 Response?
Port Blakely	No	Yes	No
Blake Is.	No	Yes	Yes
Pt. Glover	No	No	No
Orchard	Yes	No	Minor
Edmonds	Yes	Yes	Yes
Colvos	Yes	Yes	Yes
Z's	Yes	Yes	Yes

Results

MARINE SANCTUARY

Edmonds beaches are marine sanctuaries. Help protect marine plants, animals and habitat. No removal of marine life allowed. Ordinance # 2284.

- **Early reserve effect**
- **Varied pattern during early 2000s**
- **2006 was a phenomenal recruitment**
- **Most copper rockfish grown to 30 cm in 4 years**
- **Has had a strong impact on some reserves and fished sites and is persistent with conservative management**

Dive Index Update

