Fisheries-Independent Monitoring in the Estero Bay Estuary

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Research vessel - mullet skiff
Sampling gears used by the FIM program
Small fish sampling gears

21-m Seine
6.1-m Otter Trawl
Example of a small fish sample
Large fish sampling gears

183-m Haul Seine
Examples of a large fish sample
Estero Bay estuary
Fisheries-Independent Monitoring
3 years (2005-2007)
Freshwater Inflow

Mean Daily Flow (CFS)

Study Period
Study Design
158 Fishes and Swimming Invertebrates
Multi-bay Comparison
Multi-bay Comparison
Multi-bay Comparison

Small Seines – Total Fish

![Graph showing fish hauls from Estero Bay, Gasparilla Sound, Pine Island Sound, and San Carlos Bay over years 2005 to 2007. The graph displays the number of fish per haul, with the x-axis representing years and the y-axis representing the number of fish per haul. Each line represents a different bay, with Estero Bay showing the highest fish hauls in 2006, and San Carlos Bay showing the lowest fish hauls.](image)
Multi-bay Comparison

Small Seines

Bay
- ▲ Gasparilla Sound
- ▼ Pine Island Sound
- ▲ San Carlos Bay
- ◆ Estero Bay

Similarity
- 65

MDS; 2D Stress: 0.09

Year
- 2005
- 2006
- 2007
Small Seines

Multi-bay Comparison

SIMPER; 81% Dissimilarity
Multi-bay Comparison

Large Haul Seines – Total Fish

![Graph showing fish haul comparison across different years and locations.](image-url)
Multi-bay Comparison

Large Haul Seines

Bay
- Gasparilla Sound
- Pine Island Sound
- San Carlos Bay
- Estero Bay

Similarity
- 60

MDS; 2D Stress: 0.08
Large Haul Seines

Multi-bay Comparison

SIMPER; 81% Dissimilarity
Multi-bay Comparison

Trawl – Total Fish

![Graph showing the comparison of fish catch in different bays over three years.](image-url)
Multi-bay Comparison

Trawl

Bay
▲ Gasparilla Sound
▼ Pine Island Sound
▼ San Carlos Bay
▼ Estero Bay

Similarity
▲ 60

MDS; 2D Stress: 0.07
Multi-bay Comparison

Trawl

SIMPER; 84% Dissimilarity
Estero Bay Tributaries

2D Stress: 0.14

season_wateryear
- MayOct_2005
- NovApr_2006
- MayOct_2006
- NovApr_2007
- MayOct_2007
Species Profiles

Blue crab
Red drum
Striped mullet
Pink shrimp
Common snook
Striped mojarra
Bay anchovy
Hogchoker
Southern kingfish
Pinfish
Species Profiles

• When are species present?

• e.g., pink shrimp from the Estero Bay estuary (21.3-m seines)
Species Profiles

• Where are species found?

- e.g., common snook from the Estero Bay estuary (21.3-m seines)
**Species Profiles**

- At what salinities are species found in the river?

![Graph showing geometric mean abundance for different salinity ranges.](image)

- e.g., Striped anchovy from the Estero Bay estuary (21.3-m seines)
Species Profiles

• What habitats do they occupy?

- e.g., pink shrimp from the Estero Bay estuary (21.3-m seines)
Species Profiles

• Response to Inflow?

$Lagodon rhomboides$ (21.3-m seine): Bay

Sizes: <=150mm
Feb. to Jun.

\[ y = 6.7633 - 0.7368x \]

Adj. $r^2 = 0.482$

• e.g., pinfish in the Estero Bay (21.3-m seines)
Species Profiles

• Response to Inflow?

**Farfantepenaeus duorarum** (21.3-m seine): Tributaries

Sizes: <=150mm
Jun. to Oct.

\[
y = -3.6567 + 2.2834x - 0.2267x^2
\]

Adj. \( r^2 = 0.4199 \)

• e.g., pink shrimp in the Estero Bay tributaries (21.3-m seines)
Estero Bay estuary

Current Knowledge

Fish assemblages under current water management
Baseline indices of relative abundance for important species
Distribution and abundance of exotic fishes
Fish health background levels
Stochastic events regional or specific to river
Thank you!
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