Curtin University of Technology

SWAN RIVER TRUST

Health of Fish Inhabiting Claisebrook Cove

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Why Claisebrook Cove?

- **Nearby sediments found to contain the following contaminants at concentrations that exceeded environmental guidelines:**
  - **DDT / DDE**
  - **PAHs**
  - **Organochlorines (dieldrin)**
  - **Heavy metals (Zn, Pb)**
- **These contaminants have the potential to affect fish health**

Aim: to evaluate health status of fish inhabiting Claisebrook Cove

How to measure fish health?

- Biomarkers of fish health:
  - Physiological indicators (CF, LSI, GSI)
  - EROD activity (liver detoxification enzymes)
  - Serum Sorbitol Dehydrogenase (SDH activity)
  - PAH biliary metabolites
  - DNA damage

Field Sampling of Claisebrook Cove

March 2009

Field Sampling of Burswood Lakes

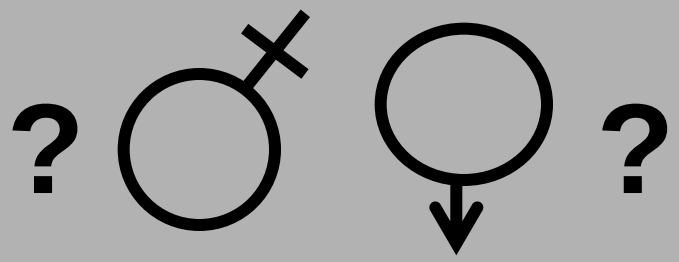
March 2009

Collection of Biopsies

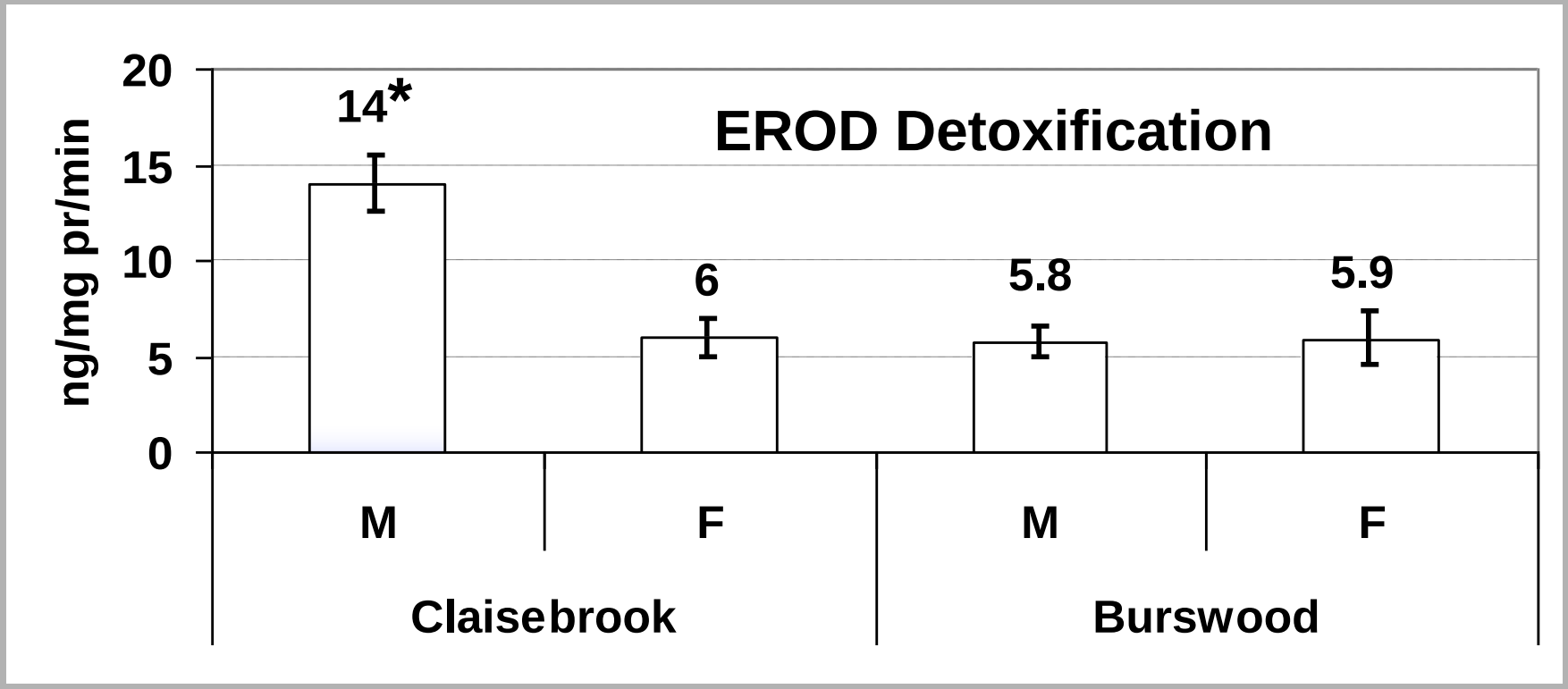
Results …

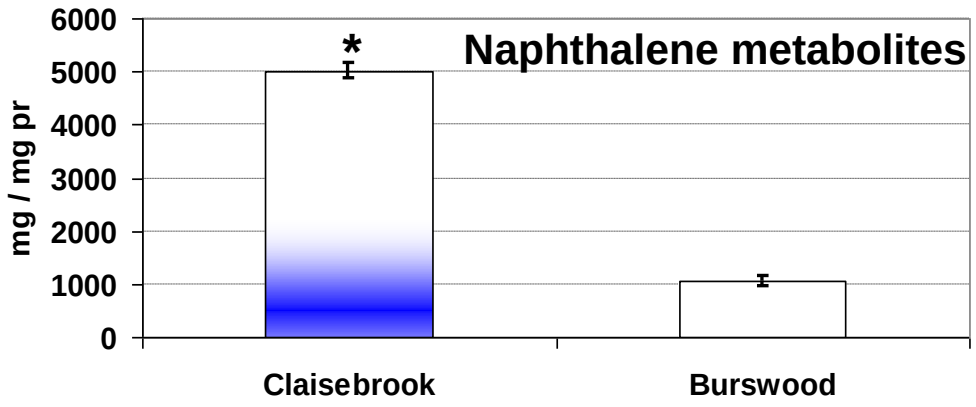
- CF similar but LSI higher, and GSI lower at Claisebrook Cove relative to Burswood Lakes

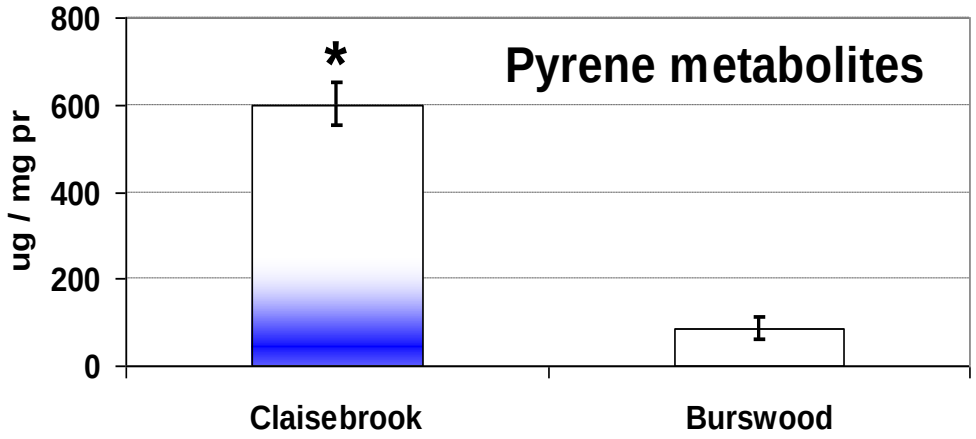
- Endocrine disruption may be occurring in fish collected from Claisebrook Cove

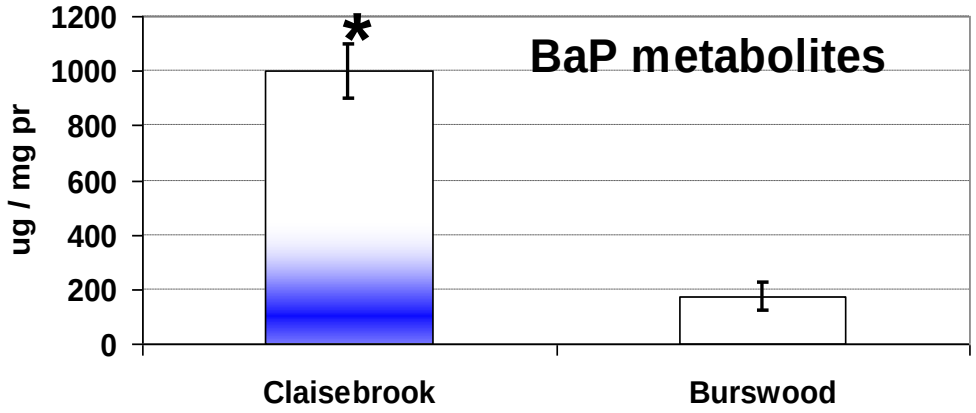


Liver detoxification more active in Claisebrook male fish







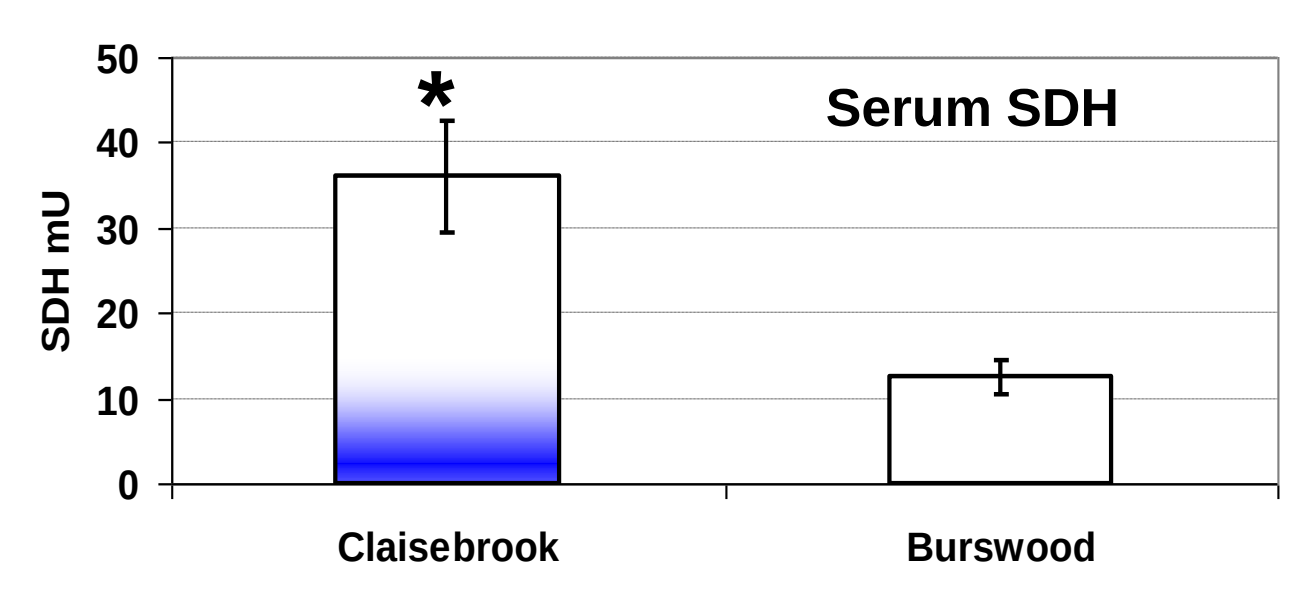


Bile metabolites of:
- naphthalene
- pyrene
- BaP

were elevated at Claisebrook Cove

Liver Integrity

Liver integrity was compromised in the Claisebrook black bream



DNA Damage

- Oxydative DNA damage was not elevated in the Claisebrook black bream

  (as measured by 8-OHdG activity)

- Elevated DNA damage (2.4 x higher) was measured in mussels collected in Claisebrook Cove

Overall

- Along with biochemical markers of fish health, physiological indicators suggest that the health of the Claisebrook Cove fish was generally compromised.

- Evidence suggests a possible source of endocrine disrupting contaminants within or entering Claisebrook Cove

Future Directions

- Localised or generalised effects of contaminants on fish?
- Permanent effects of EDCs on fish reproduction?
- Clean up beneficial to aquatic biota?