Port Phillip Bay Ecology & Impacts of Channel Dredging

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Port Phillip Bay
Why dredge?
How it works
The Impacts
Port Phillip Bay – An Ecosystem

- 5000 marine species
- 90% endemic
- Interaction of distinct marine environments

Sea Grass

- Key Producer
- Habitat for juvenile fish stocks
- Loss of seagrass due to sedimentation and eutrophication
Sediment

- Habitat for benthic organisms and infauna
- Nutrient Cycling organisms
  - ‘microphytobenthos’
- Sponge Gardens and Sea Squirts
- Trapped toxins within sediment

Reefs

- Kelp Forests
- Walls covered in sponge, coral and bryozoans.
- Filters
- Eggs and Larvae
- Food source
- Marine Parks
Pelagics

- King George Whiting & Snapper
- Sharks
- Marine Mammals
  - Resident
    - Australian Fur Seals
    - Bottle Nose Dolphins
  - Visiting
    - Southern Right Whales
    - Humpback Whales

Why Dredge?

- Melbourne - Busiest container port in the Southern Hemisphere
- Currently 12.1 m Max Depth
- 30% of ships cannot fully load
- Within 10 years 14 m is required
- Direct Benefit of $1.35 billion
  indirect $3.2 billion
What is Planned?

Port Phillip Heads

- The most treacherous commercial shipping port entry in the world
- Max depth 103m
- Currents 6-9 knots
- Diver Paradise
- Marine National parks
The Yarra

- Removal of 10 million square metres of yarra sediment
- Contaminated spoil
- Relocation of essential services
The process...

- $540 Million Taxpayer funded
- Project to occur 2005 - 2007
- Re-location of 6 essential services under Westgate Bridge ($160 Million)
- Re-location of Footscray Markets ($300 million)
- Removal of 42 + million cubic metres of sand, silt, rock
- DMG
  - Off Mornington 7.5 sq. Km site
  - Off Brighton, 10+ million Tonnes.
- Self regulated process

What are the impacts?

*Biological Impacts*

- Turbidity
- Sedimentation
- Mobilisation of contaminants
- Disruption of nutrient cycling
- Marine Pests
Turbidity & Sedimentation

- Smothering of Benthic organisms
- Reduced light penetration
- Impact on benthic filtering organisms
- Impact on nutrient cycling 'microphytobenthos'

Nutrient Cycling

*Break down of the sediment structure and benthic community*

- Nitrogen
  - Mainly derived from organic material
- Phosphate
  - From sewerage treatment
Contaminants

- Mobilization of trapped contaminants
  - Eg. Algal cysts, organics, heavy metals
  - Possibility of causing algal blooms

- Dredging of the Yarra’s ‘Moderately Contaminated’ spoil

Marine Pests

- Northern Pacific Sea Star
  - Aesteras amurensis

- Japanese Kelp
  - Undaria

- Mediterranean Fan Worm
  - Sebella spellanzanii
Other Impacts

- Scuba Diving & Snorkeling
- Fishing
- Tourism
- Aquaculture
- Noise
- Migratory birds
- Sea level, tides, currents & waves
- Oil and Chemical spills

Alternatives

- Use of natural deep water ports at Brisbane, Sydney, Fremantle and Darwin
- Invest in national rail transport
- 70 % of ships can enter Melbourne fully loaded
More Information

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or visiting the Channel Deepening website


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