

4.3.2

Ecosystem Modelling

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Background

- Estuaries are typically heavily impacted by anthropogenic factors in both catchments and the estuaries themselves
- Likely to be heavily impacted by effects of climate change
- Impacts on trophic structure likely to be evident
- Have often been extensively studied
- Provide a valuable opportunity to explore benefits of ecosystem modelling to the provision of management advice



Major outcomes expected

- Estuaries are highly visible and of considerable socio-economic importance to local communities
- Will increasingly require management action to maintain the “health” of their ecosystems
- Modelling is intended to provide insight into effectiveness of alternative strategies to reduce or ameliorate adverse impacts on ecosystem of various factors.
- Key concerns are
 - Excessive nutrient input
 - Increasing exposure of acid-sulfate soils

WAMSI Ecosystem Modelling Project

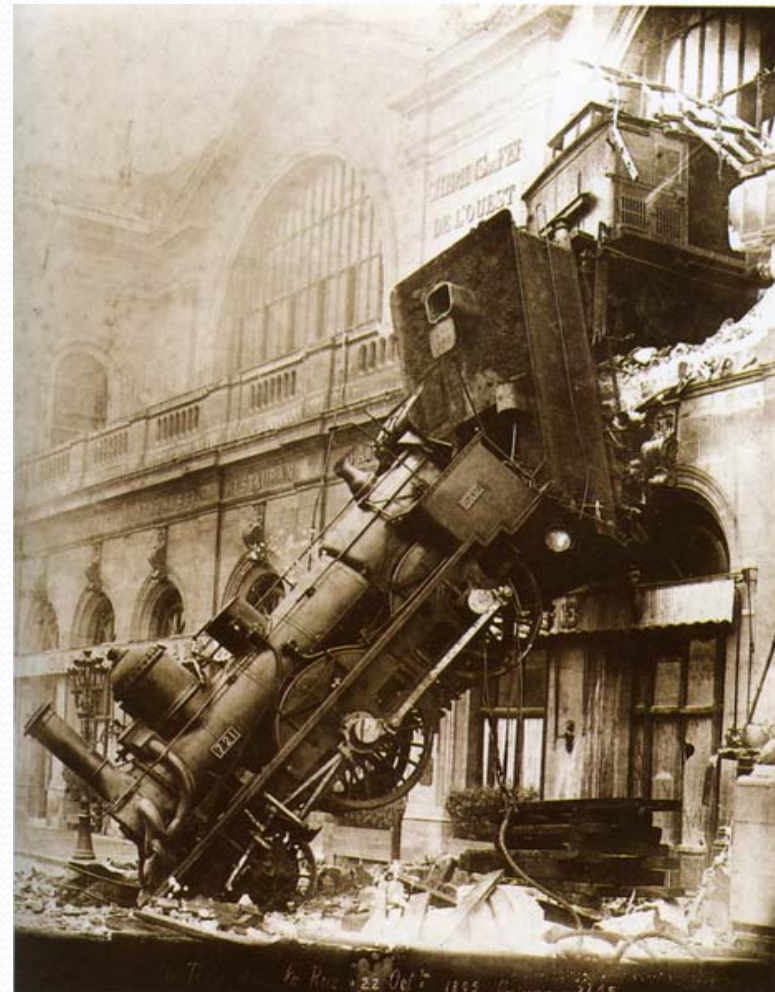
- The WAMSI Project consisted of two components
- 1. Quantitative model of Peel-Harvey Estuary
- 2. Qualitative modelling of Peel-Harvey, Leschenault and Swan Estuaries

Quantitative model of Peel-Harvey Estuary

- Sarah Fretzer has focused her PhD study on this topic
- The support of Hector Lozano-Montes in supervising this aspect of the study is greatly appreciated
- Sarah will present details of her study in a few minutes

Qualitative modelling

- Went off rails when Postdoctoral Research Fellow resigned and returned to Sydney to care for mother who had developed cancer
- Too late to recruit and train another person
- Have identified strategies to proceed, but these need to be considered by WAMSI Board.





Key implication for management

- Past data collection has not had an ecosystem focus
- Ecosystem models require data on biology of **all** functional groups, and on the relationships among these groups and with the environment
- Functional groups important to ecosystem are not necessarily directly important to fishers or community
- Requirement for well-integrated, strategic research programs with an ecosystem focus, with regular interaction among researchers