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A case study in successful management of a data-poor fishery using simple decision rules: the Queensland spanner crab fishery

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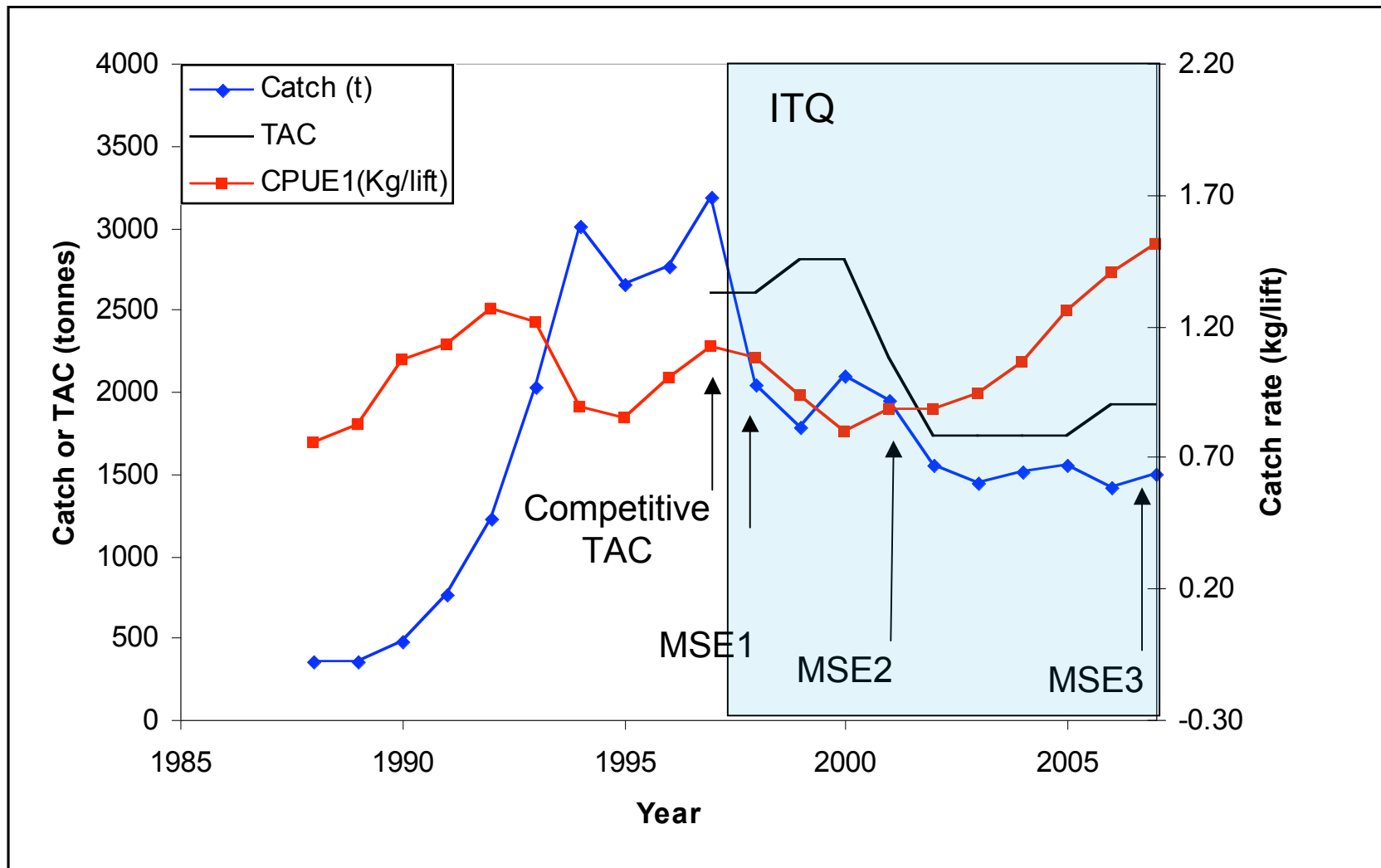
Queensland Department of Primary Industries and Fisheries



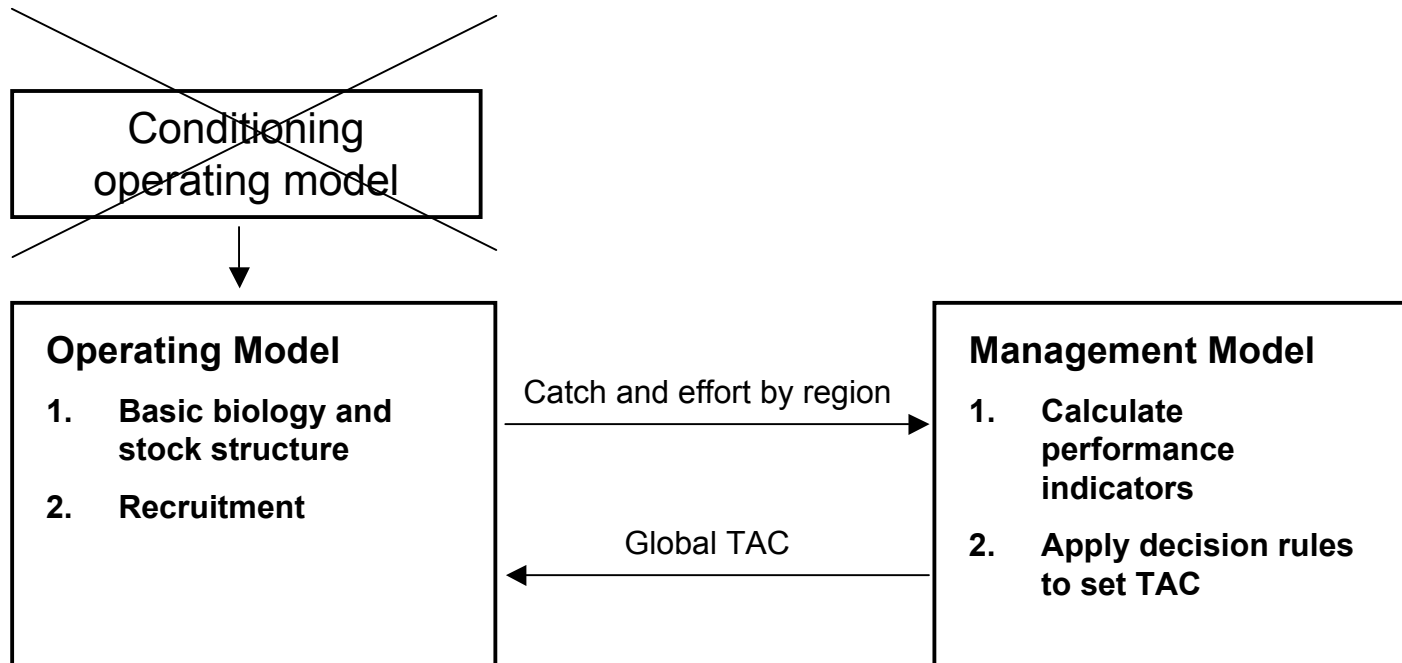
Fishery background

- Simple fishery – almost no bycatch
 - low value, small
 - Live export
- Middle end of “data poor”
 - have catch and effort
 - high uncertainty in biology
- Moved to TAC/ITQ fishery, despite:
 - no assessment
 - no real knowledge of sustainable catch → *adaptive management*
- Cheap catch monitoring – mobile/cell phones
- Good co-management

History



Management Strategy Evaluation



- **Multiple plausible operating models**
- **Want harvest strategies (management procedure) robust to uncertainty**

Harvest strategies

- **MSE 1 - (1998)**
 - Harvest strategies aim to be clear and simple
 - Slope of regression of CPUE over past 5 years for 5 “stocks”
 - Create effort weighted pooled index
 - TAC changed based on index
 - Some back-up rules to protect single stocks
 - Initial TAC (for political reasons) set too high
- **MSE 2 - (2001)**
 - Cyclical pattern in catch rates caused problems
 - Rules modified
 - Longer cpue series
 - Bi-ennial TAC
- **MSE 3 – (2007)**
 - Better idea of economic and biological “sustainable” catch
 - Constant catch and only deviate up/down when big changes
 - Included independent survey data
- **Detailed rules in paper**

Advantages

- **Gained economic and other benefits of ITQ system e.g. fish when best for market and costs**
 - Concentrating on high value live transport fishery
 - Lack of assessment did not stop fishery from moving to ITQs
 - Cheap catch monitoring with mobile phones
- **TAC is set by well-defined rules:**
 - simple, easy to understand,
 - transparent, inexpensive and
 - Quick/cheap to produce
- **Industry major contribution to subsequent rules**
- **Industry spent money (saved) on independent survey**
- **Catch rates are now the highest since logbook programme started**

Disadvantages

- **TAC system not useful in very data poor fisheries**
 - Unless creates incentive to become data “rich”
- **Absolute stock status is not known**
 - need for greater precaution in harvest strategies
 - E.g. ‘half up, full down’ clauses in rules
- **TACs initially have been quite volatile**
 - in a quota trading environment, have been a cost to the industry
 - Now better idea of “best” TAC

Lessons learnt

- **Avoid setting initial TAC too high**
- **Create robust harvest strategies using MSE**
 - Operating models not conditioned (only plausible scenarios) unusual
 - were capable producing successful management system despite lack of knowledge
 - Robust rules
- **Lack of knowledge should not stop choosing a “data rich” system**
 - Fishery concentrated their effort on valuable live trade
- **Simple ≠ bad**
- **Simple = easy to interpret, cheap, cost-effective**
 - Empowers fishers to really contribute
- **Be adaptable**
 - change rules for good reasons
 - stick with overall principles (e.g. there will be rules)!
- **Need co-management**
 - Good working relationship between managers, industry and scientists