

Richard McGarvey - Fisheries Modelling

SARDI AQUATIC SCIENCES

SARDI



Areas of expertise

Fisheries population modelling; statistical analysis; survey design; fisheries stock assessment; marine protected areas; fish movement; growth analysis; fishery management systems; ecosystem modelling.

Countries of work experience

Belgium, UK, Italy, Canada, USA, Australia

Overview of experience and qualifications

Dr. McGarvey was trained as a physicist specialising in physical and chemical principals underlying self-organisation in living matter. He applied these mathematical and statistical skills to fisheries modelling in completion of his PhD. He has published 47 scientific papers, 88 technical reports, and given 57 conference and seminar presentations. His experience has focused in four areas: stock assessment modeller, project manager, research scientist, and statistical consultant

Dr. McGarvey and his team have developed:

1. stock assessment models for rock lobster, King George whiting, garfish, and snapper,
2. management simulation models with user-friendly Windows GUI's and user guides for rock lobster, giant crab, and King George whiting,
3. movement estimation models for King George whiting, and rock lobster,
4. growth models for rock lobster, giant crab, King George whiting, snapper, and garfish,
5. fishery-dependent survey designs for rock lobster and blue crab, and
6. fishery-independent diver survey design for abalone.

New statistical methods he and his co-workers developed at SARDI include:

1. accurate yearly estimates of biomass and recruitment using only catch log data of effort, catch in weight, and catch numbers landed, (qR model),
2. estimation of fish movement rates that are unbiased by incomplete reporting of recaptured tagged fish, requiring many fewer prior assumed inputs,
3. estimating time between moults for crustaceans,
4. for egg survey, estimates of total spawning biomass without staging sampled eggs,
5. estimating flexible growth transition matrices for lobsters,
6. a new 'leaded-line' method of abalone survey design to estimate legal biomass available for harvest,
7. a new stock assessment model structure (slice-partition) to dynamically predict and estimate fish population numbers broken down by both age and length,

8. estimation of mortality rate using widely available single tag-recovery data which is unbiased under partial-reporting of tags by fishers.



Professional appointments

July 2001-present: Subprogram Leader, Fisheries Modelling, SARDI Aquatic Sciences.

June 1994-July 2001: Principal Scientist, Population Dynamics, SARDI Aquatic Sciences.

1991-1993: Assistant Research Scientist, Chesapeake Biological Laboratory, University of Maryland, USA.

1989-1991: Post-Doctoral Teaching Fellow, Department of Biology, Dalhousie University, Canada.

1983-1986: Chercheur Libre, Service de Chimie Physique II, Université Libre de Bruxelles, Brussels, Belgium.

Research and consulting

1994-present: Dr. McGarvey has been modeller (5) and principal investigator (5) on 7 FRDC projects at SARDI.

November 1993: Consultant, Fisheries Resources, United Nations FAO, Rome

1987: Research Analyst. Fisheries modeling, programming and data analysis. Population Dynamics Branch, Northeast Fisheries Center, US National Marine Fisheries Service, Woods Hole, Massachusetts, USA.

Awards

- Dr McGarvey won the Research and Development Award at the biennial 5th Australian Seafood Industry Awards in Melbourne, recognising his contributions to fisheries science and management.

- Research and Development Excellence Award at the 7th biennial 2009 South Australian Seafood Industry. Adelaide, 8 May 2009.

- 2009 SARDI Achievement Award under the category of Delivery to Industry.

Contact

Dr Richard McGarvey, Subprogram Leader - Fisheries Modelling, (Aquatic Sciences).

Tel: 08 8207 5460 Fax: 08 8207 5481

E-mail: richard.mcgarvey@sa.gov.au

SARDI Website: www.sardi.sa.gov.au



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