

Areas of expertise

Ecology of marine mammals and seabirds, ecosystem trophodynamics, ecosystem based fisheries management, the ecological effects of fishing, protected species interactions with fisheries (operational and trophic), marine protected species conservation and management.

Countries of work experience

Australia, USA, Antarctica.

Overview of experience and qualifications

A/Prof Goldsworthy has been undertaking research in the field of marine biology for over 20 years, specialising in the ecology of marine mammals and seabirds, ecosystem trophodynamics, the ecological effects of fishing and operational and trophic interactions with fisheries. He completed his PhD at Monash University in 1992 on fur seal populations in South Australia and the sub-Antarctic, and then undertook a two-year Post-doctoral Research Fellowship with the Smithsonian Institution in Washington DC where he used molecular genetic methods to investigate hybridisation and population structure in Southern Ocean fur seal populations. He then worked for two years monitoring the impacts of the Iron Baron oil spill on little penguin populations in Tasmania, then at CSIRO Marine Research, investigated the ecological effects of sub-Antarctic fisheries for Patagonian toothfish. In 2000, he took up a lecturing position in the Zoology Department at La Trobe University, where he established the Sea Mammal Ecology Group. In 2004 he moved to South Australia to take up a position as Principal Research Scientist with SARDI Aquatic Sciences where he heads the Threatened, Endangered and Protected Species (TEPS) Subprogram. He coordinates a number of significant research programs that focus around the foraging and population ecology of pelagic predators, and their trophic and operational interactions with commercial fisheries. He provide key capabilities within MISA's (Marine Innovation SA) Ecosystem Services node, has honorary academic positions at both Adelaide and Flinders Universities, and is actively involved in graduate and post-graduate supervision of students. He has published over 60 scientific papers, and supervised 17 PhD and 13 Honours students.

Professional appointments:

Current: Principal Research Scientist and SubProgram Leader – Threatened, Endangered and Protected Species. Marine Environment and Ecology Program, SARDI Aquatic Sciences.

Associate Professor, School of Biological Sciences, Flinders University (Full Academic Status)

Senior Lecturer, School of Earth & Biological Sciences, Adelaide University (Affiliate status)

2003 – 2008: SubProgram Leader – Pelagic Ecosystems. Wild Fisheries Program, SARDI Aquatic Sciences.

2000-2004: Senior Lecturer, Sea Mammal Ecology



Group, Department of Zoology, Latrobe University, Bundoora, Victoria, Australia
1998-2000: Marine Mammal Ecologist, CSIRO – Division of Marine Research, Tasmania.
1995–1997: Scientific Officer - Tasmanian Department of Environment and Land Management, Wildlife Management Section - Marine Ecosystems.
1992–1994: Post-doctoral Research Fellow. Smithsonian Institution, National Zoological Park, Washington, DC USA

Research and consulting:

The primary areas of research includes a broad-scale study of the pelagic ecology of the eastern Great Australian Bight, with a focus on the role of small pelagic fish, and the effects of fishing on populations of seabirds and marine mammals. Implicit in this research is an understanding of the trophic pathways that sustain commercial fish production and high-trophic predator populations, and the development of ecological performance measures and reference points to assess the ecological sustainability of fisheries and ecosystem health.

The application of ecological models and ecological performance measures for other management purposes such as marine protected area planning and management, and the application of high trophic level predators as sentinels of change in marine ecosystems, especially in climate change research are also being developed.

Other projects include research to support the conservation and management of the threatened Australian sea lion. This includes research on the population and foraging ecology of the species to support conservation and management objectives, and the development of mitigation strategies to reduce the impacts of bycatch in commercial fisheries.

Selected recent publications:

Goldsworthy SD., Page BC (2007) A Risk-Assessment Approach to Evaluating the Significance of Seal Bycatch in two Australian Fisheries. *Biological Conservation* 139: 269-285



Lancaster, M.L., **Goldsworthy SD**, and Sunnucks P (2007) Multiple mating strategies explain unexpected mixing of New Zealand fur seals with two congeners in a recently recolonised population. *Molecular Ecology*. 16(24): 5267- 5276

Lancaster, M.L., Bradshaw C.J.A., **Goldsworthy, S.D.** and Sunnucks, P. (2007) Lower reproductive success in hybrid fur seal males indicates fitness costs to hybridization. *Molecular Ecology*. 16(15): 3187-3197.

McKenzie, J., Page, B., **Goldsworthy, S.D.**, and Hindell, M.A. (2007) Growth strategies of New Zealand fur seals (*Arctocephalus forsteri*). *Journal of Zoology (London)*. 272: 377-389.

Lancaster, M. L., Gemmell, N. J., Negro, S. **Goldsworthy, S.** Sunnucks P. (2006) Ménage à trois on Macquarie Island: hybridization among three species of fur seal (*Arctocephalus spp.*) following historical population extinction. *Molecular Ecology* 15, 3681-3692

McIntosh, R.R., Page, B., **Goldsworthy, S.D.** (2006) Dietary analysis of regurgitates and stomach samples from free-living Australian sea lions. *Wildlife Research*. 33: 661-669.

Page B, J. McKenzie, M.D. Sumner, M. Coyne, and **S.D. Goldsworthy** (2006) Spatial separation of foraging habitats among New Zealand fur seals. *Marine Ecology Progress Series*. 323: 263-279

McIntosh, R. R., Shaughnessy, P. D. and **Goldsworthy, S. D.** (2006) Mark-recapture estimates of pup production for the Australian sea lion, *Neophoca cinerea* at Seal Bay Conservation Park, South Australia. In: A.W. Trites, S.K. Atkinson, D.P. DeMaster, L.W. Fritz, T.S. Gelatt, L.D. Rea and K.M. Wynne (eds) *Sea Lions of the World*. Alaska Sea Grant College Program, University of Alaska: Fairbanks, Alaska. pp 353-368.

Shaughnessy, P. D., McIntosh, R. R., **Goldsworthy, S. D.**, Dennis, T. E., and Berris, M. (2006) Trends in abundance of Australian sea lions, *Neophoca cinerea*, at Seal Bay, Kangaroo Island, South Australia. In: A.W. Trites, S.K. Atkinson, D.P. DeMaster, L.W. Fritz, T.S. Gelatt, L.D. Rea and K.M. Wynne (eds) *Sea Lions of the World*. Alaska Sea Grant College Program, University of Alaska: Fairbanks, Alaska. pp 325-351.

Hamer, D.J., and **Goldsworthy, S.D.** (2006) Seal fishery interactions: identifying the environmental and operational aspects of a trawl fishery that contribute to by-catch and mortality of Australian fur seals (*Arctocephalus pusillus doriferus*). *Biological Conservation* 130: 517-529

Goldsworthy SD (2006) Maternal strategies of the New Zealand fur seal: evidence for interannual variability in provisioning and pup growth strategies. *Australian Journal of Zoology* 54(1): 31-44.

McKenzie, J., Parry, L.J., Page, B., **Goldsworthy, S.D.** (2005) Estimation of pregnancy rates and reproductive

failure in New Zealand fur seals (*Arctocephalus forsteri*). *Journal of Mammalogy* 86: 1237-1246.

Page, B., McKenzie, J., **Goldsworthy SD** (2005) Intersexual differences in New Zealand fur seal diving behaviour. *Marine Ecology Progress Series*. 304: 249-264

Einoder, L.D., **Goldsworthy, S.D.** (2005) Foraging flights of short-tailed shearwaters (*Puffinus tenuirostris*) from Althorpe Island: assessing their use of neritic waters. *Transactions of the Royal Society of South Australia* 129: 209-216

Baylis, A.M.M., Page, B., Peters, K., McIntosh, R., McKenzie, J., and **Goldsworthy, S** (2005) The ontogeny of diving behaviour in New Zealand fur seal pups (*Arctocephalus forsteri*). *Canadian Journal of Zoology* 89: 1149-1161.

Page B. McKenzie J. Hindell MA. **Goldsworthy SD.** (2005) Drift dives by male New Zealand fur seals (*Arctocephalus forsteri*). *Canadian Journal of Zoology* 83(2): 293-300

Page, B., McKenzie, J., **Goldsworthy SD** (2005) Dietary resource partitioning among sympatric New Zealand and Australian fur seals. *Marine Ecology Progress Series*. 293: 283-302

Goldsworthy SD, Lea, M-A., and Guinet, C (2004) Comparison of mass-transfer and isotopic dilution methods for estimating milk intake in Antarctic fur seal pups. *Polar Biology* 27: 801-809.

Page, B., McKenzie, J., McIntosh, R., Baylis, A., Morrissey, A., Calvert, N., Haase, T., Berris, M., Dowie, D., Shaughnessy, P. and **Goldsworthy, S.D.** (2004). Entanglement of Australian sea lions and New Zealand fur seals in lost fishing gear and other marine debris before and after Government and industry attempts to reduce the problem. *Marine Pollution Bulletin* 49: 33-42.

Goldsworthy SD, Bulman C, He X, Larcombe J, and Littnan C (2003) Trophic interactions between marine mammals and Australian fisheries: an ecosystem approach. In: Gales N, Hindell M, and Kirkwood R. (eds) *Marine Mammals and Humans: Fisheries, tourism and management*. CSIRO Publications. Pp. 62-99.

Contact

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