

SAM McCLATCHIE

Supervisory Fisheries Oceanographer
Southwest Fisheries Science Center, National Marine Fisheries Service
8604 La Jolla Shores Drive, La Jolla, CA 92037, USA
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Research homepage: (<http://home.roadrunner.com/~fishocean/>)

Personal

Place & date of birth: Tacoma, Washington, U.S.A., 28 September 1955

Citizenships: USA (by birth), New Zealand (by naturalisation)

Marital status: Married to Elena Turin

Languages: English (native), Spanish (intermediate)

Education

- 1985 PhD in Oceanography. Dalhousie University, Halifax, Nova Scotia, Canada.
 PhD thesis: "Feeding rates, selectivities and behaviour of euphausiid Crustaceans"
- 1979 First Class Honours BSc in Zoology, University of Canterbury, Christchurch, New Zealand.

Other relevant skills

Competent in R statistical language, all aspects of Linux, Echoview, as well as MacOSX and Windows.

Honours & awards

- Japan Science & Technology Research Fellow, 1998
- Alexander von Humboldt Research Fellowship, declined 1990.
- Universite Laval, Quebec Research Associateship (OPEN), declined 1990.
- University of Cape Town Postdoctoral Fellowship, declined 1989
- New Zealand University Grants Committee Postdoctoral Fellowship 1986-1989
- Dalhousie Graduate Fellowship, 1981-1985
- NSF Graduate Fellowship Honourable Mention, 1981
- First Class Honours in Zoology, 1979.

Employment history

- 2006 - present Research Oceanographer, Southwest Fisheries Science Center, NOAA, NMFS, La Jolla, CA, USA
- 2003 - 2006 Senior Research Scientist, South Australian Research & Development Institute (SARDI Aquatic Sciences), Australia
- 1995 - 2003 Research scientist, fisheries acoustics, National Institute of Water and Atmospheric Research (NIWA) , New Zealand
- 1992 - 1995 Research Scientist, MAF Fisheries South, Dunedin, New Zealand
- 1990 - 1992 Research Associate, Department of Oceanography, Dalhousie University, Halifax, Nova Scotia, Canada.
- 1990 1990 Postdoctoral Associate at Ecology & Systematics, Cornell University, New York, USA
- 1989 - 1990 Temporary joint appointment between Zoology & Portobello Marine Laboratory, University of Otago, , New Zealand
- 1986-1989 UGC Postdoctoral Fellow at Portobello Marine Laboratory, University of Otago, New Zealand

Recent collaborators (last 2 years)

Ed Weber, Russ Vetter, Kevin Hill, Bill Watson, Andrew Thompson, Nancy Lo, Suzanne Kohin, & Heidi Dewar FRD SWFSC, La Jolla, CA
Karen Nieto (NRC postdoc) & Akinori Takasuka (visiting scientist)
Art Miller & Guillermo Auad, Climate Research Division, Scripps Institution of Oceanography, La Jolla, CA
Ralf Goericke, Dan Rudnick & Mati Kahru , Scripps Institution of Oceanography, La Jolla, CA
Tony Koslow, CalCOFI Director, Scripps Institution of Oceanography, La Jolla, CA
Steven Bograd, ERD SWFSC, Monterey, CA

Proposal Reviewer for

- NOAA, US Department of Commerce proposals (USA)
- National Science Foundation proposals (USA)
- National Undersea Research Program (USA)
- National Environmental Research Council proposals (UK)
- Wellcome Trust Joint Infrastructure Fund proposals (UK)
- Natural Sciences & Engineering Research Council of Canada proposals
- Foundation for Research Science and Technology proposals (New Zealand)
- CSIRO National Facility Southern Surveyor proposals (Australia)

Manuscript Reviewer for

- ICES Journal of Marine Science
- Ecology
- Marine Biology
- Marine Ecology Progress Series
- New Zealand Journal of Marine & Freshwater Research
- Fisheries Research
- CCAMLR Science
- South African Journal of Marine Science
- Ciencias Marinas
- Journal of Crustacean Biology
- Oceanography
- Limnology and Oceanography
- Fisheries Oceanography
- Progress in Oceanography
- Continental Shelf Research
- Deep-Sea Research

Committees

Member on U.S. National Science Foundation Review Panel, Washington D.C., 1999 & 2004

Member on Foundation for Research, Science and Technology (FRST) Marine Climate and Geology Advisory Committee (1994-1996)

Advisory Committee representative for FRST Review of NIWA and Cawthron Institute Coastal and Estuarine Programs (1994)

Member on NIWA Research and Development Committee. 1998-2000.

Publications

Recent papers are available at my personal website

<http://home.roadrunner.com/~fishocean/>

Submitted papers:

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- Currie, D.R., **McClatchie, S.**, Middleton, J.F. and Nayar, S. Biophysical factors affecting the distribution of demersal fish around a submarine canyon off the Bonney Coast, South Australia. *Fisheries Oceanography*.

Published journal papers:

- McClatchie, S.**, Goericke, R. Rich Cosgrove, R. and Vetter, R. In press. Oxygen in the Southern California Bight: multidecadal trends and implications for demersal fisheries. *Geophysical Research Letters*.
-
- McClatchie, S.**, Goericke, R., Auad, G. and Hill, K. In press. Re-assessing the temperature index for Pacific sardine (*Sardinops sagax*) stock assessment. *Canadian Journal of Fisheries and Aquatic Sciences*.
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- Weber, E.D. and **McClatchie, S.** 2010. Predictive Models of Northern Anchovy *Engraulis mordax* and Pacific Sardine *Sardinops sagax* Spawning Habitat in the California Current. *Marine Ecology Progress Series* 406: 251-263.
-
- Weber, E.D. and **McClatchie, S.** 2009. rcalcofi: Analysis and visualization of CalCOFI data in R. *CalCOFI Reports* 50: 178-185.
- McClatchie, S.**, Goericke, R, Schwing, F. and 29 other authors. 2009. The state of the California Current, 2008–2009: Cold conditions drive regional differences. *CalCOFI Reports* 50: 43-68.
-
- McClatchie, S.**, Goericke, R, Koslow, A.J. and 24 other authors. 2008. The state of the California Current, 2007–2008: La Niña conditions and their effects on the ecosystem. *CalCOFI Reports* 49: 39-76.
- Vetter, R., Kohin, S., Preti, A., **McClatchie, S.** and Dewar, H. 2008. Predatory interactions and niche overlap between mako shark, *Isurus oxyrinchus*, and jumbo squid, *Dosidicus gigas*, in the California Current. *CalCOFI Report* 49, 2008: 142-156.
- McClatchie, S.**, P.J. Rogers, and L. McLeay (2007). Importance of scale to the relationship between abundance of sardine larvae, stability and food. *Limnology & Oceanography* 52(4): 1570-1579.
- McClatchie, S.**, J.F. Middleton and T.M. Ward (2006). Water mass and alongshore variation in upwelling intensity in the eastern Great Australian Bight. *Journal of*

Geophysical Research 111, No.C8, C08007, doi:10.1029/2004JC002699.

- Ward, T.M., L. Mcleay, W. Dimmlich, P.J. Rogers, **S. McClatchie**, R. Matthews, J. Kämpf and P.D. van Ruth (2006). Pelagic ecology of a northern boundary current system: effects of upwelling on the production and distribution of sardine (*Sardinops sagax*), anchovy (*Engraulis australis*) and southern bluefin tuna (*Thunnus maccoyii*) in the Great Australian Bight. *Fisheries Oceanography* 15: 191.
- **McClatchie, S.**, M. Pinkerton and M.E. Livingston (2005). Relating the distribution of a semi-demersal fish, *Macruronus novaezelandiae*, to their pelagic food supply. *Deep-Sea Research* 52(8): 1489-1501.
- **McClatchie, S.** and R.F. Coombs (2005). Low target strength fish in mixed species assemblages: the case of orange roughy. *Fisheries Research* 72, 185-192.
- **McClatchie, S.** and R.F. Coombs (2005). Spatial variability of orange roughy around the Northwest Hills on the Chatham Rise, New Zealand. *Deep-Sea Research I* 52, 589-603.
- Sawada, K.; Takahashi, H.; Takao, Y.; Watanabe, K.; Horne, J.K.; **McClatchie, S.**; Abe, K. 2004. Development of an acoustic-optical system to estimate target strengths and tilt angles from fish aggregations. *Oceans04/ Tech-Ocean04 Proceedings*, 395-400.
- Takahashi, H.; Sawada, K.; Watanabe, K.; Horne, J.K.; **McClatchie, S.**; Takao, Y.; Abe, K. 2004. Development of a stereo TV camera system to complement fish school measurements by quantitative echosounder. *Oceans04/ Tech-Ocean04 Proceedings*, 409-414.
- **McClatchie, S.**, R.F. Coombs and G. Macaulay (2004) Acoustic backscatter and copepod secondary production across the Subtropical Front to the east of New Zealand. *Journal of Geophysical Research Oceans* 109, C03013, doi:10.1029/2000JC000751.
- **McClatchie, S.** and A. Dunford (2003). Estimated biomass of vertically migrating mesopelagic fish off New Zealand. *Deep-Sea Research* 50: 1263-1281.
- **McClatchie, S.**, G.J. Macaulay and R.F. Coombs. (2003). A requiem for the use of $20\log_{10}$ length for acoustic target strength with special reference to deep-sea fishes. *ICES Journal of Marine Science* 60(2): 419-428
- Doonan, J., R.F. Coombs and **S. McClatchie** (2003). Absorption of sound in seawater in relation to estimation of deepwater fish biomass. *ICES Journal of Marine Science* 60: 1047-1055.
- **McClatchie, S.**, R. Thorne, P. Grimes and S. Hanchet. 2000. Ground truth and

target identification for fisheries acoustics. Fisheries Research 47(2-3): 173-191. Special Issue on Fisheries Acoustics.

- **McClatchie, S.** and Z. Ye. 2000. Target strength of the deepwater fish, orange roughy (*Hoplostethus atlanticus*). Part II: Modelling. Journal of the Acoustical Society of America 107(3): 1280-1285.
- **McClatchie, S.**, Macaulay, G., Coombs, R.F., Grimes, P. and A. Hart. 1999. Target strength of an oily deep-water fish, orange roughy (*Hoplostethus atlanticus*). Part I: Experiments. Journal of the Acoustical Society of America 106(1), 131-142.
- Jacob, W., **S. McClatchie**, P.K. Probert and R. Hurst. 1998. Demersal fish assemblages off southern New Zealand. Deep Sea Research 45(12): 2119-2155
- O'Driscoll, R.L. and **S. McClatchie**. 1998. Spatial distribution of planktivorous fish schools in relation to krill abundance and local hydrography off Otago, New Zealand. Deep-Sea Research Special Issue 45: 1295-1325.
- Ye, Z. and **S. McClatchie**. 1998. On inferring speed of sound in marine organisms. Journal of the Acoustical Society of America 103(3): 1667.
- **McClatchie, S.**, G. Macaulay, S. Hanchet and R.F. Coombs (1998) Target strength of southern blue whiting (*Micromesistius australis*) from swimbladder modelling, split beam and deconvolution. ICES Journal of Marine Science 55: 482-493.
- **McClatchie, S.**, R.B. Millar, F. Webster, P.J. Lester, R. Hurst and N. Bagley (1996). Demersal fish community diversity off New Zealand: Is it related to depth, latitude and regional surface phytoplankton? Deep-Sea Research Part 1 44(4): 647-668.
- **McClatchie, S.**, J. Alsop, and R. Coombs. (1996) A re-evaluation of relationships between fish size, acoustic frequency and target strength. ICES Journal of Marine Science 53(5): 780791.
- **McClatchie, S.**, J. Alsop, Z. Ye and R. Coombs. (1996) Consequence of swimbladder model choice and fish orientation to target strength of three New Zealand fish species. ICES Journal of Marine Science 53(5): 847862.
- **McClatchie, S.**, C.H. Greene, M.C. Macaulay and D. Sturley. (1994). Fine-scale horizontal variability Antarctic krill biomass: implications for stock assessment. ICES Journal of Marine Science 51: 11-18.
- Pilditch, C. and **S. McClatchie**. (1994). Quantitative analysis of grazing and carnivory in the krill *Nyctiphanes australis*, with an examination of the effect of alternate prey. Marine Ecology Progress Series 107: 41-53.
- **McClatchie, S.** (1992). Time series measurement of grazing rates of zooplankton

and bivalves. Journal of Plankton Research 14(2): 183-200 Invited Paper

- **McClatchie, S.**, S. Rakusa-Suszczewski and K. Filcek (1991). Seasonal growth and mortality of *Euphausia superba* in Admiralty Bay, South Shetland Islands, Antarctica. ICES Journal of Marine Science 48: 335-342.
- **McClatchie, S.**, J.B. Jillett and P. Gerring. (1991) Observations of gulls foraging on beach-stranded plankton in Otago Harbour, New Zealand. Limnology and Oceanography 36(6): 1195-1200.
- Greene, C.H., T.K. Stanton, P.H. Wiebe and **S. McClatchie**. (1991) Acoustic estimates of Antarctic krill. Nature 349: 110.
- **McClatchie, S.**, P. Jaquier, C. Pilditch and R. Kawachi. (1991). Grazing rates of *Nyctiphanes australis* (Euphausiacea) in the laboratory and Otago Harbour, measured by three independent methods. Continental Shelf Research 11(1): 1-22.
- **McClatchie, S.**, R. Kawachi and D.E. Dalley. (1990) Epizoic diatoms on the euphausiid *Nyctiphanes australis*: consequences for gut fluorescence measurements. Marine Biology 46(3): 631-646.
- **McClatchie, S.**; D. Hutchinson and K. Nordin. (1989) Aggregation of avian predators and zooplankton prey in Otago shelf waters, New Zealand. Journal of Plankton Research 11(2): 361-374.
- Dalley, D.E. and **S. McClatchie**. (1989) Functional feeding morphology of the euphausiid *Nyctiphanes australis*. Marine Biology 101: 195-203.
- **McClatchie, S.** (1988). Functional response of the euphausiid *Thysanoessa raschii* grazing on small diatoms and toxic dinoflagellates. Journal of Marine Research 46: 631-646.
- **McClatchie, S.** (1988). Food limited growth of Antarctic krill, *Euphausia superba*, in Admiralty Bay, South Shetland Islands, Antarctica. Continental Shelf Research 8: 329-345.
- **McClatchie, S.** (1987). Experimental test of an allometric method for estimating potential copepod production. Marine Biology 94: 597-603.
- **McClatchie, S.** (1986). Time-series feeding rates of the euphausiid *Thysanoessa raschii* in a temporally patchy food environment. Limnology & Oceanography 31(3): 469-477.
- **McClatchie, S.** and M.R. Lewis. (1986). Limitations of grazing rate equations: the case for time-series measurements. Marine Biology 92: 135-140.

- **McClatchie, S.** (1985). Feeding behaviour of *Meganyctiphanes norvegica* (M.Sars) (Crustacea: Euphausiacea). *Journal of Experimental Marine Biology and Ecology* 86(3): 271-284.
- **McClatchie, S.** and C.M. Boyd. (1983). Morphological study of sieve efficiencies and mandibular surfaces in the Antarctic krill, *Euphausia superba*. *Canadian Journal of Fisheries and Aquatic Sciences* 40(7): 955-967.
- **McClatchie, S.,** S.K. Juniper and G.A. Knox. (1982). Structure of a mudflat diatom community in the Avon-Heathcote estuary, New Zealand. *New Zealand Journal of Marine and Freshwater Research* 16: 299-309.
- **McClatchie, S.** (1979). *Zeacumantus subcarinatus* grazing on *Ulva lactuca*. *Mauri Ora* 9: 17-24.

Published Conference papers (presentations are not listed):

- McClatchie, S., Coombs, R.F. (2000). Giant internal waves and mid-water fishes in the Subtropical Fronts off New Zealand. Conference Proceedings of the 5th European Conference on Underwater Acoustics, Lyon, France, 10-13 July 2000.

Reports and popular articles:

- McClatchie, S. (Ed.) 2009. Report on the NMFS California Current Ecosystem Survey (CCES) (April and July-August 2008). NOAA-TM-NMFS-SWFSC-438.
- McClatchie, S., J Middleton, C Pattiaratchi, D Currie, G Kendrick. 2006. [The South-west Marine Region: Ecosystems and Key Species Groups](http://www.environment.gov.au/coasts/mbp/publications/south-west/sw-ecosystems.html) <<http://www.environment.gov.au/coasts/mbp/publications/south-west/sw-ecosystems.html>>
- Ward, T.M., L.J. McLeay and S. McClatchie. Spawning biomass of the sardine (*Sardinops sagax*) in South Australia in 2004. Report to PIRSA Fisheries.
- McClatchie, S. & R.F. Coombs. 2002. Are changes in orange roughy density detectable in acoustic backscatter from a mixed species assemblage? Final Research Report for Ministry of Fisheries Research Project ORH2000/01. NIWA, New Zealand.
- McClatchie, S. and R.F. Coombs 2002. Spatial variability of orange roughy around the Northwest Hills on the Chatham Rise, New Zealand. Final Research Report for Ministry of Fisheries Research Project ORH2000/01. NIWA, New Zealand.
- McClatchie, S. R. Coombs, G. Macaulay. 2001. 'Bugs', physics and production in the Subtropical Front. *NIWA Water & Atmosphere* 9(3): 19-21.
- McClatchie, S. R. Coombs, & G. Macaulay. 2001. Are there more fish in the

- front? NIWA Water & Atmosphere 9(1): 13-16.
- - McClatchie, S. & R.F. Coombs 2000 In situ target strength measurements of orange roughy (*Hoplostethus atlanticus*). Final Research Report for Ministry of Fisheries Research Project ORH9801. NIWA, New Zealand.
 -
 - McClatchie, S. R. Coombs, G. Macaulay, P. Grimes, A. Hart and D. Tracey. 1999. In situ target strength of orange roughy and modelling target strength of associated bycatch species. Ministry of Fisheries client report.
 -
 - McClatchie, S. 1999. Re-examining acoustic absorption in relation to orange roughy biomass assessment. Ministry of Fisheries client report.
 -
 - McClatchie, S; Chiswell, S.M; Richards, L; Uddstrom, M. and N. Oien. 1998. Scaling the Chatham Rise. Water & Atmosphere 6(4): 12-14.
 -
 - McClatchie, S. 1998. Something dynamic is happening on the Chatham Rise. NIWA Water & Atmosphere 6(1): 17-20.
 -
 - McClatchie, S., G. Macaulay, P. Cordue, R. Coombs, P. Grimes and A. Hart 1996. Live orange roughy brought back for acoustic experiments. Seafood New Zealand 4(11): 55-56. December 1996.
 -
 - McClatchie, S., G. Macaulay, R. Coombs and P. Cordue 1996. NIWA's fisheries acoustics program: how can it help the fishing industry? Seafood New Zealand 4(5): 40-43. July 1996.
 -
 - McClatchie, S., G. Macaulay, R. Coombs and P. Cordue 1996. A searchlight in the sea: NIWA's fisheries acoustics program. NIWA Water & Atmosphere 4(1):13-17.
 -
 - Francis, M.P. and S. McClatchie 1995. Elephant fish. Seafood New Zealand November 1995.
 -
 - McClatchie, S., R.B. Millar, F. Webster, P. Lester, R. Hurst and N. Bagley. 1995. Biodiversity. Seafood New Zealand. February 1995.
 -
 - FRST review panel 1994. Review of NIWA Coastal and estuarine program.
 -
 - FRST review panel 1994. Review of Cawthron Institute Estuarine and Coastal program.
 -
 - McClatchie, S. and P. Lester. 1994. Stock assessment of the elephant fish (*Callorhynchus millii*). New Zealand Fisheries Assessment Research Document 94/6. MAF Fisheries, Greta Point, Wellington.
 -
 - McClatchie, S. 1994. Bioacoustical oceanography workshop, Friday Harbor

Laboratory, Washington, USA, July/ August 193. Overseas Travel Report. MAF Fisheries South Internal Report 1, 16 p.

-
- McClatchie, S. 1994. Explaining patterns in the distribution of fish communities off south east New Zealand. Seafood New Zealand. March 1994.
-
- McClatchie, S. and L. Teirney. 1993. Using patterns in fish communities in the management of the multispecies trawl fishery. New Zealand Professional Fisherman. March 1993.

Sea-going experience

- Numerous day trips on small boats. No major problems with seasickness.
- NOAA ship Miller Freeman: California Current Ecosystem Survey (chief scientist), 2008
- MV NGERIN: Egg production survey of sardines, 2004.
- MRV TANGAROA: Acoustic survey and target strength on Chatham Rise, New Zealand, 1994, 1996, 1997, 1998, 1999, 2000, 2001.
- MRV TANGAROA: Multidisciplinary oceanographic work on Chatham Rise, New Zealand, 1997, 1999, 2001 (see New Zealand Geographic Dec 2001 issue "Probing the deep ocean").
- MRV KAHAROA & TANGAROA: trawl survey cruise to Canterbury Bight, New Zealand, 1993 & 1994.
- RV SURVEYOR cruise to Southern Ocean, Atlantic sector, 1990. Acoustic assessment of krill populations.
- CSS PANDORA: (mothership for PISCES submersible) St. Margarets Bay, Nova Scotia, 1985.
- CSS DAWSON: Biological and descriptive physical oceanography. Scotian Shelf, 1982.
- RV GYRE: Comparative sampling of warm-core and cold-core eddies. Gulf of Mexico, 1981.

Teaching experience

Thesis supervision of 4 Masters students and 1 PhD University of Otago:

R. O'Driscoll 1997. PhD thesis applying sidescan sonar to examine patchiness of fish schools in relation to micronekton, seabirds, and small scale physical features. Current post: Research scientist with NIWA.

W. Jacobs 1995. Demersal fish assemblages off southern New Zealand. MSc. thesis. Thesis grade B+. Current post: Fisheries scientist for Canadian Indian tribe.

D.E. Dalley 1990. "Larval development of feeding appendages and functional morphology of the krill, *Nyctiphanes australis*". MSc. thesis. Thesis grade: B+. Current position: Mother and homemaker.

R. Kawachi 1990. "Diurnal variation in feeding activity of the krill *Nyctiphanes australis*".

MSc. thesis. Thesis grade A-. Last known position: Zoology technician at University of Otago.

C. Pilditch 1991. "Functional response of *Nyctiphanes australis* (Euphausiacea) feeding on *Chaetoceros gracilis* (Bacillariophyceae) and *Acartia* spp. (Copepoda)". MSc thesis. Thesis grade A+. Current position: Faculty, Earth Sciences, University Waikato.

Lecturing

1993-1996: graduate course in Fisheries, Marine Science, University of Otago.

1991: 4th year Fisheries Science at Dalhousie University

1991: MSc. Marine Affairs at Dalhousie University

1989: MSc. Marine Science at University of Otago

1987. 3rd year Marine Biology at University of Otago

1986: MSc. Marine Science at University of Otago

1983 - 1985: Laboratory teaching assistant for graduate level course in biological oceanography at Dalhousie University.

1981: Laboratory teaching assistant for first year undergraduate botany course, Texas A&M University.

Professional societies

ASLO, Acoustical Society of America , Oceanography Society, American Association for the Advancement of Science, Nature Conservancy.

Other activities

My recreational activities include yoga (for which I am a qualified instructor), Latin American dance, sea kayaking, hiking, and swimming. I am a keen reader, and enjoy both a lively social life and travelling with my wife.