

CURRICULUM VITAE

1. NAME

David Arthur Demer, Ph.D.

2. PROFESSIONAL ADDRESS

Southwest Fisheries Science Center
8604 La Jolla Shores Drive
La Jolla, California, U.S.A., 92037

3. CURRENT TITLE/POSITION/GRADE

Leader, Advanced Survey Technologies Program / Supervisory Ocean Acoustics Engineer / ZP-4

4. EDUCATIONAL HISTORY

Ph.D., Electrical and Computer Engineering / Applied Ocean Science, 1994, UCSD/Scripps Institution of Oceanography, La Jolla, CA;
Major area: underwater acoustics and digital signal processing;
Dissertation: "The accuracy and precision of echo integration surveys of Antarctic krill;"
Committee: Drs Bill Hodgkiss (Chair), John Hildebrand, D. Van Holliday, Roger Hewitt, Jules Jaffe, Rob Pinkel, and Paul Smith.

B.S., Electrical and Computer Engineering, 1986, University of Arizona, Tucson, AZ, solid-state physics; microelectronics materials, fabrication and analysis

5. PROFESSIONAL HISTORY

2005-date Leader, Advanced Survey Technologies Program, Fisheries Resources Division, Southwest Fisheries Science Center, La Jolla, CA;
Grade: ZP-4, Supervisory Ocean Acoustics Engineer;
Supervisor: Dr. Roger P. Hewitt, Director, FRD/SWFSC;
Responsibilities / Major Accomplishments:

- Supervise and direct nine FTE's, contractors, and interns;
- Advise Bachelors, Masters and Ph.D. level students;
- Develop and employ numerous survey technologies and methods exemplified by: an instrumented autonomous underwater vehicle, multiple small craft, and a buoy array; a broad bandwidth multi-scattering hyperbaric chamber; and an autonomous echosounder with remote data acquisition and automated data processing; and
- Survey the dispersion and abundance of a number of fisheries resources including krill, coastal pelagic species, and rockfish.

2000-date Research Associate, Marine Physical Laboratory, Scripps Institution of Oceanography, La Jolla, CA;

Grade: non-salaried;

Supervisor: Professor William Kuperman, Director, MPL

1999-2005 Leader, Advanced Survey Technologies Program, Fisheries Resources Division, Southwest Fisheries Science Center, La Jolla, CA

Grade: ZP-4 Ocean Acoustics Engineer

Supervisors: Drs. John Hunter and Roger Hewitt, Directors, FRD/SWFSC
Responsibilities / Major Accomplishments:

- Largely expanded the scope of bioacoustical oceanographic research and expedited the development of survey technologies at SWFSC;
- Led NMFS in the acquisition, development and use of autonomous underwater vehicles for more accurate and efficient surveys of fish and zooplankton dispersion and abundance;
- Led the design, fabrication and use of instrumented small-craft and buoy arrays for surveying krill and observing predator-prey interactions, for the first time, in the nearshore regions of the Antarctic Peninsula;
- Developed the acoustic data collection and analysis protocols for the CCAMLR 2000 international survey of krill, and quantified the total uncertainty in the survey results; and
- Developed and validated a new target strength model for Antarctic krill which CCAMLR adopted, and revised estimates of krill dispersion and abundance in the Scotia Sea.

1990-1999 Research Engineer, Antarctic Ecosystems Research Division, Southwest Fisheries Science Center, La Jolla, CA

Grade: GS-13, Ocean Acoustics Engineer

Supervisors: Dr. Roger Hewitt, Group Leader, AERD/ SWFSC

Responsibilities / Major Accomplishments:

- Led Antarctic expeditions as Chief Scientist;
- Conducted research on underwater acoustics in support of U.S. commitments to the Convention for the Conservation of Antarctic Marine Living Resources (CCAMLR);
- Developed acoustical strategies and tools for assessing zooplankton and fish stocks including: techniques for quantifying uncertainty in echo integration; enhanced methods for *in-situ* target strength measurements; multi-frequency techniques for improved taxa identification and delineation; instrumented research platforms for economically studying ecosystems and predator-prey interactions over large time and space-scales; and acoustic Doppler techniques for behavioral observations of fish and zooplankton aggregations; and

- Designed and executed acoustical stock assessment surveys; related the results to predator foraging strategies; and participated in the domestic and international dissemination of the research findings.

1988-1989 Leader, Sort-Visual Laboratory, Fabrication Facility Number 7, Intel Corporation, Rio Rancho, NM;

Supervisor: Lynn Nanneman, Leader, Yield Analysis Engineering

Responsibilities / Major Accomplishments:

- Led an integrated circuit failure analysis and defect reduction group; supervised 4 laboratory technicians, directed 6.
- Shifted emphasis in quality control from reacting to product failures to proactively monitoring each step; and
- Developed and implemented statistical quality control system to improve the yield of microelectronic memory, microcontroller and microprocessor fabrication.

1987-1988 Product Engineer, Fabrication Facility Number 7, Intel Corporation, Rio Rancho, NM;

Supervisor: E.J. Peiker, Leader, Yield Analysis Engineering

Responsibilities / Major Accomplishments:

- Employed numerous analytical techniques including: scanning electron microscopy, energy dispersive x-ray analysis, micro-probing, capacitance-voltage testing, liquid crystal hot-spot detection, plasma- and wet-chemistry etches and others.
- Developed liquid crystal hot-spot detection for improved localization and visual identification of sort defects in EPROM arrays. Specified and developed plasma etching system for reverse processing of integrated circuits.

1985-1987 Research Technician, Microelectronics Laboratory, University of Arizona, Tucson, AZ;

Supervisor: Professor Robert Carlisle

Responsibilities / Major Accomplishments:

- Developed and employed expertise in scanning electron microscopy and energy dispersive x-ray analysis techniques;
- Participated in research to develop novel plasma etching techniques for fabricating Schottky diodes, vertical capacitors and vias in silicon wafers;
- Studied the electrical effect of ion-damaged silicon surfaces, Schottky diode fabrication and via etching;
- Conducted uniformity and profile studies of plasma-etched silicon wafers using scanning electron microscopy (senior thesis); and
- Continued SEM analysis of plasma-etched silicon to determine temperature/etch depth and temperature/etch profile relationships (honors independent study).

6. AWARDS

2006 NOAA Fisheries Service Employee of the Year Award.

2006 ICES Service Award, in recognition of dedicated work for ICES as Chair of the Working Group on Fisheries Acoustic Science and Technology (WGFAST) for three years from 1 January, 2004 to 31 December, 2006.

2006 Fifteen year service award, NMFS/SWFSC

2006 Spot Award for exceptional contribution to the Fisheries Resources Division

2001 Ten year service award, NMFS/SWFSC

2000-2006 Special Act Award and bonus, NMFS/SWFSC

1995 Superior Qualifications Appointment, NMFS/SWFSC

1993-1999 Certificate of Recognition and bonus for high level of performance, NMFS/ SWFSC

1991 Antarctica Service Medal of the United States of America, presented by the National Science Foundation and the Secretary of the Navy

1989-1994 Hertz Foundation Fellowship recipient, UCSD/SIO

7. PUBLICATIONS

a. Papers published in peer-reviewed journals

R. P. Hewitt and **D.A. Demer**, “Krill abundance,” *Nature*. 353-310. (1991).

D.A. Demer and R.P. Hewitt, “Calibration of an acoustic echo-integration system in a deep tank, with system gain comparisons over standard sphere material, water temperature, and time,” *CCAMLR Selected Scientific Papers*, SC-CAMLR-SSP 9:127-144 (1992).

R.P. Hewitt and **D.A. Demer**, “Dispersion and abundance of Antarctic krill in the vicinity of Elephant Island in the 1992 austral summer,” *Mar. Ecol. Prog. Ser.* 99: 29-39. (1993).

R.P. Hewitt and **D.A. Demer**, “Acoustics estimates of krill biomass in the Elephant Island area: 1981-1993,” *CCAMLR Science* 1: 1-7. (1994).

D.A. Demer and R. P. Hewitt, “Bias in acoustic biomass estimates of *Euphausia superba* due to diel migration,” *Deep-Sea Res. II*, 42 (4): 455-475. (1995).

D.A. Demer and L.V. Martin, "Zooplankton target strength: Volumetric or areal dependence?," *J. Acoust. Soc. Am.* 98 (2,1): 1111-1118. (1995).

R. P. Hewitt and **D.A. Demer**, "Lateral target strength of Antarctic krill," *ICES Jour. Mar. Sci.*, 53(2): 297-302. (1996).

J.E. Zamon, C.H. Greene, E. Meir, **D.A. Demer**, R.P. Hewitt and S.N. Sexton, "Three-dimensional visualization of acoustic observations of the prey field of foraging chinstrap penguins," *Mar. Ecol. Prog. Ser.*, 131: 1-10. (1996).

R. P. Hewitt, G.W. Watters and **D.A. Demer**, "Indices of prey availability near the Seal Island CEMP site: 1990 through 1996," *CCAMLR Science* 4:37-45, (1997).

D.A. Croll, B.R. Tershy, R.P. Hewitt, **D.A. Demer**, P.C. Fiedler, S.E. Smith, W.A. Armstrong, J.M. Popp, T. Kiekhefer, V.R. Lopez, J. Urban and D. Gendron, "An integrated approach to the foraging ecology of marine birds and mammals," *Deep Sea Res. II* (45): 1353-1371. (1998).

P. Fiedler, S. Reilly, R. Hewitt, **D. Demer**, V. Philbrick, S. Smith, W. Armstrong, D. Croll, B. Tershy and B. Mate, "Blue whale habitat and prey in the Channel Islands," *Deep Sea Res. II* (45): 1781-1801. (1998).

S. Kim, V. Siegel, R. Hewitt, M. Nagonobu, **D. Demer**, T. Ichii, S. Kang, S. Kawaguchi, V. Loeb, A. Amos, K. Chung, O. Holm-Hansen, W. Lee, N. Silva and M. Stein, "Temporal changes in marine environments in the Antarctic Peninsula area during the 1994/95 austral summer," *Mem. Nat. Inst. Polar Res.* Special Issue No. 52:186-208, (1998).

E.A. Loggerwell, R.P. Hewitt and **D.A. Demer**, "Scale-dependent spatial variance patterns and correlations of seabirds and prey in southeastern Bering Sea as revealed by spectral analysis," *Ecography* 21: 212-223. (1998).

D.A. Demer, M.A. Soule and R.P. Hewitt, "A Multi-frequency method for improved accuracy and precision of in situ target strength measurements," *J. Acoust. Soc. Am.* 105 (4): 2359-2376. (1999).

G. Swartzman, R. Brodeur, J. Napp, D. Walsh, R. Hewitt, **D. Demer**, G. Hunt and E. Loggerwell, "Relating predator and prey spatial distributions in the Bering Sea using acoustic backscatter data," *Can. J. Fish. Aquat. Sci.* 56 (Suppl. 1): 188-198 (1999).

A.S. Brierley, **D.A. Demer**, J.L. Watkins and R.P. Hewitt, "Concordance of interannual fluctuations in acoustically estimated densities of Antarctic krill

around South Georgia and Elephant Islands: biological evidence of same-year teleconnections across the Scotia Sea,” *Marine Biology* 134: 675-681. (1999).

G. Swartzman, R. Brodeur, J. Napp, G. Hunt, **D. Demer** and R. Hewitt, “Spatial proximity of age-0 walleye Pollock (*Theragra chalcogramma*) to zooplankton near the Pribilof Islands, Bering Sea, Alaska,” *ICES Jour. Mar. Sci.* 56 (4): 545-560. (1999).

D.A. Demer, M. Barange and A. Boyd, “Measuring fish school velocities with an acoustic Doppler current profiler,” *Fisheries Research* 47:201-214 (2000).

R. P. Hewitt and **D.A. Demer**, “The use of acoustic sampling to estimate the dispersion and abundance of euphausiids, with an emphasis on Antarctic krill,” *Fisheries Research* 47:215-229 (2000).

M.E. Goebel, D.P. Costa, D.E. Crocker, J.T. Sterling and **D.A. Demer**, “Foraging Ranges and Dive Patterns in Relation to Bathymetry and Time-of-Day of Antarctic Fur Seals, Cape Shirreff, Livingston Island, Antarctica,” pp 47-50 in Antarctic Ecosystems: Models for Wider Ecological Understanding, Eds. W. Davison, C. Howard-Williams, and P. Broady, The Caxton Press, Christchurch, NZ (2000).

P.N. Trathan, J.L. Watkins, A.W.A. Murray, A.S. Brierley, I. Everson, I. C. Goss, J. Priddle, K. Reid, P. Ward, R.P. Hewitt, **D.A. Demer**, M. Naganobu, S. Kawaguchi, V. Sushin, S.M. Kasatkina, S. Hedley, S. Kim, T. Pauly, “The CCAMLR-2000 krill synoptic survey: a description of the rationale and design,” *CCAMLR Science*, 8, 1-23. (2001).

R.P. Hewitt, J.L. Watkins, M. Naganobu, P. Tshernyshkov, A.S. Brierley, **D.A. Demer**, S. Kasatkina, Y. Takao, C. Goss, A. Malyshko, M.A. Brandon, S. Kawaguchi, V. Siegel, P.N. Trathan, J.H. Emery, I. Everson and D.G.M. Miller, “Setting a precautionary catch limit for Antarctic krill,” *Oceanography*, 15(3):26-33. (2002).

J.H. Churnside, **D.A. Demer** and B. Mahmoudi, “A comparison of lidar and echosounder measurements of fish schools in the Gulf of Mexico,” *ICES Jour. Mar. Sci.*, 60:147-154 (2003).

D.A. Demer, S. Conti, J. De Rosny and P. Roux, “Absolute measurements of total target strength from reverberation in a cavity,” *J. Acoust. Soc. Am.*, 113(3):1387-1394 (2003).

S. Allen and **D.A. Demer**, “Detection and characterization of yellowfin and bluefin tuna using passive acoustical techniques,” *Fisheries Research*, 63:393-403 (2003).

S.G. Conti and **D.A. Demer**, “Wide-bandwidth acoustical characterization of anchovy and sardine from reverberation measurements in an echoic tank,” *ICES J. Mar. Sci.* 60:617-624 (2003).

R.P. Hewitt, **D.A. Demer**, J.H. Emery, “An 8-year cycle in krill biomass density inferred from acoustic surveys conducted in the vicinity of the South Shetland Islands during the austral summers of 1991-1992 through 2001-2002,” *Aquatic Living Resources*, 16:205-213 (2003).

D.A. Demer and S. Conti, “Reconciling theoretical versus empirical target strengths of krill; effects of phase variability on the distorted-wave, Born approximation,” *ICES J. Mar. Sci.*, 60(2):429-434 (2003). Erratum, 61:157-158 (2004).

D.A. Demer and S.G. Conti, “Validation of the stochastic distorted-wave, Born approximation model with broad bandwidth total target strength measurements of Antarctic krill,” *ICES J. Mar. Sci.*, 60:625-635 (2003). Erratum, 61: 155-156 (2004).

S.G. Conti, P. Roux, **D.A. Demer**, and J. De Rosny, “Measurement of the scattering and absorption cross sections of the human body,” *Applied Physics Letters*, 84(5):819-821 (2004).

M.A. Brandon, M.Naganobu, **D.A. Demer**, P. Chernyshkov, P.N. Trathan, S.E. Thorpe, T. Kameda, O.A. Berezinskiy, E.J. Hawker, S. Grant, “Physical oceanography in the Scotia Sea during the CCAMLR 2000 survey, austral summer 2000,” *Deep-Sea Research II*, 51:1301–1321 (2004).

O. Holm-Hansen, M. Naganobu, S. Kawaguchi, T. Kameda, I. Krasovski, P. Tchernyshkov, J. Priddle, R. Korb, M. Brandon, **D. Demer**, R.P. Hewitt, M. Kahru, C.D. Hewes, “Factors influencing the distribution, biomass, and productivity of phytoplankton in the Scotia Sea and adjoining waters,” *Deep-Sea Research II*, 51:1333–1350, (2004).

R.P. Hewitt, S. Kim, M. Naganobu, M. Gutierrez, D. Kang, Y. Takao, J. Quinones, Y.-H. Lee, H.-C. Shin, S. Kawaguchi, J.H. Emery, **D.A. Demer**, V.J. Loeb, “Variation in the biomass density and demography of Antarctic krill in the vicinity of the South Shetland Islands during the 1999/2000 austral summer,” *Deep-Sea Research II*, 51:1411–1419, (2004).

RP. Hewitt, J. Watkins, M. Naganobu, V. Sushin, A.S. Brierley, **D.A. Demer**, S. Kasatkina, Y. Takao, C. Goss, A. Malyshko, M. Brandon, S. Kawaguchi, V. Siegel, P. Trathan, J. Emery, I. Everson, D. Miller, “Biomass of Antarctic krill in the Scotia Sea in January/February 2000 and its use in revising an estimate of precautionary yield,” *Deep-Sea Research II*, 51:1215–1236, (2004).

D.A. Demer, “An estimate of error for the CCAMLR 2000 survey estimate of krill biomass,” *Deep-Sea Research II*, 51:1237–1251 (2004).

D.E. McGehee, **D.A. Demer** and J.D. Warren, “Zooplankton in the Ligurian Sea: Part I. Characterization of their dispersion, relative abundance and environment during summer 1999,” *Journal of Plankton Research*, 26(12):1409-1418 (2004).

J.D. Warren, **D.A. Demer**, D.E. McGehee, R. Di Mento, and J.F. Borsani, “Zooplankton in the Ligurian Sea: Part II. Exploration of their physical and biological forcing functions during summer 2000,” *Journal of Plankton Research*, 26(12):1419-1427 (2004).

D.A. Demer, and S.G. Conti, “New target-strength model indicates more krill in the Southern Ocean,” *ICES Journal of Marine Science*, 62(1):25-32 (2005).

S.G. Conti, **D.A. Demer**, M.A. Soule, J.H.E. Conti, “An improved multiple-frequency method for measuring in-situ target strengths,” *ICES Journal of Marine Science*, 62(8):1636-1646 (2005).

S.G. Conti, **D.A. Demer**, and A.S. Brierley, "Broad bandwidth sound scattering and absorption from krill (*Meganyctiphanes norvegica*), Mysids (*Praunus flexuosus* and *Neomysis integer*) and shrimp (*Crangon crangon*)," *ICES J. Mar. Sci.* 62(5): 956-96, (2005).

A.S. Brierley, R.A. Saunders, D.G. Bone, E.J. Murphy, P. Enderlein, S.G. Conti, and **D.A. Demer**, “Use of moored acoustic instruments to measure short-term variability in abundance of Antarctic krill,” *Limnol. Oceanogr.* 4:18–29. (2006).

S.G. Conti, J. De Rosny, P. Roux, and **D.A. Demer**, “Characterization of scatterer motion in a reverberant medium,” *J. Acoust. Soc. Am.* 119(2):769-776 (2006).

D.A. Croll, **D.A. Demer**, R.P. Hewitt, J.K. Jansen, M.E. Goebel, and B.R. Tershy, “Effects of variability in prey abundance on reproduction and foraging in chinstrap penguins,” *Journal of Zoology* 269:506–513 (2006).

S. G. Conti, P. Roux, C. Fauvel, B. D. Maurer, and **D.A. Demer**, “Acoustical monitoring of fish density, behavior, and growth rate in a tank,” *Aquaculture*. 251:314– 323. (2006).

S. G. Conti and **D.A. Demer**, “Improved parameterization of the SDWBA krill TS model,” *ICES Journal of Marine Science*, 63(5):928-935, (2006).

S.G. Conti, B. D. Maurer, M. A. Drawbridge, and **D.A. Demer**, "Measurements of total scattering spectra of bocaccio rockfish (*Sebastes paucispinis*)," *Fish. Bull. U.S.*, 105:153-157.

b. Papers submitted to peer-reviewed journals

D.A. Demer and J. Renfree, "Temperature dependent performance of echo sounder transducers," *J. Acoust. Soc. Am.* (submitted).

J.D. Warren, J.A. Santora, and **D.A. Demer**, "Effect of a gale on the distribution of Antarctic krill and its avian and pinniped predators," *Mar. Ecol. Prog. Ser.* (submitted).

c. Other papers

1. Non-peer reviewed journal articles

R.P. Hewitt and **D.A. Demer**, "AMLR Program: Distribution and abundance of krill in the vicinity of Elephant Island in the 1992 austral summer," *U.S. Ant. Jour.* 27(5):210-212 (1992).

R.P. Hewitt and **D.A. Demer**, "AMLR Program: Distribution and abundance of krill around Elephant Island, Antarctic, in the 1993 austral summer," *U.S. Ant. Jour.*, 28(5) 183-185 (1993).

R.P. Hewitt and **D.A. Demer**, "AMLR Program: Distribution and abundance of krill in the Vicinity of Elephant Island during the 1993-1994 austral summer," *U.S. Ant Jour.* 29(5) 183-184 (1994).

Veit, R.R., E.D. Silverman, R.P. Hewitt, and **D.A. Demer**, "Spatial and behavioral responses by foraging seabirds to Antarctic krill swarms," *U.S. Ant. Jour.* 29(5) 164-166, (1994).

Hewitt, R.P. and **D.A. Demer**, "AMLR program: Distribution of volume backscattering strength near Elephant Island in the 1995 austral summer," *U.S. Ant. Jour.* 30(5) 219-221 (1995).

Hewitt, R.P. and **D.A. Demer**, "AMLR program: Distribution of volume backscattering strength near Elephant Island in the 1996 austral summer," *U.S. Ant. Jour.* 31(2) 134-136 (1996).

Hewitt, R.P. and **D.A. Demer**, "Distribution of volume backscattering strength near Elephant Island in the 1997 austral summer," *U.S. Ant. Jour.* 32(2) 119-121 (1997).

P. Roux, S. Conti, **D. Demer**, and B.D. Maurer, "Acoustic Method for Fish Counting and Fish Sizing in Tanks". California Sea Grant College Program. Research Completion Reports. Paper. Aqua05_01 (2005).
http://repositories.cdlib.org/csgc/rcr/Aqua05_01

2. Book chapters

M.E. Goebel, D. P. Costa, D.E. Crocker, J.T. Sterling, and **D.A. Demer**, “Foraging range and dive patterns in relation to location of Antarctic fur seals, Cape Shirreff, Livingston Island, Antarctica,” *Antarctic Ecosystem: Models for Wider Ecological Understanding*, Eds W. Davison, C. Howard-Williams & P. Brady Caxton Press, New Zealand. Pages 47-50. (2000).

3. Symposium volumes

1991– date – In addition to peer reviewed publications in symposium proceedings, abstracts of talks are documented in many symposium volumes; examples follow:

D.A. Demer and L.V. Martin, “Zooplankton target strength: Areal or volumetric dependence?,” *J. Acoust. Soc. Am.* 95, 3020 (1994).

D.A. Demer and R.P. Hewitt “In-situ target strength measurements of Antarctic zooplankton,” *J. Acoust. Soc. Am.* 95, 3021 (1994).

D.A. Demer and L.V. Martin, “Zooplankton target strength: Volumetric or areal dependence?,” ICES International Symposium on Fisheries and Plankton Acoustics held in Aberdeen 12-16 June (1995).

D.A. Demer and R.P. Hewitt, “*In situ* target strength measurements of Antarctic zooplankton (*Euphausia superba* and *Salpa thompsoni*) at 120 kHz and 200 kHz, corroboration of scattering models, and a statistical technique for delineating species,” ICES International Symposium on Fisheries and Plankton Acoustics held in Aberdeen 12-16 June (1995).

R.P. Hewitt and **D.A. Demer**, “Lateral aspect target strength of Antarctic krill,” ICES International Symposium on Fisheries and Plankton Acoustics held in Aberdeen 12-16 June (1995).

R.P. Hewitt and **D.A. Demer**, “Antarctic krill aggregation patterns as inferred from acoustic surveys,” ICES International Symposium on Fisheries and Plankton Acoustics held in Aberdeen 12-16 June (1995).

J. Napp, R.D. Brodeur, R.P. Hewitt, and **D.A. Demer**, “Acoustic determination of plankton and nekton concentrations at tidally generated shelf fronts in the eastern Bering Sea,” ICES International Symposium on Fisheries and Plankton Acoustics held in Aberdeen 12-16 June (1995).

David A. Demer and Michael A. Soule, “Uncertainty in fisheries echosounder calibrations,” *J. Acoust. Soc. Am.* 102, 3194 (1997).

D.A. Demer, M.A. Soule, and R.P. Hewitt, "A multiple-frequency method for potentially improving the accuracy and precision of in situ target strength measurements," *J. Acoust. Soc. Am.* 105, 2359 (1999).

D.E. McGehee and **D.A. Demer**, "Acoustical study of the prey field and supporting food web for whales in the Ligurian Sea north of Corsica," *J. Acoust. Soc. Am.* 108, 2488 (2000).

W.L. Michaels, J.M. Jech, and **D.A. Demer**, "Backscatter measurements of Atlantic herring in the Northwest Atlantic," *J. Acoust. Soc. Am.* 108, 2457 (2000).

J.D. Warren, **D.A. Demer**, D.E. McGehee, R. Di Mento, and J.F. Borsani, "Biological and physical factors affecting the distribution of *Meganyctiphanes norvegica* and other zooplankton in the Ligurian Sea in late summer 2000." ICES Symposium on Acoustics in Fisheries and Aquatic Ecology, Montpellier, France, June (2002).

J. D. Warren and **D. A. Demer**, "Factors controlling krill distributions in the near-shore waters of Livingston Island, Antarctica." 3rd International Zooplankton Production Symposium, Gijon, Spain, May (2003).

S.G. Conti, P. Roux, **D.A. Demer**, and J. de Rosny, "Measurements of the total scattering and absorption cross-sections of the human body," *J. Acoust. Soc. Am.* 114, 2357 (2003).

D.A. Demer, S.G. Conti, J. De Rosny, and P. Roux, "Absolute measurements of total target strength from reverberation in a cavity," *J. Acoust. Soc. Am.* 113, 1387 (2003).

S.G. Conti, P. Roux, J. de Rosny, and **D.A. Demer**, "Acoustical characterization of scatterer motion in a reverberant media," *J. Acoust. Soc. Am.* 116, 2567 (2004).

S.G. Conti, B.D. Maurer, P. Roux, C. Fauvel, **D.A. Demer**, and K.R. Waters, "Acoustical monitoring of fish behavior in a tank," *J. Acoust. Soc. Am.* 116, 2489 (2004).

J.D. Warren and **D.A. Demer**, "Near-shore krill distribution around Livingston Island, Antarctica," *J. Acoust. Soc. Am.* 115, 2557 (2004).

Y. Tremblay, M.E. Goebel, B.L. McDonald, D.P. Costa, J.D. Warren, C. Reiss, J. Santora, and **D.A. Demer**, "Antarctic fur seals foraging at the southern limit of their range: A study combining behavior and

oceanography." 9th SCAR International Biology Symposium, Curitiba, Brazil, July (2005).

J.D. Warren, J. Santora, and **D.A. Demer**, "Where should we eat?: Predator and prey spatial relationships in the Antarctic krill ecosystem," *J. Acoust. Soc. Am.* 118, 1910 (2005).

J.D. Warren and **D.A. Demer**, "A nearshore observatory for Antarctic krill: Analysis of the spatial variability in their distribution and abundance," *J. Acoust. Soc. Am.* 117, 2411 (2005).

S.G. Conti, P. Roux, and **D.A. Demer**, "Acoustical estimation of scatterer population from total scattering measurements," *J. Acoust. Soc. Am.* 117, 2381 (2005).

J.D. Warren, J. Santora, and **D.A. Demer**, "Predator and prey interactions in the Antarctic krill ecosystem." Ocean Sciences Meeting, Honolulu, Hawaii, February (2006).

S.G. Conti, J. de Rosny, P. Roux, and **D.A. Demer**, "Characterization of scatterer motion in a reverberant medium," *J. Acoust. Soc. Am.* 119, 769 (2006).

G.R. Cutter, Jr. and **D.A. Demer**, "Measurement of scattering directivity and behavior of fish schools using multi-beam sonar," *J. Acoust. Soc. Am.* 120: 3018 (2006).

D.A. Demer and J. Renfree, "Variations of echosounder transducer performance versus water temperature," *J. Acoust. Soc. Am.* 120, 3016 (2006).

e. Reports

R.P. Hewitt and **D.A. Demer**, Acquisition and evaluation of an acoustic system for mapping the distribution of Antarctic krill, Administrative Report LJ-91-46, 25 pp. (1991).

D.A. Demer, D. McGehee, R.P. Hewitt, J. Rosenberg, and S. Sexton, "Hydroacoustic survey," in AMLR 1991/92, FIELD SEASON REPORT: Objectives, Accomplishments and Tentative Conclusions, ADMINISTRATIVE REPORT LJ-92-17, 121 pp. (1992).

D.A. Demer, R. Bistodeau, R.P. Hewitt, J. Rosenberg, and Y. Hu, "Bioacoustic survey," AMLR 1992/93 FIELD SEASON REPORT Objectives, Accomplishments and Tentative Conclusions, ADMINISTRATIVE REPORT LJ-93-08, 114 pp. (1993).

D.A. Demer, G. Chandran, J. Kirsch, R.P. Hewitt, N. Carbone, and J. Rosenberg, “Bioacoustic survey,” AMLR 1993/94 FIELD SEASON REPORT Objectives, Accomplishments and Tentative Conclusions, ADMINISTRATIVE REPORT LJ-94-13, 122 pp. (1994).

D.A. Demer, R.P. Hewitt, M. Prowse, J. Rosenberg, S. Rumsey, and S. Sexton, “Bioacoustic survey,” AMLR 1994/95 FIELD SEASON REPORT Objectives, Accomplishments and Tentative Conclusions, ADMINISTRATIVE REPORT LJ-95-13, 139 pp. (1995).

R.P. Hewitt, E. Mitchell, **D.A. Demer**, G.V. Chavez, and R.S. Holt, “Bioacoustic survey,” AMLR 1995/96 FIELD SEASON REPORT Objectives, Accomplishments and Tentative Conclusions, ADMINISTRATIVE REPORT LJ-96-15, 116 pp. (1996).

R.P. Hewitt, V. Lopez, D.H. Kang, **D.A. Demer**, J. Popp, and N. Jaquet, “Bioacoustic survey,” AMLR 1996/97 FIELD SEASON REPORT Objectives, Accomplishments and Tentative Conclusions, ADMINISTRATIVE REPORT LJ-97-09, 123 pp. (1997).

R.P. Hewitt, **D.A. Demer**, J. Popp, and A. Jenkins, “Bioacoustic survey,” AMLR 1997/98 FIELD SEASON REPORT Objectives, Accomplishments and Tentative Conclusions, ADMINISTRATIVE REPORT LJ -98-07, 166 pp. (1998).

J. Popp, R.P. Hewitt, P. Kappes, and **D.A. Demer**, “Bioacoustic survey,” AMLR 1998/99 FIELD SEASON REPORT Objectives, Accomplishments and Tentative Conclusions, ADMINISTRATIVE REPORT LJ-99-10, 162 pp (1999).

D.A. Demer, R.P. Hewitt, V. Loeb, P. Malan and R. Rowley, “Physical Oceanography,” AMLR 1999/00 FIELD SEASON REPORT Objectives, Accomplishments and Tentative Conclusions, NOAA-TM-NMFS-SWFSC-302, 139 pp. (2000).

J.H. Emery, R.P. Hewitt, **D.A. Demer** and D. Roberts, “Bioacoustic survey,” AMLR 1999/00 FIELD SEASON REPORT Objectives, Accomplishments and Tentative Conclusions, NOAA-TM-NMFS-SWFSC-302, 139 pp. (2000).

D.A. Demer and A. Jenkins., “Cape Shirreff Inshore survey,” AMLR 1999/00 FIELD SEASON REPORT Objectives, Accomplishments and Tentative Conclusions, NOAA-TM-NMFS-SWFSC-302, 139 pp. (2000).

M.R. Prowse, D.J. Needham, M.A. Soule and **D.A. Demer**, “Physical oceanography,” AMLR 2000/01 FIELD SEASON REPORT Objectives, Accomplishments and Tentative Conclusions, NOM-TM-NMFS-SWFSC-314, 188 pp. (2001).

J.H. Emery, R.P. Hewitt, **D.A. Demer**, A. Dizon, D. Roberts and C.D. Jones, "Bioacoustic survey and bottom typing," AMLR 2000/01 FIELD SEASON REPORT Objectives, Accomplishments and Tentative Conclusions, NOM-TM-NMFS-SWFSC-314, 188 pp. (2001).

M.R. Prowse, D.J. Needham, M.A. Soule and **D.A. Demer**, "Physical oceanography," AMLR 2001/02 FIELD SEASON REPORT Objectives, Accomplishments and Tentative Conclusions, NOM-TM-NMFS-SWFSC-350 (2002).

J. Emery, R.P. Hewitt, and **D.A. Demer**, "Bioacoustic Survey," AMLR 2001/02 FIELD SEASON REPORT Objectives, Accomplishments and Tentative Conclusions, NOM-TM-NMFS-SWFSC-350, 187 pp. (2002).

J.D. Warren, A. Jenkins, and **D.A. Demer**, "Nearshore acoustical survey," AMLR 2001/02 FIELD SEASON REPORT Objectives, Accomplishments and Tentative Conclusions, NOM-TM-NMFS-SWFSC-350, 187 pp. (2002).

S. Conti and **D.A. Demer**, "Total target strength measurements project," AMLR 2001/02 FIELD SEASON REPORT Objectives, Accomplishments and Tentative Conclusions, NOM-TM-NMFS-SWFSC-350, 187 pp. (2002).

D.A. Demer, D.J. Needham, and M.A. Soule, "Multi-instrumented remotely monitored buoy project," AMLR 2001/02 FIELD SEASON REPORT Objectives, Accomplishments and Tentative Conclusions, NOM-TM-NMFS-SWFSC-350, 187 pp. (2002).

V.A. Philbrick, P.C. Fiedler, L.T. Balance, and **D.A. Demer**, Report of ecosystem studies conducted during the 2001 Oregon, California and Washington (ORCAWALE) marine mammal survey on the research vessels David Starr Jordan and McArthur, NOAA-TM-NMFS-SWFSC-349 (2003).

J. Warren, A. Jenkins, D. Needham, M. van den Berg, M. Soule and **D.A. Demer**, "Nearshore Survey" AMLR 2003/04 FIELD SEASON REPORT Objectives, Accomplishments and Tentative Conclusions, NOM-TM-NMFS-SWFSC-367, 165 pp. (2004).

J. Warren, S. Sessions, M. Patterson, A. Jenkins, D. Needham and **D.A. Demer**, "Nearshore Survey" AMLR 2004/05 FIELD SEASON REPORT Objectives, Accomplishments and Tentative Conclusions, NOAA-TM-NMFS-SWFSC-385 (2005).

J. Warren, M. Cox, S. Sessions, A. Jenkins, D. Needham, and **D.A. Demer**, "Nearshore Survey" AMLR 2005/06 FIELD SEASON REPORT Objectives,

Accomplishments and Tentative Conclusions NOAA-TM-NMFS-SWFSC-XXX (2006).

f. Others

D.A. Demer, “Accuracy and precision of acoustic surveys of Antarctic krill”, Ph.D. dissertation, University of California, San Diego, 144 p. (1994).

8. PRESENTATIONS

a. Talks presented at professional meetings

1991– date – Presented multiple talks at professional meetings each year; examples follow:

1997 – Invited Speaker in Bioacoustical Oceanography Session of American Fisheries Society Symposium, Monterey, CA; presented “Unconventional Techniques Using Standard Acoustic Equipment.”

1999 – Invited Speaker at Acoustical Society of America / European Acoustics Association joint-symposium, Berlin, Germany; presented “A Multi-frequency method for improved accuracy and precision of in situ target strength measurements.”

2002 – Speaker at An International Workshop on the Applications of Passive Acoustics in Fisheries, MIT, Cambridge, MA, presented “Detection and characterization of yellowfin and bluefin tuna using passive acoustical techniques.”

2006 – Speaker at ICES Working Group on Fisheries Acoustics, Science and Technology, Hobart, Tasmania; presented “Acoustical-Optical Method for Surveying Rockfish.”

2006 – Speaker at the Western Groundfish Conference, Newport, Oregon; presented “Non-lethal Surveys for Rockfish”.

2006 – Speaker at the SWFSC lunch seminar, La Jolla, CA; presented “A sound method for surveying CPS.”

2006 – Speaker at the ASTWG Workshop on Demersal Fish Habitat, Seattle, WA; presented “Acoustical remote sensing of rockfish and seafloor type.”

2006 – Speaker at the ICES Fishing Technologies Committee, Maastricht, The Netherlands; presented the “Report of the Working Group on Fisheries Acoustics Science and Technology.”

2006 – Invited speaker at the ICES Fishing Technologies Committee meeting, Maastricht, The Netherlands; presented “Objectives and technologies for measuring marine biodiversity.”

2007 – J.D. Warren and D.A. Demer presented “Small vessel surveys of krill populations near Livingston Island” at ICES Working Group on Fisheries Acoustics, Science and Technology, Dublin, Ireland.

2007 – Speaker at the ICES Working Group on Fisheries Acoustics, Science and Technology, Dublin, Ireland; presented “Variations in echosounder transducer performance versus water temperature.”

2007 – N.O. Handegard and D.A. Demer presented “Designing an Ocean Mid-trophic Automatic Acoustic Sampler” at ICES Working Group on Fisheries Acoustics, Science and Technology, Dublin, Ireland.

2007 – Speaker at the ICES Working Group on Fisheries Acoustics, Science and Technology, Dublin, Ireland; presented “Collaborative Optically-assisted Acoustic Survey Technique (COAST) for surveying rockfish in the Southern California Bight.”

2007 – Invited expert at the CCAMLR WG-EMM’s Study Group on Acoustic Survey and Analysis Methods; presented “Acoustic-optical techniques for surveying demersal fish,” and “Target strength models and multi-frequency measurements of Antarctic krill, myctophids and squid.”

2007 – Invited speaker at the Pacific Islands Fisheries Science Center, Honolulu, Hawaii; presented “Collaborative Optically-assisted Acoustic Survey Technique (COAST) Applied to Rockfish in the Southern California Bight.”

2007 – M.J. Cox, D.A. Demer, J.D. Warren, G.R. Cutter, and A.S. Brierley presented “Characterizing the three dimensional structure of Antarctic krill (*Euphausia superba*) swarms,” at the 4th International Zooplankton Production Symposium, Hiroshima, Japan.

b. Posters presented at professional meetings

1991– date – Presented multiple seminars and presentations each year; examples follow:

1995 – Invited Lecturer, Bioacoustical Oceanography Workshop, Santa Cruz, CA

2000 – Invited Lecturer, Bioacoustical Oceanography, Scripps Institution of Oceanography, La Jolla, CA

2002 – Invited Speaker, Cuyamaca College, School of Engineering, Cuyamaca, CA

2004 - Invited Lecturer Bioacoustical Oceanography, SIO

2004 – Invited Speaker, RD Instruments

2006 – Invited Speaker, Workshop on Climate effects on the California Current Ecosystem, Scripps, Institution of Oceanography, La Jolla, CA

9. PROFESSIONAL AFFILIATIONS/ACTIVITIES/SERVICE

a. Professional societies/organizations

International Council for the Exploration of the Sea (Chair WG-FAST 2003-06)
Oceanography Society
Acoustical Society of America
Marine Technology Society
Institute of Electrical and Electronics Engineers - Oceanic Engineering Society

b. Editorial positions

Selected as Co-Guest Editor with David MacLennan for the Proceedings of the 2008 Symposium on Fisheries Acoustics, to be published in a 400-500 page volume of the ICES *Journal of Marine Science*.

c. Membership on panels

1995-date – U.S. Representative to the Fisheries Acoustic Science and Technology Working Group reporting to the Fishing Technology Committee of the International Council for the Exploration of the Sea (ICES).

1995-date – U.S. Representative to the Working Group on Environmental Monitoring and Management reporting to the Scientific Committee of the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR)

d. Advisory services

S.N. Sexton, J.E. Rosenberg, and **D.A. Demer**, “Volumetric analysis of Antarctic marine ecosystem data,” WG-Krill-91/38, CCAMLR, Hobart, Australia (1991).

R.P. Hewitt and **D.A. Demer**, “Distribution and abundance of krill in the vicinity of Elephant Island in the 1992 austral summer,” WG-CEMP-92/15, CCAMLR, Hobart, Australia (1992).

D.A. Croll, R.P. Hewitt, **D.A. Demer** and J. Jansen, “Penguin foraging behavior in relation to the distribution of prey,” WG-Krill-93/47, CCAMLR, Hobart, Australia (1993).

R.P. Hewitt, V. Marin, and **D.A. Demer**, “An attempt to derive a composite index of abundance from acoustic surveys and fishery data,” WG-Krill-94/14 CCAMLR, Hobart, Australia (1993).

Hewitt, R.P., V. Marin, and **D.A. Demer**, “An attempt to derive a composite index of abundance from acoustic surveys and fishery data,” WG-EMM95, CCAMLR, Hobart, Australia (1995).

R.P. Hewitt and **D.A. Demer**, “Distribution, biomass and abundance of Antarctic krill in the vicinity of Elephant Island during the 1996 Austral Summer,” WG-EMM-96 CCAMLR, Hobart, Australia (1996).

Report of the Workshop on Area 48. La Jolla, USA, 15 to 26 July 1998. CCAMLR Working Group on Ecosystem Monitoring and Management. WG-EMM-98/16. 127p. (1998).

D.A. Demer, “Some Suggestions for Acoustic Sampling Protocols for the Synoptic Survey of FAO Area 48,” WG-EMM-98. (1998).

Advanced Sampling Technologies Working Group, “National Marine Fisheries Service Fisheries Acoustics Protocol,” (2003).

Advanced Sampling Technologies Working Group, “EK500-EK60 Workshop Report,” Alaska Fisheries Science Center, Seattle, WA, USA, (2004).

ICES Fisheries Technology Committee ICES CM 2004/B:06

Report of the Working Group on Fisheries Acoustics Science and Technology (WGFAST) 20–23 April Gdynia, Poland, ICES Fisheries Technology Committee ICES CM 2004/B:06, Chair: **D.A. Demer** (2004).

Justin Manley, Rob Downs, Gene Smith, David Detlor, **David Demer**, Doug Perry, Frank Colohan, “Applying Autonomous Underwater Vehicles to NOAA Goals: Current Status and Future Opportunities; A Report to the NOAA Ocean Council Submitted by: NOAA Autonomous Underwater Vehicles Working Group (2005).

Report of the Working Group on Fisheries Acoustics Science and Technology (WGFAST), 19–22 April, Rome, Italy, ICES Fisheries Technology Committee, ICES CM 2005/B:05, Chair: **D.A. Demer** (2005).

D. Pinkard, **D.A. Demer**, J. Butler, L. Asato, and M. Wilson, "The development of acoustical-optical methods to estimate rockfish abundance and habitat type," submitted to the Pacific States Marine Fishing Commission, 29 pp. (2006).

Report of the Working Group on Fisheries Acoustics Science and Technology (WGFAST), 27–30 March, Hobart, Tasmania, ICES Fisheries Technology Committee, ICES CM 2006/FTC:01, Chair: **D.A. Demer** (2006).

NMFS Advanced Technologies Workshop on Essential Offshore Habitat for Demersal Fish, Northwest Fisheries Science Center, Seattle, WA, USA, (in prep.).

e. Workshops organized, chaired; sessions organized, chaired at professional meetings

2002 – Session Chair of "Target Strength Modeling and Measurement," at the ICES Symposium on Fisheries and Plankton Acoustics.

2004–date – Chair of the Working Group on Fisheries Acoustics, Science and Technology reporting to the International Council for the Exploration of the Sea (ICES).

2005-date Co-Convener for the 2008 International Council for the Exploration of the Sea (ICES) Symposium on Fisheries Acoustics Science and Technology, Bergen, Norway.

2006 – Steering Group member for NOAA/ASTWG Workshop on Demersal Fish Habitat

2006 – Organized Workshop on Nearshore Survey Analysis, SWFSC.

2006 – Co-Chaired Theme Session I on "Quantifying, summarizing, and integrating total uncertainty in fisheries resource surveys," ICES Annual Science Conference, Maastricht, the Netherlands

g. Teaching and mentoring

Stephane G. Conti, Ph.D. Applied Physics, University of Paris, VI, Dissertation Research Advisor and Committee Member (Currently a researcher at UCSD/SIO/Marine Physical Laboratory).

Joseph D. Warren, Ph.D., Applied Ocean Science, MIT/WHOI, Post-Doc Advisor (Currently an Assistant Professor at Marine Sciences Research Center, Stony Brook – Southampton).

Sarah Glaser, Ph.D. Biological Oceanography, Scripps Institution of Oceanography; taught acoustics data analysis and advised on related Ph.D.

research.

Scott Allen, M.S. Ocean Engineering, University of New Hampshire, Masters Internship Advisor

Claire Debever, M.S. Applied Physics, University of Paris, VI, France, Masters Internship Advisor

Kevin Baillie, M.S. Applied Physics, University of Paris, VI, France, Masters Internship Advisor

Nicolas Colson, M.S. Applied Physics, University of Paris, VI, France, Masters Internship Advisor

Faustine Sabot, M.S. Oceanography, University of Tulon, France, Masters Internship Advisor.

Ben Maurer, M.S. Engineering, UCSD. Summer Internship Advisor (Currently a Ph.D. candidate at UCSD).

2006 – Dylan Shinzaki, WestView High School, Marine Technology Society Summer Internship Advisor.

2007 – Ana Sirovic, Ph.D., Oceanography, UCSD / Scripps Institution of Oceanography, Post-Doctoral Advisor.

2007 – Jason Eckstein, B.S., Engineering, Columbia University, NY Hollings Fellowship Advisor.

2008 – Juan Zwolinski, Ph.D., Portuguese Fisheries Research Institute - IPIMAR / University of Aveiro, Portugal, Post-Doctoral Advisor.

10. AGENCY SERVICE

a. Committees

2001-date – SWFSC Representative to NMFS Working Group on Advanced Survey Technologies

2002 – NMFS Representative to the NOAA multi-beam Workshop

2003-date – NMFS Representative to the NOAA Working Group on Autonomous Underwater Vehicles

2006 – Co-Theme Lead on NMFS-OAR Joint Research Retreat attended by NMFS Leadership Council and OAR Senior Research Council.

2006-date Committee member for the SWFSC Ocean Ecosystem Observing Task

b. Other

2006 – July, La Jolla, CA; organized Antarctic nearshore survey workshop.

11. OTHER RELEVANT INFORMATION

1993–date – Refereed multiple manuscripts each year for: *Journal of the Acoustical Society of America*, *ICES Journal of Marine Science*, *Deep Sea Research II*, *Marine Ecology Progress Series*, *Fisheries Research*, *Fisheries Bulletin*, and *CCAMLR Science*.

Received research grants from the National Science Foundation, Office of Polar Programs via Stony Brook University, the Office of Naval Research, the National Environmental Research Council via St. Andrews University, Pacific States Marine Fishing Commission, Center for Integrated Marine Technology via the University of California at Santa Cruz, and the NOAA/NMFS Advanced Sampling Technology Working Group.