CURRICULUM VITAE
12/28/2022

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	Santa Cruz, CA 95026		

EDUCATION

1993	Ph.D., University of Washington
1991	MS, University of Washington
1988	B.A., Pomona College

POSITIONS

2015-	Director, Givens Statistical Solutions
2022-	Adjunct Professor, Statistics, UC Santa Cruz
2017-	Faculty Affiliate, Statistics, Colorado State University
2015	Emeritus Associate Professor, Statistics, Colorado State University
2000-2014	Associate Professor, Statistics, Colorado State University
1994-2000	Assistant Professor, Statistics, Colorado State University

SABBATICALS

2003	Visiting Professor, University of Otago, New Zealand. Worked on statistical methods for cetacean conservation biology research and drafted major portions of *Computational Statistics*.
2009-2010	Visiting Scientist, Commonwealth Scientific and Industrial Research Organization (CSIRO), Brisbane, Australia. New research on habitat definition with CSIRO colleagues, statistical methods for cetacean conservation, and drafted the second edition of *Computational Statistics*.

HONORS AND AWARDS

1992-present	US Delegate to the Scientific Committee of the International Whaling Commission (IWC)
2021-present	Chair, IWC Scientific Committee Standing Working Group on Abundance Estimates, Status of Stocks and International Cruises, and co-Chair 2018-2021
2011	Best of Automatic Face and Gesture Recognition (*Image and Vision Computing*)
2008	Best Paper of 2008, *IEEE Face and Gesture*
1996	ASA Outstanding Application Award

PUBLISHED WORKS

Books:

Givens, G.H. and Hoeting, J.A. (2013), *Computational Statistics, Second Edition*. John Wiley & Sons, 469pp. Widely used worldwide in 110+ universities in over 30 countries.

Givens, G.H. and Hoeting, J.A. (2005), *Computational Statistics*, John Wiley & Sons, 418pp.

Publications:

Givens, G.H., George, J.C., Suydam, R., Tudor, B., Von Duyke, A., Person, B. and Scheimreif, K. (2023) Correcting the 2019 survey abundance of Bering-Chukchi-Beaufort Seas bowhead whales for disturbance from powered skiffs. *J. Cetacean Res. Manage.,* to appear.

Givens, G.H., George, J.C., Suydam, R. and Tudor, B. (2021) Bering-Chukchi-Beaufort Seas bowhead whale (*Balaena mysticetus*) abundance estimate from the 2019 ice-based survey. *J. Cetacean Res. Manage.* 22: 61-73.

Sformo, T.L., de la Bastide, P., LeBlanc, J., Givens. G.H., Adams, B., Kunaknana, S.C., Seigle, J.C., Moulton, L.L. and Hintz, W.E. (2021) Temperature response and salt tolerance of the opportunistic pathogen *Saprolegnia parasitica*: implications for the broad whitefish subsistence fishery. *Arctic, Antarctic and Alpine Research*, to appear.

Givens, G.H., Ferguson, M.C., Clarke, J.T., Willoughby, A., Brower, A., and Suydam, R. (2020) Abundance of the eastern Chukchi Sea stock of beluga whales, 2012-17. *Arctic*, 73: 485-498. https://doi.org/10.14430/arctic71592

Givens, G.H. and Heide-Jørgensen, M.P. (2020) Abundance. In J.C. George and J.G.M. Thewissen (Eds.) *The Bowhead Whale*. Elsevier Inc., Philadelphia PA. 640pp.

George, J.C., Lubetkin, S.C., Zeh, J.E., Thewissen, J.G.M. and G.H. Givens, (2020) Age Estimation. In J.C. George and J.G.M. Thewissen (Eds.) *The Bowhead Whale*. Elsevier Inc., Philadelphia PA. 640pp.

Suydam, R.S., Lefevre, J., Givens, G.H., George, J.C., Litovka, D. and Brower Jr., H.K. (2020) Conservation and Management. In J.C. George and J.G.M. Thewissen (Eds.) *The Bowhead Whale*. Elsevier Inc., Philadelphia PA. 640pp.

George, J.C., Tudor, B., Givens, G.H. Mocklin, J. and Vate Brattström, L. (2019) Entanglement-scar acquisition rates and scar frequency for Bering-Chukchi-Beaufort Seas bowhead whales using aerial photography. *Marine Mammal Science*, 35: 1304-1321.

Clark, C.W., Charif, R.A., Hawthorne, D., Rahaman, A., Givens, G.H., George, J.C. and Muirhead, C.A. (2018) Acoustic data from the spring 2011 bowhead whale census at Point Barrow, Alaska. *J. Cetacean Res. Manage.* 19: 23-30.

Sensor, J.D., George, J.C., Clementz, M.T., Lovano, D.M., Waugh, D.A., Givens, G.H., Suydam, R., Stimmelmayr, R., and Thewissen, J.G.M. (2018) Age estimation in bowhead whales using tympanic bulla histology and baleen isotopes. *Marine Mammal Scienc*e, 34: 347-364.

Wetzel, D. L., Reynolds III, J. E., Mercurio, P., Givens, G. H., Pulster, E. L., and George, J. C. (2017) Age estimation for bowhead whales (*Balaena mysticetus*) using aspartic acid racemization with enhanced hydrolysis and derivatization procedures. *J. Cetacean Res. Manage.* 17: 9-14.

Hunter, B.D., Cooley, D., Givens, G.H. and Beveridge, J.R. (2017) Modeling the upper tail of the distribution of facial recognition non-match scores. *Statistics and its Interface*, 10: 711-725.

VonDuyke, A.L., Stimmelmayr, R., Sheffield, G., Sformo, T., Suydam, R., Givens, G.H. and George, J.C. (2016) Prevalence and abundance of cyamid "whale lice" (*Cyamus ceti*) on subsistence harvested bowhead whales (*Balaena mysticetus*), *Arctic*, 69: 331-340.

George, J.C., Stimmelmayr, R., Suydam, R., Usip, S., Givens, G.H., Sformo, T. and Thewissen, J.G.M. (2016) Severe bone loss as part of the life history strategy of bowhead whales. *PLoS ONE* 11(6):e0156753. doi:10.1371/journal.pone.0156753.

G.H. Givens, S.L. Edmondson, J.C. George, R. Suydam, R.A. Charif, A. Rahaman, D.L. Hawthorne, B. Tudor, R.A. Delong, and C.W. Clark, (2016) Horvitz-Thompson whale abundance estimation adjusting for uncertain recapture, temporal availability variation and intermittent effort. *Environmetrics,* 27: 134-146.

M.G. Buhnerkempe, C.T. Webb, A.A. Merton, J.E. Buhnerkempe, G.H. Givens, R.S. Miller and J.A. Hoeting (2016) Using community detection on biological networks to identify migratory bird flyways in North America. *Ecological Applications*, 26: 740-751.

G.H. Givens, S.L. Edmondson, J.C. George, B. Tudor, R.A. DeLong and R. Suydam (2015) Weighted likelihood recapture estimation of detection probabilities from an ice-based survey of bowhead whales. *Environmetrics,* 26: 1-16.

S.D. Foster, G.H. Givens, G.J. Dornan, P.K. Dunstan and R. Darnell (2013) Modelling biological regions from multi-species and environmental data. *Environmetrics*, 24: 489-499.

G.H. Givens, J.R. Beveridge, Y.M. Lui, D.S. Bolme, B.A. Draper and P.J. Phillips (2013) Biometric face recognition: from classical statistics to future challenges. *WIRES: Computational Statistics*, 5: 288-308.

G.H. Givens, J.R. Beveridge, P.J. Phillips, B.A. Draper, Y.M. Lui and D. Bolme (2013) Introduction to face recognition and evaluation of algorithm performance. *Computational Statistics and Data Analysis*, 67: 236-247.

J.R. Beveridge, P.J. Phillips, D. Bolme, B.A. Draper, G.H. Givens, Y.M. Lui, M.N. Teli, H. Zhang, W.T. Scruggs, S. Cheng, K.W. Bowyer, and P.J. Flynn (2013) The Point-and-Shoot Face Challenge. *IEEE Sixth International Conference on Biometrics: Theory, Applications and Systems (BTAS).* DOI 10.1109/BTAS.2013.6712704

P.J. Phillips, J.R. Beveridge, D. Bolme, B.A. Draper, G.H. Givens, Y.M. Lui, S. Cheng, M.N. Teli and H. Zhang (2013) On the existence of face quality measures. *IEEE Sixth International Conference on Biometrics: Theory, Applications and Systems (BTAS)*. DOI 10.1109/BTAS.2013.6712704

P.J. Phillips, J.R. Beveridge, B.A. Draper, G.H. Givens, A.J. O'Toole, D. Bolme, J. Dunlop, Y.M. Lui, H. Sahibzada, and S. Weimer (2012) The good, the bad, and

the ugly face challenge problem. *Image and Vision Computing*, 30: 177-185. (Best of Automatic Face and Gesture Recognition, 2011)

M.N. Teli, J.R. Beveridge, P.J. Phillips, G.H. Givens, B.A. Draper and D.S. Bolme (2011) Biometric zoos: Theory and experimental evidence. *International Joint Conference on Biometrics*, October 2011, p. 1-8.

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E. Archer, K.K. Martien, B.L. Taylor, R.G. LeDuc, B.J. Ripley, G.H. Givens and J.C. George (2010) A simulation-based approach to evaluating population structure in non-equilibrial populations. *J. Cetacean Research and Management*, 11: 101-114.

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G.H. Givens, R.M. Huebinger, J.C. Patton, L.D. Postma, M. Lindsay, R. S. Suydam, J.C. George, J.C. Matson and J.W. Bickham (2010) Population genetics of bowhead whales (*Balaena mysticetus*) in the western Arctic. *Arctic*, 63: 1-12.

J.R. Beveridge, G.H. Givens, P.J. Phillips, B. Draper, D. Bolme, and Y.M. Lui. (2010) FRVT 2006: Quo vadis face quality? *Image and Vision Computing*, 28: 732-743.

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J.R. Beveridge, G.H. Givens, P.J. Phillips, B. Draper, and Y.M. Lui (2008) Focus on quality: predicting FRVT 2006 performance. *IEEE Conf. on Automatic Face and Gesture Recognition*, 1-8. Awarded Best Paper of 2008.

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P.E.Jorde, T. Schweder, J.W. Bickham, G.H. Givens, R.S. Suydam, and N.C. Stenseth (2006) Detecting temporal genetic structuring of migrating bowhead whales off the coast of Barrow, Alaska. *Molecular Ecology*, 16: 1993-2004.

J.R. Beveridge, B.A. Draper, G.H. Givens, and W. Fisher (2005) Introduction to the statistical evaluation of face recognition algorithms. In *Face Processing: Advanced Modeling and Methods*, W. Zhao and R. Chellappa (Eds.), Elsevier, pp. 87-123.

G.H. Givens, J.R. Beveridge, and P.J. Phillips (2005) Repeated measures GLMM

estimation of subject-related and false positive threshold effects on human verification performance. *IEEE Conference on Computer Vision and Pattern Recognition, Empirical Evaluation in Computer Vision Workshop*, June 2005. ISBN: 0-7695-2660-8.

G. H. Givens, J.R. Beveridge, B.A. Draper, P. Grother, and P.J. Phillips (2004) How features of the human face affect recognition: a statistical comparison of three face recognition algorithms. *IEEE Conference on Computer Vision and Pattern Recognition*, June 2004: 381-388.

G.H. Givens, J.R. Beveridge, B.A. Draper, and D. Bolme (2004) Using a generalized linear mixed model to study the configuration space of a PCA+LDA human face recognition algorithm. *Articulated Motion and Deformable Objects (AMDO 2004)*: 1-11.

G.H. Givens, J.R. Beveridge, B. Draper, and D. Bolme (2003) A statistical assessment of subject factors in the PCA recognition of human faces. *IEEE Conference on Computer Vision and Pattern Recognition*, Dec 2003.

G.H. Givens (2003) Empirical estimation of safe aboriginal whaling limits for bowhead whales. *Journal of Cetacean Research and Management*, 5: 39-44.

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D. Poole and G.H. Givens (2001) An exploratory assessment of the Bering-Chukchi-Beaufort Seas stock of bowhead whales using a stochastic population dynamics model. *Journal of Cetacean Research and Management*, 3: 1-6.

P.J. Roback and G.H. Givens (2001) Supra-Bayesian pooling of priors linked by a deterministic simulation model. *Communications in Statistics-Simulation and Computation*, 30: 447-476.

J.R. Beveridge, K. She, B. Draper, and G.H. Givens (2001) A nonparametric statistical comparison of principal component and linear discriminant subspaces for face recognition. *IEEE Conference on Computer Vision and Pattern Recognition, December, 2001*: 535-42 .

J.R. Beveridge, K. She, B. Draper, and G.H. Givens (2001) Parametric and nonparametric methods for the statistical evaluation of human ID algorithms. *Third Workshop on the Empirical Evaluation of Computer Vision Systems*, Dec. 2001.

A.E. Punt and G.H. Givens (2000) Issues related to the specification of trials for the Eastern North Pacific stock of gray whales. *Journal of Cetacean Research and Management, 2(Suppl.)*: 153-154.

G.H. Givens (2000) Strike limit algorithm optimisation: a realistic example. *Journal of Cetacean Research and Management*, 2: 75-83.

D.D. Smith, G.H. Givens, and R.L. Tweedie, (2000) Adjusting for publication and quality bias in Bayesian meta-analysis. In *Meta-analysis in Medicine and Health Policy*, D.K. Stangl and D.A. Berry (Eds.), Marcel Dekker, New York, pp. 277-304.

G.H. Givens, A.E. Punt, and T.A.O. Bernstein (1999) Equivalence tuning of strike limit algorithms. *Journal of Cetacean Research and Management*, 1: 289-295.

G.H. Givens (1999) Multicriterion decision merging: competitive development of an aboriginal whaling management procedure. *Journal of the American Statistical*

Association, 94: 1003-1014.

G.H. Givens and P.J. Roback (1999) Logarithmic pooling of priors linked by a deterministic simulation model. *Journal of Computational and Graphical Statistics*, 8: 452-478.

D. Poole, G.H. Givens, and A.E. Raftery (1999) On a proposed stock assessment method and its application at the International Whaling Commission. *Fishery Bulletin*, 97: 144-152.

G.H. Givens, (1999) Bayesian population dynamics modeling using uncertain historical catch, surveyed abundances, and biological priors. In: *Marine Mammal Survey and Assessment Methods*, G.W. Garner et al. (Eds), A.A. Balkema, pp. 225-238.

C.A. Hunt, G.H. Givens, and S. Guzy (1998) Bootstrapping pharmacokinetic models: visualization of predictive and parameter uncertainty. *Pharmaceutical Research*, 15: 690-697.

G.H. Givens (1998) AWMP development and diverse prototypes. *Report of the International Whaling Commission*, 48: 483-495.

G.H. Givens, D.D. Smith, and R.L. Tweedie (1997) Bayesian data-augmented meta-analysis that accounts for publication bias issues exemplified in the passive smoking debate. *Statistical Science*, 12: 221-250.

G.H. Givens and D. Thomas (1997) Bowhead aboriginal management scheme trials and statistics. *Report of the International Whaling Commission*, 47: 851-864.

P. Wade and G.H. Givens (1997) Designing catch control laws that reflect the intent of aboriginal whaling management principles. *Report of the International Whaling Commission*, 47: 871-874.

G.H. Givens and D. Thomas (1997) Sample bowhead aboriginal whaling management scheme trials, *Report of the International Whaling Commission*, 47: 875-884.

G.H. Givens and A.E. Raftery (1996) Local adaptive importance sampling for multivariate densities with strong nonlinear relationships. *Journal of the American Statistical Association*, 91: 132-141.

G.H. Givens and S.E. Thompson (1996) Alternative Bayesian synthesis approaches to Bering-Chukchi-Beaufort Seas bowhead whale stock assessment: uncertainty in historic catch and hitting with fixed MSYR. *Report of the International Whaling Commission*, 46: 509-530.

G.H. Givens, J.E. Zeh, and A.E. Raftery (1996) Implementing the current management regime for aboriginal subsistence whaling to establish a catch limit for the Bering-Chukchi-Beaufort Seas stock of bowhead whales. *Report of the International Whaling Commission*, 46: 593-600.

G.H. Givens and M.V. Bravington (1996) Confirmation, revision, and sensitivity analysis of the 1994 Scientific Committee assessment of the Bering-Chukchi-Beaufort Seas stock of bowhead whales. *Report of the International Whaling Commission*, 46: 501-8.

G.H. Givens (1995) Consistency of the local kernel density estimator. *Statistics and Probability Letters*, 25: 55-61.

G.H. Givens, A.E. Raftery, and J.E. Zeh (1995) Response to comments by Butterworth and Punt in SC/46/AS2 on the Bayesian synthesis approach. *Report of the International Whaling Commission*, 45: 325-330.

G.H. Givens, J.E. Zeh and A.E. Raftery (1995) Assessment of the Bering-Chukchi-

Beaufort Seas stock of bowhead whales using the BALEEN II model in a Bayesian synthesis framework. *Report of the International Whaling Commission*, 45: 345-364.

A.E. Raftery, G.H. Givens, and J.E. Zeh (1995) Inference from a deterministic population dynamics model for bowhead whales (with discussion). *Journal of the American Statistical Association*, 90: 402-430. Awarded 1996 ASA Outstanding Statistical Application.

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Other[1]:

Givens, G.H., Raftery, A.E. and Zeh, J.E. (1992) Benefits of a Bayesian approach for synthesizing multiple sources of evidence and uncertainty linked by a deterministic model. SC/44/O31.

Givens, G.H., Zeh, J.E. and Raftery, A.E. (1993) Assessment of the Bering-Chukchi-Beaufort Seas stock of bowhead whales using the HITTER-FITTER model in a Bayesian synthesis framework. SC/45/AS1.

Givens, G.H., Raftery, A.E. and Zeh, J.E. (1993) A reweighting approach for sensitivity analysis within the Bayesian synthesis framework for population assessment modelling. SC/45/O5.

Givens, G.H., Raftery, A.E. and Zeh, J.E. (1994) Response to comments by Butterworth and Punt in SC/46/AS2 on the Bayesian Synthesis Approach. SC/46/AS5.

Givens, G.H., Zeh, J.E. and Raftery, A.E. (1994) Assessment of the Bering-Chukchi-Beaufort Seas stock of bowhead whales using the BALEEN II model in a Bayesian synthesis framework. SC/46/AS14.

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[1] *The citations for the following papers all include "Submitted to the Scientific Committee of the International Whaling Commission. Available from the IWC Secretariat at www.iwc.int." These scientific papers were written for and presented to the Scientific Committee of the International Whaling Commission. After speaker presentation, each paper is discussed and evaluated by subcommittees of relevant experts, then archived.*

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Smith, T., Givens, G. and Bravington, M. (1994) Developing an aboriginal subsistence whaling management procedure: outline of a process. SC/47/AS17.

Smith, T.D., Bravington, M.V. and Givens, G. (1994) The basis for the Scientific Committee's 1994 management advice on aboriginal subsistence whaling on the Bering-Chukchi-Beaufort Seas stock of bowhead whales. SC/47/AS19.

Givens, G.H. and Bravington, M.V. (1995) Borel's Paradox and sensitivity analysis. SC/47/AS21.

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Givens, G.H. and Thomas, D.J. (1996) Bowhead aboriginal management procedure trials and statistics. SC/48/MG1.

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Givens, G.H., Punt, A.E. and Bernstein, T.A.O. (1998) Equivalence tuning of SLAs. SC/50/AWMP4

Givens, G.H. (1999) Optimising Strike Limit Algorithms: example search and results. SC/51/AWMP3.

Givens, G.H. (1999) Comparing methods for optimising Strike Limit Algorithms. SC/51/AWMP5.

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simulation trials proposed for the Bering-Chukchi-Beaufort Seas stock of bowhead whales. SC/N99/AWMP4.

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Implementation Review: a search for plausible trials exhibiting management risk. SC/58/AWMP8.

Givens, G.H. and Ozaksoy, I. (2006) Transience of a temporal lag correlation feature in bowhead microsatellites. SC/58/BRG18.

Givens, G.H., Huebinger, R.M., Bickham, J.W., George, J.C. and Suydam, R. (2006) Re-examination of stock structure in bowhead whales from the western arctic: preliminary analyses based on new microsatellites. SC/58/BRG19.

Givens, G.H. and Ozaksoy, I. (2006) Population structure and covariate analysis based on pairwise microsatellite allele matching frequencies (revised). SC/58/SD3.

Givens, G. and Ozaksoy, I. (2006) Transience of a temporal lag correlation feature in Bowhead microsatellites. SC/A06/AWMP2.

Givens, G.H., Huebinger, R.M., Bickham, J.W., George, J.C. and Suydam, R. (2006) Re-examination of stock structure in bowhead whales from the western Arctic: preliminary analyses based on new microsatellites. SC/A06/AWMP3.

Givens, G.H. (2006) Report of intersessional email on pulsed migration structure. SC/A06/AWMP7

Givens, G. and Ozaksoy, I. (2006) Population structure and covariate analysis based on pairwise microsatellite allele matching frequencies. SC/A06/AWMP1.

Givens, G., Williams, M., Morin, P.A., Hancock, B. and George, J.C. (2007) A brief and preliminary look at SNPs data for some Bering-Chukchi-Beaufort Seas bowhead whales. SC/59/BRG11.

Givens, G., Huebinger, R.M., Bickham, J.W., George, J.C. and Suydam, R.S. (2007) Patterns of genetic differentiation in bowhead whales (Balaena mysticetus) from the western Arctic. SC/59/BRG14.

Archer, E., Martien, K.K., Taylor, B.L., Leduc, R.G., Givens, G. and George, J.C. (2007) Use of an individual-based simulation of BCB bowhead whale population dynamics to examine empirical genetic data. SC/59/BRG17.

Skaug, H. and Givens, G. (2007) Relateness among individuals in BCB bowhead microsatellite samples. SC/59/BRG20.

Givens, G.H., Huebinger, R.M., Bickham, J.W., George, J.C. and Suydam, R.(2007) Patterns of genetic differentiation in bowhead whales (Balaena mysticetus) from the Western Arctic. SC/J07/AWMP2.

Givens, G. (2007) A note on interannual variation of Fis for bowhead whales sampled at Barrow. SC/59/BRG32.

Martien, K.K., Givens, G. and Archer, E. (2007) A note on the ability of STRUCTURE to correctly infer the number of populations for Bering-Chukchi- Beaufort Seas bowhead whales. SC/59/BRG34.

Givens, G.H., Edmondson, S.L., George, J.C., Tudor, B., Delong, R. and Suydam, R. (2011) Estimation of detection probabilities from the 2010 ice-based independent observer survey of bowhead whales near Barrow, Alaska. SC/63/BRG1.

George, J.C., Givens, G.H., Herreman, J., Delong, R., Tudor, B., Suydam, R. and Kendall, L. (2011) Report of the 2010 bowhead whale survey at Barrow with emphasis on methods for matching sightings from paired independent observations. SC/63/BRG3.

George, C., Suydam, R., Givens, G.H., Bickham, J., Stimmelmayr, R., Moore, S. and Zeh, J. (2012) Selected research relevant to the 2012 bowhead Implementation

Review. SC/64/AWMP6.

George, C., Herreman, J., Givens, G.H., Suydam, R., Mocklin, J., Clark, C., Tudor, B. and Delong, R. Brief overview of the (2012) 2010 and 2011 bowhead whale abundance surveys near Point Barrow, Alaska. SC/64/AWMP7.

Givens, G.H., Edmondson, S.L., George, J.C., Tudor, B., Delong, R.A. and Suydam, R. (2012) Detection probability estimates from the 2011 ice-based independent observer survey of bowhead whales near Barrow, Alaska. SC/64/BRG4.

Clark, C.W., Charif, R.A., Hawthorne, D., Rahaman, A., Givens, G.H., George, J.C., and Muirhead, C.A. (2013) Analysis of acoustic data from the spring 2011 bowhead whale census at Point Barrow, Alaska. SC/65a/BRG09.

George, J.C., Givens, G.H., Suydam, R., Herreman, J., Tudor, B., DeLong, R., Mocklin, J. and Clark, C.W. (2013) Summary of the spring 2011 ice-based visual, aerial photo-ID, and acoustic survey of bowhead whales near Point Barrow, Alaska. SC/65a/BRG11.

Givens, G.H., Edmondson, S.L., George, J.C., Suydam, R., Charif, R.A., Rahaman, A., Hawthorne, D., Tudor, B., DeLong, R.A. and Clark, C.W. (2013) Estimate of 2011 abundance of the Bering-Chukchi-Beaufort Seas bowhead whale population. SC/65a/BRG01.

Wetzel, D.L., Reynolds III, J.E., Mercurio, P., Givens, G.H., Pulster, E.L. and George, J.C. (2014) Age estimation for bowhead whales, *Balaena mysticetus*, using aspartic acid racemization with enhanced hydrolysis and derivatization procedures. SC/65b/BRG05.

Givens, G.H., George, J.C. and Suydam, R. (2015) A population dynamics model and assessment of Bering-Chukchi-Beaufort Seas bowhead whales. SC/66a/BRG09.

Vate Brattstrom, L., Mocklin, J., Tudor, B., George, J.C. and Givens, G.H. (2016) Update on the bowhead whale aerial photoID program and 2011 aerial spring survey. SC/66b/BRG04

Ferguson, M.C., Givens, G.H., Clarke, J.T., Willoughby, A., Brower, A. and George, J.C. (2017) A minimum abundance estimate of BCB bowhead whales in the western Beaufort Sea in late August, 2016. SC/67a/AWMP08.

Givens, G.H, Mocklin, J.A., Vate Brattström, L., Tudor, B.J., Koski, W.R., George, J.C., Zeh, J.E. and Suydam, R. (2017) Survival rate and 2011 abundance of Bering-Chukchi-Beaufort Seas bowhead whales from photo-identification data over three decades. SC/67a/AWMP09.

George, J.C., Suydam, R., Givens, G.H., Horstmann, L., Stimmelmayr, R. and G. Sheffield (2018) Length at sexual maturity and pregnancy rates of Bering-Chukchi-Beaufort Seas bowhead whales. SC/67b/AWMP07.

Ferguson, M.C., Clarke, J.T., Angliss, R., Bengtson, J., Brower, A., Citta, J., Clapham, P.J., Conn, P., Forney, K.A., George, J.C. and Givens, G.H. (2018) Bering-Chukchi-Beaufort bowhead whale abundance estimation survey workshop Report. SC/67b/AWMP16.

Baird, A.B., Givens, G.H., George, J.C., Suydam, R.S. and Bickham, J.W. (2018) Stock structure of bowhead whales inferred from mtDNA and SNP data. SC/67b/SDDNA01.

Givens, G.H., Ferguson, M.C., Clarke, J.T., Willoughby, A., Brower, A., and Suydam, R.

(2019) Abundance of the eastern Chukchi Sea stock of beluga whales, 2012-2017. SC/68a/ASI09.

Ferguson, M.C. and Givens, G.H. (2020) Summary of 2019 abundance estimates for Bering-Chukchi-Beaufort Seas bowhead whales. SC/68b/ASI10.

Givens, G.H., George, J.C., Suydam, R. and Tudor, B. (2020) Bering-Chukchi-Beaufort Seas bowhead whale (*Balaena mysticetus*) abundance estimate from the 2019 ice-based survey. SC/68b/ASI02.

Stimmelmayr, R., George, J.C., Clarke, J., Ferguson, M., Willoughby, A., Brower, A., Sheffeld, G., Stafford, K., Givens, G.H., Von Duyke, A., Sformo, T., Person, B., De Sousa, L. and Suydam, R. (2020) 2018-2019 Health report for the Bering-Chuckchi-Beaufort Seas bowhead whales – preliminary findings. SC/68b/ASW03.

Givens, G.H., George, J.C., Suydam, R., Tudor, B., Von Duyke, A., Person, B. and Scheimreif, K. (2021) Correcting the 2019 survey abundance of Bering-Chukchi-Beaufort Seas bowhead whales for disturbance from powered skiffs. SC/68c/ASI01.

Givens, G.H. and Weller, D.W. (2021) Two aboriginal subsistence whaling stocks remain in tested parameter space. SC/68c/ASW02.

Stimmelmayr, R., Citta, J., Scheimreif, K., Ferguson, M., Givens, G.H., Willoughby, A., Brower, A., Von Duyke, A., Sheffield, G., Person, B., Sformo, T., de Sousa, L. and Suydam, R. (2022) 2020-2021 health report for the Bering-Chukchi-Beaufort Seas bowhead whale. SC/68d/ASW03.

CONTRACTS & GRANTS THROUGH CSU

Starting in 2015, all my research funding has been supported by private contracts with Givens Statistical Solutions; client contracts are confidential but the total is over $1 million. Below is a list of support awarded during my career with CSU, totaling $5.6 million.

2014-2015 The 2014 Graybill/ENVR Conference. National Science Foundation, Division of Mathematical Sciences. (J. Opsomer, Co-PI) $10,000.

2014-2015 Population dynamics modeling of Bering-Chukchi-Beaufort Seas bowhead whales. North Slope Borough, Alaska, for its Department of Wildlife Management. (PI) $99,908.

2013-2014 Population size estimaion for Bering-Chukchi-Beaufort Seas bowhead whales, Phase II. North Slope Borough, Alaska, for its Department of Wildlife Management. (PI) $119,766.

2012-2017 Assessing water management tradeoffs and targets under climactic and land use uncertainty. NSF/USDA. (Co-PI with M. Arabi, J. Pritchett, A. Denning and K. Paustian).$1,500,000.

2012-2014 Advanced statistical biometric analysis, including video and soft biometrics. Technical Support Working Group, US Dept. of Homeland Security. (Co-PI with J.R. Beveridge and B.A. Draper) $510,873.

2012   Bowhead whale census population size estimation. North Slope Borough,

Alaska for its Department of Wildlife Management. (PI) $130,974.

2011-2012 Face recognition evaluation and baseline algorithm development. Intelligence Advanced Research Projects Activity (IARPA). (Co-PI with J.R. Beveridge and B.A. Draper), $249,000.

2011-2012 Bowhead whale census visual detection probability estimation via the Huggins model. North Slope Borough, Alaska, for its Department of Wildlife Management. (PI) $15,583.

2010-2012 Advanced statistical analysis of biometric challenges and evaluations. Technical Support Working Group, US Dept. of Homeland Security. (Co-PI with J.R. Beveridge and B.A. Draper) $451,663.

2009-2011 Statistical methods for the study of spatio-temporal patterns of bowhead whale presence and migration. North Slope Borough, Alaska, for its Department of Wildlife Management. (PI) $153,742.

2008-2009 Enhanced biometrics fusion: multiple biometrics grand challenge. Technical Support Working Group, US Dept.of Homeland Security. (Co-PI with R. Beveridge and B.A. Draper) $433,587.

2008   Patterns of genetic structure and spatio-temporal distribution in Bering-Chukchi-Beaufort Seas bowhead whales. Supplemental extension to: Bowhead bioinformatics: studies of genetic homogeneity in a whale population. North Slope Borough, Alaska, for its Department of Wildlife Management. (PI) $38,985.

2007   Supplement to: Covariate analysis of face recognition algorithms. Technical Support Working Group, US Dept.of Homeland Security. (CO-PI with J.R. Beveridge and B.A. Draper). $55,000.

2007   Interim supplement to: Covariate analysis of face recognition algorithms. Technical Support Working Group, US Dept. of Homeland Security. (CO-PI with J.R. Beveridge and B.A. Draper) $13,086.

2006-2007 Supplemental extension to: Bowhead bioinformatics: studies of genetic homogeneity in a whale population. North Slope Borough, Alaska, for its Department of Wildlife Management, (PI) $77,091.

2005-2006 Supplemental extension to: Bowhead bioinformatics: studies of genetic homogeneity in a whale population. North Slope Borough, Alaska, for its Department of Wildlife Management. (PI) $14,539.

2005-2006 Supplement to: Covariate analysis of face recognition algorithms. Technical Support Working Group, US Dept. of Homeland Security. (Co-PI with J.R. Beveridge and B.A. Draper) $159,992.

2004-2006 Bowhead Bioinformatics: Studies of genetic homogeneity in a whale population. North Slope Borough, Alaska, for its Department of Wildlife Management. (PI) $209,968.

2004-2005 Covariate analysis of face recognition algorithms. Covariate analysis of face recognition algorithms. Technical Support Working Group, US Dept. of Homeland Security. (Co-PI with J.R. Beveridge and B.A. Draper) $159,992.

2003-2004 Bowhead whale bioinformatics. Jointly funded by NOAA, National Marine Mammal Laboratory, and North Slope Borough, Alaska, for its Department of Wildlife Management. (PI) $62,401.

2000-2003 Statistical Inference Methods for Understanding Human Identification. Defense Advanced Research Projects Agency. (Co-PI with J.R. Beveridge and B.A. Draper) $437,318.

1999-2003 CAREER: Bayesian Simulation Modeling. NSF. (PI) $200,000.

2001-2002 Completion of a bowhead aboriginal whaling management procedure. Jointly funded by NOAA, National Marine Mammal Laboratory, and North Slope Borough, Alaska, for its Department of Wildlife Management. (PI) $67,585.

2000-2001 Development of a bowhead aboriginal whaling management procedure. Jointly funded by NOAA, National Marine Mammal Laboratory, and North Slope Borough, Alaska, for its Department of Wildlife Management. (PI) $59,549.

1999-2000 Advancements in bowhead aboriginal whaling management procedure development. Jointly funded by NOAA, National Marine Mammal Laboratory, and North Slope Borough, Alaska, for its Department of Wildlife Management. (PI) $56,968.

1998-1999 Optimization methods for bowhead whale aboriginal whaling management Procedures. Jointly funded by NOAA, National Marine Mammal Laboratory, and North Slope Borough, Alaska, for its Department of Wildlife Management. (PI) $54,081.

1998 Computer-intensive aboriginal whaling management procedure simulation and optimization. US National Marine Fisheries Service. (PI) $6,000.

1998 Equipment purchase for AWMP development. Jointly funded by NOAA, National Marine Mammal Laboratory, and North Slope Borough, Alaska, for its Department of Wildlife Management. (PI) $9,725.

1998 Equipment purchase contribution for AWMP simulation. National Marine Mammal Laboratory. (PI) $6,000.

1997-1998 Continued development of bowhead aboriginal whaling management procedures. Jointly funded by NOAA, National Marine Mammal Laboratory, and North Slope Borough, Alaska, for its Department of Wildlife Management. (PI) $59,997.

1996-1997 Development and initial exploration trials for bowhead aboriginal whaling management procedures. Jointly funded by NOAA, National Marine Mammal Laboratory, and North Slope Borough, Alaska, for its Department of Wildlife Management. (PI) $66,541.

1996 Simulation evaluations relevant to bowhead aboriginal management. National Marine Mammal Laboratory. (PI) $7,451.

1995-1996 Statistical evaluations of aboriginal management schemes for the bowhead whale. Jointly funded by NOAA, National Marine Mammal Laboratory, and North Slope Borough, Alaska, for its Department of Wildlife Management. (PI) $62,710.

1995 Analysis of bowhead whale morphology and management. National Marine Mammal Laboratory. (PI) $7,518.

1994-1995 Assessment modeling of the bowhead whale, Balaena mysticetus. Jointly funded by NOAA, National Marine Mammal Laboratory, and North Slope

Borough, Alaska, for its Department of Wildlife Management. (PI)
$36,950.

SYMPOSIA/INVITED LECTURES/WORKSHOPS

(Invited) Short Courses:

2016   'Introduction to Statistics for Environmental Applications', Northwest
        Environmental Training Center, Seattle.
2015   'Introduction to Statistics for Environmental Applications', EPA Region 8,
        Denver CO.
2009   'Methods for Monte Carlo Integration and Optimization', CSIRO, Brisbane,
        Australia.
2008   'Computational Statistics: Methods for Monte Carlo Integration and
        Optimization', Joint Statistical Meetings, Denver.
2006   'Computational Statistics' Joint Statistical Meetings, Seattle.
2006   'Computational Statistics' 2-day course for Alaska Chapter of ASA, Juneau.
2005   'Computational Statistics', Joint Statistical Meetings, Minneapolis.
2004   'Optimization methods for environmental problems in statistics: numerical
        maximum likelihood, combinatorial optimization, and EM algorithms'.
        Computational Environmetrics Conference jointly sponsored by ASA and
        Univ. of Chicago.
2004   'Methods of integration for environmental problems in statistics: quadrature,
        Monte Carlo integration, and Markov chain Monte Carlo methods'.
        Computational Environmetrics Conference jointly sponsored by ASA and
        Univ. of Chicago.

Invited or Organizer:

2016   'Science update on IWC management issues', AEWC Convention, Barrow AK.
2015   'Using stock abundance and structure analyses to guide bowhead management',
        Bowhead Whale Genomics Symposium, Battelle Memorial Institute,
        Columbus OH.
2014   Graybill/ENVR Organizing Committee, Co-Chair Alix Gitelman of ENVR.
2014   'Modelling biological regions from multi-species and environmental data'. 2014
        Graybill/ENVR Conference.
2013   'Whale tales: science, politics and tribal traditions'. Society of Senior Scholars.
2013   'Detection probability estimates from ice-based surveys of bowhead whales near
        Barrow, Alaska, using a weighted recapture model'. Joint Statistical
        Meetings, Montréal, Canada.
2011   'Advances in design', Joint Statistical Meetings. Organizer. Miami.
2010   'Estimation of spatio-temporal relative animal density from line transect data with
        clustering and censoring', Joint Statistical Meetings, Vancouver, Canada.
2008   'A new model for analysis of spatio-temporal genetic variation, with emphasis on

population substructure', North Carolina State University Dept. of Statistics, Raleigh NC.

2007   'Methods for inference about population structure and inheritance from genetic data', Joint Statistical Meetings. Organizer. Salt Lake City.

2006   'Statistical approaches to performance evaluation of biometric algorithms', in Symposium on Strengthening the Scientific Basis of Biometric Identification and Authentication, American Association for the Advancement of Science Annual Meeting, St. Louis, February.

2004   'Statistical models for assessing how features of the human face affect recognition', Biometric Consortium Conference, Arlington VA.

2003   'Statistical assessment of subject factors in the PCA recognition of human faces', IEEE Conference on Computer Vision and Pattern Recognition.

2003   'Statistics and the whaling debate at the International Whaling Commission: Bayesian simulation modeling and decision making', Dept. of Mathematics and Statistics, University of Otago, Dunedin, New Zealand.

2002   'A statistical assessment of subject factors in the PCA recognition of human faces', NIPS, Workshop on Statistical Methods for Computational Experiments in Visual Processing and Computer Vision, Whistler, British Columbia.

2002   'Statistical evaluation of human ID algorithms', (with J.R. Beveridge), DARPA Human ID Conference, NIST, Gaithersburg, MD.

2001   'Bayesian simulation modeling', American Association for the Advancement of Science, Arctic Science Conference. Invited Keynote Speaker. Anchorage. (Session cancelled on 9/11/01.)

2001   Invited discussant of: Estimation of gestation in bowhead whales (the 2001 JASA Applications and Case Studies Invited Paper. Joint Statistical Meetings, Atlanta, Georgia.

2000   'Bayesian estimation with a stochastic whale population model, and problems with the underlying likelihood', in Minisymposium: Bayesian Analysis in Computational Science and Engineering. First SIAM Conference on Computational Science and Engineering, Washington DC.

1998   'Estimating and adjusting for publication bias using data augmentation in a Bayesian meta-analysis', U.C. Berkeley Statistics Department, Berkeley, California.

1998   ' Estimating and adjusting for publication bias using data augmentation in a Bayesian meta-analysis', Rand Corporation Statistics Group, Santa Monica, California.

1998   ' Estimating and adjusting for publication bias using data augmentation in a Bayesian meta-analysis', U.C. San Francisco Department of Biostatistics, Department of Biopharmaceutical Sciencies, and the Medical Information Science Program, San Francisco, California.

1998   'Bayesian population dynamics modeling using uncertain historical catch, surveyed abundances, and biological information', Symposium on Surveys, Status, and Trends of Marine Mammal Populations, Biological Science Center, Biological Resources Division, US Geological Survey, and NMML, NMFS, NOAA, Seattle, Washington.

1997   Understanding nature: simulation-based inference for natural systems, Joint
        Statistical Meetings, Invited Session Organizer and Chair, Anaheim,
        California.
1997   'Evidence pooling via simulation models', Joint Statistical Meetings, Anaheim,
        California.
1996   'Log pooling of incoherent priors linked by a deterministic model', Joint Statistical
        Meetings, Chicago, Illinois.
1994   'Inference from a deterministic population dynamics model for bowhead whales
        (with discussion)', JASA Applications and Case Studies Invited Speaker,
        Joint Statistical Meetings, Toronto.

Selected Contributed and Other:

2014   'Horvitz-Thompson whale abundance estimation adjusting for uncertain
        Recapture, smoothed availability trends and interrupted effort'
        International Statistical Ecology Conference (July 2014).
2011   'Biometric Face Recognition and Performance Evaluation', Joint Statistical
        Meetings, Miami, Florida.
2005   'Generalized linear mixed model evaluation of face verification algorithms,
        emphasizing human subject characteristics', Joint Statistical Meetings,
        Minneapolis, Minnesota.
1999   'Multicriterion decision merging: competitive development of an aboriginal
        Whaling management procedure', Joint Statistical Meetings, Baltimore,
        Maryland.
1995   'Bayesian meta-analysis with data-augmentation to estimate publication bias',
        Joint Statistical Meetings, Orlando, Florida.
1995   'A method for determining uncertainty of predictions from deterministic epidemic
        models', Western Multiconference sponsored by the Society for Computer
        Simulation, Las Vegas, Nevada.
1993   'A Bayesian framework for exploiting stochastic evidence when modeling
        environmental systems', Meetings of the International Statistical Institute,
        Milan, Italy.

CSU TEACHING

ST192-First Year Seminar
ST204-Stat. for Business Students
UW Stat 220-Basic Statistics
ST301-Intro. to Statistical Methods
ST310-Data Analysis Tools and Database Management
ST372-Data Analysis Tools
ST304-Multiple Regression Analysis
ST498-Undgr. Research: Exploratory & Graphical Data Analysis.
ST540-Data Analysis and Regression
ST600-Statistical Computing
ST640-Design and Linear Modeling

ST684-Supervised College Teaching
ST699-Thesis
ST796-Group Study
ST799-Dissertation

ADVISING

Advisor:

Brett Hunter, co-advisor	2016	Ph.D.
Stacy Edmondson	2015	Ph.D.
Karli English	2015	MS
Courtney Weeks	2014	MS
Grant Dornan	2011	MS
John Greenberg	2011	MS
Benjamin Bird, co-advisor	2010	MS
Josh Horstman	2008	MS
Laura Beri, co-advisor	2008	MS
Marisa Williams	2007	MS
Isin Ozaksoy	2006	Ph.D.
Jonathan Holland	2002	MS
Sarah Hawley	2002	MS
Marsha S. Huang	2000	MS
Paul J. Roback	1998	Ph.D.
Tiffany A.O. Bernstein	1998	MS
David D. Smith, co-advisor	1997	Ph.D.
Dave Thomas	1997	MS
Sandra Thompson	1996	MS
Mike Williams	1996	MS

Member:

Arun Anbumani	2014	MS	Elec. & Comp. Eng.
Hao Zhang	2013	Ph.D.	Computer Science
Melanie Hartman	2013	Ph.D.	NREL/Ecology
M. Nayeem Teli	2013	Ph.D.	Computer Science
Michael Buhnerkempe	2012	MS	Statistics
David Hopkins	2012	MS	Mathematics
Keegan Patmore	2012	MS	Computer Science
Jennifer Kendall	2011	MS	Grd. Deg. Prog. Ecol.
Dusty Ross	2009	MS	Mathematics
Amy Davis	2008	MS	Statistics
Laura Ciasto	2008	Ph.D.	Atmospheric Science
Gabi Marques Betz	2008	MS	Animal Sci.(Subs.)
Jilmil Saraf	2006	MS	Computer Science
Katrina Olson	2005	MS	Animal Science
Laura Ciasto	2004	MS	Atmospheric Science
Jason Furtado	2004	MS	Atmospheric Science
Laura Ciasto	2003	MS	Atmospheric Science

Alex Trindade	2003	Ph.D.	Statistics
Jean-Paul Watson	2001	Ph.D.	Computer Science
Lance Forbes	2001	Ph.D.	Computer Science
Shengtao Dong	2001	MS	Computer Science
Jean-Paul Watson	1999	MS	Computer Science

Other:

Undergraduate Research Sponsor:
Baily Draper, 2009. "Iris Challenge Evaluation (ICE) 2006",
Data Analyst.

Undergraduate Honors Committee:
Samantha Barrows, 2012

COMMITTEES

International:
US delegate to Scientific Committee of International Whaling Commission, 1992-present. Chair, Working Group on Abundance Estimation, Stock Status, and International Cruises (2021-present, co-Chair 2018-2021). The IWC shapes international and domestic policy for cetaceans. I help lead scientific development of global aboriginal whaling management policies with a small team of international colleagues.

National:
International Biometrics Society ENAR/WNAR representative to American Association for the Advancement of Science (AAAS), 2005-2007

University:
Committee on Responsibilities and Standing of Academic Faculty, 9/10-12/14
University Curriculum Committee, 8/00-12/02 (15% effort allocation)
Faculty Council 7/13- 12/14
School of Global Environmental Sustainability, Curriculum Committee, 9/08-5/09

College:
College of Natural Sciences Curriculum Committee:
	Chair,		8/00-12/02 and 8/08-5/09
	Member,		4/99-8/00 and 8/03-8/08
College of Natural Science Strategic Planning Committee, 12/04-12/05
Sabbatical Committee, 9/11-5/15

Department (various year spans and instances):
2014 Graybill/ENVR Organizing Committee, Co-Chair
Graduate committee
Hiring committee, member and Chair
Undergraduate committee
Computing committee
Distance program admission committee, chairperson

Distance degree program; including coordinator
Seminar Coordinator
Technical Report Coordinator

PROFESSIONAL AFFILIATIONS AND ACTIVITIES

Membership in Professional Societies:
American Statistical Association, 1992-present
International Biometrics Society, WNAR, 2005-2008
American Association for the Advancement of Science, 2005-2008
Society for Computer Simulation, 1994-1995
International Statistical Institute, 1993-1994

Review/Editorial Boards:
Series Advisor, Wiley Series in Probability and Statistics, 2014-present
Consulting Editor, Wiley Series in Computational Statistics, 2004-2013
Associate Editor, *Computational Statistics and Data Analysis*, 2010-2015
Associate Editor, *Australia and New Zealand Journal of Statistics*, 2002-2015

Grant Refereeing:
National Science Foundation
Australian Marine Mammal Center, Australian Antarctic Division
North Pacific Research Board
International Whaling Commission

Manuscript Refereeing:
Journal of the American Statistical Association
Journal of Computational and Graphical Statistics
Statistics and Computing
Biometrics
Statistica Sinica
Demography
Ecology
Arctic
Marine Mammal Science
Journal of Applied Ecology
Water Resources Research
Report of the International Whaling Commission
Journal of Cetacean Research and Management
A.A. Balkema Publishers
John Wiley and Sons Publishers

Other Review Boards:
Program Committee, Biometrics Symposium, BCC 2005-7.
National Marine Fisheries Service panel review for United States Letter of Authorization
        for an arctic oil exploration project.

IATTC Inter-American Tropical Tuna Commission independent panel review of data collection and database use.

NSB Scientific Advisory Committee panel review of BP Alaska's Northstar Development (Liberty Prospect) Environmental Impact Statement to the US Dept. of Interior, US Minerals Management Service.

NSB Scientific Advisory Committee panel review of BP Alaska's sound monitoring program for the Northstar facility.

OTHER – SERVICE/OUTREACH

Visiting Scholars Sponsored:

Barbara Taylor, 2004. National Marine Fisheries Service, Southwest Fisheries Science Center.

Pia Barner Neve, 1997. Greenland Institute of Natural Resources.

C. Anthony Hunt, 1997. UC San Francisco.

Popular Media:

2013   Speaker, Society of Senior Scholars

2013   Northern Colorado Channel 5 News, profile

2013   MarineConnection.Org, brief profile

2000   *National Fisherman*, "Harvest in the Spotlight: To Whale or Not to Whale?"

1998   Science and Technology Network (syndicated), "Whaling with Computers"

1998   *Rocky Mountain News*, "Leviathan Effort", feature article.

1997   *Daily Telegraph* (U.K.), "Cancer Alert on Passive Smoking `is False Alarm'"

Community Outreach

2013-2014 Blevins Middle School, Visiting Scientist Days