

FIRST ANNUAL CONFERENCE:  
**STATISTICAL SURVEY DESIGN AND ANALYSIS  
FOR AQUATIC RESOURCES**  
Department of Statistics



*SPONSORED BY:* STARMAP  
(SPACE-TIME AQUATIC RESOURCES MODELING AND ANALYSIS PROGRAM)

**AGENDA**  
Final

PLACE: 108A, Microbiology Building, Colorado State University Campus.

**Friday 9/20/2002**

**1:00 - 2:00 pm: Background**

- Introduction. Richard Davis, Chair, Department of Statistics, Colorado State University
- Rick Miranda, Dean, College of Natural Sciences, Colorado State University
- Statistics in EPA's Science to Achieve Results (STAR) Program. Barbara Levinson, Project Officer, STAR Program, EPA
- Sound science for Monitoring Ecological Condition. Anthony Olsen, EMAP Design, WED, NHEERL, EPA

**2:00 - 3:00 Design-Based/Model-assisted Survey Methodology for Aquatic Resources: An EPA STAR Cooperative Research Program.** Don L. Stevens, Statistics, Oregon State University

**3:00 - 3:30 Break**

**3:30- 5:30 Oregon State University Research Projects**

**Project 3: Survey Design Methodology for Aquatic Resources**

- Introduction - Don L. Stevens
- Spatial Interpolation of Environmental Variables using Bayesian Techniques and Ancillary Information. Steven S. Carroll, Department of Statistics, Oregon State University
- ODFW Coho Salmon Trend Analysis Development. Don L. Stevens and Cynthia Cooper, Department of Statistics, Oregon State University
- Model-Aided Sampling Designs for Salmon Population Status. Jean-Yves Pip Courbois, Department of Statistics, VIGRE, Loveday Conquest, Aquatic/Fisheries Science, and Rebecca Buchanan, Quantitative Ecology and Resource Management, University of Washington, Seattle, WA
- Inferring Species Richness from Samples. Paul Murtaugh, Department of Statistics, Oregon State University
- Causal Modeling of Benthic Invertebrate Data. Alix I. Gitelman, Department of

Statistics, Oregon State University

**Project 4: Parametric Model-Assisted Survey Methods for Environmental Surveys**

- Project Overview. Virginia M. Lesser, Paul Murtaugh, Breda Munoz-Hernandez, Ruben A. Smith-Cayama and Bev Benham, Department of Statistics, Oregon State University
- Design-Based Orthogonal Empirical Functions. Breda Munoz-Hernandez and Virginia M. Lesser, Department of Statistics, Oregon State University.
- Handling Missing Data in Environmental Surveys. Ruben Smith-Cayama and Virginia M. Lesser, Department of Statistics, Oregon State University

**Saturday, September 21, 2002**

(continue in Microbiology 108A, Colorado State University)

**8:30 - 9:15 Overview of STARMAP, the Program at Colorado State University. Overview.** N. Scott Urquhart, Department of Statistics, Colorado State University

**9:15 - 9:55: Colorado State University Research Projects**

**Project 1: Combining Environmental Data Sets.** Jennifer A. Hoeting, Department of Statistics, Colorado State University

- Optimal Lattice and Geo-referenced Sample Designs for EMAP. Molly Leecaster, Idaho National Engineering and Environmental Laboratory, Jennifer A. Hoeting, Department of Statistics, Colorado State University, and Kerry J. Ritter, Southern California Coastal Water Research Project
- Predicting Acid Neutralizing Capacity. Brett Kellum, Jennifer A. Hoeting, and N. Scott Urquhart, Statistics, Colorado State University
- Composition Models for Benthic Invertebrate Data. Devin Johnson, Department of Statistics, Colorado State University

**9:55 - 10:25 Break**

**10:25 - 12:00 Colorado State Projects (continued)**

**Project 2: Local Inference.** F. Jay Breidt, Department of Statistics, Colorado State University

- Local Inferences via Nonparametric Model-Assisted Methods. F. Jay Breidt, Department of Statistics, Colorado State University and Jean D. Opsomer, Department of Statistics, Iowa State University
- Nonparametric Survey Regression Estimation in Two-Stage Spatial Sampling. Siobhan Everson-Stewart, Department of Statistics, Colorado State University
- Estimating Distribution Functions from Survey Data Using Nonparametric Regression. Alicia A. Johnson, Department of Statistics, Colorado State University
- Semiparametric Mixed Models in Small Area Estimation. Mark J. Delorey,

Department of Statistics, Colorado State University

**Project 3: Indicator Development - Dave Theobald leading**

- Developing GIS Indicators and Metrics. Dave Theobald, Natural Resources Ecology Laboratory, Colorado State University
- Quantifying Taxonomic Richness in Terms of the Level of Rarity Assessed by a Fixed Count. Kerry J. Ritter, Southern California Coastal Water Research Project, David Birkes, Department of Statistics, Oregon State University, and N. Scott Urquhart, Department of Statistics, Colorado State University

**Project 4: Outreach**

- Overview. N. Scott Urquhart, Department of Statistics, Colorado State University
- Evaluation of Tribal Needs: A Preliminary Report. Steven Johnson, Water Quality Technology, Fort Collins, CO

**12:30 - 3:00 Lunch - Science Advisory Committee** ( Kansas Room, 2<sup>nd</sup> floor, Holiday Inn, luncheon meeting. SAC, only.)

**POSTERS**

USEPA River Reach File RF3 and USGS Northwest Stream Database. Barbara J. Rosenbaum, Computer Sciences Corp, EMAP/WED/NHEERL/ORD/EPA. Corvallis, OR

Linking Watersheds to Streams: Using a Direct Measure of Flow to Model Hydrological Networks. Mary Kneeland and David Theobald, Natural Resource Ecology Lab, Colorado State University, Ft. Collins, CO.

Statistical Survey Design and Analysis for Aquatic Resources: External Collaborators of the CSU and OSU Programs. Mary Kneeland, Natural Resources Ecology Lab, and N. Scott Urquhart, Department of Statistics, Colorado State University, Ft. Collins, CO.

Design and Implementation of Riparian Vegetation Monitoring Along the Colorado River in Grand Canyon. Kearsley, M.J.C. and N.S. Urquhart. Also displayed at Ecological Society of America Annual Meeting, Tucson, AZ, August 5, 2002.