

# JANUARY 27–28, 2005– MEETING AGENDA

## Thursday, January 27th

Session 1 (8:30am – 11:30pm)

### Introductory session

8:30 - 8:40 Welcome & Introductions  
 8:40 - 8:45 Workshop Goals and Objectives

### Introduction to Population Modeling, Parameterization, and Analysis

8:45 - 9:20 The Basics of the Deterministic Matrix Population Model  
 9:20 - 10:00 Perturbation Analysis and Short Term Dynamics  
 10:00 - 10:30 Break  
 10:30 - 11:10 Stochastic and Density Dependent Models  
 11:10 - 11:30 Models, Models, and Alternative Models

### Lunch (11:30pm – 1:00pm)

Session 2 (1:00pm – 4:50pm)

### Introduction to Aves Modeler

1:00 - 1:20 Introduction and General Overview  
 1:20- 2:00 Database: Capabilities, Summary of Current Data, and Functionality  
 2:00 - 3:00 Hands On: Literature Search, Data Entry, Extraction and Summaries  
 3:00 - 3:15 Break  
 3:15 - 3:45 Modeling Software: Capabilities, Basic Structure, Catastrophic Scenarios, Output, and Functionality  
 3:45 - 4:05 Case Study: Deterministic Example of Pre- and Post-breeding Models  
 4:05-4:50 Hands On: Creating a Model and Understanding the Output

## Friday, January 28<sup>nd</sup>

Session 3 (9:00am– 11:45am)

### Modeling Software : Advanced

9:00 - 9:25 Case Study: Stochastic Models and Density Dependent Models  
 9:25 - 10:15 Hands On: Stochastic Models, and Density Dependence  
 10:15 - 10:45 Break  
 10:45—11:00 Question and Answer Session  
 11:00 - 11:45 Hands On: Build Your Own Model

### Lunch (11:45pm – 1:00pm)

### Modeling Software : Advanced (Continued)

Session 4 (1:30pm – 4:30pm)

1:00 - 1:15 Question and Answer Session  
 1:15 - 2:30 Build Your Own Model (Continued)\*  
 2:30 - 3:45 Wrap Up and Discussion

\*Build your own model: Here we will help you to use the software to build a model of your choice. You can bring your own data and basic life cycle information, or use a sample exercise we will provide. The value of this session to you and your work will be determined by your own willingness to participate.

For information and updates see:

[www.auburn.edu/~grandjb](http://www.auburn.edu/~grandjb)

### Project Background:

In 2001, the USGS Alaska Science Center and the Alabama Cooperative Fisheries and Wildlife Research Unit (ALCFWRU) began a research project intended to develop modeling tools that would be useful to biologists and managers for predicting the recovery and/or extinction of Beaufort Sea waterbird populations following a catastrophic-mortality event such as a major oil spill. Here we present this tool, Aves Modeler, which includes a database of literature on Beaufort Sea species and a multifaceted modeling tool. This workshop is the 3rd in a series of workshops that began in 2001 on estimating the effects of oil related losses on the birds of the Beaufort Sea.



# Understanding the Impacts of Catastrophes on Marine Bird Populations: Using AvesModeler for Population Level Analyses

In 2001, the USGS Alaska Science Center and the Alabama Cooperative Fisheries and Wildlife Research Unit began a project intended to develop modeling tools that would be useful to biologists and managers for predicting the recovery and/or extinction of Beaufort Sea waterbird populations following a catastrophic event such as an oil spill. The result of this project is AvesModeler, a user-friendly software tool that includes a database of demographic literature for 29 waterbird species and a multifaceted matrix modeling program.

## *The modeling portion of AvesModeler features:*

1. Step-by-step model development and data entry
2. Flexibility with capabilities to create deterministic and stochastic models (pre- and post-breeding design options), and density dependent models
3. Capability to process up to 10 user-defined catastrophic loss scenarios with inputs ranging from acute losses to long-term declines in vital rates
4. Pop-up boxes with hints, definitions and examples, and built in error checking

## *This work shop features:*

1. A mini-course in matrix population modeling, deterministic and stochastic models, perturbation analysis, and model selection.
2. An introduction and hands on demonstration of the new and improved AvesModeler database program.
3. An introduction and hands on demonstration of the new and improved modeling software.
4. An opportunity to develop a model with your own data using AvesModeler and receive assistance from our staff.

## Workshop Organizers

Dirk Derksen  
USGS Alaska Science  
Center

James (Barry) Grand  
Alabama Cooperative Fish  
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Jennifer Arnold  
Alabama Cooperative Fish  
and Wildlife Research Unit

David Koons  
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## Support Staff

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# Understanding the Impacts of Catastrophes on Marine Bird Populations: Using AvesModeler for Population Level Analyses



**Alaska  
Science Center  
Anchorage, Alaska**  
January 27th and 28th  
2005

**HOSTED BY:**  
U.S. GEOLOGICAL SURVEY  
ALASKA SCIENCE CENTER  
AND  
ALABAMA COOPERATIVE FISH AND WILDLIFE  
RESEARCH UNIT