Glasgow, 17ᵗʰ - 19ᵗʰ August 2015

An Introduction To Using GIS In Marine Biology

Course Announcement

GIS In Ecology will be holding an introductory training course on using GIS for marine biological research in Glasgow on the 17ᵗʰ to 19ᵗʰ of August 2015. The course will be taught by Dr. Colin D. MacLeod, the author of *An Introduction To Using GIS In Marine Biology* (Pictish Beast Publications, Glasgow, UK). It is aimed at those just starting to use GIS in their research and who have little or no existing knowledge of this subject area. A preliminary course timetable and content can be found on page two of this announcement. All the practical exercises will be done using a standard data set so you do not need to have your own data to do this course. Attendance will be limited to a maximum of 15 people. The course will cost £395 per person (£300 for students, the unwaged and those working for registered charities). To book a place, or for more information, contact info@GISinEcology.com.

At the end of the course, all attendees will receive a certificate of attendance and completion. Each certificate is embossed with the GIS In Ecology official stamp to prevent its fraudulent reproduction. In addition, each certificate has its own unique identification number that we will record, along with your name, meaning that we can verify the authenticity of the certificates we issue (and the course you have completed) on request.

To attend this course, you must bring your own laptop computer and have a fully licensed copy of ArcGIS software (the course will be primarily be taught based on ArcGIS 10.3, but ArcGIS 10.2, 10.1, 10.0 and 9.3 will be supported), and a licence for the ArcGIS Spatial Analyst extension pre-installed on it. You can find information about how to get this software package at http://groups.google.com/group/gis-in-ecology-forum/browse_thread/thread/35b142b06c09d1ef#. It addition, you will also need to have spreadsheet software, such as Excel, on your computer.

The course will be held in central Glasgow at the IET Glasgow Teacher Building (14 St Enoch Square, Glasgow, G1 4DB, UK - see http://teacherbuilding.theiet.org/about/location.cfm for information on how to get there and on parking if you are coming by car). For information on how to get to Glasgow see http://www.seeglasgow.com/getting-here/.

Attendees will be responsible for their own accommodation. However, Glasgow provides a wide range of accommodation options to fit most budgets. Information on accommodation in Glasgow can be found at http://www.glasgowguide.co.uk/hotels.html or http://www.hostelbookers.com/hostels/scotland/glasgow/. As a general rule, if you can find accommodation near the venue or one of Glasgow's Subway Stations (see http://www.spt.co.uk/subway/maps-stations/), you will be able to get to the venue very easily.

Attendees will be responsible for their own lunches. Hoowever, there are plenty of cafes, takeaways, supermarkets, bars and restaurants within a short walk of the Teacher Building to provide food to fit all budgets.

Preliminary Course Timetable And Contents

Day One – 17*th* August 2015

10:00 – Welcome And Introduction.

10:05 – 1. Background Session One:
      1.1 What is GIS and why is it useful in marine biology?.
      1.2 The structure of GIS projects in ArcGIS software.
      1.3 An introduction to data layers.
      1.4 The importance of projections, coordinate systems and datums.
      1.5 Understanding resolution and scale in GIS projects.

11:05 – Coffee Break

11:25 – Background Session Two:
      2.1 Things to think about before you start your GIS project
      2.2 An introduction to ArcGIS software

11:45 – Practical Session One: Starting A GIS Project:
      3.1 Setting the projection, coordinate system and datum for your data frame.
      3.2: Adding existing data layers to your GIS project.
      3.3 Adding locational data as a point data layer.
      3.4 Re-creating survey tracks as line data layers from GPS waypoints.
      3.5 How to create a new data layer.

13:00 – Lunch.

14:00 – Background Session Three: Collecting Data For Use In A GIS Project:
      4.1 Data collection for GIS projects.
      4.2 Using GPS data in a GIS project.
      4.3 The importance of error checking your data during data input.
      4.4 Error checking other peoples data.

14:30 – Practical Session Two: Making A Map For A Presentation, Report Or Publication (with coffee break at 15:30):
      5.1 Setting the extent of your map.
      5.2 Selecting the right projection.
      5.3 Making sure that your data layers are displayed correctly.
      5.4 How to deal with legends
      5.5 Adding latitude and longitude information around the edges.
      5.6 Adding a scale bar.
      5.7 How to ensure that multiple maps of the same area are identical.

17:00 – Close.

Day Two – 18*th* August 2015

09:30 – Background Session Four: An Introduction To Working With Raster Data Layers:
      6.1 What are raster data layers and why are they useful?
      6.2 Things you need to think about before creating raster data layers.

10:00 – Practical Session Three: Working With Raster Data Layers (with coffee break at 11:00):

7.1 Making a raster data layer of species distribution.
7.2 Making a raster data layer of survey effort.
7.3 Making a presence-absence raster data layer for a species.
7.4 Making a species richness raster data layer.
7.5 Making raster data layers of habitat variables (such as water depth, seabed slope, seabed aspect and standard deviation of seabed slope).

12:30 – Lunch.

13:30 – Background Session Five: Using GIS To Investigate Spatial Relationships
8.1 What are spatial joins and how can you do them in GIS.

14:00 – Practical Session Four: Investigating Spatial Relationships (with coffee break at 15:15):
9.1 Linking species locational records to habitat variables such as water depth to compare habitat preferences between species.
9.2 Linking habitat variables to presence-absence data from a raster data layer.

17:00 – Close.

Day Three – 19ᵗʰ August 2015

09:30 – Background Session Six: How to Translate Biological Tasks Into The Language Of GIS:
10.1 Using flow diagrams to work out what steps you need to do to do a biological task in GIS.
10.2 Automating tasks in GIS.
10.3 How to find out how to do specific tasks in GIS.
10.4 Using Extensions and scripts.

10.5 Using non-GIS software to do specific tasks.

10:30 – Coffee Break.

10:35 – Practical Session Five: Creating And Using Polygon Grid Data Layers:
11.1 Using a polygon grid to calculate abundance per unit survey effort for each grid cell for a study area.
11.2 Linking environmental data to a polygon grid data layer.

12:30 – Lunch.

13:30 – Background Session Seven: Extracting Data For Statistical Analysis:
12.1 Preparing data for statistical analysis.
12.2 Exporting data from a GIS project for use in statistical analysis.

14:00 – Practical Session Six: Exporting Data From Your GIS (with coffee break at 15:00):
13.1 How to export data layers from a GIS project for use in other software
13.2 How to add latitude and longitude to a data layer before exporting it so it can be re-plotted in a GIS project at a later date.

15:30 Summary And Closing Remarks (finish by 16:00).