GIS IN ECOLOGY
Approved Course
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Providing Training, Advice And Consultancy On The Use Of Geographic Information Systems In Ecology
www.GISinEcology.com

Preliminary Course Timetable And Contents

Day One

Welcome And Introduction.

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.

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

3. 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.

4. 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.

5. 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.

Day Two

6. 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.

7. Practical Session Three: Working With Raster Data Layers:
      7.1 Making a presence-absence raster data layer for a species.
      7.2 Making a species richness raster data layer.
      7.3 Making raster data layers of habitat variables (such as water depth, seabed slope, seabed aspect and standard deviation of seabed slope).

8. Practical Session Four: Creating And Using Polygon Grid Data Layers:
      8.1 Using a polygon grid to calculate abundance per unit survey effort for each grid cell for a study area.

9. Background Session Five: Joining Data Together Based On Their Spatial Locations
      9.1 Spatial joins.
      9.2 Extractions.
      9.3 Zonal statistics.
      9.4 Table joins.

10. Practical Session Five: Investigating Spatial Relationships:
      10.1 Linking species locational data to habitat variables
      10.2 Linking environmental data to presence-absence raster data layer.