

Summer Course

Next Generation Data Management in Movement Ecology

San Michele all'Adige, Trento, Italy

PROGRAMME

Module I

Introduction to Spatial Database and SQL

DAY 1 (Wednesday, 01-07-2015)

Morning (08:00-12:00)

- Welcome speech, general introduction to the course and logistics, presentation of speakers and participants (Francesca Cagnacci, 08:00-08:20)
- From unstructured data to databases (Antonio Galea, 08:20-09:00)
- Exploring a PostgreSQL database (Antonio Galea, 09:00-10:00)
COFFEE BREAK (10:00-10:30)
- Retrieving data from tables (Antonio Galea, 10:30-11:30)
- Play with SELECT statement (Antonio Galea and Federico Ossi, 11:30-12:00)

Afternoon (13:00-18:00)

- SQL functions (Antonio Galea, 13:00-15:00)
COFFEE BREAK (15:00-15:30)
- Working with multiple tables (Antonio Galea, 15:30-17:00)
- Create a report on animal record data (Antonio Galea and Federico Ossi, 17:00-18:00)

DAY 2 (Thursday, 02-07-2015)

Morning (08:00-12:00)

- Installation of PostgreSQL and PgAdmin (Antonio Galea, 08:00-10:00)
COFFEE BREAK (10:00-10:30)
- Exploring databases with PgAdmin (Antonio Galea and Federico Ossi, 10:30-12:00)

Afternoon (13:00-18:00)

- Creating database and tables (Antonio Galea, 13:00-15:00)
COFFEE BREAK (15:00-15:30)
- Populating tables with CSV data (Antonio Galea and Federico Ossi, 15:30-16:00)
- Database maintenance: dump, restore, user administration (Antonio Galea, 16:00-17:00)
- Installation of tracking database (Antonio Galea and Federico Ossi, 17:00-18:00)

DAY 3 (Friday, 03-07-2015)

Morning (08:00-12:00)

- PostGIS and spatial data types (Antonio Galea, 8:00-10:00)
COFFEE BREAK (10:00-10:30)
- PostgreSQL and PostGIS at work for ecological investigation (Federico Ossi, 10:30-12:00)

Afternoon (13:00-18:00)

- PostGIS application (Antonio Galea and Federico Ossi, 13:00-15:00)
COFFEE BREAK (15:00-15:30)
- Accessing data from other clients: ODBC drivers (Antonio Galea, 15:30-18:00)

Module II

Database for wildlife Tracking data Management

DAY 1 (Monday, 06-07-2015)

Morning (08:00-12:00)

- Welcome speech, general introduction to the second module, presentation of speakers (Francesca Cagnacci, 08:00-08:20)
- TALK: Introduction to wildlife tracking (Federico Ossi, 08:20-09:30)

- TALK: An answer to our management needs: relational database (Ferdinando Urbano, 09:30-10:00)
COFFEE BREAK (10:00-10:30)
- EXERCISE: Storing your tracking data in an advanced database platform: PostgreSQL (Ferdinando Urbano, 10:30-12:00)

Afternoon (13:00-18:00)

- TALK: Extending the database with other meta information: capture, mortality, population data (Federico Ossi, 13:00-13:30)
- EXERCISE: Managing and modelling information on animals and sensors (Ferdinando Urbano, 13:30-15:30)
COFFEE BREAK (15:30-16:00)
- CASE STUDY: Eurodeer (Francesca Cagnacci, 16:00-16:30)
- EXERCISE: From data to information: associating locations to animals – part I (Ferdinando Urbano, 16:30-17:30)
- CASE STUDY: U.S. IOOS Data Management for Marine Animal Telemetry (Hassan Moustahfid [remote connection], 17:30-18:00)

DAY 2 (Tuesday, 07-07-2015)

Morning (08:00-12:00)

- EXERCISE: From data to information: associating locations to animals – part II (Ferdinando Urbano, 08:00-09:30)
COFFEE BREAK (09:30-10:00)
- EXERCISE: Spatial is not special: how to manage the location data in a spatial database: PostGIS (Ferdinando Urbano, 10:00-12:00)

Afternoon (13:00-18:00)

- TALK: Geographical data in ecology: from local to global spatial scales (Duccio Rocchini, 13:00-13:30)
- EXERCISE: Environmental layers: integration and management of spatial ancillary information (Ferdinando Urbano, 13:30-15:00)
COFFEE BREAK (15:00-15:30)
- EXERCISE: How to extract environmental information related to location data (Ferdinando Urbano, 15:30-16:30)
- TALK: Finding our way on the sharing and re-use of animal telemetry data in Australasia (Hamish Campbell, 16:30-17:30)
- CASE STUDY: ZoaTrack- A web-based platform for assessing species movement and occupancy (Hamish Campbell, 17:30-18:00)

DAY 3 (Wednesday, 08-07-2015)

Morning (08:00-12:30)

- TALK: From locations to steps: the movement model (Mathieu Basille, 8:00-10:00)
COFFEE BREAK (10:00-10:30)
- EXERCISE: The movement model: implementation (David Bucklin, 10:30-12:30)

Afternoon (13:30-18:00)

- TALK: Sensors data: how to ingest into the database (Timothy Giles, 13:30-14:30)
- CASE STUDY: WRAM (Timothy Giles, 14:30-15:00)
COFFEE BREAK (15:00-15:30)
- EXERCISE: Consolidation and use of the spatial database: recap exercises (Ferdinando Urbano, 15:30-18:00)

DAY 4 (Thursday, 09-07-2015)

Morning (08:00-12:00)

- TALK: GPS technology and future perspectives (Nicola Gadow, 08.00-08.45)
- TALK: Accelerometers: investigating animal's activity (Anne Berger, 08:45-09:45)
- EXERCISE: Integrating activity data into the database (Ferdinando Urbano, 09:45-10:30)
COFFEE BREAK (10:30-11:00)
- EXERCISE: Working with activity data: some examples (Ferdinando Urbano, 11:00-12:00)

Afternoon (13:00-18:00)

- TALK: A new type of biologged data: spatial explicit contact detection (Federico Ossi and Francesca Cagnacci, 13:00-13.30)
- EXERCISE: Data quality: how to manage wrong locations (Ferdinando Urbano, 13:30-15:30)
COFFEE BREAK (15:30-16:00)
- EXERCISE: Analyzing and managing movement data: examples of representations and tools in the database framework (Ferdinando Urbano, 16:00-17:00)
- TALK: Data sharing and dissemination in movement ecology: why and how to archive your data (Sarah Davidson [remote connection], 17:00-17:30)
- CASE STUDY: Movebank (Martin Storhas, 17:30-18:00)

DAY 5 (Friday, 10-07-2015)

Morning (08:00-12:30)

- EXERCISE: There and back again – part I: Analyzing movement data in the R statistical environment (Mathieu Basille, 08:00-10:00)
COFFEE BREAK (10:00-10:30)
- TALK: The Qualitative Trajectory Calculus (QTC) as a tool to analyse complex interactions between moving animals (Nico Van de Weghe, 10:30-11.00)
- EXERCISE: There and back again, part II: Connecting PostGIS and R (Mathieu Basille, 11:00-12:30)

Afternoon (13:30-18:00)

- EXERCISE: The movement model: recap and integration with the database concepts developed so far (Mathieu Basille and David Bucklin, 13:30-15:30)
COFFEE BREAK (15:30-16:00)
- EXERCISE: There and back again, part III: Extending PostGIS with PI/R (Mathieu Basille, 16:00-17:30)
- Final remarks (Francesca Cagnacci, 17:30-18:00)