UNIVERSITY OF MICHIGAN-DEARBORN

2012 IPS Pre-Congress Workshop on Use of GPS for Field Primatologists

AUGUST 10-11, 2012

The Practical Application of GPS and Spatial Analyses for Field Primatologists

Co-Organizers: [1]**Francine Dolins,** [2]**Christopher Shaffer,** [3]**Leila Porter ,** [4]**Jena Hickey &** [5]**Nathan P. Nibbelink**

[1]Department of Behavioral Sciences, University of Michigan-Dearborn, Dearborn, MI, USA (fdolins@umich.edu)
[2]Department of Anthropology, Washington University, St. Louis, MO, USA (cashaffe@wustl.edu)
[3]Department of Anthropology, Northern Illinois University, DeKalb, IL, USA (lmporter@niu.edu)
[4,5]Warnell School of Forestry & Natural Resources, University of Georgia, GA, USA (jhickey@uga.edu); (nate2@uga.edu)

Background and Aims of the Workshop:

Data derived from GPS and other spatial data sources used in the field of primatology provide meaningful insight into animal and group movement, decision-making, social interactions and relationships, territoriality, and conservation. Spatial data collected in the field setting allows for derivation of useful pattern analyses; but to be effective, attention must be given to fulfilling requirements such that data collection and analyses are adjusted for each study and field site accordingly. Foundational requirements for effective GPS data collection and

analyses include knowledge of: (1) intricacies involved in programming individual GPS receivers to suit field study sites; (2) availability of software for spatial analysis methods; and (3) suitability of analysis methods for different types of field data addressing specific questions.

The purpose of this workshop is to address all three foundational requirements for effective GPS data collection and analyses by providing field primatologists with practical experience and information about how to collect and geoprocess GPS-derived data. Participants will gain hands-on field experience with 'good practice' in GPS data collection and learn how to use ArcGIS and Google Earth as instruments to transform, quantify and display spatial data. Relevant topics in the use of spatial data in primatology include: (1) GPS accuracy as affected by tree canopy density and receiver orientation; (2) considerations of spatial reference systems and projections of spatial data; and (3) variable applications of common spatial statistics useful in quantifying spatial data. This workshop aims to increase spatial literacy while providing primatologists with the knowledge necessary to enhance their use of spatial data in field research.

Workshop participants will be asked to supply their own GPS devices, laptops, appropriate data transfer cables (USB) and extra batteries. Participants are welcome to bring with them GPS data sets for examination and analysis during the workshop. The Workshop Organizers will supply copies of the software analysis program by ESRI, ArcGIS 10.0.

Timetable for the workshop

***Please note that the schedule listed below may be altered to accommodate workshop participants' interests or the need to convey information within the sessions.**

The Practical Application of GPS and Spatial Analyses for Field Primatologists

Workshop participants will be asked to supply their own GPS devices, laptops, appropriate data transfer cables (USB) and extra batteries. Participants are welcome to bring GPS data sets for examination and analysis during the workshop. The Workshop Organizers will supply copies of the software analysis program by ESRI, ArcGIS 10.0.

UNIVERSITY OF MICHIGAN-DEARBORN

DAY 1:

Presentations of How GPS Data Are Used to Address a Variety of Research Questions at Various Field Sites

8:30-9:00am: Morning coffee/tea/juice and continental breakfast

9:00-9:15am: F. Dolins & L. Porter: Welcome to the workshop

9:15-9:40am: C. Schaffer: Introduction to the Workshop: concepts, problems, and technology in addressing field Primatology research questions with GPS and other spatial data sources (side note for organizers: C. Shaffer will also introduce himself briefly during this Intro)

9:40-9:45am: J. Hickey & N. Nibbelink: Introduce themselves & their background with GPS/GIS briefly

9:45-10:30am: C. Schaffer: GIS analysis of patch use and group cohesiveness of bearded sakis (*Chiropotes sagulatus*) in the Upper Essequibo Conservation Concession, Guyana

10:30-11:00am: *Tea/Coffee break*

11:00-11:45am: L. Porter and P. Garber: GPS-based data analyzing route-based mental maps during traveling and foraging in wild Bolivian saddleback tamarins (*Saguinus fuscicollis weddelli*)

11:45-12:30am: K.C. MacKinnon: A comparison of GPS data to investigate wild capuchin home range use in primary tropical rain forest in Suriname (*Sapajus apella*) and secondary tropical dry forest in Nicaragua (*Cebus capucinus*)

12:30-2pm: *Lunch (provided with registration for workshop)*

2:00-2:45pm: K. Janmaat, R. Mundry, S. Ban and C. Boesch: Estimating travel distances and linearity using tracking data collected with a handheld GPS: Ideas on how to clean and smooth data

2:45-3:30pm: J. Hickey: Combining GPS-level and landscape-level data to model the distribution of bonobos (*Pan paniscus*)

3:30-4:00pm: *Tea/Coffee break*

4:00-4:45pm: F. Dolins: Round table for speakers to discuss how they could have conducted their GPS data collection and analyses differently: approaching problems and solutions at their field sites and with the technology.

UNIVERSITY OF MICHIGAN-DEARBORN

4:45-6:00pm: C. Schaffer, J. Hickey, & N. Nibbelink: Set-up with GIS software and GPS units; includes installation of common GIS software onto participants' personal laptop computers and instruction for participants to gain familiarity with the software for Day 2 data collection and analyses.

6:00-6:10pm: F. Dolins and L. Porter: Brief summary and recommendations for Day 2.

Dinner on own.

DAY 2:

Collecting and Methods of Analyzing GPS Data

8:00-8:30am: Morning coffee/tea/juice and continental breakfast

8:30-9:15am: N. Nibbelink: Introduction to GPS - What it is and how it works, and differential correction

9:15-9:30: *Tea/coffee break*

9:30am-11:15am: C. Schaffer and J. Hickey: Field data collection; includes the collection of point locational data, linear path data, and areal extent data. Working with hand-held GPS receivers; includes discussion of spatial reference systems, the different types of spatial data (point, line, polygon), and programming individual GPS receivers to suit field location for workshop

11:15-11:30am: *Tea/Coffee break*

11:30-12:30pm: N. Nibbelink, C. Schaffer & J. Hickey: Importing data into ArcGIS

12:30-1:30pm: *Lunch (provided with registration for workshop)*

1:30-2:00pm: C. Schaffer: Data Visualization: Importing GPS data into Google Earth for expedient display on any computer

2:00-3:30pm: J. Hickey & C. Schaffer: Data analyses: includes importing and applying common spatial analyses in ArcGIS, home-range estimation, travel routes, and animal movement

3:30-4:00pm: *Tea/Coffee break*

4:00-5:00pm: C. Schaffer: Using free on-line resources to download useful spatial data for individual field study sites (i.e., aerial imagery, digital elevation data, etc.)

UNIVERSITY OF MICHIGAN-DEARBORN

5:00-5:20pm: C. Schaffer, J. Hickey & N. Nibbelink: Questions and Discussion

5:20-5:30pm: F. Dolins: Completing the survey for feedback on the workshop.

5:30-5:40pm: F. Dolins and L. Porter: Thanks and closing remarks.

Dinner on own.

Workshop Dates and Time:

August 10-11, 2012; 8:30am to 6:00pm

Location & Venue:

Hyatt Regency Hotel, Cancun