

Guidelines for Collecting GPS Data for the All Taxa Biodiversity Inventory

1. Recommended Map Coordinate System

UTM Coordinates:

- **UTM Coordinates are preferred** over any other latitude-longitude or any other types of coordinates
- **Use UTM Zone 15**, which is the zone the park is located in
- **The preferred Datum is NAD 83**, which is the current standard for the ATBI database and the parks GIS data
- **Record UTM Easting coordinates to 6 digits** (leave off any preceding zeros), and **UTM Northings to 7 digits**. Record whole numbers only; no decimal places (which represent fractions of a meter), no commas (thousands separators), and no letters (such as 'E' or 'N')

Longitude-Latitude Coordinates:

- If you are unable to collect UTM's, please record/submit Latitude-Longitude (Geographic) coordinates in one of the following three formats:

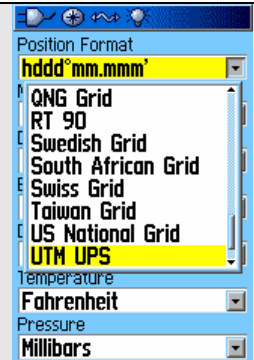
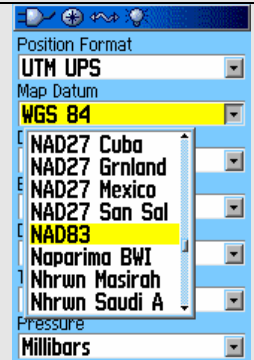
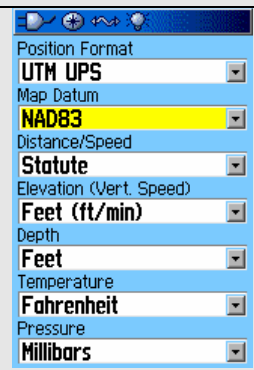
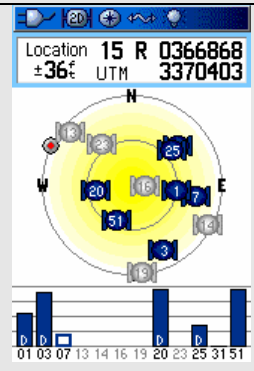
Description	Data Format	Example
decimal degrees	DD.DDDDD	35.20181
degrees and decimal minutes	DD MM.MMM	35 12.108
degrees, minutes and seconds	DD MM SS.S	35 12 06.5

- The **decimal degrees format is preferred**, followed by the degrees-minutes-seconds format
- The preferred datum for lat-long coordinates is also **NAD83**
- Record coordinate values to the number of **significant decimal places** shown above (or more)
- When submitting data, **do not enter symbols (other than decimal points)**, and **leave a single space** between the degrees, minutes, and seconds units
- **Do not use more than one format** within the same set of data

2. Setting your GPS Unit

Note: The following instructions are for a typical Garmin unit; however, most other brands are set up in a similar manner. See your instruction booklet for further assistance.

Setting your GPS Unit to UTM (Zone 15), NAD83:

<p>1. From the main menu, navigate to the Setup page (submenu) and then to the Units page (or Position tab on some units).</p> <p>Select UTM UPS* (or UTM/UPS on some units) for the Position Format....</p> <p>*UPS = Universal Polar Stereographic (used in polar regions instead of UTM)</p>	 <p>A screenshot of the 'Position Format' menu in a GPS device. The menu is titled 'Position Format' and has a dropdown menu set to 'hddd°mm.mmm'. Below this is a scrollable list of coordinate systems: QNG Grid, RT 90, Swedish Grid, South African Grid, Swiss Grid, Taiwan Grid, US National Grid, and UTM UPS (which is highlighted in yellow). Below the list are three more dropdown menus: 'Temperature' set to 'Fahrenheit', 'Pressure' set to 'Millibars', and another 'Pressure' set to 'Millibars'.</p>
<p>2.and then NAD83 (or NAD83 CONUS on some units) for the Map Datum.</p> <p>(Note: The UTM Zone number is not selectable, but rather is automatically calculated by the GPS unit based on your current location, and displayed next to the easting and northing coordinates – see screenshot 4 below).</p>	 <p>A screenshot of the 'Map Datum' menu in a GPS device. The menu is titled 'Map Datum' and has a dropdown menu set to 'WGS 84'. Below this is a scrollable list of datums: NAD27 Cuba, NAD27 Grnland, NAD27 Mexico, NAD27 San Sal, NAD83 (highlighted in yellow), Naparima BWI, Nhrwn Masirah, and Nhrwn Saudi A. Below the list are three more dropdown menus: 'Temperature' set to 'Fahrenheit', 'Pressure' set to 'Millibars', and another 'Pressure' set to 'Millibars'.</p>
<p>3. Check your position settings before each use, especially when the GPS unit is shared with others.</p> <p>But if you do collect data using settings different than above, be sure to record the Position Format and Datum settings used. This information is needed to convert your data into the correct coordinate system.</p>	 <p>A screenshot of the 'Distance/Speed' menu in a GPS device. The menu is titled 'Distance/Speed' and has a dropdown menu set to 'Statute'. Below this are several other dropdown menus: 'Elevation (Vert. Speed)' set to 'Feet (ft/min)', 'Depth' set to 'Feet', 'Temperature' set to 'Fahrenheit', and 'Pressure' set to 'Millibars'.</p>
<p>4. The easting and northing coordinates displayed in the example to the right would be 366868 and 3370403.</p> <p>The “15 R “ displayed on the GPS screen refers to the north-south zone (column) “15” and the east-west band (row) “R” in the UTM grid system.</p>	 <p>A screenshot of the 'Location' screen in a GPS device. At the top, it shows 'Location 15 R 0366868 ±36' UTM 3370403'. Below this is a circular UTM grid diagram with a yellow circle in the center. The grid has columns labeled '15' and '16' and rows labeled 'R' and 'S'. Below the grid is a bar chart with a horizontal axis labeled '01 03 07 13 14 16 19 20 23 25 31 51' and a vertical axis with a 'd' label.</p>

3. Converting Existing Coordinates to UTM (NAD83)

Here are some of the methods available for converting latitude-longitude (or other) coordinates to (and from) UTM.

- GPS manufacturers' software (e.g. Garmin's **MapSource** and US Topo) usually allows you to download and export your data into any coordinate system (regardless of the settings on your GPS unit). Check your GPS manufacturers' web site for more information.
 - <http://www.garmin.com/>
 - <http://www.magellangps.com/>
- The same capabilities are available in many third-party GPS/mapping programs, including:
 - DeLorme
 - Maptech
 - National Geographic
- **DNR Garmin** is a free software program that will download and convert data from Garmin GPS units. The program can be downloaded from the Minnesota Department of Natural Resources GIS website.
 - <http://www.dnr.state.mn.us/mis/gis/tools/arcview/extensions/DNRGarmin/DNRGarmin.html>
- **Corpscon** is an excellent free software utility from the Army Corps of Engineers which will convert coordinates between UTM, lat-lon and State Plane systems, and NAD27 and NAD83 datums. Point coordinates can be converted manually (one at a time), or automatically in batch files. Corpscon will also convert lat-lon coordinates into all three formats.
 - Go to the Army Corps of Engineers Coordinate Conversion Website:
 - <http://crunch.tec.army.mil/software/corpscon/corpscon.html#download>
 - Then download the basic program installation file:
 - "corpscon_base_conus.exe"
- Hints for using Corpscon:
 - Don't enter the minus sign in front of longitudinal values (e.g., "-94.123" should be entered as "94.123" [no quotes]). Corpscon assumes all users are in the western hemisphere, where longitude values are technically negative (unless they are described as "94.123 west", for example).
 - The output values will usually be to several decimal places. Round off these numbers using the guidelines in the first section of this document.
 - Corpscon does not have an option for the WGS84 datum, so instead select NAD83 (the resulting error should be less than a meter).
 - "None" should be selected for the vertical datum (and ignore the vertical datum units field), otherwise you may get strange results. (Vertical datums are only needed when making precise elevational measurements; i.e., not necessary for our purposes).