

DNR GPS

A User Guide for Educators

Prepared by: *The Virginia Geospatial Extension Program*

Overview

DNR GPS is an easy-to-use software application that allows you to manage, manipulate and save your GPS information for use in GIS programs such as ArcMap. This is a “point and click” software package. While there are a number of things that DNR GPS software can do, some of the functions most applicable to extension agents include the following:

- Educators can use this software package to **transfer** GPS data between a Garmin GPS receiver and a PC.
- DNR Garmin can **save** GPS data as projected (or unprojected) shapefiles for use in ArcMap, as graphics, as a database files, or as text files for use in other programs.
- The program allows for initial **projection** of GPS data (i.e. waypoints, routes, etc.) to many different map datums (Lat/Long, UTM/UPS, country grids etc.).
- Information can be **filtered** in various ways and waypoints **sorted** according to specified criteria. Route and track statistics are available and can be transferred into other programs for analysis (i.e. spreadsheet programs).

DNR GPS unfortunately does not have any mapping software that allows you to view your data before you save it to your computer. This guide is written using the Garmin eTrex 10/20/30 GPS receiver. All other Garmin GPS receivers will follow the same protocols.

Before Using DNR GPS

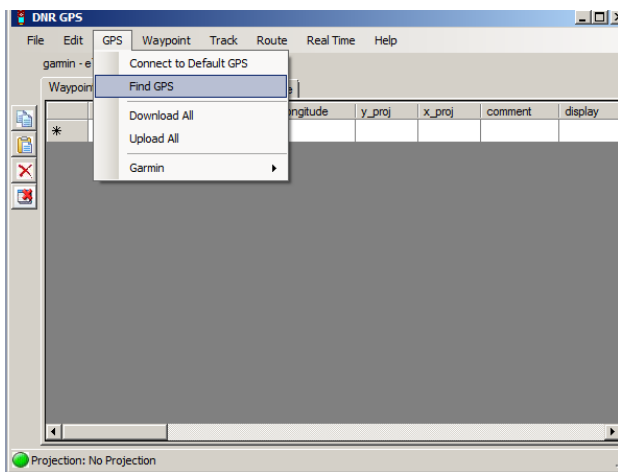
The instructions in this handbook assume the following:

1. You have already installed DNR GPS software on your computer. If you do not have it installed you can download the program at <http://www.dnr.state.mn.us/mis/gis/DNRGPS/DNRGPS.html>
2. You have already collected GPS Data (i.e. waypoints, routes, tracks, etc.), and have stored the GPS data on your GPS receiver (if not, refer to *The Garmin Etrex 10/20/30: An Introductory Handbook for Educators* for additional information and instructions. The Garmin handbook has been prepared by the Virginia Geospatial Extension Program. This customized Garmin handbook is also available online: <http://www.gep.frec.vt.edu/cooltools.html>



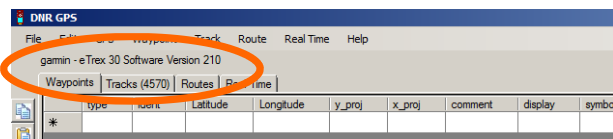
Downloading GPS Data

1. Start DNR GPS by selecting it from the Program list on your computer Start Menu.
2. Connect your GPS receiver to the computer using the data cable provided with your GPS receiver. **Make sure that your GPS receiver is turned on.**
3. On DNR GPS, go to the **GPS** Menu and **Find GPS**.
4. When DNR GPS finds your GPS, you will notice



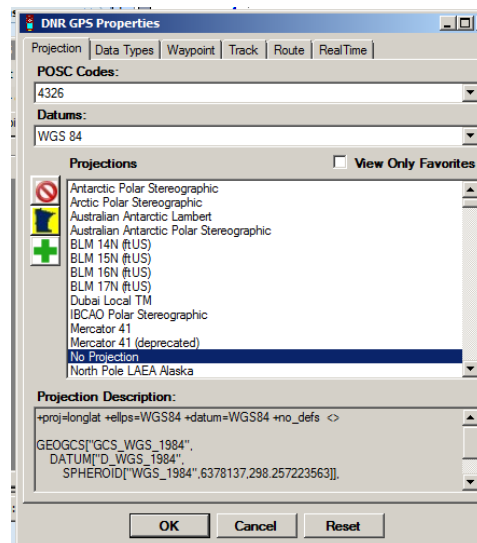
your GPS name listed just under the menu bar. If DNR GPS finds more than one GPS connected to the computer, you will be prompted to select the proper GPS.

Your GPS should now be properly communicating



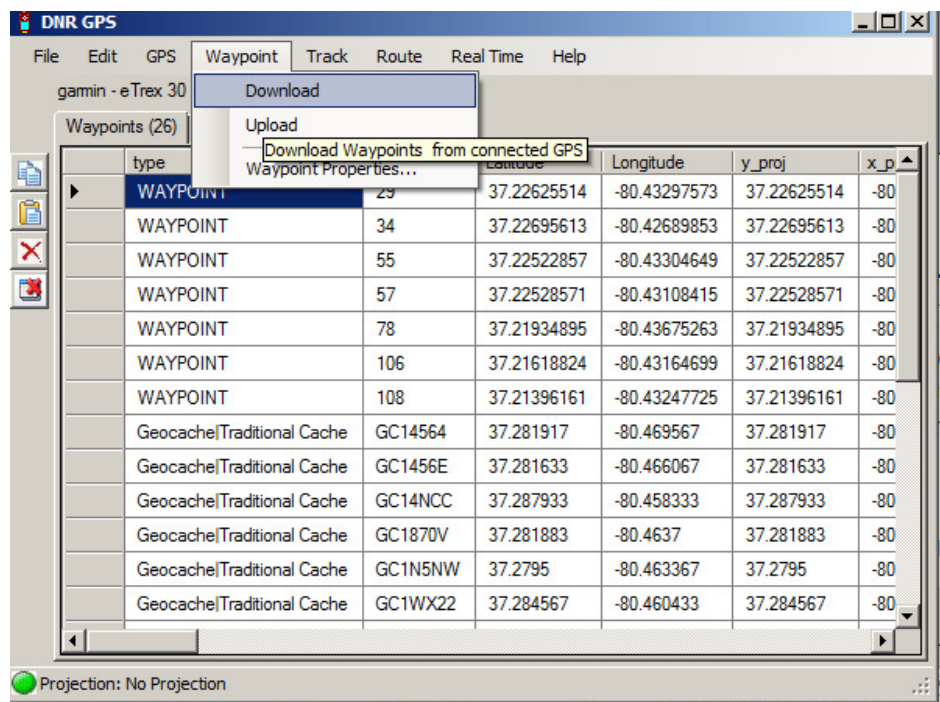
with your PC through the DNR Garmin Software...

4. Now that your GPS unit is connected, you can set up the datum/projection that you would like your data projected to when it is uploaded to DNR Garmin. To do this, go to the **File** menu, then **Set Projection**. This brings you to the GPS Properties dialog box (This can also be accessed by going through the **Waypoint, Track, or Route** menus and the **Properties** option, then the **Projection** tab.).



The Properties dialog box will appear with several tabs. Select the "Projection" tab. Here you are able to choose from a wide range of datum/projections from the ESRI projection folder after selecting the "Load PRJ" button. After selecting a projection your GPS data will be have its projection defined once it is downloaded to DNR Garmin. Once a projection is selected, click "OK."

5. Unfortunately, DNR GPS does not allow you to download more than one type of data at the same time. You must download waypoints, trackpoints, and routes individually by going to the corresponding menu (Shown here: **Waypoint**) and selecting **Download**. You can then select specific waypoints tracks, or routes, or choose to download all. DNR GPS will automatically download the selected type of data and will display the data as shown below.

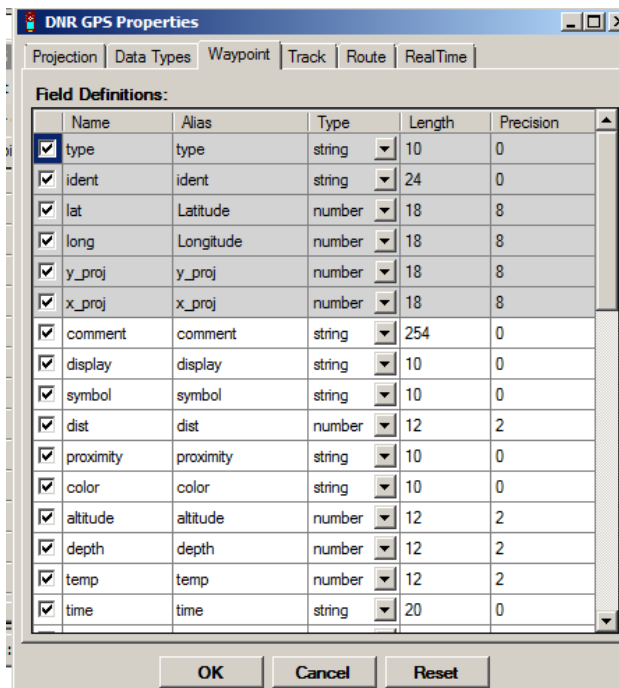


Review of terms:

- Waypoints:** These are “virtual points” or marks that you have saved in individually. Waypoints can be assigned customized names (the GPS receiver assigns them numerical names [001, 002] by default).
- Tracks:** Tracks are a previous path of travel. Basically, you turn on your GPS receiver, and it will start to “map your movements”. Trackpoints are individual points that are used to create a track (if you connect these points, with a line, you would have a track)
- Routes:** A route is a “path to a destination with intermediate stops along the way”. The “stops” along the way are defined by Waypoints.

Setting Up Your Data Table

DNR GPS allows you to choose what fields you would like to have in your data table once data has been downloaded. To do this, go to the **File** menu, and **File Properties**. Go to the tab that is related to the type of data you are working with (e.g. waypoints). Under “Fields to Use” is your list of fields for your data. You can uncheck/check any combination of fields that you want, or just choose to leave all fields checked. The checked fields will be the fields in your attribute table and database once you have saved the data (Page 5).



The screenshot shows the 'DNR GPS Properties' dialog box with the 'Waypoint' tab selected. The 'Field Definitions' section contains a table with the following fields:

	Name	Alias	Type	Length	Precision
<input checked="" type="checkbox"/>	type	type	string	10	0
<input checked="" type="checkbox"/>	ident	ident	string	24	0
<input checked="" type="checkbox"/>	lat	Latitude	number	18	8
<input checked="" type="checkbox"/>	long	Longitude	number	18	8
<input checked="" type="checkbox"/>	y_proj	y_proj	number	18	8
<input checked="" type="checkbox"/>	x_proj	x_proj	number	18	8
<input checked="" type="checkbox"/>	comment	comment	string	254	0
<input checked="" type="checkbox"/>	display	display	string	10	0
<input checked="" type="checkbox"/>	symbol	symbol	string	10	0
<input checked="" type="checkbox"/>	dist	dist	number	12	2
<input checked="" type="checkbox"/>	proximity	proximity	string	10	0
<input checked="" type="checkbox"/>	color	color	string	10	0
<input checked="" type="checkbox"/>	altitude	altitude	number	12	2
<input checked="" type="checkbox"/>	depth	depth	number	12	2
<input checked="" type="checkbox"/>	temp	temp	number	12	2
<input checked="" type="checkbox"/>	time	time	string	20	0

Buttons: OK, Cancel, Reset

Note: The fields listed in gray are required by DNR Garmin and cannot be unchecked.

Saving and Using your Data

You can now save the data that you have collected on your GPS receiver directly to a “GIS readable” file (i.e. shapefile) or to other formats.

1. Make sure the data that you want to save (i.e. Waypoints, Tracks, etc.) is “visible”.
2. Under the **File** menu, select **Save To**, and **File**.
 - a. To save in a GIS compatible format,
 1. Enter a Filename
 2. Under the **Save As Type**, option, choose either:
 - ◆ ESRI Shapefile (*.shp)- this option saves data directly to a GIS-compatible shapefile according to the user-defined projection.
 - ◆ GPS eXchange Format (*.gpx)- this option enables you to share your GPS file with other GPS users (& GPS receivers).
 - ◆ Google Keyhole Markup Language (*.kml)- this option allows you to display and share your data with others on Google Earth.
 - ◆ Save as a Text file & bring your data into other software programs (Excel, etc.).

