

Field Experience with GPS: Verifying GPS Coordinates Using USAPhotoMaps Software

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Background:

USAPhotoMaps requires that the user understand and know how to operate a GPS unit, and organize and collect field data associated with each GPS unit. This software enables users to download GPS WayPoints (or tracks) from their GPS receivers onto their computer, and to superimpose the collected data on top of aerial photographs.

USAPhotoMaps prompts the user for a single WayPoint (for reference purposes). The software then “goes out” onto the Internet (i.e. Terraserver) finds the appropriate digital image associated with the user defined Waypoint, and downloads this digital photograph onto the user’s computer. The user can then superimpose collected WayPoints onto the image, or digitize new WayPoints on the image, and download them onto the GPS.

The user should be aware of the limitations of USAPhotoMaps. This software only accesses aerial photography from Terraserver, which is primarily an archive of USGS imagery. These aerial photographs are a bit dated (the majority of the photographs for Virginia date back to the mid 1990’s). None of Virginia’s high resolution BaseMapping Imagery (VBMP) is accessible through this software.

Getting Started...

Before you can actually get started using USAPhotoMaps, you need to do a few things...

1. Setup and Install USAPhotoMaps software

- a. Install USAPhotoMaps on your computer (<http://www.jdmcox.com/>)

- b. Reboot your computer (not always necessary, but it has made a difference before!).

2. Collect GPS WayPoints, Tracks, etc.

Head out into the field and have some fun. Refer to *The Garmin Etrex Legend: An Introductory Handbook for Extension Agents* or the Garmin Owner’s Manual...

3. Download the GPS Data onto a Digital Aerial Photographic Map

This involves 2 steps:

Step 1: “Initializing, downloading, and opening” the Digital Photographs;

Step 2: Downloading your GPS points on top of a digital aerial photograph (this is what the software is all about!)

This manual will walk you through the two steps listed above...



First, start with Step 1:

- A. Logon to your computer
- B. Start the USAPhotoMaps program. You should see a window like this appear on your computer screen(the program defaults to an aerial photograph of Washington, D.C.):



- C. To begin, select the <File> menu and select <New Map Location> This dialogue box below appears and is prompting you for some basic information so that it can find the appropriate aerial photographs...

1. Enter a name for your map

New Map Location

Enter a name for your map Location:

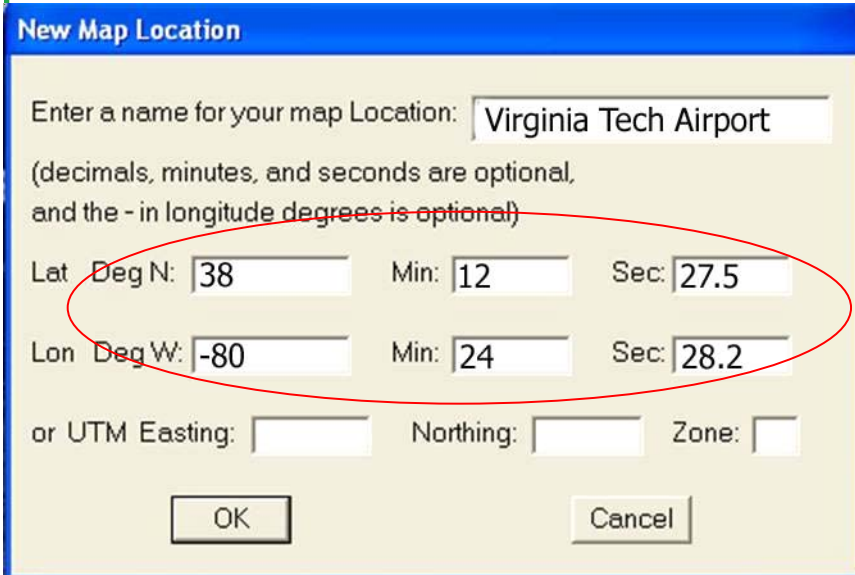
(decimals, minutes, and seconds are optional,
and the - in longitude degrees is optional)

Lat Deg N: Min: Sec:

Lon Deg W: Min: Sec:

or UTM Easting: Northing: Zone:

2. Now you need to enter the initial Latitude and Longitude coordinates from your GPS (a waypoint coordinate from your GPS...)

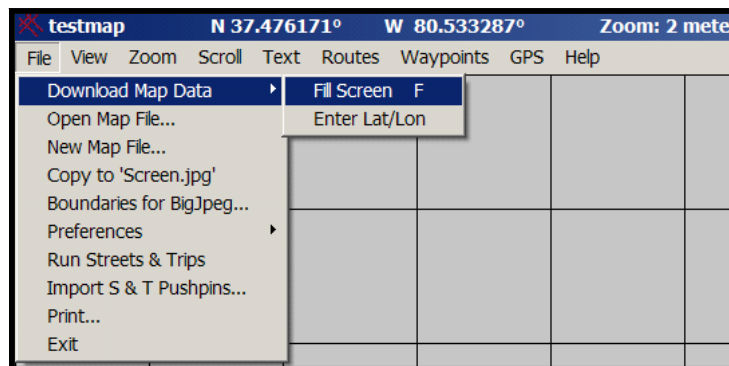


✓Latitude is associated with either north or south, Longitude is associated with either east or west.

✓Enter these values in the dialogue box. NOTE: In the United States, Longitude Degree Values should have a negative sign in front of them as shown in the example (your values will differ from the values in the example *but your longitudinal degree value must be negative*) if you are in the U.S.

3. Press the <OK> button on the bottom of the New Map Dialogue Box. Your coordinates have now been stored. The software is now ready to go searching for an aerial photography for you to display.

4. Select the <file> menu, select <Download Map Data> and <Fill Screen> (see figure below), or you can press the “f” key on your keyboard...

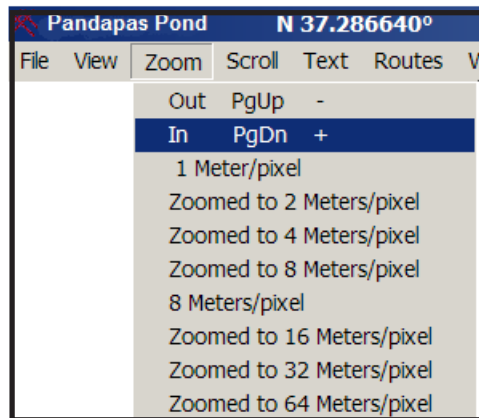


5. Your map should draw in the window. This could take some time if you have a slow internet connection...

Note: your image should look different from the image below. The image below is from Pandapas Pond, Virginia. Your image should be from the area where you were conducting your field work!!!



6. Zoom into your map if you can by going to the <Zoom> menu, and select <zoom in>



Now you are ready for Step #2:

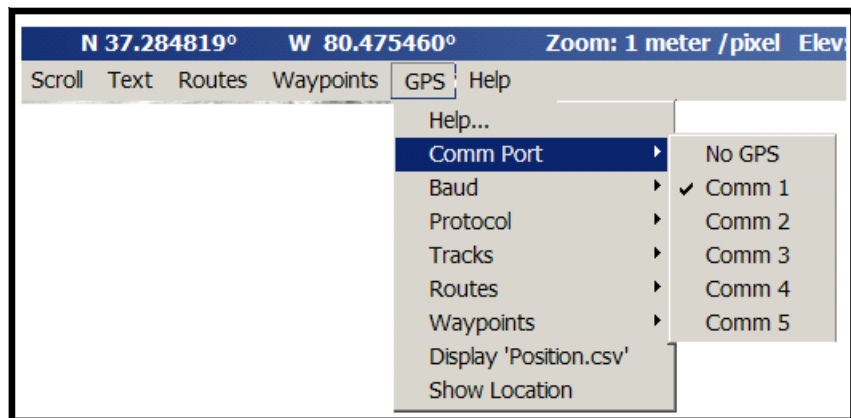
Downloading your GPS points on top of the Digital Photographs.

Note: These instructions are for Garmin GPS receivers. If you are working with a different brand or model, your instructions, you should refer to the “official” instructions for USAPhotoMaps located in the Program Files/USAPhotoMaps/gpshelp.txt document which is downloaded to your local computer after you download the USAPhotoMaps software.

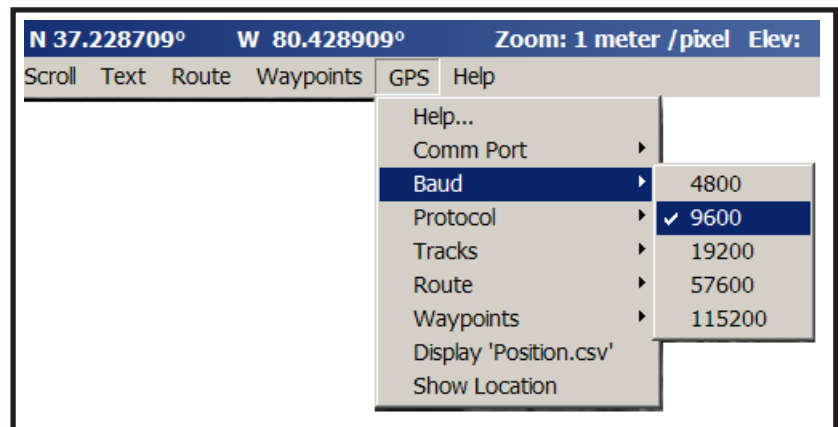
The BAUD rate in USAPhotoMaps has to match the BAUD rate of your GPS receiver.

1. Make sure that the GPS unit is configured to communicate properly with the USAPhotoMaps software program.
 - a. Attach the cable to your GPS receiver and to the serial port of your computer (it is probably the only port where the cable will fit properly).
 - b. Turn on your Garmin GPS Receiver

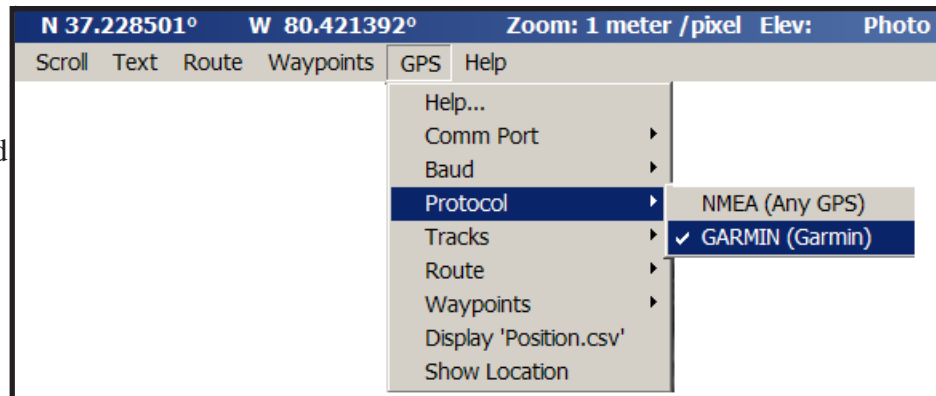
2. In USAPhotoMaps software, make sure that the communications port is set to “1”



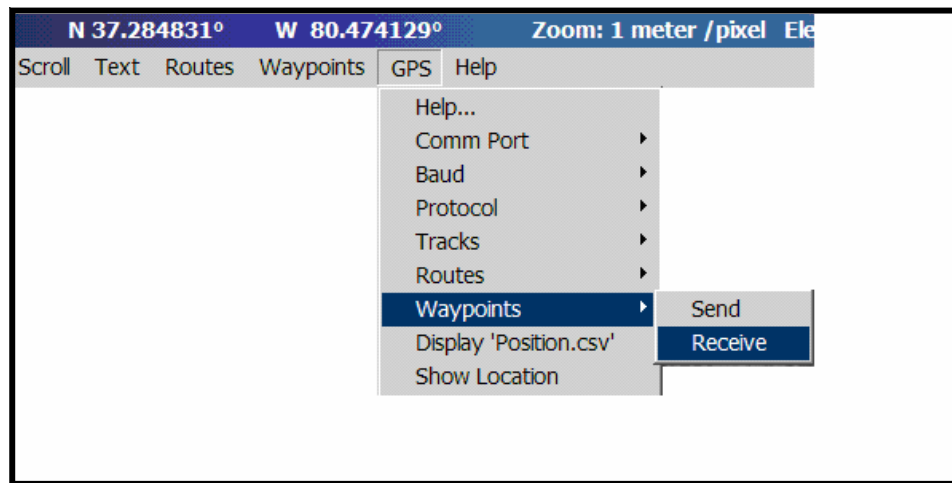
3. Make sure that the Baud rate is set to 9600.



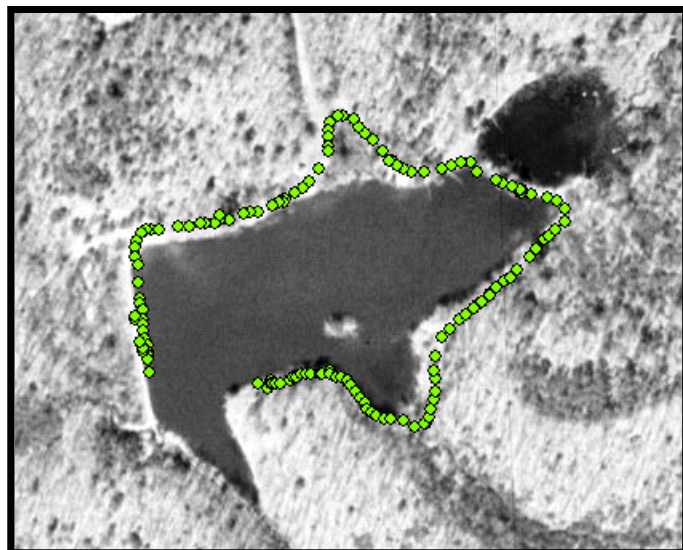
4. Under <Protocol>, make sure that <Garmin> is selected



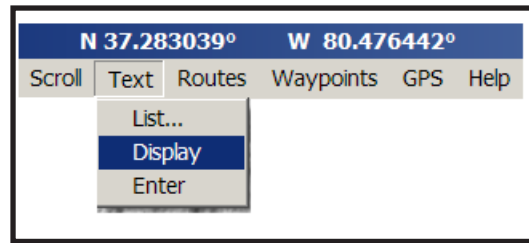
5. Now you are ready to receive your Waypoints! If you get an error message, then let the computer sit idle for a couple of minutes, and try receiving the waypoints again...



6. You should end up with a map that looks something like this (each dot will represent a WayPoint)



- To identify the actual identification numbers of each Waypoint while scrolling across your aerial photograph, go to the <Text> menu, and select <DISPLAY>

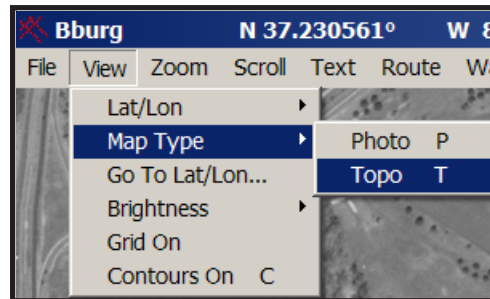


This will “turn on” the identification numbers of each waypoint when you scroll over them. Use your data logging sheets to determine if these positions are correct or not.

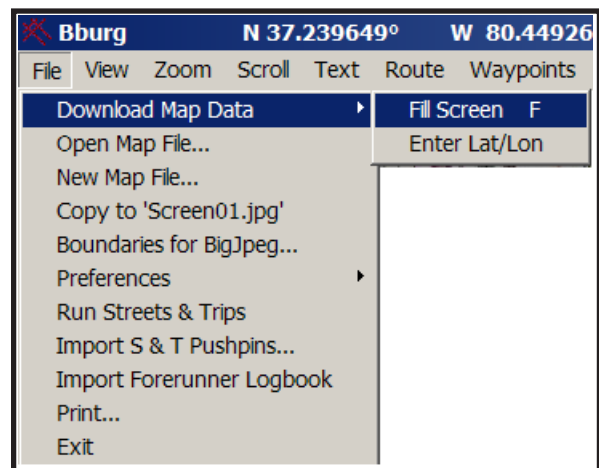
Tricks and additional hints:

In addition to adding aerial photography as a “backdrop”, USAPhotoMaps can also be used to bring up topographic maps in the background of your waypoints and routes!

- Under the <View> menu, choose <Map Type> and <Topo>



- If the topographic map does not draw, then go to the <File> menu, select <Download Map Data> and <Full Screen>



A topographic map should appear in the display window, and your waypoints / routes should draw on top of the topographic map!

