

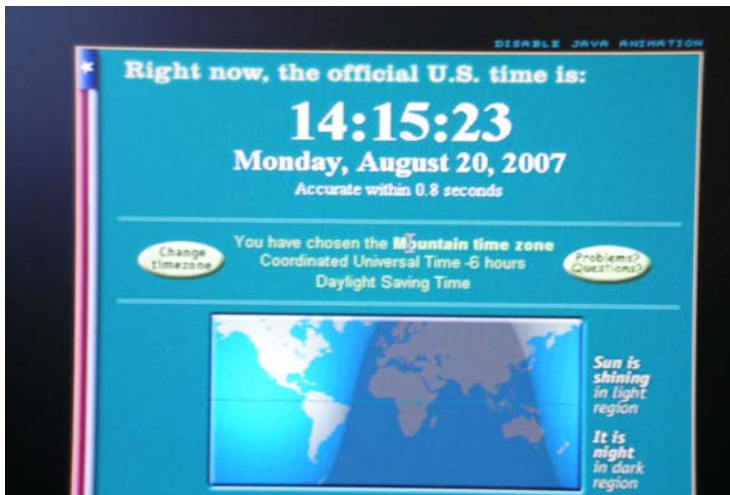
# Using GPS-Photo Link with TerraSync and Any Digital Camera

August 22, 2007

**Camera:** The GPS-Photo Link software can link photos from almost any digital camera to data collected in TerraSync. The connection between the handheld GPS receiver running TerraSync and the camera is wireless and is based on time matching between the GPS data and the pictures on the camera. Therefore, the only requirement for the camera is that it stores the date and time of the pictures that are taken.

**Setting up:** Before beginning any data collection, make sure the date and time are correct on both the GPS receiver and the camera. Failure to do so could result in data that the GPS-Photo Link software is unable to process.

Before going out to collect data, take a picture of the local time that is shown at [www.time.gov](http://www.time.gov). This is how the software is calibrated during processing and allows the rest of the photos to be linked up according to the time they were taken.



**Note:** This step can be done at any point during the data collection, but it may be a good idea to take this picture before going out into the field to ensure it is not forgotten. Data can not be processed without this picture.

**Data Collection:** Now you are ready to begin collecting data. Collect data as usual in TerraSync, making sure to take your photo right before, during or right after collection of the feature it should be linked to. If you want to take a picture of a feature before collecting the feature in TerraSync, try to take all pictures before collection of the associated features. If it is easier to take the picture after the feature is logged, try to take all pictures after the corresponding features are collected. Consistency in this procedure will make processing the data easier and more streamlined.

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P. O. Box 31, Jerome, ID 83338  
(208) 324-8006 Fax (208) 324-8015  
[www.elecdata.com](http://www.elecdata.com) [support@elecdata.com](mailto:support@elecdata.com)

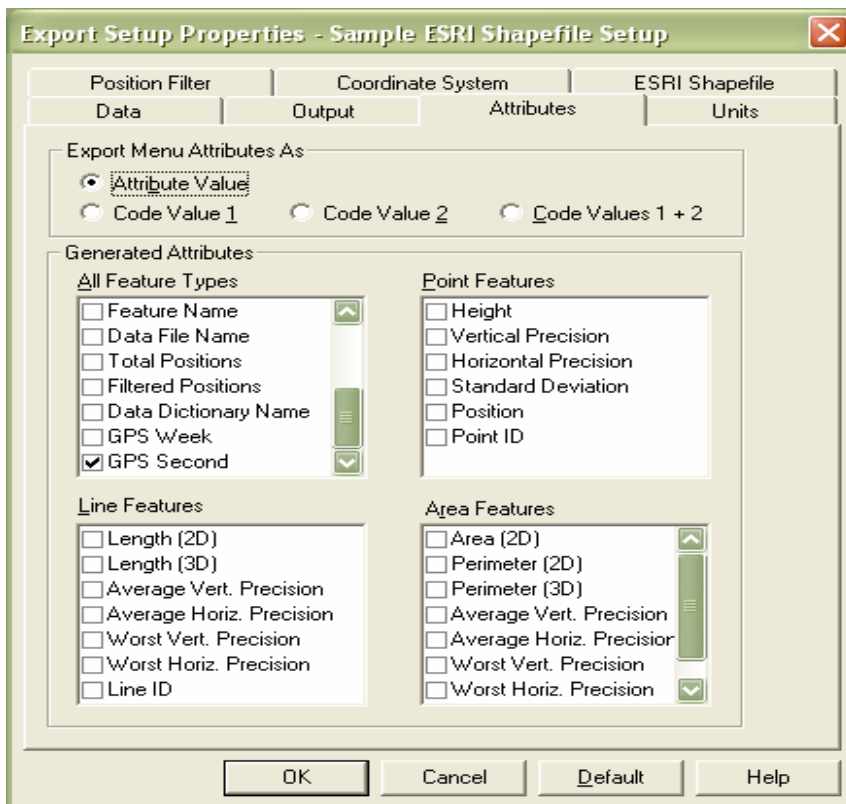
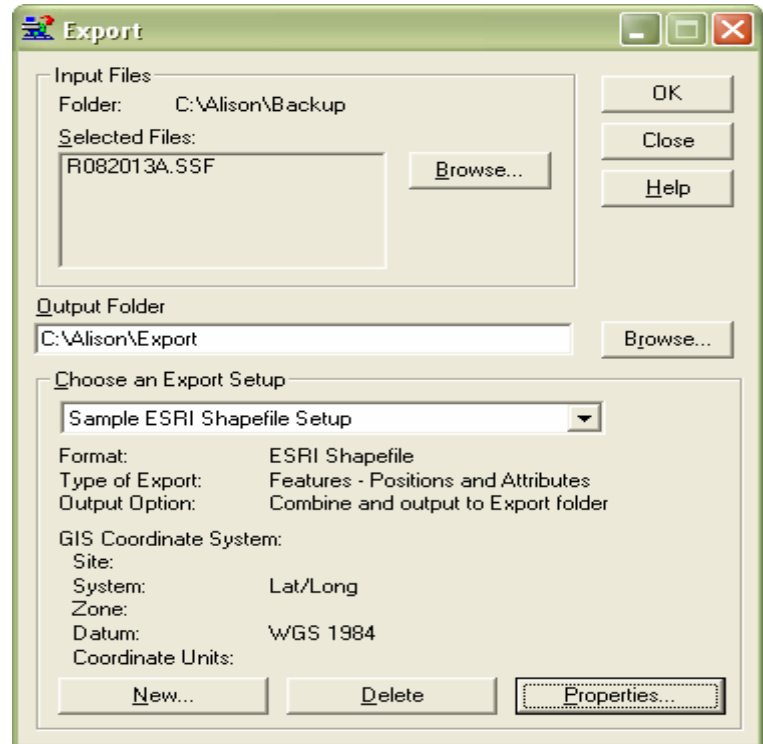
**Preparing Data for Photo Link Processing:** When you are back in the office after collecting your data, you will want to process the TerraSync data.

Use Data Transfer to transfer the file to your computer, and use the Differential Correction Utility to correct your data and get the best possible accuracy.

Then, you will need to export the corrected file. In the Export Utility, select the Sample ESRI Shapefile Setup as your Export Setup.

Then click on Properties.

In the coordinate system tab, make sure the System is set to Latitude/Longitude and the Datum to WGS 84. The GPS-Photo Link software will not be able to process data that has been exported to UTM, State Plane or other grid. It must be able to read the lat/long coordinates from the shapefile to process. During processing, you can choose to have the final shapefile projected in UTM coordinates with a different datum.



In the Attributes tab, add the following attributes to your output by checking the appropriate boxes under All Feature Types:

- GPS Date
- GPS Time
- GPS Second

Any attributes that you collected in the field will be passed through to the final shapefile.

Click OK and then OK again to export the file to the shapefile that can be used by GPS-Photo Link.

**Note:** At this point in normal processing, it is typically recommended that you use the Define Projection tool in ArcToolbox to write the .prj file for your new shapefile. When processing with the GPS-Photo Link software, this step is not necessary. The software will write a picture.pri file when it creates the new picture.shp file with the photos attached.

**Transfer Pictures from Camera:** First, make sure that the USB CONNECTION setting in the Ricoh setup is set to mass storage (MASS STR) no matter which transfer technique you decide to use. If you will want to rename the picture file names, you must transfer the pictures from your camera to your computer and rename them now. **Once the pictures are linked, the file names can not be changed.**

If you do not wish to change the picture file names, you can either transfer the pictures to your computer now, or you can have the GPS-Photo Link software do it for you in the first step of processing.

Now you are ready to process the pictures using the GPS-Photo Link software.

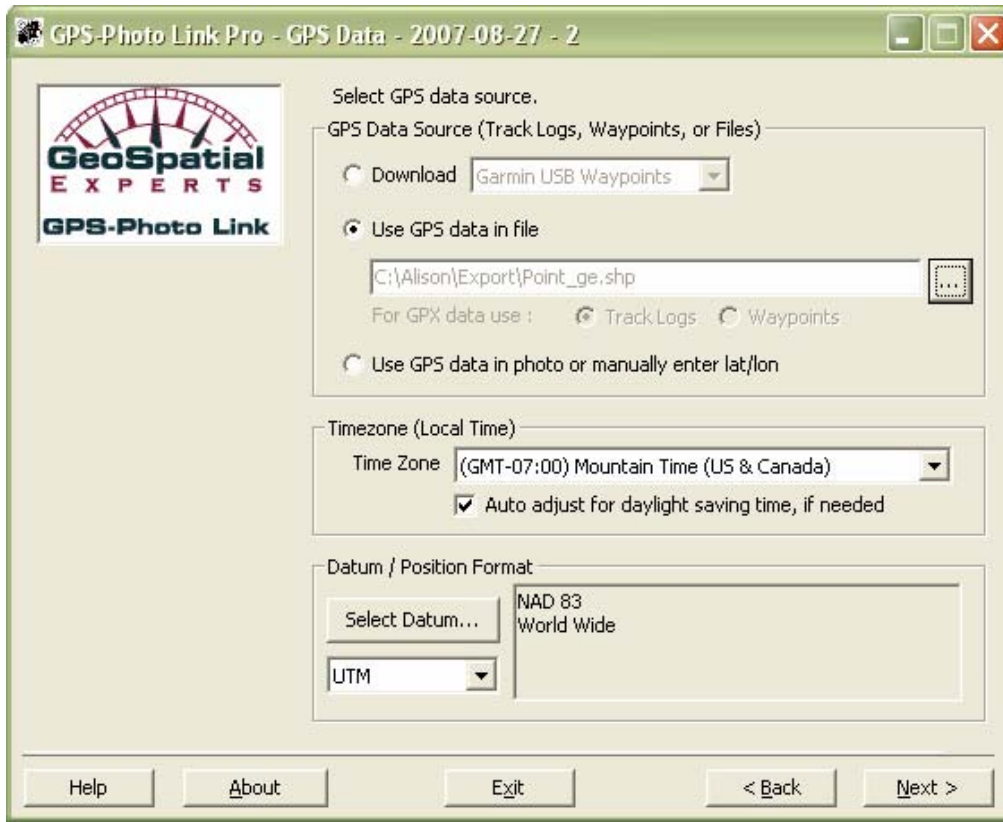
**Processing with GPS-Photo Link:** Start the software by clicking on Start>Programs>GPS-Photo Link. The initial screen will come up. If you have already transferred the pictures from the camera, select Existing Folder as the Photo Source, and browse to the folder where the pictures are located.

If you have not transferred your photos yet, choose Camera Folder as the Photo Source. Under Camera Folder, browse to the drive where your camera is located and choose the folder on the camera where the pictures are stored.

Then browse to the folder where you want the output saved, and name the new folder that will be created. The default is today's date. Under Original Photo Action, you can select 'Copy photos to output folder' or 'Move photos to output folder'. If you choose to move the photos, they will be deleted from the camera. Click Next.



The GPS Data Screen will come up.



Select 'Use GPS data in file'. Browse to and select the shapefile that was exported earlier.

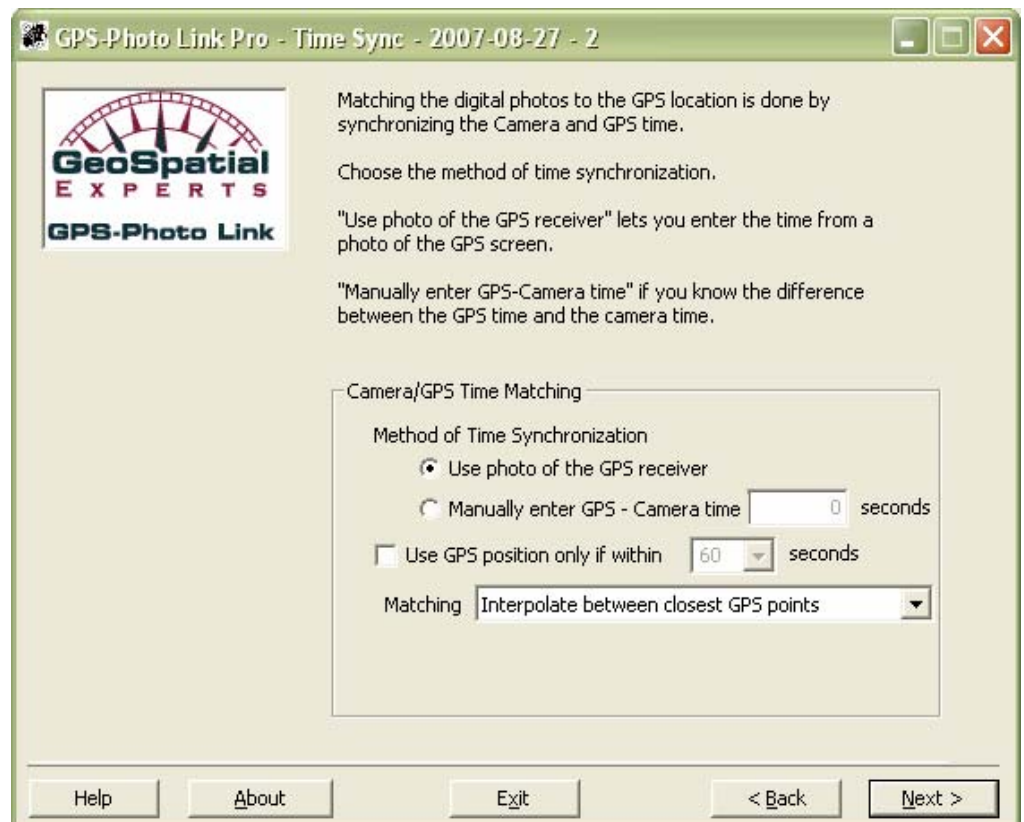
Select the correct time zone, and check the box to 'Auto adjust for daylight saving time, if needed'.

Choose the datum and coordinate system in which you want the final shapefile projected. Note that State Plane coordinate systems and custom coordinate systems are not supported here.

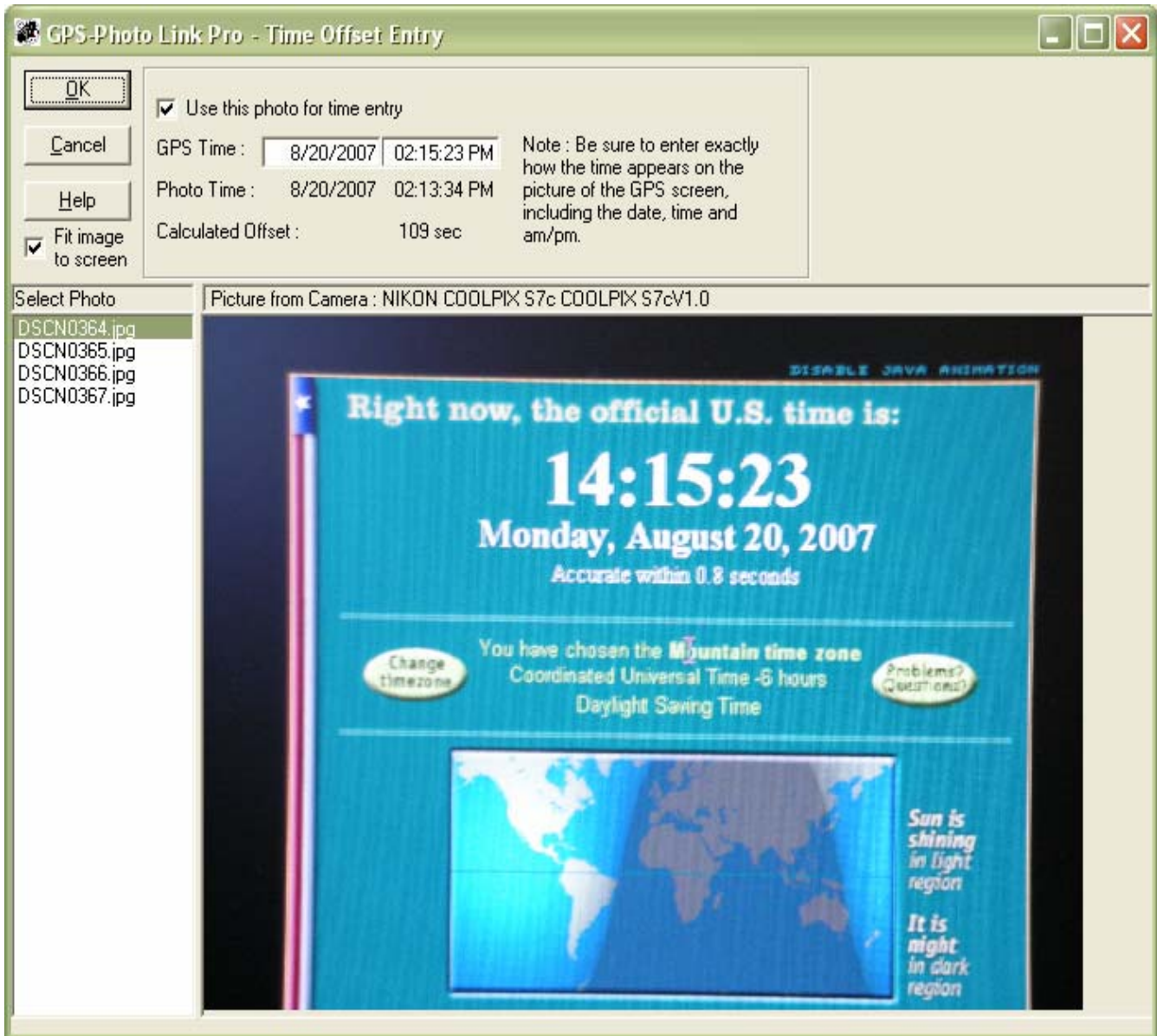
The Time Sync page will come up.

Select 'Use photo of the GPS receiver'.

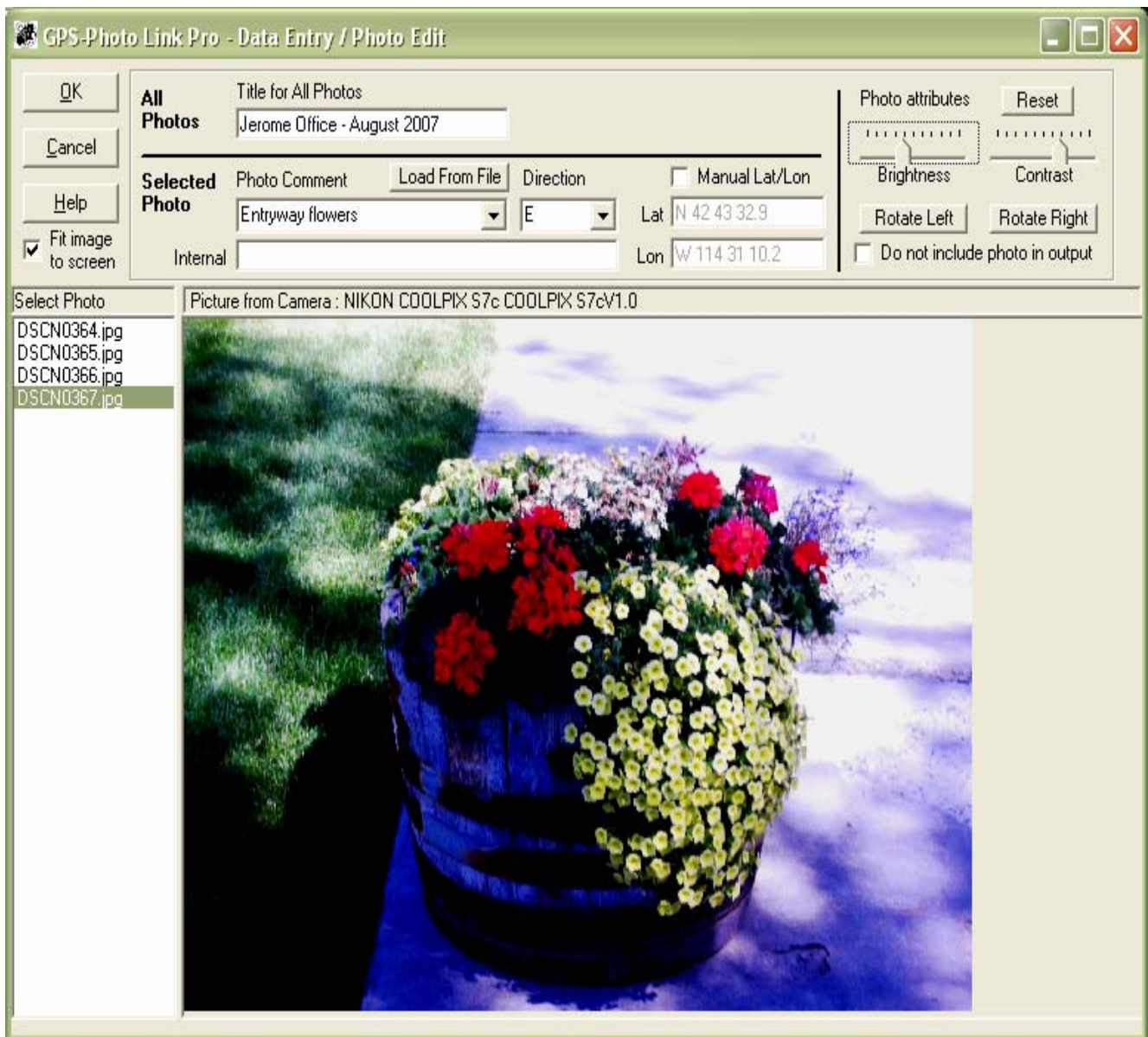
Make sure that the box is unchecked to use GPS position only if within a certain time of the picture, and select your matching choice.



The Time Offset Entry page will come up. Under Select Photo, highlight the picture of the www.time.gov website. Check the box to 'Use this photo for time entry'. In the GPS Time, set the date and time exactly as shown in the picture, and click OK.



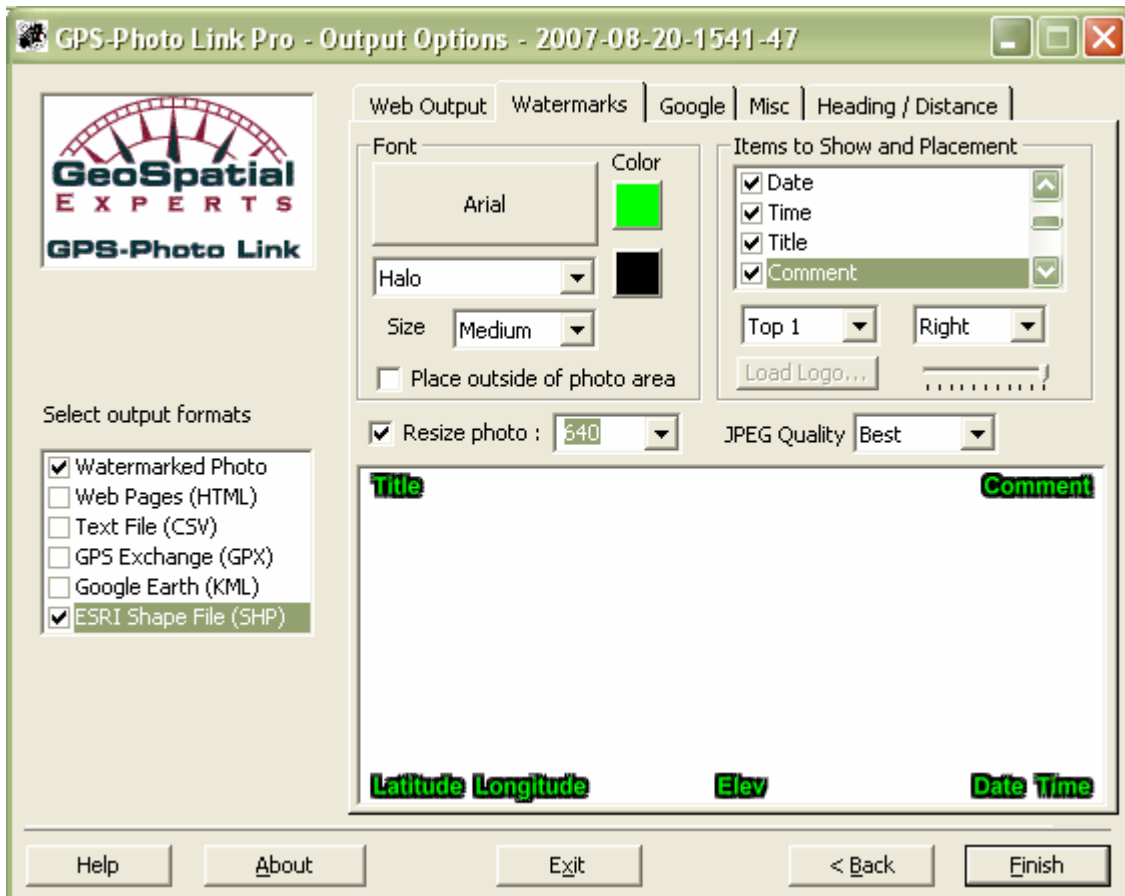
Then you will be brought to the Data Entry/Photo Edit page. This is the page that allows you to add a title for all of your pictures in the group, add comments for individual pictures, select the direction of the picture, rotate pictures if needed, and fine tune brightness and contrast. If there are photos that you do not want attached to any features (such as the picture of www.time.gov), highlight that picture, and check the box that says 'Do not include photo in output'.



When you click OK, you will be brought to the Output Options page where you can select the different types of output files that you would like to be generated. You will want to check each of the tabs to make sure everything is set the way you want it.

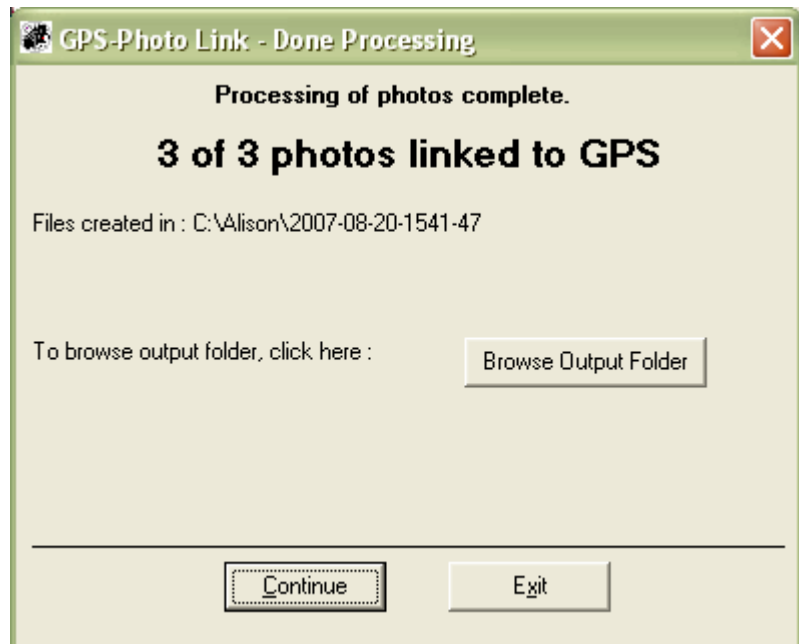
To create a shapefile with the features and photos linked, you will want to check the ESRI Shape File (SHP) box. When you open this file in ArcMap and put your cursor over the feature, the thumbnail photo will automatically pop up. If you want the Watermarked Photo to come up when you click on the feature that will show your Title, Comment, Date, Time, ect., you must also select Watermarked Photo from the list.

Click Finish.




The files will now be processed, and the pictures will be linked to the GPS features. You will get a message letting you know how many of the pictures were linked. Click Continue, and then Exit the software.

GPS-Photo Link has created a shapefile called picture that will be located in the same folder as the pictures. This shapefile can be renamed but must be kept in the same folder as the pictures. The folder itself can be moved to anywhere on the computer, but none of the files can be moved out of this folder.



To view the linked photos in this new shapefile in ArcGIS, you must first activate the GPS-Photo Link toolbar by right-clicking in the toolbar area, and clicking on GPS-Photo Link.

Add the new shapefile to the map, and then click the View Picture button  on the Photo Link toolbar.

You should now be able to move the arrow over the features and see the pictures linked to those features.

