

Recommended Garmin GPS Units for Alaska National Park Applications

Alaska Regional Office - GIS Team Cheat Sheet
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Purpose: As of July 2008, there are over 25 Garmin handheld GPS receivers to choose from including the latest Colorado and eTREX “H” series. The Alaska GIS team still will support only those units that allow waypoint averaging, external GPS antenna capability and support with DNRGarmin for downloading. These include the GPSMap60, GPSMap76 series.

Current Recommended Garmin GPS for Alaska Park Units

The standard Garmin GPS model AKRO GIS has been recommending and supporting are the **Garmin GPSMap60 and Garmin GPSMap76 series** handhelds. The only difference between these two series is the way they are shaped, and the Map76 series floats and has tide information. We do not recommend the Colorado series at this time since DNRGarmin cannot extract waypoints and tracks smoothly nor is date/time stored as local date/time. Future releases of DNRGarmin may support files from Colorado, but not until October 2009 (July 2008, Chris Pouliot, personal communication). By using the recommended Garmin units the AKRO GIS will support any technical question, or training issue when using this unit in Park operations. The GIS Team also has 18 Garmin Map76 handhelds available for loan in training exercises. The 12XL, 12CX, 12Map, III+, and Garmin V all remain very viable GPS units capable of all features below. These units also work well with the NPS Alaska Garmin software data transfer software called DNR Garmin.

Newer Garmin Units

The introduction of new GPS models has been rapid enough that it is difficult for us to fully evaluate every new GPS receiver in time for your upcoming field season. It does appear that if money is no object, either the Map76 or Map60 series purchased at the “CSx” model level will be extremely beneficial. The “C” stands for color and is easier to see in all conditions and is good on battery life. The “S” stands for sensor and allows both electronic compass and barometer functions. The “x” and “H” models stand for high sensitivity GPS units that include a SIRF or Media Trek 3 GPS chip. This provides quicker position readout “fast lock” and more productive mapping under canopy. All modern units come with WAAS, providing more accuracy in the open and should be enabled in almost all cases.

The three most important factors in evaluating Garmin handhelds for use in Alaska are those factors enhancing the highest quality GPS data into your Park’s geographic information systems. We are not interested in geocaching, stopwatch features, dog tracking, radio features or choosing a cheap and small unit “that fits in a pocket”. Not all Garmin’s are created equal. All Garmin units recommended by AKRO GIS require the following:

- 1) Must be able to **average** a waypoint. This increases accuracy. Most eTREX models cannot average a waypoint.
- 2) Must have **external antenna** hookup. This allows for better and more accurate collection in aircraft, boats, snowmachines and ATV use when the GPS receiver is placed inside a cabin or under a thick coat when moving. The number one way to increase accuracy is to get the GPS seeing the sky directly above. Any use of a GPS inside an aircraft should be done with external antennas.
- 3) Must be capable of downloading to **DNRGarmin** efficiently with local date and time information extracted from the Comment Field. Some units like the eTREX cannot do this. The entire line of Colorado series is not capable of downloading via Garmin Protocol the waypoints and tracks with local date/time.

Because of these issues we still strongly DO NOT recommend purchase of any Garmin belonging to the eTREX series. No eTREX model supports external antennas. Only Venture Cx and Vista HCx allow

averaging. Many eTREX do not record date/time in appropriate fields for DNRGarmin. The eTREX series continues not to be supported by Alaska GIS.

As of June 2008, the entire Colorado series cannot be efficiently downloaded via DNRGarmin. DNRGarmin assumes connection via Garmin Protocol. In all other recommended models, this means ready access to either waypoints or tracklogs (active and saved). These data are then saved as points, lines and polygons for GIS use. The Colorado series cannot connect to DNRGarmin via this protocol. The user must connect to the Colorado as a USB device and copy/save the GPX file to a harddrive and then ingest that file into DNRGarmin. The GPX file stores date/time of all waypoints, and tracks in Zulu time, which breaks the ability to hotlink to images using local time, and makes for more confusion when understanding data streams. This is another example of Garmin producing a model for recreational (hiker/bikers) who only use the Garmin TOPO to produce a map of where they have been. In Alaska NPS use, we have a different reason to use Garmin's – for fast efficient marking of resource, fire information to transfer into high quality GIS. For these reasons, the entire Colorado series is not recommended for GIS purposes. Minnesota DNR expects possible reading of Colorado GPX files by October 2009. Until that time, Alaska NPS does not support these devices. (July 2008, Chris Pouliot, personal communication).

Garmin Choices allow for higher support

By standardizing on just several models, the GIS team can better support your park in training and technical support including software, accessories and recommended data collection. The AKRO will endeavor to provide timely information as it comes available on the newer models. Of particular note are the Colorado series. As of this writing, no eTREX or Colorado series are recommended at this time. There may be extenuating circumstances with any GPS purchase. Contact Joel Cusick for more information.

Conclusion

Going into the summer of 2008, the GIS Team of the Alaska Regional Office continue to recommend the Garmin Map60 or Garmin Map76 series. Adding additional functionality all the way up to the "CSx" level is recommended if you have money to spend. It is not recommended to purchase any Garmin in the eTREX or Colorado series.

Accessories: All receivers require a few extra accessories. Please consider these when purchasing:

- 1) Case: To store GPS, batteries, download cable, digital camera. GPS Outfitters has one for \$14.00 See: <http://www.gpsoutfitters.com/bag.htm>
- 2) External Antenna: The Garmin antennas are not very good quality. The best antennas for all Garmins are produced by Gillsonn. Outstanding characteristics of these antennas will extend the accuracy of all garmins. Please shop for the antenna at <http://www.gillson.com>
- 3) Brackets. Purchase brackets to hold either units upright during collection on board aircraft, boats or on handlebars. In a pinch, duct taping the GPS to a stick or handlebar works too.
- 4) Purchase at least one copy of MapSource TOPO US 2008. <http://www8.garmin.com/cartography/mapSource/topous.jsp>
- 5) Extra AA batteries.

Vendors – GPS and Software:

GPS Units:

Garmin is the first place to shop. Select the mapping handheld group and compare models using the Compare button. It is not possible to view if a unit averages waypoints or has external antennas, so this paper will help you there. (<http://www.garmin.com>).

Cheapest place to buy Garmin units can be purchased from <http://www.GPSNow.com>

There are a confusing set of software 3rd party solutions for the recreational handheld GPS user if you are collecting data for use in ArcView. Keep all versions of software current.

Solution 1: DNRGarmin - FREE

This is the preferred download approach for all Garmin receivers into ArcGIS.

<http://www.dnr.state.mn.us/mis/gis/tools/arcview/extensions/DNRGarmin/DNRGarmin.html>

This extension allows communication with all Garmin models and provides a simple way to download Garmin data as well as upload shapefiles into a Garmin. Please see the Alaska GPS Web page for installation instructions.

Solution 2: MapSource TOPO 2008 CD– For upload of background maps into Garmins

If you purchase Garmin’s MapSource TOPO software ver. you get 1:100,000 scale maps of the entire state of Alaska as well as the ability to transfer waypoints/tracks to/from all Garmin models including elevation data. If you have many different models of Garmin’s in your park this is a good route to go. Be sure to stay current with software / firmware upgrades

<http://www8.garmin.com/support/download.jsp>

Solution 3: MapTech Terrain Navigator Pro or National Geographic TOPO!

Both allow download of Garmin data into a high resolution standalone product that can provide very fast maps for display. If Joel had an opinion, Terrain Navigator Pro is a better product.

Terrain Navigator Pro. Alaska CD \$199

<http://www.maptech.com/land/terrainnavigatorpro/index.cfm>

National Geographic’s TOPO! Alaska \$99

<http://shop.nationalgeographic.com/product/247/3606/120.html>

Website: <http://165.83.62.205/rgr/akgis/index.cfm?action=dsp&topic=gps&item=gps>

Revision History

Date Modified	Revised By	Changes Made
2005-05-03	J. Cusick	Original
2007-01-05	J. Cusick	Continued Updates
2008-01-18	J. Cusick	Revamp.
2008-07-15	J. Cusick	Following new info on Colorado series. Drop support.