GPS and “The Crazy Rubber Band”

During the spring of 1998 Keith Horry loaned me his "Eagle Explorer" Global Positioning System (GPS) unit. The deal was that I got to keep the machine for 6 months but had to find out how to use it for the retrieving of lost model planes then teach Keith how to do it. The results were impressive and I was convinced that GPS would be of real benefit to our cause when the price was reasonable.

A year later, in February 1999, I purchased my own unit, a "Garmin" Model GPS 12 for £130. Although there were two cheaper units by "Magellan" available from my local Maplin store, having read through all three instruction manuals (by courtesy of the sales assistant) I decided that GPS12 had the best features for me. Having implicitly followed the instruction manual and learned how to use it as a navigational aid, I have to say that these little jiggers are absolutely the bees’ knees.

In 8 years of ownership, it has helped me retrieve countless “lost” models and not just my own. In the early days I helped several friends and colleagues in “The Crazy Rubber Band” to locate their lost models too. The word spread and many of them purchased their own systems. Like me, they swear by them for tracking down their long distance fly-aways’. For further testimony, talk to some other “crazies” like Ted Challis, Bill Cox and John Knight. Between them they have made some spectacular retrieves.

In particular, John used GPS to save his vintage glider from a forest some 7 miles from Middle Wallop during the summer of 2004, after a full day of searching the GPS line lane by lane, farm by farm until his radio tracking system pulled in a faint signal on his “yagi”. Even then he had to scour the forest tree by tree before rescuing it from the branches of its twiggy grave. This demonstrates that GPS alone is not a complete solution, but used in conjunction with radio trackers it becomes an awesome tool.

And not just for the competition flier either. One sees many Sport Model and Trimming fly-aways’ from places like Old Warden, Middle Wallop and Chobham, wistfully rued. How often do you hear, "I only put a couple of hundred turns on the motor and it just flew away"? And it's not the gauging of bearing and distance that are the main problems! It's staying on line when negotiating natural terrain, fields, crops, dwellings and such-like, that is the really difficult trick.

How does it all work? Well, GPS is all about marking and going to places called waypoints and the accuracy is quite spooky. It can take you anywhere on earth, to within about 10 feet. Without question, used as a supplementary tool to your normal retrieving process, GPS will help you rescue many model planes from medium and long distance fly-aways' which might otherwise be lost for-ever! Even over shorter distances when a model goes into tall grass, crops or undergrowth the usefulness of GPS should not be underestimated.

So! How to do it? Well there is no easy “GPS USER GUIDE” that will help you plug into its resources without doing some groundwork. It’s about as complicated as

setting a video recorder and most of us have learned that task. So, rather than give a tiresome technical treatise on programming, I think it better to offer the following general advice on achieving a reasonable level of GPS navigating competence which can then be directly applied to tracking model planes. First and foremost get familiar with your chosen GPS units features, particularly:-

* Setting waypoints for your current position
* Setting waypoints for a predicted position
* Re- naming waypoints using the simple programming keys
* Deleting redundant tracks and waypoints
* Resetting distances and times to zero
* Scale changing (zooming in and out)
* Map setup
* Track setup
* Setting and canceling the "GOTO" feature

If you find GPS instructions difficult to follow, just assume that you are planning to eat an elephant and tackle it in the bite sized portions outline above. If it does not sink in, read your instructions again and repeat each process until familiarity takes over.

Also, think simple navigation! By that I mean, imagine two points on a map joined with a line. That line can be relative not just to those two points but everything in line behind the nearest and in front of the farthest points.

In our pre-GPS model retrieval world, if you saw a target landing point on the near horizon then you immediately identified another point beyond it on the far horizon on the same line. If you now went round Will’s Mother’s trying to get to the landing point, sometimes the far horizon has disappeared because of terrain undulations and you can’t re-establish the line. But if you took the trouble to identify a raised landmark on the back-bearing behind the starting point, then with a compass you could always get in line with that backward point even if you could not see beyond the outbound target point.

Thus to GPS and the simple way we might use it. We only need to tell it about 2 points. Where we start from and where we want to go. But because it can project lines forward or backward, as long as we can intersect those 2 points and then set up a new point on the same line, forward or backward then we can always be “on line”. And the real beauty is that GPS will tell you if you are off-line.

The best way, I found, is to take and play with your GPS everywhere you go! e.g.:- Walks in the park, Exercising Rover, Tesco's, Visits to Granny, Day-trips to Bangor! (Didn’t we have a lovely time?) Everywhere! Because GPS works OK inside a car it can help if you get "’er Indoors" to do the driving while you Fiddle and Hum.

Once you are reasonably proficient at using GPS, the following basic information is vital to our model chasing cause.

a) Your **CURRENT POSITION** which will probably be the launch point, programmed into GPS as a waypoint, named (let's say) "UP". In my GPS I have all the main airfields that I fly from programmed in permanently (e.g. “Wallop”) then all I have to do on the day is reset the waypoint coordinates to the actual spot I am flying from.

b) The **COMPASS BEARING** from your current position to the model plane. GPS can work with magnetic bearings so no corrections are necessary as with maps. **Note:** This is the most vital measurement and your accuracy will be enhanced by using a good quality "Sighting Compass". Mine is a SILVA Type 4/54 and I am genuinely surprised just how precise it is, used alongside the sophisticated GPS. For lots of dosh you can buy a set of BMFA legal bino’s with a built in compass. And these are pretty accurate too. I would say at this point that if you take a compass bearing standing anywhere near a motor car then be prepared to lose your model airplane. Large metal objects and compasses are not a happy marriage. Even steel rimmed spectacles can make an unwelcome difference.

c) The **ESTIMATED DISTANCE** to touch-down. **Note:** It helps to be accurate but it is perfectly acceptable to over-estimate distance. More so, in the case of an o.o.s. flyaway. Although it requires some mental agility, I usually make my calculations as follows: Assuming that most flights do behave themselves and describe proper flight circles, say the breeze is estimated at 12 mph then a 5 minute flight would travel 5/60 of 12: That’s 1 mile. OR. In a 25 mph gale (wow!) then a 10 minute flight would travel 10/60 of 25. That’s about 4 miles. However, if you suffer a “(Spencer) Willis Turn” whereby the arc of you flight circle is a straight line down wind then best be sure you do over estimate the distance.

Without moving from your current position you now create and name a NEW waypoint (let's say "DOWN") manually, without knowing it's position co-ordinates but using only it's bearing and distance from your current position. For me the easiest way to set up the new waypoint is to ask GPS for a “NEW” waypoint and then simply plug in the bearing and distance, give it a name, and confirm that it is done.

Now for some basic motherhood facts. Let’s say that your bearing is 180 degrees and the distance is 1 mile. The law of basic motherhood states that there is only one place in the whole universe that is 1 mile away from where you stand on a bearing of 180 degrees. GPS knows that and assigns that place latitude and longitude coordinates to the nearest 1000^{th} of a minute and it remembers it forever until you delete that waypoint. Awesome, or what?

You now command GPS to "GOTO" the newly created waypoint "DOWN". On screen you see a straight line plotted course starting at "UP" and terminating at "DOWN". Your model resides along that plotted line depending on how you estimated the distance. That’s why an over estimate is not a problem.

Walking towards the model you observe on-screen your spidery track being plotted which deviates to left or right of the "GOTO DOWN" course as you travel. The

closer you are able to stay on course, the more you can reduce the scale of the screen ("Zoom In") to enhance your navigating accuracy. The closer to the model you get, the more important it is to stay on course. If you have made a truly reliable compass bearing then the natural accuracy of GPS (about 10 feet) will take you within normal vision of most lost models. However a dodgy compass bearing will always let you down, as ever! In reality, your compass bearing will have some error so the closer you get to the target the more vigilant you need to be.

On a major airfield where biking is possible, then making retrieves around the perimeter track or along cross-runways will invariably take you off line. Of course, retrieving from a well manicured airfield is generally straightforward and requires little or no technical help. However, if following a short flyaway the first field you come to is Barley or Oilseed Rape then we must be so careful these days with our obligations to farmers that making a quick and accurate retrieve is vital. In these circumstances GPS rewards us with hitherto unavailable precision.

If you have to go by car, no matter what track you take, you can see how far off course you are and make corrections accordingly. Driving a couple of miles around the outside of your flying field is no problem at all, because GPS continuously indicates how to navigate back to your target. Much longer distances become rattlingly do-able also. Those of you who heard of my adventures chasing a lost Bienenstein "Challenger" from Woodbury, Devon in 1998 would be interested to know that I used GPS as back-up to my radio tracker to help me trail the model more than 20 miles to Brixham before the penny dropped and I reluctantly concluded it was sleeping with the fishes in the English Channel being pushed down the coast by the northerly winds which prevailed that day. After 24 hours at sea the radio tracker failed, otherwise I might have even hired a boat.

But I digress! From my own more recent experiences, even using GPS on its own is a very useful tool. Sometimes the unexpected happens. Flying at Luffenham in 2003 using only a radio tracker I realized that the bug had stopped transmitting and the model was probably in crops. Returning to the launch point I set up GPS on the bearing and resumed the search across several fields which gave up the model only 20 yards off my line. Impressive, but in combination with a radio tracker you have a perfect model retrieval team at your disposal.

Regarding the cost of these technical aids, I don't think it is too difficult to justify. Due to age, weight, old bones and creaking joints I find it increasingly difficult to sustain my energy levels on medium to long retrieves. The use of radio tracking, and now the advent of low cost GPS, eliminates a lot of wasted energy used in doubling-back and off-course navigating which occurs without these aids. Those of us who are otherwise known as “The Crazy Rubber Band" need all the help we can get these days.

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