



# The Sky's the Limit

With the ever increasing popularity of GPS sounders Nikkulas explains some of the terms, features, functions and what to look for in a GPS.

**Below:** TAFE students have some hands on training.

**T**hese days many boat owners have a GPS unit of some description which offers them easy navigation, positioning and assistance to locate their secret fishing spots. With technology constantly changing there is quite a wide variety on the market with many different features and functions. From handheld units through to mounted systems, sometimes it can be a little confusing for boat owners to choose a unit to suit their needs.

## WHAT IS GPS?

GPS, or Global Positioning System, is a satellite-based navigation system developed by the U.S. Department of Defence. It is made up of three parts; satellites orbiting the earth, control stations on earth and GPS receivers owned by users. Anyone with a GPS receiver can access free worldwide navigation information including weather conditions 24hrs a day. You can accurately locate where you are and where you want to go whether you are walking, driving, flying or boating.

When it comes to boating using GPS navigation can be a worthwhile investment making your boating experience safer, smarter and more fun.

### ACCURACY

Originally the US department of defence deliberately had a position error put in place so civilian users only had accuracy within 100m of a position. This position error was used as a security measure to prevent hostile military or terrorist organisations obtaining maximum accuracy of their position.



Unfortunately this adjustment has been the cause of many maritime navigation errors due to users relying too much on the GPS and forgetting traditional navigation practices. You should never rely 100% on a GPS as the sole navigation tool, it should only be used as an aid. This position error has now been taken out of the system.

A typical GPS receiver now provides accuracy within 10-15m. This accuracy can be improved to one to two metres (some cases under a metre) with a 'Differential GPS'. (DGPS) This is basically a correction provided by fixed land based

receivers working in conjunction with the satellites

## FUNCTIONS AND FEATURES

Various manufacturers make GPS units and some have more features than others but they all give basically the same information. Almost all of them have graphic displays and for boating it's also essential that they have electronic charts. This provides yet another way of checking your position, especially if you are in sight of land or an object on the chart.

You should expect your GPS to accept



**Above left and left:** The Helm of the Oceanic Rottneest Ferry with the latest GPS system making the trip to Rotto safe and efficient for the skipper.

**Above:** Most GPS retailers have different models on display so you can see how the features work.



waypoints (where you want to go) and routes (a series of waypoints leading to your final destination). Once you have keyed in a waypoint into the GPS it will then calculate your current position and give you (at minimum) the following information:

- A course to steer to the waypoint (continually updated)
  - The distance to the waypoint (continually updated)
  - Once underway your speed (continually updated)
  - The time it will take to get to the waypoint at your current speed (continually updated)
  - If a turn, steer or off-course error occurs the GPS should tell you what direction to take to get back on course.
- Other alarms should also be available

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**This picture:** Satellite communications receiver used for picking up TV, Internet and phone any place on the ocean. Different system than a GPS but similar satellite principle.

*All the cool features built in to your GPS may in fact get in the way when using the GPS for fishing. You can often end up with a cluttered mess that's hard to read. The only info worth knowing in relation to fishing is bottom contours, depths and structures that attract and hold fish.*



**Above left:** A mounted GPS monitor helps to find your position and the skipper should be able to see and operate GPS without having to move from helm position.  
**This picture:** The mounting position and size of the GPS antenna/receiver will give unobstructed recieval of satellite signals.

such as:

- An arrival alarm that sounds when approaching a waypoint
- A proximity alarm that sounds when you come within a preset distance of any of several waypoints, regardless of whether they are your destination
- An anchor alarm that sounds when you travel more than a preset distance from a waypoint
- An off-course alarm that sounds whenever you are exceeding a preset distance from your intended course

### BUYING A GPS

Like the computer revolution, the GPS revolution is a great example of increasing features, increasing user

friendliness, and decreasing costs. With this in mind a new GPS is the way to go so the latest models are the best.

I have found by far the most important consideration when using a GPS on the ocean is the screen size and resolution. The reason being it simply makes it easier to view the information on the screen. The bigger the screen the better. In the past this meant bigger costs and this was just for the screen.

If you have room in your wheelhouse and protection from the elements the best way to go is using a laptop computer. If you have existing GPS receiver you should be able to use it with your laptop and all that may be required is providing the correct power supply for

the laptop which in most cases can be achieved with an inverter. Once you have the power issue sorted for your laptop the actual location can be a problem but there are various products on the market that provide secure cradles and cases.

It's even possible to get a USB GPS receiver that plugs directly into your laptop. This set up is totally portable so you can have your GPS with you on the fly bridge, and lower driving station. The actual receiver is waterproof and as long as it's in a position facing the uninterrupted sky it will work as good as any fixed receiver.

In the case of smaller open boats this option is limited so GPS that have waterproof screens and controls are the

**This picture:** This vessel was built long before the invention of GPS but has been added to make things safer for the skipper.



only option. Go for the biggest screen you can afford and check out GPS that allow sounder/GPS Function. These are ideal when space is limited and cheaper than buying separate systems. You can even have the screen split showing your position and bottom of the ocean floor at the same time

### SECURITY

When you have finished using your boat the laptop comes home with you and not left on your boat. This also helps as you can edit any marks etc, as well as plan your next trip in the comfort of your own home.

It's not just the physical risk of theft you avoid by taking the laptop home but also your waypoints (lumps, diving sites etc) you have marked in over the years should be safer at home. It would also be wise to make a back up copy.

### TIPS

Refer to your owner's manual to find out exactly how to work your GPS and features.

The card or electronic chart you purchase should be of the area you go boating in. Check this and find out what programs are available. There are a number of programs on the market even some available free on the internet (so they say). Your receiver should come with software and it's simply a matter of installing the program into your laptop if you are using one.

All the cool features built in to your GPS may in fact get in the way when using the GPS for fishing. You can often end up with a cluttered mess that's hard to read. The only info worth knowing in relation to fishing is bottom contours, depths and structures that attract and hold fish.

Go to the 'Display Options' or 'On Screen Features' and turn off everything except the contour lines and wreck symbols. You may need to see navies and shipping lanes while steaming to the fishing ground but once you get there turn them off. Next with your screen clean shift to the largest scale chart available, this will present the most detail. Experiment with the zoom function to expand your view all the way in for greatest accuracy in picking up your mark or making a new one.

In an emergency situation the GPS can also be a great way to mark a man overboard. It is a good idea having a dedicated button just in case, so remember this and practice using it.

GPS are one of the greatest technologies to come for modern day boating and although they have been around for a number of years now I strongly recommend to check them out next time your at a boating retail store. That is if you haven't got one already!

### SOME GPS TERMS WORTH KNOWING

**DGPS** is a feature that is basically an add on to the original system. It provides corrections to your GPS receiver increasing navigation accuracy.

**POSITION** Marine Navigation is based on the latitude/longitude coordinate system. A **WAYPOINT** marks an exact position fix so it can be recalled for future use. The GPS lets you mark waypoints electronically, without physical landmarks.

**BEARING** is a compass direction to a particular waypoint from your present position.

**TRACK** is a compass direction representing your course over ground or course made good. Ⓞ



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