



# Where the hell am I?

## A handheld GPS uses satellites to guide you through the bush — but don't rely on them alone!

PHOTOGRAPHY: GENE ROSS

### nutshell

▶ Handheld GPS devices can help you get back from a long walk in the bush, but take along a compass, good map and some common sense — just in case.

▶ Saving waypoints along your journey can be invaluable for future visits, whether it's a dangerous cliff face to avoid, or a fantastic restaurant you stumbled upon in Bahrain.

**A**n 'adventure' handheld GPS can reveal your position if you're lost or record every step you take so you can find your way back. Also, if you know the co-ordinates of a destination, anywhere in the world, it will show you how to get there on foot.

All the models CHOICE tested work by collecting information from a group of at least 24 satellites that constantly orbit the earth. A fix on three satellites is all you need to get a 2D position, with a fourth needed to calculate height. So unless you're inside a building or at either the North or South Pole, any of these products will help you find your place in the world.

Unlike some of the latest mobile phones with inbuilt GPS features, these units don't need a mobile phone network to work, and unlike a car navigation device, they don't need an electronic map to be useful.

A handheld GPS continually monitors its own position and speed, ready to give you information on where you've been while you were carrying it and which way you should go.

All the units tested are portable and designed to be carried for extended hikes. The compact MAGELLAN and GARMIN models are similar in size to a ruggedised mobile phone, with several small buttons and a joystick.

The LOWRANCE units are larger, with a bigger screen and wider buttons.

Saving a waypoint — such as a river crossing, interesting rock formation or even hard-to-find bookstore — is an ideal way to record route markers or points of interest when you're out walking — simply press a button or two on the unit. If you want it to record the entire journey, a tracking feature creates a snail-trail that evolves as you move. Once a track is created, you can save it as a route to use later or to guide you back to your original position.

All the models except the GARMIN eTrex Legend also have an alarm to let you know when you've arrived back at the starting position and to alert you if you move too far off the saved path.

### Mapping at home and in the field

All the models came with a basic world map, but to get a detailed electronic Australian topographic map you'll have to shell out a bit more cash.

For the MAGELLAN eXplorist 400 and 500LE, the only option is the DiscoverAus Topo SD map, which isn't cheap at around \$400, although it does provide impressive contour details, which are accurate to 5 m. The Tracks4Australia (\$180 with 20 m contour intervals) or Topo Plus (\$129 with 10 m contour intervals) maps can be used with the GARMIN models. The LOWRANCE models have some fantastic US topographic maps — but that's not much help for us down in Australia.

Electronic topographic maps are contained on a removable flash memory card and provide very good detail on surrounding areas and contours, but the small screens of the MAGELLAN and GARMIN units made it difficult to gain a wider view of the area. Higher-resolution screens on the GARMIN eTrex Legend Cx and eTrex Vista Cx and MAGELLAN eXplorist 500LE provided the best readability of the compact units.

Both the LOWRANCE and GARMIN models claim support for additional marine navigation maps for those with a nautical bent. These give good depth information as well as details of buoys, lighthouses and anchorages. >

### Did you know ?

- Google Earth (<http://earth.google.com>) accepts latitude and longitude figures to zoom straight to any spot on earth. So you can just enter stored waypoints from your handheld GPS to show lucky friends spots along your last trek. If you have a MAGELLAN or GARMIN and want to take the experience further, Google Earth Plus (annual subscription \$20) allows you to export tracks from your GPS onto Google Earth, such as a treacherous ravine crossing in Kosciuszko National Park or a perhaps even more treacherous literary pub crawl in Dublin. Connect your GPS to the PC, upload your route information and the complete journey will be shown on a Google Earth map for all to see.
- Soon after it was created, the civilian GPS was doctored by the US government, which incorporated an artificial inaccuracy (up to 100 m) to counter any potential terrorist threat.
- Bill Clinton removed this restriction in 2000, arguing that the public good to be gained through using as accurate a system as possible would outweigh any security concerns. However, the US government still reserves the right to introduce selective availability if it feels its national interests are threatened — for example, during the war in Iraq, where the civilian GPS has been made inoperable within the war zone.

What to buy



**GARMIN eTrex Vista Cx**

PRICE \$599

**GOOD POINTS**

- High-resolution colour screen.
- Compact.
- Easy to use with one hand (left or right).
- Barometer/altimeter information to help predict changing weather patterns.

**BAD POINTS**

- Small screen.



**GARMIN eTrex Legend Cx**

PRICE \$499

**GOOD POINTS**

- High-resolution colour screen.
- Compact.
- Easy to use with one hand (left or right).

**BAD POINTS**

- Small screen.



**MAGELLAN eXplorist 500LE**

PRICE \$650

**GOOD POINTS**

- High-resolution colour screen.
- Compact.
- Comes with an OK map of Australia.
- Uses either a rechargeable Li-Ion battery or three AAA batteries.

**BAD POINTS**

- Small buttons and screen.
- Joystick use not intuitive.



**GARMIN eTrex Legend**

PRICE \$299

**GOOD POINTS**

- Compact
- Easy to use with one hand (left or right).

**BAD POINTS**

- Small monochrome screen.
- No PC mapping software supplied.

About the rest

- If you have large hands, or are off to a colder climate and plan on using the GPS with gloves on, a larger unit like one of the LOWRANCE models could be a good option.
- All the LOWRANCEs and the MAGELLAN eXplorist 400 and 210 lost points for letting in water — see *Waterproofing issues*, page 55, for more on this.

A PORTABLE WEATHER STATION

We also had a quick look at the SILVA Multi-Navigator. It has no mapping capabilities, but has a very good electronic compass and can indicate not only the barometric pressure but also the rate of change — effectively giving you a portable weather station. It has worse battery performance than the other models because it constantly collects barometric pressure information, even when turned off. Our tester found it to be very robust in the field, although some of the wilderness rescue panel found it unintuitive to use.

HOW WE TESTED



PHOTO COURTESY OF DENIS GALLAGHER

- **Accuracy** was assessed by testing the devices at four survey points and a variety of altitudes. The test was repeated twice at different times of day when a different constellation of satellites would be within range. Our testers also carried out a '10-minute' test, in which the units were left for 10 minutes at one waypoint. This test determines whether having more time to communicate with the satellites produced a more accurate reading.
- For **acquisition**, our tester measured how long each model took to acquire a satellite fix under a clear sky and then under dense foliage. Three runs of each test were carried out on different days and at different times to provide a variety of satellite constellations.
- For the **battery test**, each unit was set up to constantly fix its position and then checked every hour until its batteries ran out or it shut itself down with a low battery indication.
- **Ease of use testing** was conducted in two stages. First, the Bushwalkers Wilderness Rescue Squad examined each model, plotted a simple route and then followed the track log to gauge its accuracy. This was followed by an assessment conducted by CHOICE, which included starting the unit, logging a waypoint or route and general usability with regard to button accessibility and screen readability. The ease of use score was based on the CHOICE assessment modified by the feedback from the Bushwalkers Wilderness Rescue Squad.
- Models that claimed **waterproofing** to IPX7 standards were submerged to a depth of 1 m for 30 minutes. They were then dried and turned on to obtain a fix.
- **Ruggedness** was tested by dropping the units four times from a height of 93 cm onto a linoleum-covered hard surface.

## Jargonbuster @\*!?

**Acquisition** The ability to find and lock onto satellite signals to determine position.

**Fix** A successful connection with a group of orbiting satellites.

**GPS** Global Positioning System.

**Grid** A co-ordinate system that projects the earth as a flat surface, using square zones to show position information.

**Topographic map** Shows elevation through the use of contour lines and altitude markings.

**Waypoint or POI (point of interest)** An exact co-ordinate marked to show a position.

### USING THE TABLE

**Scores** The overall score is made up of:

- Ease of use: 50%
- Battery life: 15%
- Accuracy: 15%
- Acquisition: 10%
- Waterproofing: 10%

### TABLE NOTES

ns Not stated

## What to look for

### SCREEN

A high-resolution screen, preferably colour, is necessary if you want to use detailed topographical maps.

### OTHER FEATURES

- A battery compartment that accepts standard batteries (AA or AAA) means you can use either rechargeable or normal alkalines in an emergency.
- PC mapping software allows you to select a waypoint or route at home and download it to your GPS to use in the field.
- A connectivity cable allows your GPS to connect to a PC to download and upload information. But beware; these cables can be expensive if they use a proprietary connection.

### EASE OF USE

The GPS needs to be comfortable in your hand, with well-spaced buttons that allow you to select functions more easily.



PHOTOGRAPHY: GENEROSS

PRODUCT	PERFORMANCE						SPECIFICATIONS
	Overall score (%)	Ease of use score (%)	Battery life score (%)	Accuracy score (%)	Acquisition score (%)	Waterproofing score (%)	
<b>Brand</b>							<b>PC software supplied</b>
Garmin eTrex Vista Cx	83	84	90	75	63	100	Mapsource 6.11.6
Garmin eTrex Legend Cx	81	83	90	70	53	100	Mapsource 6.10.2
Magellan eXplorist 500LE	78	81	70	70	68	100	MapSend Lite 2.00e beta, Magellan Conversion Manager 1.07, Magellan Geocache Manager 1.07
Garmin eTrex Legend	77	78	80	70	55	100	None
Garmin GPSmap60	74	75	80	70	40	100	Mapsource 6.10.2
Lowrance iFinder H20c	71	79	75	60	60	50	None
Magellan eXplorist 400	71	74	75	70	73	50	MapSend Lite 2.00e beta, Magellan Conversion Manager 1.07, Magellan Geocache Manager 1.07
Magellan eXplorist 210	69	71	75	70	65	50	MapSend Lite 1.00, Mapsend Manager
Lowrance iFinder Expedition C	67	79	70	65	75	0	None
Lowrance iFinder H20	67	76	70	75	75	0	None

< You can also use a map program on a PC to set waypoints and routes at home before you head out, and if you want to show off what a hardy bushwalker you are, you can upload routes back to a map on a PC to show where you've been. All the units can use mapping software on a PC, but while it's standard on most, it's an optional extra for the LOWRANCE and GARMIN eTrex models.

All the models performed accurately when getting a fix on the required number of satellites, with differences ranging from around 3 m for the GARMIN eTrex Vista Cx, to 12 m for the LOWRANCE iFinder H<sub>2</sub>Oc. A wider range was observed when trying to calculate altitude; however, it's generally more important to know where you are than how high you are.

Under a clear sky, no GPS took longer than a minute to locate their position. However, when confronted with dense foliage, they varied in the time taken to get a fix, with the GARMIN GPSmap60 the only one to fail to do so within five minutes.

The MAGELLAN eXplorist 400 and 500LE were the only models with a rechargeable Li-Ion battery, which initially caused concern among our wilderness rescuers due to the inability to get spares out in the field. However, a AAA battery adapter that comes standard in the box was seen as a good all-round solution.

All the other models can use either rechargeable AAs or normal alkaline AA batteries.

While a handheld GPS provides very accurate recordings of individual waypoints and treks, we recommend carrying and learning to use a compass and paper topographical map as backup for anything longer than a short hike.

## Waterproofing issues

Despite claims of being waterproof, two of the LOWRANCES, the iFinder Expedition C and iFinder H<sub>2</sub>Oc, failed our immersion test. The LOWRANCE iFinder H<sub>2</sub>Oc passed but had some water in its battery compartment.

The MAGELLAN eXplorist 400 also had water in its battery compartment, which caused it to flatten, but it was fine when the battery was recharged. The MAGELLAN 210 also let water in here but its battery didn't flatten.

The eight models that passed the water test all passed our drop test too.

When we contacted LOWRANCE about its models failing their stated waterproof claims, the company responded: "We have encountered some inconsistency with one of the vendors that supplied the sealing agent for this product. R & D (at Lowrance) has identified the issue and a correction is in place."

If you own one of the LOWRANCE models in this test and think they haven't met their claims to the IPX7 waterproof standard (see *How we tested*), call its service department on 1300 784 244. ■

**Despite claims of being waterproof, two of the Lowrances failed our immersion test. The company says "a correction is in place".**

Connection to PC	Cable supplied	Dimensions (mm, H x W x D)	Weight (g)	No. and type of batteries	Display size (mm, W x H)	Display resolution (pixels, W x H)	Display type	High-resolution display	Contact	Price (\$)
Mini-B USB/USB 2.0 Type A	✓	106 x 58 x 32	173	2 x AA	34 x 43	176 x 220	Colour	✓	www.garmin.com.au	599
Mini-B USB/USB 2.0 Type A	✓	106 x 58 x 32	170	2 x AA	33 x 43	176 x 220	Colour	✓	www.garmin.com.au	499
Proprietary/USB 2.0 Type A	✓	119 x 55 x 33	152	1 x Li-ion or 3 x AAA	34 x 43	122 x 160	Colour	✓	www.magellangps.com	650
Proprietary/serial port	✓	113 x 57 x 32	155	2 x AA	29 x 51	160 x 288	Mono		www.garmin.com.au	299
Mini-B USB/USB 2.0 Type A	✓	159 x 58 x 34	204	2 x AA	35 x 53	160 x 240	Mono		www.garmin.com.au	529
Proprietary/serial port		149 x 68 x 31	245	2 x AA	43 x 57	240 x 320	Colour	✓	www.lowrance.com.au	649
Proprietary/USB 2.0 Type A	✓	119 x 55 x 33	156	1 x Li-ion or 3 x AAA	34 x 46	122 x 160	Mono		www.magellangps.com	550
Proprietary/USB 2.0 Type A	✓	119 x 55 x 33	167	2 x AA	34 x 45	122 x 160	Mono		www.magellangps.com	420
Proprietary/serial port		149 x 68 x 31	249	2 x AA	43 x 57	240 x 320	Colour	✓	www.lowrance.com.au	729
Proprietary/serial port		149 x 68 x 31	253	2 x AA	41 x 54	180 x 240	Mono		www.lowrance.com.au	419