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Cry for help

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Satellite phones go where mobiles fear to tread

BEHIND Mayhem Manor are some of the toughest hiking trails in the Santa Monica Mountains. The Topanga State Park offers hundreds of square miles of wilderness just 40 minutes drive from downtown Los Angeles.

Two things your correspondent always takes with him on his rambles—apart from stout walking boots, a wide-brimmed hat and a couple of bottles of water—are a magnetic compass and a topological map from the United States Geological Survey's exquisite "7.5-minute quadrangle" series.

Spot LLC

A 7.5-minute quad is perfect for exploring the countryside on foot, bike or horse. The whole of America (bar a few states and Puerto Rico) has been mapped on this 1:24,000 scale—equivalent to a little over two-and-a-half inches to the mile. The series is similar in detail to the Ordnance Survey's Explorer series of the British Isles.

So far, he has not bothered to take a mobile phone or GPS navigator with him. The wireless connections you take for granted in everyday life quickly peter out when on a mountain trail. Verizon's otherwise robust cellular network barely reaches your correspondent's home, a mere 750 feet (230 metres) up the hillside; other carriers fail to get even that far. Deeper into the mountains, a mobile phone becomes useless baggage.

A GPS navigator would be more useful, especially if it included a two-way radio. Some of the best, like the Rino range from Garmin, come with a barometric altimeter, electronic compass and weather alerts as well as a GPS receiver and five-watt transmitter operating in the General Mobile Radio Service (GMRS) band reserved in the United States for family and personal use.

This is not your father's walkie-talkie. Rino-type devices are small, light and waterproof, and run all day on a single charge. But they are not cheap: typically around $500. And while GMRS radios have a range of 14 miles (22 kilometres) in open country, your correspondent finds them as useless as mobile phones in the meandering canyons that trails usually follow through the mountains.

Getting lost is not the worry. The concern is more about taking a tumble and breaking a leg—or having a nasty run in with a wild animal.

Cougars—the meanest big cat in North America and the fourth-largest in the Felidae family—prowl the

nearby mountains. Ubiquitous coyotes will attack children and maul even pit-bull terriers when hungry enough. With hunting outlawed, lots of predators, and the cougars in particular, have lost all fear of humans, and occasionally drag unwary hikers or trail-bikers off into the bushes for supper.

Your correspondent likes the idea of being able to cry for help. The obvious answer is to carry a satellite phone coupled to a GPS tracker. In an emergency, friends and family would then know what had happened and precisely where you were stranded.

So far, however, satellite phones have been largely for commercial and government users—oil companies, news organisations, fishing fleets, armed forces, emergency services, plus well-financed expeditions to remote regions. Costing thousands of dollars and weighing a pound or more, satellite phones have not exactly been on the must-have list for weekend wanderers.

What of late has made them more practical—and cheaper—has been the trend to low-Earth orbit (LEO) satellites in place of geostationary ones "hovering" 23,000 miles (36,000 kilometres) above the equator. Unlike the geo-sats that circle the Earth once every 24 hours (and so appear stationary in the sky), LEO satellites zoom overhead at an altitude of 400 to 700 miles once every 100 minutes or so. With each satellite being in line of sight for less than ten minutes, dozens of them are needed to ensure users always have at least one satellite to communicate with at any given moment.

Being closer to the ground, less power is needed to beam messages up to LEO satellites and back to receivers elsewhere on the planet. That translates into smaller antennas and cheaper handsets. There is also much less annoying "latency"—the gap between words uttered by the speaker and heard by the listener—that mars phone calls made via geostationary satellites.

Unfortunately LEO systems are very capital-intensive because they need a constellation of satellites. They also require a long lead-time to get all the birds built, launched and perched in their correct orbits—a killer for cash-flow.

No surprise, then, that quite a few satellite-phone companies have gone bust trying to provide a commercial service. Motorola's Iridium network, which used 66 satellites in near-polar orbits to blanket the globe, was in service for barely a year before going out of business in 1999. An earlier attempt by Globalstar, which relied on 44 satellites in orbits inclined at 52º to the equator (to focus on the more populated parts of the planet), limped along until 2002.

Nowadays, both are back in business under new ownership, having been bought out of bankruptcy for a fraction of their former cost. Shorn of their early debts, they have bounced back by selling voice and data connections for satellite phones, pagers, computer modems and transceivers for tracking mobile assets such as aeroplanes, trains, trucks, trailers and shipping containers.

For consumers who have grown used to broadband speeds, satellite phones and modems are a reminder of the dawn of the internet age. But while 9.6 kilobits a second may be way too slow for uploading video clips to YouTube or downloading music from iTunes, it is good enough for voice as well as many a global tracking or messaging application.

Meanwhile, big improvements are on their way. The first generation of phone satellites are coming to the end of their natural life. After about eight years in orbit, their solar arrays have deteriorated through bombardment by radiation and space debris. The satellites are also running out of fuel for nudging them back into their correct orbit and orientation, or steering them closer to siblings that have conked out so that they might take on the dead sibling's work.

A second generation of satellites, which are about to be launched by Globalstar atop trusty old Soyuz rockets from Baikonur in Kazakhstan, will whisk data around the planet at a far more respectable speed of 250 kilobits a second.

By later next year, when Globalstar has all 24 of its new satellites in orbit, high-quality voice and 3G data transmission will be possible from anywhere on the planet, except for polar latitudes. In making broadband available more or less anywhere anytime, Globalstar reckons it is six years ahead of the competition.

Your correspondent almost cannot wait. Globalstar already sells a tempting little $170 device called SPOT, which can send your GPS location to friends and family, along with a preprogrammed message and a link to Google Maps that lets them track your progress.

Imagine the possibilities when such a hand-held gizmo can beam video as well as voice, GPS location and

instant messaging. Your correspondent will be posting his progress through the canyons and along the ridge lines on Twitter, Flickr and YouTube—with the peace of mind that comes from knowing his exact location and condition can be beamed instantly to loved ones in the outside world.