



# Avoiding collision

Circumnavigator Stuart MacDonald shares essential tips for staying out of trouble in this extract from his book *Sail This Way*

**A**fter many years of ocean sailing I have reluctantly come to the conclusion that on the open sea you cannot rely on anyone else to be keeping a lookout.

After a number of close-quarters situations with commercial vessels in daylight hours, I am sure that on a couple of occasions there has been no one on the bridge of the other vessel or, if there was, they were immersed in some other task and paying no attention at all to what was going on round about them. I'm sure there are lots of well-run ships on which the highest standards prevail, but I am

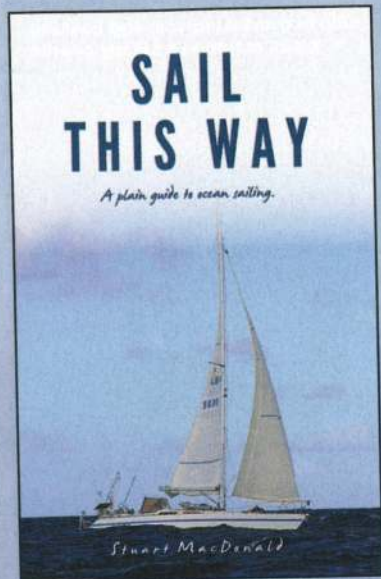
also sure that there are many on which they do not.

It seems that now we are truly in the grip of the electronic age, radar has become the principal means of detecting the presence of one vessel from another, even in clear weather and that if the ARPA (Automatic Radar Plotting Aid) alarm does not go off indicating risk of collision, the person on the bridge assumes there is nothing there.

One very windy night on the South African coast I found myself the meat in the sandwich between two ships approaching each other, end on. Each had detected the presence of the other and

they chatted on VHF Ch6 about the alterations they would make to avoid each other. Unfortunately, as they rapidly closed the distance between them it became obvious that neither had seen me despite the fact it was a clear night and I had all my lights on. There was a big sea running and I didn't want to risk gybing. I eventually made contact and encouraged them to take notice, but until that point they were clearly oblivious to my presence.

On another night, a large vessel came up from astern and was shaping up to pass very close to *Beyond*, my 1991 Comfortina 38. I called and eventually made contact and was asked for my



*Sail This Way* – A plain guide to ocean sailing by Stuart MacDonald, £9.99, is available from the Beyond Sailing website [www.beyondsailing.co.uk](http://www.beyondsailing.co.uk)

### ABOUT THE AUTHOR

Stuart MacDonald left school at 16 to work for a Glasgow-based shipping company. He became Master of his first ship at the age of 30 and spent shore leave cruising the west coast of Scotland where he learned many of the lessons described in his book *Sail This Way*.

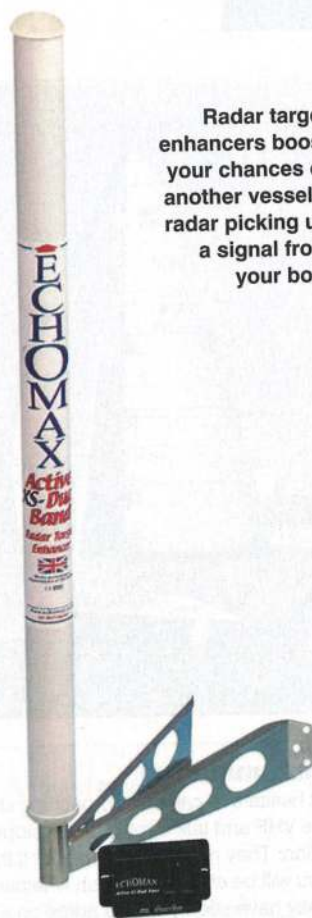


MMSI number. After a minute or two they called up saying they were sorry, but I was not on their register (and therefore presumably not in existence). I suggested they looked out of the window.

These are extreme examples, both of which occurred in busy coastal waters, but they do illustrate the danger that exists for a yacht on passage. Unless you've established radio contact, it's very dangerous to assume you have been seen.

Another thing to remember is that the person on the bridge of the ship probably knows nothing about sailing and the constraints you'll be under as far as you altering your course is concerned.

David Harding



Radar target enhancers boost your chances of another vessel's radar picking up a signal from your boat

### How to reduce the risk

Broadly speaking, there are a couple of ways to decrease the risk of collision:

- You can do everything possible to make yourself visible and to detect the presence of other vessels electronically and visually;
- You can do your best to stay clear of the routes other vessels are likely to be following.

### Target enhancers

I carry a radar target enhancer, mounted about 10ft (3m) above the waterline. When switched on, it responds to any strike from an incoming radar beam, sounding an audible alarm at the chart table and sending out a pulse which shows up on the radar screen of the ship it has detected.

The problem with these devices is that if the strike comes in from a ship over the visual horizon, you can come up on deck and see nothing. So you know there is something out there, but you don't know where. Also, there may be more than one ship out there somewhere, but there is no way of knowing. Nonetheless target enhancer devices are a very valuable aid to detecting other vessels on the open sea, and of helping make sure that they are aware of you.

### AIS

For me, AIS (Automatic Identification System) represents the greatest advance in the avoidance of collision since the advent of radar. I started with a receive-only set, which displayed its targets on the

AIS transponders allow you to see and be seen



plotter screen. I then moved to a transmitting set, with its own screen, showing all the targets and their tracks. This tells me everything I need to know, and provides a great sense of security. I have fitted an external audible alarm which emits a screech that would wake the dead when my guard zone is breached or if there is a converging target which will come within my closest point of approach limits. It is a great piece of kit: it's not cheap, but worth every penny because of its contribution to your safety.

### Radar

On the open sea, in my Merchant Navy days, when we were keeping watch on the bridge in clear weather the radar was never switched on. We used it for collision avoidance in restricted visibility and for coastal navigation when within radar range of the shore.

But radar has advanced massively and can now analyse the speed and course of other vessels, assess the risk of collision and even propose a course of action. Radar's constant use is universal on commercial vessels and perhaps rightly so. However, I believe its value on a yacht is limited, and that's not just because I can't afford one.

This is because the plotter provides all the information you need for coastal navigation and the AIS provides detailed information on other vessels and their closest points of approach as well as analysing the risk of collision.

Of course, not all vessels carry transmitting AIS, but the majority do and an AIS consumes much less current than a radar set, and doesn't need a big scanner halfway up the mast, or mounted on a clumsy pod down aft. For me radar is perhaps a 'nice to have item', but one which I did not have and which I have never missed.



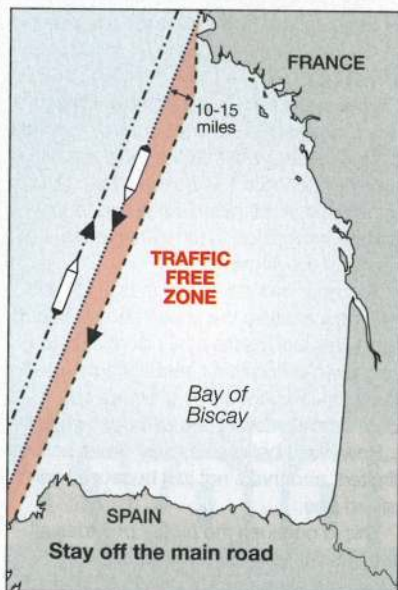
Radar is effective but expensive and relatively power-hungry

### Crossing paths

Commercial vessels usually take the course which results in the shortest possible distance between their port of departure and their destination.

This means that you will be able to look at your paper ocean chart and mark on it the direct course between, say, The Mona Passage in the Caribbean and Curacao. If you are sailing from the north of the Leeward Islands to Colon at the Panama Canal, you will be able to estimate the period during which you will be most likely to cross the paths of ships on that passage and take the necessary precautions to avoid them.

The Admiralty Ocean Routing Charts show the main routes, including the Great Circle Routes, between the major ports in the areas they cover, and provide a good guide to assist you. On a smaller scale, it's just like making an English Channel crossing. You know the main routes and you know when to expect the main concentrations of ships.



### Stay off the main road

As an example of this technique, draw a line between the inner separation zones at Ushant off the French coast and Cape Finisterre, in Spain, and think of it being the eastern border of a motorway.

If you are heading south, or north, across the Bay, get over about 10-15 miles to the east of the line and you will be unlikely to encounter many ships, greatly reducing the chance of a close-quarters situation. The slight extra distance is well worth it.

I did the same when crossing the Pacific, drawing a series of lines between the Canal and the main ports in Polynesia, New Guinea, the Philippines, Japan and so on. I headed for the Marquesas staying well clear of the main routes, and all the way across I saw only one other vessel. There may have been more, but I didn't see them.



David Harding

### Communication

Don't hesitate to call an approaching ship on the VHF and talk through a developing situation. They may not answer, but if they do you will be able to establish whether or not they have seen you and agree on a course of action.

I have enjoyed many a mid-ocean exchange of courtesies this way.

### Crossings

In a crossing situation I occasionally use my hand-bearing compass to check the bearing of the other vessel, but given that both your own boat and compass card will be swinging around a bit, it's easier to check whether the bearing is changing by sitting in the same position in the hatch and marking the other ship's location in relation to a stanchion or other fixed point on your own boat. On the open sea, even crossing ships which should give way, rarely do. Don't get dangerously close just to prove a point!

### Fishing boats

Fishing boats are a law unto themselves. Other vessels have to give way to them when they are fishing, quite rightly, but it sometimes seems to me that they consider themselves to be fishing from the time they leave port until the time they get back. They certainly have no interest in a yacht.

When they are working, they are working and they will be concentrating on what they are doing. At night they may have very bright working deck lights on and probably won't be able to see outside the circle of their own illumination, even if they cared to look, which is unlikely.

Unless they are trawling, when they will be making a fairly steady course at moderate speed, they are also liable to make sudden alterations of course and/or speed.

In coastal waters, particularly in Europe,

If a ship is overtaking you, and passing clear, maintain a steady course

you may come across small boats setting or lifting lines of pots, often with only one man on board. He will be working hard to make a living and probably has to handle his boat, operate the pot hauler and drag pots around the deck, all at the same time. For his own sake, he has to concentrate. It's hard work and dangerous when there is a sea running, so stay well away and let him get on with it.

### The cardinal rule

When two vessels are approaching each other, a developing close-quarters situation can become a dangerous situation very quickly. As the distance between the two decreases, the options for avoiding each other narrow and risk rises exponentially. The earlier you react, the safer you are likely to be.

Think ahead and try to avoid close-quarters situations entirely, regardless of your rights.



David Harding

Think ahead and try to avoid close-quarters situations

### Overtaking situation

If a ship is overtaking you, and passing clear, try and keep as steady a course as possible and don't hesitate to alter away from her to broaden the angle and build in a safety factor.

On an open sea passage I don't like getting closer than a mile to a passing ship and in that situation there is no reason why you should.

If you are overtaking another sailing vessel, the closing speed is likely to be small. It is courtesy to pass to leeward, well off. Don't forget to wave.

### End on situation

Under most circumstances, particularly when sailing on a broad reach or a run in a big sea, your boat will be veering around probably through 10-15° either side of her course.

So, if you are closing with another vessel, end on or nearly so, it can be hard for them to tell whether they are seeing your port or your starboard bow, particularly in daylight. In fact they will probably be seeing each bow in turn. Under these circumstances, make a very clear alteration, in plenty of time, probably at least 30°, so as to put your own mind at ease and leave the person on the ship in no doubt.

If things start to look really bad and the wind angle permits it, you can take some of the heat out of the situation by turning on to the same course as the vessel coming towards you. That will temporarily stabilise the situation because you have immediately greatly reduced the closing speed between you and gained some thinking time.

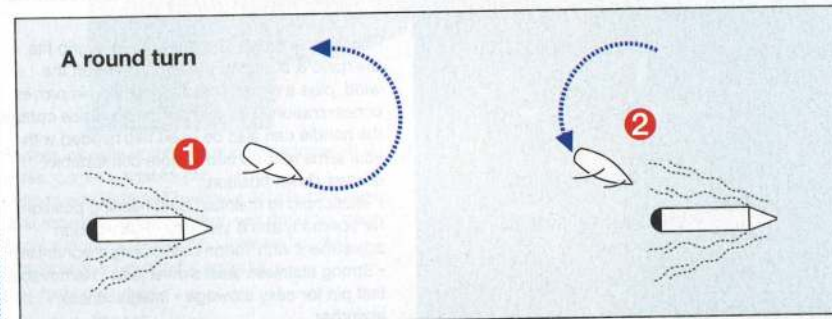
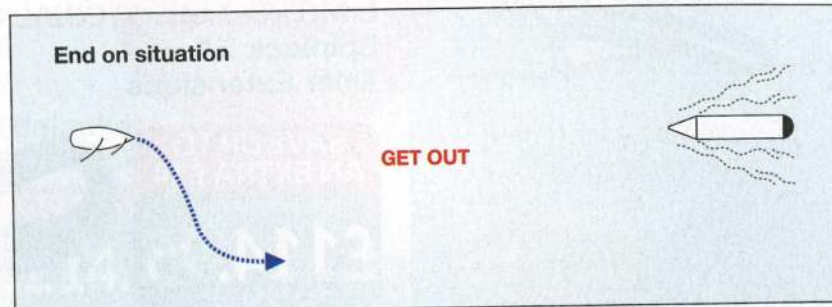
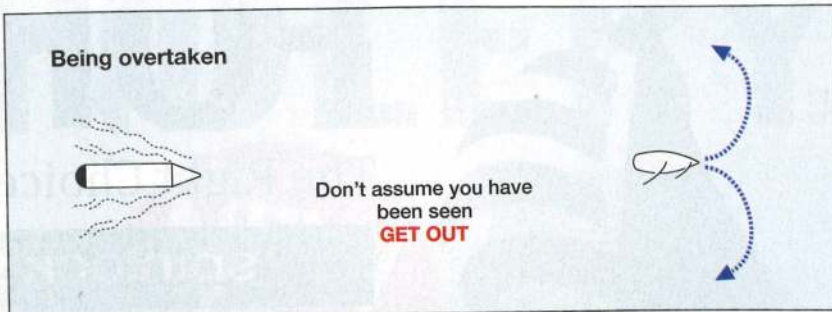
### Converging situation: the round turn

If I am in a converging situation with a commercial vessel on a nearly parallel course, I always try to alter course away from her and to do so in plenty of time so that she is clear about what I am doing.

If you are under power, you can just slow down or change course, but if you are sailing that's not so easy, and the best way to get clear may be to take a turn out of your own boat, by altering course away from the ship and sailing in a circle until you are either able to pass round her stern, or are back on the same heading, by which time the relative positions of your boat and the ship will be such that the risk of collision is greatly reduced or removed altogether.

You should always try and alter course away from a danger rather than towards it.

When you are on a converging course with a ship, you are both sailing in more or less the same direction and the risk of collision increases with each passing minute, but as soon as you turn away from the ship, and you have made half your round turn, you and the ship are heading in opposite directions, and the risk decreases rapidly.



### Better safe than right

In general terms, you are always safer to alter course away from a danger and to avoid crossing ahead of another vessel.

In open water a power-driven vessel is supposed to give way to a vessel under sail, but don't bank on it happening. Just get out of the way. There is no point in being run down just to prove a point and anyway you are required to do whatever is necessary to avoid a collision, whether you have the right of way or not. After all, the ship is working, and you are having fun, or you should be.

### Avoid the dead wind zone

There is another good reason for not getting close to a large ship. Large vessels disturb the wind which blows over them



David Harding

### Give large ships plenty of clearance

even when they are at anchor. If the ship is going across the wind she will create a dead area to windward and another to leeward. She will also suck the wind in behind her the same way as a big lorry does on a motorway. Stay out of the dead zone or you could find yourself with no wind just when you really need some.

