# Need a lift?

If you're in a small boat and have to have a casualty lifted off by helicopter, what should you expect? David Harding finds out

**Many of us have seen a casualty being airlifted from a yacht, either in a genuine emergency or as an exercise. Some of us have been involved in pre-arranged exercises too, or called up by HM coastguard out of the blue – or the grey – and asked to take part in an exercise as we were sailing along minding our own business. If we agreed, we would end our day much the wiser about what to do should it ever happen for real.**

In this feature we're going to concentrate principally on what might happen if someone needs to be lifted off a small motorboat. Although motorboats don't have the same heavy and/or fast-moving bits of rig or rigging to bang you on the head, which account for a high proportion of the injuries sustained on sailing yachts, a fair amount of distress calls leading to a helicopter rescue come from motorboats.

Small motorboats present their own particular challenges to the helicopter crew. That's why it was good to have an opportunity to see what happened when they joined forces with Will King and the Harbour Sea School for an exercise in Poole Bay. Will was skippering a Cap Camarat 755, crewed by Will Kennedy, and this was a new experience for both of them.


**The pilot and the winch operator are on the starboard side of the helicopter**

**The powerful downdraught (or downwash) throws up a lot of spray**

**Approaching from the port side allows the helicopter to maintain visual contact**

## Start with the basics

To make sense of the reasoning behind the various methods used by the HM Coastguard search and rescue crews, it helps to understand a few fundamental facts and principles.

- There is no such thing as a 'standard' rescue technique for any given situation. The methods shown here are examples of what might happen. All can be varied. The helicopter crew will assess each situation before making judgements and issuing instructions to the boat accordingly.
- Instructions will be issued by VHF radio where possible. If you don't have a VHF on board, it will come down to hand signals and alternative (potentially less efficient) rescue techniques might have to be used.
- Helicopters prefer to be moving forward rather than hovering. Movement into the wind creates greater air-speed through the rotors, generating more lift so less power is needed and also moving the downdraught behind the helicopter.
- Helicopters create a powerful downdraught (or downwash). If they're hovering when there's little or no wind, the downdraught will be almost directly underneath the rotors and therefore very close to the boat. It will tend to blow the boat around, often unpredictably, making life much harder for the pilot and winchman as well as the boat's crew. The spray it also throws up adds to the discomfort. It's essential to remove any loose items such as cushions, clothing and caps before the helicopter approaches in order to stop them being blown around, adding to the general confusion and presenting a potential danger to the helicopter's engines.
- Helicopters are noisy beasts. When you're immediately underneath, or even a little way to one side, you won't be able to hear anything over its noise. VHF communication will be impossible, as might talking to (or shouting at) your crew. A briefing over the radio (if you have one) will take place before the helicopter closes in, and crucial hand-signals will be explained.
- The pilot and the winch operator are on the starboard side of the helicopter, so they need to be on the boat's port side to see what's happening. The pilot might still lose visibility of the boat – especially a small boat – whereas the the winch operator will maintain visual contact at all times.
- If circumstances allow, the winchman will probably be lowered straight on to the boat to save time. In some situations – when there's a lot of movement, for example – a hi-line will be lowered first. This is a weighted line that the boat's crew pulls aboard to help guide and steady the winchman or any equipment that comes down from the helicopter. Rule No1 with the hi-line is that it should never be made fast to the boat!
- On exercises like this, particularly one involving a small boat in choppy conditions, the winchman might not land on board. He would be risking injury – not a good idea if a genuine distress call is received immediately after the exercise, as it was on this occasion. As the helicopter was returning to base at Lee-on-Solent it was called back to an emergency in Poole Bay, where we had been on exercise.

## SCENARIO 1: Boat going upwind

On the boat you will be given a speed and course to steer by the helicopter crew – either a compass course or a course in relation to the wind. For sailors or experienced motorboaters, this is unlikely to present a problem. Those with neither wind-sense nor a compass will be doing themselves and the rescue crew no favours.

In this case, Will was instructed to head directly into the wind at 5 knots. The onshore breeze was kicking up a moderate chop and was strong enough not to call for any greater speed from the helicopter.

The helicopter then made its approach from astern and slightly to port. On this occasion the rescue crew was testing a new method whereby the winch operator rather than the pilot controls the helicopter at low speeds. This allows greater precision in manoeuvring because the pilot might lose sight of the boat and have to be guided by the winch operator. The drawback is that it can take longer to get the helicopter into position. For this reason, rather than leave the winchman dangling for a long time, the rescue crew lowered weighted bags on the end of the winch cable.

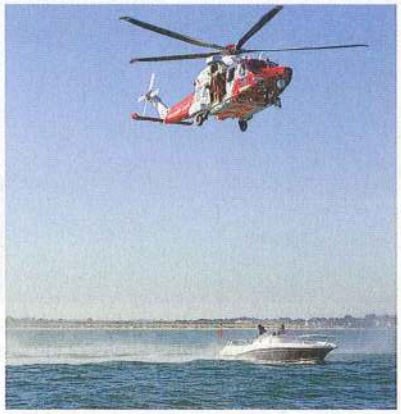
**1** Will heads the boat directly into the wind at 5 knots.

**2** The helicopter moves up from astern and to port…

**3** …before beginning to lower the weighted winch line.

**4** An earthing line is on the end of the winch line and should be allowed to make contact with the boat or the water before being touched by the crew on the boat.

**5** Here the line ('winchman') is close to the boat, but the aim is to lower it (him) into the cockpit rather than on to the bow.



**6** It's 40 seconds later and the line is by the stern. From here the winchman could easily land in the cockpit.

## From a sailing yacht

Methods used with a sailing yacht will vary, as with all boats, but it's common for a boat under sail to be asked to maintain a close-hauled course on port tack. With the boat on the helicopter's starboard side, the boat will be heeling away from the helicopter and the winchman, keeping the rig clear and presenting the deck and cockpit as a landing area. For the yacht's helmsman, maintaining a constant course is less important than following any wind shifts to keep the speed and heel.

If conditions dictate, the helicopter might come overhead, lower a hi-line and then move away to port to lower the winchman.

**1** The hi-line has been lowered into the boat and the winchman now comes down from the port quarter.

**2** Guiding the winchman into the cockpit with the help of the hi-line, which should be free to run and never made fast to the boat.

## SCENARIO 2: Boat dead in the water

Sometimes, motoring the boat into the wind won't work; if there's insufficient sea-room to windward, for example, or conditions are such that driving the boat forward makes it bounce around too much for the winchman to land safely. Pitching, rolling and slamming might also exacerbate any injuries on board. There are many reasons why the dead-in-the-water approach is more likely with a small boat, among them that the pilot might lose visual contact or that the boat's crew has not been able to receive instructions over the radio.

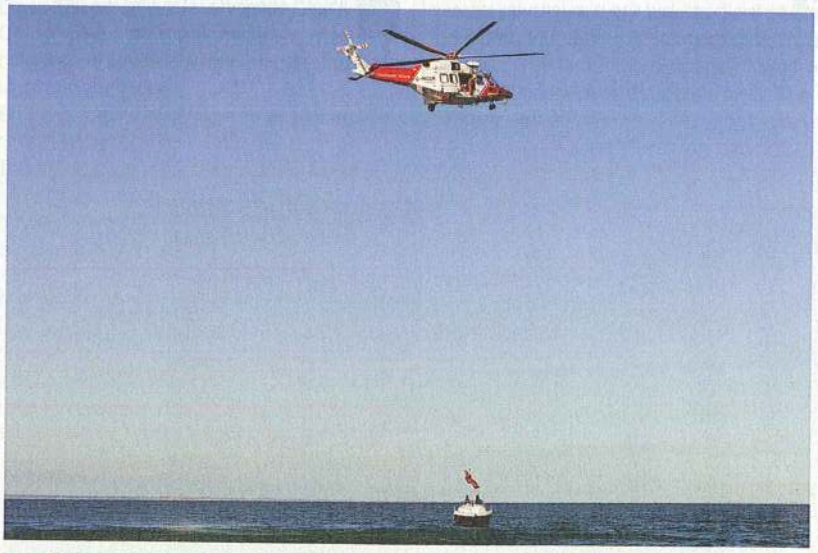
A boat that's stopped will usually lie beam-on to the wind and seas. The helicopter will then approach from downwind. Clearly this is less demanding for the boat's helmsman, but it presents challenges for the helicopter crew for the reasons explained earlier. One difficulty is that the downdraught will spin the boat around, making it harder for the winchman to land and to avoid obstructions such as A-frames.

**1** The boat has stopped and is lying beam-on to the wind as the helicopter hovers downwind, keeping the downdraught clear.

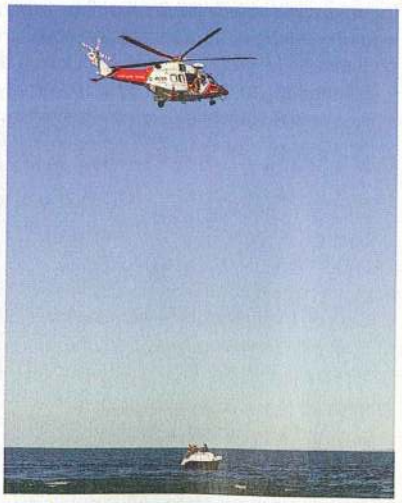
**2** Now the winchman is lowered and the helicopter begins to make its approach.

**3** As the helicopter brings the winchman in closer, the downdraught comes ahead of the boat and the bow points further downwind.

**4** Will and Will can do little at this stage except look on – and get soaked by the spray.



**5** **Lining up:** the downdraught is still ahead of the boat as the winchman comes directly overhead…



**6** …before landing safely in the cockpit. It's significant that, despite the downdraught, the boat moved relatively little throughout this operation.

## SCENARIO 3: From an inshore lifeboat

If the casualty is being recovered from an IRB (inshore rescue boat) driven by a trained coxswain, the procedure is normally very different. The boat will typically make between 5 and 15 knots directly into the wind, the speed chosen to take into account the strength of the wind and the sea state. The helicopter will be ahead (upwind) of the boat, which will move off to starboard of the helicopter to the 4 o'clock position before closing in, maintaining a constant angle and thereby keeping ahead of the downdraught. Once the boat is in position, the winchman can be lowered.

This is the preferred method when a trained helmsman is in charge of the boat. It's generally the quickest and most efficient way to lift a casualty off because it keeps the helicopter moving fast enough to use minimal power, on a consistent heading and at a constant speed. In stronger winds the helicopter can go more slowly because plenty of air will be passing through the rotors, and the boat will probably have to go more slowly because of the sea state.

This approach is by far the most demanding for the boat's helmsman and would not normally be practised except with an experienced lifeboat coxswain. Will's skill and experience meant he was more than up to the job, however, and he positioned the boat in exactly the right spot.

The challenges, he explained afterwards, were manyfold. It's vital to watch the seas and react accordingly, or the boat might bounce up underneath the winchman and injure him. And although you want to position the boat underneath the winchman, bear in mind that he's swinging around and so you won't be steering a steady course if you're aiming for him the whole time. It can be best to tilt your head to keep the helicopter in your peripheral vision and, if you have someone with you, get him or her to watch the winch operator and check for hand signals.

Then there's the need to avoid the downdraught or the bow gets blown off as well as being knocked off by the waves. With the deafening noise thrown into the mix, it makes for a seriously challenging experience that tested Will's helming skills to the limit. Don't expect to be asked to do this, but it's useful to be aware of what's involved.

**1** The helicopter makes upwind at around 12 knots over the ground. Will moves the boat on to its starboard quarter.

**2** As the winchman comes down he's inevitably swinging around, so Will doesn't want to risk over-steering by constantly aiming for him.

**3** When the boat meets a wave, there's a risk it could bounce up underneath the winchman and cause injury – one reason why he didn't land on the boat on this occasion.

**4** Keeping the boat in the 4 o'clock position in relation to the helicopter is vital to being seen while avoiding the downdraught.

**5** The boat is now perfectly positioned beneath the winchman…

**6** …but the intention was to practise the positioning rather than to land him, so it's time for him to be winched back up and for the boat to peel away to starboard.

## PBO conclusion

**Having an idea of what to expect in a rescue situation is a good start. So is having some experience, a VHF radio and a compass. A competent crew will help as well.**

**With a small boat close to land you're more likely to be rescued by a lifeboat than by helicopter but, as with the methods described in this feature, there are no hard-and-fast rules. Most important is to do what you're told: the rescue teams have done this many times before.** PBO