

SAFETY TRADE-OFFS

The BGA Safety Team describes how the acceptance of some minor risks can allow more serious accidents to be avoided

After a difficult cross-country flight a few summers ago, an experienced competition pilot was holding off the landing to touch down near the rigging area when a call of 'Wheel' was made by radio. Instinctively changing hands to check and lower the undercarriage, the pilot lost control of the glider which hit the ground, bounced into the air, dropped a wing and ground-looped, destroying a wing and breaking the tail boom, canopy and front fuselage. The pilot was astonished to emerge unhurt.

Our records reveal at least four similar incidents in which a radio call about the undercarriage caused an experienced pilot to lose control of the glider, resulting in substantial damage and in one case a minor injury. Further accidents occurred when pilots responded to an undercarriage warning alarm, or simply realised at a late stage that the undercarriage had not been lowered. Two of these pilots were seriously injured.

In contrast, when pilots ignored any call or alert and concentrated on a decent wheel-up landing, any damage was generally minor, confined to the forward fuselage and

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the four reported injuries were slight. While a radio call or undercarriage warning might have avoided some of these cases entirely, their benefits are greatly outweighed by the risk of a more serious outcome. BGA advice is therefore not to fit undercarriage warnings without very careful consideration, and never to warn the pilot of a glider seen approaching the landing area with the wheel-up [1].

PROBABILITY NEGLECT

There are a number of trade-offs in gliding safety, whereby the small risk of a serious or catastrophic outcome is weighed against a greater risk of something more minor.

One example is the order of priority 'Aviate – Navigate – Communicate', reflecting the potential consequences of not performing these actions. Generalisations rarely cover all situations, though, so pilots are inevitably tempted to make their own judgements about individual circumstances – and that's where things can go wrong.

The balancing of risks is susceptible to a cognitive bias known as probability neglect, whereby our intuitive feeling about a risk overrides objective judgement [2]. When faced with the small risk of a catastrophic outcome, we tend towards either complete disregard or paranoia, exemplified respectively during the COVID-19 pandemic by the government's initial response and individuals' vaccine fears.

It is easy for pilots to neglect the risk of outcomes rare enough to be beyond their own experience, especially if they over-estimate their ability to cope with such eventualities. This is apparent when pilots try to lower a forgotten wheel rather than focus on landing, and when they leave field selection and planning too late through trying to thermal away. The inconvenience of a field



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retrieve or damaged undercarriage door is a more immediate concern than the possibility of a cartwheel, heavy landing or spinning in.

With a nationwide perspective, though, it's clear that the combined inconvenience of wheel-up landing damage is outweighed by the grief that goes with serious injuries.

AEROTOW AND WINCH LAUNCH PRIORITIES

If you learned to aerotow some years ago, you were probably taught to scan for other aircraft and spot potential landing sites whilst on tow. A number of tug upsets prompted a change to focus on maintaining safe station behind the tug [3], to leave lookout to the tug pilot [4] and to brief yourself about potential fields beforehand [5]. While the possibility of collision or unplanned field landing remains, the greatest risk is of killing the tug pilot.

On a winch launch, many pilots focus excessively upon the placarded maximum launch speed, though our records show that no correctly rigged and airworthy glider has been damaged through excessive speed on a winch launch. In contrast, insufficient airspeed and transitioning too briskly to the full climb have both resulted in serious and fatal injuries. BGA advice is not to be overly concerned about exceeding the placarded maximum speed during the early part of the winch launch, to climb gently to a safe height, and then to signal cautiously or release if the speed remains excessive [6,7]. Pulling hard or signalling vigorously could create the loads that the max winch speed is there to prevent.

WING DROPS

Another winch launch trade-off concerns the event of a wing touching the ground at the start of the launch. Allowing the launch to continue risks it developing into a powered groundloop and asymmetrical reinforced stall, leading to the glider cartwheeling and striking the ground with considerable energy. Sadly, our records show that cartwheels resulting from wingdrops have killed two pilots and left five with very serious injuries.

Although the pilot will ideally release the cable when unable to keep the wings level, pilots do not always spot the problem. The BGA therefore advises that the launch should be stopped before the wing touches the ground [8]. If STOP is signalled and acted upon without delay, experience shows that winch power can be cut before the situation develops. While in some cases the pilot

‘ PILOTS MAY NEGLECT THE RISK OF OUTCOMES RARE ENOUGH TO BE BEYOND THEIR OWN EXPERIENCE ’

may need to lean on previous training and practice of a low launch failure, which always needs careful handling, that presents a lower risk than a potential wing drop cartwheel.

TRAINING TRADE-OFFS

It might seem useful to provide training on ultra-low launch failure, but this is another case of a safety trade-off: there is little time for an instructor to intervene should the trainee make an error, so it is likely that more accidents would occur during practice than would be saved for real. Training is therefore limited to an instructor-flown demonstration.

Some have suggested that wing drop recognition and response could be trained as a practical exercise, but the risks of allowing the wing to drop on a live winch cable are too great. Like ultra-low launch failure recovery, though, the exercise can usefully be flown in a simulator [9].

Landing on aerotow is another exercise that does not justify practice: a recent EGU discussion revealed no cases within living memory of release failure at both tug and glider, and the scope for upsetting the tug or colliding during landing seems considerable. Instead, and at a height from which the tug could recover, we train descent on tow, from which it should not be hard for a competent pilot to land if ever necessary.

A further case of the training risk being greater than the potential saving in practice is in parachute use. Mid-air collisions are rare, and few pilots who bale out suffer more than minor cuts or bruises, while ankle injuries from training parachute jumps are far from unknown. Practising exit from the glider as a hangar exercise is certainly worthwhile; practising collapsing an inflated parachute in a gusty wind is not, as the club member who broke his arm and fractured his pelvis from being dragged over the clubhouse roof a decade ago can doubtless testify.

Tim Freearge and the BGA safety team

■ BGA advice is generally collected within Managing Flying Risk [1] and the Instructor Manual [4].

- [1] BGA, Managing Flying Risk – undercarriage warnings
<https://tinyurl.com/flyright2607>
- [2] C R Sunstein, Yale Law J 112, 61 (2002-3)
<https://tinyurl.com/flyright2608>
- [3] *Avoiding upset*, S&G (Apr/May 2020)
<https://tinyurl.com/flyright2609>
- [4] BGA Instructor Manual, chapter 11b (2025)
<https://tinyurl.com/flyright2610>
- [5] *Aerotow options*, S&G (Jun/Jul 2023)
<https://tinyurl.com/flyright2611>
- [6] BGA Safe Winch Launching
<https://tinyurl.com/flyright2612>
- [7] *Flying the winch launch*, S&G (Oct/Nov 2025)
<https://tinyurl.com/flyright2613>
- [8] *Stop the Drop*, S&G (Feb/Mar 2020)
<https://tinyurl.com/flyright2614>
- [9] The Condor 3 flight simulator allows instructors to instigate a wing-drop during the ground run
<https://tinyurl.com/flyright2615>

■ All previous 'Fly Right' articles are available from the S&G website.
See: www.sailplaneandgliding.co.uk/safety-articles which may be accessed using the QR link below.

