

WINTER HAZARDS

The BGA Safety Team surveys some typical hazards of the coming season



From Aboyne looking west along the Dee Valley towards the Cairngorms. A delayed start to the day, waiting for the sun to get high enough to clear ice from the wings (Tim Martin)

**SHORT DAYS
CAN MEAN
MANY THINGS
HAPPENING
TOGETHER**

THE six months from October to March account for less than a quarter of UK gliding accidents and incidents. Short days and poor weather limit opportunities for flying, sparse thermals all but eliminate cross-country flights, the competition season is over, and many privately-owned gliders are confined to their trailers. For much of the country, gliding is constrained to training and short flights local to a familiar airfield. Perhaps we should be surprised that there are so many winter accidents rather than so few.

The reason is that winter brings its own hazards. A good quarter of winter accidents are related to weather and the length of the day, whose effects can catch us by surprise, particularly when they're a novelty after a clear, hot and dry summer. Our accident records reveal some of the principal causes.

Rain

The season typically begins with rain, which makes the grass grow and mowing difficult. Long grass can grab a glider wingtip, causing a groundloop that can damage the wing and break the fuselage. Long or wet grass slows a tug's acceleration, lengthening the take-off run [1]. Wet ground makes the groundloop easier, and is also a skid risk for vehicles

and ground crew. Tugs and gliders can skid too – and wet brakes can be ineffective.

In the air, wet wings affect performance, raising the stall speed and steepening the glide angle. Rain greatly reduces visibility so is to be avoided, but it thus creates quite an obstacle, and several pilots have come a cropper navigating around heavy showers.

Shorter days

In the summer we have usually run out of enthusiasm and packed up before daylight fails, but in winter it is sunset that stops us. Dusk arrives earlier at ground level, and several pilots landing after late flights have hit obstacles that they didn't see.

Landing before the sun sets has its own hazards, as in the UK an approach into the

**STRAIGHTEN
UP & FLY
RIGHT**

prevailing wind will be directly towards the low sun. Dazzle, or just the difficulty of seeing through the scatter from a mucky canopy, again makes ground obstacles hard to spot. Gliders have been seriously damaged by colliding with trees, fence posts, a windsock pole and surface obstacles, and from heavy landings that ensued when the round-out was difficult to judge.

Canopy misting can also affect visibility if the temperature drops as night approaches. Most gliders have ventilators or enough leaks to keep canopies clear aloft, but ventilation isn't always the answer as flight into a layer of humid air will still result in condensation onto a cold canopy. Blocked or broken ventilators don't help, of course.

Short days can also mean many things happening together: there might be aircraft landing while gliders are being towed to the hangar and the winch is winding in its cable. That could be a challenging combination when the light is fading.

Cloud

As winter comes, many soaring pilots head for the hills to enjoy ridge and wave lift. As well as the other winter hazards, these pilots can be caught out by wave and orographic cloud, which can both form very quickly. Flight into cloud from the ridge, and descent into it from wave, both risk an encounter with solid ground before visibility improves. There have been some astonishingly lucky escapes, but gliders have been substantially damaged and pilots injured.

Wind

Winter is a time of winds, which after a calm summer can catch pilots and ground crew out. Gliders have undershot when returning into a strong headwind; stalls and heavy landings have resulted from approaching with insufficient speed through a wind gradient [2] or turbulence. As winter winds

are often changeable, circuit plans may need to be adaptable.

Launching needs particular care in a crosswind, the most serious hazard being wing-drop, which can be exacerbated by soft ground, long grass and cable bow [3]. Landing can also be tricky: drift can catch out the unwary, and at low speed the rudder may not be able to prevent weathercocking into wind, so don't plan to roll up close alongside another glider or vehicle to the windward of you. Glider crosswind limits can be surprisingly low.

Strong winds have caused devastation among picketed gliders and even glider trailers. Gusts have overturned parked gliders and caused damage during rigging and ground handling.

In windy conditions, winch cables can fall where they shouldn't. Our records show them hitting gliders, cars and tractors both within and outside the airfield, and falling across power lines and public roads.

Tugs and motor-glidors

Tailwheel tugs and motor-glidors can be particularly susceptible to soft ground and wind when landing and taxiing. Crosswind gusts can lift a wing, or the tail can rise when taxiing downwind, and with no nosewheel it can then be hard to keep the propeller clear of the ground [4]. Soft ground makes things worse, as more thrust is needed to make headway, and boggy areas can tip the aircraft onto its nose – as can ruts or sudden braking. Habits acquired for summer convenience can be risky on winter airfields. Parking crosswind, and even manoeuvring at all under power, are sometimes well avoided.

Cold

As winter deepens, the temperature drops, and cold can affect a pilot's finesse and judgement. Wave pilots expect it, but an extended flight in a draughty glider can easily chill us at lower altitudes, especially towards sunset.

Glidors suffer from the cold too. Several have been damaged or impaired by build-ups of ice or snow on wings and airbrakes.

A coating of snow can hide unforgiving obstacles that become apparent only when the aircraft hits them. A snow-covered landscape can also impair judgement of height when rounding out.

Mitigations

Most of these hazards are well-known, and once recognised have familiar or obvious

solutions. The airfield set-up should take ground conditions and wind into account; pilots should be aware of any soft earth and similar hazards, and the ground crew should be ready to react to changing conditions. The BGA's Safe Winch Launch website [3] explains some important considerations. Tug operations likewise need to take ground and wind conditions into account.

Thinking through the conditions and consequences ('Threat & Error Management') will help pilots prepare for them before they launch. For example, there could be other landing directions if low sun or crosswind is a problem – indeed, the duty instructor might change runs for such reasons.

Prior preparation might also involve polishing the canopy, making sure ventilators work, and checking you've got sunglasses, warm clothing, and a squeegee to clear rain from the wings.

Unintended consequences

Unfortunately, the mitigations we put in place for one set of hazards can sometimes create new problems. Changes in airfield set-up have exposed rough ground or obstacles that weren't usually a problem. Squeegees have found their way underneath glider seats, and bulky clothing has interfered with canopy mechanisms and caught switches. Simply doing things differently can be confusing or distracting.

The answer is for those on the ground and in the air to plan thoughtfully, monitor conditions, keep an eye on how things are working – and stay warm.

Tim Freearge and the BGA safety team

HABITS ACQUIRED FOR SUMMER CONVENIENCE CAN BE RISKY ON WINTER AIRFIELDS. PARKING TUGS AND MOTOR-GLIDERS CROSSWIND, AND EVEN MANOEUVRING AT ALL UNDER POWER, ARE SOMETIMES WELL AVOIDED

[1] CAA *SafetySense 7c - Aeroplane Performance* (2013) <https://tinyurl.com/flyright2226>

[2] *The Effects of Wind Gradient, S&G pp64-65. (Oct/Nov 2019)* <https://tinyurl.com/flyright2227>

[3] BGA *Safe Winch Launching* <https://tinyurl.com/flyright2228>

[4] H S Plourde, *The Compleat Taildragger Pilot* (1991)

■ Clubs can obtain printed copies of Safety Briefings from the BGA Office.

PREVIOUS 'FLY RIGHT' ARTICLES

- *The perils of distraction* (Apr/May 19)
- *Keeping safe in thermals* (June/July 19)
- *Why it is good to think ahead* (Aug/Sep 19)
- *The effects of wind gradient* (Oct/Nov 19)
- *A fun but safe introduction* (Dec 19/Jan 20)
- *Stop the drop* (Feb/Mar 20)
- *Avoiding upset* (Apr/May 20)
- *Backroom boys* (June/July 20)
- *Cockpit muddle* (Aug/Sep 20)
- *Safe rotation* (Oct/Nov 20)

- *Cockpit remedies* (Dec 20/Jan 21)
- *Covid currency* (Feb/March 21)
- *Eroded margins* (April/May 21)
- *A good lookout* (June/July 21)
- *Trouble with turbos* (Aug/Sept 21)
- *'Hopefully' is not an option* (Oct/Nov 21)
- *Act when the launch fails* (Dec 21/Jan 22)
- *Time to solve a knotty problem* (Feb/Mar 22)
- *RTFM: Read the flight manual* (Apr/May 22)
- *Startling events* (June/July 22)
- *Collision risks* (Aug/Sep 22)