

BE AWARE OF RISK APPETITE

Chris Fox and Ed Downham report that 19 out of 128 Airprox last year involved gliders

WELCOME back to our annual update on Airprox events involving gliders.

Glider Airprox in 2017/2018

From 1 July 2017 to 1 July 2018, there were 19 Airprox involving gliders out of a total of 128 Airprox in the period, excluding drones. (see chart on facing page). This is an increase over last year, when we had 12.

We're pleased to see that of the 19, 12 were filed by glider pilots. You're staying engaged with the system and the lessons

we learn from these reports all go to trying to keep everyone safer in the air. Of course, we all know that there are many unreported incidents; we'd encourage you to report if you felt 'phew – that was a bit close', or if you feel that there are things we could all learn from your experience.

Overflights of winch launching sites remains a recurring problem: we have had three last year. However, none by helicopters this time – we've made a bit of a push to get the word out to the rotary world and hopefully this is having an effect.

General trends in Airprox

Whilst the headline number of Airprox is increasing rapidly (figure 1), pretty much all of that growth is down to drones. Excluding these (Small Unmanned Aircraft Systems, or 'SUAS' in Airprox-speak), the trend is pretty flat (figure 2).

However, the long-term trend within GA is rising (see figure on p22). And within GA, by far the most common cause of Airprox is late or non-sighting of the other traffic. Which leads us into...

See and Avoid

We know that 'See and Avoid' remains the primary means of collision avoidance in the Class G airspace in which we usually operate. Various forms of electronic conspicuity (EC) are, of course, increasingly available and used by both gliders and other GA aircraft – but just how good are your eyes at detecting other aircraft?

Here follows a brief examination of some of the main factors which affect our ability to spot objects in the sky and recognise them as threats. This is not an exhaustive list and we have erred on the side of brevity as opposed to complete scientific accuracy; if you are interested, follow the links in the rest of the article.

Research data

As you might expect, there's been some research on this subject. Back in 1986,

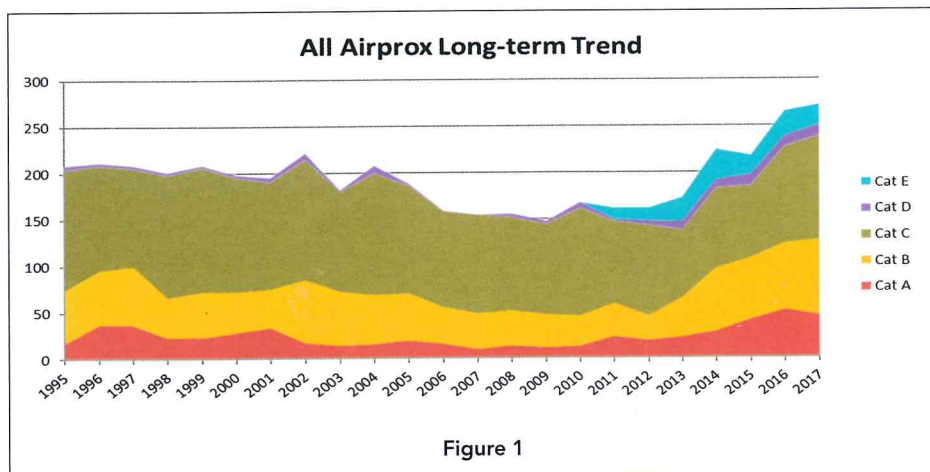


Figure 1

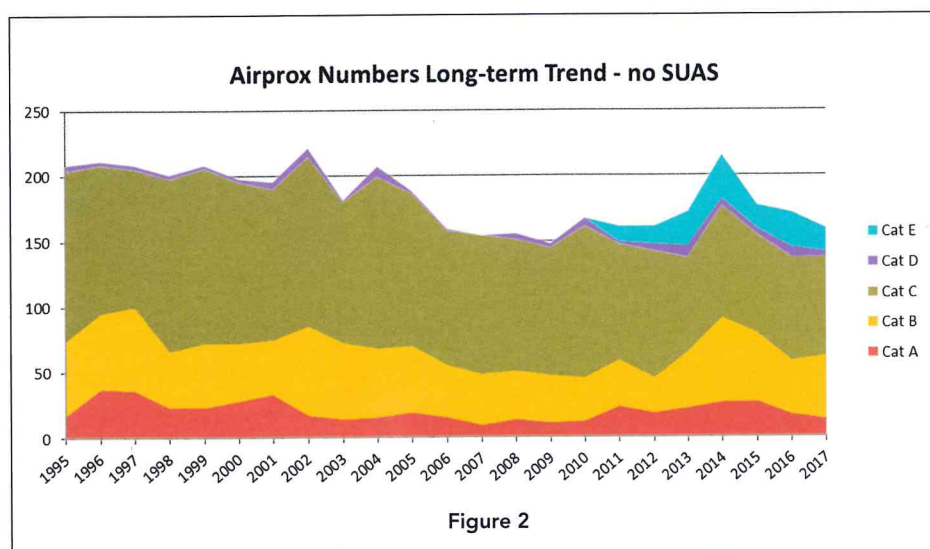


Figure 2

AirproxID	Risk	Latitude	Longitude	Aircraft 1	Aircraft 2	Location	Type	Comment
2017148	E	51.85	-1.9	GLASER DIRKS - DG-300	BOEING - C17	N of Brize - nr Northleach	Concerned by Proximity	DG-300 encountered C17 in Class G
2017160	A	51.75	-0.73333	SCHLEICHER - ASK 21	AEROSPATIALE - AS365	Near Halton	Aerotow encounter	K-21 on tow, heli close to AT2
2017200	C	51.53333	-1.1	SCHLEICHER - ASW 27	COMCO IKARUS C42	Overhead Chiltern Park	Circuit conflict	ASW 27 landing at Chiltern
2017220	B	52.23333	-1.71667	SCHLEICHER - ASK 21	PIPER - PA28	Overhead Snitterfield	Overflight	PA28 overflew winch site
2017275	C	56.25	-3.33333	SCHEMPP HIRTH - DISCUS BT	VULCAN - P68	N of Portmoak	Late/non sighting	P68 on survey task
2017147	C	51.86667	-1.93333	AGUSTA - A109	Unknown Glider	N of Brize	Late/non sighting	Late sighting
2017186	A	52.15	-1.76667	AVIONS ROBIN - DR400	Unknown Glider	Long Marston	Circuit conflict	Glider seen in Marston circuit
2017203	B	52.7	-2.85	OTHER - Military (Juno)	SCHEMPP HIRTH - DUODISCUS	Shrewsbury	Late/non sighting	Late sighting, talking to Shawbury
2017253	C	57.05	-2.8	DE HAVILLAND - DHC8	SCHLEICHER - ASK13	E of Aboyne	FIR Conflict	K-13 drifted back
2018001	A	51.85	-0.53333	SCHLEICHER - ASK 21	UNKNOWN (RPAS)	Dunstable	Circuit conflict	Drone encountered in the circuit
2018013	B	52.81667	-0.7	Puchacz	UNKNOWN	Salby	Overflight	Overflight by light aircraft during winch launch
2018017	C	51.28333	-1.76667	OTHER - Military (Viking)	GLASER DIRKS - DG-1000	Upavon	FIR Conflict	Conflict close to the airfield
2018022	B	52.96667	-0.96667	AVIONS ROBIN - DR400 (+glider)	PIPER - PA38	Near Syerston	Aerotow encounter	Late sighting, on different frequencies
2018023	C	51.93333	-1.4	SCHLEICHER - SF25	OTHER - Military (Apache)	Enstone	Circuit conflict	Apache flew through the circuit
2018060	C	51.13333	-2.23333	OTHER (Cirrus glider)	PIPER - PA28	The Park	Overflight	Overflight by light aircraft during winch launch
2018062	C	50.91667	-0.43333	ROLLADEN SCHNEIDER - LS4	CESSNA - 525	Parham	Concerned by Proximity	Citation tracked close to Parham
2018006	C	50.81667	-1.2	DIAMOND - DA42	SCHLEICHER - K8	Lee on Solent	Circuit conflict	K-8 crossed in front of DA42 on final
2018046	B	56.2	3.43333	THRUSTER - T600	GLASFLUGEL - 304	Balado, nr Portmoak	Circuit conflict	Conflict in the Balado circuit
2018058	C	51.68333	-1.16667	OTHER - Military (Chinook)	OTHER (ASG 29)	NW Benson	FIR Conflict	Glider saw Chinook and Chinook had TI

Table above shows gliders involved in Airprox between July 2017 and June 2018

Massachusetts Institute of Technology was commissioned by the FAA to do some air-to-air trials using light aircraft. Pilots were recruited for a study related to 'flight safety', which involved a 45-minute cross-country flight. Part of their brief was to report all sighted traffic to the accompanying researcher. Unknown to them, during that flight another aircraft was deliberately flown across their path with 500ft vertical separation. See <https://bit.ly/2z6EbqT> for the full report.

In only 56 per cent of the encounters was the other aircraft seen, at an average distance of one mile.

Why might this be? In gliders, we are used to having a pretty good field of view in comparison with other GA aircraft. But the human eye has some significant limitations.

Vision limitations

Our brains are very good at putting together the inputs from our eyes to create the perception of a seamless world. But this can be an illusion...

- When our eyes track across a scene, it feels like a smooth panning motion. But in fact our eyes move in a series of jumps, called saccades, which the brain stitches together into a smooth image using a series of snapshots. And here's the thing: whilst

the eyeball is actually moving, the brain ignores the blurred, confusing inputs. We are effectively blind in those instants!

- Once our eyes stop moving, we normally focus on something in the scene. But much of the time when we are flying, there's not much to focus on, so then we encounter another limitation: empty field myopia. In the absence of a target, our eyes will often adopt a focus point just a few metres away, so everything else is out of focus.

- To add to this, the acuity of our vision varies enormously across our visual field. Our 'best' vision is concentrated in a surprisingly small section looking directly ahead.

- And, of course, we have to consider the 'blind spot'; a small area of the retina where the optic nerve leaves the eyeball. When we are looking straight ahead, the overlap from the other eye gives complete coverage, but if we look to one side without turning our head, this overlap disappears. The blind spot is then big enough to hide a reasonably sized aircraft at 200m range.

- Finally, the visual analysis system in our brain seems to be optimised to detect moving targets. Unfortunately, the aircraft you're going to hit will be stationary in your visual field, hence harder to spot.

How can we overcome these limitations? Lookout is never going to be perfect, but



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UK AIRPROX BOARD

The Board's sole purpose is to promote and increase air safety. It investigates all Airprox that occur in UK airspace and it's made up 14 people involved in aviation from almost every discipline: ground and air-based, civil and military, professional and amateur, users and regulators. It's chaired by the Director of the UKAB - currently Steve Forward, an ex-Harrier and occasional glider pilot.

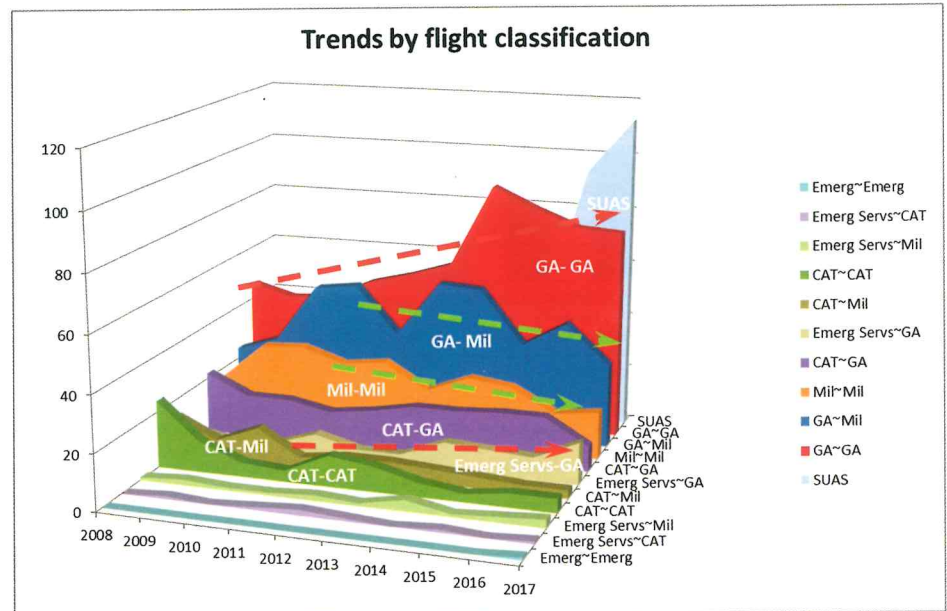
An Airprox is any event where, in the opinion of a pilot or air traffic controller, the aircraft involved got close enough to cause concern. That's it. No minimum distances - but note it must be a pilot or ATC who files the report, not a ground observer.

A report is made on form CA1094 - a slightly daunting bit of paperwork available on the website at www.airproxboard.org.uk, but actually not too onerous to complete.

Once accepted by the UKAB team based at Northolt, an investigator is assigned and they will collect all the relevant data, including tracing all the involved aircraft, capturing radio transcripts and radar recordings, etc. A report of the facts is prepared and submitted to the Board for appraisal.

The Board meets once a month to consider 20-25 Airprox, supported by advisers from the military, NATS, CAA and so forth. We decide what caused the Airprox (but definitely without assigning blame) and allocate a Risk Category from A - it was pure luck that a collision didn't occur, to E - a Sighting Report where there was never any actual risk of collision. The full details of every report are published on the Board's website at www.airproxboard.org.uk/home/ updated monthly. There's an annual magazine, available online at <http://bit.ly/2DueCR2>

The real value of the Board's work comes in the form of recommendations made to other bodies, eg CAA or NATS, for systemic changes that can reduce the risk of future Airprox. This comes down to looking at overall trends and looking for common themes.



☞ you can do things to improve the odds:

- Your lookout scan should not be one continuous sweep. Rather, break the visual field into sections and consciously focus on each in turn.

- Move your head. When you look out, turn your head not your eyes and, if you can, move your head from side to side. That way you not only look round any obstructions in your visual field - canopy pillars and the like - but that stationary target will appear to move, giving you a better chance of spotting it.

- Regular small course deviations will also give the 'fly on the windscreen' a chance to develop some relative motion and trigger your attention.

For a much more detailed analysis, see this report prepared for the Australian Transport Safety Bureau, available at <https://bit.ly/2QjZJKE>

What can we learn from all this?

> Keep looking out!

> Move your head

> BUT... help yourself with other info sources - EC, radio, etc.

Minimising the risk

The messages here don't change:

- Let other airspace users know where you are and what you're doing. This can be via the radio, or increasingly using EC devices such as FLARM and Transponders.

- When you're in the vicinity of busy airfields, especially those with Instrument Approaches, let them know you're there. Just a short call could avoid an Airprox or worse. Last year we talked about the risks from Instrument Holds; these haven't gone away, although we're pleased to say we haven't seen any incidents of this type this time around.

- Be aware that our 'risk appetite' - in particular, how comfortable we are with flying close to other gliders - is usually different to that of other airspace users.

BGA Courses and Seminars in 2018



BGA maintainer, inspector, club safety officer, instructor and examiner courses and seminars are detailed at

<https://members.gliding.co.uk/courses/>

**Bookings should be made via the BGA office
0116 289 2956 or debbie@gliding.co.uk**