

# LOOKOUT FOR GLIDER PILOTS<sup>§</sup>

*This should be an invariable habit for all.*

1. Be conscious of your lookout responsibility 100% of the time.
2. Set up your cockpit to maximise your time outside the cockpit. Instrument layout, GPS operation, map handling etc should be set up to allow maximum time looking outside.

## RECOMMENDED PROCEDURES

1. Use a scan technique appropriate to what you are doing. Good situational awareness is essential.

**CRUISE SCAN – Forward conical scan 60 degrees left/right, up and down)**

**FULL SCAN – Complete visible sky scan. Each side, above and below, behind each side round to as far back as possible. Vital for situational awareness, particularly in the circuit.**

**TARGETED SCAN – Used in specific circumstances. Scan concentrates on that part of the sky where the hazard is expected, eg pull-up into a thermal.**

2. Look in particular for turning gliders indicating a gaggle thermalling ahead.
3. Slow down before entering an identified area of lift especially if it already contains gliders.
4. When thermalling at turnpoints and in the circuit, experience will readily dictate where to look for potentially conflicting gliders.
5. In particular when pulling into a turn, remember that you have changed the situation significantly so you need to take primary responsibility for remaining clear of other gliders. Particularly scan back along the tack direction when entering a thermal looking for expected and unexpected gliders on that same track.
6. Because gliders around us will sometimes be easy to see and other times will disappear as we look, it is necessary to make a conscious effort to maintain situational awareness – keep track of the gliders around you and what they are doing.
7. Remember modern gliders in particular have high energy. Speeds are higher than before. Height gain in pullups is significant, and rapid.
8. Hazards are greater on cross-country cruise/racing. Stay alert.
9. Increased stress at contest start points, getting low on track, approaching a turn point, navigation checks and etc force pilots back into the cockpit. Be particularly aware of this and force yourself to lookout!

## PHYSIOLOGICAL EFFECTS

Be aware of and allow for the effects age, fatigue, low blood sugar, dehydration and mild anoxia.

If you have any of these be sure to concentrate more than ever on technique.

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<sup>§</sup> Adapted from Gliding Federation of Australia (GFA) Safety Briefing Pack.

## LOOKOUT PROCESSES

The table below shows the visual target size and time available to avoid a conflict at various target distances. The visual target size is defined as the apparent wingspan of a 15 m glider subtended at about arm's length (1m) – at the chosen range.

**Target size, Range of Detection and Time to Avoid.**

Actual distance to glider	Apparent target size (wing span)	Time to collision at closing speed		
		50 kt	100 kt	200 kt
100m	15cm	4sec	2sec	1sec
500m	3cm	20sec	10sec	5sec
1,000m	1.5cm	40sec	20sec	10sec
1,500m	1cm	60sec	30sec	15sec

- Image size of a glider (at arms length as above) at initial detection is rarely much smaller than 1cm so normal first detection range is about 1500 m. This means that, even at 50 kt, proceeding longer than 60 seconds without a visual scan is equivalent to flying blind!
- Clearly, the high closing speed and small target area of head-to-head conflicts make such conflicts more difficult to see than other conflicts.
- Analysis of glider collisions tells us that one glider would have had a clear view of the other.
- The picture we 'see' in our brain is not updated by any automatic process. It is all too easy to 'look' without 'seeing'. In order to 'see' the small target provided by another aircraft we need to make a conscious effort to 'see' when we look 100% of the time.
- Focus on the horizon and notice some detail.
- Examine each section of the sky with the eye focused on infinity and stationary for a short period of time before moving to the next segment. A moving eye will not see any detail.

## PRIORITY of LOOKOUT

- Consciously retain good situational awareness by being aware of the likely traffic patterns and any known aircraft in your vicinity. Target the scan to the areas of potential hazard. ***“Think of the possible even if unlikely.”***
- Where the traffic pattern is random (lone cross-country or in the terminal area, ie local soaring) concentrate the scan on straight ahead and then to about 60° to each side. When flying fast, concentrate more on straight ahead; when flying slower expand the area of concentration. Regularly, but less frequently, do a full scan to the side and as far back as possible, especially where slowing, weaving or to achieve situational awareness when (say) heading off from the top of a thermal or approaching the airfield. However, the highest risk of collision is glider-to-glider, crosscountry flying.
- The terminal area (within say, 5 miles) at a crowded site is a high traffic area with random traffic. This is particularly dangerous airspace and lookout needs to be excellent. High speeds in this area are not appropriate. Flying pre start in a competition is a particularly hazardous situation of this type.

- Gliders on a reciprocal heading are very difficult to see. Avoid such circumstances and where this is not possible take special care. Examples are; in obvious streets and to/from an obvious thermal close to a turn point.
- When gliding in a group or on a set task, much of the traffic will be on a similar heading. Head-to-tail conflicts are easily avoided – however this traffic provides an ongoing hazard from gliders doing a pull-up, weaving turning or backtracking.
- Do not fly in another aircraft's blind spot; for example, do not follow another directly astern and higher. A glider doing a pull-up can be in a double blind situation – there is no obvious fix for this so prevention is the only defence.
- When weaving or entering make sure the lookout goes as far back as you can see. The responsibility for clearing the air remains with the turning glider for at least the first full turn. Subsequently the responsibility may be shared with other aircraft. Look over your head to see traffic conflicting with your turn particularly back along the mutual track. If necessary, roll level to allow the conflicting glider to pass in front before re-entering the turn. Following gliders, particular if higher than the leading glider, must be aware of the likelihood of a turn associated with a pull-up and be ready to take appropriate action.
- Be particularly careful when back-tracking (in lift) as this creates a head-to-head conflict.
- It follows that situations where the following glider is a few hundred feet above the leading glider are potentially dangerous.
- Other areas where there are obvious traffic patterns are; at turn points, when final gliding, when approaching the terminal area and in the circuit. Be aware of these and scan accordingly.