



# Wingtips

Mike Ward, briefly back from the coast, is obviously feeling the strength of the wind (on this page courtesy of the ancient Greek god of wind, Aeolus). His model is the Avanti S, a purchase from Bob Raadts. For more, see page 3.



## Coming Up

CMAC Scale Rally, 1 & 2 September.  
See page 2.

NAAS Mammoth Fly-In, 2, 3 &  
4 November. See page 2.

## On Other Pages

Details of Future Events	page 2
Seen at the Field	pages 2 and 3
Featured Model of the Month	pages 3 and 4
Wing Loading	page 5

Here's John Hilton's Wilga, 1800 size, by Black Horse. The full-size version is a Short Take-off and Landing machine made by a couple of European manufacturers in the period 1962 to 2006. Power for John's model is a Scorpion 4020 540kv fed by a 6S lipo. After the maiden flight, test pilot Peter Ederle (right) remarked that it has a nasty stall if you hold the nose up for too long.



### CMAC Scale Rally

Once again Canberra Model Aircraft Club are having their Annual Scale Rally, an event that's open to all MAAA members. This year it will be held over the weekend of 1 and 2 September. The entry fee of \$25 per pilot allows any number of aircraft. Food and drinks will be available. For directions to the CMAC field go to [www.cmac.org.au](http://www.cmac.org.au).

### NAAS Mammoth Fly-In

Another repeat event is the Mammoth Fly-In to be held at the National Aeromodelling & Aviators Society's field on Friday to Sunday 2, 3 and 4 November. All model aircraft are welcome, but there's a special WWI theme, machines of that era helping to remember the end of the Great War in 1918. The entry fee is \$20 and, as usual, only MAAA members may fly. Food and drinks will be available over the weekend, and there will be a roast dinner on the Saturday night costing \$30 per head. For directions to the field go to [www.naas.org.au](http://www.naas.org.au).



Phil Spence's Votec 322 doesn't look like a foamy – the surfaces are so smooth – but it is. It's a Plug 'n' Play by FMS. Here you can see how it flies: spectacularly in Phil's hands, presumably aided by the huge control surfaces visible in the top-left photo.





### Seen at the Field, continued

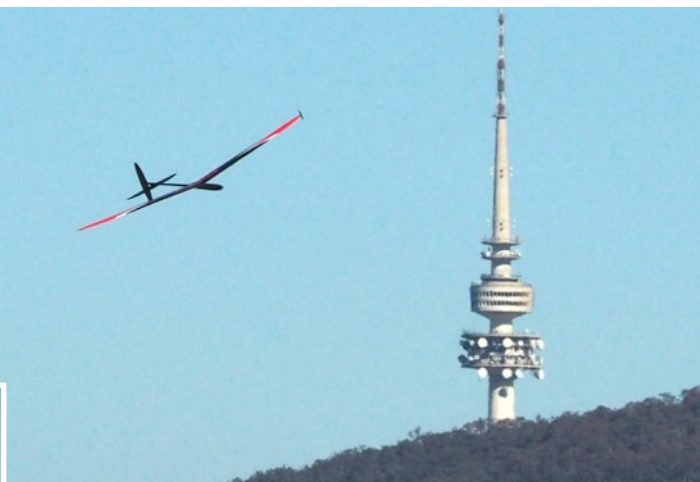


### Avanti, continued from page 1.

Although made by Freewing, it's a SebArt design, powered by an 80mm Electric Ducted Fan. It has a claimed top speed of 185kph but, like many EDFs, flight times are short, in Mike's case only 3½ minutes. The maiden flight of 4½ minutes left only 2% in the battery, obviously not enough for another circuit in the event of an aborted landing.

## Featured Model of the Month

### *Peter Campbell's Flipper*



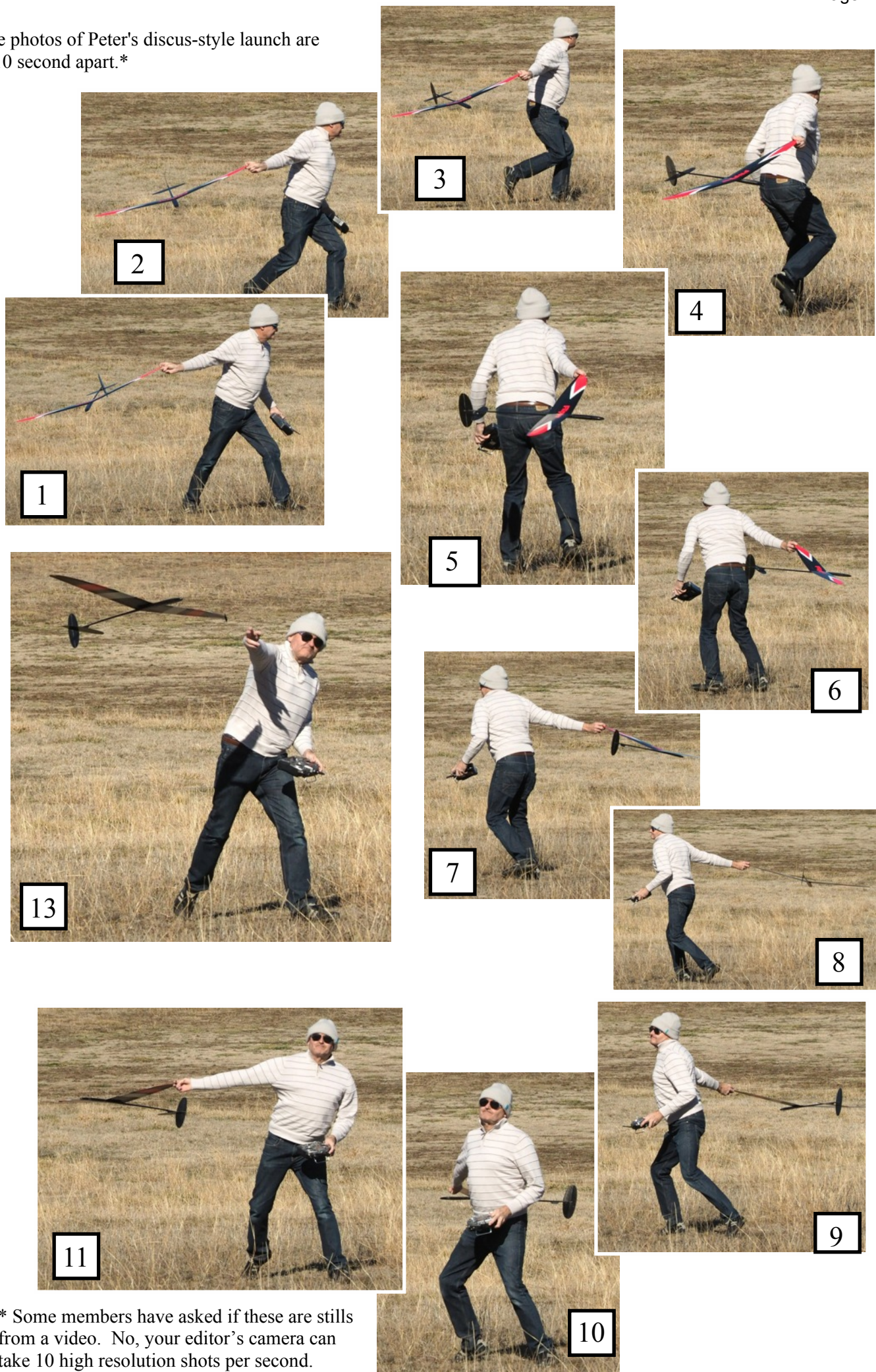
There are a number of ways to launch both a full-size and a model glider: from the top of a steep hill, by winch or by aerotow. Here's a method that can work only for models: discus-launch. Peter Campbell's Flipper has a 1250 mm wingspan and weighs 210g, being made mostly of carbon fibre. The photo below shows it catching a thermal over the field.

The photos on the next page show Peter's launching style.





The photos of Peter's discus-style launch are 1/10 second apart.\*



\* Some members have asked if these are stills from a video. No, your editor's camera can take 10 high resolution shots per second.



## Wing loading, how to calculate it and what it tells you

With any aeroplane, wing loading is the ratio of its weight to its wing area. Greater wing loading means more speed on landing, as you will see below.

The specifications of ARFs almost always give the wing loading, or at least enough data to calculate it.

### Examples

- The E-Flite Apprentice, commonly seen at our field, has a take-off weight of about 1200g and a wing area of 33.7 square decimetres (one dm<sup>2</sup> is an area 100mm x 100mm) so the wing loading is  $1200/33.7 = 35.6 \text{ g/dm}^2$ .



(If you prefer imperial measurements, the Apprentice weighs 42 oz and has a wing area of 3.65 sq ft so its wing loading is **11.5 oz/sq ft**.)

- The club's trainer, the Seagull Boomerang, has a wing area of 39.5 dm<sup>2</sup> and a



take-off weight of about 2700g. Its wing loading will be  $2700/39.5 = 68 \text{ g/dm}^2$ , considerably more than the Apprentice. Just by watching the Apprentice and the Boomerang landing you can see the difference.

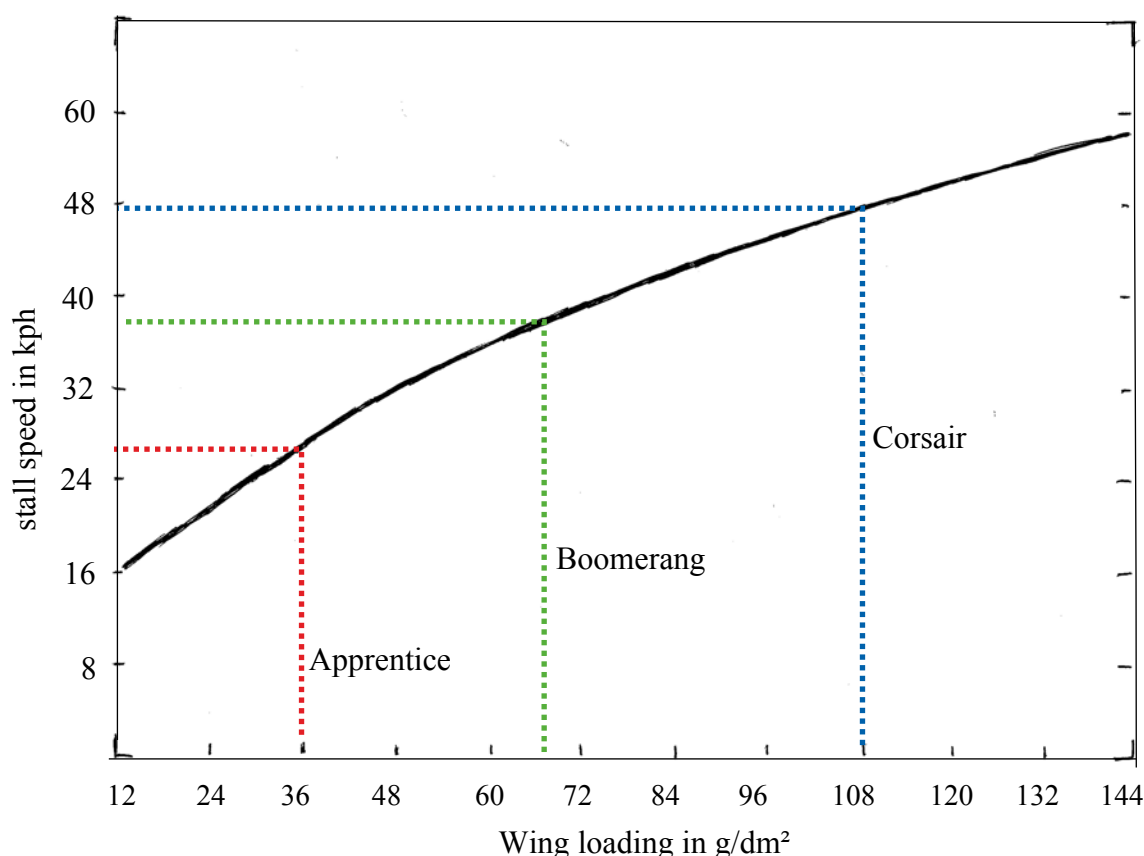


- The Hangar 9 Corsair 20cc petrol weighs about 5600 g and has a wing area of 51.7 dm<sup>2</sup>. Its wing loading is therefore  $5600/51.7 = 108 \text{ g/dm}^2$ .

### How to use the wing loading figure?

If you know your model's wing loading before its maiden flight you'll have an idea of its stall speed – the absolute minimum landing speed. This, in turn, suggests how much runway it will need, how it will handle wind and how you should go about landing it.

The graph\* below allows you to calculate the stall speed from the wing loading, so you can decide if you can handle a new model, based on your experience.



**Note:** The results will be approximate; many factors could influence the actual landing speed to some degree.

A headwind will obviously lower the ground speed. Flaps will lower the airspeed, depending on the kind fitted. (The Corsair mentioned above has flaps, but the 48 kph figure doesn't take these into account.) Different aerofoils give different amounts of lift. Larger models fly better.

Also note that a wing that is inclined to tip stall (e.g. Spitfire or the deHavilland Comet racer) will need to land faster to prevent one wing from dropping rapidly.

**Footnote:** I've always fancied the Dornier 335 and, at one stage, considered buying the ESM model, a magnificent twin-engined machine with a wingspan of over 2 metres, weighing 11kg. But the wing loading was 48 oz/sq ft or 144 g/dm<sup>2</sup>! Despite being equipped with flaps a landing speed of 55kph+ would have been beyond my abilities.

\* Source: Andy Lennon, *R/C Model Aircraft Design*, Air Age Media, 1996.

Brian Oakes