

# GLIDEPATH



The Journal of Wessex Soaring Association. November 2021  
BMFA Club No 2759

## From the Editor

With summer now well and truly behind us I expect more people will be thinking of model repair/building rather than flying. So if you do have any interesting building projects, please consider producing an article about it as I am sure other members will be interested. Otherwise you may have to put up with more on my musings on extra-terrestrial gliding, with this month's edition containing a follow on from the October publication. There is also some words of wisdom from Geoff Collins about the importance of doing a proper check of your controls surfaces after a heavy landing; something that he has learnt the hard way.

## From the Chair

Hi all, hope you are all keeping well, sadly still not much flying this month due to rather unfavourable conditions.

### E Soaring

Sadly, I felt I had to postpone the multitask event. The forecast wind direction and strength looked like it would be rather nasty for flying at Chalbury in the current field (4). I hope to run an event before Christmas so keep an eye on your inbox.

I plan to review the current E soaring format for next year, and I will hold a pre-season meeting early next spring to discuss.

### Horses track

I am informed that the track has deteriorated, especially at the lower end, and care needs to be taken in longer or lower cars.

### AGM

The AGM is fast approaching, please note that this year it will be at the **HORTON VILLAGE HALL** **7.30pm start on TUESDAY 7th DEC.** Full details in an latter article

### Winter Warmer

I was hoping to run this popular event again next year. Obviously it is not easy to plan anything at the moment so I will keep an eye on things and advise.

Well, that is about it from me for this month.

## Slopeside by Pete Carpenter

As far as I am aware there is no change regarding the Oxo/Swallowcliffe situation. There is also still no change with Stoney Down so for the time being we can continue there as we have done. The situation regarding the other slopes is shown below. Please use your own common sense and apply the countryside rules. Therefore if things look different at a site, particularly if it involves crops or livestock, please do not enter and contact me on [pete.carpenter12@gmail.com](mailto:pete.carpenter12@gmail.com) or 01722 328728.

- 1) Winklebury (W to NE wind) - Available.
- 2) Norrington Down (S to SW wind) - Available.
- 3) Donkey Valley (SE wind) - Available.
- 4) Swallowcliffe (NW to NNE wind) - **Not Available.**
- 5) Quarry (W to WNW wind) - Available. Access to the slope must be via the Stony Down / Berwick St John route only. Launching and landing from the slope face is OK, but the slope is perfectly flyable from the Berwick St John field. You may encounter some paragliders as they also have permission from the farmer to fly there. In this case it is best to have a friendly chat with them and see if you can agree separate airspaces for models and paragliders.
- 6) Oxo (WNW to NW wind) - **Not Available.**
- 7) Horses/Barbara's Field (WNW to NW wind):- Available.
- 8) Daltons 1&2 (NW to NNW wind) - Available.
- 9) Crockerton (NW to NNW wind) - Available subject to rules in slope guide.
- 10) Death Valley (SW wind) - **Not Available.**
- 11) Berwick St John (SW wind), Stony Down (ESE to SE wind) - Available. Code on gate padlock is 5823 . Please do not over fly the parked cars on your landing approach at Stony Down.
- 12) East Bowl (NEE to E wind) - Available. There is a gate with a keycode, which is 7850. The shepherd is Mr.Fletcher (red Toyota pick-up) and he has asked that anyone parking on the track put a little note on the dashboard of their car, letting him know that they are a WSA member.

There are also a number of public slope sites, particularly in the Purbecks that anybody can fly from. A list of these is maintained on [Christchurch Club's website](#) so please have a look there for details.

### **Flat Field Update**

1. The field number to be used is determined by the farmer to suit his activities and is liable to change periodically.
2. The current chosen field is shown by the number on the hook located on the front of the club (green) cupboard in the yard opposite the Farm House. **Leave this where it is.** NB, after a period of strong winds the number may be blown off its hook and might then be found nearby on the ground.
3. The location of the fields is shown on the numbered map to be found in the club cupboard.
4. If you are the first to arrive, take out the red sign from inside the cupboard which reads (WSA ON SITE) and slip this into the grooved slot on the front of the club cupboard.
5. On competition days take out the required equipment; tapes, cones etc. and take to the flying field.
6. After the flying is finished return any used equipment to the club cupboard and remove the "WSA ON SITE" red notice and put back in the cupboard.

**Ensure that the field number remains where it is, hooked to the front of the club cupboard.**

Be aware of the field condition, e.g. after rain. Do NOT leave wheel spin marks. If in doubt, park off the lane outside the field. Leave space for farm traffic.

Be aware of footpaths across the fields, Do not launch if walkers are on the paths. Do not launch if horse riders are nearby.

No low flying over power lines. **No flying over farm buildings and the cottage, AT ANY HEIGHT, or immediately upwind of the farm complex.**

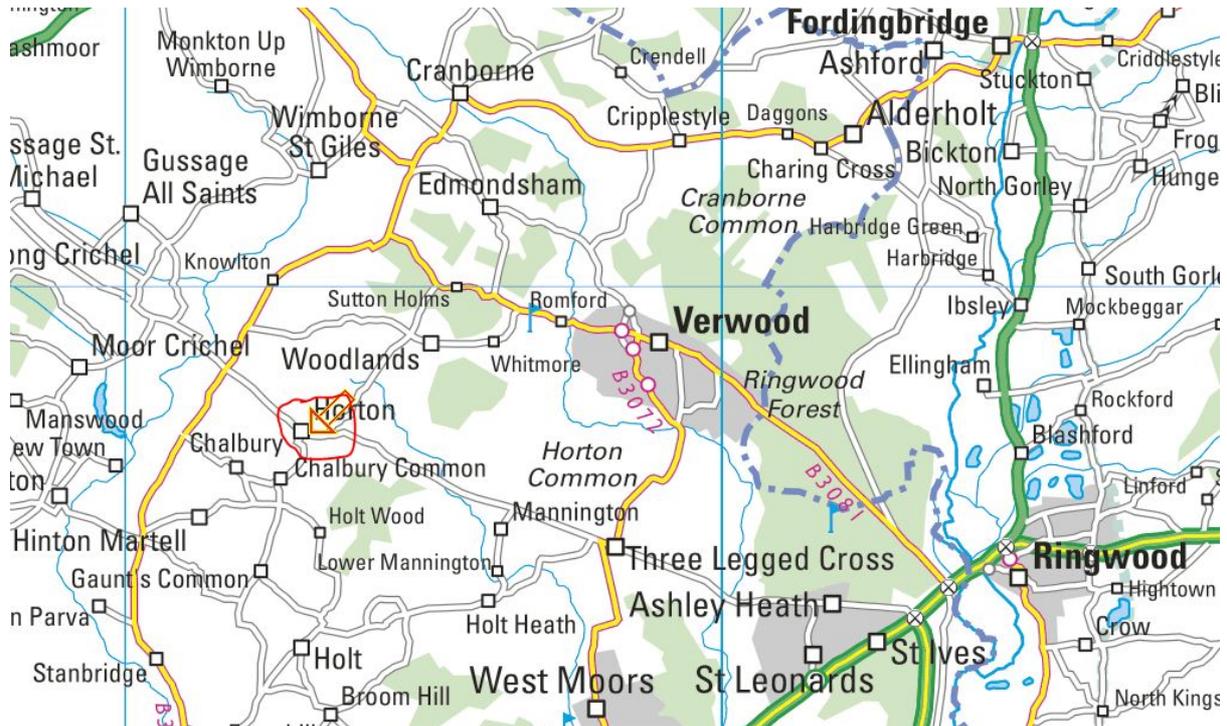
Fly SAFELY at all times. Especially launching and landing. Do not launch over cars and do not approach a landing over other flyers, fly a proper circuit.

Report any problems to the flat field rep, Doug Bowmann.

## WSA Annual General Meeting – 7<sup>th</sup> December 2021 at 19.30

We have a different venue for our AGM this year, namely the Horton and Chalbury Village Hall at Horton, which is about one kilometre from our flat field site at Chalbury. The post code is BH21 7JA, the OS grid reference is [SU031074](#) and the what3words reference is [masts.sprint.snake](#).

The hall is a large black wood structure on the right just as you enter Horton village from the south east (left going out of the village coming from the north west!). It will be dark in the area, but the hall will be lit up. Ample parking in the grounds.



## **How Not To Do It !** by Geoff Collins

About a month ago I had been watching Ian Duff practising landing, very impressive, so when the chance of light winds and nobody watching occurred, I decided to try and tune my landings as well. I soon unfortunately had a bit of an 'arrival' rather than a landing, but I waggled the sticks and every thing seemed to working OK. Therefore I launched again, climbed to about 100 feet and went straight round in to an approach which was not looking bad round again. "Eat your heart out Ian " I thought as this was looking better on each approach was I sure this landing was going at be at my feet; unfortunately it then ballooned up to 12 feet and tent pegged into the ground. A quick look around reassured me that nobody saw my wounded plane with its motor driven back into the fuselage and one wing tip forward. Again I did just did a waggle of the sticks and everything was working, so I just put the incident down to a change of prop, less weight and warm air coming of the mown grass.

After it was all repaired and I did some more test flights and all seemed well, it was just a nice stable plane to fly. I moved out, found some lift then came in for a landing which was OKish ; not spot on but with a slight overshoot. So I launched and climbed out again, shutting off the power quite early as height was not on my agenda. With landing in mind I feed some down trim but it did not seem to make any difference so guessed I had used up my digital trim . The landing again was iffy, almost but not exactly where I wanted, but at least it was down. I sat down and enjoyed the sun and twiddled the sticks which were all working, but I then decided to check the all moving trailing edge against the neutral mark on the fin. It was very close but showing slightly more up than it should be , so I tried the trim but no down movement, while moving the stick resulted in bags of up but NO down. I only have a small amount of down anyway with it being an all moving stabiliser, so had a retrim on the buttons but still no downward movement. The penny then finally dropped, the plane had been flying with no down elevator for a whole session, the tent peg landing and one set of test flights .The arrival that preceded all this must have sent a shock back to the servo and damaged it and although I did wiggle the sticks after to check, it was not a precise movement so did not notice all was not well. This was rather sloppy of me really, so watch out as it can happen quite easily. Therefore when having a test wiggle of the sticks, make sure that control surfaces move in BOTH directions as expected.

As an aside, while doing repairs to the wing and making good I use Ronseal deep filling compound and mix a small amount of water proof glue with it ; I have and found it very smooth to apply and rubs down a treat. I believe it is basically ground pumice and there plenty of that around now with future supplies coming from the earth via La Palma !!!

## **Martian Gliding Revisited** by Roger Crickmore

After my article in last month's Glidepath I received the following e-mail.

*'Dear Roger, I was very interested to read your article in Gildepath about the aerodynamics of flying a glider on Mars. However I do feel your assumption that the lift coefficient on Mars would be similar to that on Earth is simply not valid as the change in Reynolds number due to the higher velocity and lower density might cause significant variation in the flow regime over the aerofoil, which would obviously effect the lift coefficient. Maybe you would like to consider this effect in a future article for Glidepath'*

Not wishing to let this keen reader down, I decided to give the matter a bit of thought. For those of you who are not familiar with with the Reynolds number it basically describes the ratio in a fluid flow between forces relating to the momentum of the flow and those relating to viscosity. The viscosity of a fluid is a measure of how difficult it is to make it flow, so something like golden syrup has a high viscosity , while water has a much lower one. The Reynolds number is important because the same aerofoil can operate very differently if the Reynolds number changes. For our purposes the Reynolds number is given  $Re = UxD\rho C / \mu$  where U is the speed of the plane , D is the density of the air (~1.2 kg/m<sup>3</sup> on earth), C is the chord of the wing and  $\mu$  is the the viscosity of the air (~1.8 x10<sup>-5</sup> Pa.s). So if we assume we have a model with chord of 0.2m flying at 15 mph (6.7ms<sup>-1</sup> ) we have a Reynolds number of about 89,000.

Next we have to consider what would happens to the Reynolds numbers if we flew the same model on Mars. Obviously the chord would still be the same and last month I estimated the speed would have to increase by a factor of 6, in order to provide enough lift in an atmosphere whose density is only about 1% of that on Earth. You might expect that the viscosity in the less dense Martian atmosphere to be lower, but it turns out that this is not the case and it is virtually the same as on

Earth. Therefore the only changes are the 6 times higher speed and 100x lower density, so the Reynolds number on Mars would become 5350.

Our model planes with their low speed and small chords are normally at the lower end of interest of Reynolds numbers, with most work having been done at the much higher numbers experienced by passenger planes and military aircraft. However some work has been carried out looking at what happens at even lower numbers, partly in fact driven by the need to optimise the design of Ingenuity, the helicopter that has been flying on Mars. One particular study (<https://arc.aiaa.org/doi/10.2514/1.C034415>) looked at how the performance of a range of aerofoils changed as the Reynolds number was reduced from 120,000 (similar to that for a model glider on Earth) to 10000 which is similar to that we would have on Mars. For all aerofoils their performance was reduced at the lower Reynolds number but some were more affected than others. The humble Clark Y, as is used on the Gentle Lady was particularly badly affected with its lift coefficient falling by a factor of 2, and its lift/drag ratio, which is important in determining the glide angle, becoming 6 times worse. As I showed last month the speed a model must fly at is inversely proportional to the square root of the lift coefficient. Therefore the halving of this would lead to a further increase in the speed by a factor of 1.4 pushing it up to about 130mph!

Hopefully that has answered the reader's question and probably by now I have written enough about Martian gliding. However have you ever wondered what would happen if you tried to fly on Venus with its extra dense atmosphere? Maybe I will consider that in the next edition of Glidepath.

## **Calendar**

Tuesday 7th Dec            AGM, Horton Village Hall  
(Each following Sunday will be the fallback date for the e-soaring events)

## **Contacts**

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