Sweepriding: A Dragonrider's Challenge

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Dragonriders are very busy people. As if fighting Thread, caring for a beast the size of an airline jet and endless military-style drills weren't enough, it seems that someone is always sending a dragonrider out to "fly a sweep." Since no one ever seems to issue a broom with this order, it's safe to assume that they don't mean for the rider to do a little housecleaning. So what, exactly, does flying sweeps entail?

Based on the numerous references to sweepriding in Anne McCaffrey's books, sweeps seem to fall into one of two categories. There are sweeps designed to be a reconnaissance of something occurring on the ground, such as when F'lar joined T'bor and the wings of Southern Weyr to check for Thread burrows after a short 'Fall in Dragonquest. There are also sweeps that have a more aerial objective, such as those sent out to check the current wind and weather conditions. These sweepriders serve the same purpose as the "weather ships" that military flying units will sometimes launch to check on marginal conditions. How better to observe the weather than to be actually up in it, after all? These two different goals require two very different flying styles in order to provide the best information to the home Weyr.

The ground-based sweep requires that the dragon and rider make visual contact with the objective, whether that be a Thread-burrow, a flock of herdbeasts, or an injured person needing rescue. The dragon and rider, then, must conduct their sweep at a relatively low altitude, in order that the dragon and rider may distinguish enough detail to do the job. This requirement also means that they must fly at a slow enough airspeed to comprehend what they see. Fortunately for us, dragons tend to fly much slower than Terran jets, so this isn't as big a deal for Pernese aviators as it is for Terran ones. A dragon flying at his normal cruise speed should not have to adjust his airspeed too much for a ground sweep. Altitude, however, is a different matter.

Terran search and rescue pilots know that the recommended altitude for finding a survivor on level terrain with heavy foliage is 500 feet above ground level (AGL). Now, certainly, dragons can safely fly lower than Terran aircraft and are generally more maneuverable as well. So, let us assume that dragons fly their low-level sweeps at about 300 feet AGL. They could probably go lower if they wanted, but at 100 feet AGL, one's view is generally so obstructed by terrain and other obstacles that actually performing a decent search or sweep gets exponentially harder. At 300 feet, one can see over most obstacles, but still distinguish details on the ground very well.

So know that we know an altitude and an airspeed for our sweeprider, what type of route does he fly? Does he just go in a straight line from point A to point B? Or does the sweeprider adopt some kind of search pattern for their flight path? The answer is: it depends. In the case of Southern Weyr's search for Thread burrows, the entire Weyr turned out, flying wingtip to wingtip to completely cover the sweep area with the greatest amount of accuracy for the shortest amount of time. In this situation, with a large group of sweepriders, the straight line approach works fairly well. This tactic can be adopted for use with smaller units as well. If a Flight or a Wing as a whole had a certain territory to sweep, this might be the way they'd go about it. But what about our solitary sweeprider out on patrols?

Chances are, he'd adapt a particular type of search pattern to the individual area that he is to sweep. The best way to do this is to first define the area with easily recognizable boundaries. For example, if his sweep area is a wide valley between two ridges that run north and south, he would obviously use the east ridge and the west ridge as his boundaries. A stream or river might provide the northern boundary, while to the south, perhaps a convenient farmhold makes an easily visible marker. Once his boundaries are set, the sweeprider begins to fly tracks back and forth across his defined area. In this example, he starts at the corner of his west ridge and northern stream, and he flies west until he reaches the other ridge. Then he turns around, displaces himself an appropriate distance from his last track, and flies back the other way. The appropriate distance is approximately twice the distance that either he or his dragon can see. This allows for maximum visual coverage of an area in an efficient manner. It is also the least time consuming way of covering a large area.

Aerial-based sweeps are a different matter altogether. The primary objective in these cases is usually to explore weather phenomena and possibly make predictions about upcoming weather changes. The aerial sweeprider would therefore want to fly somewhat higher than his ground-based counterpart. How high? Well, that depends on the type of weather being observed. Most often, an aerial sweeprider will fly at several different altitudes to check the wind direction and approximate velocity at these different flight levels. How do sweepriders know how high they fly? They can either use landmarks with a known elevation (mountains come to mind) or if they're lucky, they can borrow one of the Weyr's few precious pressure barometers to see exactly how high they are above sea level. These small instruments, the work of a smithcraft master, register changes in air pressure. Since the air thins at a constant rate as one ascends, a sweeprider can tell how high he is by the change in pressure from the ground, up to whatever altitude he is checking. If a particular cloud formation warrants further observation, a sweeprider will often fly close to the cloud itself. Though the prudent sweeprider is very careful to fix coordinates in his head for a quick duck *between*, just in case the visibility or turbulence gets too dangerous.

One exception to this "go check it out" policy is the thunderstorm. Sweepriders are careful to avoid thunderstorms by at least five miles. Thunderstorms can produce hail and lightning up to 20 miles outside the core of the storm, and while a dragon can duck *between* to dodge hail, lightning is just a little too fast for even draconic instinct. Thunderstorms also produce other serious hazards. Severe downdrafts, known as "microbursts" have been known to make a Terran aircraft lose over 1,000 feet of altitude in the space of a few seconds. Can you imagine the kind of damage that much violent air could do to a fragile dragon's wing? Even escaping *between* could be tricky, since a microbust could surprise a dragonpair before a visualization and jump could be made...and once the wings are damaged, the odds start to stack against survival. So the consensus is that thunderstorms are just generally bad news. Thankfully, Thread drowns in rain, so the nightmare of fighting Thread in a thunderstorm is usually not a possibility. Of course, there are thunderstorms that don't actually produce much rain...

In any case, sweepriding is not the mundane activity it has become in fandom. Whether flying low level, skimming the tops of the trees while looking for something on the ground, or fighting turbulence and 80 knot headwinds at 15,000 feet, no sweep should ever be considered boring. On the contrary, flying sweeps is demanding, time-consuming and physically and mentally draining to both dragon and rider, especially when you consider that nothing in this world or any other ever goes quite as planned.