

Speed indeed

Paddling in tidal streams and on rivers.

Although I've been paddling since 1962, what follows never occurred to me until last year when I was paddling up and down the river Forth above Stirling. The issue arose because I was given a Garmin watch for Christmas a few years ago which records everything I do of course. Like all gadgets, I'm only using about 1% of its power and have no idea what all the other gizmos do. Body battery +1/-63 – no idea. Stress level 33. I get stressed with tech. Is 33 good news or bad news? Do I care? I simply record current speed, average speed, miles, and time into paddle + heart beat to give me an idea of my effort. Now that is interesting.

I paddled up the river using the eddies, so that I wasn't pegged back against the full flow. On the way down, I paddled in the middle of the river to get the full benefit of the flow.

When I finished my run up and down the river, I expected my average speed to be very good, but it wasn't, and it set me thinking, 'Why not?'

The answer is simple, and applies if you are paddling up and down a river, or on the sea with a tide for and against you as you paddle round an island, or up and down an estuary.

So, here's the maths (the units don't matter, just the numbers). Imagine you are paddling up a river, turning and paddling back, as I was. Let's travel at 4mph through the water and paddle four miles up a river and back. Imagine the river is flowing on average at 2mph. On the way up, your speed over the ground (SOG) is 2mph and on the way back it's 6mph. You'll take 2 hours upstream and 40 minutes downstream – a

total of 2 hours 40 minutes. However, you have only covered 8 miles, and you have been travelling through the water at 4mph. So, if you had paddled on a lake or loch, your time would have been just two hours. You have lost a whole 40 minutes, simply because of the flow of the river. What can you do about it? Not a lot, except use the eddies on the way up as much as possible – everyone knows that. However, if you are racing, what this calculation tells you is that if you are going to paddle flat out at any time, you would be best to pile on the pressure on the way up the river rather than on the way down – the payback is much greater against the current than with the current.

The table summarises the situation for different speeds paddling *against* a 1 knot current for six nautical miles, and then with the same 1 knot current *behind you* for another six nautical miles. The 'Lost time' column is the time difference compared with paddling on flat water with no tidal flow. STW – Speed Through Water.

The table is in knots for old sea dogs, and kph for enthusiastic K1 racers.

You can see, that the faster you paddle through the water (STW) the less this river/tidal effect, and the difference is considerable. So, paddling hard against a strong current pays a big dividend, although psychologically, it can be very disheartening. And if you are racing, drop the b...s going upstream!!!

Andy Morton

STW (kn/kph)	Time up	Time down	Total time	Lost time	Average speed (kn/kph)
2 / 3.7	6 hours	2 hours	8 hours	2 hours	1.5 / 2.8
3 / 5.5	3 hours	1hr 30m	4hr 30m	30 minutes	2.7 / 5.0
4 / 7.4	2 hours	1hr 12m	3hr 12m	12 minutes	3.75 / 6.9
5 / 9.2	1hr 30m	1 hour	2hr 30m	6 minutes	4.8 / 8.9
6 / 11.1	1hr 12m	51 mins	2hr 3m	3 minutes	5.85 / 10.8



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