

THERE IS NO LEE-BOW EFFECT - Dave Perry

One of the most fascinating and timeless controversies in our sport is over what effect current has on how we sail and race our boats. Beginning in early 1979, Peter Isler and I filled hours of time debating the effects of current, and it wasn't until mid-1980 that he finally parted my clouds and shook me loose from years of misconceptions and incorrect assumptions. Here then is my understanding of the effects of current, substantiated by several of my more mathematically-clever friends.

Assuming that we're sailing in constant current direction and strength, No! As we've determined, the direction and strength of the current created wind is the same no matter at what angle the boat is aiming or at what speed it is moving. The presumption of the lee-bow effect is that if you are sailing directly into the current you can pinch slightly, putting the current on your leeward bow, and the current will push you up to weather. This is obviously false because the only direction the current can move you is in the direction it is going (the stick on the river).

The presumption of those who believe that in current a boat will have a different apparent wind direction and strength on opposite tacks, is that on one tack the boat will be slowed more by the current than on the other. The extreme example is when port tack takes you right into the current, and starboard tack takes you across it. The illusion is that on port tack it would seem that the boat is still going forward toward the wind, but that on starboard the boat is being swept away from the wind by the current. Therefore, the apparent winds must be different on the two tacks.

The fallacy here, though, is that the judgment of going toward the wind and being swept away are made in reference to fixed objects such as the mark, an anchored boat, or land. In reality, both boats are being affected equally by the current and the wind "sees" both boats in the same way. In other words, if you were following the race in a motorboat and were in the ocean where you couldn't see any land for reference, the boats would look identical on either tack, and in fact you would have no clue that there even was current unless you knew from charts or perhaps from the surface condition of the water. Put another way, if you're sailing on a boat with apparent wind strength and direction instruments, they'll read the same on both tacks because the boat is affected in the same way by the current on either tacks (the stick in the river again).

-- Excerpt from Winning in One-Designs by Dave Perry,
<http://www.ussailing.org/member/library/wiodcurrent.htm>