

Iris E. Hendriks, Miguel Cabanellas-Reboredo, Tjeerd J. Bouma, Salud Deudero and Carlos M. Duarte, (2010). [Seagrass Meadows Modify Drag Forces on the Shell of the Fan Mussel *Pinna nobilis*](#)
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Abstract: We assess the sheltering effect of *Posidonia oceanica* meadows on drag forces exerted on shells of the fan mussel *Pinna nobilis*. We examine a range of shell sizes under four unidirectional flow speeds (0.05–0.34 m s⁻¹) and two oscillating regimes. Three meadow densities are evaluated and a control without vegetation. We found that the attenuating effect of the meadow on drag forces experienced by bivalves is determined by the form of the hydrodynamic energy, e.g., as unidirectional flow or wave action. In tidal currents, the meadow protects most sizes of bivalves, with a higher efficiency for dense meadows, while in wave dominant zones the meadow reduces drag forces for bivalves with shell areas below a threshold of 0.019 m², whereas larger animals experience increased drag forces within the meadow independent of meadow density. Reduction of shoot density in seagrass meadows might therefore not affect the effectiveness of the canopy to reduce drag forces on associated species like the fan mussel in wave-dominated areas while increased storm frequency could result into losses of larger individuals during periods of high wave action.

Keywords: Seagrass, *Posidonia oceanica*, Fan mussel, *Pinna nobilis*, Drag forces, Wave exposure