Phenotypic plasticity is the capacity for one genotype to alter its phenotype in response to environmental cues. Kelps, large brown algae of the order Laminariales, are known to exhibit plasticity in response to ambient water flow regimes, developing broad, high surface area blades in sheltered areas and narrow, hydrodynamic blades in exposed areas. Phenotypic plasticity in kelps is triggered by increased tension on the intercalary meristem (growing point) due to drag, and likely increases survival by maximizing photosynthesis in low flow and reducing dislodgement in high flow. It remains unknown, however, whether other environmental factors such as temperature may affect the capacity for phenotypic plasticity in kelps. This study aimed to determine the effect of thermal stress on drag-induced plasticity in two kelps: The bull kelp Nereocystis luetkeana and the sugar kelp Saccharina latissima. Optimal and stressful temperatures were determined from a thermal performance curve for N. luetkeana and from the literature for S. latissima. Calibrated weights were used to exert high and low tension on kelp blades growing at an optimal and a stressful temperature. The elongation rate and change in blade width were recorded as a measure of phenotypic plasticity. Preliminary results indicate that tension may increase blade elongation rate in addition to decreasing blade width. Additionally, they indicate that kelps may remain capable of altering their morphology under high temperatures despite decreased growth rates. These results will lead to an improved understanding of how environmental factors interact to affect kelp growth and survival. Is this pertinent to global warming and are there global implications?

Themes:

Check (highlight) the most applicable theme according to the abstract.

- Innovation and Technology
- Health and Wellness
- Culture and Society
- Sustainability and Conservation

Comments: a very well-written abstract!