



How do different light extinction rates in WA marine waters affect nearshore management practices?



Central Washington University installed light sensors at multiple sites in nearshore marine water.



Once light enters the water column it is absorbed. Only a portion of the light that enters the water surface can be used by plants and other organisms.

DNR has investigated the ability light has to pass through different types of deck grating of overwater structures. This project was designed to complement that previous work and address information gaps regarding how far light can travel through the water column at different marine sites in Washington. For PAR (photosynthetically active radiation) adequate for eelgrass survival and fish passage, light must penetrate through deck gratings, then travel through the water column. Light penetration distance within the water column is influenced by multiple conditions such as: the amount of suspended particles in the water; the size and type of suspended particles; changes in the salinity and density with depth; and the concentrations of plankton and chlorophyll.

AAMT has partnered with Central Washington University to determine how the different rates of light extinction (absorption or scattering of light as it travels through water) in Washington marine waters might influence DNR nearshore management practices. Light sensors were deployed at multiple sample sites representing the geographic complexity of Washington marine nearshore water. The sensors were placed at the water surface; at a known depth; and at different times (to represent sun throughout the day, through the seasons, and the various sun angles). This provided data needed to calculate light extinction coefficients for each sample site.

Using the extinction rate data together with the results from the deck grating light penetration study, AAMT can determine which types of grating will allow sufficient light down to the eelgrass canopy and below, near the bed where juvenile fish are found. Data will eventually be put into a database to assist in making more informed management decisions.

Preliminary results show that only one deck type, fiberglass with 70% open space, allows sufficient PAR to reach the eelgrass canopy and below to support growth and fish passage.