

Stabilization of the Yaquina Bay shoreline along the northeastern edge of the Hatfield Marine Science Center (HMSC) campus became necessary to halt erosion that threatened both HMSC critical infrastructure (seawater storage tank) and public access to the HMSC Nature Trail. A Dynamic Revetment (gravel beach) was installed in November, 2011 on 260 feet of shoreline to mitigate erosion. Shoreline topographic and biological monitoring was initiated before and has continued after the project completion. Monitoring of beach profiles indicated that as of December 2013, the 2011 Dynamic Revetment Project (DRP) has successfully stabilized the shoreline in the project area, while rapid erosion has continued in the adjacent Reference beach area. Erosion in the unprotected Reference area in the period 2009-2013 has been as great as 9.6 m (31.5 ft). Beach profile data also indicated that the 2007 DRP continued to be successful in stabilizing further retreat of the shoreline. Monitoring of birds and marine mammals was discontinued in 2013 as planned. Monitoring of beach wrack invertebrates, fish, and vegetation continued. Per unit of beach wrack biomass, there was no significant difference in density of wrack invertebrates among the three study areas. Total amount of beach wrack was much sparser in the Reference area because of vertical beach scarps generated by erosion that appeared to limit wrack accumulation. As has been a consistent pattern, fish were significantly more abundant in the Reference area compared to the DRP. However, this pattern was present in the pre-project sampling, and the Reference area may have a higher degree of physical habitat complexity, resulting from root masses of trees that have been eroded onto the shore. Bottom dwelling Pacific Staghorn Sculpin tended to be somewhat more evenly distributed between the DRP and Reference areas, while pelagic Shiner Perch tended to be found more in the Reference area. Vegetation coverage was significantly greater and presence of non-living substrata was significantly less in the Reference area as compared to the DRP. These differences are consistent with pre-project site differences, probably resulting from a low area of the shoreline which allows increased flooding and associated disturbance in the DRP back shore area. Fish and wrack invertebrates, such as beach hoppers, were shown to utilize the DRP project area. Biological differences in fish and vegetation observed in year 2 of post-project monitoring tended to reflect differences in habitat that were present before the DRP project.