Using videography to assess changes in subtidal echinoderm abundance after sea otter predation and sea star wasting disease

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Benthic echinoderm communities, specifically urchins (*Mesocentrotus franciscanus*), sea cucumbers, and sea stars are known to be affected by apex predators (*Enhydra lutris*) and sea star wasting disease (SSWD). Predation by otters and SSWD can cause large declines in echinoderm abundance. This study used underwater video tows, a new method, to identify and estimate abundance changes of urchins, sea cucumbers, and sea stars. Underwater video tows were run near Calvert Island, British Columbia. Replicate tows were run in 2012 and repeated in 2016, before and after the presence of sea otters and the outbreak of sea star wasting disease. The changes in abundance were analyzed using two sample T-tests. The all species except urchins were non-parametric, thus a Mann-Whitney U test was used to assess differences in abundance. There was a significant decline in red urchins but not California sea cucumbers between 2012 and 2016. Leather star abundance did not change significantly between 2012 and 2016. There were significant declines in some forcipulate sea stars (*Evastarias* and *Henricia*), but not others (*Luidia* and *Pycnopodia*), between 2012 and 2016. The second objective of this study was to determine the efficacy of this new method. Video transects appear to be an effective means to detect changes in benthic echinoderm abundance. Improvements are proposed as well as the identification of any limitations to the method.