FEASIBILITY OF MANUAL REMOVAL OF THE INVASIVE RED ALGA,

GRACILARIA SALICORNIA IN WAIKIKI, O'AHU

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Abstract

The tropical red alga *Gracilaria salicornia* was introduced to reefs fronting Waikiki, Hawaii in 1971 for experimental aquaculture and has since become invasive throughout much of Waikiki and adjacent reef areas. *G. salicornia* appears to be displacing native algae and coral; consequently state and federal resource managers have expressed interests in developing mitigation strategies to control its abundance and reduce spread to adjacent reefs. The goals of this study were to assess the feasibility of manual removal of *G. salicornia* by determining the person-hours required to clear plots in a heavily invaded area in Waikiki. Effects of *G. salicornia* to the benthic flora biodiversity were also determined. Re-growth of the invader was monitored in permanently established plots for two years following removal to determine the effectiveness of hand clearing. Initial percent cover, manual removal time and biomass (wet weights) were recorded for fifteen ¼ m² plots along three 30 m transects. Net re-growth was determined by surveying cleared plots after removal and then periodically for two subsequent years. Data obtained in this study indicate that large-scale manual removal of *G. salicornia* would require on average 6.54 person hours/m² (± 3.28 person hr/m² SD), a substantial economic investment. The results also confirm that *G. salicornia* decreases benthos biodiversity and re-grows quickly. Current and future research must develop other options for control such as mechanized removal methods, enhancement of native herbivore populations and/or replanting cleared areas with fast-growing native algae.