

PhD Dissertation
Department of Environmental Science and Policy
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Title: Impacts of Sediment Exposure During Routine Handling on Nursery-Raised *Acropora Cervicornis*

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ABSTRACT

Coral restoration and conservation techniques have made significant progress in combatting the decline of critical reef-building species, such as staghorn coral, *Acropora cervicornis*. Unfortunately, disease persists in nursery-grown fragments and outplanted colonies, raising the question of whether restoration techniques should be re-assessed to determine possible vectors, such as sediment, that may expose fragments to potential pathogens. In 2016, two experiments were performed in two of the Coral Restoration Foundation's (CRF) Florida Keys offshore nurseries, to assess the long- and short-term impacts of sediment exposure on tissue condition of *A. cervicornis* fragments. Samples were observed histologically and semiquantitative data analyzed to determine if an alteration in handling protocols would result in healthier fragments suitable for outplanting on local reefs. Results from the long-term impact study showed no significant difference in tissue condition between fragments exposed to sediment and those not exposed and no significant difference between fragments handled with gloves and those handled with bare hands. Results from one of the short-term impact studies showed significant differences in certain tissue condition parameters of fragments exposed to sediment when compared to those not exposed, demonstrating a stress response to exposure. Results of both experiments support the current handling protocol of colonies for the long-term goal of outplanting; however, poor tissue condition observed in the interior of many apparently healthy-looking fragments reinforces the value of using histological examinations as a tool for understanding the effects of restoration techniques on corals.