

InPort dataset catalog number: 22436

InPort dataset title: Elkhorn coral demographic monitoring

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PURPOSE OF THE DATASET: To quantify demographic rates (recruitment and mortality) and sources of mortality in remnant populations of *Acropora palmata* in the upper Florida Keys, Navassa Island, and reference populations in Curaçao

ABSTRACT: The overall objectives of this project are to document the dynamics of the remaining Elkhorn populations in the upper Florida Keys and to compare its performance to other Caribbean locations. This is an on-going monitoring project with thrice yearly surveys in the upper Florida Keys, annual surveys in Curaçao and only episodic surveys in Navassa (2006, 2009, 2012). Study units are 150 m² plots in which all attached *Acropora palmata* colonies are mapped and surveyed each year. In Florida, individually tagged *A. palmata* colonies are surveyed more frequently to document their condition. Based on these observations, we can estimate basic population parameters including recruitment, growth and mortality, along with the causes of recent tissue mortality and the sources of recruitment (asexual or sexual). All monitored colonies were genotyped in Florida in 2006 and 2010 such that clones within the population are identified. Only tagged colonies were genotyped in Curaçao.

METHODS: Protocols for this demographic dataset have been published as

Williams DE, Miller MW, Kramer KL (2006) Demographic monitoring protocols for threatened Caribbean *Acropora* spp. corals. NOAA Technical Memorandum NMFS-SEFSC-543. 91pp.

Briefly, this protocol depends on identifying and tracking all individual colonies within a plot and thus, necessarily targets stands with an intermediate colony density (fewer than 50 colonies per plot) at the time of setup. Initial study plots were established in the Florida Keys in 2004 (monitored thrice annually), in Curaçao in 2006 (monitored annually), and plots in Navassa Island were established in 2006, but monitored only episodically as cruises to this remote location were possible (2009 and 2012).

In all regions, fixed 150 m² study plots were established at selected sites, targeting intermediate-density *A. palmata* stands (mean 23; range 6–53 colonies per plot) with three plots at each of three sites in both Curaçao and Navassa (n = 9 plots each) and 25 plots among seven reefs in the upper Florida Keys (15 plots were established in 2004 with 10 additional plots added in 2010). We map all *A. palmata* colonies found attached to the substrate within the study plot relative to the center stake, measure their length (longest horizontal axis), width (measured perpendicular to length), and height (from the base of the colony to the top at the tallest point along the axis of growth) and visually estimate their percent live tissue coverage. At each annual survey, we re-identify the previously mapped colonies and map and measure

any new colonies that were not present the previous year. These data are given in **MapColony_Data**. In some cases, specifically Turtle Rocks reef in Florida and several plots in Curaçao, logistic or severe physical disturbances precluded tracking the mapped colonies from one year to the next. Data for these occasions is given in a separate table (**DeNovoMapColony_Data**) as measurements for all the colonies encountered, but without colony designations or locations.

We also tagged a random subset of colonies at the start for more frequent monitoring of size and condition. At least three times per year in Florida (annually in Curaçao, episodically in Navassa), we measure, visually estimate the percent live tissue cover of each of these tagged colonies, and assess these tagged colonies for the source and amount of recent tissue loss, including disease, predation, physical breakage, clinoid sponge infestation, lesions caused by fish fecal matter, etc (**TagColony_Data**).

We collected tissue samples from all colonies in the Florida plots (initially in 2006 and then sampled any additional colonies in 2010) and the Navassa plots (in 2006), but only the tagged subset of colonies in the Curaçao plots (2006). Five published microsatellite markers (Baums IB, Hughes CR, Hellberg M. 2005. Mar Ecol Prog Ser 288:115-127) were used to determine multilocus genotypes for each sampled colony (Williams DE, Miller M, Baums I. 2014. Coral Reefs 33:595-606) which are indicated in the **ColonyID** table.

Included files:

PlotLocations_SurveyCoverage

Survey_Dates

ColonyID

TagColony_Data

MapColony_Data

DeNovoMapColony_Data