PR Project Reading Notes

Garcia-Sais et al. 2017

* Large bleaching event in 2005
* Lists location of all sites w/ map
* Used satellite data to get the water quality info
* Localized impacts upon coral reefs associated with anthropogenic activities have been reported (Hughes et al., 2003; Fabricius, 2005; Warne, Webb & Larsen, 2005)
* Orbicella annularis (complex) is the main reef builder in PR. It suffered major declines after the bleaching event

Bruno et al. 2019

* When coral cover declines, so does habitat complexity (Alvarez-Filip et al. 2009, 2011) and the diversity of reef inhabitants, including fishes and invertebrates (Idjadi&Edmunds 2006, Jones et al. 2004, Pratchett et al. 2008).
* Important that there are grazing fish to remove algae which competes with the coral
* Parrotfish abundance specifically helps protect reef systems
* Hypothesis that MPAs protect parrotfish, and therefore protect coral
* Managed – resilience theory: good figures
* No study found that local protection improved local coral cover resilience
  + Coral recovery was consistent in and out of MPAs
  + Coral response decline was worse in MPAs than outside
* Only one out of the 18 studies supported the hypothesis
* Shift in coral species to slower growing corals that do not fill functional niches
* One reason that the theory does not work could be that MPAs do not protect the herbivores
* \*\*\* do the MPAs protect the parrot fish?
* \*\*\* do the parrot fish impact the macroalgae cover?
* Fish protection may be so good, that they’re restoring the top predators and therefore decreasing the herbivores (trophic cascade)
* Size of the fish impacts how much they eat
* Non –fish species can be herbivores (urchins)
* Resilience vs recovery
* By decreasing local disturbance, it could actually be making the reef less acclimated and therefore more susceptible to global/larger scale disturbance
* Fishing can directly harm corals through destructive fishing practices
* There is clear evidence of widespread and striking declines in fish biomass on coral reefs, including general declines in parrotfish biomass (Paddack et al. 2009, Valdivia et al. 2017, Williams set al. 2011).
* No evidence that declines in parrotfish have adverse effects on corals
* On how coral mortality affects the composition and diversity of fishes via habitat loss ( Jones et al. 2004, Pratchett et al. 2008, Wilson et al. 2006). Jackson et al. (2014) asked the inverse question and found that spatial variation in parrotfish biomass across the Caribbean was unrelated to coral loss (Figure 8).
* \*\*\*\* are there relationships between algal and coral cover?
* Fishing intensity strongly related to fishing ports/proximity of people (Nadon et al. 2012, Stallings 2009).
* By protecting the herbivores, you also protect their predators, and actually may reduce the number of herbivores
* Parrotfishes both help and harm corals through bioerosion and reducing algal cover

Beltran 2020

* Discusses each of the MPAs in detail
* Lists of commercially important fish species
* Need better connectivity between MPAs to form networks… not currently happening in the Caribbean

McClanahan & Muthiga 2020

* Restriction of parrotfish capture led to recovery of the top species
* Parrotfish pop controlled by ecology of reef rather than fishing pressure