Assessment and Amelioration of the Impact of Lobster Traps on Coral Reef and Hardbottom Habitat in the Florida Keys

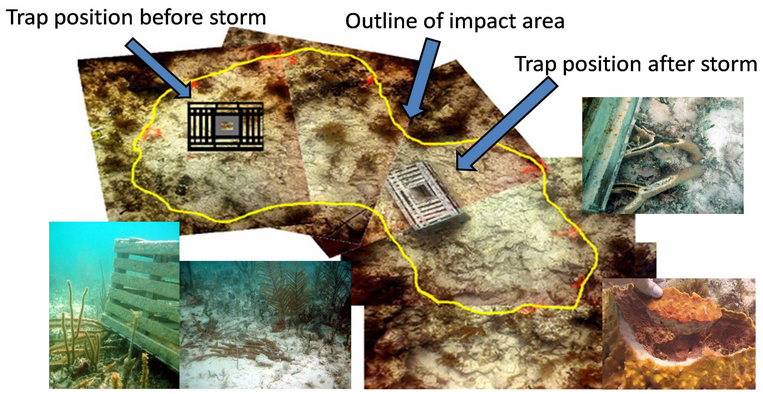
Chris McHan and Thomas R. Matthews

Florida Fish and Wildlife Conservation Commission, Fish and Wildlife Research Institute, Marathon, FL, USA

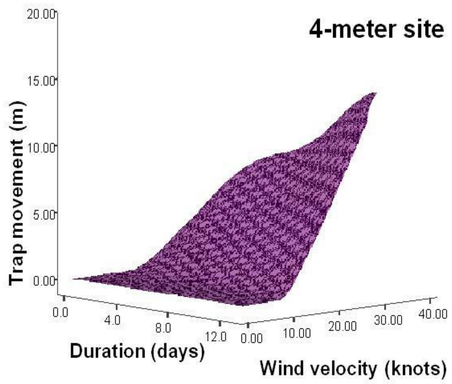
Introduction

There are approximately 460,000 lobster traps in use in Florida, 90% of which are deployed in the waters of the Florida Keys. The use of these traps in sensitive habitats, such as coral reefs and hardbottom, is one factor implicated in the loss of corals, gorgonians, and sponges (sessile fauna) throughout the Florida Keys. Quantitative research has demonstrated that the movement of traps during strong wind events results in significant losses of sessile fauna within trap movement paths. Considering the large number of traps in use and the average 18.5 wind events per fishing season, finding a way to ameliorate trap impacts is essential to conserving these sensitive habitats and for managing the recovery of susceptible species.

Trap Distribution and Impact



- Estimated 250,000 traps in ocean side waters of Florida Keys
- 14% of traps deployed on reef or hardbottom habitat
- Traps can move when exposed to 15 knot or greater winds for 2 or more days
- Loss of sessile faunal cover in trap movement paths
  - 14% loss from coral reef habitat
  - 10% loss from hardbottom habitat



Modifying Traps to Reduce Trap Impacts

- Can traps be designed to move less?
- FWC biologists collaborated with Florida Keys Commercial Fishermans' Association lobster fisherman to identify what trap characteristics could be altered to reduce trap movement
- Traps were designed and tested in Florida Keys waters during actual wind events

Testing of Lobster Trap Modifications

- Tested 26 combinations of modifications and compared against controls
- Modification Treatments
  - Buoy Size and Shape
    - Bullet
    - 6" round
    - 7.5" round
  - Rope Diameter
    - 1/4"
    - 5/16"
    - 5/16" oversize
    - 3/8"
  - Trap Weight
    - -15lbs to +20lbs
  - Trap Material
    - Wood
    - Wire
  - Trap shape/design
    - Standard box
    - Trapezoid
    - Legs


Wood (control)


Legs


Wire Basket


Rope Types


Bullet Buoy

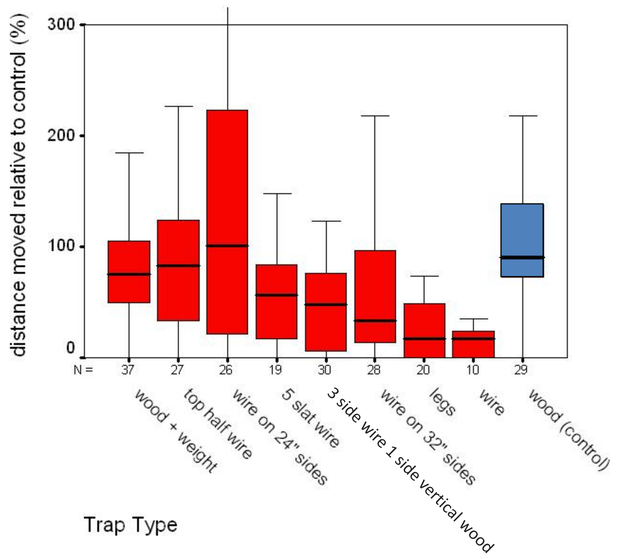

32" Side Wire

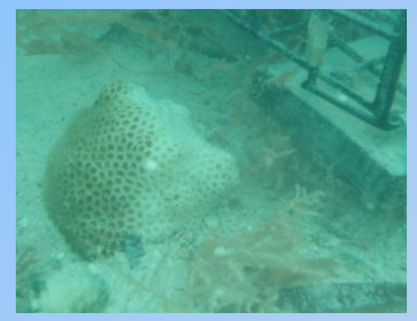

Round Buoy


3 Side Wire w/ Vertical Wood

Results Summary

- Rope and buoy treatments had no significant effect on trap movement
- Practical increases in trap weight had minimal effect on trap movement
- Attachment of legs to bottom of trap may be effective but is likely not practical
- Most effective treatment for reducing trap movement was replacement of wood with wire
  - Generally, the more wire used the less the traps moved





Conclusions and Remarks

- Trap modifications have potential to reduce impacts in small and moderate wind events
- Trap impacts are likely during high wind events regardless of trap modifications
- The implementation of wire trap designs must be considered in the context of bycatch mortality, nonharvest fishing mortality, and marine debris accumulation
- The long term ecological implications of trap use remain unknown. It seems likely that the sessile faunal communities observed today are dominated by trap resilient species selected for by frequent trap disturbance.
- **Other options for reducing trap impacts should be considered in conjunction with trap modifications:**
  - Expansion of existing or designation of new protected areas
  - Increase trap reduction rate – current actual passive reduction rate of .25% per year will reach target number of 400,000 traps in year 2095
  - Continued reduction in number of traps in fishery to suggested economically viable levels of 160,000-260,000 traps (Milan 1999)
  - Replacement of some trap fishing effort with alternative methods; bully netting, commercial diving, casitas in appropriate locations.

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