

Trap Debris Prevention and Awareness in the Spiny Lobster Fishery in Florida, USA

La Prevención y Conciencia de Escombros de Trampas en la Pesquería de la Langosta Espinosa en la Florida, EEUU

Sensibilisation et Prévention de Débris de Pièges dans la Pêche à la Langouste en Floride, États-Unis

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EXTENDED ABSTRACT

The number of lost lobster traps and their effect on the lobster population, the environment, and protected species are well studied in the spiny lobster fishery in Florida, USA (Chiappone et al. 2002, Chiappone et al. 2005, Uhrin et al. 2005, Lewis et al. 2009, Adimey et al. 2014, Uhrin et al. 2014, Butler and Matthews 2015). Though concern for environmental issues usually ranks high for much of the public (Bell 2011), specific knowledge of marine debris impacts varies among groups. Specifically, there is considerable disagreement or lack of information within the commercial fishing community concerning trap loss research. Environmentalists, recreational boaters, and the fishing community also appear to lack information on trap debris issues, trap loss, and programs to recover lost traps. A two-year education campaign was directed at both the commercial fishing industry and the environmentally-concerned public to improve awareness of trap debris issues. This campaign also included issues associated with monofilament fishing line and other marine debris.

The goal of the education campaign was to convert research results to public knowledge, and to encourage the fishing industry and public to help prevent and reduce marine debris. Over the previous decade, we conducted numerous research studies that examined the cause, number, and environmental impact of lost traps from the lobster fishery in South Florida. This public education project converted those data to public knowledge and identified opportunities for the public to participate in events that reduced the amount of marine debris in the environment. Historically, our education and outreach programs targeted the commercial fishing community, but members of the broader public interested in environmental issues, fishing, or boating were not included in the process. For this education campaign, we developed a three-step approach. First step, we developed novel educational content synthesized from a decade of trap debris-related research. This educational material focused on the issues related to trap debris including ghost fishing, damage to coral reefs, and entanglement of protected species. In addition, we also provided information on marine debris retrieval programs and the FWC Trap Retrieval Program, all of which were open to public participation. Second step, we disseminated this information through in-person educational activities such as seminars, workshops, and festivals. Our education campaign was collaborative, involving several existing public outreach networks, including the Florida Keys National Marine Sanctuary, NOAA Marine Debris Program, Florida Sea Grant, University research programs, and community-based organizations. Third step, we posted the educational material online, utilizing both traditional web pages and social media platforms.

Though assessment of the long-term effects of our educational programs are challenging to measure, metrics regarding the number of people reached and the amount of time people spent engaged in educational activities are valuable measures of interest. We developed 22 outreach presentations, each lasting 15 - 60 minutes, and participated in eight environmental festivals with manned booths or tables to engage the public. Our outreach presentations reached an estimated 1,088 people, and we interacted with an estimated 2,450 people during the festivals. We estimated our visitor contacts based on visits to our booth and table displays lasting longer than several minutes, rather than total visitor attendance at the festival. Our online and web-based outreach had over 4,000 visits, not including views of content posted on other agencies' web sites. We used Flickr, Facebook, and YouTube social media sites to post content that was of general interest to lobster enthusiasts, which included links to more in-depth information on the FWC/FWRI web page (<http://www.myfwc.com/research/saltwater/crustaceans/lobster/>). A video on lobster trap debris accounted for 2,646 of the 4,000 online views; notably, 791 viewers accessed other FWC content after watching the video. The trap debris video was also presented at the Beneath the Waves film festival during the 2015 Benthic Ecology Meeting to an audience of ~500 scientists. Webinars provided to FKNMS Advisory panel, South Atlantic Fishery Management Council, and the Gulf of Mexico Fishery Management Council were also available as webcasts, but we do not have any metrics available to evaluate the audience reached in these forums. Seventy-five people attended the Florida Keys Lobster Fishermen's Outreach Workshop. This workshop included 10 presentations from an array of fishery managers, biologists, and industry members, followed by a panel discussion. The allotted 6 hours of scheduled activities was extended to 8 hours to accommodate more discussion.

Our trap debris prevention and awareness campaign corresponded with increased visits to FWC research websites concerning trap debris. At the conclusion of the project in June 2016, our web page had 931 visits for the preceding year, with the number of visits in May 2016 and June 2016 increasing to over 100 each month. The increased number of monthly visits to our lobster research and marine debris web pages was sustained in the year since the project ended. For the ten-month period since June 2016, visits to our web pages increased over 300%, to 2,815 visits. Our website continues to

provide relevant, up-to-date information on trap debris issues, and our outreach through social media and video outlets appears to engage the public and inspire them to learn more about these issues.

KEYWORDS: *Panulirus argus*, marine debris, lobster fishery

ACKNOWLEDGEMENTS

This work was made possible by a grant from National Oceanic and Atmospheric Administration (NOAA), Marine Debris Prevention, Education and Outreach Partnership Grants, award number NA13NOS4630065 to Florida Fish and Wildlife Conservation Commission.

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