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Adam Nardelli  
Nova Southeastern University  

Stephanie Green  
Oregon State University  

L. Akins  
Reef Environmental Education Foundation  

David W. Kerstetter  
Nova Southeastern University, kerstett@nova.edu  

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Measuring the socio-economic characteristics of a lionfish derby event
Adam Nardelli¹, Stephanie Green², Lad Akins³, and David Kerstetter¹

¹Nova Southeastern University Oceanographic Center, Dania Beach, FL 33004 USA
²Oregon State University, Corvallis, OR 97331 USA
³Reef Environmental Education Foundation (REEF), Key Largo, FL 33037 USA

Introduction

In the western North Atlantic Ocean, Caribbean Sea, and the Gulf of Mexico, invasive lionfish (Pterois miles and P. volitans) have demonstrated the ability to rapidly expand their range and establish populations throughout different habitats reaching higher densities than their native range. There is great potential for this invasive species to continue impact local populations of native reef fishes. For example, within just two years following increases in lionfish abundances on Bahamian reefs, the biomass of their 42 native prey species declined dramatically.

Lionfish derbies are being used as a means to both control local populations and increase recreational diver awareness. Teams compete for boosting rights and prize money awarded for the most, biggest, and smallest lionfish collected while on SCUBA or free diving. Thousands of lionfish from small geographic regions have been removed during these single-day events, which have shown measurable success at reducing local lionfish populations.

The Reef Environmental Education Foundation (REEF) has hosted a series of annual derbys in Key Largo since 2010. Aside from continuing to remove lionfish and collect specimens for research, this was the first attempt to examine the socioeconomic components of the 2011 derby experience. This preliminary data was gathered to better understand the impact derbys have on the local economy and participation.

Discussion

Results from this 2013 event suggest that participation is comprised of all age groups and an approximate equal mix of the local resident base as well as out-of-town visitors. Further, while all ranges of economic income were represented, a large proportion of participants earned a high income bracket. This may indicate that it is possible to pay for the costs of participation even at the relatively lower income levels; however, those individuals at higher income levels may be likely to participate most often, or again in a future derby.

The results of the lionfish catch reflect non-derby related removal activity and can infer the on-going effort that exists. As shown here, spearing (70%) as opposed to netting (16%) is the primary methods used to remove lionfish for non-derby related removals. Most teams collected lionfish while on SCUBA (90%), but most commonly dive only once per month (18%). Further, of the non-derby removals, 52% capture lionfish on “most” to “every” dive.

A combined total amount of $24,561 was reported as spent by all teams. The derby expenditures presented within this survey demonstrate the diversity of economic markets that may be influenced by these one-day events. Boat fuel and oil was the most common expense (16% of total), followed by dive boat fees (14% of total), and then accommodations, restaurant meals and automobile transport (12% total each). The increase in net expenditures may add a benefit to the recreational/tourism industry of the Key Largo economy, especially since approximately half the participants travel from out of town and spend their money there.

Further versions of this survey will be improved upon by asking for more specific responses, rather than generalized qualitative and multiple response answers. For example, it would be of interest to include local businesses and inquire pre- and post-derby sales/output effects. Future plans for this survey during 2014 include surveys at the entire South Florida-based derby series to expand the geographic range and temporal fields for comparison.

*Green et al., 2012. PLoS ONE 7(3).
*Green et al., in preparation