Fishing Derbies for Invasive Lionfish: A Tool for Public Engagement and Population Control

Derbies de Pesca de Pez León Invasor: Una Herramienta para aa Participación Pública y el Control de la Población

Concours de Pêche pour les Poissons-papillons Invasive: Un Outil pour L'engagement du Public et le Contrôle de la Population

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EXTENDED ABSTRACT

Indo-Pacific lionfish (*Pterois volitans/ P. miles*) have rapidly established dense populations throughout the Western Atlantic, Caribbean, and Gulf of Mexico (USGS 2013). This marine predator invasion is now among the most destructive in history (Côté et al. 2013), and resource managers across the region are now actively devising strategies to suppress their populations (Morris et al. 2012). One tool that is proving effective at increasing local awareness of the invasion is the creation of lionfish fishing derbies or tournaments, but whether derby events are an effective means to control local lionfish populations, and the area over which they may affect control, remain unknown. In this study, we evaluated the magnitude and scale of lionfish population suppression achieved during two annual derbies over two years (2012 - 2013) located in Green Turtle Cay, Bahamas and in Key Largo, Florida.

METHODS

To assess derby effectiveness, we used conducted pre- and post-derby in-water assessments of lionfish density on a range of habitat types within the areas fished by derby participants, including natural patch reefs, iron shore, sea grass, and artificial structures. We also measured the number and size of all lionfish caught on the day of the derby by each team, and conducted surveys with each derby team to assess fishing effort (number of team members, skill level, gear types used) and obtained maps and GPS points of fishing locations.

RESULTS

We found that derby participants affected a greater than average 60% reduction in lionfish densities within the derby areas, compared with pre-derby levels. Crucially, population suppression was isolated to the area in which the derby occurred. The size distribution of lionfish observed in both derby areas was significantly smaller in the second year of the study compared with the first, providing further evidence that derbies are 'fishing down' local invasive populations.

CONCLUSIONS

Our study indicates that these single day derby events can be an effective strategy for suppressing the lionfish invasion at a local scale, using volunteer effort. Organizing derbies in high priority locations, such as MPAs and juvenile fish habitat, may thus be an effective way to suppress lionfish populations below levels that impact native fish populations (i.e. below levels that over-consume prey; Green et al., In review), in a cost effective manner.

LITERATURE CITED

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