

Lionfish control in areas inaccessible to fishers: counting and culling with the help of conservation volunteers

El manejo de pez león en zonas inaccesibles por pescadores: monitoreando y controlando con la ayuda de voluntarios de conservación

Le controle du poisson-lion en zones inaccessible aux pecheurs: compter et supprimer avec l'aide de bénévoles de la conservation

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In Belize, targeted fishing is gaining momentum as the most cost-effective method to control invasive alien lionfish by suppressing population numbers to or below site-specific threshold levels. However in the country's marine reserve no take zones (NTZs) or deep reefs (>18m) where commercial fishing is either not permitted or impractical, there is a need for alternative means of lionfish control. This study evaluates a lionfish control programme that enlists the help of conservation volunteers to monitor lionfish populations and support removal efforts using regular SCUBA culls, an initiative that began in January 2011 in Bacalar Chico Marine Reserve (BCMR), northern Belize. We observed a significant upshift in lionfish population size structure between 2011 and 2012 suggesting that lionfish would soon enter the exponential growth phase typical of expanding invasive alien species populations. However, population size structure has since stabilised, and sighting per unit effort (SPUE) data collected over the 4 years since the culling program began suggest that the rate of population expansion has slowed. Our results suggest that although regular culling efforts have not reduced abundance in BCMR, they may have prevented the lionfish population from entering exponential growth. We discuss the potential for volunteers to support lionfish monitoring and control efforts in NTZs and present preliminary lionfish population density estimates recorded by volunteers in another NTZ in southern Belize that highlight the need to develop similar lionfish control strategies in areas inaccessible to fishers across Belize's marine reserve network.

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