

Lionfish Derbies: An Effective Tool for Local Control?

Derbies del Pez Leon: ¿Una Herramienta Eficaz para el Control Local?

Derbys de Poissons de Lion: Un outil Efficace pour la Commande Locale?

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EXTENDED ABSTRACT

Invasive lionfish (*Pterois volitans* and *P. miles*) are now common throughout the temperate and tropical western Atlantic, where they are likely to cause severe ecological and economic impacts. To address the invasion, many locations are developing lionfish control programs. Lionfish derbies are becoming popular components of these programs. While derbies in the Bahamas and Florida Keys have removed more than 5,000 fish over the last two years, it is not yet clear whether this level of removal effort provides control of local lionfish populations. However, these derbies have provided opportunities and incentives for a broad group of stakeholders to participate in local marine conservation actions, and a forum for increasing their knowledge about the invasion and its potential effects on local natural resources. Using examples and results from recent derbies in the Bahamas and Florida, we examine the components necessary to create effective derbies. We discuss successful strategies for developing funding, outreach and education, training, and research components. We also identify some drawbacks and limitations to the current use of derbies as a means of lionfish control and directions for future work.

Types of Removals

While there are many different tools and techniques available for lionfish removals, we can categorize removal efforts into four primary categories:

- i) *Incidental removals* — are typically sporadic in nature and include removals that are not targeted specifically towards lionfish. Examples include hook and lion catches of lionfish, fish pots, or gill nets. These tools are typically targeting other species and catch of lionfish is unexpected or unintended.
- ii) *Individual removals* — are targeted towards lionfish but not are normally not focused or directed by resource managers. Examples of Individual removals include unsupervised removals by individual divers, snorkelers or spearfishers whenever they may encounter lionfish during their normal recreational activities
- iii) *Focused removals* — include efforts that are supervised or directed in some fashion. These typically involve some manner of direction from resource managers including when and where the removal activities will take place. Dive clubs, resource agencies, or formally trained divers are typically involved in focused removal efforts.
- iv) *Events* — tend to involve individuals, but are focused in time and space and include direction and focus of effort and distinct areas for return of collected specimens. Events can include festivals, derbies or contests with specific beginning and ending dates.

We will focus our discussions here on lionfish derbies as removal tools.

History of Derbies

The very first lionfish derby we are aware of took place in May 2009 at Green Turtle Cay, Abaco, Bahamas. In that single day event, 17 teams of up to four divers or snorkelers each brought in 1,408 lionfish from a roughly 20 square mile area around Green Turtle Cay. As word of the derbies success spread, additional events began to be organized around the region with numbers of lionfish landed in some cases more than 2,800 fish. Since the initial derby in Abaco, derbies have been held in many countries around the region and have been touted as successful tools for addressing the lionfish invasion. However, derbies are not recognized as a solution to the invasion and their limitations must be recognized.

What Derbies Cannot Do

Though it would be nice if a single day event could solve all lionfish issues, there is little disagreement that they cannot. It is important to recognize derby limitations and not to over-promote the utility of derby events. Derbies cannot:

- i) Eradicate lionfish,
- ii) Provide ongoing removals of lionfish (depending on event frequencies), or
- iii) Provide incentive for removals in the time periods leading up to the derby event

What Derbies Can Do

- i) Increase knowledge and awareness through formal pre-derby briefings and informal interactions with experts,
- ii) Engage local and visiting marine enthusiasts by providing opportunities for involving these key constituent groups,
- iii) Train removers in safe and effective techniques which can be used in removal efforts outside derby dates,
- iv) Encourage development of markets by working with restaurants and other retailers,
- v) Generate media attention leading to increased outreach and awareness,
- vi) Provide samples and data for researchers and research institutions,
- vii) Encourage participants to engage in ongoing removals following derby events,
- viii) Encourage removals from non-traditional sites where lionfish densities may be higher than traditionally culled sites,
- ix) Generate funding for research and control efforts through sponsorship, entry fees, raffles, etc., and
- x) Remove large numbers of lionfish!

Components of Effective Derbies

While not all derbies are organized in the same fashion, there are common themes associated with effective derby events. These include:

- i) Partnerships to provide a united front and spread the workload,
- ii) Promotion to increase participation in the derby event and awareness of the general public,
- iii) Incentives for participation including prizes and recognition of participants and sponsors,
- iv) Captains' Meeting to better educate and engage participants including:
 - Registration
 - Rules
 - Information
 - Training
- v) Scoring to provide a measure of ranking successes
- vi) Data gathering to include information on effort, location fished and other parameters that can be

utilized by managers to determine removal success and direct effort,

- vii) Scientific use of specimens by researchers to facilitate data needs,
- viii) Demonstrations of best tools and techniques for collecting and handling to promote increased removal effectiveness,
- ix) Tastings to encourage market development and ongoing use and incentive for removals, and
- x) Media attention to increase public awareness.

Future Direction

As resource managers look forward and consider derby programs in their regions a few considerations are warranted including:

- i) Organizing and conducting derbies in MPA areas,
- ii) Recognition of derbies that meet certain standards or criteria, and
- iii) Establishing sponsorship or funding to ensure sustainability of derby events.

In summary, while derbies or other focussed removal events may not solve the lionfish issue, there are many benefits of engaging the public and providing increased education, awareness, data, and samples.

KEY WORDS: Lionfish, fishing derbies, invasive species control, stakeholder involvement