

Market-based Approaches for Control of Invasive Lionfish



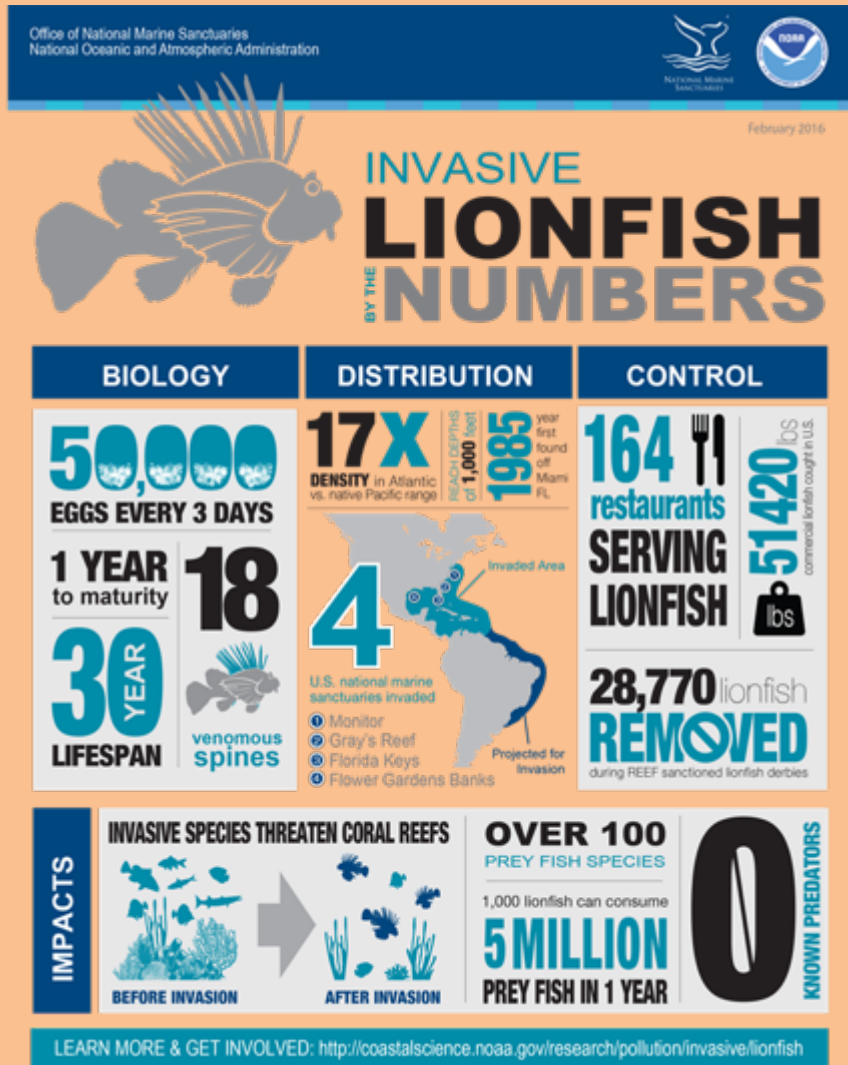
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What's the problem?

- No native predators
- Consume juveniles of commercially important fish
- As well as biologically important species
- High growth & feeding rates
- High reproductive rate
 - Reach sexual maturity at 12 months
 - Year round spawning
 - Multiple spawning each month
- Venomous spines
- Highly adaptable
 - Found in mangrove, rocky bottom & coral reef environments
 - Found at depths up to 300 meters
 - Can survive in low salinity



Management Strategies

- Broad agreement that eradication is impossible
- Only solution is to control lionfish population densities via
 - Regular Removals (Marine Protection Agencies & Volunteer Divers)
- Challenge: How to undertake these removals on a financially sustainable basis



Market Based Tools offer one set of Solutions

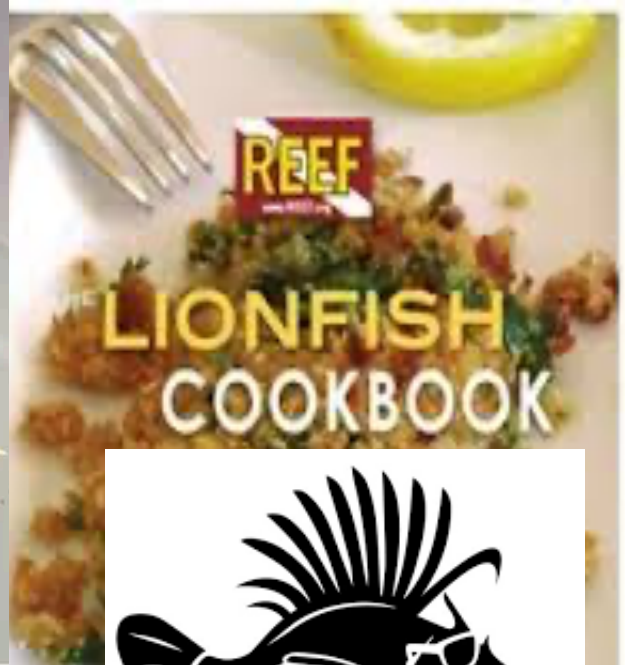
Development of a series of **vertical markets** can provide a sustainable approach to suppress invasive lionfish populations and provide an alternative income source for fishing communities, supporting fisheries management and native fish stock recovery



Vertical Market #1

- Fishers
- Seafood Sellers
- Restaurants / Chefs

Eat'em to Beat'em!
Eat da Lion!



Claire Wood & Polly Allford



f /lionfishhunters



GRILL'S GUIDE TO LOCAL LIONFISH



Eat Them to Beat Them!
SUPPORT RESTAURANTS THAT SERVE LIONFISH!





All Recommendations for Lionfish

SEARCH AGAIN

Seafood Watch

lionfish



8
BEST

REFINE YOUR SEARCH

What kind is it?

Select one

BEST CHOICE



Type

Lionfish, Devil firefish
Butterfly Cod, Firefish,
Lionfish, Ornate Butterfly
Cod, Peacock Lionfish, Red
Firefish, Red Lionfish,
Turkeyfish, Zebrafish

Method

Hand implements

Location

U.S. - Western Co
Atlantic Ocean: G
Mexico)

Type

Method

Location

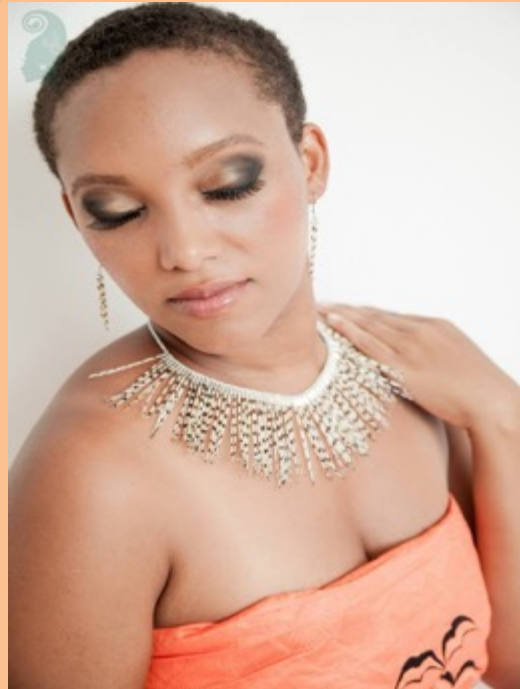
Vertical Market #2 Lionfish Jewelry and Handicrafts



- Lionfish spines, fins and tails can be dried and preserved in a variety of shapes and colors
- Resulting in attractive material for use in jewelry

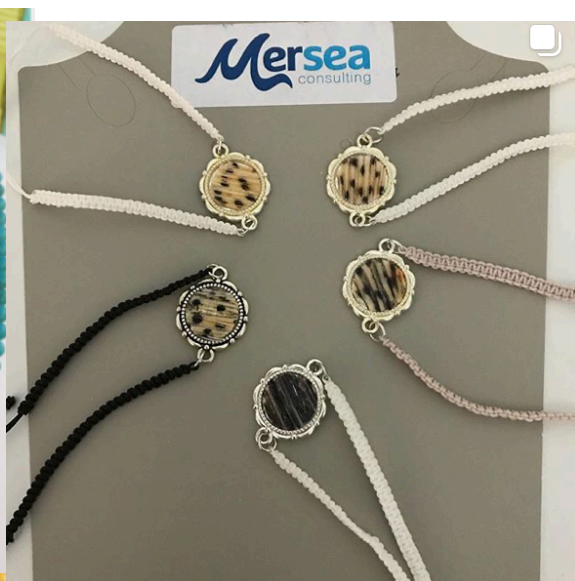


A variety of jewelry items can be produced, using spines....



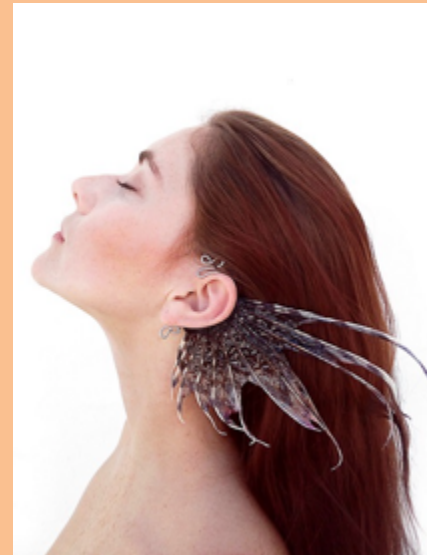
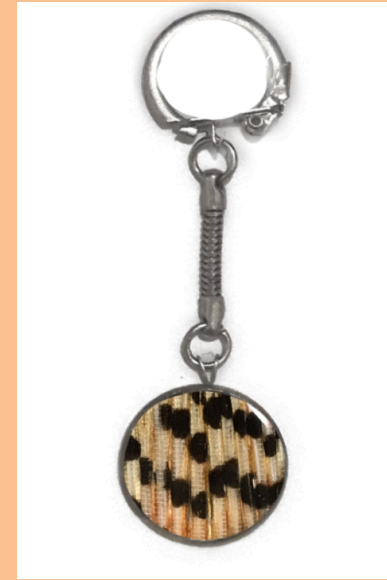
And fins / tails





Some innovative artists are using other parts of the fish such as pectoral fins and operculum

And making other types types of products such as Christmas ornaments, keychains and hair stylizers

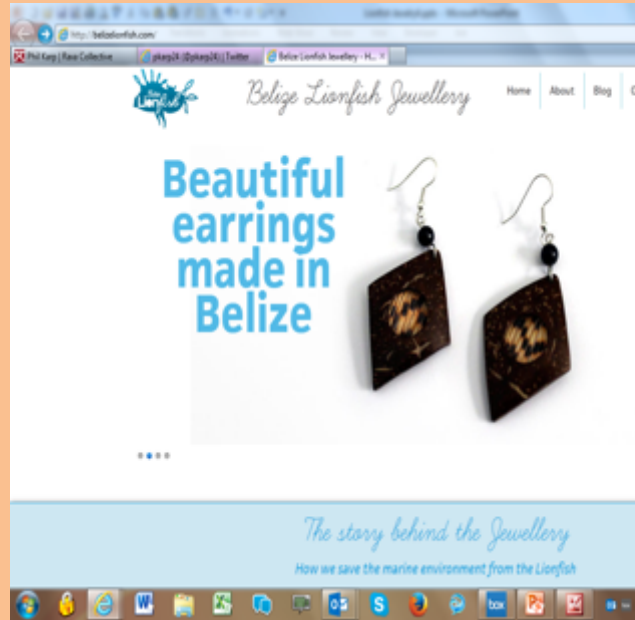


And mixing with other materials such as sea glass, feathers, coconut shell and husk, and even bottle caps!



Where is lionfish jewelry being produced?

- Clusters of production in **Belize, Colombia, Curacao, Grenada and St. Vincent & the Grenadines**
- Individual artists in **Aruba, Bahamas, Bermuda, Puerto Rico, Mexico, USVI**, and various parts of the **United States**
- Some initial production in **Cyprus and Turkey**



Everyday Finds

Jewelry & Accessories

Clothing & Shoes

Home & Living

Wedding & Party

Toys & Entertainment

Art & Collectibles

Craft Supplies

🎁 Gifts

Special offers

- FREE shipping
- On sale
- Personalizable (Monogram, engravings, etc)

Ready to ship in

- 1 business day
- 1 - 3 business days

Price (\$)

- Any price
- Under \$25
- \$25 to \$50
- \$50 to \$100
- Over \$100
- Custom

Low to High >

Shop location

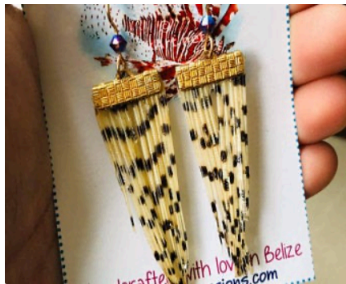
- Anywhere
- United States
- Custom

Enter location >

Item type

- All items
- Handmade
- Vintage

Ordering options



Lionfish earring with Swarovski crys...
Ad by KajLionfish
\$22.50



Lionfish Cufflin / Fish Cufflinks / Fis...
Ad by AdamantineSuit
★★★★★ (507)
\$22.99 FREE shipping



Lionfish Dangle
Ad by KajLionfish
\$22.50
Only 1 available and it's in 2 people's carts



Lionfish earring with Topaz crystals
Ad by KajLionfish
\$22.50



More colors
Lionfish Bracelet Pectoral fin
LionfishJewelry
\$10.00



Lionfish Necklaces
Lionfantastic
★★★★★ (3)
\$10.00



More colors
Stingray Lionfish Pendant
LionfishExpressions
★★★★★ (15)
\$25.00



Lionfish Bracelets
Lionfantastic
★★★★★ (3)
\$5.00



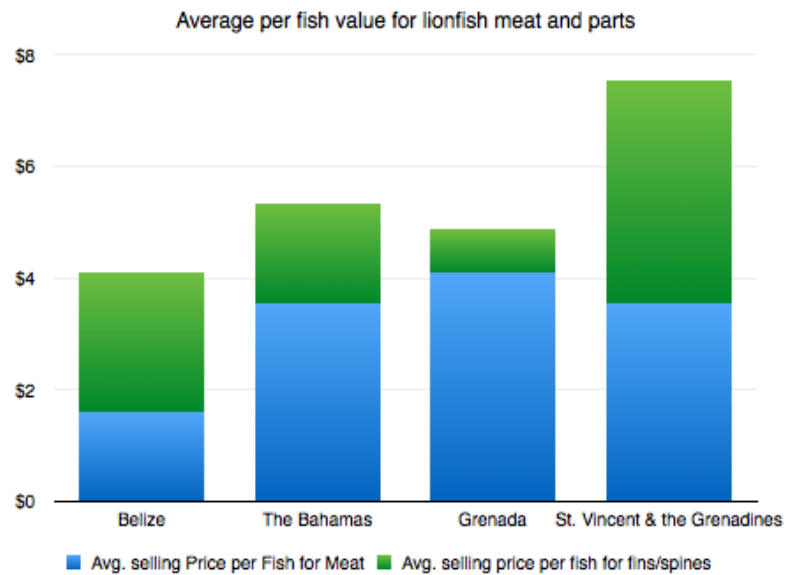
OK, so lionfish jewelry is cool...
but how does this address the
challenge of managing the
invasion?

Some empirical evidence from Belize,
the Bahamas, Grenada and the
Grenadines



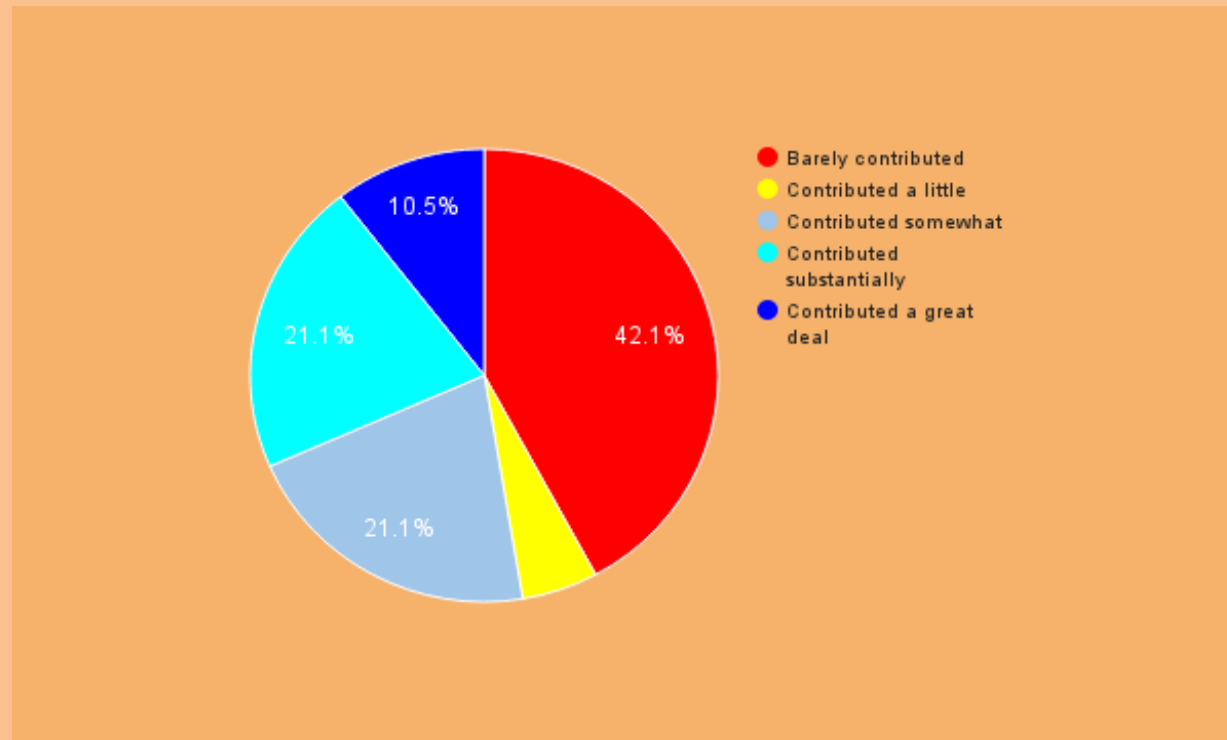
Incentivizing Removals

Experience from Belize, The Bahamas, Grenada and St. Vincent & the Grenadines demonstrated that **sale of fins and spines** can **increased landed value of lionfish** by 16 to 61 percent



	USD price/ lb - Whole Fish	USD price/lb - Fillets	Avg. selling Price per Fish for Meat	USD price for fins/ tails	USD price for spines	Avg. selling price per fish for fins/ spines	Value- Added
Belize	\$1.50 - \$3.00	\$3.00 - \$6.00	\$1.59	\$0.25 - \$0.50	\$0.10	\$2.50	61%
The Bahamas	\$11.00	\$5.00	\$3.56	\$0.44	spines not used	\$1.77	33%
Grenada	\$3.00 - \$3.75	\$4.50 - \$6.00	\$4.10	\$0.15 - \$0.25	spines not used	\$0.80	16%
St. Vincent & the Grenadines	\$3.75	N/A	\$3.56	\$0.50 - \$1.00	\$0.10	\$4.00	42%

Livelihood Contribution



2014 Survey of 35 lionfish jewelry artists from Belize, Bahamas, Grenada, and St. Vincent and the Grenadines

- 32% indicated that it contributed **substantially** or a **great deal** to their household income
- Jewelry artists also reported **enhanced self-worth** and **sense of contribution** to their communities.

Lionfish jewelry production also has important ancillary benefits, including

- Empowerment and new livelihood opportunities for women
- Acquisition of business skills
- Increased household income
- Raised awareness about the threat posed by invasive lionfish



Item	#UNITS	\$BZ	\$BZ/unit
CLASP SILVER, SMALL	195	48	25 ¢
CLASP GOLD, SMALL (###)	130	30	27 ¢
CLASP GOLD, SMALL (###)	72	24	33 ¢
CLASP SILVER, MEDIUM	100	32	32 ¢
CLASP GOLD, LARGE	20	30	37 ¢
CLASP SILVER, LARGE	80	28	35 ¢
HOOKS (straps, etc)	100	5	5 ¢
Copper wire	5 feet (60")	13	21 ¢
Silver wire	5 feet (60")	26	43 ¢
(Shimmer and fofo)	2.5 feet (300)	20	6 ¢
Shimmer and fishing wire	30 feet (360)	6	

CLEANING MATERIAL	
Nail polish remover	\$2.95
25-60 fins = (2) =	7 ¢/fin
PRESERVATION	
Varnish	\$7.95 /bottle
1/2 bottle = \$1.98	
10 fins	
(coat each fin) = 19 ¢	\$73.95 /gallon
Food dye x4	\$6.25
COLOUR	= 1 ¢ /fin

HANDMADE LIONFISH JEWELRY

FROM THE WIDER CARIBBEAN REGION



PROTECTING CARIBBEAN REEFS FROM INVASIVE LIONFISH

- LIONFISH JEWELRY MARKETS INCENTIVIZE INCREASED REMOVALS
- SALE OF FINS & SPINES FOR JEWELRY RAISES VALUE OF FISHER'S CATCH BY UP TO:



EMPOWERING WOMEN

LIONFISH JEWELRY PRODUCTION HELPS WOMEN IN COASTAL COMMUNITIES BY:

- PROVIDING NEW LIVELIHOOD OPPORTUNITIES
- ENHANCING SELF-ESTEEM
- DEVELOPING BUSINESS AND ENTREPRENEURSHIP SKILLS

[f/BELIZELIONFISHJEWELRY](#)

PROUD PARTNERS

blue ventures



Conclusions

- Market-based tools have an important role to play in managing invasive lionfish
- Development of vertical markets in both seafood and jewelry can help support regular removals on a financially sustainable basis
- Moreover, lionfish jewelry production has important ancillary benefits, particularly for women
- Regional knowledge-sharing, training, production and marketing/branding could offer an effective strategy for tapping international markets
- Potential is particularly strong for Mediterranean countries to learn from experience in the Caribbean