

University of the West Indies

Alina Szmant
University of North Carolina

A Coral-List Server Discussion Thread: The Indopacific lionfish invasion of the U.S. south Atlantic sea coast and Caribbean Sea

[Coral-List] Coral-List Digest, Vol 14, Issue 24; RE: Lionfish has arrived on Curacao, Netherlands Antilles

Lauren Saulino [l.saulino at gmail.com](mailto:l.saulino@gmail.com)
Thu Oct 29 20:36:05 EDT 2009

RE: Lionfish has arrived on Curacao, Netherlands Antilles

Lionfish have now also arrived in Bonaire, NA. This past week Marine Park manager Ramon de Leon responded to two sightings of juvenile lionfish at the dive sites Nukove and Something Special. While at least one of these reported fish was successfully located and removed from the protected waters of Bonaire's marine park it is disconcerting to know that these fish have managed to swim against the currents (literally) and reach this southern Caribbean island.

~Lauren Saulino
CIEE (Council for International Educational Exchange) - Bonaire

[Coral-List] Lionfish has arrived on Curacao, Netherlands Antilles

Mark J A Vermeij [vermeij at hawaii.edu](mailto:vermeij@hawaii.edu)
Wed Oct 28 13:51:22 EDT 2009

Dear All

Divers at Ocean Encounters West, a dive school at the western tip of Curacao, found a lionfish at Watamula, a nearby dive site. The animal was captured later that day. Another one was supposedly observed at East Point (which the complete opposite side of the island) 2 weeks ago but there wasn't (in

contrast to the aforementioned one) a photo or any other official documentation of that individual.

Best regards

Mark

Dr. M.J.A. Vermeij
Science Director
Carmabi Foundation
Piscaderabaai z/n
Curaçao, Netherlands Antilles
Phone: +5999-5103067 NEW NUMBER
Email: m.vermeij@carmabi.org
Skype: markvermeij
Web: <http://www.researchstationcarmabi.org/>

Department of Botany
University of Hawaii at Manoa
email: vermeij@hawaii.edu
<http://www.botany.hawaii.edu/>

July 2009

Steve LeGore slegore@mindspring.com
Sun Jul 5 12:34:30 EDT 2009

Some may remember a message I sent several weeks ago suggesting that a specialty fishery might be possible to help control Caribbean lionfish populations. Those that do may be interested that the widely read Florida Sportsman Magazine published an article in its July 2009 issue titled: "Eat the Invaders" on page 31 ff. It provides handling tips for the recreational public, as well as informing them that lionfish make "wonderful sushi and ceviche," and are terrific fried whole or filleted. It also refers readers to www.lionfishhunter.com, where additional information and recipes may be found.

Steve LeGore, Ph.D.
LeGore Environmental Associates, Inc.
2804 Gulf Drive N.
Holmes Beach, Florida 34217 USA
Tel: 941/778-4650
Fax: 941/778-4761
Cell: 941/447-8010
GMT + 4 hrs

June 2009

Ernesto Weil eweil@caribe.net
Wed Jun 17 13:20:37 EDT 2009

Rectifying my earlier message, I was just informed the fish has been observed and collected in La Parguera too.

EW

Ernesto Weil [eweil at caribe.net](mailto:eweil@caribe.net)
Wed Jun 17 11:56:14 EDT 2009

A friend of mine who snorkels frequently on the west coast of PR just told me that he saw a couple of lionfish while snorkeling at the "Tres Palmas Natural Reserve" in Rincon during the week of May 16-23rd. There are now sightings from both the east and west coast of the island. So far, there have not been any sightings in La Parguera, but is just a matter of time.

Saludos

Dr. Ernesto Weil
Professor
Dept. of Marine Sciences
University of Puerto Rico

Glauco A Rivera [glauco150 at aol.com](mailto:glauco150@aol.com)
Thu Jun 18 16:38:58 EDT 2009

Dear listers:

Concurring with Ernesto's posting, my brother-in-law observed a lionfish while diving at El Natural reef on June 13, just north of Crashboat beach, Aguadilla, PR.? He was told another fish has been observed south?at?Crashboat beach.

regards,

Glauco A Rivera, MS
Principal, Glauco A Rivera & Associates
1948 Oceania St.
Isabela, PR 00662
off. 787-830-3410
cel. 787-645-9534
Ph D Candidate (ABD)
Univ. of Puerto Rico-Dept. Marine Sciences

Nick Bach [nicbach at yahoo.com](mailto:nicbach@yahoo.com)
Mon Jun 8 17:01:17 EDT 2009

Having slowly spread throughout the greater Caribbean over the course of the years, the lionfish has now finally reached the Bay Islands. On May 22nd, a local dive shop reported the capture of an 8inch (front of mouth to base of tail) specimen near Punta Gorda (in the NE part of Roatan). It was found in 21ft of water, inside the barrier reef and about 200 m from shore. The specimen is currently being kept in an aquarium and will be used

for educational purposes. As yet, there have been no further sightings but we expect many more in the coming future.
With the lionfish here to stay, we will be assessing possibilities of dealing with this invasive species

Promoting Research, Education & Conservation

Nic Bach
Director of Marine Infrastructure
Roatan Marine Park
www.roatanmarinepark.net
Cel: (504) 3349-4138
Office: (504) 445-4206 / 445-4208

Charles Booth booth at easternct.edu
Wed Jun 10 10:32:32 EDT 2009

Nick Bach wrote:

"With the lionfish here to stay, we will be assessing possibilities of dealing with this invasive species." Just got back from San Salvador Island, Bahamas, where I was told by the dive master at the Riding Rock Resort and Marina that people are finding ways to filet and eat lionfish. She was planning to go to Long Island (Bahamas) to learn more about this method of dealing with the fish.

Chuck Booth

Dr. Charles E. Booth
Dept. of Biology
Eastern Connecticut State University
Willimantic, CT 06226

Ph: 860-465-5260
Email: booth at easternct.edu
FAX: 860-465-5213

Elizabeth Brill elizabeth.brill at mac.com
Wed Jun 10 22:16:21 EDT 2009

Check out breef.org.

And maybe this will help:
<http://www.breef.org/InvasiveSpecies/Lionfish/tabid/91/Default.aspx>

BREEF {and others} have been encouraging eating lionfish and are addressing education, safe handling, cleaning, etc. I think I even recall seeing a recipe in one of their newsletters, so maybe it's on their website. . .

Buon appetito!

Elizabeth R. Brill

Rachel Odom [rachelodom at gmail.com](mailto:rachelodom@gmail.com)

Mon Jun 1 13:41:31 EDT 2009

Rob,

Freshwater et al. 2009 examined the genetic relatedness between the Floridian and Bahamian populations: "These results indicate that the source of the Bahamian lionfish is egg and larval dispersal from the United States east coast population, and support previous models of reef fish dispersal that suggest a low level of connectivity between the Bahamas and east coast of Florida."

I can't recall where, but I remember reading somewhere that were likely multiple introductions. Perhaps there were multiple introductions into US waters that formed the population that spread to the Bahamas and beyond?

Reference:

Freshwater, D. W., A. Hines, S. Parham, A. Wilbur, M. Sabaoun, J. Woodhead, L. Akins, B. Purdy, P. E. Whitfield, C. B. Paris. 2009. Mitochondrial control region sequence analyses indicate dispersal from the US East Coast as the source of the invasive Indo-Pacific lionfish *Pterois volitans* in the Bahamas. *Marine Biology* 156: 1213-1221.

Best Regards,

Rachel Odom
Graduate Student
Coastal and Estuarine Ecology Lab (CEELAB)
University of Central Florida
[rachelodom at gmail.com](mailto:rachelodom@gmail.com)

May 2009

Jeremy Woodley [jdwoodley at yahoo.co.uk](mailto:jdwoodley@yahoo.co.uk)

Tue May 5 13:30:57 EDT 2009

I agree with John that the creature is probably here to stay. However, people who have researched its life-history, natural distribution and ecology could tell us if there is some weak point at which it might be susceptible for control, or could enhance attempts to capture them. But it's hard to imagine that divers with nets and spears can do the job: not enough divers and too many less accessible reefs.

Jeremy

Tupper, Mark (WorldFish) [M.Tupper at CGIAR.ORG](mailto:M.Tupper@CGIAR.ORG)

Wed May 6 06:08:06 EDT 2009

Lionfish have been one of the more popular species in marine aquaria for a long time, as well as being exploited for food in a few places, but I've never heard of any noticeable declines in their populations, even where locally harvested for the aquarium trade. I rather doubt that any kind of removal program would have much effect.

As far as I know, their major predators are large groupers and other lionfish. There are definitely fewer large grouper species in the tropical west Atlantic than the Indo-Pacific, and there is the question of whether any predator in the Atlantic would find them palatable. What are the predators of scorpionfish in the Atlantic, if any? They might also be able to prey on lionfish. I suppose one could hope that lionfish numbers in the Caribbean might reach an equilibrium if their cannibalism rate eventually equals their recruitment rate, but who knows what sort of population density would be needed for that to happen...

Mark Tupper

John Ogden [jogden at marine.usf.edu](mailto:jogden@marine.usf.edu)
Mon May 4 10:44:35 EDT 2009

Thinking back to the Diadema mass mortality of 1983-84 and the opportunities that were missed because of poor communications across the region, now would be a very good time to use our superb and ubiquitous communications to set up a coordinated observation network to see what is the impact of lionfish on populations of small reef fishes. It appears that this idea could be trumped by well-meaning but ultimately futile attempts to remove them. Who doubts that they are here to stay? It would be best we anticipate the future of Caribbean reefs with lionfish and try to get some data to help get our minds around this.

Cheers all.

John C. Ogden, Director
Florida Institute of Oceanography
Professor of Integrative Biology
University of South Florida
830 First Street South
St. Petersburg, FL 33701 USA
Tel. 727-553-1100
Fax 727-553-1109
<http://www.marine.usf.edu/FIO/>
<http://www.cas.usf.edu/biology/Faculty/ogden.html>

*From: Gulf and Caribbean Fisheries Institute Network
[mailto:[GCFINET at LISTSERV.TAMU.EDU](mailto:GCFINET@LISTSERV.TAMU.EDU)] On Behalf Of Dave Anderson
Sent: Sunday, May 03, 2009 9:24 PM
To: [GCFINET at LISTSERV.TAMU.EDU](mailto:GCFINET@LISTSERV.TAMU.EDU)
Subject: [GCFINET] Cayman Islands Lionfish Update
This message was originally submitted by Bradley Johnson
[mailto:[Bradley.Johnson at gov.ky](mailto:Bradley.Johnson@gov.ky)] to GCFINet.*

Hi all,

As of 30th April 2009 we have caught 90 lionfish! This includes the 2 caught in Cayman Brac and Little Cayman in 2008 and 3 live specimens. They have been caught in water ranging from 3' down to 110', on all sides of the islands, and in all habitats.

By island we have:
Grand Cayman - 44;
Cayman Brac - 8;
Little Cayman - 38.

Cayman Brac was hit by Hurricane Paloma in November and sustained severe damage to the Island, including their dive operations. The sightings have so far been primarily from divers, so with practically no diving in the Brac we are getting fewer reports of lionfish from there. We assume this will increase once the dive operations reopen.

We have licensed approximately 163 divers to remove lionfish for us having 130 in Grand, 3 in the Brac, and 30 in LC. We will increase the number of licensed divers in the Brac once they get more dive staff back.

Bradley C. Johnson
Research Officer
Department of Environment
Cayman Islands Government
PO Box 486
Grand Cayman KY1-1106
CAYMAN ISLANDS
345-949-8469 Office
345-244-4168 Direct
345-949-4020 Fax

Brice Semmens [brice.semmens at noaa.gov](mailto:brice.semmens@noaa.gov)
Tue May 5 14:12:57 EDT 2009

John,

No one doubts mosquitoes are here to stay, yet most folk appreciate control efforts (particularly in your neck of the woods!) Efforts aimed at culling lionfish are principally intended to limit impacts to already stressed reef communities. Put another way, the efforts are only futile if the goal is eradication. I don't believe anyone involved in these (well coordinated) efforts has eradication as a goal at this point. It's also worth noting that any rigorous efforts aimed at identifying lionfish impacts on a whole-reef scale should probably attempt some version of BACI... note the 'control' part of BACI.

So, the big question -- are you suggesting that folks forgo control efforts in order to focus exclusively on documenting the undoubtedly horrific effects of this invasion? To me that's like studying the wiring diagram of a time bomb that's about to go off -- I'd rather spend my time figuring out how to avoid as much of the blast as possible.

My two cents.

Brice Semmens

John Ogden [jogden at marine.usf.edu](mailto:jogden@marine.usf.edu)

Tue May 5 15:19:58 EDT 2009

Bruce,

Good first point and more or less what I meant to say. Let's distinguish control and eradication. Control (living with) lionfish requires knowledge that could be side-tracked by expensive, extensive, well-meaning but ultimately futile eradication measures (and there are many people thinking this way). I suggest that the time is now to use the event of invasion not just to document but to look at what is happening on Caribbean reefs as this invader is established. Surely this will help gather knowledge useful to control. In my opinion we will be living with lionfish from here on out.

Cheers.

John C. Ogden, Director
Florida Institute of Oceanography
Professor of Integrative Biology
University of South Florida
830 First Street South
St. Petersburg, FL 33701 USA
Tel. 727-553-1100
Fax 727-553-1109
<http://www.marine.usf.edu/FIO/>
<http://www.cas.usf.edu/biology/Faculty/ogden.html>

andrew ross [andyroo_of72 at yahoo.com](mailto:andyroo_of72@yahoo.com)

Tue May 5 18:24:51 EDT 2009

Regarding those stressed reefs, do lionfish hunt among the branching coral (staghorn-type) thickets on their native reefs?

Andrew

Tupper, Mark (WorldFish) [M.Tupper at CGIAR.ORG](mailto:M.Tupper@CGIAR.ORG)

Wed May 6 05:06:50 EDT 2009

Not usually. I mostly see lionfish hunting along overhangs and caves in the forereef or reef wall. They use their pectoral fins in a "herding" technique to trap small fish. I think this works best along wider surfaces than most branching corals would provide.

Mark Tupper

andrew ross [andyroo_of72 at yahoo.com](mailto:andyroo_of72@yahoo.com)

Wed May 6 09:42:47 EDT 2009

Will and Mark,

My question was a little leading- do you suppose that the lack of this elaborate/extensive refuge habitat may somehow be facilitating the success/spread of this invader and its eventual impact, particularly on artisanal reef-fisheries?

To rephrase Mark's observations- a tractor can't corner rabbits against a cattle fence.

A

Justin R Grubich [justinrg at gmail.com](mailto:justinrg@gmail.com)

Wed May 6 12:33:11 EDT 2009

Colleagues,

To add to Mark's observations of lionfishes in their native ranges, we recently documented lionfish species diversity and biogeography during an expedition to the southwest islands of Palau this past summer. Interestingly, we found very low numbers of lionfishes but high species richness and abundances of groupers. In addition to healthy populations of large groupers among these remote reefs, there was also high densities of medium and small groupers species that are likely keeping them in check as ecomorphological competitors of lionfishes. If anyone is interested in more details, the results of this rapid assessment of lionfishes will be coming out in Coral Reefs soon. For those interested in the raw data, the specimen and tissue collections are being housed at the Field Museum of Natural History in Chicago

-Justin Grubich

Lad Akins [Lad at reef.org](http://ladatreef.org)

Wed May 6 15:05:51 EDT 2009

HI John, Paul, Brice and all.

Glad this issue is catching your eye. It has been on the radar for some time now and much is being done in both control and documentation of the impacts relative to this invasion. It's been a while since we've updated on the coral list, so I maybe this is a good time to do so.

Relative to documentation of the impacts, James Morris, Paula Whitfield, Roldan Munoz and others at NOAA's Beaufort lab as well as others working in the South Atlantic Bight have been taking a lead role in addressing status and impacts of this invasion along the US east coast. Work on reproduction, age/growth, predation (on and by lionfish), population dynamics, genetics, parasitology, and more have been either recently published or are in final review.

Stephanie Green and Isabelle Côté at Simon Fraser University, James Morris at NOAA, Mark Albins and Mark Hixon at Oregon State, Nicola Smith at University of British Columbia and others have been looking at similar issues and impacts relative to coral reef systems in the Bahamas and other invaded areas of the Caribbean.

REEF has been working in close coordination with those along the US Coast and in the wider Caribbean to facilitate research but also to implement outreach/awareness, early detection/rapid response and control programs. Over the last 6 months we have worked with the Bahamas, Turks and Caicos, Cayman Islands and the Netherlands Antilles to conduct workshops on outreach/awareness, detection and response, medical issues, collection and handling techniques and monitoring and assessment protocols. We were able to train and license over 160 dive professionals in Cayman alone to respond to sightings and remove fish via early detection/rapid response protocols. Upcoming projects and workshops are planned for Belize (<http://www.reef.org/programs/exotic/lionfish/trips>) , the Florida Keys, Bahamas and USVI/PR this summer. (visit www.reef.org/lionfish for updates)

The USGS has been the focal point for databasing lionfish sightings and has dedicated significant resources to hosting the lionfish sightings database on their NAS website (<http://nas.er.usgs.gov/taxgroup/fish/lionfishdistribution.asp>). They have also developed mapping tools and maintain an early warning system to alert users (anyone can sign up) of lionfish or other non-nativespecies sightings in new areas.

The recent GCFI (Guadaloupe), ICAIS (Montreal) and the upcoming Marine Bioinvasions (Portland) conferences all have lionfish special sessions where the latest work has been/is being presented. There is a very good summary of what is currently known about lionfish including discussion on control and management from the recent GCFI symposium (http://www.ccfhr.noaa.gov/documents/morrisetal_2009.pdf)

We (NOAA/REEF) now have funding to conduct a series of regional workshops this summer and fall and many research and control programs are set to start up early this summer.

I hope this eases some of the concern relative to the control and impacts issue. If you have any questions or would like more info, feel free to contacts us. Let's all work together to ensure that research and control will work hand in hand to come up with successful solutions to this issue.

All the best,

Lad

Lad Akins
Director of Special Projects
Reef Environmental Education Foundation (REEF)
98300 Overseas Hwy, Key Largo, FL, 33037
(305) 852-0030
(305) 942-7333 cell
[Lad at REEF.org](http://www.reef.org)
www.reef.org

Glazer, Bob [Bob.Glazer at MyFWC.com](http://www.myfwc.com)

Wed May 6 16:58:56 EDT 2009

During the recent CaMPAM Training of Trainers course in Tobago, a representative from the Bahamas Department of Fisheries related how a pair of

lionfish were observed from an ROV platform at greater than 400' - they are here to stay! Kathleen Sullivan-Seeley and others in the Bahamas developed a very comprehensive plan to deal with them.

Here are the oral and poster abstracts relating to lionfish from the November 2008 GCFI symposium on Invasive Species held in Guadeloupe, FWI:

REEF'S VOLUNTEER PROGRAM FOR EARLY DETECTION AND RAPID RESPONSE OF NON-NATIVE MARINE SPECIES

Lad Akins¹ and James Morris²

¹REEF P O Box 246 Key Largo, FL 33037 US [Lad at reef.org](http://Lad.at.reef.org) ²NOAANational Centers for Coastal Ocean Science 101 Pivers Island Rd Beaufort NC 28516 USA

ABSTRACT
Lionfish (*Pterois miles/volitans*) have rapidly become established along the east coast of the U.S., Bermuda, Bahamas, and the north-central Caribbean. A nearly perfect invader, lionfish have spread throughout these regions since 2000 and recent studies have demonstrated significant impacts of lionfish on native reef fish communities. The use of volunteers in early detection and rapid response may provide significant aid in slowing the expansion and controlling populations at key locations of high priority. The Reef Environmental Education Foundation (REEF), a U.S. based NGO, in partnership with NOAA, the USGS, the National Aquarium in Washington D.C., Simon Fraser University, Oregon State University, local dive operators and volunteers has developed methods and materials for outreach, detection, reporting, and response which can serve as a model for downstream countries preparing for the invasion. Volunteer divers and snorkelers are the eyes and ears of the coral reef environment. REEF provides training for these marine enthusiasts in identification and survey techniques and provides materials for them to report their sightings to a central, publicly accessible database (www.reef.org). These data provide a valuable baseline resource and continually updated monitoring information and may be the first line of defense in early detection efforts. Since January 2007, REEF has conducted 15 week-long lionfish projects in the Bahamas. Over 190 volunteers have participated, helping to gather over 1700 specimens for researchers. The protocols developed during these projects provide an example of how volunteer collection teams can be enabled to minimize impacts of lionfish through regular detection and control activities.

KEYWORDS: volunteers, lionfish, fish surveys, stewardship, non-native species

EFFECTS OF THE INVASIVE INDO-PACIFIC LIONFISH (*PTEROIS VOLITANS*) ON BAHAMIAN CORAL-REEF FISHES: PREDATION AND COMPETITION

Mark Albins and Mark Hixon

Oregon State University, Department of Zoology 3029 Cordley Hall Corvallis, OR 97331 USA [albinsm at science.oregonstate.edu](http://albinsm.at.science.oregonstate.edu)

ABSTRACT
The Indo-Pacific lionfish (*Pterois volitans*), introduced to Florida waters in the early 1990s, is currently spreading rapidly throughout the Caribbean region. This invasive carnivore may cause both direct and indirect deleterious changes in coral-reef ecosystems via predation on native fishes and invertebrates as well as competition with native predators. We are conducting a series of controlled field experiments on a matrix of small patch reefs in the Bahamas to examine the short-term effects of lionfish on native reef fishes. In 2007, lionfish caused significant reductions in the recruitment of native fishes by an average of 79% over a five-week period. Twenty-three of thirty-eight species recruiting to both lionfish-absent (control) reefs and lionfish-present reefs -- including four of five parrotfishes -- were negatively affected by lionfish. This strong effect on a

key life stage of a broad variety of coral-reef fishes suggests that invasive lionfish are already having substantial negative impacts on Atlantic coral reefs. In addition to the demonstrated direct predatory effect of lionfish on small fishes, substantial reductions in this important prey resource may indirectly lead to reduced growth and survival of native piscivores. We are currently conducting experiments investigating potential competitive interactions between lionfish and native serranids, including coney and Nassau grouper. We will also present the results of these ongoing investigations.

KEYWORDS: invasive species, community interactions, piscivory, marine fishes, recruitment

THE OCCURRENCE OF LIONFISH (TELEOSTEI: SCORPAENIDAE: PTEROIS SP.) IN CUBAN MARINE WATERS

Hansel Caballero¹, Pedro Pablo Chevalier², and Olaechea Armando²
¹Acuario Nacional Cuba Ave.1ra y 60, Miramar, Playa, Ciudad de La Habana, Cuba [hanselc at acuaronacional.cu](mailto:hanselc@acuaronacional.cu) ²Acuario Nacional de Cuba Ave.1ra, esq.60, Miramar, Playa Ciudad de la Habana Cuba

ABSTRACT

The natural distribution of the lionfish *Pterois volitans* (Linnaeus, 1758) includes the Indian and Pacific oceans in a very extensive area. The finding of this fish in American and Caribbean waters is not new, but was confirmed the occurrence in Cuba since June 2007, when it was observed for first time in the southeast region and in August, more specimens were catch in the central North region, reported by Chevalier et al. (2008). At the moment, U. S. Geological Survey (USGS) has in its data base, around 470 reports (<http://nas.er.usgs.gov/queries/collectioninfo.asp.htm>) of the occurrence of the lionfish where includes several reports of the 51 from Cuba until July of the 2008. Our goal is to explain the efforts that the Cuban research institutions are doing, to study biological and ecological aspects of the lionfish in Cuban water. These studies are carried out by the National Aquarium of Cuba (<http://www.acuaronacional.cu>), with the participation of other institutions dedicated to the marine research with the support of the CHM ("Mechanism of Facilitation for information on biodiversity in Cuba") (www.ecosis.cu/chm/chmcuba.htm), the Project PNUD/GEF (Network of Voluntary Monitoring of Early Alert) ([alcolado at ama.cu](mailto:alcolado@ama.cu)). Among other aspects, the study includes examine and determine the abundance and distribution of the lionfish in different zones from the Cuban archipelago; to implement a program of environmental education and to develop a data base of sighting of the species in Cuba.

KEYWORDS: Nonindigenous species, Scorpaenidae, Marine introductions, Lionfish, *Pterois volitans*

THE RED LIONFISH INVASION OF SOUTH CAICOS, TURKS & CAICOS ISLANDS

John Claydon, Marta Calosso, and Siri Jacob
The School for Field Studies Center for Marine Resource Studies 1 West Street South Caicos, Turks and Caicos Islands [jclaydon at fieldstudies.org](mailto:jclaydon@fieldstudies.org)

ABSTRACT

The first observation of red lionfish (*Pterois volitans*/miles) in the waters around South Caicos, Turks & Caicos Islands was made in December 2007. From this time until the end of July 2008, lionfish sightings were recorded by staff and students from The School for Field Studies Center for Marine Resource Studies in South Caicos . Twenty-three individuals have been observed. Although effort was made to capture all specimens seen (with 21 individuals captured), sightings represent opportunistic observations made during other activities. All except one were recorded in waters shallower than 2.5m, and specimens have been found in patch reef (n=14), seagrass

(n=6), mangrove (n=2), and deep reef (25m; n=1). Although individuals captured ranged in size from 4.1 to 27.7cm TL, all but 2 individuals were <15cm TL. This study documents the invasion of South Caicos by red lionfish, and although the effects of this invasion are unknown, the exponential increase of sightings per month is worrying. Future monitoring will include targeted searches for red lionfish.

KEYWORDS: red lionfish, invasion, Turks & Caicos Islands, ,

PREDICTING THE IMPACT OF INVASIVE LIONFISH (PTEROIS VOLITANS AND P. MILES) ON NATIVE REEF FISH POPULATIONS IN THE CARIBBEAN

Stephanie Green and Isabelle Côté

Simon Fraser University Department of Biological Sciences 8888 University Drive Burnaby, BC V5A 1S6 Canada [stephanie.green at sfu.ca](mailto:stephanie.green@sfu.ca)

ABSTRACT

Indo-Pacific lionfish (*Pterois volitans* and *P. miles*) have recently invaded and rapidly spread throughout temperate and tropical Western Atlantic habitats. Lionfish use an ambush strategy to consume whole prey fish and have few predators in their introduced range. To understand the impacts of lionfish on native fish communities in the Bahamas and to predict their impacts on the wider Caribbean, the prey and habitat preferences of lionfish on reefs along the southwest coast of New Providence, Bahamas, were studied. Prey-sized fish density, diversity and size distribution, reef complexity and topography, and lionfish density and habitat preference data were collected from 14 sites varying in habitat types, depths and lionfish densities. From January 2007 to July 2008, 500 lionfish (TL = 50 - 424 mm) were collected from these sites. Stomach content analysis revealed that lionfish prey heavily on many species and size classes of native reef fish. Comparisons of diet to prey availability suggest preferential predation on species with behavioural characteristics and morphologies that increase encounter rate and ease of capture. Furthermore, compared to total available biomass, lionfish consume a considerable amount of prey biomass from the reef. Finally, lionfish density was positively correlated with both reef complexity and relief, and prey-sized fish density. Results indicate that lionfish have the ability to significantly impact native reef fish communities. These findings can be used in conjunction with fish community and habitat profiles from elsewhere in the Caribbean to predict the impact of lionfish as they continue to spread throughout the region.

KEYWORDS: invasive species, lionfish, predation, prey selection, habitat selection

BIOLOGY AND ECOLOGY OF THE INVASIVE LIONFISH, PTEROIS MILES AND PTEROIS VOLITANS

James Morris

NOAA 101 Pivers Island Rd Beaufort, NC 28516 USA [james.morris at noaa.gov](mailto:james.morris@noaa.gov)

ABSTRACT

The Indo-Pacific lionfishes, *Pterois volitans* and *Pterois miles*, are now established along the U.S. south east coast, Bermuda, Bahamas, and are presently becoming established in the Caribbean. While the lionfishes are popular in the aquarium trade, little is known regarding the biology and ecology of these species. Given the rapid establishment of lionfish and the potential impacts lionfish may have on native reef fish communities, we set out to describe lionfish reproductive biology, feeding habits, and venomology using laboratory and field observations. Observations of lionfish reproduction indicate that lionfish are iteroparous, asynchronous, indeterminate batch spawners. Lionfish spawning periodicity measurements indicate that lionfish are spawning monthly, with spawning events occurring during most months of the calendar year throughout their invaded range.

Laboratory experiments designed to investigate predation on juvenile lionfish indicate that some native reef fishes avoid lionfish as prey, likely due to their venom defence. Lionfish stomach content analyses reveal that lionfish are preying mostly on crustaceans and small-bodied forage fishes including commercially and recreationally important snapper and grouper. These efforts are providing new insight regarding the integrated biology and ecology of the non-native lionfish and further demonstrate the need for aggressive early detection and rapid response efforts in the marine environment.

KEYWORDS: *Pterois miles*, *Pterois volitans*, lionfish

INDO - PACIFIC LIONFISH INVASION IN BAHAMAS: A CASE STUDY OF RESEARCH, OUTREACH AND MANAGEMENT PLANNING

Kathleen Sullivan Sealey¹, Nicola SMITH², Lakeisha Anderson³, and Deon Stewart⁴

¹University of Miami Department of Biology P.O. Box 249118 Coral Gables, FL 33124 USA [ksealey at miami.edu](mailto:ksealey@miami.edu) ²Department of Zoology University of British Columbia ³Department of Marine Resources Nassau, Bahamas ⁴Bahamas Environment Science and Technology Commission Nassau, Bahamas

ABSTRACT

The invasion of the Indo-Pacific lionfish to Bahamian waters raises considerable concern due to the uncertainty of its ecological impacts and its potential threats to commercial fisheries, tourism and human safety..

Lionfish have been reported throughout the archipelago and are the focus of several research and monitoring initiatives. The Bahamas has a National Invasive Species Strategic Plan, but marine invaders require unique partnerships to gather and collate information, launch educational initiatives, and develop realistic management options. The Government of The Bahamas has limited funds to address major resource management issues; hence, collaboration with non-governmental agencies, and tertiary education institutions is imperative.. The lionfish invasion has created a novel opportunity for the formation of innovative public-private partnerships to address the ecological, social and economic impacts of biological invaders.

KEYWORDS: Lionfish, Invasion, reefs

Robert Glazer

Associate Research Scientist

Florida Fish and Wildlife Conservation Commission

Fish and Wildlife Research Institute

2796 Overseas Hwy., Ste. 119

Marathon, FL 33050

305-289-2330; 305-289-2334 (fax)

[bob.glazer at myfwc.com](mailto:bob.glazer@myfwc.com)

research.myfwc.com

Tupper, Mark (WorldFish) [M.Tupper at CGIAR.ORG](mailto:M.Tupper@CGIAR.ORG)

Wed May 6 22:19:22 EDT 2009

The Akins and Morris talk sounds very interesting (as do all these presentations) but I am a bit skeptical of the statement "The protocols developed during these projects provide an example of how volunteer collection teams can be enabled to minimize impacts of lionfish through regular detection and control activities". I doubt that manual removal will achieve anything other than a highly localized effect at a few sites. If the aquarium trade cannot make a dent in lionfish numbers on their native reefs,

I'm not sure what volunteer collection teams can do in an area where lionfish seem to have no natural predators or competitors.

Dr. Mark H. Tupper
Scientist - Coral Reefs and Reef Fisheries
The WorldFish Center

Tupper, Mark (WorldFish) [M.Tupper at CGIAR.ORG](mailto:M.Tupper@CGIAR.ORG)
Wed May 6 22:20:51 EDT 2009

Dear Justin and colleagues,

Did your rapid assessment include night-time census? I lived in Palau for nearly 3 years and while I saw lionfish only occasionally during the day (usually in caves or overhangs), I would typically see at least one and often two or three during night dives.

Cheers,

Mark Tupper

Tupper, Mark (WorldFish) [M.Tupper at CGIAR.ORG](mailto:M.Tupper@CGIAR.ORG)
Wed May 6 22:31:34 EDT 2009

Andrew,

I think that is quite possibly the case. Lionfish appear to be habitat generalists - they are just as likely to appear around artificial structures (wrecks, piers, rigs, etc.) as on reefs - anything that provides shade and a surface against which to trap their prey.

Mark

Nishan Perera [boraluwa at gmail.com](mailto:boraluwa@gmail.com)
Thu May 7 01:31:20 EDT 2009

With regard to lionfish ecology, in Sri Lanka they are more common on rocky reefs rather than coral rich areas. And despite heavy collection for the aquarium trade they (in particular *P. volitans*) are present in large numbers so I doubt they can be physically eradicated from the Caribbean. Juveniles are often found in estuaries so this may have something to do with their distribution. Overall I see more lionfish here than anywhere else I have been to in the Indo-Pacific. Sometimes in groups of 5-10 together as compared to the occasional individuals elsewhere. And their distribution seems correlated with sediment and freshwater input (just observation and not based on stats). We see more lionfish on silty rocky reefs than on coral reefs or offshore reefs with good visibility. Also more lionfish on the west coast of SL where there are more rivers than on the east coast where there is less freshwater input.

Cheers,

Nishan

Les Kaufman [lesk at bu.edu](mailto:lesk@bu.edu)

Wed May 6 12:31:28 EDT 2009

Sorry if I missed part of this thread, but everybody does know about Hixon et al's continuing work on expat lionfish biology?

Les

Les Kaufman
Professor of Biology
Associate Director
Boston University Marine Program
and
Senior PI
Marine Management Area Science
Conservation International

Sarah Frias-Torres [sfrias_torres at hotmail.com](mailto:sfrias_torres@hotmail.com)

Tue May 5 07:41:03 EDT 2009

John,

I think we all agree that we must take advantage of the many ways we can communicate today, so we can work together on the lionfish invasion in the Caribbean. I was not around (at least not yet as a scientist) for the *Diadema* mass mortality, but coming from a country who is very ineffective at almost everything, I can see how poor communication can ruin the best of intentions.

As for the removal of invasive lionfish, I do disagree with you. We might not get rid of them completely, but major containment/ control by physical removal could be one of the objectives from a coordinated effort.

Coming from the Mediterranean Sea, and based on our most recent invasive experience, the lionfish invasion in the Caribbean still has a silver lining. In the Mediterranean, the invasive tropical algae *Caulerpa taxifolia*, has taken over most of our seagrass beds of the endemic *Posidonia oceanica*. Nothing is quite effective removing this pest. Even when you try to remove the caulerpas, if a small fragment of the algae is left in the substrate, it will grow again. When uprooted, propagules will spread away to colonize other parts, or cling to your dive suit, to your hair, or to the hull of your boat, so you become another agent for spreading them. This is the stuff from a Hollywood alien movie!!!

However, the invasive lionfish comes in discrete, single units. Albeit, thousands of them, but still in "ones". So, with adequate coordination, both removal (aiming for contention and control) and study (aiming at how the Caribbean will survive with a controlled lionfish population) of these aliens can be completed. And in the process, we can get some fish sticks! If we do nothing, I don't think there is much of a future for the Caribbean fauna as we know it.

Sarah Frias-Torres, Ph.D. Marine Conservation Biologist Ocean Research & Conservation Association
1420 Seaway Drive, 2nd Floor

Fort Pierce, Florida 34949 USA
www.teamorca.org

Murdoch, Thad [tjmurdoch at gov.bm](mailto:tjmurdoch@gov.bm)
Thu May 7 12:49:57 EDT 2009

Please follow the link below for news on how Bermuda is tacking the
invasive lionfish problem locally.

<http://www.royalgazette.com/siftology.royalgazette/Article/article.jsp?sectionId=60&articleId=7d85e3330030009>

Best Regards - Thad

Dr. Thad Murdoch
BREAM: Bermuda Reef Ecosystem Assessment and Mapping Programme
Bermuda Zoological Society. PO Box 145, Flatts, BERMUDA
www.bermudabream.org
www.bamz.org

Eva Salas [salas.e at gmail.com](mailto:salas.e@gmail.com)
Fri May 15 12:43:01 EDT 2009

Lionfish has been spotted in Costa Rica, Cahuita and off Punta Uva, by
marine biologists Ulises Arrieta and Carlos Jiménez, between april and may
2009. We are investigating how many sightings by fishermen and divers have
been done and where, so we can estimate an approximate arrival time. Helena
Molina and Carlos are coordinating with the government to start management
actions.

Eva Salas

Rob Hilliard, imco [rhilliard at imco.com.au](mailto:rhilliard@imco.com.au)
Fri May 29 17:41:33 EDT 2009

Dear Listers

I was hoping Melissa Keyes' May 7 question (on why/how lionfish now seem to
be spreading so fast and wide) would invoke some responses -
apologies if I've missed them!

Is it right to assume this apparent rapid spread - and sometimes across
large distances (e.g. outward to Bermuda / southwestward to central
America and still going south) is not an artifact? Or is it because
more divers in more areas are now specifically searching for it - but it is
such an obvious species to spot....

After its Florida discovery in the early nineties, is it correct to say
that it showed a 'conventional' northward spread (Gulf stream assisted)
- with its larvae occasionally showing up in New York by the early or
mid naughties?) So if the apparent southward explosive spread in the last
2-3 years is real, does it have the larval characters / juvenile behaviors to
achieve it solely by self-spread - and do the regional water current
pathways match the chronologies of its reported sightings across the
Caribbean?

Or are there some human or seaweed rafting vectors lending a helping hand to the larvae or young?

Has anyone looked at the DNA - are they all closely related to the 'founder' population off Florida? Or does the evidence imply multiple releases by Caribbean aquarists who can't be bothered to kill or return their pets to the shop?

I see there's a 2002 article (Whitfield) noting its potential to be spread by the ballast water of trading ships - does the current evidence knowledge base support this?

It strikes me that understanding how it's been spreading so widely - and apparently so quickly - may help identify ways to slow it down or at least prevent large jumps - before it ends up along the whole western Atlantic seaboard - from north of the Carolinas to Cabo Frio / Rio - plus a large chunk of the west African coast plus the Atlantic islands in between...

Cheers

Rob Hilliard PhD
InterMarine Consulting Pty Ltd
19 Burton Road, Darlington
Western Australia 6070
Mob: +61 427 855 485
Office: +61 8 6394 0606
Fax: +61 8 9255 4668
[*rhilliard at imco.com.au](mailto:rhilliard@imco.com.au) <mailto:[rhilliard at imco.com.au](mailto:rhilliard@imco.com.au)>*

Melissa Keyes [mekvinga at yahoo.com](mailto:mekvinga@yahoo.com)
Thu May 7 15:23:01 EDT 2009

Hello, Listers,

Is there any theory as to how these fish are spreading? From what I've gathered, they're first seen as large juveniles or adults. I've never seen a photo of a tiny one, do they resemble adults soon after being born/hatched? Are the young much stronger swimmers to go so many miles? To have gone across the Atlantic to Bermuda is amazing, but to have reached Belize, well, where do the currents go, anyway?

I think it's very very strange that Lionfish are just recently being seen in the Florida Keys. They've made it many hundreds of miles to the east and south of Miami, their origin.

Lionfish have recently arrived in the Virgin Islands, as adults.

We certainly cannot depend on large Groupers to eat many of them.

Regards,

Melissa E. Keyes
Saint Croix, USVI

Brad Baldwin [bbaldwin at stlawu.edu](mailto:bbaldwin@stlawu.edu)
Sat May 31 18:55:40 EDT 2008

Hi Folks,
Sorry if this has already been discussed but just came back from a field class trip on San Salvador in the Bahamas and found plenty of lionfish there. Although its an amazing fish, it would sure be nice to eradicate it. I work on invasive freshwater inverts and fish and so realize this will be very unlikely. However, I would love to hear what you folks think about efforts to control it, its documented ecological impacts, and safety issues related to working in its new turf. I'll search websites for this as well but always find your feedback helpful. Thanks, Brad

Date: Thu, 14 May 2009 14:22:22 -0700 (PDT)
From: Valeria Pizarro <[valepizarro at yahoo.com](mailto:valepizarro@yahoo.com)>
Subject: [Coral-List] first report of a lion fish in continental Colombia - Granate
To: [coral-list at coral.aoml.noaa.gov](mailto:coral-list@coral.aoml.noaa.gov)
Message-ID: <[636530.89102.qm at web45109.mail.spl.yahoo.com](mailto:636530.89102.qm@web45109.mail.spl.yahoo.com)>
Content-Type: text/plain; charset=iso-8859-1

Dear coral listers,
Yesterday (May 13th) the first lion fish was spotted in the continental reefs of Colombia in the bay of Granate (near Santa Marta city). The observation was made by the marine biologist Juliana Gonzalez and the instructor Santiago Estrada.
Don't know if the discussion on how to deal with this invasion problem resulted in any specific actions but we have to start doing something if we don't want to see our reefs more deteriorated.

Kind regards,
Valeria Pizarro
Valeria Pizarro, PhDDocente TitularPrograma Biolog?a MarinaUniversidad Jorge Tadeo Lozano,?Sede Santa MartaCra. 2 No. 11-68, Edificio Mundo MarinoRodadero, Santa Marta, MagdalenaPBX: + 57 5
[4229334valeria.pizarro at utadeo.edu.co](mailto:4229334valeria.pizarro@utadeo.edu.co)

March 2009

Kirah Forman [kirahforman at yahoo.com](mailto:kirahforman@yahoo.com)
Fri Mar 13 18:01:07 EDT 2009

The first lionfish was caught in Belize on March 12, 2009. It was caught by a dive master from San Pedro who spotted it during there dive tour in Turneffe Atoll. He caught the fish and brought it in. This now confirms the sightings previously reported.

Kirah Forman
Marine Biologist
Hol Chan Marine Reserve
P.O. Box 60
San Pedro, Ambergris Caye

Phone: (501)226-2247

FEB 2009

Michael Lombardi [explore at oceanopportunity.com](http://www.oceanopportunity.com)

Fri Feb 6 14:17:54 EST 2009

Hi folks,

Your responses have been overwhelming, and consistent! Thank you for the links and resources. They have been forwarded to the team of physicians managing this patient. Naturally, with HIPAA and whatnot, I probably won't learn much from what transpires. However, I do now that the info is appreciated. This is naturally a rare occurrence here in Northeast hospitals (the injury occurred in warm waters.no need to panic about the northward lionfish migration!).

Cheers,

Mike

Michael Lombardi

<<http://www.oceanopportunity.com/>> Oceans of Opportunity
The Explorer's Club, MN'07

Eran Brokovich [eran.brokovich at mail.huji.ac.il](mailto:eran.brokovich@mail.huji.ac.il)

Fri Feb 6 13:16:06 EST 2009

For first aid, immerse in hot water, as hot as the help giver can stand. Immerse for about 30 min. make sure this doesn't waste evacuation time. The poison is a protein degrading in the heat. In the hospital they usually treat for pain and monitor systemic and allergic reactions. Medical analgesia, removal of residual spine(s) and consideration of prophylactic antibiotics and tetanus immunisation are the mainstays of treatment. Non fatal usually but in extreme cases could lead to allergic reactions, vomiting, nausea and cardio-vascular collapse. The hot water immersion soon after envenomation will help tremendously in controlling the amount of poison going into the body. It will reduce pain and venom quantities resulting in a less severe injury

Eran Brokovich

Marine Twilight-zone Research & Exploration
The Interuniversity Institute for Marine Sciences at Eilat (IUI).
H. Steinitz Marine Biology Laboratory.

Tel: +972-8-6360-157
P.O. Box 469
Eilat 88103
Israel

Lad Akins [Lad at reef.org](http://ladatreef.org)

Tue Feb 10 15:44:04 EST 2009

HI All,

Following is the link to a recent paper on invasive lionfish providing a summary of lionfish biology and ecology gleaned from the literature and recent observations.

http://www.ccfhr.noaa.gov/documents/morrisetal_2009.pdf

As lionfish are rapidly spreading into the Caribbean (and soon to be Gulf of Mexico), we hope this information will provide local managers with accurate information, which they can use to educate the public and increase awareness and management actions. We are continuing to track to the spread of lionfish, so please remember to report any sightings/collections to the USGS/NOAA/REEF international sightings database

<<http://nas.er.usgs.gov/queries/FactSheet.asp?speciesID=963>>

<http://nas.er.usgs.gov/queries/FactSheet.asp?speciesID=963>.

If you want to stay informed about sightings in new locations, please sign up to receive lionfish alerts at

<<http://nas.er.usgs.gov/AlertSystem/default.asp>>

<http://nas.er.usgs.gov/AlertSystem/default.asp> .

Some locations are now working to develop local lionfish response plans. To assist with this, the Reef Environmental Education Foundation (REEF) is partnering with NOAA, USGS, and Simon Fraser University to hold lionfish workshops focused on educating local managers, dive operators and fishermen with early detection and rapid response strategies, handling techniques, and local market development initiatives. A media summary of the last workshop in the Turks and Caicos can be found seen at:

<<http://wiv4.wordpress.com/2009/01/30/the-decer-holds-conference-on-controlling-lion-fish-migration/>>

<http://wiv4.wordpress.com/2009/01/30/the-decer-holds-conference-on-controlling-lion-fish-migration/>

The abstract for the review paper is below.

Best Fishes,
Lad

Lad Akins
Director of Special Projects
REEF
98300 Overseas Hwy
Key Largo FL 33037
(305) 852-0030
(305) 942-7333 cell
www.REEF.org

Biology and Ecology of the Invasive Lionfishes, *Pterois miles* and *Pterois volitans*. JAMES A. MORRIS, JR., J.L. AKINS, A. BARSE, D. CERINO, D.W. FRESHWATER, S.J. GREEN, R.C. MUÑOZ, C. PARIS, and P.E. WHITFIELD
ABSTRACT

The Indo-Pacific lionfishes, *Pterois miles* and *P. volitans*, are now

established along the U.S. southeast coast, Bermuda, Bahamas, and are becoming established in the Caribbean. While these lionfish are popular in the aquarium trade, their biology and ecology are poorly understood in their native range. Given the rapid establishment and potential adverse impacts of these invaders, comprehensive studies of their biology and ecology are warranted. Here we provide a synopsis of lionfish biology and ecology including invasion chronology, taxonomy, local abundance, reproduction, early life history and dispersal, venomology, feeding ecology, parasitology, potential impacts, and control and management. This information was collected through review of the primary literature and published reports and by summarizing current observations. Suggestions for future research on invasive lionfish in their invaded regions are provided.

KEY WORDS: Lionfish, invasive species, Pterois

Carrie Manfrino [manfrino at reefresearch.org](http://manfrino.at.reefresearch.org)

Sun Feb 1 19:13:27 EST 2009

Unfortunately, we have 2 lionfish in a tank at the Little Cayman Research Centre. Divers caught them last week. It has been an entire year since the first sighting on Little Cayman. Several (6) more fish are being reported on the reef in Little Cayman. Fish are being sighted in Bloody Bay Marine Park which is located on the north side of the island and on the south side of the island as well.

The local Department of Environment is monitoring the situation. CCMI completed a rapid assessment in August 2008 and found no lionfish. We have a rapid assessment planned for August 2009. Please visit our website if anyone is interested in participating.

Carrie Manfrino
Central Caribbean Marine Institute
PO Box 1461
Princeton, NJ 08540
<http://reefresearch.org>

Michael Lombardi [explore at oceanopportunity.com](http://explore.oceanopportunity.com)

Fri Feb 6 08:42:26 EST 2009

Hello folks,

I'm posting on behalf of a friend/colleague who is a physician doing a toxicology rotation. Yesterday a patient visited the ER with an extremely swollen hand, saying that he had contact with a lionfish while diving about ten days ago. No problems occurred since then. Has anyone had experience with lionfish toxins? First response? Known household treatments? Any specific medicines that work better than others?

Thanks for any guidance

ML

Michael Lombardi

<<http://www.oceanopportunity.com/>> Oceans of Opportunity
The Explorer's Club, MN'07

January 2009

Steve LeGore slegore at mindspring.com

Sat Jan 31 12:49:56 EST 2009

A friend, a marine ornamental fish collector, tells me he captured a lionfish in Bahia Montalvo adjacent to one of the mid-bay mangrove islands on Saturday, January 17th. The water was about 6 ft deep and the 5.5 inch-long fish was found in a grass bed with mud bottom.

The catch has been reported to local NOAA folks, who visited and photographed the fish, and who were scheduled to visit the site for taking GPS coordinates, so I assume a more formal report will be forthcoming.

Steve

Steve LeGore, Ph.D.
LeGore Environmental Associates, Inc.
2804 Gulf Drive N.
Holmes Beach, Florida 34217 USA
Executive Director,
Association of Marine Laboratories of the Caribbean
Tel: 941/778-4650
Fax: 941/778-4761
Cell: 941/447-8010
GMT + 4 hrs
<http://www.devex.com/SteveLeGore>

Hernandez Edwin coral_giac at yahoo.com

Sat Jan 31 14:24:22 EST 2009

Hola, Steve et al.

According to local fishermen in Culebra Island, 27 km east of Puerto Rico, when some of them were confronted with lionfish pictures they claimed having seen the fish for the past 10-15 years or so around Los Corchos and La Puso reefs, east of Culebra, particularly in deeper waters, 80-140 feet. They described their shape, color, size, behavior, and preferred reef habitat perfectly matching the known characteristics of the species. These are the northeasternmost coral reefs of PR state waters, and are located several km west-northwest of Red Hind Bank, St. Thomas, USVI. I have not personally seen any of them yet.

Regards.

Edwin

Edwin A. Hernández-Delgado, Ph.D.
Affiliate Researcher

University of Puerto Rico
Department of Biology
Center for Applied Tropical Ecology and Conservation
Coral Reef Research Group
P.O. Box 23360
San Juan, Puerto Rico 00931-3360

Tel (787) 764-0000, x-2009
Fax (787) 764-2610

e-mail: [coral_giac at yahoo.com](mailto:coral_giac@yahoo.com)

Eesat Atikkan [atikkanuwn at yahoo.com](mailto:atikkanuwn@yahoo.com)

Thu Jan 8 15:57:28 EST 2009

Recently one of my students (Luis Lora) went diving in Colombia (First two weeks, Dec 08). He emailed me a picture of a lionfish - He contends that the observation was at the following location, as per his email:

"I don't know if you got this: location of the area where the lionfish was observed. Providencia and Santa Catalina islands are located between the coordinates 13° 17' y 13° 32' N y 81° 17' y 81° 26' W, approximately 600 Km.. From Cartagena de Indias, a major Colombian tourist city, 200 Km. away of Central America, only 20 minutes flight from San Andrés island in the Colombian Caribbean.

Alojamiento Old Providence y Santa Catalina"

That observation would put the range of the 'lionfish' further south than the 6 Jan 09 update of the USGS Lionfish Sightings map:

<http://nas.er.usgs.gov/queries/FactSheet.asp?speciesID=963>

E. Esat Atikkan

Jay Robs [jayrobson at gmail.com](mailto:jayrobson@gmail.com)

Sat Jan 10 12:21:20 EST 2009

I have heard many reports of Lionfish in the Florida Keys, even one urban legend of someone catching them with live shrimp.

-JayR

December 2008

Katherine Cure [katherine.cure at gmail.com](mailto:katherine.cure@gmail.com)

Thu Dec 18 21:47:50 EST 2008

Hello to all,

I just got the first report for lionfishes at Turneffe Atoll, Belize. I haven't personally seen them, but got the report from dive master at The Agressor, a local liveboard. Pictures, gotten by a local diver on the eastern side of Turneffe are available for species ID. Can those colleagues involved in dealing with this invasive species contact me with further information?

Cheers,

--

Katherine Cure, M.Sc.
Field Coordinator/Coral Reef Researcher
Oceanic Society
Blackbird Caye, Belize
T: (501) 220-4256

Mark A. Albins [albinsm at science.oregonstate.edu](mailto:albinsm@science.oregonstate.edu)

Sat Dec 20 01:49:07 EST 2008

Hi Katherine,

Our lab has been conducting a broad range of lionfish research over the last two years, focusing primarily on their interactions with native Bahamian reef fish. I've attached a pdf of our recent MEPS publication, in which we document that single lionfish transplanted onto small patch reefs reduce recruitment of native fishes by nearly 80%! Unfortunately, lionfish are currently spreading rapidly westward and southward, and it is likely only a matter of time before this ravenous, invasive predator is literally all over the Caribbean. This does not bode well for native reef communities.

I'd be more than happy to take a look at your photos and help to confirm the species ID. I also strongly suggest that you report your lionfish sighting to the USGS aquatic invasive species database.

Report sightings here: <http://nas.er.usgs.gov/SightingReport.asp>

They seem to have the most comprehensive online compilation of lionfish sightings, as well as a recently updated fact sheet:

<http://nas.er.usgs.gov/queries/FactSheet.asp?speciesID=963>

You can see from their maps (see links in fact sheet) that your sighting, if confirmed, will be the first from Central America.

Please let me know if you have any questions about our research, or about lionfish in general. I'd be happy to try to answer them, or refer you to someone who can.

Aloha,

Mark

Lad Akins [Lad at reef.org](http://ladatreef.org)

Sat Dec 20 10:07:40 EST 2008

HI Katherine, Mark and all,

Thanks Mark, for chiming in with info and forwarding the USGS NAS site. A number of us have been collaborating on research, education/outreach, early detection/reporting/rapid response and control and have many lessons learned from the past few years of intense work in the Bahamas, Bermuda, the US East Coast and the Caribbean. I thought I'd respond to Katherine's info request and pass along more info to those interested in the lionfish (and other non-natives) issue.

First, the report...we are aware of this one and vetting final details before putting the word out. The report came in to us on December 11th (the day the fish was sighted) from one of Peter Hughes' dive vessels. An instructor (who has significant experience diving in New Guinea and knows her fish!) found the lionfish about mid-day on the 11th at a site referred to as Doc's Place on the east side of Turneffe. The fish is approx. 8-10cm and was observed in the open at a depth of 85'. We do have photo confirmation of the fish (I've seen the images and confirmed the sighting) and are working on final details before putting the fish into the USGS NAS sightings database.

For those of you interested in staying current on lionfish distribution and new reports, please consider signing up for the USGS early warning notification system. All data that we receive is forwarded into this master database and any new records of lionfish or other non-native species are broadcast to those signed up for the early warning system. You can access the site at <http://nas.er.usgs.gov> <<http://nas.er.usgs.gov/>> and follow the links to the taxa of your choice.

For each of the records listed in the lionfish distribution map, additional info is accessed by clicking on the map dot. Records in this system are well vetted and QA generally requires an image or very strong evidence of occurrence before inclusion, hence the delay in getting the Belize fish into the system.

Another site of interest may be the lionfish progression map showing the spread of this invasion by year.

http://fl.biology.usgs.gov/lionfish_progression/lionfish_progression.html

This map is updated regularly though not daily.

I encourage the reporting of all sightings of lionfish or any other non-native species via either the REEF Exotic Species Reporting page

<http://www.reef.org/programs/exotic/report>

or the USGS NAS System <http://nas.er.usgs.gov/SightingReport.asp>

If anyone is interested we also have a lionfish project already planned for Belize in June (13th-20th) aboard Peter Hughes' Sundancer liveaboard. This was originally planned to be an education/awareness project, but it looks like we may be doing more now with this early arrival.

Best Fishes,

Lad

