

The Red Lionfish Invasion of South Caicos, Turks & Caicos Islands

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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-five individuals were observed. Although effort was made to capture all specimens seen (with 23 individuals captured), sightings represent opportunistic observations made during other activities. All except two were recorded in waters shallower than 2.5m, and specimens have been found in patch reef (n = 15), 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 two individuals were < 15 cm 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.

KEY WORDS: Red lionfish, invasión, Turks & Caicos Islands

La Invasión de South Caicos, Turks & Caicos Islands, por los Peces León Rojo

La primera observación de pez león rojo (*Pterois volitans/miles*) en las aguas alrededor de South Caicos, Turks & Caicos Islands fue hecha en Diciembre de 2007. Desde esa fecha hasta fines de Julio de 2008, avistamientos de peces león han sido registrados por estudiantes y miembros de The School for Field Studies Center for Marine Resource Studies en South Caicos. Veinticinco individuos han sido observados. Aunque se realizaron esfuerzos para capturar todos los especímenes observados (con 23 individuos capturados), los avistamientos representan observaciones oportunistas hechas durante otras actividades. Todos, excepto dos, fueron registrados en aguas de profundidad menor a 2.5 m y especímenes han sido encontrados en manchas de arrecife (n = 15), hierba marina (n = 6), manglares (n = 2) y arrecife profundo (25 m; n = 1). Todos los individuos capturados iban de una gama de 4.1 a 2.27 cm TL, excepto 2 que eran de <15cm TL. Este estudio documenta la invasión de South Caicos por los peces león rojo y, aunque los efectos de esta invasión son desconocidos, el crecimiento exponencial de avistamientos mensuales es preocupante. Futuros monitoreos incluirán búsquedas específicamente orientadas al pez león rojo.

PALABRAS CLAVES: Pez león rojo, invasión, Turks & Caicos Islands

Invasion de South Caicos, Îles Turks & Caicos, par le Poisson Scorpion

La première observation d'un poisson scorpion (*Pterois volitans/miles*) dans les eaux autour de South Caicos a été faite en décembre 2007. Depuis lors et jusqu'à la fin juillet 2008, le staff et les étudiants de The School For Field Studies Center for Marine Resource Studies localisée à South Caicos ont pris note de toutes les observations de poissons scorpions. Vingt-cinq individus ont été observés. Tandis qu'un effort a été fourni pour capturer tous les individus observés (avec 23 capturés), toutes les observations représentent des observations opportunistes, réalisées pendant d'autres activités. Toutes, sauf deux, ont été enregistrées dans des eaux peu profondes de moins de 2.5m et les spécimens ont été trouvés dans des récifs en patch (n = 15), herbiers (n = 6), mangroves (n = 2), et récifs profonds (25 m ; n = 1). Bien que les individus capturés aient une taille de 4.1 à 27.7 cm TL, tous les individus étaient < 15 cm TL sauf deux. Cette étude documente l'invasion de South Caicos par le poisson scorpion et, bien que les effets de cette invasion ne soient pas connus, l'augmentation exponentielle des observations est inquiétante. Futures monitorings incluront des recherches spécifiques pour les poissons scorpions.

MOTS CLES: Poisson scorpion, invasion, Îles Turks & Caicos

INTRODUCTION

The red lionfish, *Pterois volitans/miles*, invasion of the western Atlantic is well documented (Whitfield *et al.* 2007). However, very little information has been collected in the Turks & Caicos Islands (TCI). Whilst the first sightings in the TCI were made off West Caicos and Providenciales in 2005, in South Caicos no individuals had been documented until December 2007 (Figure 1). This study documents the invasion of red lionfish in the waters around South Caicos following the initial sighting.

MATERIALS & METHODS

Lionfish sightings around South Caicos were recorded by staff and students from The School for Field Studies, Center for Marine Resource Studies (SFS-CMRS). These sightings represent opportunistic observations made during snorkeling and SCUBA diving activities. Depth and habitat were recorded, and specimens were captured to prevent multiple sightings of the same individual. Total lengths were measured and maturity assessed through gonad analysis.

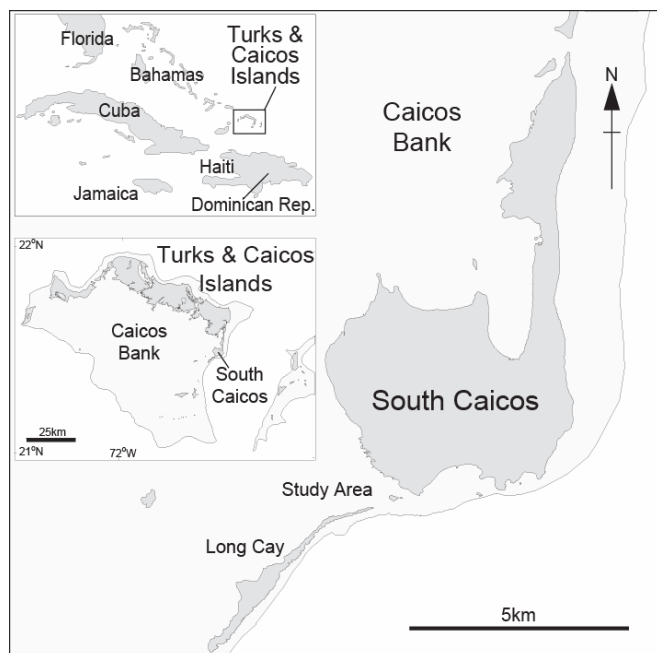


Figure 1. Location of South Caicos within the Turks & Caicos Islands.

RESULTS

A total of 25 lionfish were observed, of which 23 were captured and measured. The number of sightings per month increased exponentially during the study period (Figure 2). Most lionfish ($n = 24$) were recorded at less than 2.5m depth. The majority were found in reef habitats (15 on patch reefs, 1 on fringing reef, and 1 on the edge of the drop-off at 25 m). Six individuals were seen in seagrass habitats of which five were sheltering in blow-out ledges (Figure 3). A further two lionfish were found in mangroves (Figure 2). Specimens ranged in size from 4.7 to 27.7 cm TL, with 21 individuals < 15 cm TL (Figure 3). The largest specimen caught was the only sexually mature individual recorded.

DISCUSSION

The lack of sightings prior to December 2007, the exponential increase in sightings over time, and the predominance of immature and small individuals suggest that the lionfish invasion of South Caicos is in its initial stages. Although the effects of the invasion are unknown, some results are of concern. Lionfish were observed in blow-out ledges in seagrass habitats (5 during the study and 11 thereafter). These structures serve as important microhabitat for juvenile Nassau groupers (*Epinephelus striatus*) around South Caicos (Claydon & Kroetz 2007; see Figure 3D). A continued exponential increase of lionfish may lead to inter-specific competition for space in blow-outs. This could impact populations of the regionally endangered Nassau grouper. Although the majority of lionfish were found on reefs and at shallow depths, this may partly reflect disparity in sampling effort. Future

research will include a more systematic and representative monitoring protocol. In addition, potential threats of the lionfish invasion will be investigated with the aim of identifying appropriate strategies of management and mitigation.

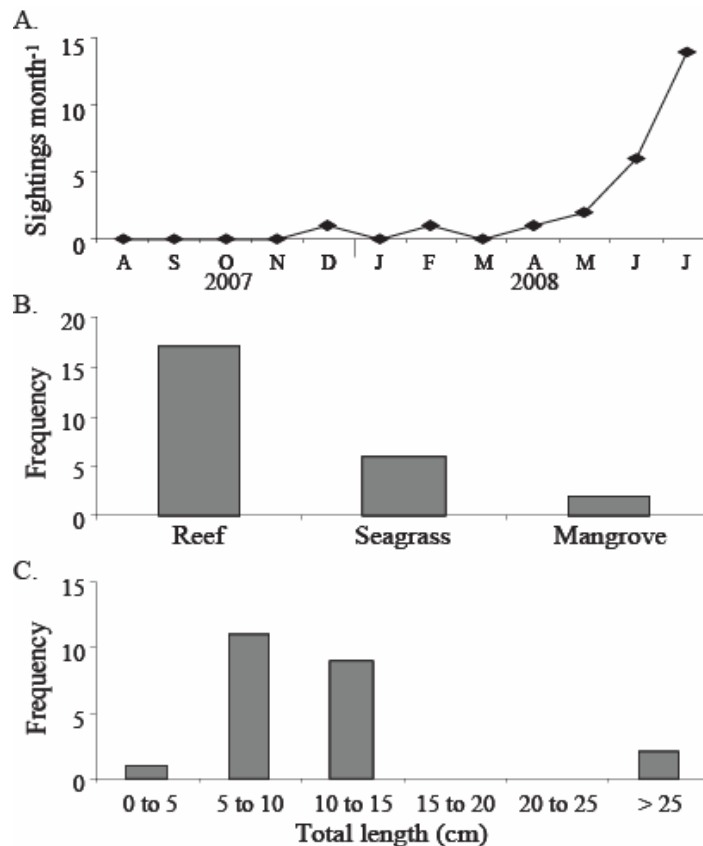


Figure 2. **A.** Lionfish sightings per month from August 2007 to July 2008. **B.** Frequency of lionfish observed in reef, seagrass and mangrove habitats ($n = 25$). **C.** Size frequency distribution of lionfish caught around South Caicos ($n = 23$).

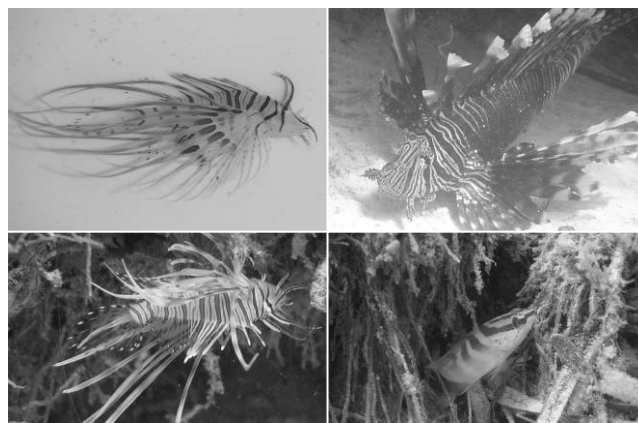


Figure 3. **A.** The smallest (4.7cm TL) and **B.** the largest (27.7cm TL) lionfish captured. **C.** Lionfish in blowout ledge in seagrass habitat. **D.** Juvenile Nassau grouper in blowout ledge.

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