

Record densities of Indo-Pacific lionfish on Bahamian coral reefs

Received: 6 October 2008 / Accepted: 28 October 2008 / Published online: 25 November 2008
© Springer-Verlag 2008



Fig. 1 a, b. High densities of *P. volitans* on coral reefs off of New Providence, Bahamas. Photo credit: Richard Carey: richcarey_zim@hotmail.com

First documented off Florida more than a decade ago, populations of Indo-Pacific lionfish (*Pterois volitans* and *P. miles*) have rapidly spread throughout the Bahamas and northern Caribbean (Whitfield et al. 2007; Hamner et al. 2007; USGS Nonindigenous Aquatic Species Database 2007). Here, we report lionfish densities from reefs off the southwest coast of New Providence, Bahamas (25°04.6′N, 77°20.6′W) which far exceed the highest densities documented for this species in both its invaded and native ranges. Densities of *P. volitans* were measured on 10 × 50 m transects from May to July 2008, at depths of 12 to 20 m. At three sites, each separated by more than 1 km, we found >390 lionfish per hectare (mean ± 1 SD; 393.3 ± 144.4 lionfish ha⁻¹, *n* = 4 transects per site). These densities are more than 18 times higher than those reported by Whitfield et al. (2007) from invaded habitats off the coast of North Carolina, USA (21.2 ± 5.1 ha⁻¹). Fishelson (1997) provides the only rough estimate of lionfish density of which we are aware for the native range: ~80 adult lionfish in a 1-km stretch of Red Sea reef. Assuming a mean search width of 10 m, this would yield a density of ~80 lionfish ha⁻¹, which is five times lower than that in New Providence. Caribbean sightings have now been confirmed as far west as Cuba and the Cayman Islands and southeast to St. Croix (Lad Akins, REEF, pers. comm.). The impacts of this invasion are generating great concern, as individual lionfish have been shown to reduce recruitment of Bahamian native fish by 79% on small experimental reefs (Albins and Hixon 2008). Given the high densities noted here (Fig. 1), the impacts of lionfish on natural reefs are expected to be extreme.

References

- Albins MA, Hixon MA (2008) Invasive Indo-Pacific lionfish *Pterois volitans* reduce recruitment of Atlantic coral-reef fishes. *Mar Ecol Prog Ser* 367:233–238
- Fishelson L (1997) Experiments and observations on food consumption, growth and starvation in *Dendrochirus brachypterus* and *Pterois volitans* (Pteroinae, Scorpaenidae). *Environ Biol Fish* 50:391–403
- Hamner RM, Freshwater DW, Whitfield PE (2007) Mitochondrial cytochrome *b* analysis reveals two invasive lionfish species with strong founder effects in the western Atlantic. *J Fish Biol* 71:214–222
- USGS Nonindigenous Aquatic Species Database (2007) http://fi.biology.usgs.gov/lionfish_progression/lionfish_progression.html
- Whitfield PE, Hare JA, David AW, Harter SL, Munoz RC, Addison CM (2007) Abundance estimates of the Indo-Pacific lionfish *Pterois volitans/miles* complex in the Western North Atlantic. *Biol Invasions* 9:53–64

S. J. Green (✉) · I. M. Côté
Department of Biological Sciences, Simon Fraser University, Burnaby, BC, Canada V5A 1S6
e-mail: stephanie.green@sfu.ca

Reef sites

Coral Reefs (2009) 28:107
DOI 10.1007/s00338-008-0446-8