Lionfish found to use flared fin display to instigate cooperative hunting

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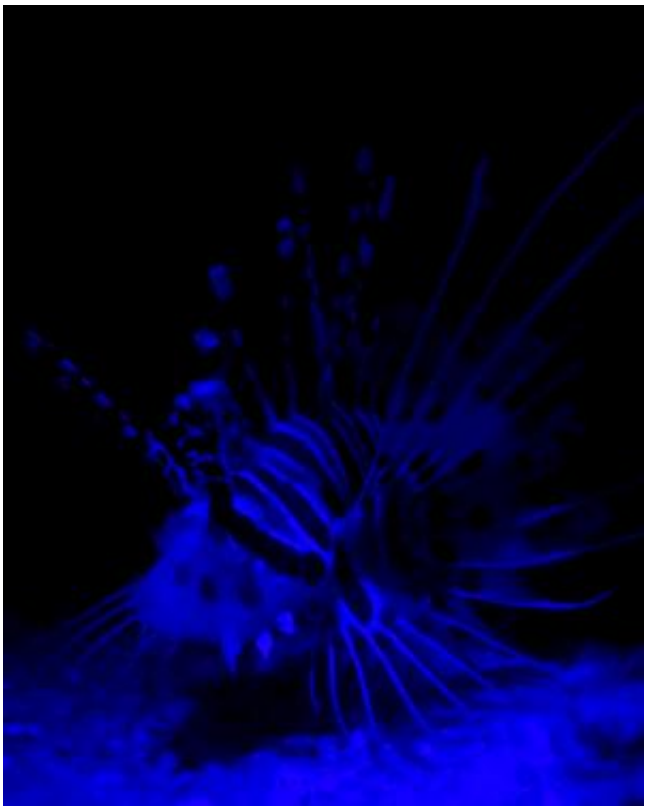
(Phys.org) —A trio of researchers working in Australia has found that lionfish use their fins to communicate with other lionfish as a means to instigate cooperative hunting. In their paper published in the journal *Biology Letters*, Oona Lönnstedt, Maud Ferrari and Douglas Chivers describe observations they made undersea around the Great Barrier Reef and in their lab.

Lionfish are a group of related species that all have impressive fins, both on top and on their sides. The team in Australia has found that they use the fins in ways other than to swim—they use them to communicate with others of their own kind to instigate hunting together.

Observations in their natural environment revealed that individual lionfish, when spotting prey, (generally a school of smaller fish) would engage in a unique behavior. First one would swim near to another lionfish—positioning itself slightly downward. Then it would flare its pectoral fin, which would be followed by a quick swish of the tail. After a moment it would slowly wave one pectoral fin, then the other. The second fish would then appear to respond by waving its own pectoral fins, at which point, the two (or more) fish would attack the prey—together, herding them and taking turns darting into to grab a meal. The researchers report that after many hours of observation, the same behavior only ever occurred just prior to hunting.

Impressed by the apparent communication skills of the fish, the researchers captured several specimens (taking mind of the venomous spines on their backs) and brought them back to their lab for further investigation.

In water tanks, the lionfish exhibited the same behavior when small schools of prey fish were introduced. Remarkably, the researchers found that if only one of the fish was allowed to see the prey, causing it to start its hunting dance, the others would follow suit, completely unaware at the onset that there was food to be had. Other experiments indicated that lionfish hunting cooperatively were much more successful than those hunting alone.



Credit: © Oona M. Lönnstedt

The researchers note that the lionfish shared equally in the spoils of the hunt, which appears to be a first for cooperative hunting in an animal of any kind.

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More information: Lionfish predators use flared fin displays to initiate cooperative hunting, *Biology Letters*, rsbl.royalsocietypublishing.or … ontent/10/6/20140281

Abstract

Despite considerable study, mystery surrounds the use of signals that initiate cooperative hunting in animals. Using a labyrinth test chamber, we examined whether a lionfish, Dendrochirus zebra, would initiate cooperative hunts with piscine partners. We found that D. zebra uses a stereotyped flared fin display to alert conspecific and heterospecific lionfish species Pterois antennata to the presence of prey. Per capita success rate was significantly higher for cooperative hunters when compared with solitary ones, with hunt responders assisting hunt initiators in cornering the prey using their large extended pectoral fins. The initiators would most often take the first strike at the group of prey, but both hunters would then alternate striking at the remaining prey.

Results suggest that the cooperative communication signal may be characteristic to the lionfish family, as interspecific hunters were equally coordinated and successful as intraspecific hunters. Our findings emphasize the complexity of collaborative foraging behaviours in lionfish; the turn-taking in strikes suggests that individuals do not solely try to maximize their own hunting success: instead they equally share the resources between themselves. Communicative group hunting has enabled Pteroine fish to function as highly efficient predators.