Crab Coalitions

Male fiddler crabs will help neighboring crabs defend their territories against intruders, a new study shows. They’re not exactly good Samaritans, though; the crabs only pitch in when they’re likely to win, and they do it to keep potential bullies out of the neighborhood.

A number of birds, mammals, and fish sometimes appear to assist their neighbors in fending off challenges from would-be usurpers. What’s in it for them? In 1987 behavioral ecologist Thomas Getty suggested an explanation: Cooperative behavior could enable the helper to avoid renegotiating boundaries with a new—and likely stronger—neighbor. But this idea had never been demonstrated conclusively.

The new evidence comes from fiddler crabs. Patricia Backwell and Michael Jennions of the Australian National University in Canberra studied the crabs, *Uca mjoebergi*, on Australia’s northern coast. These crabs live in holes in the mud during high tide, coming out to feed at low tide. Males use their gigantic claws to defend their burrows against neighbors and “floater” crabs, homeless males that try to take over occupied burrows.

After noting three-way clawfights, Backwell and Jennions took a closer look. They monitored 268 fights between floaters and resident males. In 17 cases, a neighboring crab left its own hole to help the besieged resident. Help was provided only when the resident was smaller than the floater, and thus more likely to get evicted. Allies who pitched in were almost always larger than the floaters they helped attack, and thus likely to best them in a fight. The extra claw made a difference: Residents kept their burrows in 88% of fights when helped by a neighbor, but only 71% of the time when fighting alone.

The study also showed that a neighbor has a vested interest in the squabble. Backwell and Jennions mimicked usurpation by replacing 10 crabs with larger crabs. Neighbors responded by attacking the novel crabs in nine cases (but never attacked when the original crab was removed and replaced), suggesting that usurpation does in fact force neighboring crabs to expend energy and risk injury to defend their turf. The study appears in the 22 July issue of *Nature*.

The work is the most compelling support yet for defensive coalitions, says Getty, of Michigan State University in East Lansing. Behavioral ecologist Lee Dugatkin of the University of Louisville in Kentucky is impressed that the crabs are picking their fights. "It's not just that they form coalitions, but that these are very selective coalitions," he says. "These crabs are making fairly sophisticated kinds of decisions."

--JAY WITHGOTT