

Not every partnership is about sex

October 1 2015, by Rebecca Fox



Many animals form life-long partnerships, but they're not always about sex.
Credit: Brett Sayer/Flickr, CC BY-NC

Many species form long-term partnerships in life. When we see such pair bonds, our first assumption tends to be that the two individuals are a male and female, and the partnership is based on mating.

And for the most part [this is indeed the case](#). Monogamous pair bonds have typically evolved where it takes two parents working together to successfully raise offspring.

We made the same assumption about partnerships being for mating when we saw pairs of [rabbitfish](#) in apparent long-term relationships.

But a recent discovery turned this notion on its head, and gave us deeper insight into why some animals form long-term partnerships for reasons other than raising young.

How do we know it's about the sex?

It's difficult to tell the sex of a rabbitfish on first glance, so we assumed that one of the pair was male, one was female and that they were paired in order to mate together. However, no-one had documented the [actual process of reproduction in the wild](#) among the 14 pairing species of rabbitfish to know whether this assumption was true.

So we used tiny acoustic tags implanted inside one of these pairing species of rabbitfish, *Siganus doliatus*, to track their movements for six months to see if we could find out more about their reproduction.

We [discovered](#) that at the time of the new moon in October, November and December, individuals all migrated away from their home territories along the same route, returning home two to three days later.



Pairing species of rabbitfish tend to feed from cracks and crevices in the reef.

These apparent coordinated group migrations during the [mating season](#) suggest that the pairing species of rabbitfish reproduce in mass aggregations. In addition, partnerships are not always of the opposite sex, and [same-sex pairings can exist](#).

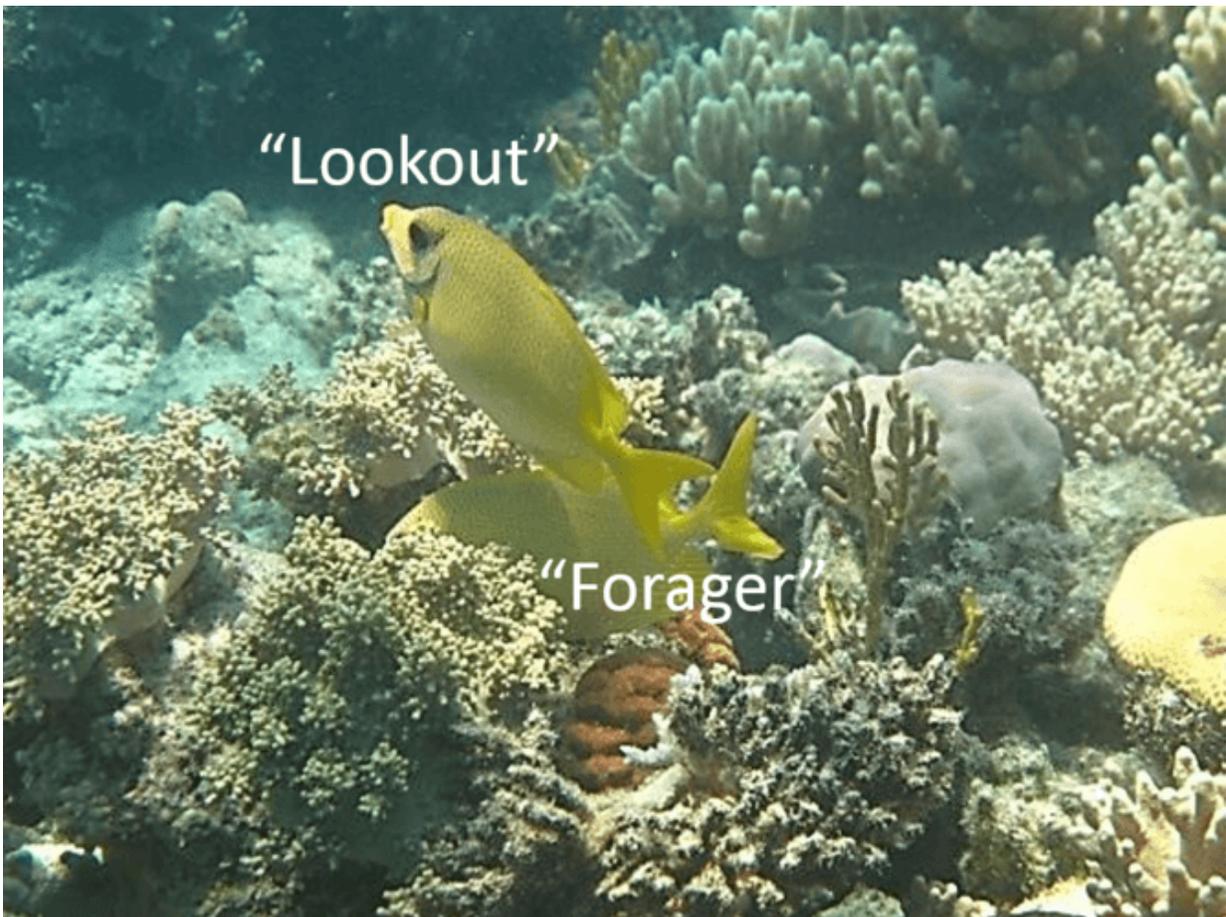
The existence of some same-sex couples within a species doesn't necessarily mean that pairing is not for mating. But, together with our latest findings, it raises the question of why rabbitfish partner up when they can get access to mates at a regular gathering.

Why pair if you're mating in a group?

Pairs can form as cooperative alliances in order to gain access to resources, like the male cheetahs that form [life-long alliances](#) in order to defend a territory. But often these alliances are ultimately based on access to reproductive resources (such as mates) and therefore come back down to sex.

In fact, when you think about it, cooperation between two unrelated individuals is not an easy thing to explain. Natural selection favours selfishness in many ways. This is because when you help someone else at a cost to yourself, you might raise their chance of having offspring (and passing on their genes to the next generation) while reducing your own reproductive chances.

Two of the main theories proposed to account for cooperative behaviour are [reciprocal altruism](#) and [mutualism](#). While mutualism ("you do your thing, I'll do mine, and we're both better off") is [well-demonstrated empirically](#), reciprocity ("you scratch my back, I'll scratch yours later") has yet to receive the [same support](#).



System of vigilance displayed by pairs of rabbitfish when feeding in visually occluded habitats on coral reefs.

Rabbitfish sentinels?

In the case of rabbitfish, one reason why they pair may lie in their feeding behaviour. Research has shown that these pairing species tend to [forage deep into cracks and crevices](#), meaning that their vision can be temporarily blocked.

This could be risky. So it might be worth their while teaming up with another fish, to have a partner where ["you watch my back, I'll watch yours"](#).

After all, just like Starsky and Hutch, or Butch Cassidy and the Sundance Kid, sometimes you do just need someone to watch your back and give you a better chance of survival.

No-one yet knows how rabbitfish pairs form, and which fish chooses which. If we can learn more about the process of pair-formation, their mating behaviour at spawning aggregations and whether there are specific fitness benefits from the vigilance behaviour when feeding, we can determine whether reciprocity rather than [mating](#) could constitute an evolutionary basis for pairing.

In the meantime, just be careful what you assume when you see a partnership in nature, because it may not necessarily be all about the sex.

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