

# Bluestreak cleaner wrasse found to recognize self in photograph after passing mirror test

February 7 2023, by Bob Yirka

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Cleaner fish (*L. dimidiatus*). Credit: Naoki Kubo

A team of biologists at Osaka City University, working with a colleague from the University of Neuchâte, reports that a type of cleaner fish can pass the mirror test and then recognize itself in a photograph. In their

paper published in *Proceedings of the National Academy of Sciences*, the group describes their work, which involved studying brain capabilities in the species of fish.

The bluestreak cleaner wrasse specializes in removing dead skin and other materials from other [fish](#) or sea creatures. Prior work has shown that the small blue-and-silver-striped fish are capable of passing the mirror test. In the test, they are exposed to a mirror for a period of time, then a mark is placed on their face, and they are able to understand that the mark on the fish in the mirror is actually on their own body. They respond by trying to scrape it off on nearby rocks. In this new effort, the researchers wondered if the fish could also retain a memory of their own face compared to others of their species. To find out, they set up and carried out a simple experiment.

The researchers placed a mirror in a tank with several of the fish for a period long enough to allow them to acclimate to seeing themselves reflected. They then removed the mirror and replaced it with a picture of the same fish with a mark on its face. The fish responded by trying to remove the mark. The researchers also placed pictures of other similar fish in the tank with the same mark on their faces. The wrasses attacked them, seeing them as rivals.

When wrasses that had not been exposed to the [mirror images](#) of themselves were shown their own photographs, the fish attacked them, a clear sign that they were not able to recognize themselves because they had not seen what they looked like in the [mirror](#).

The research team suggests their findings indicate that [self-awareness](#) and self-recognition may be more widespread in the [animal kingdom](#) than has been previously thought.



A cleaner fish (*L. dimidiatus*) with mirror self-recognition ability sees its own reflection in a mirror. Credit: Taiga Kobayashi

**More information:** Masanori Kohda et al, Cleaner fish recognize self in a mirror via self-face recognition like humans, *Proceedings of the National Academy of Sciences* (2023). [DOI: 10.1073/pnas.2208420120](https://doi.org/10.1073/pnas.2208420120)

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