

## Cleaner Wrasse Fish Study

**Two cleaner wrasse fish are better than one.**

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Cleaner wrasse cleaning eel's mouth. Photo by Saad Alafaliq '06 One of the most remarkable sights on a coral reef is when a large fish suspends its natural predatory instincts, to allow itself to be cleaned by a blue streak cleaner wrasse (*Labroides dimidiatus*). The fish being cleaned actually indicates to the wrasse which part of its body requires attention by altering its body posture. Encounters of this type take place over specific parts of the reef, known as cleaning stations.

The small blue streak cleaner wrasse seeks out external parasites attached to the skin of the host fish, as well as food particles lodged in the fish's mouth. A cleaner wrasse may occasionally be tempted to go a bit further and bite into the protective mucus secretion that covers the surface of the host fish's body. The painful impact of the wrasse's fang-like teeth is then sufficient to induce the larger fish to break off the association and swim away.

This cleaning ritual is the subject of a detailed study by a Swedish research team from Stockholm University's Department of Zoology, headed by Professor Olof Leimar. Their results, published in the journal *Nature*, have given remarkable insights into the benefit of having two cleaner wrasses working together, rather than a single individual. The pair of cleaner wrasses seem to distract each other, reducing the likelihood of the host fish being bitten rather than just cleaned.

The study was confirmed in the laboratory and on the reef. Further investigations revealed that when there were two members of this species cooperating in this way, they were always male and female.

The male cleaner wrasse would be recognizable by his larger size. It appears that his presence would inhibit the smaller female cleaner wrasse from biting the host fish. If the female did bite the host fish, then the male would react by chasing her away. On the other hand, the female blue streak cleaner wrasse would undertake the task of removing parasites more diligently in the first instance, benefiting the fish being cleaned.