

# What guitarfish and aircraft wings have in common

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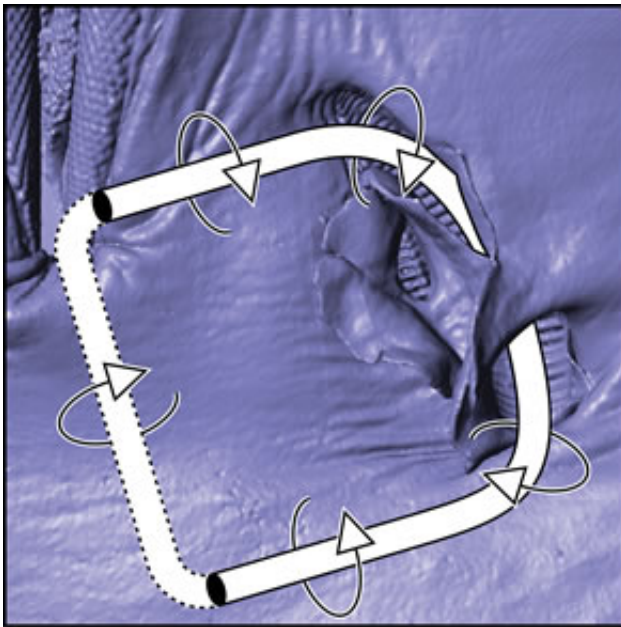
Recent research by a team led by Jonathan Cox and Zhijin Wang shows how water flows through the nose of a guitarfish, a type of ray. The team discovered that vortex-like structures in their noses help the guitarfish to swim and smell more efficiently. This is the first time that vortex-like structures have been found in a fish's nose.

Smell is important for fish. Their ability to pick up scent depends on the movement of water. Some fish get water moving through their [nose](#) by breathing, others by swimming.

The team discovered that guitarfish move water through their nose by swimming and breathing. The movement by swimming is helped by nasal flaps.

## Vortex-like structures

These nasal flaps create regions of high and low pressure. Vortex-like structures resulting from the [pressure difference](#) may encourage water flow through the nose. This may make the guitarfish smell—and swim—more efficiently.



The vortex-like structures in the guitarfish's nose may be similar to the vortex rings associated with [aircraft wings](#). These vortex-like structures caused by air circulating near the wing enable planes (and birds) to fly.

**More information:** Mawuli P.K. Agbesi et al. Complex flow in the nasal region of guitarfishes, *Comparative Biochemistry and Physiology Part A: Molecular & Integrative Physiology* (2016). [DOI: 10.1016/j.cbpa.2015.12.007](https://doi.org/10.1016/j.cbpa.2015.12.007)

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