

Breaching sunfish

Images by Lee Black

Text by Natasha Phillips

The ocean sunfish is the world's largest bony fish, reaching up to 3m in length and as such they are an incredible species to see in the wild. These leviathans feed primarily on gelatinous planktonic prey including jellyfish medusae, salps and ctenophores, but less well known is that as smaller fishes, up to 40% of their diet also includes crustaceans, molluscs and some fish species. Since they pose no threat to humans and typically swim at a cruising rate of around 0.5 m/s, these gentle giants are a wonder to swim alongside or to watch as they bask in surface waters.

The sunfishes are notable for their somewhat unusual appearance, with a round, truncated body, extended dorsal and anal fins, and lack of a true caudal tail. This body shape or bauplan, differs to many other open water fish species where often more torpedo-like streamlining offers pursuit predators like tuna and marlin a distinct advantage. However, when we look into the sunfishes

evolutionary history, the origins of this strange shape become apparent. The fishes as a group, first emerged around 500 million years ago, but it was only around the middle Eocene, approximately 40 million years ago that more modern coral reef fishes appeared. Of these reef-dwellers, a group of puffer fish appear to have moved from the shallow sunny reefs out into the open ocean, and over geological time, the ocean sunfish as we know it evolved. Although it may look like a misshapen marine pancake, the sunfishes' body plan actually represents millions of year of evolution, honing that original puffer fish shape to thrive in the open ocean.

Unfortunately for the sunfishes, their strange shape, selection of slow jellyfish prey and basking behaviours have given them a reputation as slow-moving and sluggish. They have even been described as incapable of moving quickly. But never judge a book by its cover, nor a sunfish by its' sunbathing! If startled, sunfishes can swim very fast at rates >2 m/s





Nikon D4, Nikkor 28-300mm lens at 10 frames per second.

and they have been known to travel long distances at consistently high speeds covering >20 km/day, equivalent to some shark and salmonid species.

One of their most impressive, but rarely seen, swimming techniques requires an incredible combination of speed and power, leading them to breach clear of the water up to reported heights of 10 feet! As with many species which breach, scientists remain unsure as to why they perform such extreme behaviours. Sunfishes can reach

a weight of 2.3 tonnes and so these breaching behaviours represent a significant investment of energy. It has been suggested that these leaps, which are often repeated in a series of breaches (and subsequent giant splash downs) could be an attempt to dislodge persistent parasites, remove remoras or to scratch skin irritations. Other large marine species such as humpback whales, spinner dolphins and basking sharks are also known to breach, although these have also been thought to pose as

displays of fitness to impress mates, communication signals over long distances, signs of stress or perhaps for the sheer joy of jumping!

Many marine species are able to swim in a distinct pattern whilst regularly breaking the water's surface in a movement known as "porpoising". This differs slightly to the individual large breaches as seen in sunfish, as porpoising is a regular leaping behaviour undertaken whilst travelling. Intriguingly this means of travel provides a more energetically



Nikon D4 with a Nikkor 14-24mm lens with a single Sea&Sea YS-250 Pro strobe on Ultralight Buoyancy arms.

efficient method of swimming at high speeds, however this will only occur when an animal, such as a seal or penguin, is swimming close to the sea surface after a specific 'cross-over' speed has been reached and then leaping behaviours become more energetically efficient.

Sunfish breaching events are relatively rare but sometimes photographers are able to capture this incredible event, such as this series of images, where the sunfishes' power and capabilities can be appreciated in stunning detail.

Images: Lee Black

Lee is an engineer, former dive instructor, and photographer based in Oklahoma. Since hanging up his fins and underwater housing on a full time basis, he spends his time on a lesser-known type of photography that you can see on his instagram account:

[leeblackflowtography](https://www.instagram.com/leeblackflowtography)

Text by Natasha Phillips

Natasha is a marine biologist based at Queen's University Belfast who regularly writes, tweets & produces mini-films about sunfish & other cool wildlife on twitter @ SunfishResearch and on YouTube @ Swimming Head Productions