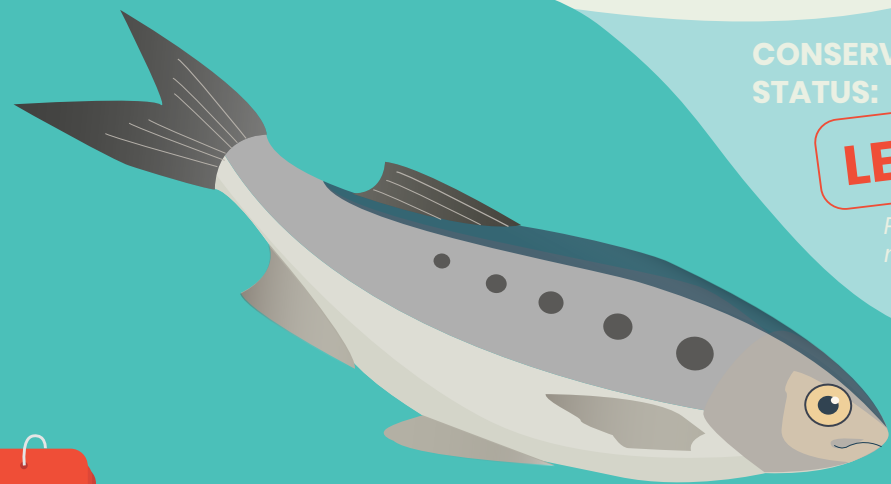


# The Twaite Shad

*Alosa fallax*



Native to the various areas in **Europe**



CONSERVATION STATUS:

**LEAST CONCERN**

*Populations currently stable but massively below historical levels*



Only spend about **1 month** of the year in freshwater for reproduction before return to the sea

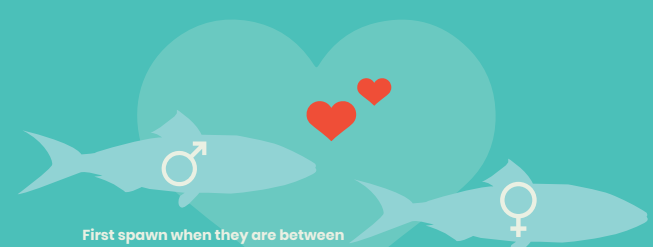
They can swim in bursts of up to:



Can migrate up to:

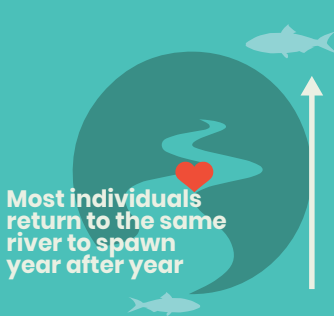


into freshwater to spawn



First spawn when they are between **3-6 years old** and can spawn for 5 subsequent years

Grow to a maximum size of **450mm**

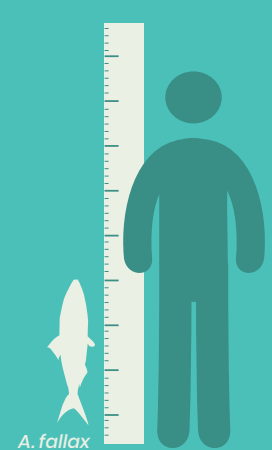


Most individuals return to the same river to spawn year after year

**River barriers block them**



from returning to historic migration routes



*A. fallax*

# The Twaite Shad

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## Twaite shad

Twaite shad, *Alosa fallax*, are a member of the herring family but unlike other herring species, twaite shad swim into freshwater to lay their eggs each spring. Northern populations have been shown to return 5 or more times to spawning, while southern populations may return fewer times. Most individuals home to the same river to spawn year after year. Tracking studies on the River Severn show that they typically spend on average only 17 days in freshwater and a maximum of 41 days before returning to the sea. Even though their time in freshwater is brief they can migrate tens of kilometres upstream– the furthest recorded distance travelled so far for a shad in the River Severn is 500km!

During spawning time they ovulate a batch of eggs each night, repeating this until they have released all their eggs. Spawning nearly always happens at night in fast flowing water and is quite a spectacle. The shad pair up and as the female releases her eggs the male will perform a rigorous circling of her to mix the milt with the eggs. This gives a distinctive sound in the darkness and it lasts a few seconds. These “Bull” events can be recorded to give an indication of spawning success and population.

The health of the population is heavily dependent on good spawning years when river temperatures are high and flow conditions stable in May to July. These good spawning events result in young shad that will then dominate the population for the next 5–10 years. They actually live up to 10 years! However, because of the variation in environmental factors, populations experience significant peaks and troughs.

Shad are generally poor jumpers, which is why weirs and dams have had such an impact on their distributions. However, they are excellent swimmers, are incredibly streamlined and can literally slice through the water. In fact, they can swim in burst speeds of up to 5 metres per second. This means if there is sufficient depth of water they can swim up and over some obstacles, hence why nature-like fishways can prove successful in restoring migratory pathways lost through river engineering. These modifications have proved successful in Portugal, France and the UK.

## Range and habitat

Genetically distinct populations exist from North Africa, northwards along the coast of Western Europe (Portugal, Spain, France), parts of the Mediterranean and then along the English Channel and into the lower Baltic. Some populations have become landlocked living their whole life in freshwater. These are believed to have arisen from glaciation separation or in some cases entrainment of eggs through abstractions of water supplies to landlocked bodies of water.

Young shad only spend a few months in freshwater, hatching within a few days and beginning their drift downstream. They generally enter the estuary in late summer to begin their life at sea, before returning to spawn for the first time at the age of 3–6 years (males become sexually mature earlier than females).

Their migration at sea is still a bit of a mystery; genetic diversity suggests that populations probably have only limited overlap, but bycatch at sea does suggest they roam widely around the continental shelf. Through the development of coordinated tracking networks our knowledge is improving and shad have been confirmed as travelling hundreds of kilometers from their home rivers before homing to a very high level of accuracy >95%.

## Size

They are a relatively small fish rarely exceeding 450mm in length and are typically 30–44mm wide. They have no lateral line, making them distinctive as a single bar of silver, often when removed from the water appearing to have an iridescent shine of blue/purple to their backs. You might even be able to see a line of black spots down their backs, but this is generally more visible when viewed underwater.

## Feeding

Shad are predators at sea. They are constantly swimming and eating anything they can chase down and therefore they grow fast. They

have incredible hearing and can hear higher frequencies than many fish. They use this ability to hear the acoustic clicks of their predators, mainly dolphins and porpoises. They are clearly good at this as survival at sea between years, based on scale spawning marks and recent tracking studies, is greater than 60%. Not bad for a small shoaling fish.

### Current status

This species is currently listed as Least Concern. This is because the current population and distribution is considered stable. However, its range has declined significantly in the last 250 years due to construction of barriers to migration and poor estuarine water quality.

In a few rivers, as industrial pollution has reduced, shad are starting to make a return to tidal freshwater reaches, particularly around Belgium, Netherlands and Germany. If migratory pathways are restored and water quality improved shad show a great ability to recolonize former ranges naturally. In some cases, stocking of a few day old juveniles have helped to kick start this process.

Today shad are protected in many countries (although some local fisheries remain), but historically they were recognised for their culinary uses. They are a very bony fish and were often barrelled and salted to preserve and make them more palatable.

There is a larger species in Europe, the Allis shad (*Alosa alosa*), which was more prized as a food but its distribution and numbers have suffered even more through the construction of barriers to their migration grounds. They are predominantly restricted to large estuary rivers flowing into the Atlantic Ocean, like the River Gironde in France. This species migrate even further into freshwater- upwards of 400km (River Loire) if passage routes are available- but they pay the price with most dying after spawning. Where the two species are artificially forced together because of barriers they will readily hybridise; for example, in the River Severn over 30% of all shad are fertile hybrids.

### Information Gathered by:



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