



## Allis shad - *Alosa alosa* / Twaite shad - *Alosa fallax*

**A**llis and twaite shad are anadromous fish; spending part of their lives in the sea but moving up rivers to their birthplace to spawn. Shad are members of the herring family (Clupeidae) and are characterised by a deep-bodied, laterally flattened shape with a strongly toothed keel along the belly, large silvery scales, and relatively small fins. The simplest way to distinguish the allis and twaite shad is by size, number of lateral line scales and number of gill rakers on the first gill arch. The last of these is the most important and critical point of distinction. Allis shad are usually 30-50cm, with more than 70 scales along the lateral line and more than 90 fine gill rakers on the first gill arch. Twaite shad are usually 25-40cm, with less than 70 scales along the lateral line and less than 60 coarse gill rakers on the first gill arch. Spot pattern is not a reliable indicator of species.

In the sea, shad are pelagic, meaning that they feed on zooplankton and small fish near the surface. Both species feed voraciously up to spring, storing enough vital energy for an upstream river migration without needing to feed. Allis shad

start their journey inland before twaite, leaving the sea in late spring and they have been known to travel up to 700km. Twaite shad spend less time in freshwater and sometimes spawn just above the tidal reaches of rivers, although often they move many kilometres upstream and have been found approximately 100-200km up river. Twaite shad gather in estuaries from late April to May before moving inland to spawn in mid-June. Migratory behaviour is governed by physical factors such as temperature, tides, river flow, light, and wind.

Allis shad spawn only once during their lifetime, laying 50,000-300,000 eggs. These are laid on gravel in swift currents where water exits from more slow-flowing pools. Thrashing their tails aids the mixing of eggs and sperm and, having sunk to the riverbed, the eggs hatch after four to eight days. Twaite shad individuals can spawn repeatedly and with a similar thrashing behaviour may lay up to 125,000 eggs. Spawning tends to be on gravel ripples and hatching occurs after four to six days. After hatching, shad fry feed on freshwater invertebrates as they drift downstream. It is assumed that juveniles tend to migrate more rapidly through rivers that have been channelled,

and therefore have reduced bankside vegetation habitats suitable for invertebrates and fish. Young fry may therefore appear in estuaries as early as late July after a June spawning. In the UK, breeding populations of shad are currently concentrated in the southwest of England and Wales. In the southeast the once prolific and commercially important spawning stocks of shad in the Thames estuary are no longer to be found, as pollution caused local extinction of these stocks. In Kent, individuals have been occasionally recorded in the Swale and Medway estuaries, at Gravesend and Blackwall point on the Thames, and most recently at the tidal limit of the river Weir. Shad are also found along the coast at Rye Bay.

Both the allis and twaite shad have suffered considerable decline since the middle of the 19th century. Habitat destruction, overfishing, pollution and physical barriers to upstream migration have reduced a once thriving shad fishery to two species of tremendous conservation concern. Construction of many weirs since the 1850s prevented shad migrating to their spawning sites upstream, and populations of both species congregating below barriers led to hybridisation. These congregations were also an easy target for fishers and consequently became overexploited. Recent research has revealed the severity of this crisis: Twaite shad only breeds in four rivers, whilst the allis shad is confined to just one river, the Tamar in southwest England.

## FURTHER INFORMATION:

### Ecology of the Allis & Twaite Shad:

[www.english-nature.org.uk/lifeinukrivers/publications/shad.pdf](http://www.english-nature.org.uk/lifeinukrivers/publications/shad.pdf)

**UK Biodiversity Action Plan:** [www.ukbap.org.uk](http://www.ukbap.org.uk)

**Environment Agency:** [www.environment-agency.gov.uk](http://www.environment-agency.gov.uk)

**English Nature:** [www.english-nature.org.uk](http://www.english-nature.org.uk)

**Kent Wildlife Trust:** [www.kentwildlife.org.uk](http://www.kentwildlife.org.uk)

**Kent Biodiversity Action Plan:** [www.kentbap.org.uk](http://www.kentbap.org.uk)

**The Kent Red Data Book, available from**

**Kent County Council:** [www.kent.gov.uk/biodiversity](http://www.kent.gov.uk/biodiversity)

**UK Marine Special Areas of Conservation:**

[www.ukmarinesac.org.uk](http://www.ukmarinesac.org.uk)

**Kent Landscape Information System:**

[www.kent.gov.uk/klis](http://www.kent.gov.uk/klis)

**Kent and Medway Biological Record Centre:**

[www.kmbrc.org.uk](http://www.kmbrc.org.uk)

Both species are protected under European law (the Bern Convention and the EU Habitats Directive), and are UK Biodiversity Action Plan species. The allis shad is afforded further protection under the Wildlife and Countryside Act (1981). Both allis and twaite shad are listed in the Kent Red Data book and are Kent Biodiversity Action Plan species. Local government is working closely with statutory agencies to improve water quality, avoid canalisation, protect against loss of aquatic habitats, identify potential spawning sites for SSSI designation, and spread awareness of the conservation status of shad to anglers and commercial fishermen, encouraging them to record and release any specimens.

## DISTRIBUTION:

There are various recorded shad catches around Kent between 1973 and 1996, at Kingsnorth Power Station, in the Medway Swale Estuary, at Gravesend and Blackwall point on the Thames and most recently at Allington Weir, the tidal limit of the river Medway. Both species of shad have also been noticed in Rye Bay (Kent BAP 1997)