successively reduce the impact on the wild stocks.

stocks are to breed offspring for stocking purposes and to
enable the fish to reach maturity in captivity. Such ex situ
successful keeping shads in captivity are studied in order
to evaluate the success of reintroduction measures. In
freshwater, the best chances to encounter allis shads are
between March and July. Noisy splashing heard on a mild
night in May or June along gravelly river stretches might be
a hint at spawning shads.

As allis shads regularly die after having spawned, there
is a high probability of finding shad carcasses along the
eriver banks of the Rhine and accessible parts of its greater
tributaries. Theoretically, allis shads can be acciden-
tally caught by anglers and professional fishermen. In
the river mouths and coastal areas allis shad can occur
all year round. Since the fish in the sea migrate over large
distances, shads which have been released in the Rhine
can generally be found in the North Sea and the Atlantic.
Ocean far away from the Rhine’s mouth. For this reason
all stocks are to breed offspring for stocking purposes and
to successively reduce the impact on the wild stocks.

What should I do, if I find or catch an allis shad?

Due to their complex life-cycle and the variety of habitats
in which allis shads occur, a detailed survey of the stocks
is hardly possible. Notifications about allis shad findings or
re-catches are thus of particular importance in order
to evaluate the success of reintroduction measures. In
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What kind of information is required?

- The most detailed description possible of the location
  where the allis shad has been found or captured.
- Photos taken of the fish (and the gill-rakers under the lifted
gill-cover or into the gorge) should be sent to the Life+ projects
  contact persons (see reverse side for details).
- The best thing is to freeze or to preserve the specimen and
to contact someone at the Life+ project (see reverse side),
  who will then organize the further procedure.

What is done for the reintroduction of the allis shad?

In 2007 a project aiming at the reintroduction of the allis
shad to the Rhine system according to the guidelines of
the International Union for Conservation of Nature (IUCN)
was inaugurated by means of the EU support instrument
LIFE. Reproduction and rearing techniques were developed
by means of which it became possible to use only a small
number of wild genitors of the GGD stock in the Southwest
of France to breed hundreds of thousands of shad larvae.
Between 2008 and 2012 about eight million shad larvae
were already produced that way and transported to Germa-
ny where they have been released in the Hessian and North
Rhine-Westphalian parts of the Rhine basin. In order to
form the basis for a future allis shad stock in the Rhine
the measures will be continued until at least 2015. At this time
the first adults are hoped to return to the Rhine system for
spawning. These returnees are to ensure and to develop a
natural stock in the long term. By means of surveys carried
out in the Lower Rhine region juvenile shads having reached
a length of 10 to 15 cm, were repeatedly observed on their
migration towards the sea. These fish were stocked as tiny
larvae far upstream in the Rhine months before.

For the purpose of sustaining the wild stocks, breeding
stocks have been established in which the conditions of
successfully keeping shads in captivity are studied in order
to enable the fish to reach maturity in captivity. Such ex situ
stocks are to breed offspring for stocking purposes and
Supporters of the Life+ allis shad project

Landesamt für Natur, Umwelt und Verbraucherschutz NRW
Leinbänzstraße 10, 45659 Recklinghausen
Postfach 101052, 45620 Recklinghausen
Telefon +49 (0) 2361 305-0  Telefax +49 (0) 2361 305-3215
E-mail: poststelle@lanuv.nrw.de
www.lanuv.nrw.de

Bildnachweis: Peter Beeck, Isabelle Caut, David Clavé, Walter Friche, Aude Lochet, Association MIGADO, Armando Piccinin, Andreas Scharbert, Stefan Staas, Bernd Stemmer
Recklinghausen 2013
The allis shad, a herring-like fish species, belongs to the group of anadromous migratory fish which spend the major part of their lives in the sea. Adult allis shad, similar to salmon, penetrate the rivers for spawning, however, they migrate no further than to the middle reaches (barbel region). From March onwards, when the water temperatures exceed 11 °C, the fish gather in the river mouths (estuaries) and start their spawning migration into the rivers. The fish spawn in spring when the water temperatures climb above 15°C, hence from April to July and preferably in May (hence the German name “May fish”). Spawning sites are gravelly river stretches with moderate currents, like inner-bend areas, flooded gravel banks and the mouths of tributaries. The actual spawning act occurs at night just beneath the surface. The fish swim in circles while they shed their eggs and sperm into the water with a loud splashing, which is quite clearly perceptible. The fertilized eggs sink to the bottom where they are trapped amongst stones. After hatching, the offspring stays for some weeks in the river mouths and migrates downstream in late summer to fall. In the Rhine system the shad migration reached as far upstream as the Upper Rhine region near Laufenburg and greater tributaries like the rivers Main, Mosel or the Sieg. The fishing of allis shad was of major economical importance for the local fishermen and gastronomy along the Rhine. The rigorous over-exploitation, accompanied by the erection of weirs and obstacles to migration, pollution and the embankment of rivers over the centuries was of major economical importance for the local fishermen and gastronomy along the Rhine. The rigorous over-exploitation, accompanied by the erection of weirs and obstacles to migration, pollution and the embankment of rivers and degradations of habitats led to the rapid decline of the stocks. In the Rhine system and the most part of the original distribution area the allis shad died out by the middle of the 20th century. Only some stocks in the less densely populated parts of Southwest Europe escaped the same fate. However, in recent years, the formerly largest remaining stock in the Gironde-Garonne-Dordogne basin (GGD) in the Southwest of France has also rapidly declined. About a hundred years after the decline of the Rhine’s allis shad stock, the remaining populations have become critically endangered, too.

Distribution and threats

The allis shad’s original distribution area ranged from the coastal areas and larger rivers of South Scandinavia to North Africa. Yet at the beginning of the 20th century fishermen caught hundreds of thousands of shads in the estuaries and rivers, during their spawning run. In the Rhine system the shad migration reached as far upstream as the Upper Rhine region near Laufenburg and greater tributaries like the rivers Main, Mosel or the Sieg. The fishing of allis shad was of major economical importance for the local fishermen and gastronomy along the Rhine. The rigorous over-exploitation, accompanied by the erection of weirs and obstacles to migration, pollution and the embankment of rivers and degradations of habitats led to the rapid decline of the stocks. In the Rhine system and the most part of the original distribution area the allis shad died out by the middle of the 20th century. Only some stocks in the less densely populated parts of Southwest Europe escaped the same fate. However, in recent years, the formerly largest remaining stock in the Gironde-Garonne-Dordogne basin (GGD) in the Southwest of France has also rapidly declined. About a hundred years after the decline of the Rhine’s allis shad stock, the remaining populations have become critically endangered, too.

How to recognize an allis shad

Due to their laterally compressed body, the deeply bifurcated caudal fin, the vertically acuminated appearance of the pupils and 1 to 3 dark lateral spots behind the gill cover the allis shad (Alosa alosa) can be easily distinguished from other fish species. As a member of the family of herring-like fish, the allis shad is likely to be confused with the closely related twaite shad (Aloper callatis). The latter, however, hardly penetrates the river stretches beyond the tidally influenced lower courses and rarely attains sizes larger than 45 cm (total length), whereas all adult allis shad regularly attain sizes of 60 cm and more. In the following, the typical features of both species are presented. The only reliable and secure distinctive feature between the allis and the twaite shad is the number of gill-rakers.

General characteristics of shads: Allis shad (above) and twaite shad (below)

Only secure distinctive feature between allis and twaite shad

1. Lateral compressed body, big head, patchy scale pattern, scales are shed even when softly touched, lateral line not or only hardly recognizable. Twaite shad hardly attains sizes bigger than 45 cm. Larger specimen should be thus inspected more closely!
2. Short dorsal fin (anterior end situated in front of the anterior end of the pelvic fin).
3. Long drawn out (nearly until the basis of the caudal fin) but short anal fin.
4. Big, deeply bifurcated caudal fin.
5. The eye-rims are covered by a transparent fat lid, the eyes appear thus often clouded, the pupils appear tapered at the lower end.
6. 1 to 3 dark lateral spots behind the gill-cover (in twaite shad mostly 4 to 10).
7. The upper jaw bears a prominent median notch.
8. The scales at the belly form a line of protruding scutes.

Number of gill-rakers on the first gill arch (recognizable by looking at the gills through the fish’s gill cover). Adult allis shads have at least 90 to 130 long gill-rakers, twaite shads have fewer than 60 (35 to 60) and considerably shorter and coarser gill-rakers on the first arch. The difference can be seen at first glance when lifting the gill cover or looking into the gorse. Juvenile specimens of both species have always fewer gill-rakers than adults, but allis shad has significantly more than twaite shad of the same size.