

Is European catfish *Silurus glanis* really becoming more abundant in the River Thames?

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Abstract

An increased number of reports (by anglers, in the angling press) of European (wels) catfish *Silurus glanis* occurrences in the River Thames (England) has led to the perception that the species has become more abundant in that river. If proved true, then this would have ramifications for non-native species policy and practice. To assess catfish density, a total of 256 rod hours of specialized angling ('clonking') was undertaken during both day and night between 17 and 21 July 2006 at numerous sites within six sectors of the River Thames. No European catfish were captured, which suggests that European catfish remains a rare species in the River Thames, providing no corroboration of anecdotal reports of increased abundance.

Key words: introductions, alien species, wels catfish, angling, clonking

Introduction

The escape or release of non-native fishes into rivers, or still waters connected to water courses, is of increasing concern (e.g. Copp et al. 1993, Hickley and Chare 2002, Copp et al. 2006), in particular those species for which little or no local data exists on the environmental biology and potential impacts. Most of the non-native fish species introduced to Great Britain have received little scientific study, and especially those of angling interest. For example, there are relatively few published studies of wild populations in Great Britain of common carp *Cyprinus carpio* (i.e. Linfield 1982, Tenner 1996, Williams et al. 2002) and rainbow trout *Oncorhynchus mykiss* (i.e. Worthington 1940, Lucas 1993), which were introduced to England in about 1496 and in 1884, respectively (Lever 1977). Virtually all of the studies on these species have been laboratory-based or purely physiological in character (e.g. Price et al. 1997,

Sloman et al. 2001, Ellis et al. 2002). Similarly, European (wels) catfish *Silurus glanis*, which was introduced to England in 1853 (Lever 1977) and is now a popular sport fish (Hickley and Chare 2002), has received no scientific study of any kind in the UK. Only anecdotal information is available on the species.

The proliferation of European catfish stockings into still waters (Hickley and Chare 2002) has increased the risk of the species escaping into river systems. But virtually all reports of European catfish in rivers have come from the angling press (e.g. Booth 2006), with articles and anglers' reports specifically referring to catfish in the Thames being rare in the 1970s, occasional in the 1980s, and more common in the 1990s (K.J. Wesley, pers. obs.). A summary of monitoring data (1995-2001) for the River Thames (Kirk et al. 2002) reported European catfish to be 'rare' in the River Thames. Similarly, all records of this species in the UK Database and Atlas of Freshwater Fishes (DAFF

2002) are for still waters. Consequently, the species was not mentioned in a recent analysis of this database on non-native fishes introductions to 'water courses' (Copp et al. 2006). The aim of the present study was to determine whether European catfish are becoming more abundant in the River Thames and, if so, whether the species is now present in sufficient numbers for its movements, migratory behaviour, habitat use and diet to be studied.

Material and Methods

Prior to the sampling, extensive research into alleged captures of catfish from the Thames was carried out to eliminate any false rumours, to estimate the number of potentially real captures, and to identify the stretches of the Thames with the maximum likelihood of capturing catfish. The study area selected encompassed a 22 km section of the River Thames between Chertsey and Teddington, England (Figure 1). This area has elevated levels of boat traffic but also contains a variety of mesohabitats, including backwater river inlets, former gravel pits connected to the river, boat marinas and large weir pools (e.g. at Weybridge and Teddington), which tend to be the most productive areas on the River Saône (France) during the hottest part of the year (L. Moffatt, pers. obs). During the week of sampling on the Thames, daytime air temperatures of $\geq 25^{\circ}\text{C}$, reaching maximum mid-day temperatures of about 35°C .

Because European catfish has been captured only once or twice in electrofishing surveys of the Thames in London (Kirk et al. 2002), sampling was undertaken by rod and line using an angling method known as 'clonking', which has been used successfully on the rivers Saône (France) and Ebro (Spain) to target European catfish (Annex), even during their inactive periods, and avoid attracting the attention of other predatory fishes (L. Moffatt, pers. obs.). Sampling was undertaken from two boats, with two persons per boat (i.e. 7.5 angler days, at $8.5 \text{ h}\cdot\text{day}^{-1}$), between 16 and 21 July (inclusive) along six stretches of the Thames (Figure 1) considered likely to be suitable for European catfish. Each boat was fitted with an electric outboard and a sonar unit (either Lowrance® or Eagle®). The sonar units were set at scan mode at all periods of boat fishing so as to identify whether any catfish would be observed lifting off the bottom to attack the baits.

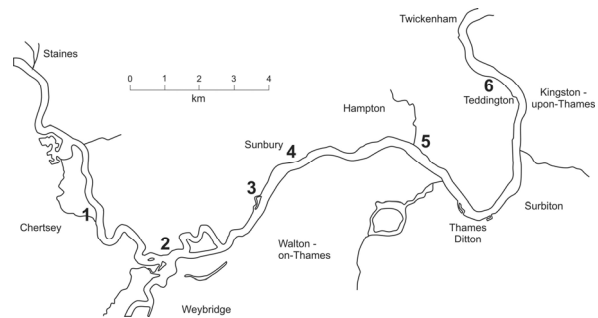


Figure 1. Map of six areas of the River Thames (London, England) in which specialized (clonking) angling was undertaken for European catfish *Silurus glanis* during day and night between 17 and 21 July, 2006

Sampling was undertaken during both daytime and evening for a total of 256 rod hours (one rod per person) at the following hours (GMT): 19:00—24:00 (16 July), 08:00—20:00 (17 July), 08:00—22:00 (18 July), 08:00—24:00 (19 July), 12:00—01:00 (20 July) and 10:00—20:00 (21 July). Complementary night-time fishing from the bank was undertaken most dates (midnight to 08:00) by the 2nd author, with an intensive effort overnight 21-22 July with five people fishing 20:00—06:00. Eels (captured from the river at night) were used as bait from the boat and from the bank the baits used were live fish, fish pellets and Ultrabite® catfish formula as bottom bait and live eels on floats and the 'buoy' rig.

Results and Discussion

After cross-referencing information from various sources as regards the numerous anglers' accounts of European catfish captures in the Thames, the estimated probable 'real' captures over the past 3 to 4 years was <10 . This suggests a very low number of catfish in the Thames, supported by the absence of captures during intensive five days of sampling in July 2006 (Annex). This contrasts the capture rates, using the same techniques and under similar conditions, on other European rivers containing European catfish (Annex). For example, a few captures or detections per person per day is the norm on the River Saône, where catfish densities are generally considered to be in moderate numbers (DIREN Rhône-Alpes 2004). Whereas, on the Ebro (Spain), where catfish numbers are considered high (Carol et al. 2007), capture rates (by weight) can be up to three times those of the

Saône (Annex). Ambient mid-day air temperatures during the week of sampling on the Thames were $\geq 25^{\circ}\text{C}$, which resembles those observed on the Saône and the Ebro (L. Moffatt, pers. obs.), where the European catfish occurs in higher abundance (Annex).

In conclusion, there is no evidence that European catfish in the Thames are other than scarce, and the 'rare' status given by Kirk et al. (2002) appears to be an accurate assessment of the species' abundance in the Thames. The most commonly angled fishes (and their perceived abundance) in the Thames are (in decreasing order): common carp, common bream *Abramis brama*, barbel *Barbus barbus*, roach *Rutilus rutilus*, chub *Leuciscus cephalus* and dace *L. leuciscus*. The type of angling equipment currently in use by anglers for common carp (a pellet bait, robust rods, reels and strong line) are sufficiently suited to capture European catfish of up to 11 kg. This suggests that European catfish are not sufficiently numerous in the Thames for any change in their abundance to be discernable, even when using capture techniques specifically developed for that species. Investigations of the various reports received of European catfish in the London stretch of the river appear to be mainly 'myth' derived through fabrication. This interpretation of such reports has subsequently been supported by a report received in February 2007 (personal communication to K.J. Wesley) from a regular angler on the Thames who claimed to have it on good authority that in July 2006 a chap named Luke Moffatt had captured a 86 lbs (39 kg) wels catfish from the Thames!

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Annex

Relative abundances from general perception (subjective assessment of the scientific literature and the angling press), monitoring surveys and specialized angling for introduced European catfish *Silurus glanis* in the rivers Thames (England), Saône (France) and Ebro (Spain)

Source	Thames River	Saône River	Ebro River
General perception	increasing	abundant	very abundant*
Monitoring surveys	rare ^β	moderate [¥]	not available
Mean capture rates (per day)			
Number of detections+captures [‡]	0	2-5	20+
By weight (kg·rod-1) [‡]	0	≈20	≈60

* from Carol et al. 2007; β from Kirk et al. (2002); ¥ derived from professional fisherman statistics (DIREN Rhône-Alps 2004, CSP 2005) for the five year period 1997-2001; † In italics — estimates by L. Moffatt (based on >5 years of professional angling experience on these rivers, using the 'clonking method in fish per 8.5 hour day)