

Distribution of the non-native fish species, pumpkinseed *Lepomis gibbosus* (Linnaeus, 1758), in Turkey

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Abstract

The North American centrarchid species, *Lepomis gibbosus* (Linnaeus, 1758), is a freshwater fish native to eastern and central North America. The species is now established in at least 28 countries of Europe and in Turkey the species' spread has been especially rapid between 2001 and 2006, with its distribution including the following areas: Kemer Reservoir, Akçay river catchment and inland waters of the Aegean and Anatolian regions. This is the first report in a new locality of the species in Asia Minor.

Key words: aquatic invasive species, *Lepomis gibbosus*, Turkey

At least 25 exotic fish have been introduced to the inland waters of Turkey over the last five decades (Innal and Erk'akan 2006). Amongst the more recent introductions (Erk'akan 1983) is that of the pumpkinseed, *Lepomis gibbosus* (Linnaeus, 1758), a centrarchid fish species native to, eastern and central North America (Scott and Crossman 1973, Page and Burr 1991). This species is already established in at least 28 European countries (Copp and Fox 2007), but it is currently considered to be invasive mainly in southern and central Europe (Villeneuve et al. 2005).

The first record of pumpkinseed in Turkey was in the Ipsala Canal-Edirne (Erk'akan 1983) and Gala Lake (Baran and Ongan 1988), which are in the Thrace region. The species was next found in two water courses (Sarıçay, Milas-Muğla and Dipsiz-Çine, Aydın) of the Aegean region presumably moved there by humans (Barlas et. al. 2001) and subsequently in Dipsiz-Çine Stream Muğla-Aydın (Barlas and Dirican 2004, Dirican and Barlas 2005), Topçam Reservoir Çine-Aydın (Sası and Balık 2003), and Geyik Reservoir Muğla (Yılmaz et. al. 2006). Most recently, specimens of pumpkinseed were

captured by gill (18-35 mm mesh sizes) and cast nets (12-22 mm mesh sizes) in Kemer Reservoir (Figure 1) (Latitude 37°32'N and longitude 28°32'E) between February and July 2006. This reservoir is part of the Akçay Stream system, which is a branch of the Great Menderes River (Aegean region). The photographed specimen (Figure 2) was preserved in 4% formaldehyde and deposited in the collection of Dr. G. Özcan at the Faculty of Fisheries, Mustafa Kemal University, Turkey.

This is the first report in a new locality of pumpkinseed in Asia Minor. The population in Kemer Reservoir appears to be reproducing successfully, as large numbers were observed. In establishment of pumpkinseed in Turkey could have considerable negative consequences for the local fisheries economy, as pumpkinseed is a potential competitor for the food of numerous endemic fish species: *Acanthobrama mirabilis* Ladiges, 1960; *Chondrostoma meandrense* Elvira, 1987; *Capoeta bergamae* Karaman, 1969 and *Barbus pectoralis* Heckel, 1843.

According local fisherman, the catches of these endemic fish species has declined since pumpkinseed was introduced to Kemer Reservoir

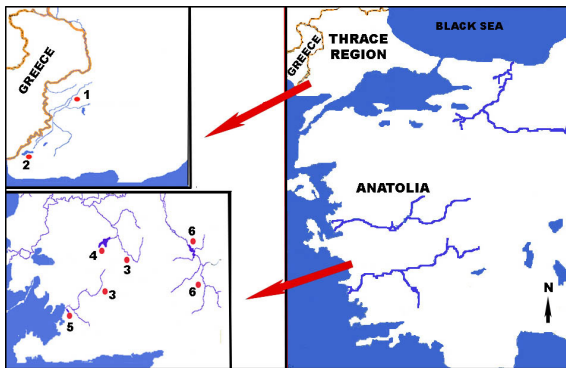


Figure 1. Map of the distribution of *Lepomis gibbosus*



Figure 2. *Lepomis gibbosus* (Linnaeus, 1758), total length 10.2 cm, Kemer Reservoir, Aydın, (Turkey), Lateral view (photo by Gülnaz Özcan)

in 2003, with the density of pumpkinseed increasing about three to four times since 2003. Adverse ecological impacts of pumpkinseed have been reported mainly for Mediterranean countries, where their diet has included endemic mollusc subspecies (García-Berthou and Moreno-Amich 2000a) and fish eggs (García de Jalón et al. 1993, García-Berthou and Moreno-Amich 2000b). Although pumpkinseed is currently found in only two regions of Turkey, its introduced range is expanding rapidly, and for this reason it is important to monitor the dispersal and assess the impacts of this introduced species on endangered endemic species and natural ecosystems.

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AnnexRecords of *Lepomis gibbosus* in the inland water of Turkey in 1983-2006

Map Reference	Location	Location coordinates		Habitat	Record date	Author
		Latitude, N	Longitude, E			
Thrace region						
1	Ipsala Canal	40°56'	26°23'	Canal	1982	Erk'akan, 1983
2	Gala Lake	40°47'	26°11'	Lake	1988	Baran and Ongan, 1988
Anatolia						
3	Sarıçay and Dipsiz-Çine Streams	37°15' 37°32'	27°37' 28°03'	Stream	1999-2001	Barlas et. al, 2001; Barlas and Dirican, 2004; Dirican and Barlas, 2005
4	Topçam Reservoir	37°41'	28°00'	Reservoir	1999-2000	Sası and Balık, 2003
5	Geyik Reservoir	37°15'	27°37'	Reservoir	1999-2003	Yılmaz et. al., 2006
6	Kemer Reservoir and Akçay Stream	37°32' 37°25'	28:32' 28°37'	Reservoir and Stream	2006	Present study