

## Memorandum for the Record

**TO:** Arthur S. Johnson, Biomonitoring Program Manager

**FROM:** Robert J. Maietta, Aquatic Ecologist  
James Carr, Environmental Analyst

**DATE** November 15, 2006

**SUBJECT** Slimy sculpin *Cottus cognatus* from un-named tributary to the Eel River in the Town of Plymouth

On July 28<sup>th</sup> 2006 DWM biologists John Fiorentino and Peter Mitchell reported that while sampling benthic macroinvertebrates (as part of Jamie Carr's South Coastal Monitoring Survey) in an un-named tributary to the Eel River in Plymouth (Station ER08 See Table 1), they collected what they believed to be a slimy sculpin *Cottus cognatus*. Maietta was somewhat surprised to hear this report, as it was his understanding that slimy sculpin did not inhabit the eastern part of Massachusetts and it would be quite remarkable for them to be found within the coastal plain. The specimen was not taken as a voucher so he questioned Fiorentino regarding the certainty of the identification and Fiorentino deferred to Mitchell. Maietta approached Mitchell with the same question and Mitchell stated that he was "almost certain" it was a slimy sculpin, but that it may have been a darter *Etheostoma* sp. Fiorentino and Mitchell both reported that this tributary seemed to have excellent water and habitat quality and that the water seemed quite cool on the day of their survey.

Upon review of in-house documents and records including *Inland Fishes of Massachusetts* (Halliwell et.al 2002), Maietta noted that sculpin are mostly limited to drainages west of the Connecticut River. Halliwell et. al. report "small, geographically isolated populations in the Millers, Chicopee and Nashua river basins." They also state that sculpin were found in the "lower Merrimack near Lawrence" in 1861, but are last reported there in 1953. This population is considered extirpated. As a result of these reviews Carr, Fiorentino, and Maietta scheduled a fish population survey for the Eel River and its un-named tributary.

On August 24<sup>th</sup> 2006, Carr, Fiorentino and Maietta conducted fish population surveys at two locations on the Eel River (ER015 and ER01) as well as the location on the un-named tributary to the Eel River (Station ER08) where Fiorentino and Mitchell had observed the slimy sculpin during July (see Figure 1).

Although sculpin were absent from Eel River stations ER015 and ER01, at station ER08, we were successful in collecting a slimy sculpin within the first 5 meters of stream that was sampled. We ended up sampling approximately 100 meters. Fish collected in order of abundance included multiple age classes of brook trout *Salvelinus fontinalis* (n=53), slimy sculpin (n=9), American eel *Anguilla rostrata* (n=5), young of the year brown trout *Salmo trutta* (n=4) and brown bullhead *Ameiurus nebulosus* (n=4). Overall collection efficiency was good. There were fair amounts of aquatic macrophytes present in stream and the thick canopy cover and subsequent shading made it very tough to spot sculpin in particular. Therefore, sculpin numbers may have been underestimated. Due to the relatively small number of sculpin collected all were released unharmed.

It should be noted that station ER08 is located within the gated community of "OS." This is presumed to stand for "Old Sandwich" which is part of "The Pinehills" development in

Plymouth. On the day of the sampling, we noted that BMPs (silt fences) installed in conjunction with a new or re-furbished gravel road located just upstream of the sampling location have failed and sediments from the roadway are presently entering the stream and threatening both benthic macroinvertebrates and fish habitat. It is unclear what if any effect the ongoing development is going to have on this un-named tributary. In light of the regional isolation of this population of slimy sculpin and the very healthy salmonid fishery present, this unique biological community deserves every protection available.

In order to investigate the extent of the slimy sculpins range within the Eel River Watershed, Carr, Mike Maynard, and Maietta returned to the watershed on September 7<sup>th</sup>, 2006 and sampled two additional stations on the un-named tributary and two additional stations on the Eel River. Carr, Mitchell and Maietta returned on September 13<sup>th</sup>, 2006 and sampled one more station within the un-named tributary and two more stations within the Eel River (See Figure 1 and Table 1). We performed “standard” fish population collections at one of the three additional un-named tributary stations and one of the three additional Eel River stations. At all other stations we performed “reconnaissance” surveys that included electrofishing. During these “reconnaissance” surveys we covered longer reaches in search of slimy sculpin and bridge shiner *Notropis bifrenatus* (a special concern species in Massachusetts that has been historically documented in the Eel River system).

Slimy sculpin were collected at one other location (ER07) within the un-named tributary but not within the Eel River. Bridge shiner were collected at the most downstream location within the un-named tributary (ER04A), and one location (again the most downstream) in the Eel River (ER03). Voucher specimens of slimy sculpin from station ER07 were retained and these will be delivered to Karsten E. Hartel at Harvard University’s Museum of Comparative Zoology.

It should be noted that there is one remaining un-named tributary, which we did not investigate, that still needs to be sampled. It is a very small un-named tributary originating in an unnamed pond. A potential sampling station is located upstream of the cranberry bog approximately 400-500 meters west of station ER07.

This “memorandum for the record” is intended to document the discovery of slimy sculpin in the South Coastal Watershed of Massachusetts and to inform interested parties as to the specific location of this discovery. It also documents the actions that have been taken to date in an attempt to document the extent of slimy sculpin distribution within this watershed. Please feel free to contact Robert Maietta or Jamie Carr at (508)767-2793 and (508)849-4045 respectively if you have any questions in this regard. A 2006 South Coastal Watershed Fish Population “Technical Memorandum” will be published during the winter of 2006. The technical memorandum will include all fish data including habitat assessments for the locations where standard fish population surveys were conducted.

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**Table 1. 2006 South Coastal Watershed, Fish Population. Location of sampling stations**

<b>Stream Name</b>	<b>Station Number</b>	<b>Sculpin Present</b>	<b>Survey Type</b>	<b>Description</b>	<b>Latitude Longitude</b>
Eel River	ER00	NO	Recon	Headwaters at cranberry bog .75 mile south of Long Pond Road in Plymouth	41° 54' 6.5" 70° 39' 3.9"
Eel River	ER01A	NO	Recon	Cranberry bog just upstream of Long Pond Road in Plymouth	41° 54' 40.8" 70° 38' 45.3"
Eel River	ER01	NO	Standard	Adjacent to bog just upstream of Nature Conservancy's driveway off of Long Pond Road in Plymouth	41° 54' 40.4" 70° 38' 38.5"
Eel River	ER015	NO	Standard	Approximately 100 meters upstream from Russell Millpond in Plymouth	41° 54' 43.9" 70° 38' 24.5"
Eel River	ER02	NO	Standard	Approximately 125 meters downstream from Russell Millpond in Plymouth	41° 55' 5.9" 70° 37' 34.3"
Eel River	ER03	NO	Recon	Upstream and downstream of Sandwich Road crossing in Plymouth	41° 55' 29.9" 70° 37' 10.4"
Unnamed Tributary to Eel River	ER04A	NO	Recon	Just downstream of Howland Pond in Plymouth	41° 55' 33.9" 70° 36' 49.7"
Unnamed Tributary to Eel River	ER06	NO	Standard	120 meters downstream of Forge Pond in Plymouth	41° 55' 11.8" 70° 36' 39.1"
Unnamed Tributary to Eel River	ER07	YES	Recon	Upstream and downstream of access road to Cranberry Bog just south of forge Pond in	41° 54' 54.7" 70° 36' 22.8"
Unnamed Tributary to Eel River	ER08	YES	Standard	125 meters downstream from dirt road in OS development in Plymouth	41° 54' 36.8" 70° 36' 17.7"

Figure 1 2006 South Coastal Watershed, Fish Population. Location of sampling stations

### Distribution of Slimy Sculpin In The Eel River Watershed, Plymouth, MA



#### Fish Sampling Stations

- ▲ Sculpin not present
- Sculpin present

