Northeastern Range Extension for the Northern Redbelly Dace, *Phoxinus eos*, and the Golden Shiner, *Notemigonus crysoleucas*, in Québec

JEAN-FRANÇOIS DESROCHES

Cégep de Sherbrooke, Techniques de bioécologie, 475 rue du Cégep, Sherbrooke, Québec J1E 4K1 Canada

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In 2005 and 2009, two species of Cyprinidae, the Northern Redbelly Dace, *Phoxinus eos*, and the Golden Shiner, *Notemigonus crysoleucas*, were collected northeast of their know range, in Québec. These new records, indeed range extensions, are presented here with a short discussion on the fish fauna of the area and on the possibility of introductions.

En 2005 et en 2009, deux espèces de Cyprinidés, soit le Méné ventre-rouge, *Phoxinus eos*, et le Méné jaune, *Notemigonus crysoleucas*, ont été capturées au nord-est de leur répartition connue au Québec. Ces nouvelles mentions, qui constituent des extensions d'aire, sont ici présentées de même qu'une courte discussion sur l'ichtyofaune de la région et la possibilité d'introductions.

Key Words: Northern Redbelly Dace, *Phoxinus eos*, Golden Shiner, *Notemigonus crysoleucas*, range extension, habitat, Québec.

Ichtyological surveys have been done extensively in southwestern Québec and all along the St. Lawrence River, but many remote areas of the Québec territory have not received much attention, particularly in regard to smaller species such as the cyprinids. This is, in part, due to their low economic importance in these areas, but also because these fishes are often hard to identify, and are not of interest to anglers, except as bait. This has resulted in a poor knowledge of the distribution for many species, mostly in northern areas where aquatic habitats suitable for them are located far from human settlements, and where access to lakes and rivers is often difficult.

In 2005 and 2009, during holiday surveys in the Côte-Nord region of Québec, two species of Cyprinidae, the Northern Redbelly Dace, *Phoxinus eos*, and the Golden Shiner, *Notemigonus crysoleucas,* not previously reported from that area, were caught. Voucher specimens have been preserved in the fish collection of the Canadian Museum of Nature (CMNFI-#). Ichtyological databases associated with the collections of the Canadian Museum of Nature, the Ministère des Ressources naturelles et de la faune du Québec and the New Brunswick Museum were investigated in May 2010 in order to be certain that there were no unpublished records of these species in that area.

The Northern Redbelly Dace was found in the Rivière Amédée, at Baie-Comeau (49°12'19"N, 68° 15'32"W) just north of road 138 (Figure 1). This represent a 300 km northeast (from Québec City area) and 275 km north-east-east (from north side of Lake Saint-Jean) range extension for the species (see maps in Scott and Crossman 1998 and Bernatchez and Giroux 2000). On 29 July 2009 about 10 Northern Redbelly Daces were caught with a dipnet with five young Golden Shiners. On 5 August 2009, at the exact same place, two specimens of Redbelly Daces were collected, photographed, and preserved (CMNFI-2009-0136). The habitat is similar with those in southern Québec. The river at that location is about 80 m large, with low current (none in small bays), semi-turbid water, and muddy bottom. The aquatic emergent vegetation is mostly Cattails (*Typha sp.*) and Sweet Gale (*Myrica gale*).

The Golden Shiner was observed at Lac Yvette in 2005 and in three stations in Rivière Amédée in 2009 (Figure 2). These two sites are at about 110 km (lac Yvette) and 130 km (Rivière Amédée) northeast of the previously know distribution of the species in Québec (see maps in Scott and Crossman 1998 and Bernatchez and Giroux 2000). On 5 July 2005, three minnow traps set at Lac Yvette, Ragueneau Township (49°12'50"N, 68°26'56"W), captured 27 Golden Shiners and 14 young Yellow Perch (*Perca flavescens*). Ten specimens were preserved (CMNFI-2009-0104). This lake is clear and surrounded by forest.

In 2009, Golden Shiner were found at three different stations in the Rivière Amédée at Baie-Comeau. On 29 July, five young were caught with a dipnet, with about 10 Northern Redbelly Dace (49°12'19"N, 68°15'32"W) north of the road 138. A minnow trap was then placed there and on 31 July another Golden Shiner was captured. The habitat is described in the previous paragraph (Northern Redbelly Dace). On 29 July, south of the road 138, a young Golden Shiner was caught with dipnet (49°12'14"N, 68°15'10"W). A minnow trap was put at that place and removed on 31 July. It contained 13 Golden Shiners (12 adults and one young) and one young Yellow Perch. The habitat there is similar to the usual habitats of the species. The river is about 60 m wide at that point, with low to no current, the water is semi-turbid, the bottom is muddy, and principal aquatic plants are *Myriophyllum* sp., *Potamogeton* sp. and *Utricularia vulgaris*. Finally,

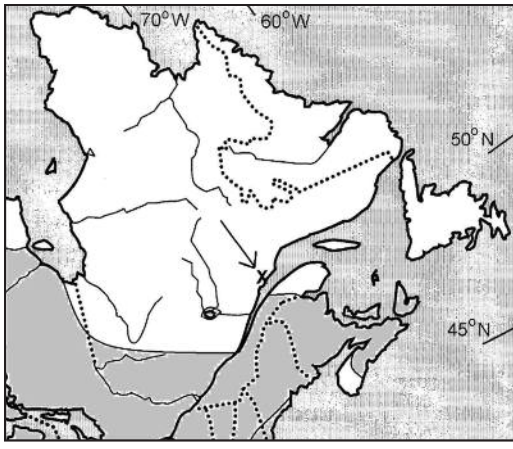

FIGURE 1. Distribution of the Redbelly Dace (*Phoxinus eos*) in Québec and adjacent territories (modified from Scott and Crossman 1998 and Bernatchez and Giroux 2000). The X is the new location from the present note.

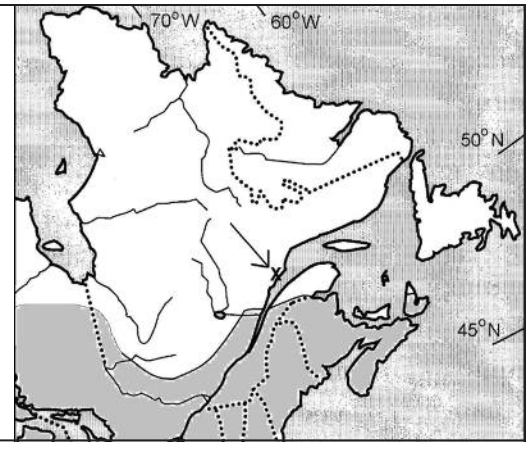

FIGURE 2. Distribution of the Golden Shiner (*Notemigonus crysoleucas*) in Québec and adjacent territories (modified from Scott and Crossman 1998 and Bernatchez and Giroux 2000). The X is the new locations from the present note.

a third station located more downstream in the Rivière Amédée (49°11'43"N, 68°14'46"W), just upstream of a bridge, allowed the discovery of the Golden Shiner. On 29 July 2009, three young Golden Shiners were caught with a dipnet, and two minnow traps left there captured one other specimen (adult) and eight young Yellow Perch. The river at that location is 50 m wide, with very low current, water ¾ clear, bottom of sand and gravel covered with organic matter. Some floating *Potamogeton* were noticed.

These new records are interesting range extensions, especially that of the Northern Redbelly Dace. This fish was not known east of Québec City area, on the north shore of the St. Lawrence River, except for Lac St-Jean. The small fish fauna has been poorly surveyed in these areas, and the discovery of new localities disjunct from their previously know range is probably often due to the fact these species have not been looked for there before. Neverthless, like the similar range extension of the Central Mudminnow (*Umbra limi*) (Desroches 2006), the possibility of anthropogenic introductions cannot be completely ignored. The Northern Redbelly Dace and the Golden Shiner are popular bait for game fishes, especially for the Walleye (*Sander vitreus*) but also for pike and trout (Bernatchez and Giroux 2000). These fishes are all present in the area where the two species of minnows (Northern Redbelly Dace and Golden Shiner) were discovered. The exact habitat where the minnows were found is not suitable for Walleye, pike and trout, at least at the Rivière Amédée, and the source of these minnow populations, if from introductions, would have had to be from far upstream.

Neither species were found in a 2009 short investigation of two well known lakes in the area for the Brook Trout (*Salvelinus fontinalis*), a highly popular sport fish, but did indicate the presence of the Lake Chub (*Couesius plumbeus*). The Lake Chub live in similar habitats than trout, i.e., clear waters and sandy to gravely bottom, and it is not surprising that they would be found sympatrically with Brook Trout.

Examples of isolated populations of fishes are common. They are often explained by the fact that aquatic habitats were strongly modified in geological times, and some giant lakes became fractioned in smaller ones, when the water level decreased in eastern North America (Moyle and Cech 2004). They are also often the site of anthropogenic voluntary or accidental introductions. In the case of small species of no direct economical value that are difficult to accurately identify, it can often be difficult to confirm or refute that these populations are naturally present at one place. The best thing to be done is to continue meticulous periodic surveys, as well as the undertaking of genetic studies to determine the links between populations. New records from outside known ranges, should be supported with voucher specimens or photographs.

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