LONGNOSE DACE (*Rhinichthys cataractae*) and LEOPARD DACE (*R. falcatus*)

Ecology and Life History

Long nose and leopard dace are members of the Cyprinid family (minnows and carps) and belong to the same genus. The longnose dace is a widely distributed minnow that occurs from coast to coast in North America (Scott and Crossman, 1973), whereas the leopard dace is known only to occur in the Frazer System and the Columbia System (including Okanagan Lake) in British Columbia (Scott and Crossman, 1973). Longnose and leopard dace inhabit both lentic and lotic habitats (Scott and Crossman, 1973). However, leopard dace appear to have a preference for lotic habitats (Coker *et al.*, 2001).

Longnose dace are largely benthic feeders. Adults and juveniles forage mostly on small aquatic insects such as dipterans (e.g., chironomids) and Ephemoptera (mayfly) (Scott and Crossman, 1973; Edwards *et al.*, 1983). Lacustrine populations of longnose dace also forage on insect drop that washes into the surge zone (Edwards *et al.*, 1983). Longnose dace juveniles and fry forage mostly on algae until they are large enough to eat dipterans (Edwards *et al.*, 1983) in both lentic and lotic habitats. Leopard dace foraging habitats are not as well documented but are likely similar to those of longnose dace (Scott and Crossman, 1973).

Very few studies have investigated the specific spawning behaviours, and habitats for longnose dace. Longnose dace spawn between June and July (Scott and Crossman, 1973; Coker *et al.*, 2001), when temperatures reach 15 °C (Edwards *et al.*, 1983). In general, longnose dace build nests, are brightly coloured, and exhibit parental care (Scott and Crossman, 1973; Coker *et al.*, 2001). However, in southern BC, it has been documented that these behaviours, or morphological characteristics (i.e., breeding colouration) are not exhibited. Spawning in lake habitats occurs in cobble/boulder substrates. Unlike adults, young of the year fish are pelagic and typically remain in calm, shallow waters with fine substrates for a few months before assuming a benthic existence (Scott and Crossman, 1973).

Even less is known about the spawning habitats or specific spawning behaviours of the leopard dace. Leopard dace spawn in July (Coker *et al.*, 2001). Males are brightly coloured, build nests and exhibit parental care, similar to longnose dace (Coker *et al.*, 2001).

Okanagan Lake System

In the Okanagan Lake system the relative abundance of longnose dace was 2.2%, 2.93% and 0.52% during the spring, summer, and fall sampling sessions. Young of the year (YOY) and juvenile fish were associated with similar habitats to adults. Both adults and juveniles were associated with close proximity to stream mouths, or in areas with wave-washed cobble/boulder substrates. Generally, longnose dace were most abundant in southern areas near Bertram Creek. However, several individuals were also sampled between Paul’s Tomb and Sutherland Bay.

Leopard dace were not as abundant as longnose dace. During the spring sampling the abundance of leopard dace was 2.0% and was similar to longnose dace. However, during the summer and fall only 1 individual was found at Paul’s Tomb. It is interesting that leopard dace were not found, while longnose dace were, since the literature documents their habitats to be similar. It may be that these species are segregated spatially to occupy different habitats to avoid competition. However, confirmation of spatial segregation was beyond the scope of this work and will require further investigation.
Spawning areas for leopard and longnose dace were similar, with most spawning individuals found in the southern-most reaches near Bertram Creek. Both leopard and longnose dace displayed some red colouration, but were not as brilliantly coloured as redside shiners. Temperatures during spring sampling were 14 to 17 ºC, within the typical spawning temperature range for these species. Typical substrates within the areas where spawning longnose dace were sampled were 30% gravel, with ample cobble or boulders whereas typical substrates where spawning leopard dace were sampled were 20% sand, 40% gravel, and some cobble or boulder. Generally, spawning dace were sampled in approximately 1 m of water on wave-washed shorelines in areas with larger littoral shelves (i.e., 10 to 30 m). It appeared that in some cases, the turbidity of the water was higher than typical sites when spawning individuals were sampled.

No investigation of the stomach contents and/or presence of gastrointestinal parasites was performed for longnose or leopard dace.

These fish appear to be limited by habitat in Okanagan Lake. As early as 1939, these two species were rarely sampled (Clemens, 1939). Since spawning habitats of these species may be limiting, and because they comprise a small percentage of the nearshore community, these fish are considered to be of importance along the Kelowna Waterfront area.

References


1 Substrates have been averaged across all sites where the majority of adults were found and are not indicative of any one particular site.