

BURBOT (*Lota lota*)

Ecology and Life History

The burbot is the only member of the Gadidae (Cods) family that inhabits the freshwaters of British Columbia (McPhail, 1997; Scott and Crossman, 1973). The fishes' range occurs circumpolar, from North America through Eurasia. There has been some debate about the distinction of European and North American burbot as separate species because the life histories and morphological traits are somewhat regional (McPhail, 1997). However, at this time the general consensus is that all burbot belong to one species and there are no sub-species (McPhail, 1997).

Burbot have a unique life history. Early in life, young of the year fish (larval form) are pelagic, drift passively with flow until their swimming performance increases and then form loosely aggregated schools (McPhail, 1997). During the larval drifting and schooling period, burbot feed on rotifers, copepods, and cladocerans (McPhail, 1997). Once larvae are about 15 mm in length, they move from pelagic regions to benthic areas and live a nocturnal, solitary life (McPhail, 1997). Young of the year burbot (YOY) feed on larger items such as amphipods, insects, etc. until they are large enough to forage on fish. Juvenile burbot, up to 500 mm, are known to feed heavily on *Mysis relicta* (mysis shrimp) (Scott and Crossman, 1973). Adult burbot forage almost exclusively on fish and are a voracious predator (Scott and Crossman, 1973; McPhail, 1997; Roberge *et al.*, 2002).

Burbot spawn in lakes and streams, typically under the ice (McPhail, 1970; Scott and Crossman, 1973; Roberge *et al.*, 2002). The age at maturity varies between systems and life histories but they typically mature between 2 to 8 years (Roberge *et al.*, 2002). This fish species spawns over fine to gravel substrates in shallow bays, or shoals, in 0.3 to 3.0 m of water (Scott and Crossman, 1973). Eggs are released into the water column, and sink slowly to the substrates below (Scott and Crossman, 1973; Roberge *et al.*, 2002). Spawning typically occurs in mid-winter, between November and May, when water temperatures are 0.6 to 1.7 °C (Scott and Crossman, 1973; Roberge *et al.*, 2002).

Okanagan Lake System

Very little is known about burbot in the Okanagan system. No larval, or juvenile burbot were sampled during beach seining activities. The relative abundance of adult burbot was 0.41, 0.41, and 0.29% (using Gill Nets) during the spring, summer, and fall, respectively. Adult burbot were only found in deep water regions, typically in excess of 20 m of water. Numbers of burbot tended to be greatest along cliff/bluff, and low rocky shorelines, with moderate usage of deepwater areas of marinas and sandy/gravel beaches.

Based upon our knowledge of the species it is difficult to predict or determine spawning locations. However, recruitment from larvae to adults may be a limiting factor (McPhail, 1997), highlighting the importance of spawning locations. Due to the limited knowledge of the species, and of particular habitat requirements within Okanagan Lake, it is difficult to predict what habitats are critical for spawning, rearing, or general living. Burbot have been sampled at the mouth of Mission Creek in July (Clemens, 1939), indicating that this area, or the stream may be used for spawning and rearing. However, based upon the lack of knowledge, and the sensitivity of this species, it is regarded as a species of special importance along the Kelowna waterfront and within the system.

References

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