Interstitial capabilities and suction feeding behavior of slimy sculpin (*Cottus cognatus*)

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When foraging, different fish species will use different modes of acquisition, detection, and capture of prey. Slimy sculpin (*Cottus cognatus*), are a benthic predator that uses suction feeding to capture its prey. Slimy sculpin are known predators of lake trout (*Salvelinus namaycush*) eggs in interstitial spaces on cobble reefs in Lake Champlain. Lake trout and other salmonid eggs swell after fertilization (water hardened), and can become lodged in the interstitial spaces among the cobble. Sculpin must have a gape large enough to engulf lodged eggs, but this also makes eggs harder to reach due their head width. The ability of sculpin to enter interstitial spaces was examined in relation to their head diameter. A tunnel was constructed with decreasing funnel size openings examine sculpins' ability to enter small spaces based on the maximum width of their skull. Sculpin were given access to one end of the tunnel, and were allowed to pass through funnels to acquire food. Sculpin entered tunnel opening up to 19% smaller than their maximum skull width, indicating skull distortion. The ability for sculpin to extract lodged eggs was also examined. A Plexiglas plate was constructed with varying hole widths and two hole depths was constructed. Each hole was seeded with a fresh lake trout egg that was allowed to water harden. Sculpin were then added to the tank and allowed to forage for the eggs. Sculpin tended to take eggs from wide, shallow holes first, then the narrow, deep holes. Sculpin used suction feeding to acquire the deep, lodged eggs. Results indicate that sculpin have foraging techniques allowing them to acquire eggs that might be inaccessible to other egg predators.