

General impacts: *Neogobius melanostomus*

Charlebois *et al.* (1997) state that, "In its native range, *N. melanostomus* does not negatively affect populations of any other species (Rudnicka, pers. obs.), although it can compete for food with sturgeon, bream, and roach (Nikol'skii, 1954). This lack of negative effects is presumably because *N. melanostomus* has coevolved and established an ecological equilibrium with these species. In the Black, Caspian, and Azov seas, *N. melanostomus* is prey for a number of sport and commercially sought species. *N. melanostomus* may reduce populations of native fishes, such as eelpout (*Zoarces viviparus*) and black goby (*Gobius niger*), through competition for food and refugia (Skora, 1996)." Both juvenile and adult round gobies feed on eggs of several native fishes (lake trout, Chotkowski and Marsden, 1999; lake sturgeon, Nichols *et al.* 2003; smallmouth bass, Steinhart *et al.* 2004).

Fuller and Benson (2003) state that, "the numbers of native fish species have declined in areas where *N. melanostomus* has become abundant. This species has been found to prey on darters, other small fish, and lake trout eggs and fry in laboratory experiments. They also may feed on eggs and fry of sculpins, darters and logperch. Adults aggressively defend spawning sites and may occupy prime spawning areas, keeping natives out. Walleye anglers in Detroit report that at times all they can catch are *N. melanostomus*, which eagerly attack bait." ANSRP (2003) states that, "*N. melanostomus* out compete native fish for food due partially to an ability to feed in darkness and to the presence of a suction disk located on their pelvic fin which allows them to attach to rocks/substrates and remain fixed on the bottom even in faster currents." The authors also state that, ""*N. melanostomus* cause interference with habitat restoration projects." The Animal Diversity Web (2002) states that, "*N. melanostomus* often eats bivalves that filter the water, and is a vector for bioaccumulation of many contaminants. The contaminants that build up are passed on to larger game fish that prey on this species and then possibly on to humans."

Charlebois *et al.* (1996) state that, "Observations in the St. Clair River suggest that mottled sculpin (*Cottus bairdi*) and logperch (*Percina caprodes*) populations have decreased coincident with an increase in *N. melanostomus* population (Jude *et al.* 1995). *N. melanostomus* may have a competitive advantage in acquiring prey at night. On the basis of laboratory experiments designed to examine behavioural interactions between juvenile mottled sculpins and round gobies, Dubs and Corkum (1996) predicted that the round goby would induce mottled sculpins to desert nearshore habitats and force them into deeper water where the sculpins would be more susceptible to large predators. *N. melanostomus* also are aggressive and territorial during the breeding season. In aquaria, they have been observed to attack, kill, and consume smaller tubenose *N. melanostomus*, rainbow darters, and greenside darters (Jude *et al.* 1995). Jude *et al.* (1992) suggested that because *N. melanostomus* consumes primarily benthos, it may compete with and prey on eggs and juveniles of other benthivorous fish, such as logperch, mottled sculpin, and darters (Jude *et al.* 1995)."

Charlebois *et al.* (1996) states that, "Piscivorous fish consume *N. melanostomus*, which in turn consume zebra mussels. Thus, *N. melanostomus* indirectly makes zebra mussel biomass available to piscivores. Availability of zebra mussel biomass to piscivores may affect food webs (e.g., through increased piscivore populations), and may cause toxic substances (e.g., PCBs and mercury) ingested by zebra mussels to be incorporated into piscivore biomass. These toxic substances could then be passed to humans who consume piscivorous fish."

MacInnis and Corkum (2000) state that, "A field experiment showed that artificial nests contained fewer eggs but were used more often by more spawning females than were such nests in Europe. The relatively high fecundity (compared with that of native species), rapid maturation, aggressive behavior, and extended spawning season may favor the continued expansion of round gobies throughout the Great Lakes."

