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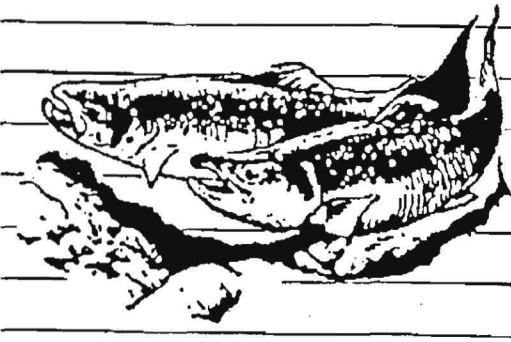

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Suckers Spawned From Captive Broodstock

The sucker family (Catostomidae) includes a wide variety of species, some of which are threatened and endangered. Other suckers have extensive ranges and are often common inhabitants in freshwater ecosystems. Some are important as a bait species for sport fisheries throughout the year. Only a few of these species have been artificially spawned. We are attempting to develop sucker culture methods that use captive broodstock, a technique that has not been utilized for most sucker species. This technique can be used to culture suckers for restoration of depleted wild stocks or for baitfish production.

Wild Spawning of White Suckers

For years, the white sucker (*Catostomus commersoni*) has been cultured throughout the north-central and northeastern states as bait or as feeder minnows for hatchery-raised gamefish. Captive broodstock have not been maintained because of their abundance during natural spawning runs. Broodstock are obtained from the wild, typically below small dams where the mature fish concentrate during spawning runs. At that time the broodstock are manually spawned at the side of the stream or at a hatchery and then released. The eggs are then hatched and the fry are raised in ponds.

Baitfish farmers in most southern states do not culture suckers because they have little opportunity to obtain sucker broodstock because of the paucity of small dams on streams. In addition, suckers have not been a traditional bait species in the South.

Baitfish farmers in the South have recently expressed the desire for a fish species that grows to approximately 17.8 cm (7 inches) within one growing season so that it could be sold to anglers seeking large predatory fish such as walleyes (*Stizostedion vitreum*), striped bass (*Morone saxatilis*), or southern largemouth bass (*Micropterus salmoides*). To be economically viable the species should also have a large potential market at smaller sizes and have a wide geographical range so that it would not be considered an exotic fish in states where it was marketed.

We examined several culture methods to determine if suckers could be raised commercially from captive broodstock and if they would grow to the desired length in one season. Culture techniques developed for suckers as a baitfish species may also be used for production of imperiled sucker species for restoration purposes.

Captive White Suckers Spawned

White sucker brood stock was obtained from Wisconsin streams in September 1993 and transplanted into 0.1-ha (0.25-acre) ponds at the Fish Farming Experimental Laboratory (FFEL) at Stuttgart, Arkansas. The fish were held over winter. Although white sucker spawning season normally occurs in late April and May in Wisconsin, these fish were showing secondary sexual characteristics in early March, near the beginning of their spawning season in northern Arkansas. The characteristics included nuptial tubercles on the anal and caudal fins and on the heads of males and enlarged and reddened vents in females. The paired fins of both sexes became bright orange. Milt or eggs were evident when pressure was applied to the ventral side of the fish.

After being transported to cement holding tanks, males and females were injected daily with 1,000 units of chorionic gonadotropin (HCG) per kilogram of body weight for 5 days. Initially, their secondary sexual characteristics became more pronounced, but after 2 days the color of their fins began to fade. On day 5 the fish began to spawn in the cement tanks. We then stripped all of the fish and placed the fertilized eggs into hatching jars that were supplied with chilled well water. The eggs hatched into viable fry within 4 days at 17°C. The young fish grew rapidly until extremely high temperatures during July 1993 caused the death of nearly all fingerlings and broodstock in the culture ponds.

Captive Spotted Suckers Spawned

Mature spotted suckers (*Minytrema melanops*) were collected in western Arkansas in April 1993 and transplanted into ponds at the FFEL. The fish survived the summer in the ponds and appeared in good shape when inspected in early March 1994, just before the spawning season in Arkansas. At that time the males had tubercles on their heads, and anal and caudal fins. The vents of females were slightly swollen and pink. We transported some of the fish to cement tanks and began daily injections of males and females with 1,000 units of HCG per kilogram of body weight; we also raised water temperatures several degrees to 20°C. A control group of fish were treated similarly but were not injected.

Within a day after injections started the fish developed a coloration that matched published descriptions of spawning coloration. The normally distinctive horizontal stripes on the dorsal side of the fish were obscured by tan and dark brown blotches; below that was a reddish streak from the gills to the tail that was more distinct on the males. Dark stripes were extremely distinct below the red streak, and the bellies of the fish became very white. Within 3 days the vents of the females became more enlarged and brighter pink. A few eggs could be seen when pressure was applied to the abdomen. Some females also developed small nuptial tubercles on their anal fins. The tubercles on the males became larger and tiny tubercles also began to appear on nearly all their dorsal and upper lateral scales. On day 6, half the females could be spawned by pressure to their abdomens. Additional injections did not induce the remaining females to release eggs. Milt was easily extruded from the males. Little change had occurred in the control group and no eggs were obtained from them.

The fertilized eggs of the spotted suckers hatched after 4 days at 22°C and were swim-up fry 7 days later. These fry were stocked into ponds and are now being used to test the effect of stocking density on production.

For further information contact

Gerald M. Ludwig
Fish Farming Experimental laboratory
P.O. Box 860
Stuttgart, Arkansas 72160
(501)673-4483