RICHARD J. NEVES

Dick
for your
information
Dick

ROUTING
BPC NAM
RGB JAR
RRC HV
JAF NC
JLN LR
VGH G SMNP

Nancy
Quinn
1996

QUARTERLY REPORT

October 1 - December 31, 1995

DEVELOPING TECHNOLOGY FOR LONG-TERM HOLDING OF MUSSELS IN CAPTIVITY

JAMES B. LAYZER and ROBERT QUINN
Tennessee Cooperative Fishery Research Unit
Tennessee Technological University
PO Box 5114
Cookeville, TN 38505

RECEIVED
FEB 14 1996
USFWS - ASHEVILLE NC

QUARTERLY REPORT

DEVELOPING TECHNOLOGY FOR LONG-TERM HOLDING OF MUSSELS IN CAPTIVITY

On November 30, we collected a total of 852 mussels of 15 species from Kentucky Lake. All mussels were hand-scrubbed with wire brushes and then placed into eight plastic stock tanks containing 200 gallons of water from Center Hill Lake for a 30-day quarantine. The seven most abundant species were distributed among seven tanks at varying density (Table 1). The remaining mussels were held in the eighth tank. After the 30-day quarantine, survival of mussels in all tanks was about 99%. Thus survival was not affected by the densities we used. Throughout the study, a number of water quality variables were monitored. Because water chemistry began to change near the end of the 30-day period, we kept the mussels in quarantine for an additional 2 week period. We are planning additional density experiments and more intensive monitoring of water quality. The high survival of mussels in this experiment was significantly greater than our first two attempts to quarantine mussels which resulted in about 80% survival.

Table 1. Species and numbers of mussels held in quarantine at varying densities.

Species	Tank-1	Tank-2	Tank-3	Tank-4	Tank-5	Tank-6	Tank-7
Amblema plicata	14	30	46	59	74	88	104
Potamilus alatus	1	2	3	4	5	6	7
Megalonaias nervosa	1	2	3	4	5	6	7
Fusconaia ebena	2	4	6	8	10	12	14
Quadrula quadrula	4	8	12	16	20	24	28
Fuconaia flava	1	2	3	4	5	6	7
Quadrula apiculata	1	2	3	4	5	6	7
TOTAL	24	50	76	99	124	148	174

QUARTERLY REPORT

October 1 - December 31, 1995

REESTABLISH POPULATIONS OF ENDANGERED AND THREATENED SPECIES IN SHOAL CREEK

JAMES B. LAYZER, ANNETTE MORGAN, and NATHAN WELKER
Tennessee Cooperative Fishery Research Unit
Tennessee Technological University
PO Box 5114
Cookeville, TN 38505

QUARTERLY REPORT

REESTABLISH POPULATIONS OF ENDANGERED AND THREATENED SPECIES IN SHOAL CREEK

In 1995, fish were collected at 83 sites located throughout the Shoal Creek drainage. During this quarter, all specimens were identified. In all, 78 species belonging to 15 families were collected (Table 1). Many of the species collected are known hosts for the common mussels introduced into Shoal Creek. Some of the species are also known hosts of the endangered mussels that are being considered for reintroduction. The fish distributional data is being analyzed to determine additional potential sites for mussel reintroductions.

Table 1. List of all fish species and the number of sites where they were collected in the Shoal Creek drainage.

ORDER FAMILY Scientific name	Number of sites
PETROMYZONTIFORMES	
PETROMYZONTIDAE	
Ichthyomyzon bdellium	12
Ichthyomyzon castenatus	7
Lamptera aepytera	1
LEPISOSTEIFORMES	
LEPISOSTEIDAE	
Lepisosteus osseus	2
CLUPEIFORMES	
CLUPEIDAE	
Dorosoma cepedianum	11
CYPRINIFORMES	
CYPRINIDAE	
Campostoma anomalum	76
Clinostomus funduloides	53
Cyprinella galactura	29
Cyprinella spiloptera	6
Erimystax dissimilis	3
Erimystax insignis	10
Erimyzon oblongus	2
Hemitrema flamea	2
Hybopsis amblops	29
Luxilus chrysocephalus	62
Luxilus coccogenis	47
Lythrurus ardens	18
Lythrurus lirus	13
Nocomis micropogon	13
Notemigonus crysoleucus	3
Notropis antherinoides	4
Notropis boops	9
Notropis leucoides	34
Notropis rubellus	8
Notropis telescopus	33
Notropis volucellus	15
Notropis sp. "sawfin shiner"	4

Table 1. Continued.

ORDER FAMILY Scientific name	Number of sites
Phenacobius uranops	10
Phoxinus erythrogaster	18
Pimephales notatus	29
Pimephales promelas	1
Rhinichthys atractulus	27
Semotilus atromactulatus	69
CATOSTOMIDAE	
Catostomus commersoni	6
Hypentilium nigricans	68
Minytrema melanops	9
Moxostoma duquesnei	21
Moxostoma erythrurum	18
SILURIFORMES	
ICTALURIDAE	
Amieurus melas	4
Ameiurus natalis	15
Ictalurus punctatus	6
Noturus exilis	9
Noturus flavus	1
SALMONIFORMES	
ESOCIDAE	
Esox niger	5
SALMONIDAE	
Oncorhynchus mykiss	3
CYPRINODONTIFORMES	
FUNDULIDAE	
Fundulus catenatus	44
Fundulus olivaceus	33
POECILIDAE	
Gambusia affinis	8
ATHERINIFORMES	
ATHERINIDAE	
Labidesthes sicculus	1

Table 1. Continued.

ORDER FAMILY Scientific name	Number of sites
SCORPAENIFORMES	
COTTIDAE	
Cottus carolinae	71
PERCIFORMES	
MORONIDAE	
Morone chrysops	1
CENTRARCHIDAE	
Ambloplites rupestris	50
Lepomis cyanellus	69
Lepomis gulosus	10
Lepomis macrochirus	58
Lepomis megalotis	47
Lepomis microlophus	1
Micropterus dolomieu	21
Micropterus punctulatus	27
Micropterus salmoides	19
Pomoxis annularis	2
Pomoxis nigromaculatus	2
PERCIDAE	
Etheostoma blennioides	46
Etheostoma blennius	20
Etheostoma boschungi	1
Etheostoma caeruleum	63
Etheostoma crossopterum (or Etheostoma nigripinne)	31
Etheostoma duryi	54
Etheostoma flabellare	39
Etheostoma neopterum	13
Etheostoma rufilineatum	49
Etheostoma simoterum	52
Etheostoma stigameum	6
Etheostoma zonale	11
Percina caprodes	22
Percina evides	22
Percina sciera	2
SCIAENDAE	
Aplodinotus grunniens	4

QUARTERLY REPORT

October 1 - December 31, 1995

ZEBRA MUSSEL IMPACTS ON ENDANGERED UNIONIDS

JAMES B. LAYZER and CURTIS DUNN
Tennessee Cooperative Fishery Research Unit
Tennessee Technological University
PO Box 5114
Cookeville, TN 38505

QUARTERLY REPORT

ZEBRA MUSSEL IMPACTS ON ENDANGERED UNIONIDS

With the exception of the Frankfort Fish Hatchery, little mortality has occurred among mussels held at the other three facilities (species, numbers, and locations held are in our Annual Report for 1995). Because of the low survival of all species at the Frankfort Hatchery, we do not intend to hold mussels there beyond this spring. Only 1 *Pleurobema pyramidatum* has died out of the 218 *Pleurobema* spp. brought to the Minor Clark Hatchery in September.

On July 21, 1995, we began using the Normandy Fish Hatchery for holding mussels in a raceway and pond. The three most abundant species were divided into two equal groups; one group was suspended in pocket nets and the other group was broadcast throughout the pond (Table 1). On December 7, the pond was drained to harvest fish. At that time, survival of mussels was slightly higher for two of the mussel species on the pond bottom and considerably higher for *Amblema plicata* (Table 1). After the fish were harvested, the pond was refilled. Because the water supply to the hatchery was being turned off for the winter, all mussels were removed from the raceway and placed in pocket nets in the ponds.

When we collected 852 mussels from Kentucky Lake near the Duck River on November 30, 1995, two zebra mussels (17 mm and 19 mm) were attached to two unionids indicating a very low density and infestation at this location.

Table 1. Species, numbers, and percent survival (in parenthesis) held in a pond at the Normandy Hatchery.

Species	Numbers and % Survival	
	Pocket Nets	Pond Bottom
Amblema plicata	50 (50%)	50 (74%)
Cyclonaias tuberculata	99 (92%)	100 (97%)
Quadrula pustulosa	51 (71%)	50 (78%)
Truncilla truncata	16 (19%)	--
Obliquaria reflexa	6 (83%)	--
TOTAL	222	200