

**FRESHWATER MOLLUSK (MUSSEL AND SNAIL) SAMPLING IN THE COOSA  
RIVER BELOW THE LAY AND MITCHELL PROJECTS  
(Interim Report – April 25, 2006)**

**Introduction**

As part of the relicensing activities and the associated minimum flow evaluation process for the Lay and Mitchell projects, APC conducted mollusk surveys in the tailrace areas downstream of both projects during 2000 and 2005. This report is a summary of findings for both of those surveys and will be used in the discussions regarding the need for a minimum flow downstream of both projects.

**Methods**

Surveys of unionid mussels and aquatic snails below the Lay and Mitchell hydroelectric projects were conducted in 2000 and again in 2005. Surveys were conducted by Southern Environmental Diving, using two PADI certified divers and a boat equipped with surface supplied air and a tender-to-diver communication system.

Surveys were performed in the first two to three miles downstream of the dams, and the sampling sites were chosen based on potential habitat suitability for mollusks. Sample sites from 2000 were not re-sampled during 2005, in an attempt to sample as many different areas of suitable habitat as possible. Each dive was 20 minutes in duration, and a total of 20 dives were performed over a two day period at each project (due to a malfunction with the communication system, only 19 dives were accomplished below Mitchell Dam during 2005).

During each dive, any live mussels and snails, as well as dead shell material, were picked up by the diver, held in a dive bag until the completion of that dive, and brought to the boat for identification and enumeration. All live mussels were then released back into the appropriate habitat; snails were either released (2000) or preserved in 95% ethanol and returned to the laboratory (2005). Some shell material was also retained for voucher purposes. Depending on their condition, shells were designated as fresh dead or relic (old and worn). The physical data associated with each dive, such as depth, substrate, and exact location (using GPS) were also recorded.

**Results**

*Lay Dam Tailwaters*

The mussel fauna collected below Lay Dam is typical of tailwater areas and is represented by a handful of hardy, big river species, none of which are federally listed as either endangered or threatened ([Table 1](#)). During 2000 sampling, five species were collected, dominated by *Quadrula apiculata* (Southern Mapleleaf) and *Obliquaria reflexa* (Threehorn Wartyback). During 2005 sampling, six species were collected; *Q. apiculata* and *O. reflexa* again dominated, along with *Plectomerus dombeyanus* (Bankclimber). The introduced Asiatic clam, *Corbicula fluminea*, was also collected in 2005. One species was collected during 2000 but not during 2005 (*Amblema plicata*, Threeridge); two species (*Leptodea fragilis*, Fragile Papershell; *Truncilla donaciformis*, Fawnsfoot) were collected during 2005 but not during 2000.

Two genera of aquatic snails were identified from dives performed during 2000 ([Table 1](#)). Both *Elimia* and *Pleurocera* (*P. prasinata*, Smooth Hornsnail) were collected by the dive crew. These genera are combined as “Pleuroceridae sp.” in [Table 1](#), since precise numbers of each genus were not documented. During 2005, *P. prasinata* and *Elimia* were again commonly collected, along with *Viviparus subpurpureus* (Olive Mysterysnail). There are recognized, documented problems with the current state of the taxonomy and identification of *Elimia* snails in the southeastern United States (see Thompson (2000) for one synopsis of these problems), and identifications in 2000 and 2005, made by various workers with considerable experience with the genus, have resulted in the assigning of several species names for the same groups of individuals collected below Lay Dam, including *E. haysiana*, *E. curvicostata*, *E. brevis*, *E. sp.cf bullula*, and *E. hartmaniana*. (None of these species of *Elimia* tentatively identified as occurring in the Coosa River below Lay Dam are currently federally listed as either endangered or threatened, nor are *P. prasinata* or *V. subpurpureus*.) While it is highly unlikely that all these taxa are in fact present below Lay Dam, it seems evident that one, two, or perhaps more variable species of *Elimia* do occur there. Additional study, including examination of type material, gathering of life history information, and genetic analysis, is needed to resolve the systematics of these species for more conclusive taxonomic identification. For the purposes of this report, all *Elimia* snails collected below Lay Dam to date will be collectively referred to as *Elimia* spp.

#### *Mitchell Dam Tailwaters*

The mussel fauna below Mitchell Dam is also typical of tailwater habitat ([Table 2](#)). During 2000, eight species of native mussels were collected by the sampling crew, none of which are federally listed as either endangered or threatened. Samples were dominated by *Q. apiculata* and *O. reflexa*. During 2005 sampling, ten species were collected, and *Q. apiculata* and *O. reflexa* were again the dominant species. *C. fluminea* was collected during the 2000 season. Two of the species collected during 2005 sampling (*Ellipsaria lineolata*, Butterfly; *Quadrula rumphiana*, Ridged Mapleleaf) were not collected during the 2000 sampling.

Two genera of aquatic snails were identified from 2000 collections ([Table 2](#)). *Elimia* (tentatively identified at the time as *E. haysiana*) and *Pleurocera prasinata* were both fairly common in the dive samples. These genera are combined as “Pleuroceridae sp.” in [Table 2](#), since precise numbers of each genus were not documented. In 2005, when snails were more specifically targeted, *Pleurocera* and *Elimia* (tentatively identified as a complex of *E. haysiana*, *E. hartmaniana*, and/or *E. sp. cf bullula*) were again very common in the samples; additionally, two species of viviparid snails, *Viviparus subpurpureus* and *Campeloma regulare* (Cylinder Campeloma), were collected in 2005. None of the snails collected in the Coosa River below Mitchell Dam are currently listed as endangered or threatened by the USFWS. As was the case below Lay Dam, further study of the species of *Elimia* occurring below this project is needed to clarify the taxonomy/identification of these snails. For the purposes of this report, all *Elimia* snails collected below Mitchell Dam to date will be collectively referred to as *Elimia* spp.

#### **Conclusion**

No federally protected mollusk species were detected in the Lay and Mitchell tailwater areas. Current operations appear to support a number of hardy, large river species of unionids. It is anticipated that continuation of the current operations, along with the anticipated dissolved oxygen improvements, will continue to support the species of mollusks present in these tailwaters. Further study will be required before the identification of the species of the *Elimia*

complex inhabiting these tailwater areas can be accomplished with a reasonable confidence level.

### Literature Cited

Thompson, Fred G. 2000. Freshwater Snails of the Genus *Elimia* from the Coosa River System, Alabama. *Walkerana* 11(25):1-54.

Table 1. Mussels and snails collected in the Lay Dam Tailrace, Chilton/Coosa County, Alabama, during 2000 and 2005			
Scientific Name	Common Name	No. collected in 2000	No. collected in 2005
<i>Amblema plicata</i>	Threeridge	1	0
<i>Lampsilis teres</i>	Yellow Sandshell	4	1
<i>Leptodea fragilis</i>	Fragile Papershell	0	1
<i>Obliquaria reflexa</i>	Threehorn Wartyback	55	63
<i>Plectomerus dombeyanus</i>	Bankclimber	2	91
<i>Quadrula apiculata</i>	Southern Mapleleaf	97	144
<i>Truncilla donaciformis</i>	Fawnsfoot	0	2
Unionidae sp.	Unidentified juvenile	0	2
<i>Corbicula fluminea</i>	Asiatic Clam	0	2
<i>Viviparus subpurpureus</i>	Olive Mysterysnail	0	9
<i>Elimia</i> spp.	<i>Elimia</i> spp.	NA	155
<i>Pleurocera prasinata</i>	Smooth Hornsnail	NA	253
Pleuroceridae sp.	snails	61	NA

Table 2. Mussels and snails collected in the Mitchell Dam Tailrace, Chilton/Coosa County, Alabama, during 2000 and 2005			
Scientific Name	Common Name	No. collected in 2000	No. collected in 2005
<i>Amblema plicata</i>	Threeridge	14	24
<i>Ellipsaria lineolata</i>	Butterfly	0	1
<i>Lampsilis teres</i>	Yellow Sandshell	5	1
<i>Leptodea fragilis</i>	Fragile Papershell	4	4
<i>Megaloniaias nervosa</i>	Washboard	6	3
<i>Obliquaria reflexa</i>	Threehorn Wartyback	53	66
<i>Quadrula apiculata</i>	Southern Mapleleaf	373	186
<i>Quadrula asperata</i>	Alabama Orb	3	1
<i>Quadrula rumphiana</i>	Ridged Mapleleaf	0	31
<i>Truncilla donaciformis</i>	Fawnsfoot	2	2
<i>Corbicula fluminea</i>	Asiatic Clam	1	0
<i>Campeloma regulare</i>	Cylinder Campeloma	0	4
<i>Viviparus subpurpureus</i>	Olive Mysterysnail	0	25
<i>Elimia</i> spp.	<i>Elimia</i> spp.	NA	18
<i>Pleurocera prasinata</i>	Smooth Hornsnail	NA	200
Pleuroceridae sp.	snails	38	NA