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1998

The VDGIF Project On The Distribution And Abundance Of Freshwater Mussels, Snails And Crayfish Of The Virginia Section Of The New River

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Project summary of 1997 field work, 5May to 16September.

Species list, and abundance and status of mussels:

Mussels

- Alasmidonta marginata* 2 (N)
- Anodonta grandis* 250 (I)
- Cyclonaias tuberculata* 605 (PN)
- Elliptio dilitata* 314 (N)
- Lampsilis fasciola* 9 (I)
- Lampsilis ovata* 25 (I)
- Lasmigona subviridis* 7 (N)
- Tritogonia verrucosa* 34 (PN)
- Utterbackia imbecillis* 75 (I)

Crayfish

- Cambarus bartoni*
- Cambarus chasmodactylus*
- Cambarus dubius*
- Cambarus sp.*
- Cambarus sciotensis*
- Orconectes spinosus*
- Orconectes sp.*

Snails

- Campoloma crassula*
- Elimia symmetrica*
- Elimia simplex* (Dillon)
- Ferrissia rivularis*
- Fossaria abrussa* (Dillon)
- Heliosoma anceps*
- Leptoxis dilitata*
- Physella hendersoni*
- Pseudosuccinea columella*
(Dillon)

Total effort: 221.5 man hours.

N= native, PN=Probably native, I=introduced; based on Ortman, A.E., 1913, The Alleghenian Divide, And Its Influence Upon The Freshwater Fauna. Proceedings Of The American Philosophical Society, Volume L11 May-August No. 210, pp. 287-387.

Snails are tentatively identified from North American Freshwater Snails, 1980, by Burch, J.B. and J.L. Tottenham, Museum of Zoology, University Michigan, Ann Arbor, Michigan, 48109.

Crayfish are tentively identified from An Introduction to the Crayfishes of Virginia, VDGIF Wildlife Information and Enhancement Division, Endangered Species and Nongame Program, 1996.

A list of suggested ideas for final report:

1. Geology of New River, 3 distinct geologic provinces and how it may influence fauna, water chemistry differences, hard water and soft water zones, water chemistry influences, substrate changes, igneous and limestone comp. etc.
2. What species are native, what species are introduced, and why and how this is known
3. Faunal changes: species decline of green floater, pistol grip (alot of fresh dead shell), elktoe. River continuum changes, lower more diverse than upper New. No wavy rayed lamp mussel above Claytor.
4. Description of New River mussels, shell characteristics sizes min. Max., gravid periods, host fish, habitat preferences (green floater in sand pockets behind boulders and bedrock protrusions, pistol grip under boulders at Foster Falls), uniqueness (spike in New is white nacre and is considered a dwarf stock by Ortman)
5. Get Stansberry reference for green floater in Little River
6. Locally, mussels were generally patchy and unpredictable in distribution
7. What happened to mussels in tributaries? Evidence suggest they were there (Cripple Creek)
8. Where are survey gaps?

Appendix

Location and collection data for sites of the VDGIF project on diversity and distribution of mussels, snails, and crayfish of the Virginia section of the New River drainage. Information is presented as follows: site number; stream name; county; landmark location; USGS quad; latitude and longitude; collection date; species list; and comments.

Site 1. New River; Pulaski County, at Allissonia VA; off Rt. 637, across from large island at first set of rapids and runs above Claytor Lake; Latitude 00 00.000 North, Longitude 000 00.000 West; Collection date: 28May97.

<u>Mussels</u>	<u>Shell</u>	<u>Crayfish</u>	<u>Snails</u>
<i>C. tuberculata</i> 59	<i>E. dilitata</i>	<i>Cambarus</i> sp.	<i>L. dilitata</i>
<i>L. ovata</i> 1	<i>T. verrucossa</i>	<i>Orconectes</i> sp.	

Comments: The area surveyed was a series of rapids, riffles and runs at the beginning of Claytor Lake. The average width was 120 meters. The average depth was .75 meters. The substrate was a mixture of boulders, cobble and sand. Most mussels were found on the right ascending bank directly across from the island at the first rapid entering Claytor Lake. A variety of size classes of *C. tuberculata* were observed, ranging from 35mm to 120mm total length. In addition, the periostracum of these mussels appeared in excellent condition, with very little shell erosion. Crayfish were found in low abundance. *L. dilitata* was extremely abundant throughout the site. Total effort: 6 man hours.

Site 2. Mouth of Reed Creek; Wythe County; Off Rt. 618, 1.5 miles southeast of Allison, VA; Latitude 36 55.886 North, Longitude 080 48.180 West; Collection date: 28May97.

<u>Mussels</u>	<u>Shell</u>	<u>Crayfish</u>	<u>Snails</u>
<i>C. tuberculata</i> 23	<i>E. dilitata</i>	<i>Cambarus</i> sp.	<i>H. anceps</i>
	<i>L. ovata</i>	<i>Orconectes</i> sp.	<i>L. dilitata</i>

Comments: The area surveyed was from the mouth of Reed Creek upstream 500 meters to a concrete bridge. The average depth was .5 meters. The average width was 35 meters. The habitat was a run with a substrate of sand, pebble, boulders and exposed bedrock. *C. tuberculata* were not found aggregated and in low abundance from the creek mouth to the first concrete bridge crossing. Total effort: 6 man hours.

Site 3. Middle Reed Creek; Wythe County; Off Rt. 619, 1.5 miles south of Grahams Forge; Max Meadows Quad; Latitude 36 56.158 North, Longitude 080 53.411 West; Collection date: 28May97.

<u>Shell</u>	<u>Crayfish</u>	<u>Snails</u>
<i>E. dilitata</i>	<i>Cambarus sp.</i>	<i>L. dilitata</i>
<i>L. ovata</i>	<i>Orconectes sp.</i>	

Comments: The area surveyed was 200 meters of stream and was accessed from a narrow field immediately off the road. The average depth was .5 meters. The average width was 40 meters. The habitat was a run with moderate flow and a substrate of sand, cobble, boulders and flat rocks. No live mussels were found. Live *Corbicula* and its shell were very abundant. Crayfish were abundant. Snails were not abundant. Total effort: 4.5 man hours.

Site 4. Upper Reed Creek; Wythe County; At Rt. 664 bridge crossing; Crockett Quad; Latitude 36 56.983 North, Longitude 081 11.311 West; Collection date: 30May97.

<u>Crayfish</u>	<u>Snails</u>
<i>Cambarus sp.</i>	<i>H. anceps</i>
<i>Orconectes sp.</i>	<i>L. dilitata</i>

Comments: The area surveyed was from the Rt. 664 bridge upstream 100 meters. The average depth was .3 meters. The average width was 12 meters. The habitat was riffles and runs with moderate flow and a substrate of cobble, pebble and sand with minimal sedimentation. No live mussels or shell were found. No *Corbicula* or its shell were found. Crayfish and snails were abundant. Total effort: 2 man hours.

Site 5. Upper Reed Creek; Wythe County; Off Rt. 625, where road parallels creek at a distance of about 1 meter, approximately .25 miles below mouth of Gullion Fork; Rural Retreat Quad; Latitude 36 58.895 North, Longitude 081 16.727 West; Collection date: 30May97.

<u>Crayfish</u>	<u>Snails</u>
<i>Cambarus sp.</i>	<i>L. dilitata</i>
<i>Orconectes sp.</i>	

Comments: The area surveyed was 100 meters upstream parallel to the road. The average depth was .15 meters. The average width was 5 meters. The habitat was fast flowing riffles and runs with cobble, sand and pebble substrate. No live mussels or shell were found. No *Corbicula* or shell were found. Crayfish and snails were abundant. Total effort: 2 man hours.

Site 6. Middle Reed Creek; Wythe County; At Rt. 121 bridge crossing, 3 miles North of Ft. Chiswell; Max Meadows Quad; Latitude 36 57.863 North, Longitude 080 57.254 West; Collection date: 30May97.

<u>Shell</u>	<u>Crayfish</u>	<u>Snails</u>
<i>E. dilatata</i>	<i>Cambarus sp.</i> <i>Orconectes sp.</i>	<i>L. dilatata</i>

Comments: The area surveyed was from the Rt 121 bridge upstream 100 meters. The average depth was .75 meters. The average width was 20 meters. The habitat was a slow flowing run with pebble, cobble and clay substrate. No live mussels were found, but several old shells of *E. dilatata* were found. *Corbicula* shell were present. Crayfish were not abundant. Snails were moderately abundant. Total effort: 2 man hours.

Site 7. Mouth of Cripple Creek; Wythe County; At the end of Quarry Road at ford, 1.5 miles North of Ivanhoe; Austinville Quad; Latitude 36 49.988 North, Longitude 080 56.439 West; Collection date: 12June97.

<u>Shell</u>	<u>Crayfish</u>	<u>Snails</u>
<i>C. tuberculata</i> 2 <i>E. dilatata</i> 9	<i>Cambarus sp.</i> <i>Orconectes sp.</i>	<i>H. anceps</i> <i>L. dilatata</i>

Comments: The area surveyed was from the mouth of Cripple Creek upstream 500 meters. The average depth was 1 meter. The average width was 15 meters. The habitat was riffles, runs and pools with a substrate of cobble, pebble, sand and bedrock. Numerous well developed gravel and pebble shoals were present and appeared to be excellent mussel habitat. In general this section of stream was clean and had little to no sedimentation. No live mussels were found. *Corbicula* were found in low abundance. Crayfish and snails were abundant. Total effort: 6 man hours.

Site 8. Upper Cripple Creek; Wythe County; 150 meters downstream of 619 bridge crossing, 3 miles East of Speedwell; Speedwell Quad; Latitude 36 49.038 North, Longitude 081 08.383 West; Collection date: 16June97.

<u>Crayfish</u>	<u>Snails</u>
<i>Cambarus sp.</i> <i>Orconectes sp.</i>	<i>L. dilatata</i>

Comments: The area surveyed was 100 meters upstream to 50 meters below the 619 bridge. The average depth was .3 meters. The average width was 12 meters. The habitat was moderate to fast flowing riffles and runs with a substrate of boulder and cobble interspersed with patches of pebble and sand. No live

mussels or shell were found. No live *Corbicula* or it's shell were found. Crayfish and snails were abundant. Total effort: 2.5 man hours.

Site 9. Middle Cripple Creek; Wythe County; directly above Rt. 94 bridge crossing; Austinville Quad; Latitude 36 51.719 North, Longitude 080 58.727 West; Collection date: 16June97.

<u>Shell</u>	<u>Crayfish</u>	<u>Snails</u>
<i>E. dilitata</i> ~100	<i>Cambarus sp.</i> <i>Orconectes sp.</i>	<i>L. dilitata</i>

Comments: The area surveyed was from the Rt. 94 bridge upstream 200 meters. The average depth was .5 meters. The average width was 15 meters. The habitat was moderate to fast flowing riffles and runs with a substrate of boulder and cobble interspersed with patches of sand and pebble. No live mussels were found but *E. dilitata* shell were abundant on the right ascending bank, approxitately 75 meters above the Rt. 94 bridge. *Corbicula* were found in low abundance. Crayfish and snails were abundant. Total effort: 3 man hours.

Site 10. New River, Foster Falls; Wythe County; Foster Falls State Park; Austinville Quad; Latitude 36 53.170 North, Longitude 080 51.210 West; Collection date: 20June97 and 23June97.

<u>Mussels</u>	<u>Shell</u>	<u>Crayfish</u>	<u>Snails</u>
<i>C. tuberculata</i> 86	<i>C. tuberculata</i>	<i>Cambarus sp.</i>	<i>L. dilitata</i>
<i>E. dilitata</i> 6	<i>E. dilitata</i>	<i>Orconectes sp.</i>	
<i>L. ovata</i> 7	<i>L. ovata</i>		
<i>T. verrucossa</i> 11	<i>T. verrucossa</i>		

Comments: The mainstem side and channels of the three small islands across from the VDGIF boat landing were surveyed on June 20. The mainststem side and channel of Baker island were surveyed on June 23. The types of habitat surveyed included all riffles and runs of .5 to 2 meters in depth. The substrate varied from well embedded pebble and cobble to loose sand and exposed bedrock. The average width was 100 meters. The average depth was 1 meter. Most mussels were found on the mainstem side of the three small islands across from the boat ramp. Most *T. verrucossa* were found under large rocks on the mainstem side of the islands. Shell of *T. verrucossa* was very abundant in the surveyed areas. 6 *C. tuberculatta* and 5 *L. ovata* were gravid. Crayfish were not abundant. Snails were abundant in areas with good flow. Total effort: 8.5 man hours.

Site 11. The mouth of Big Reed Island Creek, the mouth of Little Reed Island Creek, and New River, 200 (m) upstream of confluence with Big Reed Island Creek; Pulaski County; access from Pine Run road, off Rt. 100; Hiwassee Quad; Latitude 36 56.268 North, Longitude 080 45.093 West; Collection date: 24June97.

<u>Mussels</u>	<u>Shell</u>	<u>Snails</u>
<i>C. tuberculata</i> 70	<i>C. tuberculata</i>	<i>L. dilitata</i>
<i>E. dilitata</i> 1	<i>E. dilitata</i>	
<i>L. ovata</i> 2	<i>L. ovata</i>	
	<i>T. verrucossa</i>	

Comments: Big Reed Island Creek and Little Reed Island Creek were both surveyed from the mouth upstream for 300 meters. The average widths for these two streams was 35 meters and 12 meters respectively. The average depths were .5 meters and .3 meters. The dominant substrate in both streams was loose sand. No live mussels or shell were found in either stream. Crayfish and snails were not abundant in either stream. A series of small rapids, riffles and runs in the New River 150 meters above the mouth of Big Reed Island Creek were surveyed for 2 man hours. The average width for this area of river was 120 meters. The average depth was 1 meter. The dominant substrate was moderately embedded pebble and cobble. Mussels were abundant on the left ascending side of the river in run habitat of .5-2 meters depth. Crayfish were not abundant. Snails were abundant in shallow areas with fast flow. Total effort: 5 man hours.

Site 12. Middle Little Reed Island Creek; Wythe County; at Rt. 607 bridge, off Rt. 100; Fosters Falls Quad; Latitude 36 53.660 North, Longitude 080 47.176 West; Collection date: 25June97.

<u>Crayfish</u>	<u>Snails</u>
<i>Cambarus sp.</i>	<i>L. dilitata</i>

Comments: The area surveyed was from the Rt. 607 bridge upstream 200 meters. The average depth was .3 meters. The average width was 10 meters. The habitat was moderately flowing riffles and runs with a substrate of cobble and pebble. No mussels or shell were found. Crayfish were not abundant. Snails were moderately abundant. Total effort: 2 man hours.

Site 13. Upper Little Reed Island Creek; Wythe County; off Rt. 703 bridge, at confluence with east and west fork; Woodlawn Quad; Latitude 36 44.094 North, Longitude 080 44.879 West; Collection date: 25June97.

Crayfish

Cambarus sp.

Comments: The area surveyed was the 100 meters of stream below the confluence of the east and west forks. The stream was of high gradient and had several areas of plunge pool habitat. The average depth was .5 meters. The average width was 6 meters. The habitat was mostly fast flowing riffles and runs with a substrate of boulder, cobble and pebble. No mussels or shell were found. Crayfish were very abundant. No snails were found. Total effort: 2 man hours.

Site 14. Middle Big Reed Island Creek; Carroll County; at church on Rt. 672, 75 meters above Rt. 221 bridge; Hillsville Quad; Latitude 36 47.265 North, Longitude 080 38.959 West; Collection date: 25June97.

Crayfish

Cambarus sp.

Snails

L. dilitata

Comments: The area surveyed started 75 meters above the Rt. 672 bridge and went upstream 200 meters. The average depth was .25 meters. The average width was 15 meters. The habitat was moderately flowing riffles and runs with a substrate of cobble, pebble and sand. No mussels or shell were found. Crayfish and snails were abundant. Total effort: 2 man hours.

Site 15. Upper Big Reed Island Creek; Carroll County; at ford off Rt. 649; Laurel Fork Quad; Latitude 36 42.405 North, Longitude 080 34.639 West; Collection date: 25June97.

Crayfish

Cambarus sp.

Snails

L. dilitata

Comments: The area surveyed was from the Rt. 649 ford upstream 100 meters. The average depth was .3 meters. The average width was 5 meters. The habitat was high gradient riffles and runs with a substrate of boulder, cobble and pebble. No mussels or shell were found. Crayfish were moderately abundant. Snails were not abundant. Total effort: 2 man hours.

Site 16. New River near Ivanhoe; Wythe County; at big island above confluence with Cripple Creek; Austinville Quad; Latitude 36 51.272 North, Longitude 080 56.336 West (coordinates taken at the lower end of large island directly above mouth of Cripple Creek); Collection date: 27June97.

<u>Mussels</u>	<u>Crayfish</u>	<u>Snails</u>
<i>C. tuberculata</i> 38	<i>Cambarus sp.</i>	<i>L. dilitata</i>
<i>E. dilitata</i> 4	<i>Orconectes sp.</i>	
<i>T. verrucossa</i> 1		

Comments: Access to the site was by canoe from the New River Trail at Ivanhoe. The left ascending channel, beginning, end and mainstem side of the big island above the mouth of Cripple Creek were surveyed. 16 *C. tuberculata* (1 gravid), 2 *E. dilitata* (1 gravid), 1 *T. verrucossa* were found at the beginning of the island directly above its left ascending channel. Shell material of *E. dilitata* was abundant in this area. No mussels were found in the channel itself. 22 *C. tuberculata* and 2 *E. dilitata* (1 gravid) were found at the end of the island and along its bank on the mainstem side. A gravid *C. tuberculata* was observed with swollen mantle tissue around its siphons. When the tissue was touched it ejected small white conglomerate packets. The average depth of the area was 1.5 meter. The average width of the mainstem side was 50 meters. The average width of the channel was 15 meters. The habitat was diverse with deep runs, large riffles, small rapids and eddys typical throughout the site. The substrate was also varied with boulder, cobble, pebble and sand being dominant in many areas. Crayfish and snails were moderately abundant. Total effort: 7.5 man hours.

Site 17. New River, New River Trail at Ivanhoe access; Wythe County; off Rt. 742; Austinville Quad; Latitude 36 50.214 North, Longitude 080 57.168 West; Collection date: 30June97.

<u>Mussels</u>	<u>Snails</u>
<i>C. tuberculata</i> 3	<i>L. dilitata</i>

Comments: The areas surveyed were the riffles and runs around the small islands directly out from the New River Trail campground at Ivanhoe. The river was constricted around the islands to create a long swift rapid on the right ascending side. The rapids were not surveyed. The habitat immediately above the islands appeared excellent but few mussels or shell were found. The eddy areas below the rapid on the left ascending side of the river also appeared to be excellent habitat. No mussels were found in this area. The average depth was .75 meters. The average width was 80 meters. Boulder, cobble, and pebble were the dominant substrate. Crayfish were found in low abundance and none were collected. Snails were found in low abundance. Total effort: 4 man hours.

Site 18. New River; Wythe County; .75 miles upstream of Ivanhoe at the islands just above power line substation, access from Rt 743, Carbine Lane; Austinville Quad; Latitude 36 48.984 North, Longitude 080 57.021 West; Collection date: 30June97.

<u>Mussels</u>	<u>Crayfish</u>	<u>Snails</u>
<i>C. tuberculata</i> 15	<i>Cambarus sp.</i>	<i>L. dilitata</i>
<i>E. dilitata</i> 6		
<i>L. ovata</i> 2		
<i>T. verrucosa</i> 2		

Comments: The areas surveyed were the riffles and runs around the islands above the power line substation. The average depth was .3 meters. The average width of the river at the site was 150 meters. Boulder, cobble, pebble and sand were the dominant substrates. Most mussels were found 75 meters upstream of the islands, 20-50 meters off the right ascending bank, in run habitat of slow to moderate flow. A male *L. ovata* was observed with its siphons fully dilated releasing sperm. Crayfish were moderately abundant. Snails were found in low abundance due to *Elodea* and other aquatic macrophytes completely covering large areas of substrate. Total effort: 4 man hours.

Site 19. New River; Carroll County; .5 miles up river of Galax, at the end of Rt. 640, at islands; Galax Quad; Latitude 36 39.774 North, Longitude 080 58.558 West; Collection date: 1July97.

<u>Mussels</u>	<u>Crayfish</u>	<u>Snails</u>
<i>A. marginata</i> 2	<i>Cambarus sp.</i>	<i>L. dilitata</i>
<i>E. dilitata</i> 26		

Comments: The areas surveyed included both sides of the islands across from the horse farm at the end of Rt. 640, and from the beginning of the islands 200 meters up river. This segment of river was a large run with an average width of 150 meters, an average depth of .5 meters, and contained large amounts of sand and pebble. The substrate appeared clean and free of sediments. Most *E. dilitata* were found above the islands. Four were gravid. Shell material of *E. dilitata* was abundant and small in size, about 2 inches. Two live *A. marginata* were found 50 meters above the beginning of the islands in a moderately flowing run with pebble substrate. They were old individuals with well eroded valves, especially on the umbonal region. Neither were gravid. Both mussels were identified by Dr. Neves at Virginia Tech. Crayfish were not abundant. Snails were very abundant. Total effort: 6 man hours.

Site 20. New River, North of Galax; Grayson County; off Rt. 869, where road parallels closely to river near dirt boat ramp ; Galax Quad; Latitude 36 41.417 North, Longitude 080 58.774 West; Collection date: 2July97.

<u>Mussels</u>	<u>Crayfish</u>	<u>Snails</u>
<i>E. dilitata</i> 3	<i>Cambarus sp.</i>	<i>L. dilitata</i>

Comments: The areas surveyed were the large runs 50 meters below the dirt boat ramp off Rt. 869. The average depth was 1 meter. The average width was 120 meters. The habitat was deep runs with a substrate of sand, boulders and protruding bedrock. Deep beds of *Elodea* covered large areas of the substrate. Mussels and shell were not abundant. Crayfish were not abundant. Snails were very abundant. Total effort: 2 man hours.

Site 21. New River; Grayson County; at VDGIF boat landing off Rt. 274; Brierpatch Mountain Quad; Latitude 36 40.140 North, Longitude 080 01.583 West; Collection date: 7July97.

<u>Mussels</u>	<u>Shell</u>	<u>Crayfish</u>	<u>Snails</u>
<i>E. dilitata</i> 9	<i>C. tuberculata</i>	<i>Cambarus sp.</i>	<i>C. crassula</i> <i>L. dilitata</i>

Comments: The areas surveyed were the rapids, riffles and runs 50 meters above and below the VDGIF boat landing. The average depth was 1 meter. The average width was 120 meters. Sand, pebble and bedrock were the dominant substrate. Beds of *Elodea* covered large areas of substrate. Mussels and shell were found in runs along the left ascending bank. Crayfish were moderately abundant. Snails were abundant. Total effort: 5 man hours.

Site 22. New River; Grayson County; at Rt. 94 bridge; Galax Quad; Latitude 36 39.190 North, Longitude 080 57.849 West; Collection date: 7July97.

<u>Shell</u>	<u>Crayfish</u>	<u>Snails</u>
<i>E. dilitata</i>	<i>Orconectes sp.</i>	<i>L. dilitata</i>

Comments: The area surveyed was the run habitat 10 meters off the left ascending bank 100 meters above and 100 meters below the Rt. 94 bridge. The average depth was .5 meters. The average width was 90 meters. Sand, flat boulders, and bedrock were the dominant substrate. Crayfish were very abundant but only species of *Orconectes* were found. Snails were abundant with hundreds of juvenile *L. dilitata* snails 2-3 mm in length were observed. Total effort: 3 man hours.

Site 23. New River; Wythe County; below Byllsby dam; Austinville Quad; Latitude 00 00.000 North, Longitude 000 00.000 West; Collection date: 8July97.

<u>Mussels</u>	<u>Shell</u>	<u>Snails</u>
<i>C. tuberculata</i> 1	<i>E. dilitata</i> <i>C. tuberculata</i>	<i>L. dilitata</i>

Comments: The areas surveyed were the riffles and runs about 100 meters below Byllsby dam. River levels were high and turbid because water was being released from the dam, thus our sampling efforts were effected. However, despite these conditions live mussels and shell material did not appear abundant at the site. Filamentous algae and aquatic macrophytes covered most of the substrate. Large areas of bedrock and unembedded substrate were dominant. The turbulent flow conditions created by Byllsby dam probably constantly scour this segment of river. The average depth was 1 meter. The average width was 120 meters. Because of the conditions crayfish were difficult to find, thus their abundance could not be determined. Snails were not abundant. Total effort: 2 man hours.

Site 24. New River; Grayson County; at VDGIF boat launch below Fries dam; Galax Quad; Latitude 36 42.962 North, Longitude 080 58.646 West; Collection date: 8July97.

<u>Mussels</u>	<u>Shell</u>	<u>Crayfish</u>	<u>Snails</u>
<i>C. tuberculata</i> 115 <i>E. dilitata</i> 2	<i>E. dilitata</i> <i>T. veruccossa</i>	<i>Cambarus sp.</i> <i>Orconectes sp.</i>	<i>L. dilitata</i>

Comments: The areas surveyed were the riffles and runs at the VDGIF boat launch. About 100 meters downstream of the launch a large population of *C. tuberculata* was found. The area was not thoroughly surveyed due to oncoming thunderstorms. Judging from the number of mussels found in a relatively short time, the population is obviously much larger. The average depth was 1 meter. The average width was 130 meters. Sand, cobble and boulders were the dominant substrate. Crayfish and snails were very abundant. Total effort: 4.5 man hours.

Site 25. New River; Carroll County; directly above Rt. 606 bridge; Galax Quad; Latitude 00 00.000 North, Longitude 000 00.000 West; Collection date: 8July97.

<u>Mussels</u>	<u>Shell</u>	<u>Snails</u>
<i>C. tuberculata</i> 15	<i>E. dilitata</i>	<i>L. dilitata</i>

Comments: The area surveyed was from the Rt. 606 bridge upriver 100 meters. Mussels at this site were clumped in an area located about 25 meters above the mid point of the bridge. The average depth was 1 meter. The average width was 110 meters. The habitat was a moderately flowing run with a substrate of sand,

boulder and bedrock. No crayfish were found. Snails occurred in low abundance and were not collected. Total effort: 1.5 man hours.

Site 26. New River; Montgomery County; rapids and runs across from Parrot, access from railroad tracks off Big Vein Dr.; Radford North Quad; Latitude 37 12.860 North, Longitude 080 36.512 West; Collection date: 10July97.

<u>Mussels</u>	<u>Shell</u>	<u>Crayfish</u>	<u>Snails</u>
<i>C. tuberculata</i> 3	<i>E. dilitata</i>	<i>Cambarus sp.</i>	<i>L. dilitata</i>
<i>L. fasciola</i> 2			
<i>L. ovata</i> 1			

Comments: The series of long parallel rapids and deep runs at Parrot, VA, were surveyed from bank to bank. This area was accessed from the railroad tracks directly across the river from Parrot. The average depth was 1.5 meters. The average width was 175 meters. Sand, boulder and bedrock were the dominant substrate. *Corbicula* were extremely abundant throughout the site. In a few eddies large piles of hundreds of shell valves were found. 1 *L. fasciola* was gravid. Crayfish were found in low abundance. Snails were extremely abundant. Total effort: 4 man hours.

Site 27. New River; Giles County; above the mouth of Big Walker Creek; Pearisburg Quad; Latitude 37 18.899 North, Longitude 080 40.481 West; Collection date: 10July97.

<u>Mussels</u>	<u>Shell</u>	<u>Crayfish</u>	<u>Snails</u>
<i>C. tuberculata</i> 10	<i>E. dilitata</i>	<i>Cambarus sp.</i>	<i>L. dilitata</i>
<i>L. fasciola</i> 2			

Comments: The areas surveyed were the rapids and runs from the mouth of Big Walker Creek to the big island 200 meters upriver. The average depth was .75 meters. The average width was 120 meters. The habitat is diverse and complex at this site. Pebble, cobble and boulder were the dominant substrates. *Corbicula* were not abundant. The 2 *L. fasciola* were found well embedded in a fast run 1.5 meters deep. Crayfish were moderately abundant. Snails were abundant. Total effort: 6 man hours.

Site 28. New River; Wythe County; off Rt. 52 at rapids .75 miles upriver of Interstate 77 bridge; Austinville Quad; Latitude 00 00.000 North, Longitude 000 00.000 West; Collection date: 14July97.

<u>Mussels</u>	<u>Shell</u>	<u>Snails</u>
<i>L. ovata</i> 3	<i>C. tuberculata</i>	<i>L. dilitata</i>
	<i>E. dilitata</i>	
	<i>T. verrucossa</i>	

Comments: The area surveyed was the second set of rapids and runs upriver of the Interstate 77 bridge. Access was from a dirt and gravel drive at the first store on Rt 52 upriver of the interstate. The drive leads down to large open fields and then the river. Mussels and shell were uncommon throughout the site. The average depth was .5 meters. The average width was 140 meters. Cobble, boulder, and bedrock was the dominant substrate. *Corbicula* were not abundant at the site. Crayfish and snails were not abundant. Total effort: 4 man hours.

Site 29. New River; Pulaski County; at island and rapids 200 meters down river of Interstate 81 bridge; Radford South Quad; Latitude 37 05.082 North, Longitude 080 34.757 West; Collection date: 16July97.

<u>Mussels</u>	<u>Crayfish</u>	<u>Snails</u>
<i>L. ovata</i> 1	<i>Cambarus sp.</i>	<i>L. dilitata</i>
	<i>Orconectes sp.</i>	<i>P. hendersoni</i>

Comments: The areas surveyed were both sides of the island on the right ascending side of the river and the rapids and runs below it. The average depth was .75 meters. The average width was 175 meters. The substrate was boulder, cobble and sand. Several types of aquatic macrophytes completely covered the substrate throughout most of the area. *Corbicula* were abundant. Crayfish and snails were abundant. Total effort: 4 man hours.

Site 30. New River; Giles County; at Rt. 730 bridge, Eggleston; Eggleston Quad; Latitude 00 00.000 North, Longitude 000 00.000 West; Collection date: 18July97.

<u>Mussels</u>	<u>Crayfish</u>	<u>Snails</u>
<i>C. tuberculata</i> 50	<i>Cambarus sp.</i>	<i>L. dilitata</i>
<i>E. dilitata</i> 3	<i>Orconectes sp.</i>	
<i>L. fasciola</i> 1		

Comments: The area surveyed was from the bridge upriver along both banks for 200 meters. Mussels were only found in the run areas 5-15 meters off both banks at about 150 meters above the bridge. An aggregation of approximately 40 mussels were found off the right ascending bank. The substrate in this area was cobble and sand, with an abundance of 1 to 2 inch pieces of well embedded shale shards. The habitat throughout the site was generally runs with a substrate of boulder, cobble and sand. The average depth was 1 meter. The average width was 100 meters. *Corbicula* were moderately abundant. Crayfish and snails were abundant. Total effort: 5 man hours.

Site 31. New River; Montgomery County; RAAP, access through gate 19B; Radford North Quad; Latitude 00 00.000 North, Longitude 000 00.000 West; Collection date: 28July97.

<u>Mussels</u>	<u>Shell</u>	<u>Crayfish</u>	<u>Snails</u>
<i>C. tuberculata</i> 1	<i>C. tuberculata</i>	2 <i>Cambarus</i> sp.	<i>L. dilitata</i>
<i>L. fasciola</i> 2	<i>E. dilitata</i>	2 <i>Orconectes</i> sp.	<i>H. anceps</i>
<i>L. ovata</i> 1	<i>L. Fasciola</i>		<i>P. hendersoni</i>
	<i>L. ovata</i>		
	<i>L. subviridis</i>		
	<i>T. verrucossa</i>		

Comments: The area surveyed was the right ascending channel of the large island about 500 meters upriver of Whitethorn boat landing. The survey started immediately above a small island 30 meters down river of the large island. The distance surveyed was about 300 meters. The substrate throughout the area was a mixture of cobble, pebble and sand, with some areas of exposed bedrock. Mussels and shell material were not abundant. However, the shell material found did represent a high diversity of mussels that once existed in the area. At this site shell of *L. subviridis* was found for the first time during the project. A total of 4 valves in fair to good condition were found. The average depth was .75 meters. The average width of the channel was 50 meters. *Corbicula* were abundant. Crayfish and snails were abundant. Total effort: 12 man hours (2 hours X 6 people).

Site 32. New River; Montgomery County; RAAP, access through gate 19 A; Radford North Quad; Latitude 00 00.000 North, Longitude 000 00.000 West; Collection date: 28July97.

<u>Shell</u>	<u>Crayfish</u>	<u>Snails</u>
<i>C. tuberculata</i>	2 <i>Cambarus</i> sp.	<i>L. dilitata</i>
<i>L. fasciola</i>	2 <i>Orconectes</i> sp.	<i>H. anceps</i> 100+
<i>L. ovata</i>		<i>P. hendersoni</i> 100+
<i>L. subviridis</i>		<i>F. rivularis</i>
<i>T. verrucossa</i>		

Comments: The survey started at the trail at gate 19 A. This area is about 250 meters downstream of Whitethorn boat landing. The right ascending side of the river was surveyed upstream for about 150 meters. The survey ended about 30 meters upriver of a small island. The average depth was 1 meter. The average width was 150 meters. The habitat was a fast to moderately flowing run with a substrate of cobble, pebble and sand. Most snails were found in the channel between the small island and the right ascending bank. No live mussels were found. Shell was abundant and diverse. Crayfish and snails were abundant. *Corbicula* were abundant. Total effort: 6 man hours (1 hour X 6 people).

Site 33. New River; Montgomery County; RAAP, at Monkey Shoals; Radford North Quad; Latitude 00 00.000 North, Longitude 000 00.000 West; Collection date: 28July97.

<u>Mussels</u>	<u>Shell</u>	<u>Crayfish</u>	<u>Snails</u>
<i>C. tuberculata</i> 1	<i>C. tuberculata</i>	2 <i>Cambarus sp.</i>	<i>L. dilitata</i>
<i>L. ovata</i> 1	<i>E. dilitata</i>	2 <i>Orconectes sp.</i>	<i>H. anceps</i>
	<i>L. ovata</i>		<i>C. crassula</i>
	<i>T. verrucossa</i>		

Comments: The area surveyed was from the bottom of the rapids and riffles known as Monkey Shoals upstream 150 meters to the old concrete foundations of an RAAP water intake facility. The average depth was 1.5 meters. The average width was 120 meters. The substrate was boulder, cobble, pebble and sand. Mussels and shell were not abundant. *Corbicula* were abundant. Crayfish and snails were moderately abundant. The riffle and run areas on the left ascending side of the river were covered with dense aquatic macrophytes. Total effort: 6 man hours (1 hour X 6 people).

Site 34. Lower Crooked Creek; Carrol County; off Rt. 733 directly below Staunton branch; Austinville Quad; Latitude 36 46.260 North, Longitude 080 54.333 West; Collection date: 29July97.

<u>Crayfish</u>	<u>Snails</u>
<i>Cambarus sp.</i>	<i>L. dilitata</i>

Comments: The area surveyed was 500 meters upstream to the confluence of Staunton branch and Crooked Creek. The average depth was .5 meters. The average width was 12 meters. The habitat was moderately flowing riffles and runs with a substrate of sand and cobble. Pool areas at the site were badly silted. No mussels or shell were found. No *Corbicula* were found. Crayfish were abundant. Snails were moderately abundant. Total effort: 4 man hours.

Site 35. Lower Crooked Creek; Carrol County; off Rt. 713 at concrete bridge; Woodlawn Quad; Latitude 36 42.041 North, Longitude 080 52.536 West; Collection date: 29July97.

<u>Crayfish</u>	<u>Snails</u>
<i>Cambarus sp.</i>	<i>L. dilitata</i>

Comments: The area surveyed was from Rt. 713 bridge upstream 100 meters and downstream 50 meters back to the bridge. The average depth was .25 meters. The average width was 3 meters. The habitat was moderately flowing riffles and runs with a substrate of sand, pebble and cobble. The banks were severely eroded with most pool areas heavily silted. No mussels or shell were found. No

Corbicula were found. Crayfish and snails were not abundant. Total effort: 1 man hour.

Site 36. Middle Crooked Creek; Carrol County; at Crooked Creek WMA; Woodlawn Quad; Latitude 36 40.448 North, Longitude 080 48.854 West; Collection date: 29July97.

<u>Crayfish</u>	<u>Snails</u>
<i>Cambarus sp.</i>	<i>L. dilitata</i>

Comments: The area surveyed was a 100 meter segment of stream across from the Crooked Creek WMA parking lot. The average depth was .3 meters. The average width was 5 meters. The habitat was fast flowing riffles and runs with a substrate of sand, cobble and boulder. No mussels or shell were found. No *Corbicula* were found. Crayfish were abundant. Snails were not abundant. Total effort: 2 man hours.

Site 37. Upper Crooked Creek; Carrol County; directly below the Rt. 97 culvert crossing; Lamsburg Quad; Latitude 36 37.210 North, Longitude 080 47.427 West; Collection date: 29July97.

<u>Crayfish</u>	<u>Snails</u>
<i>Cambarus sp.</i>	<i>L. dilitata</i>
	<i>E. symetrica.</i>

Comments: The area surveyed was from 100 meters below Rt. 97 upstream to the pool directly below the culvert. The average depth .10 meters. The average width was 1.5 meters. The habitat was shallow runs with a substrate of cobble and boulder. No mussels or shell were found. No *Corbicula* were found. Crayfish were very abundant and most were female. Snails were abundant. Total effort: 2 man hours.

Site 38. Upper Chestnut Creek; Carrol County; below culvert at intersection of Rt. 613 and Rt. 790; Cumberland Gap Quad; Latitude 36 34.916 North, Longitude 080 53.664 West; Collection date: 31July97.

<u>Crayfish</u>
<i>Cambarus sp.</i> 3?

Comments: The area surveyed was from 100 meters below Rt. 790 to the pool directly below the culvert. The average depth was .20 meters. The average width was 1.5meters. The habitat was shallow runs. with a substrate of cobble and boulder. No mussels or shell were found. No *Corbicula* were found. No snails were found. Crayfish were abundant. Total effort: 2 man hours.

Site 39. Middle Chestnut Creek; Carrol County; Southwest Galax on Rt. 643, .5 miles above gauging station at Rt. 89; Galax Quad; Latitude 36 38.713 North, Longitude 080 55.196 West; Collection date: 31July97.

<u>Crayfish</u>	<u>Snails</u>
<i>Cambarus sp.</i>	<i>L. dilitata</i>

Comments: The area surveyed began 100 meters below the Rt. 643 intersection with Chestnut Creek and went upstream. The average depth was .50 meters. The average width was 12 meters. The habitat was moderatley flowing riffles and runs with a substrate of boulder, cobble and sand. No mussels or shell were found. No *Corbicula* were found. Crayfish and snails were moderately abundant. Total effort: 2 man hours

Site 40. Lower Chestnut Creek; Carrol County; Rt. 793 bridge; Galax Quad; Latitude 36 44.363 North, Longitude 080 56.849 West; Collection date: 31July97.

<u>Crayfish</u>	<u>Snails</u>
<i>Cambarus sp.</i>	<i>L. dilitata</i>

Comments: The area surveyed began 500 meters below the Rt. 793 bridge and went upstream to it. The average depth was .25 meters. The average width was 20 meters. The habitat was moderately flowing riffles and runs with a substrate of bedrock, boulder and cobble. No mussels or shell were found. No *Corbicula* were found. Crayfish and snails were not abundant. Total effort: 2 man hours.

Site 41. Lower Fox Creek; Grayson County; Rt. 58 bridge; Mouth Of Wilson Quad; Latitude 36 33.738 North, Longitude 081 18.811 West; Collection date: 1August97.

<u>Crayfish</u>	<u>Snails</u>
<i>Cambarus sp.</i>	<i>L. dilitata</i>
<i>Orconectes sp.</i>	

Comments: The area surveyed was from underneath the Rt. 58 bridge and then upstream for 300 meters. The average depth was .10 meters. The average width was 15 meters. The habitat was shallow riffles and runs with a substrate of bedrock, pebble and gravel. No mussels or shell were found. No *Corbicula* were found. Crayfish were abundant. Snails were not abundant. Total effort: 3 man hours.

Site 42. Middle Fox Creek; Grayson County; Rt. 658 bridge; Trout Dale Quad; Latitude 36 39.508 North, Longitude 081 23.605 West; Collection date: 1August97.

<u>Crayfish</u>	<u>Snails</u>
<i>Cambarus sp.</i>	<i>L. dilitata</i>
<i>Orconectes sp.</i>	

Comments: The area surveyed was from 200 meters below the Rt. 658 bridge and upstream to it. The average depth was .30 meters. The average width was 8 meters. The habitat was fast flowing riffles and runs with a substrate of bedrock, boulder, cobble and pebble. This segment of stream appeared in excellent condition with a high diversity of fish, including the Kanawha darter *E. Kanawhae*. No mussels or shell were found. No *Corbicula* were found. Crayfish were very abundant. Snails were abundant. Total effort: 3 man hours.

Site 43. Upper Fox Creek; Grayson County; at Rt. 603 bridge between Rt. 793 and Troutdale; Trout Dale Quad; Latitude 36 41.910 North, Longitude 081 27.170 West; Collection date: 1August97.

<u>Crayfish</u>
2 <i>Cambarus sp.</i>
<i>Orconectes sp.</i>

Comments: The area surveyed was from underneath the Rt. 603 bridge and then upstream for 100 meters. The average depth was .30 meters. The average width was 1.5 meters. The habitat was fast flowing runs with a substrate of bedrock, pebble and gravel. No mussels or shell were found. No *Corbicula* were found. Crayfish were very abundant. About 80% of the crayfish were female. Males were difficult to find. No snails were found. Total effort: 2 man hours.

Site 44. New River; Giles County; below Rt. 460 bridge at Ripplemead; Pearisburg Quad; Latitude 37 20.138 North, Longitude 080 40.897 West; Collection date: 6August97.

<u>Mussels</u>	<u>Shell</u>	<u>Crayfish</u>	<u>Snails</u>
<i>C. tuberculata</i> 49	<i>C. tuberculata</i>	<i>Cambarus sp.</i>	<i>L. dilitata</i>
<i>E. dilitata</i> 4	<i>E. dilitata</i>	<i>Orconectes sp.</i>	<i>P. hendersoni</i>
<i>L. fasciola</i> 2	<i>L. fasciola</i>		
<i>L. ovata</i> 1	<i>L. ovata</i>		
	<i>L. subviridis</i>		
	<i>T. verrucosa</i>		

Comments: The area surveyed was the large rapids, riffles and runs immediately downstream of the Rt. 460 bridge at Ripplemead. The average depth was 2 meters. The average width was 120 meters. The habitat throughout the

area was varied and complex. However, the shallow runs about 1-5 meters off the left ascending bank contained substrate with a good mixture of cobble, pebble and sand; 20 *C. tuberculata* were found here. About 5 to 10 meters off the right ascending bank above the first rapids and riffles downstream of the bridge, in a deep run of about 1.5 meters, the stream bottom was littered with hundreds of shell. Shell from six species of mussels were found here, including 2 valves of *L. subviridis*. *Corbicula* were very abundant at the site. Crayfish and snails were moderately abundant. Total effort: 6 man hours.

Site 45. New River; Giles County; below Rt. 460 bridge at Glen Lynn; Narrows Quad; Latitude 37 22.345 North, Longitude 080 51.466 West; Collection date: 6August97.

<u>Mussels</u>	<u>Shell</u>	<u>Crayfish</u>	<u>Snails</u>
<i>C. tuberculata</i> 2	<i>T. verrucosa</i>	<i>Cambarus sp.</i> <i>Orconectes sp.</i>	<i>L. dilitata</i>

Comments: The area surveyed was the large rapids, riffles and runs 100 meters downstream of the Rt. 460 bridge at Glen Lynn. The average depth was .75 meters. The average width was 120 meters. The habitat was a 200 meter long rapid and riffle with a varied substrate of bedrock, boulder, cobble, pebble and sand. Mussels and shell were not abundant. *Corbicula* were not abundant. Crayfish were moderately abundant. Snails were abundant. Total effort: 4 man hours.

Site 46. New River; Giles County; at VDGIF boat landing on Rt. 460, .5 miles east of Rich Creek; Narrows Quad; Latitude 37 22.224 North, Longitude 080 49.120 West; Collection date: 6August97.

<u>Mussels</u>	<u>Shell</u>	<u>Crayfish</u>	<u>Snails</u>
<i>C. tuberculata</i> 60 <i>E. dilitata</i> 2	<i>T. verrucosa</i>	<i>Cambarus sp.</i> <i>Orconectes sp.</i>	<i>L. dilitata</i>

Comments: The area surveyed was from the top of the large island 200 meters downriver of the VDGIF boat landing, and then upriver 10 to 20 meters off the left ascending bank back to the boat landing. The average depth was 1.5 meters. The average width was 150 meters. The habitat was a moderately flowing deep run with a substrate of cobble, pebble, sand and bedrock. Mussels were found along the entire length of the area surveyed. *Corbicula* were not abundant. Crayfish and snails were abundant. Total effort: 4 man hours.

Site 47. New River; Grayson County; 600 meters above Rt. 58/221 bridge; Sparta East Quad; Latitude 36 36.255 North, Longitude 081 02.959 West; Collection date: 18August97.

<u>Mussels</u>	<u>Shell</u>	<u>Crayfish</u>	<u>Snails</u>
<i>L. subviridis</i> 7	<i>L. subviridis</i>	<i>Orconectes sp.</i>	<i>L. dilitata</i>
<i>E. dilitata</i> 22	<i>E. dilitata</i>		<i>C. crassula</i>

Comments: The area surveyed was the run habitat along the left and right ascending banks at the campgrounds upstream of the Rt. 58/221 bridge. The average width of the river at the site was 150 meters. The average depth at the site was .75 meters. The habitat was predominantly a run with a substrate of sand, pebble, boulder and bedrock. *L. subviridis* were found in pockets of deep sand deposited behind areas of exposed bedrock and boulders. None of the *L. subviridis* found were gravid. Measurements were taken on two of these mussels and are as follows: 1) Length 42 mm and height 26 mm 2) Length 37 mm and height 23 mm. 3 valves from this species were also found at the site. *Corbicula* were abundant. Crayfish were moderately abundant. Snails were abundant. Total effort: 5.5 man hours.

Site 48. New River; Grayson County; were Rt. 629 parallels river; Sparta East Quad; Latitude 36 34.774 North, Longitude 081 04.841 West; Collection date: 18August97.

<u>Mussels</u>	<u>Crayfish</u>	<u>Snails</u>
<i>E. dilitata</i> 57	<i>Orconectes sp.</i>	<i>L. dilitata</i>
		<i>C. crassula</i>

Comments: The area surveyed was the run habitat where Rt. 629 out of Peach Bottom begins to parallel the river. The average depth was .50 meters. The average width was 70 meters. The habitat was a moderately flowing run with a substrate of sand and gravel. Most mussels were found along the right ascending bank and in the middle of the river. None of the mussels found were gravid. *Corbicula* were not abundant. Crayfish were abundant. Snails were moderately abundant. Total effort: 3.5 man hours.

Site 49. New River; Grayson County; were Rt. 274 parallels the river 100 meters downstream of Rock Creek; Brierpatch Mountain Quad; Latitude 00 00.000 North, Longitude 000 00.000 West; Collection date: 19August97.

<u>Mussels</u>	<u>Shell</u>	<u>Crayfish</u>	<u>Snails</u>
<i>E. dilitata</i> 3	<i>C. tuberculata</i>	<i>Orconectes sp.</i>	<i>E. symmetrica</i>
		<i>Cambarus sp.</i>	<i>L. dilitata</i>
			<i>C. crassula</i>

Comments: The area surveyed was from 100 meters downstream of the mouth of Rock Creek upstream to the rapids and riffles immediately above it. The average depth was 1 meter. The average width was 70 meters. The habitat was rapids and runs with a substrate of sand, gravel and bedrock. Mussels and shell were not abundant. 2 relict shells of *C. tuberculata* were found. Mussels found were not gravid. *Corbicula* were not abundant. Crayfish were moderately abundant. Snails were abundant. Total effort: 2 man hours.

Site 50. New River; Grayson County; where Rt. 715 closely parallels river around bend; Sparta East Quad; Latitude 36 36.505 North, Longitude 081 03.787 West; Collection date: 19August97.

<u>Mussels</u>	<u>Shell</u>	<u>Crayfish</u>	<u>Snails</u>
<i>E. dilitata</i> 3	<i>A. marginata</i>	<i>Orconectes sp.</i>	<i>L. dilitata</i> <i>C. crassula</i>

Comments: The area surveyed was the riffles and runs near the top of the descending limb of the bend in the river off Rt. 715. The average depth was .30 meters. The average width was 70 meters. The habitat was shallow riffles and runs with a substrate of sand, pebble, gravel and bedrock. The substrate at the site was very clean and free of sedimentation. Mussels or shell were not abundant. 1 fresh dead shell of *A. marginata* was found 20 meters off the left ascending bank in a shallow run with pebble and sand substrate. *Corbicula* were not abundant. Crayfish and snails were moderately abundant. Total effort: 2.5 man hours.

Site 51. New River; Grayson County; on Rt. 700 1 mile North of North Carolina border; Sparta West Quad; Latitude 36 34.393 North, Longitude 081 08.415 West; Collection date: 19August97.

<u>Mussels</u>	<u>Crayfish</u>	<u>Snails</u>
<i>E. dilitata</i> 8	<i>Orconectes sp.</i>	<i>L. dilitata</i>

Comments: The area surveyed was the first large rapids and riffles 1 mile North of NC/VA border on Rt. 700; two medium sized islands served as the starting point for the survey. The average depth was .75 meters. The average width was 80 meters. The habitat was fast flowing rapids, riffles and runs with a substrate of sand, cobble and bedrock. The substrate was covered with long green filamentous algae. Mussels or shell were not abundant. *Corbicula* were not abundant. Crayfish and snails were moderately abundant. Total effort: 3 man hours.

Site 52. New River; Grayson County; directly downstream of Rt. 21/221 bridge; Sparta West Quad; Latitude 36 34.515 North, Longitude 081 09.336 West; Collection date: 20August97.

<u>Shell</u>	<u>Snails</u>
<i>E. dilitata</i>	<i>L. dilitata</i>

Comments: The area surveyed was from 30 meters downstream of the Rt. 21/221 bridge and then to 50 meters upstream of it. The average depth was .75 meters. The average width was 90 meters. The habitat was deep runs with a substrate of sand, cobble and bedrock. The substrate at the site was covered with long green filamentous algae and *Elodea*. Live mussels were not found and shell was not abundant either. *Corbicula* were not abundant. No crayfish were found. Snails were moderately abundant. Total effort: 1 man hour.

Site 53. New River; Grayson County; on Rt. 708 1.5 miles North of North Carolina border; Sparta West Quad; Latitude 36 33.590 North, Longitude 081 11.599 West; Collection date: 20August97.

<u>Mussels</u>	<u>Crayfish</u>	<u>Snails</u>
<i>E. dilitata</i> 50	<i>Orconectes sp.</i>	<i>L. dilitata</i>

Comments: The area surveyed was the rapids and runs immediately above where Rt. 708 turns 90 degrees to parallel along the river; a small island 50 meters downstream of the rapids and runs served as the starting point. The average depth was .75 meters. The average width was 100 meters. The habitat was rapids, riffles and runs with a substrate of sand, pebble and cobble. Mussels were very patchy in distribution, all 50 being found in a 30 meter section below the rapids and riffles on the right ascending bank. *Corbicula* were not abundant. Crayfish and snails were moderately abundant. Total effort: 3 man hours.

Site 54. New River; Grayson County; at Rt. 601 bridge; Sparta West Quad; Latitude 36 35.753 North, Longitude 081 14.768 West; Collection date: 20August97.

<u>Mussels</u>	<u>Shell</u>	<u>Crayfish</u>	<u>Snails</u>
<i>E. dilitata</i> 1	<i>E. dilitata</i>	<i>Orconectes sp.</i>	<i>L. dilitata</i>

Comments: The area surveyed was from the Rt. 601 bridge upstream 100 meters along the right ascending bank. The average depth was 1 meter. The average width was 70 meters. The habitat was shallow to deep runs with a substrate of sand, cobble and boulder. Mussels were not abundant. 12 relict shells of *E. dilitata* were found. *Corbicula* were not abundant. Crayfish and snails were abundant. Total effort: 3 man hours.

Site 55. New River; Grayson County; at large island above Rt. 93 bridge; Mouth Of Wilson Quad; Latitude 36 34.583 North, Longitude 081 19.438 West; Collection date: 21August97.

<u>Mussels</u>	<u>Shell</u>	<u>Crayfish</u>	<u>Snails</u>
<i>E. dilitata</i> 6	<i>C. tuberculata</i> <i>E. dilitata</i>	<i>Orconectes sp.</i>	<i>L. dilitata</i>

Comments: The area surveyed was the riffles and runs on both sides of the large island 150 meters above the Rt. 93 bridge. The average depth was .50 meters. The average width was 40 meters. The habitat was fast flowing riffles and runs with a substrate of sand and pebble. *Corbicula* were not abundant. Crayfish and snails were moderately abundant. Total effort: 4 man hours.

Site 56. New River; Grayson County; at mouth of Saddle Creek on Rt. 711; Sparta West Quad; Latitude 36 36.301 North, Longitude 081 13.667 West; Collection date: 21August97.

<u>Mussels</u>	<u>Shell</u>	<u>Crayfish</u>	<u>Snails</u>
<i>C. tuberculata</i> 1 <i>E. dilitata</i> 13	<i>C. tuberculata</i>	<i>Orconectes sp.</i>	<i>L. dilitata</i>

Comments: The area surveyed was the runs directly above the mouth of Saddle Creek. The average depth was 1.50 meters. The average width was 90 meters. The habitat was deep runs with a substrate of sand, pebble, cobble and large areas of bedrock. *Corbicula* were moderately abundant. Crayfish and snails were moderately abundant. Total effort: 3 man hours.

Site 57. New River; Grayson County; 1 mile upstream of VDGIF boat landing on Rt. 711, access at parking spot at the sharp bend in road; Mouth Of Wilson Quad; Latitude 36 35.445 North, Longitude 081 15.400 West; Collection date: 22August97.

<u>Mussels</u>	<u>Crayfish</u>	<u>Snails</u>
<i>E. dilitata</i> 20	<i>Cambarus sp.</i> <i>Orconectes sp.</i>	<i>L. dilitata</i>

Comments: The area surveyed was the rapids, riffles, and runs 150 meters downstream of the access point. A large island along the right ascending bank delineates the length of the survey, which was about 150 meters. The average depth was .50 meters. The average width was 100 meters. The habitat was rapids, riffles and runs with a substrate of sand, pebble, cobble and boulders. Most mussels were found along the left ascending bank in run habitat. *Corbicula* were moderately abundant. Crayfish were abundant. Snails were moderately abundant. Total effort: 3 man hours.

Site 58. New River; Grayson County; on Rt. 716, 200 meters above Mouth Of Big Wilson Creek; Mouth Of Wilson Quad; Latitude 36 35.158 North, Longitude 081 20.020 West; Collection date: 22August97.

<u>Mussels</u>	<u>Crayfish</u>	<u>Snails</u>
<i>E. dilitata</i> 64	<i>Orconectes sp.</i>	<i>L. dilitata</i>

Comments: The area surveyed was the riffles and runs 200 meters upstream of the Mouth Of Big Wilson Creek. The average depth was .30 meters. The average width was 100 meters. The habitat was riffles and runs with a substrate of sand, pebble and boulder. Most mussels were found in the middle of the river in run habitat with sand substrate. This site had many areas of high mussel density, given more sampling effort the number of *E. dilitata* found could have been much higher. *Corbicula* were not abundant. Crayfish were not abundant. Snails were moderately abundant. Total effort: 3 man hours.

Site 59. Little River; Floyd County; on Rt. 706 1 mile upstream of intersection with Rt. 705; Floyd Quad; Latitude 36 58.561 North, Longitude 080 22.195 West; Collection date: 16September97.

<u>Shell</u>	<u>Crayfish</u>	<u>Snails</u>
<i>E. dilitata</i>	<i>Cambarus sp.</i>	<i>L. dilitata</i>

Comments: The area surveyed was the riffles and runs off Rt. 706, 1 mile upstream of the intersection with Rt. 705. The average depth was .50 meters. The average width was 30 meters. The habitat was runs with a flat bottom of sand and cobble as the substrate. 1 fresh dead shell and 1 relict shell were found. Crayfish were not abundant. Snails were abundant. Total effort: 2 man hours.

Site 60. Claytor Lake State Park; Pulaski County; shoreline at park; Unknown Quad;
Latitude 00 00.000 North, Longitude 000 00.000 West; Collection date:
17November97.

Mussels

A. grandis 250

C. tuberculata 3

E. dilatata 1

L. ovata 5

T. verrucosa 20

U. imbecillis 75

Comments: The area surveyed was the shorelines in the coves at Claytor Lake State Park. The substrate in the areas where mussels were found was a mixture of boulder, cobble, pebble, sand, fine sediments and sunken woody debris. The water level was down 8 feet thus exposing hundreds of mussels along the shoreline. Many of the *A. grandis* and *U. imbecillis* found were gravid. Total effort: 4 man hours.