

Bartgis and MacIvor  
January 1994Alasmidonta varicosa surveys in Maryland

## Summary:

A total of 106 locations, including most historical sites, were surveyed in Maryland for Alasmidonta varicosa. Most of these sites have been greatly impacted by pollution and upstream construction activities causing severe sedimentation and siltation. Live animals were not found in several streams that were historically occupied. The last live animals reported were found before 1950. In 1992, two live individuals were found within the same stretch of the Potomac River in Washington County and one live individual was found in the Monocacy River in northern Frederick County. In 1993, three live animals were found at two sites on Toms Creek, a Monocacy tributary.

## INTRODUCTION:

We know of no Maryland collections for the last forty years for A. varicosa (brook floater). All historical Maryland records were from the Potomac River drainage. Since that time, no extant sites were known until 1992. During the previous two years of work, surveys in historical sites resulted in no live animals.

## METHODS:

Viewing buckets were used to survey most historical sites and other nearby potential habitat for populations of A. varicosa. Tributaries and the main channel of the Potomac River, and tributaries and the main channel of the Monocacy River were targeted for survey efforts, based on museum and literature records. Surveys were also conducted in Cactoctin Creek. Some surveys were done in the adjacent Patuxent River drainage (Table 2). Spent shells (relics) of this species were collected and placed in the Maryland Natural Heritage Program reference collection. Live animals were identified and returned to the exact location where they were found. Locations of spent shells or live animals were recorded on survey and animal forms and mapped on a USGS topographic quadrangle.

## RESULTS:

A total of 106 locations in 36 streams, including one pond, were surveyed for Alasmidonta varicosa by Maryland Natural Heritage Program staff (Tables 1,2). With the exception of Evitts Run, all streams in Maryland which historically supported the species were surveyed. Multiple historic sites on the Potomac River were surveyed. No shells of this species were found in two historic streams, Tonoloway Creek and Sideling Hill Creek.

In 1992, two live A. varicosa were found within the same county stretch of the Potomac River near the mouth of Cherry Run. This was an historical collection site. This section of the Potomac had good water clarity and contained a medium water flow. No specimens were found at the other survey sites in the Potomac.

In 1992, one live A. varicosa was found in the main reach of the Monocacy River, Frederick County, near Creagerstown, also in the vicinity of an historical collection site. The animal was found in approximately 12 inches of medium flowing water. This section of the river had a great deal of siltation along the banks. The majority of the substrate, rocks, and other associated mussel species was covered with a green algae. Trash was present and oil slicks covered the top of much of the water's surface. No other Alasmidonta varicosa specimens were found at the five other survey sites in main reach of the Monocacy River.

On June 15, 1993, a small population of A. varicosa was confirmed in Toms Creek, Frederick County, where there had been historical collections. One live animal was found in the gravelly bottom of a shallow riffle at Site 1. The brook floater was in a moderately large mussel bed occupied mostly by Elliptio complanata and E. producta, with some Lampsilis and Strophitus. No dead A. varicosa shells were found. The creek at this section has little siltation and a very narrow wooded buffer, although cattle pasture extends to the creek immediately upstream.

Two live A. varicosa were found on the same date at Site 2. They were in a small mussel bed in a sandy riffle on the downstream end of an island and aquatic grass bed. Strophitus was the most common associate, along with Elliptio complanata, E. producta, and Lampsilis. No dead A. varicosa shells were found. The creek at this section had little siltation and a wooded buffer.

This section of Toms Creek is in a primarily agricultural area (mostly pasture, hay, and corn). Upstream, near Emmittsburg, there

is more development, highways, and siltation in the creek. Probably less than 10% of the watershed below Emmittsburg remains forested.

A recent shell and several old dead shells have been found at several locations in Conococheague Creek, Washington County (Table I). It is not known whether the recent shell originated locally, upstream in Pennsylvania, or in a tributary. Conococheague records include finding two older dead shells near a large bed of Elliptio complanata (which died when low water levels exposed a shoal). At another site (Rt. 68) several old shells and one fairly fresh shell was found along a large exposed shoal along approximately 60 feet of the creek bank. Seven other species (mostly dead) were also found in this area. Another very old shell was found just below the railroad crossing along the bank approximately 12 feet above the water line. One freshly dead shell (intact) was found in about 2 1/2 feet of water on top of the creek bottom substrate.

#### DISCUSSION:

Based on our survey efforts during the last two years, the majority of all mussel species in Allegany, Washington, Frederick, and Montgomery Counties may be doing much more poorly in Maryland than was previously realized (Table 3). Of 106 sites surveyed, live mussels were recorded at only 49 sites, with most of the mussel species being Elliptio complanata. Only dead mussels were found at 12 of the total sites. Of total streams surveyed, 5 contained 1 alive species, 3 streams contained 2 alive species, 2 streams contained 3 alive species, and 4 streams contained greater than 4 alive species (Table 4).

Although we found a few live individuals, water quality at most of the surveyed historical sites for A. varicosa also appears to be very poor. For example, no mussels of any species have been found in Tonoloway Creek, an historically occupied stream now heavily eutrophied and receiving industrial and water treatment plant effluent. A. varicosa has apparently disappeared from most of its original range in Maryland and is exceedingly rare in the three streams where it is known to persist. It appears to be endangered and close to extinction within Maryland.

PROGRESS: Ongoing

Surveys for this segment have been completed.

RECOMMENDATIONS:

Based on number and range of historical sites, more effort is needed to determine the current distribution and current population trends on this species in Maryland. Based on severity and imminence of threats to water quality in Maryland, efforts need to be increased to determine the viability and conservation needs of this species in Maryland. The species should be listed as endangered by the State of Maryland.

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Monocacy River	1		X	X	X	X	X
	2			X	[X]	X	
	3			X			
	4*						
	5	X		X		X	
	6						
Owens Creek	1						
	2			***** X			
Toms Creek	1	X		X	X	X	X
	2	X		X	X	X	X
	3			X	X	X	X
Broad Run	1*			[X]			
Israel Creek	1			X	[X]		
	2 <sup>2</sup>						
	3						
	4						
	5 <sup>2</sup>						
Dorcas Branch	1						
Glade Creek	1*						
Muddy Run	1*						
Linganore Creek	1*			X			
Potomac River	1			X	[X]	X	
	2			X	[X]	X	X
	3			X		[X]	
Montgomery County:							
C&O Canal	1			X		X	
Hawlings River+	1				X		X
Rocky Run	1						
Patuxent River+	1						
(incl. Howard Co.)							
Potomac River	1		[X]	X			
	2			X	X	X	[X]
	3*			[X]		[X]	
Reddy Branch+	1						
	2						
Washington County:							
Antietam Creek	1						
	2			[X]			
	3						
	4			[X]			
Bear Creek	1						
Beaver Creek	1	[X]					
	2						[X]
	3			[X] <sup>1</sup>			
C&O Canal	1						

Conococheague Creek	1		[X]		X		[X]		[X]
	2	[X]	[X]	[X] <sup>1</sup>	X	[X]	[X]	[X]	[X]
	3		[X]		X	[X]	[X]		X
	4								
	5				X		X	[X]	
	6		[X]		X		X		
	7		[X]		X				[X]
	8				X				[X]
Conococheague Trib.	1								
Hamilton Run	1								
Licking Creek	1				X				X
	2					[X]	X		X
	3				X			X	X
	4								
L. Conococheague Cr	1								
	2								
	3								
Little Tonoloway Cr	1								
Potomac River	1				X	X	X		
	2*				[X]	[X]	[X]		
	3		X		X	X	X		
	4				X		X		
	5				X	[X]	[X]		
	6				X		[X]		
Sideling Hill Creek	- see Allegany County								
Tonoloway Creek	1								
	2								
	3								

Total number sites  
living animals found: 49

Total number sites  
dead/relics only found: 12

\* Shoreline search only, no aquatic survey

<sup>1</sup> Species of Anodonta unknown

<sup>2</sup> Ditch or very narrow



Table 2. Maryland locations surveyed for freshwater mussels, Patuxent and Potomac River drainage above fall-line.

Allegany County:

Fifteen Mile Creek	1	Yonkers Road
	2	MV Smith Road
	3	Green Ridge Gap
	4	Long Pond
Flintstone Creek	1	1/2 mile above I-68
North Branch Potomac R.	1	Mouth of South Branch
	2	Mouth of Town Creek
Potomac River	1	Oldtown Bridge
Sideling Hill Creek	1	Zigler Road Bridge
	2	High Germany Rd. Bridge
	3	Sideling Hill WMA
	4	Riser Rd. Ford
	5	Stotlemeyer Rd.
Town Creek	1	Williams Road
	2	Mouth
	3	Maniford Road Ford
	4	Mouth Possum Hollow
	5	1/4 mile above Sugar Hollow
	6	1 mile above I-68
	7	Above Rt 51 Bridge
	8	Oldtown Road Ford
	9	Below Possum Hollow
	10	S ford, Lower Town Cr. Rd.
Wills Creek	1	The Narrows
	2	Ellerslie North
	3	Ellerslie South
	4	Corriganville

Frederick County:

Camp Catoclin Pond	1	Camp Catoclin
Catoclin Creek	1	Potomac River
	2	Boss Arnold/Ford Rd.
	3	Rt. 464
	4	Rt. 180
	5	Rt. 383
Flat Run (trib. Toms Cr.)	1	Seton Avenue Bridge
Hunting Creek	1	Blacks Mill Rd. Bridge
	2	Old Frederick Rd.
Middle Creek	1	North of US 40
Monocacy River	1	Bullfrog Rd. Bridge
(incl. Carroll Co.)	2	Rt. 26 Bridge
	3	Potomac River
	4	Park Mills Rd.
	5	Rt. 550
	6	Link's Bridge Rd.
Owens Creek	1	Longs Mill Rd. Bridge
	2	Loys Station Park
Toms Creek	1	Grimes Road Bridge
	2	Four Points Bridge
	3	Sixes Road Bridge

Broad Run	1	Rt. 550
Israel Creek	1	Daysville Rd.
	2	Rt. 26 (E and W)
	3	Renny Rd.
	4	Hill Rd.
	5	Rt. 550
Dorcas Branch	1	Rt. 550
Glade Creek	1	Retreat Rd.
Muddy Run	1	Rt. 15
Linganore Creek	1	Linganore Rd.
Potomac River	1	Monocacy River
	2	Catoctin Creek
	3	Lander Rd.
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Montgomery County:		
C&O Canal	1	Old Tavern
Hawlings River	1	3/4 mile below Brighton
Potomac River	1	DC line/Little Falls
	2	Great Falls
	3	Plummers Island
Reddy Branch	1	3/4 mile east Brookeville
	2	1/3 mile above Brookeville
Rocky Run	1	MacArthur Blvd.
Patuxent River	1	Roxbury Mills Rd.
Washington County:		
Antietam Creek	1	Burnside Bridge Rd.
	2	Keedysville Rd.
	3	Rt 34 Bridge
	4	Manor Church Rd.
Bear Creek	1	I 68
Beaver Creek	1	US 40 Bridge
	2	Newcomer Road Bridge
	3	Rt. 68
C&O Canal	1	Big Pool
Conococheague Creek	1	Rt 494 Bridge
	2	Rt 68 Bridge
	3	1 mile upstream Williamsport
	4	below dam, Kemps Mill Rd.
	5	Wishard Road
	6	Cearfoss Bridge
	7	Railroad crossing (N.Willsprt)
	8	Mill Rd.
Unnamed Conoco.trib	1	Snug Harbor Lane
Hamilton Run	1	Pangborn Park
Licking Creek	1	Slabtown Road
	2	Pennsylvania state line
	3	Pectonville Road
	4	below Keefer Road

Little Conococheague	1	Gruber Road Bridge
	2	Rt 56 Bridge
	3	Dam Number 5 Road
Little Tonoloway Creek	1	Widmeyer Park
Potomac River	1	below mouth Tonoloway Cr.
	2	Dam Number 4
	3	Cherry Run/Ernstville
	4	Harpers Ferry
	5	Shepherdstown
	6	1 mi. upstream from Shepherds.

Sideling Hill Creek - see Allegany County

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Tonoloway Creek	1	near Robinson Road
	2	below Hancock treatment plant
	3	MD 144/I-68 bridges

Table 3. Number of streams with alive or 'dead only' mussels, by species.

	ALU	ALV	ANC	ECO	EPR	LMO	LSS	SUN
Number of streams:								
Alive	1	3	2	12	5	10	2	9
Dead Only	2	1	2	0	4	1	2	5

Table 4. Number of streams by frequency of alive mussels.

	<u>Number of Species</u>			
	1	2	3	4+
Number of streams:	5	3	2	5*

\*These 5 streams contain the following numbers of species:

Sideling Hill Creek - 7  
 Monocacy River - 6  
 Toms Creek - 5  
 Licking Creek - 4  
 Potomac River - 4