

To NW
1991

memorandum

DATE: October 29, 1991

REPLY TO
ATTN OF: Bill Tolin and Jim Hudgins, WV Field Office, Elkins

SUBJECT: Ohio River mussel die-off

TO: File

Surveys of freshwater mussels in the Ohio River were conducted October 22-23, 1991 in response to an apparent die-off of mussels noted by Tolin a few weeks earlier. WVDNR divers Janet Clayton and Dosha Webb, supported by Doug Wood, collected mussels and made observations of the river bottom. Craig Stihler, WVDNR, processed mussels for analyses. Dr. Neves (VPI) and two assistants, and Jerry Wilson (ORINWR), were present on October 22.

Mussels were collected on October 22 in the backchannel of Muskingum Island and at Site 11. A major shift in species composition and abundance from previous years was noted at these sites, as well as a predominance of dead mussels. Amblema plicata dominated the Muskingum Island site formerly dominated by Quadrula quadrula. Q. quadrula was more abundant at Site 11 but over 50% of the specimens collected were dead.



One live female specimen of the federally endangered pink mucket, (Lampsilis abrupta) was found at Site 11. Identification of this animal was confirmed by Dr. Neves before it was returned to the substrate.

The divers noted that about 75% of the shells found at Muskingum Island were from dead animals, excluding A. plicata. All species except A. plicata were found in low numbers. There was a fine silt covering the bottom of the river. Janet noted small holes as if there had been mussels pulled from the river. The river bottom was relatively flat with a sand/gravel substrate. The was a row of shells from dead mussels observed running parallel to the island shoreline.

Mussels were collected on October 23 in the backchannel of Marietta Island near the head, and in the main channel near the Ohio shoreline opposite of Marietta Island. A greater diversity of species and a higher percentage of live mussels were found at this site than the previous two sites. A. plicata also dominated at both of these sites. In addition to collections by the divers, 20 A. plicata were collected during four short braille passes.

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The divers noted the backchannel substrate was clean swept sand and gravel and cleaner than the previous sites. Janet also noted pock marks suggesting that mussels had been collected from this site. The divers also noted a good cobble substrate in the main channel site near the Ohio shoreline.

We investigated the mouth of Duck Creek north of Marietta but did not detect any contamination. A resident had suggested Duck Creek was polluted by industry and may be affecting the Ohio River. We also investigated the outfall from the Marietta sewage treatment plant. Doug noted there was nothing unusual about the discharge that he could detect.

Janet attempted to dive for mussels in the Muskingum River about 1.5 miles above the mouth. This effort was canceled due to poor visibility. Two short brailling passes did not recover any mussels. Ponar samples indicated a sand/gravel substrate with shells from two species of mussels.

Table 1. Freshwater mussels collected by divers in the backchannel of Muskingum Island, October 22, 1991.

Species	Alive	Dead*
Anodonta imbecillis		1
Lasmigona complanata	2	
Quadrula quadrula	15**	***
Quadrula metanevra	3	
Quadrula pustulosa	2	
Amblema plicata plicata	45	2
Fusconaia flava		1
Pleurobema cordatum		1
Actinonaias ligamentina carinata	1	
Leptodea fragilis		1
Potamilus alatus		3
Lampsilis radiata luteola	1	
Lampsilis ventricosa	1	
Total	70	9 (estimated at 70%)

* Search efforts concentrated on finding live animals. Therefore dead animals of all species may have been present but not counted.

** Search efforts stopped after 15 live animals were found for analyses.

*** Dead shells of this species dominated the site and were too numerous to count.

Table 2. Freshwater mussels collected by divers at Site 11, October 22, 1991.

Species	Alive	Dead
Magnonaias nervosa	1	
Quadrula quadrula	34	36
Quadrula metanevra	13	
Amblema plicata plicata	39	1
Pleurobema cordatum	1	
Leptodea fragilis		2
Potamilus alatus	2	1
Lampsilis abrupta	1	
Total	91 (69%)	40 (31%)

Table 3. Freshwater mussels collected by divers in the backchannel of Marietta Island, October 23, 1991.

Species	Alive	Dead
<i>Lasmigona complanata</i>	2	
<i>Lasmigona costata</i>	1	
<i>Quadrula quadrula</i>	16	9
<i>Quadrula metanevra</i>	4	
<i>Quadrula pustulosa</i>	2	
<i>Amblema plicata plicata</i>	416	6
<i>Plethobasus cyphyus</i>	1	
<i>Pleurobema cordatum</i>	6	
<i>Obliquaria reflexa</i>	1	
<i>Actinonaias ligamentina carinata</i>	3	
<i>Potamilus alatus</i>	7	4
<i>Lampsilis radiata luteola</i>	3	
<i>Lampsilis ventricosa</i>	6*	2
Total	468 (96%)	21 (4%)

* includes one gravid female

Table 4. Freshwater mussels collected by divers in the mainchannel of Marietta Island, October 23, 1991.

Species	Alive	Dead
<i>Quadrula quadrula</i>	4	1
<i>Amblema plicata plicata</i>	159	1
<i>Potamilus alatus</i>	6	2
Total	169 (98%)	4 (2%)

Table 5. Samples collected for analyses from Ohio River mussel beds, October 22-23, 1991.

Number	Sample *	Location
WV92001	sediment	Muskingum Island
WV92002	A. plicata	"
WV92003	A. plicata	"
WV92004	A. plicata	"
WV92005	Q. quadrula	"
WV92006	Q. quadrula	"
WV92007	Q. quadrula	"
WV92008	sediment	"
WV92009	Q. quadrula	Site 11
WV92010	Q. quadrula	"
WV92011	A. plicata	"
WV92012	sediment	"
WV92013	sediment	"
WV92014	A. plicata	"
WV92015	Q. quadrula	"
WV92016	A. plicata	"
WV92017	A. plicata	"
WV92018	A. plicata	Marietta Island
WV92019	A. plicata	"
WV92020	sediment	"
WV92021	sediment	"
WV92022	Q. quadrula	"
WV92023	Q. quadrula	"
WV92024	Q. quadrula	"

* Mussels samples each contain a composite of five animals.