

AN ANNOTATED LIST OF ELMIDS, DRYOPIDS AND PSEPHENIDS FROM PENNSYLVANIA (COLEOPTERA)¹

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ABSTRACT: The distribution of aquatic beetles in the families Elmidae, Dryopidae and Psephenidae in Pennsylvania was studied. Collection records are presented from Lake Erie, Ohio, Susquehanna, Potomac, and Delaware River Basins which drain the majority of the state. Thirty-two species were collected of which thirteen represent new state records.

DESCRIPTORS: Elmidae, Psephenidae, Dryopidae, Distribution.

A comprehensive study of the elmids, dryopids and psephenid fauna of Pennsylvania is lacking; however, Sanderson (1938), Musgrave (1935), Collier (1969) and Brown and Murvosh (1974) recorded the following species from Pennsylvania: *Stenelmis crenata*, *S. lateralis*, *S. bicarinata*, *S. mera*, *S. musgravei*, *S. markeli*, *Helichus basalis*, *Optioservus ampliatus*, *O. trivittatus*, *O. immunis*, *O. ovalis* and *Psephenus herricki*. Brown (1972) described the general distribution of all North American dryopoids but gave little annotated information concerning collection sites. In addition to the species listed above, Brown (1975) added the genera *Ancyronyx*, *Dubiraphia*, *Macronychus*, *Microcylloepus*, *Oulimnius*, *Promoresia*, *Ectopria*, and *Dicranopselaphus* to Pennsylvania's fauna. This study was undertaken to examine the distribution of the Elmidae, Dryopidae, and Psephenidae in Pennsylvania.

Shaw and Busch (1970) described the Lake Erie Basin and the Ohio, Susquehanna, Delaware, Potomac and Genesee River Basins as the six major drainage systems in Pennsylvania. Records presented here represent collections taken in the first five basins which drain the vast majority of the state. The Genesee River Basin drains only a portion of Potter County before flowing north into New York. Techniques used to collect beetles during this study included Surber sampling, kick sampling, artificial substrate sampling, and hand-picking beetles from rocks. Two personal collections and the Pennsylvania State University collection were also studied. The distribution of these aquatic beetles will be reported as follows:

1. beetle species taken in field collections will be indicated by a county

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and stream designation;

2. new state records will be denoted by an asterisk after the name; and
3. the river basins will be designated in the collection data by the following Roman numeral and letter key according to Shaw and Busch (1970):

I. Delaware River Basin

- C. Delaware River from Lackawaxen River to the Lehigh River
- D. Lehigh River
- E. Delaware River from Lehigh River to the Schuylkill River
- F. Schuylkill River
- G. Delaware River from Schuylkill River to the Maryland border

II. Susquehanna River Basin

- K. Susquehanna River from Lackawanna River to the West Branch Susquehanna River
- L. West Branch Susquehanna River
- M. Susquehanna River from West Branch Susquehanna River to the Juniata River
- N. Juniata River
- O. Susquehanna River from Juniata River to the Maryland border

III. Ohio River

- P. Allegheny River to the New York border
- Q. Allegheny River from the New York border to the Clarion River
- W. Ohio River to the Ohio-West Virginia borders

IV. Lake Erie Basin

- X. Lake Erie

V. Genesee River Basin

VI. Potomac River Basin

- Z. Potomac River

A new species of *Stenelmis* collected during this study will be described at a later date.

RECORDS OF PENNSYLVANIA ELMIDAE:

County	Drainage Basin	Collection Site
<i>Ancyronyx variegata</i> (Germar)		
Columbia	II-M	Briar Creek
Crawford	III-Q	Mill Run, French Creek, Woodcock Creek
Erie	IV-X	Conneauttee Creek
Huntingdon	II-N	Trough Creek State Park (Penn. State University collection)
Lancaster	II-O	Conestoga Creek
Montgomery	I-F	Schuylkill River
York	II-O	Codorus Creek

County	Drainage Basin	Site
<i>Dubiraphia bivittata</i> (LeConte)*		
Crawford	III-Q	Sugar Creek
Cumberland	II-O	Conodoquinet Creek
<i>Dubiraphia minima</i> Hilsenhoff*		
Crawford	III-Q	Woodcock Creek, French Creek
Dauphin	II-O	Swatara Creek
Lebanon	II-O	Swatara Creek
Northumberland	II-M	West Branch Susquehanna River
<i>Dubiraphia quadrinotata</i> (Say)*		
Crawford	III-Q	Mill Run, Woodcock Creek, French Creek
Erie	IV-X	Mill Creek, Seven Mile Creek
Lancaster	II-O	Conestoga Creek
Venango	III-Q	Sugar Creek
<i>Dubiraphia vittata</i> (Melsheimer)*		
Crawford	III-Q	French Creek, Woodcock Creek, Little Sugar Creek, Mill Run
Cumberland	II-O	Conodoquinet Creek
Dauphin	II-O	Swatara Creek
Erie	III-Q	Hare Creek
	IV-X	Mill Creek
Lancaster	II-O	Conestoga Creek
Lawrence	III-W	North Fork Little Beaver Creek
Mifflin	II-N	Juniata River
<i>Macronychus glabratus</i> Say		
Bedford	II-N	Raystown Branch
Berks	I-F	Tulpehocken Creek
Columbia	II-M	Briar Creek
Crawford	III-Q	French Creek, Woodcock Creek
Cumberland	II-O	Conodoquinet Creek, Yellow Breeches Creek
Erie	III-Q	French Creek
	IV-X	Crooked Creek
Juniata	II-N	Tuscarora Creek
Lancaster	II-O	Conestoga Creek, Pequea Creek
Lawrence	III-W	Slippery Rock Creek, North Fork Little Beaver Creek
Lebanon	II-O	Swatara Creek
Perry	II-O	Sherman Creek
Venango	III-Q	Lake Creek, Allegheny River
York	II-O	Conewago Creek, Yellow Breeches Creek
<i>Microcylloepus pusillus</i> (LeConte)		
Crawford	III-Q	French Creek, Woodcock Creek
Cumberland	II-O	Conodoquinet Creek
Dauphin	II-M	Wisconisco Creek

County	Drainage Basin	Site
Huntingdon	II-N	Aughwick Creek
Juniata	II-N	Tuscarora Creek
Lancaster	II-O	Conestoga Creek
Perry	II-O	Sherman Creek
Snyder	II-M	Middle Creek
York	II-O	Muddy Creek, West Branch Conewago Creek

Optioservus ampliatus (Fall)

Adams	II-O	Conewago Creek
Bedford	II-N	Raystown Branch, Bobs Creek
Blair	II-N	Halter Creek
Centre	II-M	Elk Run Tributary
Clearfield	II-L	Gazzam Run, Watts Creek, Cambell Run
Crawford	III-Q	Mill Run, Little Sugar Creek, French Creek, Shirley Run
Elk	III-Q	West Branch of Clarion River
Erie	IV-X	Seven Mile Creek, Eight Mile Creek, Trout Run, Elk Creek
	III-Q	Beaver Run
Huntingdon	II-N	Aughwick Creek
Lawrence	III-W	Big Run
Mercer	III-W	Little Shenango River
Mifflin	II-N	Jacks Creek
Potter	II-L	Pine Creek

Optioservus fastiditus (Le Conte)*

Centre	II-M	Elk Run Tributary
Erie	IV-X	Conneauttee Creek
Potter	III-P	Allegheny River

Optioservus ovalis (Le Conte)

Blair	II-N	Frankstown Branch, Halter Creek
Bucks	I-E	Lahaska Creek
Centre	II-N	Logan Branch of Spring Creek
	II-M	Elk Run Tributary
Crawford	III-Q	Woodcock Creek, Little Sugar Creek, Shirley Run, French Creek
Cumberland	II-O	Yellow Breeches Creek
Elk	III-Q	West Branch of the Clarion River
Erie	IV-X	Walnut Creek, Mill Creek, Twelve Mile Creek, Elk Creek, Raccoon Creek, Little Conneauttee Creek, Seven Mile Creek, Eight Mile Creek, Hare Creek, Beaver Run, Trout Run
Huntingdon	II-N	Spruce Creek
Lawrence	III-W	Big Run
Mercer	III-W	Little Shenango River
Mifflin	II-N	Jacks Creek, Kishacoquillas Creek
Northampton	I-D	Monocacy Creek

County	Drainage Basin	Site
Perry	II-O	Sherman Creek
Venango	III-Q	Sugar Creek
York	II-O	West Branch of Codorus Creek
<i>Optioservus trivittatus</i> (Brown)		
Adams	II-O	Conewago Creek
Bedford	II-N	Raystown Branch, Dunning Creek, Yellow Creek
Berks	I-F	Tulpehocken Creek
Blair	II-N	Little Juniata River, Burgoon Run
Cameron	II-L	Sinnemahoning Creek
Centre	II-M	Elk Run Tributary
Clearfield	II-L	Chest Creek, Little Clearfield Creek, Gazzam Run
Columbia	II-M	Briar Creek
Crawford	III-Q	Little Sugar Creek, Sugar Creek, Muddy Creek, Woodcock Creek, French Creek
Cumberland	II-O	Yellow Breeches Creek, Big Spring Creek, Middle Spring Creek, Mountain Creek, Conodoquinet Creek
Dauphin	II-M	Powell Creek, Wisconisco Creek
	II-O	Manada Creek
Elk	III-Q	West Branch of the Clarion River
Erie	IV-X	Crooked Creek, Raccoon Creek, Walnut Creek
	III-Q	South Branch of French Creek, Hare Creek, Beaver Run
Forest	III-Q	Tionesta Creek
Huntingdon	II-N	Juniata River, Frankstown Branch, Aughwick Creek, Standing Stone Creek
Juniata	II-N	Juniata River, Manhantango Creek, Lost Creek, Tuscarora Creek
Lancaster	II-O	Chickies Creek, Conestoga Creek
Lebanon	II-N	Swatara Creek
	II-O	Little Swatara Creek
McKean	III-P	Potato Creek
Mercer	III-W	Little Shenango River
Mifflin	II-N	Juniata River, Jacks Creek, Kishacoquillas Creek
Montgomery	I-F	East Branch Perkiomen Creek, Perkiomen Creek
Montour	II-K	Susquehanna River
Northampton	I-D	Lehigh River
Northumberland	I-F	Mahanoy Creek
Perry	II-N	Juniata River, Cocolamus Creek
	II-O	Sherman Creek
Snyder	II-M	Middle Creek, Penns Creek
Union	II-M	Penns Creek
Venango	III-Q	Sugar Creek, Stewart Run
York	II-O	Little Conewago Creek, South Branch of Codorus Creek

County	Drainage Basin	Site
<i>Oulimnius latiusculus</i> (LeConte)		
Crawford	III-Q	Woodcock Creek
Erie	IV-X	Six Mile Creek, Little Conneauttee Creek
McKean	III-Q	Chappel Fork
Perry	II-O	Sherman Creek
York	II-O	Muddy Creek
<i>Promoresia elegans</i> (LeConte)*		
Cumberland	II-O	Conodoquinet Creek
Juniata	II-N	Lost Creek, Tuscarora Creek
Perry	II-O	Sherman Creek
Snyder	II-M	Middle Creek
Union	II-M	Penns Creek
York	II-O	Muddy Creek
<i>Promoresia tardella</i> (Fall)*		
Adams	II-O	Conewago Creek
Snyder	II-M	Middle Creek
Venango	III-Q	Stewart Run
<i>Stenelmis bicarinata</i> LeConte		
Montour	II-K	Susquehanna River
Northumberland	II-M	Susquehanna River
<i>Stenelmis concinna</i> Sanderson*		
Adams	II-O or VI-Z	Penn. State University collection
Northumberland	II-M	West Branch of the Susquehanna River
Schuylkill	I-F or II-M	Penn. State University Collection
<i>Stenelmis crenata</i> (Say)		
Adams	II-O	Conewago Creek, South Branch of the Conewago Creek
Bedford	II-N	Raystown Branch, Dunning Creek, Bobs Run, Yellow Creek
Berks	I-F	Cacoosing Creek, Tulpehocken Creek, Willow Creek
Blair	II-N	Frankstown Branch, Plum Creek
Bucks	I-E	Lahaska Creek
Centre	II-M	Sinking Creek
Chester	I-G	Taylor Run
Columbia	II-M	Briar Creek
Crawford	III-Q	French Creek, Woodcock Creek, Mill Run, Sugar Creek
Cumberland	II-O	Conodoquinet Creek, Yellow Breeches Creek, Susquehanna River
Dauphin	II-M	Powells Creek, Wisconisco Creek,
	II-O	Swatara Creek, Beaver Creek, Paxton Creek, Manada Creek

County	Drainage Basin	Site
Elk	III-Q	Clarion River
Erie	IV-X	Walnut Creek, Elk Creek, Mill Creek, Trout Run, Crooked Creek, Raccoon Creek, LeBeouf Creek, Four Mile Creek, Little Conneauttee Creek, Seven Mile Creek
	III-Q	French Creek, South Branch of French Creek, Hare Creek
Forest	III-Q	Tionesta Creek
Huntingdon	II-O	Juniata River, Little Juniata River, Spruce Creek
Juniata	II-N	Juniata River
	II-M	Manhantango Creek, Tuscarora Creek
Lancaster	II-O	Mill Creek, Conoy Creek, Conestoga Creek, Swarr Run, Octoraro Creek, Pequea Creek, Cocalico Creek, Chickies Creek, Little Conestoga Creek
Lawrence	III-W	North Fork Little Beaver Creek, Big Run
Lebanon	II-N	Swatara Creek
	II-O	Little Swatara Creek
McKean	III-P	Potato Creek, Kinzua Creek
Mercer	III-W	Black Run, Little Shenango River
Mifflin	II-N	Juniata River, Jacks Creek, Kishacoquillas Creek
Montour	II-K	Susquehanna River, Chillisquaque Creek
Northumberland	II-M	Buddys Run
	I-F	Mahanoy Creek
Perry	II-O	Sherman Creek, Juniata River
Snyder	II-M	Middle Creek, Penns Creek
Venango	III-Q	Sugar Creek, Lake Creek
Warren	III-Q	Brokenstraw Creek
York	II-O	West Branch Codorus Creek, Oil Creek, Codorus Creek

Stenelmis markeli Motschulsky

Adams	II-O or VI-Z	Penn. State University collection
Centre	II-L or II-M	Penn. State University collection
Crawford	III-Q	French Creek
Cumberland	II-O	Conodoquinet Creek
Dauphin	II-O	Susquehanna River
Mifflin	II-N	Juniata River
Perry	II-N	Juniata River
Schuylkill	I-F or II-M	Penn. State University collection

Stenelmis mera Sanderson

Adams	II-O or VI-Z	Penn. State University collection
Bedford	II-N	Raystown Branch
Crawford	III-Q	French Creek
Cumberland	II-O	Conodoquinet Creek
Dauphin	II-M or II-N	(Light trap)
Erie	IV-X	Seven Mile Creek, Elk Creek, Six Mile Creek
	III-Q	Hare Creek

County	Drainage Basin	Site
Juniata	II-N	Juniata River
Lancaster	II-O	Susquehanna River, Conestoga Creek
Mifflin	II-N	Juniata River, Jacks Creek
Montour	II-K	Susquehanna River
Northumberland	II-M	East Mahantango Creek
Perry	II-O	Juniata River, Sherman Creek
Venango	III-Q	Sugar Creek
York	II-O	Penn. State University collection
<i>Stenelmis musgravei</i> Sanderson		
Adams	II-O or VI-Z	Penn. State University collection
Blair	II-N	Penn. State University collection
<i>Stenelmis quadrimaculata</i> (Horn)		
Erie	IV-X	Penn. State University collection
<i>Stenelmis sandersoni</i> Musgrave*		
Lancaster	II-O	Octoraro Creek
Perry	II-O	Sherman Creek
<i>Stenelmis vittipennis</i> Zimmerman*		
Dauphin	II-M or II-N	(Light trap)
<i>Stenelmis</i> sp. n.*		
Bedford	II-N	Raystown Branch, Dunning Creek, Bobs Creek
Blair	II-N	Plum Creek
Centre	II-M	Penns Creek, Sinking Creek
Clearfield	II-L	Little Clearfield Creek, Gazzam Run
Columbia	II-M	Briar Creek
Crawford	III-Q	French Creek, Mill Run, Woodcock Creek
Cumberland	II-O	Yellow Breeches Creek, Conodoquin Creek
Erie	IV-X	Walnut Creek
Forest	III-Q	Tionesta Creek
Huntingdon	II-N	Juniata River, Frankstown Branch, Aughwick Creek
Juniata	II-O	Juniata River, Mahantango Creek, Lost Creek
Lancaster	II-O	Mill Creek, Conoy Creek, Conestoga Creek, Octoraro Creek, Cocalico Creek, Chickies Creek, Little Conestoga Creek, Swarr Run, Pequea Creek
Lawrence	III-W	North Fork of Little Beaver Creek, Big Run, Hickory Creek
Lebanon	II-O	Little Swatara Creek
Mifflin	II-N	Juniata River, Jacks Creek, Kishacoquillas Creek
Montour	II-K	Susquehanna River
Perry	II-N	Juniata River, Cocolamus Creek
Snyder	II-M	Middle Creek

County	Drainage Basin	Site
Venango	III-Q	French Creek, Allegheny River, Oil Creek
Warren	III-Q	Brokenstraw Creek
York	II-O	Little Conewago, Conewago Creek, Oil Creek, Codorus Creek

RECORDS OF PENNSYLVANIA DRYOPIDAE:

Helichus basalis LeConte

Crawford	III-Q	Mill Run, French Creek, Woodcock Creek
Erie	IV-X	Raccoon Creek

Helichus fastigiatus (Say)*

Erie	IV-X	Raccoon Creek
	III-Q	French Creek

Helichus lithophilus (Germar)*

Blair	II-N	Penn. Sate University collection
Crawford	III-Q	Woodcock Creek, French Creek
Cumberland	II-O	Yellow Breeches Creek
Erie	III-Q	French Creek
Franklin	II-O	Penn. State University collection
Lawrence	III-Q	North Fork of the Little Beaver Creek
Montour	II-K	Susquehanna River

RECORDS OF PENNSYLVANIA PSEPHENIDAE:

Ectopria nervosa (Melsheimer)

Crawford	III-Q	Woodcock Creek
Elk	III-Q	West Branch of the Clarion River
Erie	IV-X	Crooked Creek, Elk Creek

Psephenus herricki (DeKay)

Bedford	II-N	Raystown Branch, Yellow Creek
Cameron	II-L	First Fork of Sinnemahoning Creek, Driftwood Branch of the Sinnemahoning Creek
Crawford	III-Q	Shirley Run, Woodcock Creek, French Creek, Muddy Creek
Erie	IV-X	Seven Mile Creek, Crooked Creek, Twelve Mile Creek, Raccoon Creek, Walnut Creek, Four Mile Creek, Elk Creek, Mill Creek, Little Conneauttee Creek, Sixteen Mile Creek, Six Mile Creek, Eight Mile Creek, Trout Run, Conneauttee Creek
	III-Q	Hare Creek
Forest	III-Q	Allegheny River
Huntingdon	II-N	Aughwick Creek, Standing Stone Creek
Juniata	II-N	Tuscarora Creek

County	Drainage Basin	Site
Mercer	III-W	Little Shenango River
Northampton	I-C or I-D	Penn. State University collection
Perry	II-N	Cocolamus Creek
Potter	II-L	Pine Creek
Snyder	II-M	Middle Creek
Venango	III-Q	Oil Creek
Warren	III-Q	Brokenstraw Creek

Dr. David S. White is currently revising the genus *Optioservus* and has indicated *O. ampliatus* is probably a synonym of *O. ovalis* (personal communication).

By including previously published records with this study, Pennsylvania's elmids, dryopids and psephenid fauna now numbers thirty-two species. Thirteen species in the genera *Dubiraphia*, *Optioservus*, *Promoresia*, *Stenelmis* and *Helichus* are reported from the state for the first time.

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