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PROVISIONAL LIST OF PARASITES OCCURRING
ON *FUNDULUS* SPP.¹

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In recent years interest in the utilization of fishes, particularly marine species, as experimental animals has increased. In the search for species amenable to this use, many investigators have chosen the hardy euryhaline species belonging to the genus *Fundulus*.

In the course of holding these animals under restricted laboratory conditions, problems involving parasitization have developed. In the summer of 1964, workers at our Institute experienced great difficulty in maintaining *Fundulus* in captivity, and large numbers of experimental animals died. Examination of these fish revealed them to be heavily infested with monogenetic trematodes (mostly gyroactylids, a few dactylogyrids).

Inasmuch as severe cases of parasitism could well effect experimental results and render interpretation difficult, it is important that relationships between experimental animals and their parasites be recognized and dealt with. It is hoped that this provisional list of symbionts of the fundulid cyprinidonts will be of help in this regard.

The following lists of parasites and bibliographic data have been compiled from monographic works, check-lists and various papers in the pertinent fields. Additional records from the researches of workers at this Institute are reported.

¹Contribution No. 204 from the Virginia Institute of Marine Science, Gloucester Point, Virginia.

ORGANISMS OCCURRING IN NATURE

<i>DINOFLAGELLATA</i>			
PARASITE	HOST	SOURCE	LOCALITY
<i>Oodinium</i> sp.	<i>F. heteroclitus</i>	Lawler, unpubl.°	York River, Va.
" "	<i>F. majalis</i>	Lawler, unpubl.°	York River, Va.
<i>SPOROZOA</i>			
<i>Chloromyxum funduli</i>	<i>Fundulus</i> sp.	Kudo, 1920	USA
<i>Myxidium incurvatum</i>	<i>F. majalis</i>	Kudo, 1920	USA
<i>Myxobolus funduli</i>	<i>F. diaphanus</i>	Kudo, 1920	USA
" "	<i>F. heteroclitus</i>	Kudo, 1920	USA
" "	<i>F. majalis</i>	Kudo, 1920	USA
<i>Myxobolus musculi</i>	<i>Fundulus</i> sp.	Hahn, 1916	Woods Hole, Mass.
" "	" "	Hahn, 1917	Woods Hole, Mass.
<i>Myxobolus</i> sp.	<i>F. heteroclitus</i>	Owens, unpubl.°	York River, Va.
<i>Myxosoma funduli</i>	<i>Fundulus</i> sp.	Kudo, 1918	USA
" "	<i>F. heteroclitus</i>	Kudo, 1920	USA
" "	<i>F. majalis</i>	Kudo, 1920	USA
<i>MONOGENEA</i>			
Ancyrocephalinae	<i>F. heteroclitus</i>	Dillon & Lawler, unpubl.	York River, Va.
" "	<i>F. majalis</i>	Dillon & Lawler, unpubl.	York River, Va.
<i>Gyrodactylus funduli</i>	<i>F. similis</i>	Hargis, 1955	Florida
<i>Gyrodactylus prolongis</i>	<i>F. grandis</i>	Hargis, 1955	Florida
" "	<i>F. heteroclitus</i>	Linton, 1940	Woods Hole, Mass.
" "	<i>F. heteroclitus</i>	Dillon & Lawler, unpubl.°	York River, Va.
" "	<i>F. majalis</i>	Dillon & Lawler, unpubl.°	York River, Va.
<i>Gyrodactylus stegurus</i>	<i>F. diaphanus</i>	Mueller, 1937	USA

*Unpublished data; appreciation is expressed to Messrs. Adrian R. Lawler and Dean P. Owens of the Virginia Institute of Marine Science for permission to use their data.

PARASITE	HOST	SOURCE	LOCALITY
<i>Gyrodactylus stephanus</i>	<i>F. heteroclitus</i>	Mueller, 1937	Baltimore, Md.
" "	<i>F. heteroclitus</i>	Dillon & Lawler, unpubl.°	York River, Va.
" "	<i>F. grandis</i>	Hargis, 1955	Florida
" "	<i>F. majalis</i>	Dillon & Lawler, unpubl.°	York River, Va.
Gyrodactylidae	<i>F. similis</i>	Bangham, 1940	Florida
<i>Urocleidus angularis</i>	<i>F. diaphanus menona</i>	Mueller, 1934	Oneida Lake, N. Y.
<i>Urocleidus fundulus</i>	<i>F. catenatus</i>	Mizelle, 1940	Tennessee
<i>Urocleidus umbraensis</i>	<i>F. dispar</i>	Seamster, 1948	Louisiana
" "	<i>F. notatus</i>	Mizelle, 1938	Illinois
DIGENEA			
<i>Bucephaloides strongyluræ</i>	<i>F. grandis</i>	Sparks, 1960	Texas
<i>Clinostomum complanatum</i>	<i>F. diaphanus</i>	Meyer, 1962	Maine
<i>C. marginatum</i>	<i>F. diaphanus menona</i>	Bangham, 1944	Wisconsin
<i>Crassiphiala bulboglossa</i>	<i>F. diaphanus</i>	Hunter, 1942	Connecticut
<i>Crepidostomum</i> sp.	" "	Hunter, 1942	Connecticut
<i>Creptotrema funduli</i>	<i>F. diaphanus menona</i>	Mueller, 1934	Oneida Lake, N. Y.
" "	" "	Meyer, 1962	Maine
" "	<i>F. chrysotus</i>	Bangham, 1940	Florida
<i>Diplostomulum</i> sp.	<i>F. diaphanus</i>	Hunter, 1942	Connecticut
" "	<i>F. diaphanus menona</i>	Meyer, 1958	Iowa
Echinostomatidae	<i>F. heteroclitus</i>	Lawler, unpubl.°	York River, Va.
<i>Homalometron pallidum</i>	" "	Stafford, 1904	Woods Hole, Mass.
" "	" "	Linton, 1901	Woods Hole, Mass.
" "	" "	Manter, 1926	Maine
" "	" "	Stunkard, 1963	_____
" "	" "	Stunkard, 1964	_____
" "	<i>F. majalis</i>	Linton, 1905	Beaufort, N. C. (P)

PARASITE	HOST	SOURCE	LOCALITY
<i>Homalometron pallidum</i>	<i>F. majalis</i>	Manter, 1931	_____
" "	<i>Fundulus</i> sp.	Sparks, 1958	Louisiana
<i>Mesoporphodiplostomum pricei</i>	<i>Fundulus</i> sp.	Hoffman, 1960	USA
<i>Neascus vanceleveii</i>	<i>F. diaphanus</i>	Van Cleave & Mueller, 1934	Oneida Lake, N. Y.
" "	<i>F. similis</i>	Bangham, 1940	Florida
" "	<i>F. seminolis</i>	Bangham, 1940	Florida
" "	<i>F. majalis</i>	Bangham, 1940	Florida
" "	<i>F. grandis</i>	Bangham, 1940	Florida
" "	<i>F. chrysotus</i>	Bangham, 1940	Florida
" "	<i>F. cingulatus</i>	Bangham, 1940	Florida
" "	<i>F. notatus</i>	Bangham, 1940	Florida
<i>Neascus</i> sp.	<i>Fundulus</i> sp.	Hunter, 1942	Connecticut
" "	<i>F. notatus</i>	Bangham, 1940	Florida
" "	<i>F. diaphanus menona</i>	Bangham, 1944	Wisconsin
<i>Paramacroderoides echinus</i>	<i>Fundulus</i> sp.	Holliman and Leigh, 1953	Florida
<i>Pisciamphistoma stunkardi</i>	<i>F. notatus</i>	Bangham, 1940	Florida
<i>Posthodiplostomum minimum</i>	<i>F. diaphanus</i>	Hunter, 1942	Connecticut
<i>Rhipidocotyle lintoni</i>	<i>F. grandis</i>	Sparks, 1960	Texas
"Unidentified distome"	<i>F. similis</i>	Sparks, 1958	Louisiana
CESTODA			
<i>Agamonema immanis</i>	<i>F. heteroclitus</i>	Chandler, 1935	Texas
<i>Agamonema</i> sp.	<i>F. similis</i>	Bangham, 1940	Florida
" "	<i>F. seminolis</i>	Bangham, 1940	Florida
" "	<i>F. grandis</i>	Bangham, 1940	Florida
" "	<i>F. majalis</i>	Bangham, 1940	Florida
" "	<i>F. chrysotus</i>	Bangham, 1940	Florida
" "	<i>F. cingulatus</i>	Bangham, 1940	Florida

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PROVISIONAL LIST OF PARASITES

"	"	<i>F. notatus</i>	Bangham, 1940	Florida
<i>Bothriocephalus rarus</i>		<i>F. diaphanus</i>	Meyer, 1962	Maine
<i>Bothriocephalus</i> sp.		<i>F. seminolis</i>	Bangham, 1940	Florida
"	"	<i>F. majalis</i>	Bangham, 1940	Florida
"	"	<i>F. grandis</i>	Bangham, 1940	Florida
<i>Dorylaimus</i> sp.		<i>F. seminolis</i>	Bangham, 1940	Florida
<i>Protocephalus ambloplites</i>		<i>F. diaphanus</i>	Hunter, 1942	Connecticut
<i>Protocephalus</i> sp.		<i>F. diaphanus</i>		Connecticut
"	"	<i>F. similis</i>	Bangham, 1940	Florida
"	"	<i>F. grandis</i>	Bangham, 1940	Florida
"	"	<i>F. chrysotus</i>	Bangham, 1940	Florida
"	"	<i>F. cingulatus</i>	Bangham, 1940	Florida
"	"	<i>F. notatus</i>	Bangham, 1940	Florida

NEMATODA

<i>Contracaecum robustum</i>		<i>F. heteroclitus</i>	Chandler, 1935	Texas
<i>C. spiculigerum</i>		<i>F. similis</i>	Bangham, 1940	Florida
"	"	<i>F. majalis</i>	Bangham, 1940	Florida
"	"	<i>F. chrysotus</i>	Bangham, 1940	Florida
"	"	<i>F. cingulatus</i>	Bangham, 1940	Florida
"	"	<i>F. notatus</i>	Bangham, 1940	Florida
<i>Dichelyne lintoni</i>		<i>F. heteroclitus</i>	Yamaguti, 1961	North Carolina
<i>Eustrongylides ignotus</i>		<i>F. heteroclitus</i>	Brand, 1944	USA
<i>Eustrongylides</i> sp.		<i>F. diaphanus menona</i>	Mueller, 1934	Oneida Lake, N. Y.
"	"	<i>F. diaphanus</i>	Hunter, 1942	Connecticut
"	"	<i>F. heteroclitus</i>	Owens, unpubl.*	York River, Va.
<i>Raphidascaris cayugensis</i>		<i>Fundulus</i> sp.	Yamaguti, 1961	USA

ACANTHOCEPHALA

PARASITE	HOST	SOURCE	LOCALITY
<i>Arhythmorhynchus duocinctus</i>	<i>F. grandis</i>	Bullock, 1957	Texas
<i>Leptorhinchooides thecatus</i>	<i>F. similis</i>	Bangham, 1940	Florida
" "	<i>F. majalis</i>	Bangham, 1940	Florida
" "	<i>F. grandis</i>	Bangham, 1940	Florida
" "	<i>F. chrysotus</i>	Bangham, 1940	Florida
<i>Neoechinorhynchus cylindratus</i>	<i>F. similis</i>	Bangham, 1940	Florida
" "	<i>F. cingulatus</i>	Bangham, 1940	Florida
" "	<i>F. notatus</i>	Bangham, 1940	Florida
" "	<i>F. diaphanus menona</i>	Bangham, 1944	Wisconsin
<i>N. dorpharus</i>	<i>F. majalis</i>	Van Cleave & Bangham, 1949	Florida
<i>Neoechinorhynchus</i> sp.	<i>F. chrysotus</i>	Bangham, 1940	Florida
" "	<i>F. notatus</i>	Bangham, 1940	Florida
<i>Octospiniferoides chandleri</i>	<i>F. grandis</i>	Bullock, 1957	Texas
" "	<i>F. grandis</i>	Bullock, 1960	Florida
<i>Telosentis tenuicornis</i>	<i>F. grandis</i>	Bullock, 1957	Texas

COPEPODA

<i>Argulus funduli</i>	<i>F. heteroclitus</i>	Wilson, 1907	Beaufort, N. C.
" "	<i>F. heteroclitus</i>	Wilson, 1932	Woods Hole, Mass.
" "	<i>F. majalis</i>	Wilson, 1932	Woods Hole, Mass.
<i>Caligus rufimaculatus</i>	<i>F. heteroclitus</i>	Wilson, 1905	Woods Hole, Mass.
" "	<i>F. majalis</i>	Wilson, 1905	Woods Hole, Mass.
" "	<i>Fundulus</i> sp.	Wilson, 1932	Woods Hole, Mass.
<i>Ergasilus caeruleus</i>	<i>F. chrysotus</i>	Bangham, 1940	Florida
<i>Ergasilus funduli</i>	<i>F. ocellaris</i>	Wilson, 1911	Louisiana
" "	(<i>F. limbatus</i>)	Reichenbach Klinke, 1958	_____

PARASITE	HOST	SOURCE	LOCALITY
<i>Ergasilus funduli</i>	<i>F. heteroclitus</i>	Wilson, 1932	Louisiana
" "	<i>F. majalis</i>	Pearse, 1947	North Carolina
<i>Ergasilus lizae</i>	<i>F. similis</i>	Yamaguti, 1963	USA
" "	<i>F. heteroclitus grandis</i>	Yamaguti, 1963	USA
<i>Ergasilus</i> sp.	<i>F. notatus</i>	Bangham, 1940	Florida
<i>Lernaeenicus radiatus</i>	<i>F. heteroclitus</i>	Wilson, 1917	Woods Hole, Mass.
<i>L. affixus</i>	<i>F. heteroclitus</i>	Wilson, 1917	Woods Hole, Mass.

HIRUDINEA

<i>Cystobranchnus vividus</i>	<i>F. pisculentus</i>	Pratt, 1935	USA
<i>Piscicola funduli</i>	<i>F. pisculentus</i>	Pratt, 1935	USA

PARASITES CAUSING EXPERIMENTALLY INDUCED
INFECTIONS

SPOROZOA

<i>Ichthyosporidium hoferi</i>	<i>F. heteroclitus</i>	Sinderman & Scattergood, 1954	
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DIGENEA

<i>Heterophyes</i> sp.	<i>F. p. parvipinnis</i>	Martin and Kuntz, 1955	
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