



Gulf of Mexico

Origin, Waters, and Biota

Volume 1: **Biodiversity**

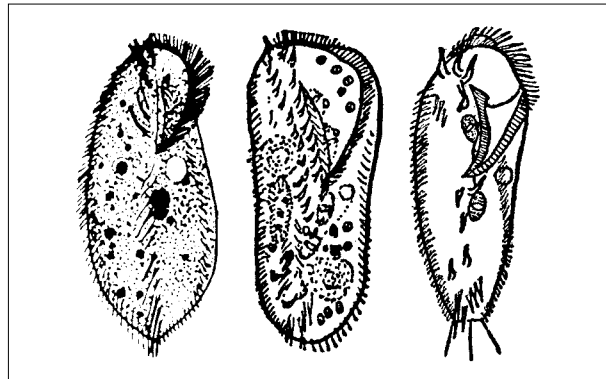
Edited by **Darryl L. Felder**
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Ciliated Protists (Ciliophora) of the Gulf of Mexico

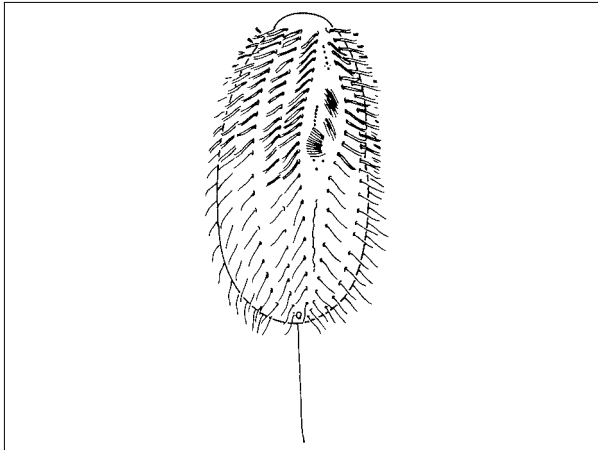
D. Wayne Coats and John C. Clamp

The ciliates represent a ubiquitous group of protists with representatives inhabiting most marine, freshwater, and terrestrial habitats (Corliss 1979). Their small size, rapid reproductive rate, and ability to form desiccation-resistant resting stages ensure easy dispersal of species and colonization of suitable habitats (Fenchel and Finlay 2004). Ciliates occur from the poles to the tropics and from alpine regions to the deep sea. They survive in extreme environments, including hot springs, hypersaline lakes, and desert settings, with many species adapted to anaerobic conditions. Free-living species can be found swimming in the water column, living within interstices of flocculent sediment or tidal sands, attached to hard or soft substrates, and creeping along soil particles or epiphytic mosses. Symbiotic and parasitic species live in association with a wide variety of hosts, including other protists, planktonic and benthic invertebrates, reptiles, fish, and mammals. Most ciliates feed on bacteria, microalgae, or other protists; however, some are photosynthetic, and others consume host tissues. Ciliates are generally viewed as playing pivotal roles in microbial food webs, as they regenerate nutrients through excretion (Caron and Goldman 1990) and transform bacterial and microalgal biomass into larger particles that are easily exploited by metazoan grazers (Azam et al. 1983, Stoecker and Capuzzo 1990, Gifford 1991). The number of ciliate species inhabiting the biosphere is uncertain, but estimates range as high as 30,000 (Foissner 1999), with about 7,200 species being formally described (Corliss 1979). Of these, a relatively small percentage has been reported from the Gulf of Mexico.



Ciliophora. After Pratt 1916.

The first published records of ciliates collected in the Gulf of Mexico are 3 papers on species from the coast of Louisiana by J. C. Smith (1898, 1900, 1904). Two papers by Jacobs (1912, 1914) on endosymbionts of sea urchins in the Dry Tortugas appeared a decade later. More than a decade and a half elapsed before the next papers on the ciliate fauna appeared. The 1930s and 1940s were a period of relatively vigorous investigation of the ciliates of the Gulf, almost all of it originating from the Tortugas Laboratory of the Carnegie Institution at the western tip of the Florida Keys. The Tortugas papers comprise 2 distinct groups: those on free-living ciliates (Bullington 1931–1940, Pearse 1932a, b) and those on endosymbionts of sea urchins, annelids, and corals (Powers 1933, 1935, Wichterman 1939, 1940, 1942a, b). A notable exception was Noland's classic paper of 1937 on free-living ciliates



Ciliophora. After Borror 1973.

collected in the vicinity of the Bass Biological Laboratory south of Tampa, Florida (Noland 1937). This study was significant in being the first large-scale survey of a marine ciliate community in the Gulf of Mexico. Sprague (1951, 1954) and Sprague and Couch (1971) published comprehensive reviews of early records from the literature and Borror (1962, 1963a,b) followed with another review of literature records and new reports of free-living species of ciliates from the Gulf Coast of the upper peninsula and eastern panhandle of Florida.

The surveys of ciliates in Alligator Harbor, Florida, by Borror (1963b) and Mobile Bay, Alabama, by Jones (1974a) constitute the most extensive and best documented investigations of the free-living ciliate fauna of the eastern half of the Gulf of Mexico. A series of papers by López-Ochoterena, Aladro-Lubel, Mayén-Estrada, and others from the Universidad Nacional Autónoma de México provide an exceptionally complete and well-documented account of the free-living ciliates, mainly interstitial species, of the western Gulf of Mexico in the area around Veracruz, Mexico (López-Ochoterena and López 1963, López-Ochoterena et al. 1976, Mayén-Estrada 1979, Aladro-Lubel, 1981, 1984, Madrazo-Garibay and López-Ochoterena 1985, Aladro-Lubel, Martínez-Murillo, and Mayén-Estrada 1986, 1988, 1990, Aladro-Lubel et al. 1986). The only other reports of ciliates from the coast of Mexico are three papers (Grolière, de Puytorac, and Grain 1978, 1980, Vidal-Martinez, Jiménez-Cueto, and Simá-Álvarez 2002) on symbionts of sea urchins. Several other authors have published reports of ciliates that form symbiotic associations with various crustaceans, other invertebrates, and fishes in the Gulf of Mexico (Pearse 1932a,b, Andrews 1944, 1946, Couch 1967, Phillips 1973, Johnson

1974, Welch 1977, Overstreet 1978, Turner, Postek, and Collard 1979, Clamp 1989, Landers, Zimlich, and Coate 1999). Three of these papers (Phillips 1973, Welch 1977, Landers, Zimlich, and Coate 1999) stand out by virtue of the fact that they deal with apostome ciliates, specialized ectocommensals of crustaceans that are, in general, poorly known.

Studies of the strictly planktonic ciliates that inhabit open waters of the Gulf of Mexico are largely limited to taxonomic listings of loricate tintinnid species retained by fine-mesh plankton nets. Among these, the works of Balech (1967a,b, 1968), Cospér (1972), Calderón-Aragón and López-Ochoterena (1973), and Aladro-Lubel (1974) are the most comprehensive, providing extensive coverage of coastal areas, particularly the northeastern Gulf, and reasonable detail of oceanic communities. In addition, Balech (1972) reviewed published data for several oceanographic regions, including the Gulf of Mexico, to examine vertical zonation of tintinnids and their potential use as indicators of upwelling. Mention of planktonic ciliates from the Gulf also can be found in reports on red tides (e.g., Lackey and Hynes 1955) and diets of larval fishes and zooplankton (Govoni, Hoss, and Chester 1983, Stoecker and Govoni 1984, Govoni and Chester 1990, Larson 1991).

The systematics of many taxa in the phylum Ciliophora are currently in a state of flux. This is mainly the result of a flood of new information relative to taxonomic placement, especially from modern techniques such as electron microscopy and gene sequencing. This is reflected in the necessity of designating several of the species listed in the following checklist as *incertae sedis*. The most up-to-date and accepted classification of ciliates is the one presented in Lynn and Small (2000), and we have used it to structure our checklist. There is also a useful website (<http://www.uoguelph.ca/~ciliates/>) that includes some problematic taxa not treated in Lynn and Small (2000). We used it to establish the most likely placement for several taxa. Older references that are still extremely useful are Kahl (1930–1935), Kofoid and Campbell (1929, 1939), and Corliss (1979).

In contrast to taxa of larger, multicellular organisms, there is little value in trying to analyze the biogeography of ciliate taxa in the present work. One reason for avoiding a biogeographical analysis of the Gulf fauna is the observer bias that is reflected in the systematic literature, which contains a preponderance of species known from western Europe, a smaller number from North America, and relatively few from other continents (Foissner 1999).

Sparse documentation of the ciliate fauna for huge areas of the world means that the basic context that is necessary for biogeographical analysis is lacking. A second reason is related to the small size of protists and their consequent ability to disperse readily over long distances and into many sorts of environments. A large number of free-living species of ciliates and other protists from both freshwater and marine habitats appear to be more-or-less cosmopolitan in distribution (Finlay, Esteban, and Fenchel 1998, Foissner 1999, Fenchel and Finlay 2004). This has led some authorities (Finlay and Fenchel 1999) to doubt the existence of biogeography, in the traditional meaning of the term, in free-living protists and other similarly tiny organisms. Other equally authoritative investigators (e.g., Foissner 1999) have maintained that some species of free-living protists do have restricted distributions, but acknowledge that the present controversy about biogeography of protists may not be resolved for many decades, given the decline in alpha-taxonomic studies.

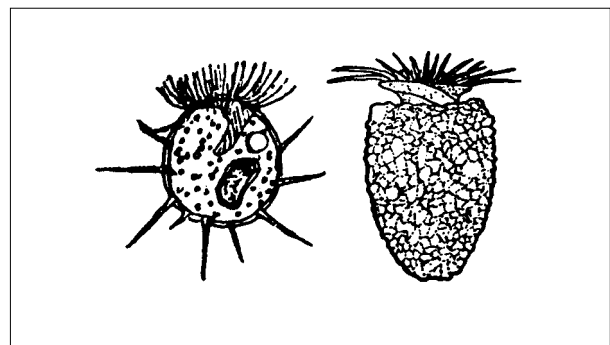
The overwhelming majority of the species recorded from the Gulf are reported from other regions, principally western Europe and the Atlantic Coast of North America (Borror 1962, 1963b, Jones 1974a, Aladro-Lubel, Martínez-Murillo, and Mayén-Estrada 1988), and thus conform to the pattern discussed in the preceding paragraph. Furthermore, the small number of free-living species reported only from the Gulf are not particularly likely to be endemic. They are all species from habitats, such as the interstitial spaces in sand and detritus, that favor long-range dispersal (Borror 1963b, Jones 1974a). Ciliates that live as obligate symbionts of animals are more likely to have restricted distributions, depending on their degree of host specificity, reflecting the distributions of their hosts; however, a majority of the symbiotic ciliates reported from the Gulf of Mexico occur on hosts elsewhere (Biggar and Wenrich 1932, Powers 1935, Andrews 1944, 1946, Couch 1967, 1978, Phillips 1973, Welch 1977, Overstreet 1978, Grolière, Puytorac, and Grain 1980, Clamp 1989).

Much is known about the ciliate fauna of the Gulf of Mexico in comparison to many other regions. On the positive side, a number of investigators have documented just under 600 species of ciliates in a variety of habitats in all major geographical areas of the Gulf. Some of these studies resulted in comprehensive accounts of particular types of communities or specific regions (Pearse 1932a, Noland 1937, Bullington 1940, Borror 1963b, Balech 1967a,b, 1968, Calderón-Aragón and López-Ochoterena 1973, Jones 1974a, Aladro-Lubel 1974, 1981, 1984, López-Ochoterena et al. 1976, Mayén-Estrada

1979, Madrazo-Garibay and López-Ochoterena 1985, Aladro-Lubel, Martínez-Murillo, and Mayén-Estrada 1986, Aladro-Lubel et al. 1986). On the negative side, many sorts of specific habitats (e.g., mangrove swamps) have received no attention at all and others are poorly represented (e.g., many taxa of animals that may harbor significant numbers of symbiotic species). In some instances (e.g., plankton tows), sampling methods have not been suitable for recovering aloricate ciliates, resulting in the likely absence of species common in marine environments like nearby Caribbean waters (Lynn and Gilron 1993).

The checklist of ciliates provided here is organized phylogenetically to order, following the scheme of Lynn and Small (2000), with lower taxa arranged alphabetically. We listed only those organisms that were identified to species in the source literature. Several references (Bullington 1931, 1935, 1939a, Pearse 1932a,b, Anigstein 1949, Davis 1950, King 1950, Hopkins 1966, Phillips 1973, Johnson 1974, Welch, 1977, Overstreet 1978, Turner, Postek, and Collard 1979, Fontaine 1985, Vidal-Martinez, Jiménez-Cueto, and Simá-Álvarez 2002, Landers and Phipps 2003) included species that were identified only to genus. These references are cited here and included in our list of references because they treated species that either were widespread, but not yet formally described, or were noteworthy in some other respect. In many cases, species cited in the checklist have been reported from habitats other than ones in which they have been found in the Gulf of Mexico. To avoid confusion, we have included only the habitats that apply to the Gulf.

Species representing all 11 classes and 40 of 57 orders of ciliates recognized by Small and Lynn (2000) have been reported from the Gulf of Mexico (see the taxonomic summary). Ciliate richness, however, is likely much higher than indicated by our checklist, as species from less than 50% of established families have been recorded



Ciliophora. After Pratt 1916.

from the region. The majority (72%) of ciliates known to occur in the Gulf are from near-shore environments, with a third of these being interstitial species. Only the classes Prostomatea and Plagiopylea are yet to have interstitial species noted for the Gulf of Mexico. Euplanktonic species account for roughly 30% of reported species, with the vast majority of these being loricate members of the class Spirotrichea. Sessile free-living and symbiotic ciliates, primarily suctoria and peritrichs, are well represented in the checklist, whereas parasitic species are rare (only 3 species).

Abbreviations

Abbreviations used in the checklist of ciliates from the Gulf of Mexico are: ben = benthic; bns = bay and near-shore; bsl = beach and shoreline; cep = coastal surface and epipelagic; epi = epibiotic; est = estuarine; eur = euryhaline; ins = interstitial; osp = oceanic surface and epipelagic; par = parasitic; plk = planktonic; ses = sessile; sft = soft substrates (mud, sands, clays); sym = symbiotic.

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Taxonomic summary for the ciliates of the Gulf of Mexico.

Component subgroups	Total species	Number interstitial species	Number planktonic species	Number sessile species	Number symbiotic and parasitic species
Karyorelictea	18	13	0	0	0
Heterotrichea	30	10	0	5	0
Spirotrichea	295	53	160	0	3
Armophorea	10	2	0	0	0
Litostomatea	50	20	2	0	1
Phyllopharyngea	35	6	0	17	0
Nassophorea	5	2	0	0	0
Colpodea	5	1	0	0	0
Prostomatea	17	0	1	0	1
Plagiopylea	4	0	0	0	0
Oligohymenophorea	105	18	1	41	19
Total	574	125	164	63	24

Checklist of ciliates (Protista: Ciliophora) from the Gulf of Mexico.

Taxon	Habitat-Biology	Depth (m)	GMx range	References/Endnotes
Subphylum: Postciliodesmatophora				
Class: Karyorelictea				
Order: Protostomatida				
Family: Kentrophoridae				
<i>Kentrophoros fasciolatum</i> Sauerbrey, 1928	ben, bns, ins	<1	ne, sw	3, 64, 67, 70
<i>Kentrophoros lanceolata</i> (Fauré-Fremiet, 1951)	bns	<1	ne	18, 20
<i>Tracheloraphis angustivittatus</i> Borror, 1963	bsl, ins	<1	ne	20
<i>Tracheloraphis dracontoides</i> (Bullington, 1940)	ben, bns, bsl, ins	<1	ne, se	18, 20, 25
<i>Tracheloraphis kahli</i> Raikov, 1962	ben, bns, ins	<1	sw	3
<i>Tracheloraphis phoenicopterus</i> (Cohn, 1866)	ben, bns, est	<1	nw, ne, sw	3, 19, 64, 79
<i>Tracheloraphis teissieri</i> Dragesco, 1960	ben, bns, ins	<1	sw	3
Family: Trachelocercidae				
<i>Trachelocerca coluber</i> Kahl, 1933	bns	<1	sw	67
<i>Trachelocerca gracilis</i> Dragesco, 1953	ben, bns, ins	<1	sw	3, 5, 8
<i>Trachelocerca subviridis</i> Sauerbrey, 1928	ben, bns, est, ins	<1	ne, sw	3, 18, 51, 67, 70
Order: Loxodida				
Family: Cryptopharyngidae				
<i>Cryptopharynx setigerus</i> Kahl, 1926	ben, bns, ins	<1	ne, sw	3, 5, 8, 18, 67
Family: Loxodidae				
<i>Loxodes rostrum</i> (O. F. Müller, 1786)	bsl	<1	nw	79
<i>Remanella minuta</i> Dragesco, 1954	ben, bns, ins	<1	sw	3
<i>Remanella obtusa</i> Fauré-Fremiet, 1951	bsl, ins	<1	sw	5
<i>Remanella rugosa</i> Kahl, 1933	bns, bsl, ins	<1	ne, sw	3, 5, 18, 20
Order: Protoheterotrichida				
Family: Geleidae				
<i>Geleia decolor</i> Kahl, 1933	bns, bsl, ins	<1	ne, sw	18, 20, 64
<i>Geleia fossata</i> Kahl, 1933	bns	<1	sw	67
Incertae sedis in Class: Karyorelictea				
<i>Ciliofaurea ornata</i> Dragesco, 1960	bsl, ins	<1	sw	5

Checklist of ciliates (Protista: Ciliophora) from the Gulf of Mexico. (continued)

Taxon	Habitat-Biology	Depth (m)	GMx range	References/Endnotes
Class: Heterotrichea				
Order: Heterotrichida				
Family: Blepharismidae				
<i>Blepharisma melana</i> Borror, 1963	bsl, ins	<1	ne	20
<i>Parablepharisma bacteriophora</i> Villeneuve-Brachon, 1940	bsl, ins	<1	ne	18, 20
<i>Parablepharisma collare</i> Kahl, 1932	bns	<1	ne	18
<i>Parablepharisma pellitum</i> Kahl, 1932	ben, bns, ins	<1	sw	8
Family: Climacostomidae				
<i>Climacostomum virens</i> (Ehrenberg, 1833)	bns	<1	sw	64
<i>Fabrea salina</i> Henneguy, 1890	bns	–	nw, sw	26, 64
Family: Condyllostomatidae				
<i>Condyllostoma arenarium</i> Spiegel, 1926	bsl, ins	<1	ne, se, sw	3, 18, 20
<i>Condyllostoma enigmatica</i> Dragesco, 1954	bns	<1	sw	67
<i>Condyllostoma granulosum</i> Bullington, 1940	bns	<1	se	25
<i>Condyllostoma magnum</i> Spiegel, 1926	ben, bns, est, ins	<1	ne, se	25, 51
<i>Condyllostoma minutum</i> Bullington, 1940	bns	<1	se	25
<i>Condyllostoma patens</i> (O. F. Müller, 1786)	ben, bns, bsl, est	<1	nw, ne	51, 79
<i>Condyllostoma remanei</i> Spiegel, 1926	bns, ses	<1	ne	18
<i>Condyllostoma vorticella</i> Ehrenberg, 1883	ben, bns, est	<1	ne	51
Family: Folliculinidae				
<i>Donsia mirabilis</i> Hadzi, 1951	bns, est	<1	ne	51
<i>Folliculina moebiusi</i> Kahl, 1932	bns, ses	<1	ne	81
<i>Metafolliculina andrewsi</i> Hadzi, 1938	bns, est, eur, ses	<1	nw, ne	9, 10, 51
<i>Parafolliculina americana</i> Hadzi, 1951	bns, est, ses	<1	ne	51
<i>Parafolliculina amphora</i> Dons, 1913	bns, ses	<1	ne	9
Family: Peritromidae				
<i>Peritromus faurei</i> Kahl, 1933	ben, bns, est, ins	<1	ne, se, sw	3, 5, 18, 20, 25, 51
<i>Peritromus montanus</i> Kahl, 1932	ben, bns, est	<1	ne	51
<i>Peritromus ovalis</i> Fauré-Fremiet, 1924	ben, bns, ins	<1	sw	8
Family: Spirostomidae				
<i>Gruberia lanceolata</i> (Gruber, 1884)	bns, bsl, ins	<1	ne, se	18, 20, 25
<i>Spirostomum intermedium</i> Kahl, 1932	ben, bns, est	<1	ne, sw	51, 67
<i>Spirostomum teres</i> Claparède & Lachmann, 1859	ben, bns, est	<1	ne	18, 51
Uncertain in Family: Spirostomidae				
<i>Propyrocirrus adhaerens</i> Mansfeld, 1923	ben, bns, ins	<1	ne, sw	5, 8, 18, 51, 68
<i>Propyrocirrus depressa</i> Ammerman, 1968	ben, bns, ins	<1	sw	8
Family: Stentoridae				
<i>Stentor auriculatus</i> Kahl, 1932	ben, bns, est	<1	ne, se	18, 25, 51
<i>Stentor introversus</i> Tartar, 1958	ben, bns, est	<1	ne	51
<i>Stentor mulleri</i> (Ehrenberg, 1831)	ben, bns, est, eur	<1	ne	51
Subphylum: Intramacronucleata				
Class: Spirotrichea				
Subclass: Protocruziida				
Order: Protocruziida				
<i>Protocruzia contrax</i> (Mansfeld, 1923)	ben, bns, ins	<1	sw	5, 8, 68
<i>Protocruzia pigerrima</i> (Cohn, 1866)	bsl	<1	nw, ne	18, 79
Subclass: Hypotrichia				
Order: Kiiitrichida				
Family: Kiiitrichidae				
<i>Caryotrichia convexa</i> Kahl, 1932	ben, bns, ins	<1	sw	8

(continued)

Checklist of ciliates (Protista: Ciliophora) from the Gulf of Mexico. (continued)

Taxon	Habitat-Biology	Depth (m)	GMx range	References/Endnotes
Order: Euplotida				
Family: Aspidiscidae				
<i>Aspidisca aculeata</i> (Ehrenberg, 1838)	ben, bns, est, ins	<1	ne, sw	3, 8, 18, 51, 68
<i>Aspidisca baltica</i> Kahl, 1932	ben, bns	<1	ne	51
<i>Aspidisca costata</i> (Dujardin, 1842)	ben, bns, bsl, ins	<1	nw, sw	8, 79
<i>Aspidisca fusca</i> Kahl, 1928	ben, bns, ins	<1	sw	3, 68
<i>Aspidisca leptaspis</i> Fresenius, 1865	ben, bns, ins	<1	ne, sw	5, 8, 51
<i>Aspidisca lynceaster</i> (O. F. Müller, 1786)	ben, bns, ins	<1	sw	3
<i>Aspidisca lynceus</i> Ehrenberg, 1838	bns, bsl, est, ins	<1	nw, ne, sw	3, 8, 18, 67, 68, 79
<i>Aspidisca magna</i> Kahl, 1932	ben, bns, ins	<1	sw	3
<i>Aspidisca polypoda</i> (Dujardin, 1841)	ben, bns, ins	<1	sw	3
<i>Aspidisca polystyla</i> Stein, 1859	bns	<1	ne	18
<i>Aspidisca steini</i> (Buddenbrock, 1920)	ben, bns, bsl, ins	<1	ne, sw	3, 4, 18, 20, 67
<i>Aspidisca turrita</i> Ehrenberg, 1838	bsl	<1	nw	79
Family: Euplotidae				
<i>Euplotes aberrans</i> Dragesco, 1960	ben, bns, ins	<1	sw	3
<i>Euplotes balteatus</i> (Dujardin, 1841)	bns, bsl, ins	<1	ne, sw	20, 68
<i>Euplotes charon</i> (O. F. Müller, 1786)	bns, bsl, est	<1	nw, ne	18, 79, 81
<i>Euplotes crassus</i> (Dujardin, 1842)	bns, sym	<1	ne, sw	8, 18, 87
<i>Euplotes cristatus</i> Kahl, 1932	bsl, ins	<1	sw	5
<i>Euplotes elegans</i> Kahl, 1932	ben, bns, bsl, ins	<1	ne, sw	8, 18, 20
<i>Euplotes harpa</i> Stein, 1859	ben, bns, bsl, ins	<1	nw, ne, sw	3, 8, 18, 51, 67, 79
<i>Euplotes minuta</i> Yocom, 1930	ben, bns, ins	<1	sw	4, 8, 67
<i>Euplotes moebiusi</i> Kahl, 1932	ben, bns, bsl, ins	<1	ne, sw	3, 5, 18, 20
<i>Euplotes nana</i> Jones & Owen, 1974	ben, bns, est, ins	<1	ne, sw	3, 8, 51, 53
<i>Euplotes thononensis</i> Dragesco, 1960	bns	<1	sw	67
<i>Euplotes trisulcatus</i> Kahl, 1932	ben, bns, bsl, ins	<1	ne, sw	3, 5, 8, 18, 20, 67, 68
<i>Euplotes vannus</i> (O. F. Müller, 1786)	ben, bns, bsl, est, ins	<1	ne, sw	3, 4, 8, 18, 20, 51, 68
<i>Euplotes woodruffi</i> Gaw, 1939	ben, bns, bsl, est, ins	<1	ne, sw	4, 18, 20, 51
<i>Paraeuplotes tortugensis</i> Wichterman, 1942	bns, epi	<1	se	91
Family: Gastrocirrhidae				
<i>Euplotidium agitatum</i> Noland, 1937	ben, bns	<1	ne	18, 70
<i>Gastrocirrhus stentoreus</i> Bullington, 1940	bns	<1	se	18, 25
Family: Uronychiidae				
<i>Diophrys appendiculata</i> (Ehrenberg, 1838)	bns, bsl, est, ins	<1	nw, ne, sw	3, 5, 8, 18, 20, 51, 67, 68, 79
<i>Diophrys histrix</i> von Buddenbrock, 1920	bsl, ins	<1	sw	5
<i>Diophrys irmgard</i> Mansfeld, 1923	bns, bsl, ins	<1	ne	18, 19, 20, 25, 79
<i>Diophrys scutum</i> (Dujardin, 1841)	ben, bns, bsl, est, ins	<1	ne, sw	3, 18, 20, 51
<i>Uronychia transfuga</i> (O. F. Müller, 1786)	ben, bns, bsl, ins	<1	nw, ne, sw	3, 5, 8, 19, 25, 51, 68, 79
Subclass: Choreotrichia				
Order: Tintinnida				
Family: Ascampbelliellidae				
<i>Acanthostomella lata</i> Kofoid & Campbell, 1929	cep, osp, plk	0–120	ne	13, 14, 15
<i>Acanthostomella minutissima</i> Kofoid & Campbell, 1929	cep, osp, plk	0–275	nw, ne, sw	13, 14, 15
<i>Acanthostomella obtusa</i> Kofoid & Campbell, 1929	cep, osp, plk	0–275	ne	13, 14, 15
<i>Ascampbelliella armilla</i> (Kofoid & Campbell, 1929)	osp, plk	0–100	ne	13, 14
<i>Ascampbelliella obscura</i> (Brandt, 1906)	bns, plk	–	ne	58
<i>Ascampbelliella urceolata</i> (Ostenfeld, 1899)	cep, osp, plk	0–275	nw, ne, se	13, 14

Checklist of ciliates (Protista: Ciliophora) from the Gulf of Mexico. (continued)

Taxon	Habitat-Biology	Depth (m)	GMx range	References/Endnotes
Family: Codonellidae				
<i>Codonaria cristellula</i> (Fol, 1884)	cep, osp, plk	–	nw, ne, se	13, 14
<i>Codonaria fimbriata</i> (Meunier, 1931)	bns, plk	–	ne	51
<i>Codonella acuta</i> Kofoid & Campbell, 1929	cep, osp, plk	0–2	ne, sw	1, 14
<i>Codonella amphorella</i> Biedermann, 1893	cep, osp, plk	–	ne	14
<i>Codonella apicata</i> Kofoid & Campbell, 1929	cep, osp, plk	0–75	entire	1, 13, 14
<i>Codonella aspera</i> Kofoid & Campbell, 1929	osp, plk	0–275	ne, se, sw	13, 14
<i>Codonella cratera</i> (Leidy, 1877)	bns, plk	–	ne	58
<i>Codonella cuspidata</i> Kofoid & Campbell, 1929	cep, osp, plk	0–75	ne, sw	1, 14
<i>Codonella galea</i> Haeckel, 1873	cep, osp, plk	–	nw, ne	13, 14
<i>Codonella olla</i> Kofoid & Campbell, 1929	cep, osp, plk	0–170	nw, sw	1, 14
<i>Codonella perforata</i> Entz Sr., 1884	cep, plk	0–150	sw	1
<i>Poroecus annulatus</i> Kofoid & Campbell, 1929	osp, plk	–	ne	14
<i>Poroecus apicatus</i> Kofoid & Campbell, 1929	cep, osp, plk	–	nw, ne	13, 14, 15
<i>Poroecus apiculatus</i> (Cleve, 1900)	osp, plk	–	nw, ne, se	14
<i>Poroecus curtus</i> Kofoid & Campbell, 1929	cep, osp, plk	0–275	nw, ne, se	13, 14, 15
<i>Poroecus tubulosus</i> Balech, 1968	osp, plk	–	nw, se	15
<i>Tintinnopsis beroidea</i> Stein, 1867	bns, cep, osp, plk	0–25	entire	14, 18, 31, 51, 58, 79
<i>Tintinnopsis brandti</i> (Nordqvist, 1890)	bns, plk	–	ne	15, 31, 46
<i>Tintinnopsis bütschlii</i> Daday, 1887	bns, osp, plk	–	ne	13, 14, 46, 51
<i>Tintinnopsis capitonis</i> Balech, 1968	osp, plk	–	ne, se	15
<i>Tintinnopsis corniger</i> Hada, 1964	cep, osp, plk	0–160	entire	1, 14, 15
<i>Tintinnopsis cylindrica</i> Daday, 1887	bns, plk	–	ne	31
<i>Tintinnopsis cylindrata</i> Kofoid & Campbell, 1929	bns, plk	–	ne	58
<i>Tintinnopsis dadayi</i> Kofoid, 1905	bns, plk	–	ne	58
<i>Tintinnopsis directa</i> Hada, 1932	osp, plk	–	ne	13, 14
<i>Tintinnopsis gracilis</i> Kofoid & Campbell, 1929	bns, cep, plk	–	nw, ne	14, 51
<i>Tintinnopsis kofoidi</i> Hada, 1932	bns, cep, osp, plk	–	nw, ne	14, 31, 46, 51
<i>Tintinnopsis lata</i> Meunier, 1910	bns, cep, osp, plk	–	nw, ne	14, 58
<i>Tintinnopsis levigata</i> Kofoid & Campbell, 1929	bns, plk	–	ne	31
<i>Tintinnopsis lobiancoi</i> Daday, 1887	cep, plk	0–25	sw	1
<i>Tintinnopsis lohmanni</i> Laackmann, 1906	cep, plk	0–75	sw	1
<i>Tintinnopsis minuta</i> Wailes, 1925	bns, plk	–	ne	58
<i>Tintinnopsis mortensenii</i> Schmidt, 1901	bns, plk	–	ne	31, 58
<i>Tintinnopsis nana</i> Lohmann, 1908	bns, plk	–	ne	51
<i>Tintinnopsis parvula</i> Jörgensen, 1912	bns, plk	–	ne	31
<i>Tintinnopsis radix</i> (Imhof, 1886)	bns, cep, osp, plk	0–120	nw, ne	13, 31, 46
<i>Tintinnopsis subacuta</i> Jörgensen, 1899	bns, plk	–	ne	51
<i>Tintinnopsis sufflata</i> Hada, 1937	cep, plk	0–2	sw	1
<i>Tintinnopsis tenuis</i> Hada, 1932	cep, plk	0–160	ne	15
<i>Tintinnopsis tocaninensis</i> Kofoid & Campbell, 1929	bns, cep, plk	0–60	ne, sw	1, 13, 14, 31, 51
<i>Tintinnopsis tubulosoides</i> Meunier, 1910	bns, plk	–	ne	51
<i>Tintinnopsis tubulosa</i> Levander, 1900	bns, plk	–	ne	31
Family: Codonellopsidae				
<i>Codonellopsis americana</i> Kofoid & Campbell, 1929	cep, plk	0–170	sw	1
<i>Codonellopsis contracta</i> Kofoid & Campbell, 1929	cep, osp, plk	0–210	ne	13, 14
<i>Codonellopsis ecaudata</i> (Brandt, 1906)	cep, osp, plk	0–275	nw, ne, se	13, 14
<i>Codonellopsis lusitanica</i> Jörgensen, 1924	bns, plk	–	ne	58
<i>Codonellopsis obesa</i> Balech, 1948	bns, plk	–	ne	46, 51
<i>Codonellopsis orthoceras</i> (Haeckel, 1873)	cep, osp, plk	0–210	entire	1, 13, 14, 27
<i>Codonellopsis pusilla</i> (Cleve, 1900)	cep, plk	–	ne	14
<i>Codonellopsis schabi</i> (Brandt, 1906)	cep, plk	–	nw, ne, se	14
<i>Codonellopsis turgida</i> Kofoid & Campbell, 1929	cep, plk	–	sw	27

(continued)

Checklist of ciliates (Protista: Ciliophora) from the Gulf of Mexico. (continued)

Taxon	Habitat-Biology	Depth (m)	GMx range	References/Endnotes
<i>Stenosemella nivalis</i> (Meunier, 1910)	bns, cep, plk	0–75	ne, sw	1, 14, 58
<i>Stenosemella pacifica</i> Kofoid & Campbell, 1929	cep, osp, plk	–	ne	15
<i>Stenosemella ventricosa</i> (Claparède & Lachmann, 1858)	cep, osp, plk	–	ne	14
Family: Cyttarocylididae				
<i>Cyttarocylis acutiformis</i> Kofoid & Campbell, 1929	cep, osp, plk	0–275	entire	1, 13, 14
<i>Cyttarocylis brandti</i> Kofoid & Campbell, 1929	bns, cep, plk	0–170	sw	1, 27
<i>Cyttarocylis eucecryphalus</i> (Haeckel, 1881)	cep, osp, plk	0–275	nw, ne, se	13, 14
Family: Dictyocystidae				
<i>Dictyocysta elegans lepida</i> (Ehrenberg, 1854)	cep, osp, plk	0–275	entire	13, 14
<i>Dictyocysta extensa</i> Kofoid & Campbell, 1929	cep, osp, plk	0–275	nw, ne, se	13, 14
<i>Dictyocysta mexicana</i> Kofoid & Campbell, 1929	cep, plk	0–150	sw	1
<i>Dictyocysta muelleri</i> (Imhof, 1886)	cep, osp, plk	–	nw, ne, se	13, 14
Family: Epiplocylididae				
<i>Epiplocylis acuminata</i> (Daday, 1887)	cep, plk	0–160	sw	1
<i>Epiplocylis blanda</i> (Jørgensen, 1924)	cep, plk	0–160	sw	1
<i>Epiplocylis healdi</i> Kofoid & Campbell, 1929	cep, plk	0–170	sw	1
<i>Epiplocylis labiosa</i> Kofoid & Campbell, 1929	cep, osp, plk	0–275	ne, se, sw	13, 14
<i>Epiplocylis mucronata</i> (Zacharias, 1906)	osp, plk	–	ne	14
<i>Epiplocylis sargassensis</i> (Brandt, 1906)	cep, plk	0–170	sw	1
<i>Epiplocylis undella</i> (Ostenfeld & Schmidt, 1901)	cep, osp, plk	0–275	entire	1, 13, 14, 27
<i>Epiplocyloides ralumensis</i> (Brandt, 1906)	cep, osp, plk	0–275	nw, ne, se	13, 14
<i>Epiplocyloides reticulata</i> (Ostenfeld & Schmidt, 1901)	cep, osp, plk	0–275	entire	1, 13, 14
Family: Metacyclididae				
<i>Climacocylis scalaria</i> (Brandt, 1906)	cep, osp, plk	0–275	entire	1, 13, 14
<i>Climacocylis scalaroides</i> Kofoid & Campbell, 1929	cep, osp, plk	0–275	entire	1, 13, 14
<i>Coxliella ampla</i> (Jørgensen, 1899)	bns, cep, plk	0–150	sw	1, 58
<i>Coxliella declivis</i> Kofoid & Campbell, 1929	cep, plk	–	nw	14
<i>Coxliella fasciata</i> (Kofoid, 1905)	cep, osp, plk	0–2	entire	1, 14
<i>Coxliella laciniosa</i> Brandt, 1906)	cep, plk	–	ne, se, sw	1, 13, 14
<i>Coxliella longa</i> (Brandt, 1906)	bns, cep, osp, plk	–	ne	14, 31
<i>Coxliella nana</i> Balech, 1968	cep, plk	0–170	ne, sw	1, 15
<i>Helicostomella fusiformis</i> (Meunier, 1919)	bns, plk	–	ne	51
<i>Helicostomella longa</i> (Brandt, 1906)	cep, osp, plk	0–60	ne	13, 14
<i>Helicostomella subulata</i> (Ehrenberg, 1834)	bns, plk	–	ne	31, 46, 58
<i>Metacylis conica</i> Kofoid & Campbell, 1929	cep, plk	0–150	sw	1
<i>Metacylis corbula</i> Kofoid & Campbell, 1929	cep, plk	0–170	sw	1
<i>Metacylis jørgensenii</i> (Cleve, 1902)	bns, plk	–	ne	58
<i>Metacylis mereschkowskii</i> Kofoid & Campbell, 1929	bns, cep, plk	–	ne, se	14, 15, 31, 58
<i>Metacylis vitreoides</i> Kofoid & Campbell, 1929	bns, plk	–	ne	58
<i>Pseudometacylis ornata</i> Balech, 1968	cep, plk	–	ne	15
<i>Stylicauda platensis</i> (Da Cunha & Fonseca, 1917)	bns, cep, osp, plk	0–100	ne, se, sw	1, 13, 14, 31, 46, 58
Family: Petalotrichidae				
<i>Petalotricha ampulla</i> (Fol, 1881)	cep, osp, plk	–	se	13, 14
Family: Rhabdonellidae				
<i>Protorhabdonella curta</i> (Cleve, 1901)	cep, osp, plk	0–150	ne, se, sw	1, 13, 14
<i>Protorhabdonella mira</i> Kofoid & Campbell, 1929	cep, osp, plk	0–75	nw, sw	1, 14, 27
<i>Protorhabdonella simplex</i> (Cleve, 1900)	cep, osp, plk	0–210	entire	13, 14
<i>Protorhabdonella striatura</i> Kofoid & Campbell, 1929	cep, plk	0–150	sw	1
<i>Rhabdonella amor</i> (Cleve, 1900)	cep, osp, plk	0–275	ne, se	13, 14
<i>Rhabdonella cornucopia</i> Kofoid & Campbell, 1929	cep, osp, plk	0–275	entire	1, 13, 14, 27
<i>Rhabdonella elegans</i> Jørgensen, 1924	cep, osp, plk	0–275	ne, se	13, 14
<i>Rhabdonella henseni</i> (Brandt, 1906)	cep, osp, plk	–	se	14
<i>Rhabdonella indica</i> (Laackmann, 1909)	cep, osp, plk	0–70	ne, se, sw	1, 14

Checklist of ciliates (Protista: Ciliophora) from the Gulf of Mexico. (continued)

Taxon	Habitat-Biology	Depth (m)	GMx range	References/Endnotes
<i>Rhabdonella spiralis</i> (Fol, 1881)	osp, plk	–	se	14
<i>Rhabdonella torta</i> Kofoid & Campbell, 1929	bns, plk	–	ne	58
<i>Rhabdonella valdestriata</i> (Brandt, 1906)	bns, plk	–	ne	58
<i>Rhabdonellopsis apophysata</i> (Cleve, 1900)	cep, osp, plk	0–150	entire	1, 13, 14
<i>Rhabdonellopsis triton</i> (Zacharias, 1906)	cep, plk	0–170	ne, sw	1, 14, 27
Family: Tintinnidae				
<i>Amphorellopsis acuta</i> (Schmidt, 1901)	bns, cep, plk	0–170	ne, sw	1, 31
<i>Amphorides amphora</i> (Claparède & Kachmann, 1858)	bns, cep, osp, plk	0–275	entire	13, 14, 31, 46, 58
<i>Amphorides minor</i> (Jørgensen, 1924)	cep, osp, plk	0–275	nw, ne, se	13, 14
<i>Amphorides quadrilineata</i> (Claparède & Lachmann, 1858)	bns, cep, osp, plk	0–275	entire	1, 13, 14, 50
<i>Brandtiella palliata</i> (Brandt, 1906)	cep, osp, plk	–	nw, ne, se	13, 14
<i>Canthariella brevis</i> Kofoid & Campbell, 1929	cep, plk	–	ne	13, 14
<i>Dadayiella cuspidata</i> Kofoid & Campbell, 1929	cep, plk	0–150	ne, sw	1, 14
<i>Dadayiella ganymedes</i> (Entz Sr., 1884)	cep, osp, plk	0–275	entire	1, 13, 14, 27
<i>Dadayiella pachytoecus</i> (Jørgensen, 1924)	osp, plk	0–275	ne	13, 14, 15
<i>Daturella stramonium</i> Kofoid & Campbell, 1929	bns, osp, plk	0–210	ne, sw	1, 13
<i>Eutintinnus angustatus</i> (Daday, 1887)	cep, plk	–	ne	58
<i>Eutintinnus apertus</i> (Kofoid & Campbell, 1929)	bns, cep, osp, plk	0–160	entire	1, 13, 14, 27, 58
<i>Eutintinnus asymmetricus</i> Balech, 1968	osp, plk	–	ne	15
<i>Eutintinnus birictus</i> (Kofoid & Campbell, 1929)	cep, osp, plk	0–100	entire	13, 14, 27
<i>Eutintinnus brandti</i> (Kofoid & Campbell, 1929)	cep, plk	0–75	sw	1
<i>Eutintinnus colligatus</i> (Kofoid & Campbell, 1929)	cep, osp, plk	0–150	ne, se, sw	1, 14
<i>Eutintinnus elongates</i> (Jørgensen, 1924)	cep, plk	0–170	nw, sw	1, 27
<i>Eutintinnus fraknoi</i> (Daday, 1887)	cep, osp, plk	0–275	entire	1, 13, 14, 27
<i>Eutintinnus latus</i> (Jørgensen, 1924)	cep, osp, plk	–	ne, se	14
<i>Eutintinnus lusus-undae</i> (Entz Sr., 1885)	cep, osp, plk	0–75	nw, ne, sw	1, 13, 14, 27
<i>Eutintinnus macilentus</i> (Jørgensen, 1924)	cep, plk	0–170	sw	1, 27
<i>Eutintinnus medius</i> (Kofoid & Campbell, 1929)	bns, cep, osp, plk	0–210	entire	1, 13, 14, 46
<i>Eutintinnus pectinis</i> (Kofoid & Campbell, 1929)	bns, plk	–	ne	58
<i>Eutintinnus perminutus</i> (Kofoid & Campbell, 1929)	cep, osp, plk	0–25	ne, sw	1, 14
<i>Eutintinnus pinguis</i> (Kofoid & Campbell, 1929)	bns, cep, osp, plk	0–150	ne, se, sw	1, 13, 14, 27, 46
<i>Eutintinnus procurrerens</i> (Kofoid & Campbell, 1929)	cep, plk	0–2	sw	1
<i>Eutintinnus rectus</i> (Wailes, 1925)	bns, plk	–	ne	51
<i>Eutintinnus similis</i> Balech, 1962	cep, osp, plk	0–170	entire	1, 13, 14, 27
<i>Eutintinnus stramentus</i> (Kofoid & Campbell, 1929)	cep, osp, plk	0–170	ne, se, sw	1, 13, 14, 27
<i>Eutintinnus tenuis</i> (Kofoid & Campbell, 1929)	bns, cep, osp, plk	0–210	entire	1, 13, 14, 31
<i>Eutintinnus tubulosus</i> (Ostenfeld, 1899)	bns, cep, osp, plk	0–170	ne, se, sw	1, 13, 14, 31
<i>Eutintinnus turgescens</i> (Kofoid & Campbell, 1929)	cep, plk	0–150	sw	1
<i>Odonthophorella serrulata</i> Kofoid & Campbell, 1929	osp, plk	–	ne	14
<i>Ormosella breslaui</i> Kofoid & Campbell, 1929	osp, plk	0–120	ne	13, 14, 15
<i>Ormosella schweyeri</i> Kofoid & Campbell, 1929	osp, plk	–	ne	15
<i>Rhabdosella cuneolata</i> (Kofoid & Campbell, 1929)	cep, osp, plk	0–275	nw, ne, se	13, 14, 15
<i>Salpingella acuminata</i> (Claparède & Lachmann, 1858)	cep, osp, plk	0–75	entire	1, 13, 14, 15, 27
<i>Salpingella attenuata</i> Jørgensen, 1924	cep, plk	0–150	sw	1
<i>Salpingella faurei</i> Kofoid & Campbell, 1929	osp, plk	–	ne	14
<i>Salpingella glockentögeri</i> (Brandt, 1906)	cep, osp, plk	0–275	nw, ne, se	13, 14
<i>Salpingella gracilis</i> Kofoid & Campbell, 1929	cep, osp, plk	0–170	ne, sw	1, 27
<i>Salpingella jugosa</i> Kofoid & Campbell, 1929	osp, plk	–	ne	13, 14
<i>Salpingella laminata</i> Kofoid & Campbell, 1939	cep, plk	0–160	sw	1
<i>Salpingella subconica</i> Kofoid & Campbell, 1929	cep, plk	0–170	sw	1, 27
<i>Steenstrupiella gracilis</i> Jørgensen, 1924	plk	0–120	ne, se	13, 14
<i>Steenstrupiella intumescens</i> Jørgensen, 1924	cep, plk	0–170	sw	1
<i>Steenstrupiella steensrupii</i> (Claparède & Lachmann, 1858)	cep, osp, plk	0–275	entire	1, 13, 14, 27

(continued)

Checklist of ciliates (Protista: Ciliophora) from the Gulf of Mexico. (continued)

Taxon	Habitat-Biology	Depth (m)	GMx range	References/Endnotes
Family: Tintinnidiidae				
<i>Leptotintinnus neriticus</i> (Campbell, 1926)	bns, plk	–	ne	58
<i>Tintinnidium mucicola</i> (Claparède & Lachmann, 1858)	bns, plk	–	ne	46
<i>Tintinnidium primitivum</i> Busch, 1923	bns, plk	–	ne	58
Family: Undellidae				
<i>Propectella claparèdei</i> (Entz Sr., 1885)	cep, osp, plk	0–150	entire	13, 14
<i>Propectella ellipsoidea</i> Kofoid & Campbell, 1929	cep, plk	–	sw	27
<i>Propectella parva</i> Kofoid & Campbell, 1929	cep, osp, plk	–	nw, ne, se	14
<i>Propectella perpusilla</i> (Kofoid & Campbell, 1929)	cep, plk	0–170	sw	1
<i>Propectella subcaudata</i> (Cleve, 1901)	cep, osp, plk	0–275	entire	1, 13, 14, 15
<i>Undella hadai</i> Balech, 1975	cep, plk	0–75	sw	1
<i>Undella pistillum</i> Kofoid & Campbell, 1929	cep, osp, plk	0–150	ne	13, 14
<i>Undella turgida</i> Kofoid & Campbell, 1929	cep, osp, plk	0–170	nw, sw	1, 15
Family: Xystonellidae				
<i>Favella azorica</i> (Cleve, 1900)	cep, plk	–	se	14
<i>Favella campanula</i> (Schmidt, 1901)	bns, plk	–	ne	58
<i>Favella composita</i> (Jørgensen, 1924)	bns, plk	–	ne	58
<i>Favella ehrenbergi</i> (Claparède & Lachmann, 1858)	cep, plk	0–170	sw	1
<i>Favella panamensis</i> Kofoid & Campbell, 1929	bns, cep, osp, plk	0–120	ne	13, 14, 31, 46, 58
<i>Favella taraikaensis</i> Hada, 1932	bns, cep, osp, plk	–	ne	14, 46
<i>Parundella aculeata</i> Jørgensen, 1924	cep, osp, plk	0–275	nw, ne	13, 14
<i>Parundella caudata</i> Ostenfeld, 1899	cep, plk	–	ne	14
<i>Parundella conica</i> Sousa & Silve, 1958	osp, plk	0–150	ne	15
<i>Parundella inflata</i> Kofoid & Campbell, 1929	cep, osp, plk	0–275	nw, ne	13, 14
<i>Parundella longa</i> Jørgensen, 1924	osp, plk	–	ne	13, 14
<i>Parundella praetenuis</i> Kofoid & Campbell, 1929	cep, osp, plk	–	ne	13, 14, 15
<i>Xystonella acus</i> Brandt, 1906	cep, plk	0–150	sw	1
<i>Xystonella lanceolata</i> (Brandt, 1906)	cep, osp, plk	0–210	ne	13, 14
<i>Xystonella longicauda</i> (Brandt, 1906)	cep, osp, plk	0–170	entire	1, 14, 27
<i>Xystonella minuscula</i> Kofoid & Campbell, 1929	cep, plk	–	nw, sw	1, 27
<i>Xystonella treforti</i> (Daday, 1887)	cep, osp, plk	0–275	entire	1, 13, 14, 27
<i>Xystonellopsis aciculifera</i> (Jørgensen, 1924)	osp, plk	0–275	ne	13, 14, 15
<i>Xystonellopsis cymatica</i> (Brandt, 1906)	cep, osp, plk	0–170	ne, sw	1, 13, 14, 15
<i>Xystonellopsis dahli</i> (Brandt, 1906)	osp, plk	–	ne	14
<i>Xystonellopsis dicymatica</i> (Brandt, 1906)	cep, osp, plk	0–275	nw, ne, sw	1, 13, 14
<i>Xystonellopsis heros</i> (Cleve, 1900)	cep, osp, plk	0–275	entire	1, 13, 14, 27
<i>Xystonellopsis inaequalis</i> Kofoid & Campbell, 1929	cep, plk	–	sw	27
<i>Xystonellopsis paradoxa</i> (Cleve, 1900)	osp, plk	–	ne	13, 14
Order: Choreotrichida				
Family: Lohmanniellidae				
<i>Lohmaniella oviformis</i> Leegaard, 1915	bns, cep, ins	<1	ne, sw	3, 5, 8, 51
Family: Strobiliidiidae				
<i>Strobilidium caudatum</i> (Fromentel, 1876)	ben, bns, est, ins	<1	nw	3, 18, 79
<i>Strobilidium conicum</i> Kahl, 1932	ben, bns, ins	<1	ne, sw	8, 51
Family: Strombidinopsidae				
<i>Strombidinopsis minima</i> (Gruber, 1884)	bns, plk	<1	ne	51
Subclass: Stichotrichia				
Order: Stichotrichida				
Family: Amphiisiellidae				
<i>Amphiisiella annulata</i> Kahl, 1928	ben, bns, ins	<1	ne, sw	3, 8, 18
<i>Amphiisiella lithophora</i> Fauré-Fremiet, 1954	ben, bns, ins	<1	sw	3
<i>Amphiisiella milnei</i> Kahl, 1932	bsl, ins	<1	sw	5

Checklist of ciliates (Protista: Ciliophora) from the Gulf of Mexico. (continued)

Taxon	Habitat-Biology	Depth (m)	GMx range	References/Endnotes
<i>Gastrostyla pulchra</i> (Perejaslawzewa, 1886)	ben, bns, est	<1	ne	18, 19, 51
<i>Gastrostyla stenocephala</i> Borror, 1963	ben, bns, ins	<1	sw	3
Family: Epiclintidae				
<i>Epiclintes ambiguus</i> (O. F. Müller, 1786)	ben, bns, ins	<1	ne, sw	3, 18, 20
<i>Epiclintes caudatus</i> Bullington, 1940	bns	<1	se	25
Family: Keronidae				
<i>Keronopsis monilata</i> (Kahl, 1928)	ben, bns, est	<1	ne	51
<i>Keronopsis rubra</i> (Ehrenberg, 1838)	ben, bns, est, ins	<1	ne, se	18, 19, 25, 51, 79
<i>Keronopsis similis</i> (Stokes, 1886)	ben, bns, est	<1	ne	51
Family: Spirofilidae				
<i>Chaetospira monilata</i> Jones, 1974	ben, bns, est	<1	ne	51
<i>Chaetospira mulleri</i> Lachmann, 1856	ben, bns, est	<1	ne	51
<i>Hypotrichidium conicum</i> Ilowaisky, 1921	ben, bns, est	<1	ne	51
<i>Stichotricha gracilis</i> Möbius, 1888	ben, bns, est, eur	<1	ne, sw	51, 67
<i>Stichotricha marina</i> Stein, 1859	ben, bns, est	<1	ne, sw	8, 18, 51
<i>Urostrongylum caudatum</i> Kahl, 1930	ben, bns, ins	<1	sw	3
Order: Urostylida				
Family: Pseudokeronopsidae				
<i>Uroleptopsis roscoviana</i> (Maupas, 1883)	bns	<1	ne	18
Family: Urostylidae				
<i>Balladyna euplotes</i> Dragesco, 1960	bns	<1	sw	67
<i>Balladyna parvula</i> Kowalewski, 1882	bns	<1	ne	18
<i>Holosticha alveolata</i> Kahl, 1932	bsl, ins	<1	ne	18, 20
<i>Holosticha annulata</i> Kahl, 1928	ben, bns	<1	ne	20
<i>Holosticha arenicola</i> Kahl, 1932	ben, bns, est, ins	<1	ne, sw	3, 51, 68
<i>Holosticha diademata</i> (Rees, 1883)	ben, bns, bsl, est, ins	<1	ne, sw	3, 5, 8, 18, 20, 51, 64, 68
<i>Holosticha discocephalus</i> Kahl, 1932	bns	<1	ne	18
<i>Holosticha extensa</i> Kahl, 1932	bns	<1	sw	67
<i>Holosticha flava</i> Cohn, 1866	bns, est	<1	nw	79
<i>Holosticha kessleri</i> (Wrzesniowski, 1877)	bns	<1	ne, sw	3, 18, 68
<i>Holosticha obliqua</i> Kahl, 1928	ben, bns, ins	<1	sw	8
<i>Holosticha velox</i> (Quennerstedt, 1869)	bns	<1	ne	18
<i>Holosticha vernalis</i> Stokes, 1887	bns	<1	ne	18
<i>Holosticha viridis</i> Kahl, 1932	bsl, ins	<1	sw	5
<i>Uncinata gigantea</i> Bullington, 1940	bns	<1	se	25
<i>Urostyla dispar</i> Kahl, 1932	bns	<1	ne	18
<i>Urostyla grandis</i> Ehrenberg, 1838	ben, bns, bsl, est	<1	nw, ne	51, 79
<i>Urostyla marina</i> Kahl, 1932	bns	<1	ne, sw	18, 67
Order: Sporadotrichida				
Family: Oxytrichidae				
<i>Onychodromus grandis</i> Stein, 1859	ben, bns, est, ins	<1	ne	51
<i>Oxytricha ferruginea</i> Stein, 1859	ben, bns, est, ins	<1	ne	51
<i>Oxytricha marina</i> Kahl, 1932	ben, bns, est	<1	ne	51
<i>Oxytricha ovalis</i> Kahl, 1932	bns	<1	ne	18
<i>Oxytricha parallela</i> (Engelmann, 1862)	bns, est	<1	nw	79
<i>Oxytricha stenocephala</i> (Borror, 1963)	bsl, ins	<1	ne	20
<i>Stylonychia mytilus</i> (O. F. Müller, 1773)	ben, bns, bsl, est	<1	nw, ne, sw	51, 67, 79
<i>Stylonychia pustulata</i> Ehrenberg, 1838	bsl, est	<1	nw	79
<i>Tachysoma pellionella</i> (Müller-Stein, 1859)	bsl, est	<1	nw	2, 79
<i>Tachysoma rigescens</i> Kahl, 1932	ben, bns, ins	<1	sw	4

(continued)

Checklist of ciliates (Protista: Ciliophora) from the Gulf of Mexico. (*continued*)

Taxon	Habitat-Biology	Depth (m)	GMx range	References/Endnotes
Family: Trachelostylidae				
<i>Gonostomum strenuum</i> (Engelmann, 1862)	bns	<1	ne	18
<i>Trachelostyla dubia</i> Dragesco, 1954	bns	<1	sw	67
<i>Trachelostyla pediculiformis</i> (Cohn, 1886)	ben, bns, bsl, ins	<1	nw, ne, sw	3, 5, 8, 18, 20, 51, 68, 79
Subclass: Oligotrichia				
Order: Halteriida				
Family: Halteriidae				
<i>Halteria active</i> Smith, 1900	bns, est	<1	nw	78
<i>Halteria grandinella</i> (O. F. Müller, 1786)	bns	<1	ne	18, 51
Order: Strombidiida				
Family: Strombidiidae				
<i>Laboea strobila</i> Lohmann, 1908	bns, plk	<1	ne	51
<i>Strombidium alveolare</i> Bullington, 1940	bns	<1	se	25
<i>Strombidium arenicola</i> Dragesco, 1960	ben, bns, ins	<1	sw	3, 5
<i>Strombidium calkinsi</i> Kahl, 1932	ben, bns, ins	<1	sw	8, 67
<i>Strombidium capitatum</i> (Leegaard, 1915)	bns, plk	<1	ne	51
<i>Strombidium cinctum</i> Kahl, 1932	ben, bns, ins	<1	sw	3, 5, 8
<i>Strombidium elongatum</i> Leegaard, 1915	bns, plk	<1	ne	51
<i>Strombidium filficum</i> Kahl, 1932	bns, plk	<1	ne	51
<i>Strombidium latum</i> Kahl, 1932	ben, bns, ins	<1	sw	3, 8
<i>Strombidium sulcatum</i> (Claparède & Lachmann, 1859)	ben, bns, ins	<1	ne, sw	3, 4, 8, 18, 20
<i>Strombidium tintinnodes</i> Entz, 1884	ben, bns, ins	<1	sw	8
<i>Strombidium viride</i> Stein, 1859	bns, plk	<1	ne	18, 20
<i>Tontonia appendiculariformis</i> Fauré-Fremiet, 1924	bns, plk	<1	ne	51
Class: Armophorea				
Order: Armophorida				
Family: Metopidae				
<i>Metopus brevicristatus</i> Lucas, 1934	bns, sym	<1	se	76
<i>Metopus contortus</i> Quennerstedt, 1869	ben, bns, bsl, ins	<1	ne, sw	3, 18, 20
<i>Metopus es</i> O. F. Müller, 1786	bsl, est	<1	nw	79
<i>Metopus fuscus</i> Kahl, 1932	bns	<1	sw	67
<i>Metopus histophagus</i> Powers, 1935	bns, sym	<1	se	76
<i>Metopus rotundus</i> Lucas, 1934	bns, sym	1–6	se	76
<i>Metopus setosus</i> Kahl, 1927	ben, bns, ins	<1	sw	3
<i>Parametopus circumlabens</i> (Biggar & Wenrich, 1932)	bns, sym	1–6	se, sw	47, 48, 63, 75, 76
Order: Odontostomatida				
Family: Discomorphellidae				
<i>Discomorphella pectinata</i> Levander, 1896	bns	<1	sw	67
Family: Mylestomatidae				
<i>Mylestoma bipartitum</i> (Gourret & Roeser, 1886)	bns	<1	ne	18
Class: Litostomatea				
Order: Cyclotrichida				
Family: Mesodiniidae				
<i>Askenasia stellaris</i> Leegaard, 1920	bsl, ins	<1	ne	18, 20
<i>Mesodinium acarus</i> Stein, 1862	bns, bsl, est, ins	<1	nw, ne, sw	3, 8, 18, 20, 51, 67, 70, 79
<i>Mesodinium pulex</i> Claparède & Lachmann, 1858	ben, bns, est, ins	<1	ne, sw	3, 8, 18, 51, 67, 68, 70
<i>Myrionecta rubra</i> Lohmann, 1908	bns, plk	<1	ne	62
Order: Haptorida				
Family: Didiniidae				
<i>Didinium nasutum</i> O. F. Müller, 1786	bns, est, plk	<1	ne	51

Checklist of ciliates (Protista: Ciliophora) from the Gulf of Mexico. (continued)

Taxon	Habitat-Biology	Depth (m)	GMx range	References/Endnotes
Family: Enchelyidae				
<i>Chilophrya utahensis</i> Pack, 1919	bns	<1	sw	64, 67
<i>Enchelys mutans</i> Mermod, 1914	bsl, ins	<1	sw	5
<i>Enchelys nebulosa</i> Entz, 1897	bns	<1	sw	67
<i>Enchelys pterotracheae</i> Collin, 1913	bns, est, sym?	<1	ne	51
<i>Microregma binucleatum</i> Lepsi, 1926	bns	<1	sw	67
<i>Pithothorax ovatus</i> Kahl, 1927	bns	<1	sw	67
Family: Lacrymariidae				
<i>Lacrymaria caudata</i> Kahl, 1933	ben, bns, ins	<1	sw	8
<i>Lacrymaria cohnii</i> Kent, 1881	bns, est	<1	ne	51
<i>Lacrymaria coronata</i> Claparède & Lachmann, 1858	bns, est, eur	<1	ne	51
<i>Lacrymaria lagenula</i> Claparède & Lachmann, 1858	bsl	<1	nw	79
<i>Lacrymaria kahl</i> Dragesco, 1960	bns	<1	sw	67
<i>Lacrymaria olor</i> O. F. Müller, 1776	bns	<1	ne, sw	8, 18, 68
<i>Lacrymaria salinarum</i> Kahl, 1928	ben, bns, ins	<1	sw	3
<i>Lacrymaria rotundata</i> Dragesco, 1954	ben, bns, ins	<1	sw	3
<i>Lacrymaria versatilis</i> Quennerstedt, 1865	ben, bns, bsl, ins	<1	ne, sw	3, 18, 20
Family: Tracheliidae				
<i>Dileptus marinus</i> Kahl, 1935	ben, bns, est, sft	<1	ne	51
<i>Trachelius tracheloides</i> Maskell, 1887	bns, est, eur	<1	ne	51
Family: Trachelophyllidae				
<i>Chaenea limicola</i> Lauterborn, 1893	bns	<1	sw	67
<i>Chaenea teres</i> Dujardin, 1841	bsl, ins	<1	ne	18, 20
<i>Chaenea vorax</i> Quennerstedt, 1867	bsl, ins	<1	sw	5
<i>Lagynophrya halophila</i> Kahl, 1930	bns	<1	sw	68
<i>Lagynophrya mucicola</i> Kahl, 1927	bns, est	<1	ne	51
<i>Trachelophyllum brachypharynx</i> Levander, 1894	bns	<1	ne	18
<i>Trachelophyllum clavatum</i> Stokes, 1886	bns	<1	sw	67
Order: Pleurostomatida				
Family: Amphileptidae				
<i>Amphileptus claparedei</i> Stein, 1867	bns	<1	ne	18
<i>Amphileptus fusidens</i> (Kahl, 1926)	bsl, ins	<1	sw	5
Family: Litonotidae				
<i>Heminotus caudatus</i> Kahl, 1933	bns	<1	sw	67
<i>Litonotus anguilla</i> Kahl, 1930	ben, bns, ins	<1	sw	8
<i>Litonotus carinatus</i> Stokes, 1885	bns, est	<1	ne	51
<i>Litonotus cygnus</i> (O. F. Müller, 1776)	ben, bns, ins	<1	sw	8
<i>Litonotus duplostriatus</i> Maupas, 1883	ben, bns, est, eur	<1	ne	51
<i>Litonotus fasciola</i> Wrzesniowski, 1870	bns, bsl	<1	nw, ne, sw	8, 18, 79
<i>Litonotus lamella</i> (Ehrenberg, 1838)	ben, bns, ins	<1	sw	3, 5
<i>Litonotus marina</i> (Kahl, 1931)	bsl, ins	<1	ne	18, 20
<i>Litonotus obtusus</i> (Maupas, 1888)	bsl, ins	<1	ne	18, 20
<i>Litonotus pictus</i> Gruber, 1884	bns, est	<1	ne	51
<i>Litonotus rotunda</i> (Kahl, 1931)	bns, est	<1	ne	51
<i>Litonotus vesiculosus</i> Stokes, 1885	bns	<1	sw	67
<i>Loxophyllum helus</i> Stokes, 1884	ben, bns, ins	<1	sw	3, 4, 8, 68
<i>Loxophyllum meleagris</i> Dujardin, 1841	bns, est	<1	ne	8, 51
<i>Loxophyllum perihoplophorum</i> von Buddenbrock, 1920	bns	<1	ne, sw	8, 18
<i>Loxophyllum setigerum</i> Quennerstedt, 1867	ben, bns, bsl, ins	<1	nw, ne, sw	5, 8, 18, 51, 79
<i>Loxophyllum simplex</i> Kahl, 1933	ben, bns, ins	<1	sw	8
<i>Loxophyllum uninucleatum</i> Kahl, 1928	bns, est	<1	ne, sw	8, 51
<i>Loxophyllum verrucosum</i> (Stokes, 1893)	ben, bns, ins	<1	sw	8

(continued)

Checklist of ciliates (Protista: Ciliophora) from the Gulf of Mexico. (*continued*)

Taxon	Habitat-Biology	Depth (m)	GMx range	References/Endnotes
Class: Phyllopharyngea				
Subclass: Phyllopharygia				
Order: Chlamydodontida				
Family: Chilodonellidae				
<i>Chilodonella capucina</i> Penard, 1922	bns, est	<1	ne	51
<i>Chilodonella caudata</i> Stokes, 1885	bns, est	<1	ne	51
<i>Chilodonella cucullus</i> (O. F. Müller, 1786)	bsl	<1	nw	79
<i>Chilodonella helgolandica</i> Kahl, 1933	bns, est	<1	ne	51
<i>Chilodonella uncinata</i> Ehrenberg, 1838	bns, est	<1	ne, sw	8, 51
Family: Chlamydodontidae				
<i>Chlamydonon mnemosyne</i> Ehrenberg, 1837	bns, est	<1	nw, ne	18, 51, 67, 77
<i>Chlamydonon obliquus</i> Kahl, 1931	bsl, ins	<1	ne	18, 20
<i>Chlamydonon triquetrus</i> (O. F. Müller, 1786)	bsl, ins	<1	ne	18, 20
Order: Dysteriida				
Family: Dysteriidae				
<i>Dysteria armata</i> Huxley, 1857	ben, bns, ins	<1	sw	8
<i>Dysteria calkinsi</i> Kahl, 1931	bns	<1	ne	18
<i>Dysteria dystila</i> (Maskell, 1887)	ben, bns, ins	<1	sw	8, 68
<i>Dysteria marina</i> Gourret & Roeser, 1886	bns, est	<1	ne	51
<i>Dysteria navicula</i> Kahl, 1928	bns, est	<1	ne	51
<i>Dysteria procera</i> Kahl, 1931	ben, bns, ins	<1	sw	3
<i>Trochilia salina</i> Entz, 1897	bns, bsl, ins	<1	ne, sw	5, 18
Family: Hartmannulidae				
<i>Hartmannula acrobates</i> (Entz, 1884)	bns, est	<1	ne	51
Subclass: Suctoria				
Order: Exogenida				
Family: Corynophryidae				
<i>Corynophrya francottei</i> (Sand, 1859)	bns, est, ses	<1	ne	51
Family: Ephelotidae				
<i>Ephelota crustaceorum</i> Haller, 1880	bns, est, eur, ses	<1	ne	51
<i>Ephelota gemmipara</i> Hertwig, 1876	bns, est, eur, ses	<1	ne	51
Family: Paracinetidae				
<i>Paracineta estuarina</i> Jones, 1974	bns, est, ses	<1	ne	51, 52
<i>Paracineta limbata</i> (Maupas, 1881)	bns, est, ses	<1	ne	51
<i>Paracineta lineata</i> Jones, 1974	bns, est, ses	<1	ne	51, 52
<i>Paracineta meridionalis</i> Jones, 1974	bns, est, ses	<1	ne	51, 52
<i>Paracineta patula</i> Claparède & Lachmann, 1861	bns, est, ses	<1	ne	51
Family: Podophryidae				
<i>Podophrya maupasi</i> Bütschli, 1889	bns, est, ses	<1	ne	51
Order: Endogenida				
Family: Acinetidae				
<i>Acineta corophii</i> Collin, 1912	bns, est, ses	<1	ne	51
<i>Acineta craterellus</i> Collin, 1909	bns, est, ses	<1	ne	51
<i>Acineta foetida</i> Maupas, 1881	bns, est, eur, ses	<1	ne, sw	51, 68
<i>Acineta tuberosa</i> Ehrenberg, 1838	bns, est, eur, ses	<1	ne	18, 51
Family: Dendrosomatidae				
<i>Dendrosoma radians</i> (Ehrenberg, 1838)	bns, est, ses	<1	ne	51
<i>Lernaephyra capitata</i> Perez, 1903	bns, est, ses	<1	ne	51, 69
Family: Enchelyomorphae				
<i>Enchelyomorpha vermicularis</i> (Smith, 1898)	bns, est	<1	nw	77
Family: Trichophryidae				
<i>Platophrya rotunda</i> (Hentschel, 1915)	bns, est, ses	<1	ne	51
<i>Trichophrya columbiae</i> Wailes, 1932	bns	<1	ne	18

Checklist of ciliates (Protista: Ciliophora) from the Gulf of Mexico. (continued)

Taxon	Habitat-Biology	Depth (m)	GMx range	References/Endnotes
Order: Evaginogenida				
Family: Discophryidae				
<i>Discophrya buckei</i> (Kent, 1882)	bns, est, ses	<1	ne	51
Class: Nassophorea				
Order: Synhymeniida				
Family: Scaphidiodontidae				
<i>Chilodontopsis vorax</i> (Stokes, 1887)	bns	<1	ne	18
Order: Nassulida				
Family: Nassulidae				
<i>Nassula gigantea</i> Bullington, 1940	bns	<1	se	25
Family: Paranassulidae				
<i>Paranassula microstoma</i> Claparède & Lachmann, 1858	bns, est	<1	ne	51, 70
Order: Microthoracida				
Family: Microthoracidae				
<i>Hemicyclium lucidum</i> Eberhard, 1862	bsl, ins	<1	sw	5
<i>Microthorax lucidum</i> (Eberhard, 1862)	bsl, ins	<1	sw	5
Class: Colpodea				
Order: Cyrtolophosidida				
Family: Cyrtolophosididae				
<i>Aristerostoma marinum</i> Kahl, 1933	ben, bns, ins	<1	sw	3, 5, 8
Family: Platyophryidae				
<i>Platyophrya lata</i> Kahl, 1930	bns	<1	sw	67
Family: Woodruffiidae				
<i>Woodruffia rostrata</i> Kahl, 1931	bns	<1	sw	67
Order: Colpodida				
Family: Colpodidae				
<i>Colpoda aspera</i> Kahl, 1926	bns	<1	ne	18
Family: Maryniidae				
<i>Mycterothrix taumotuensis</i> Balbiani, 1887	bns, est	<1	ne	51
Class: Prostomatea				
Order: Prorodontida				
Family: Colepidae				
<i>Coleps heteracanthus</i> Noland, 1937	ben, bns, ins	<1	ne, sw	3, 70
<i>Coleps hirtus</i> Nitzsch, 1817	ben, bns, est, ins	<1	ne	51
<i>Coleps pulcher</i> Spiegel, 1926	ben, bns, bsl, ins	<1	ne, sw	3, 18, 20, 64, 67, 70
<i>Coleps spiralis</i> Noland, 1937	ben, bns, bsl, ins	<1	ne, sw	20, 64, 67
<i>Coleps tessellatus</i> Kahl, 1930	ben, bns, ins	<1	ne, sw	3, 70
Family: Cryptocaryonidae				
<i>Cryptocaryon irritans</i> Brown, 1951	bns, par	<1	ne	71
Family: Holophryidae				
<i>Holophrya atra</i> Svec, 1897	ben, bns	<1	sw	4
<i>Holophrya coronata</i> deMorgan, 1925	bsl, ins	<1	ne	18, 20
<i>Holophrya vesiculosa</i> Kahl, 1926	bns, est, eur	<1	ne	51
Family: Placidae				
<i>Placus salinus</i> Dietz, 1964	bns, est, eur	<1	ne	51
<i>Placus socialis</i> (Fabre-Domergue, 1889)	ben, bns	<1	ne	18, 70
Family: Plagiocampidae				
<i>Plagiocampa marina</i> Kahl, 1930	bns, ins, plk	<1	ne, sw	5, 18, 55, 67
Family: Prorodontidae				
<i>Prorodon edentatus</i> Claparède & Lachmann, 1858	bsl	<1	nw	79
<i>Prorodon marinus</i> Claparède & Lachmann, 1858	bns, est, ins	<1	ne, sw	3, 51
<i>Prorodon mimeticus</i> Kahl, 1930	bsl, ins	<1	ne	18, 20

(continued)

Checklist of ciliates (Protista: Ciliophora) from the Gulf of Mexico. (*continued*)

Taxon	Habitat-Biology	Depth (m)	GMx range	References/Endnotes
<i>Prorodon opalescens</i> Kahl, 1928	bns, est	<1	ne	51
<i>Prorodon teres</i> Ehrenberg, 1838	bns, bsl, ins	<1	nw, ne	18, 20, 79
Class: Plagiopylea				
Order: Plagiopylida				
Family: Plagiopylidae				
<i>Plagiopyla megastoma</i> (Smith, 1898)	bsl, est	<1	nw	77, 79
<i>Plagiopyla ovata</i> Kahl, 1931	bns	<1	ne	18
Family: Sonderiidae				
<i>Sonderia pharyngia</i> Kirby, 1934	bns	<1	ne	18
Family: Trimyemidae				
<i>Trimyema marinum</i> (Kahl, 1931)	bns	<1	ne	18
Class: Oligohymenophorea				
Subclass: Peniculia				
Order: Peniculida				
Family: Frontoniidae				
<i>Frontonia acuminata</i> Ehrenberg, 1833	ben, bns	<1	sw	4
<i>Frontonia marina</i> Fabre-Domergue, 1891	ben, bns, bsl, est, ins	<1	ne, se, sw	8, 18, 20, 24, 51
<i>Frontonia microstoma</i> Kahl, 1933	ben, bns, bsl, est, ins	<1	ne	18, 20, 51
<i>Frontonia ocularis</i> Bullington, 1939	bns	<1	se	24
<i>Frontonia schaefferi</i> Bullington, 1939	bns	<1	se	24
Family: Lembadionidae				
<i>Lembadion lucens</i> Maskel, 1887	bns, est	<1	ne	51
Family: Parameciidae				
<i>Paramecium caudatum</i> Ehrenberg, 1838	bsl, est	<1	nw	79
<i>Paramecium calkinsi</i> Woodruff, 1921	ben, bns, ins	<1	sw	3
<i>Paramecium woodruffi</i> Wenrich, 1928	bns, est	<1	ne	51
Family: Urocentridae				
<i>Urocentrum turbo</i> (O. F. Müller, 1786)	bns, est	<1	nw, ne	51, 79
Subclass: Scuticociliatia				
Order: Philasterida				
Family: Cinetochilidae				
<i>Cinetochilum margaritaceum</i> Perty, 1852	ben, bns, ins	<1	ne, sw	3, 18
<i>Cinetochilum marinum</i> Kahl, 1933	bns, bsl, est, ins	<1	ne, sw	3, 5, 8, 51
Family: Cohnilembidae				
<i>Cohnilembus caeci</i> Powers, 1935	bns	<1	ne, se	18, 76
<i>Cohnilembus velifer</i> Cohn, 1866	bsl, est	<1	nw	79
<i>Cohnilembus verminus</i> (O. F. Müller, 1786)	bns, bsl, est, ins	<1	ne, sw	3, 8, 18, 20, 51, 68, 77, 79
Family: Cryptochilidae				
<i>Biggaria bermudensis</i> (Biggar & Wenrich, 1932)	bns, sym	1–150	se, sw	47, 48, 63, 76
<i>Biggaria echinometris</i> (Biggar & Wenrich, 1932)	bns, sym	<1	sw	63
Family: Entodiscidae				
<i>Entodiscus sabulonis</i> Powers, 1935	bns, est	<1	se	76
Family: Loxocephalidae				
<i>Cardiostomatella vermiforme</i> (Kahl, 1928)	bsl, ins	<1	ne	18, 20
<i>Loxocephalus granulatus</i> Kent, 1882	bsl	<1	nw	79
<i>Platynematum denticulatum</i> Kahl, 1935	bns	<1	ne	18
<i>Platynematum hyalinum</i> Kahl, 1931	bns	<1	ne	18
<i>Platynematum marinum</i> Kahl, 1933	ben, bns, ins	<1	sw	5
Family: Orchitophryidae				
<i>Metanophrys elongata</i> (Biggar & Wenrich, 1932)	bns, sym	1–150	se, sw	47, 48, 63, 75, 76
<i>Paranophrys aglycus</i> (Powers, 1935)	bns, sym	<1	se	76

Checklist of ciliates (Protista: Ciliophora) from the Gulf of Mexico. (continued)

Taxon	Habitat-Biology	Depth (m)	GMx range	References/Endnotes
Family: Parauronematidae				
<i>Parauronema acutum</i> (von Buddenbrock, 1920)	ben, bns, ins	<1	sw	3, 5, 68
Family: Philasteridae				
<i>Helicostoma Buddenbrocki</i> Kahl, 1931	bns	<1	ne	18
<i>Paraphilaster echini</i> Grolière, de Puytorac, & Grain, 1980	bns	–	sw	44, 45
<i>Philaster digitiformis</i> Fabre-Domergue, 1885	bns	<1	ne, sw	18, 67
<i>Philasterides armata</i> (Kahl, 1926)	ben, bns, ins	<1	ne, sw	3, 18
Family: Uronematidae				
<i>Uronema acutum</i> von Buddenbrock, 1920	bsl, ins	<1	ne	18, 20
<i>Uronema filificum</i> Kahl, 1931	ben, bns, est	<1	ne	18, 19
<i>Uronema marina</i> Dujardin, 1841	bns, bsl, ins	<1	nw, ne, sw	3, 5, 8, 18, 20, 67, 72, 79
<i>Uronema pluricaudatum</i> Noland, 1937	ben, bns	<1	ne, sw	18, 67, 70
Order: Pleuronematida				
Family: Cyclidiidae				
<i>Cristigera media</i> Kahl, 1928	bns	<1	ne, sw	18, 64
<i>Cristigera setosa</i> Kahl, 1928	ben, bns, ins	<1	sw	3, 5
<i>Cyclidium citrullus</i> Cohn, 1865	ben, bns, ins	<1	sw	3, 5
<i>Cyclidium curvatum</i> Mansfeld, 1922	ben, bns, est, ins	<1	ne, sw	3, 18, 51
<i>Cyclidium elongatum</i> Schewiakoff, 1896	ben, bns, ins	<1	ne, sw	3, 4, 5, 8, 18
<i>Cyclidium glaucoma</i> O. F. Müller, 1786	bns, bsl, est	<1	nw, ne, sw	4, 8, 51, 67, 79
<i>Cyclidium lanuginosum</i> Penard, 1922	bns	<1	sw	67
<i>Cyclidium litomewsum</i> Stokes, 1884	bns	<1	sw	67
<i>Cyclidium marinum</i> Borror, 1963	ben, bns, bsl, ins	<1	sw	3, 20, 64, 67
<i>Cyclidium rhabdotectum</i> Powers, 1935	bns, sym	<1	se	18, 76
<i>Cyclidium stercoris</i> (Powers, 1933)	bns, sym	<1	se	75, 76
<i>Cyclidium versatile</i> Penard, 1922	bns	<1	ne	18
Family: Histiobalantiidae				
<i>Histiobalantium semisetatum</i> Noland, 1937	ben, bns	<1	ne	70
Family: Pleuronematidae				
<i>Pleuronema coronatum</i> Kent, 1881	bns, bsl, est, ins	<1	ne, sw	3, 4, 5, 18, 20, 51, 70
<i>Pleuronema crassum</i> Dujardin, 1841	bns, est	<1	nw, ne	51, 79
<i>Pleuronema marina</i> Dujardin, 1841	ben, bns, bsl, ins	<1	ne, sw	3, 5, 18, 20, 70
<i>Pleuronema setigera</i> Calkins, 1903	bns, bsl, est, ins	<1	ne, sw	5, 18, 20, 51, 67, 70
Order: Thigmotrichida				
Family: Hysterocinetidae				
<i>Hysterocineta pontodrila</i> Wichterman, 1942	bns, sym	<1	se	90
Subclass: Hymenostomatia				
Order: Hymenostomatida				
Family: Glaucomidae				
<i>Espejoia mucicola</i> (Penard, 1922)	bns	<1	sw	67
<i>Glaucoma scintillans</i> Ehrenberg, 1830	bns, est	<1	ne	51
Family: Ophryoglenidae				
<i>Ophryoglena frontonia</i> Bullington, 1940	bns	<1	se	25
Family: Tetrahymenidae				
<i>Tetrahymena pyriformis</i> (Ehrenberg, 1830)	bns	<1	ne	18
<i>Tetrahymena vorax</i> Kidder, Lilly, & Claff, 1940	bns, est	<1	ne	51
Subclass: Apostomatia				
Order: Apostomatida				
Family: Foettingeriidae				
<i>Hyalophysa chattoni</i> Bradbury, 1966	bns, epi, est, sym	<1	ne	60
<i>Terebrospira chattoni</i> Bradbury, Clamp, & Lyon, 1974	bns, est, par	<1	ne	71

(continued)

Checklist of ciliates (Protista: Ciliophora) from the Gulf of Mexico. (*continued*)

Taxon	Habitat-Biology	Depth (m)	GMx range	References/Endnotes
Subclass: Peritrichia				
Order: Sessilida				
Family: Epistylididae				
<i>Epistylis bimarginata</i> Nenninger, 1948	bns, est, ses	<1	ne	51
<i>Epistylis hentscheli</i> Kahl, 1935	bns, est, ses	<1	ne	51
<i>Epistylis niagarae</i> Kellicott, 1883	bns, est, ses	<1	ne	51
<i>Epistylis vaginula</i> Stokes, 1884	bns, ses	<1	sw	67
Family: Lagenophryidae				
<i>Lagenophrys aselli</i> Plate, 1886	bns, epi, est, ses	<1	ne	51
<i>Lagenophrys callinectes</i> Couch, 1967	bns, epi, ses	1–20	nw, ne	29, 32, 71, 82
<i>Lagenophrys eupagurus</i> Kellicott, 1893	bns, epi, ses	1–15	entire	29, 51, 71, 86
Family: Operculariidae				
<i>Opercularia cylindrata</i> Wrzesniewski, 1870	bns, ses	<1	sw	67
<i>Opercularia longigula</i> Nenninger, 1948	bns, est, ses	<1	ne	51
<i>Opisthostyla thienemanni</i> Nenninger, 1948	bns, est, ses	<1	ne	51
Family: Vaginicolidae				
<i>Cothurnia fecunda</i> Stokes, 1893	bns, est, eur, ses	<1	ne	51
<i>Cothurnia innata</i> O. F. Müller, 1786	bns, epi, est, ses	<1	ne	51
<i>Cothurnia limnoriae</i> Dons, 1928	bns, est, ses	<1	ne	51
<i>Cothurnia maritima</i> Ehrenberg, 1838	bns, epi, est, ses	<1	ne	51
<i>Cothurnia oblonga</i> Kahl, 1935	bns, est, ses	<1	ne	51
<i>Cothurnia poculum</i> Kahl, 1933	bns, est, ses	<1	ne	51
<i>Platycola gracilis</i> de Fromentel, 1874	bns, est, eur, ses	<1	ne	51
<i>Pyxicola socialis</i> Gruber, 1879	bns, est, eur, ses	<1	ne	51
<i>Thuricola valvata</i> Wright, 1858	bns, est, ses	<1	ne	51
<i>Vaginicola ampulla</i> (de Fromentel, 1874)	bns, est, ses	<1	ne	51
<i>Vaginicola crystallina</i> (Entz, 1884)	bns, est, ses	<1	ne	51
<i>Vaginicola ingenita</i> (O. F. Müller, 1786)	bns, est, ses	<1	ne	51
<i>Vaginicola ovata</i> Dons, 1922	bns, est, ses	<1	ne	51
<i>Vaginicola wangi</i> Kahl, 1933	bns, est, ses	<1	ne	51
Family: Vorticellidae				
<i>Pseudovorticella monilata</i> (Tatem, 1870)	bns, est, ses	<1	ne	51
<i>Vorticella aequilata</i> Kahl, 1935	bns, est, ses	<1	ne	51
<i>Vorticella alba</i> de Fromentel, 1874	bns, est, ses	<1	nw	79
<i>Vorticella dubia</i> de Fromentel, 1874	bns, ses	<1	sw	67
<i>Vorticella marina</i> Greeff, 1870	bns, est, ses	<1	se, ne	18, 73
<i>Vorticella nebulifera</i> O. F. Müller, 1786	bns, est, eur, ses	<1	ne, sw	4, 18, 20, 51, 72
<i>Vorticella platysoma</i> Stokes, 1887	bns, est, ses	<1	ne	51
<i>Vorticella procumbens</i> de Fromentel, 1874	bns, est, ses	<1	ne	51
<i>Vorticella punctata</i> Dons, 1917	bns, est, ses	<1	ne	51
Family: Zoothamniidae				
<i>Zoothamnium affine</i> Stein, 1859	bns, est, ses	<1	ne	51
<i>Zoothamnium alternans</i> Claparède & Lachmann, 1858	bns, est, eur, ses	<1	ne	51
<i>Zoothamnium commune</i> Kahl, 1933	bns, est, eur, ses	<1	ne	51
<i>Zoothamnium duplicatum</i> Kahl, 1933	bns, est, ses	<1	ne	51
<i>Zoothamnium mucedo</i> Entz, 1884	bns, est, ses	<1	ne	51
<i>Zoothamnium penaei</i> Song, 1992	bns, epi, ses	1–15	se, sw	86
<i>Zoothamnium plicatum</i> Gourret & Roeser, 1886	bns, ses	<1	ne	18
Order: Mobilida				
Family: Trichodinidae				
<i>Trichodina ctenophorii</i> Estes, Reynolds, & Moss, 1997	bns, epi, plk	–	ne	35

Checklist of ciliates (Protista: Ciliophora) from the Gulf of Mexico. (*continued*)

Taxon	Habitat-Biology	Depth (m)	GMx range	References/Endnotes
Subclass: Astomatia				
Order: Astomatida				
Family: Anoplophryidae				
<i>Anoplophrya macronucleata</i> Wichterman, 1942	bns, par	<1	se	90
Family: Maupasellidae				
<i>Maupasella leptus</i> Wichterman, 1942	bns, sym	<1	se	90
<i>Incertae sedis</i> in Phylum: Ciliophora				
Family: Coelosomididae				
<i>Incertae sedis</i> in Family: Coelosomididae				
<i>Epimecophrya cylindrica</i> Kahl, 1933	ben, bns, ins	<1	sw	3
<i>Paraspathidium fusca</i> (Kahl, 1928)	ben, bns	<1	sw	4
<i>Paraspathidium trichostomum</i> Noland, 1937	ben, bns	<1	ne	18, 70