DEPARTMENT OF COMMERCE

BULLETIN

OF THE

UNITED STATES BUREAU OF FISHERIES

VOL. XLIII
1927

IN TWO PARTS—PART I

HENRY O'MALLEY
COMMISSIONER

PRICE, $1.50 (Buckram)
Sold only by the Superintendent of Documents, U. S. Government Printing Office
Washington, D. C.

UNITED STATES
GOVERNMENT PRINTING OFFICE
WASHINGTON
1928

ERRATA

Page 1, eighth line from the bottom of the page: *Sphyrinidæ* should read *Sphyrnidæ*.

Page 47, first line: *Carcharpinus* should read *Carcharhinus*.
Page 49, Family VI: *Sphyrinidæ* should read *Sphyrnidæ*.
Page 169: Figure 87 is wrong side up.

FISHES OF CHESAPEAKE BAY

By SAMUEL F. HILDEBRAND, *Director, U. S. Fisheries Biological Station, Beaufort, N. C.,* and WILLIAM C. SCHROEDER, *Assistant Aquatic Biologist, U. S. Bureau of Fisheries*

CONTENTS

	Page
Introduction	8
Literature on fishes of Chesapeake Bay	10
General character of the fauna	11
Distribution of species	12
General statistics and remarks on fisheries of Chesapeake Bay	13
Buchanan Brothers' fishery	17
Systematic catalogue of the fishes of Chesapeake Bay	32
Interpretation of descriptions	32
Use of keys	33
Key to the families	33
Class Leptocardii	42
Order Amphioxi	42
Family I—Branchiostomidæ. The lancelets	42
1. Branchiostoma virginiæ	42
Class Marsipobranchii	43
Order Hyperoartia	43
Family II—Petromyzonidæ. The lampreys	43
2. Petromyzon marinus	43
Class Elasmobranchii	44
Subclass Selachii	44
Order Euselachii	44
Family III—Orectolobidæ. The nurse sharks	44
3. Ginglymostoma cirratum	45
Family IV—Lamnidæ. The mackerel sharks and the man-eater sharks	45
4. Carcharodon carcharias	46
Family V—Galeidæ. The gray sharks	46
5. Mustelus mustelus	47
6. Carcharhinus milberti	48
7. Scoliodon terræ-novæ	49
Family VI—Sphyrinidæ. The hammerhead sharks	49
8. Sphyrna zygæna	50
9. Sphyrna tiburo	51
Order Tectospondyli	51
Family VII—Squalidæ. The dogfishes	51
10. Squalus acanthias	52
Family VIII—Squatinidæ. The angel sharks	54
11. Squatina dumeril	54
Order Batoidei	55
Family IX—Pristidæ. The sawfishes	55
12. Pristis pectinatus	55
Family X—Rajidæ. The skates	56
13. Raja diaphanes	56
14. Raja eglanteria	58
15. Raja stabuliforis	59
16. Raja erinacea	60

Class Elasmobranchii—Continued.
Subclass Selachii—Continued.
Order Batoidei—Continued.
Page
Family XI—Torpedinidæ. The electric rays 61
17. Torpedo nobiliana 62
Family XII—Dasyatidæ. The sting rays 63
18. Dasyatis centrura 64
19. Dasyatis americana, sp. nov 64
20. Dasyatis say 66
21. Dasyatis sabina 67
22. Pteroplatea micrura 67
Family XIII—Myliobatidæ. The eagle rays 68
23. Myliobatis freminvillii 69
24. Aëtobatus narinari 70
Family XIV—Rhinopteridæ. The cow-nosed rays 70
25. Rhinoptera quadriloba 71
Family XV—Mobulidæ. The sea devils 71
26. Manta birostris 71
Class Pisces. True fishes 72
Superorder Ganoidei 72
Order Glaniostomi 72
Family XVI—Acipenseridæ. The sturgeons 72
27. Acipenser oxyrhynchus 72
28. Acipenser brevirostrum 76
Order Holostei 77
Family XVII—Lepisosteidæ. The gar pikes 77
29. Lepisosteus osseus 77
Superorder Teleostei. The bony fishes 78
Order Isospondyli 78
Family XVIII—Elopidæ. The ten-pounders 78
30. Elops saurus 78
Family XIX—Megalopidæ. The tarpons 79
31. Tarpon atlanticus 80
Family XX—Clupeidæ. The herrings 81
32. Clupea harengus 81
33. Pomolobus mediocris 83
34. Pomolobus æstivalis 85
35. Pomolobus pseudoharengus 89
36. Alosa sapidissima 93
37. Opisthonema oglinum 101
38. Brevoortia tyrannus 102
Family XXI—Dorosomidæ. The gizzard shads 106
39. Dorosoma cepedianum 106
Family XXII—Engraulidæ. The anchovies 108
40. Anchoviella mitchilli 109
41. Anchoviella epsetus 110
Order Apodes 111
Family XXIII—Anguillidæ. The common eels 111
42. Anguilla rostrata 112
Family XXIV—Congridæ. The conger eels 116
43. Conger conger 116
Order Eventognathi 117
Family XXV—Catostomidæ. The suckers 117
44. Erimyzon sucetta 117
45. Minytrema melanops 118
46. Catostomus commersonii 119

Class Pisces—Continued.
Superorder Teleostei—Continued.
Order Eventognathi—Continued. Page
Family XXVI—Cyprinidæ. The minnows and carps 120
47. Cyprinus carpio 121
48. Notemigonus crysoleucas 123
49. Hybognathus nuchalis 124
50. Notropis hudsonius amarus 125
51. Notropis bifrenatus 126
Order Nematognathii 127
Family XXVII—Ariidæ. The sea catfishes 127
52. Felichthys felis 127
Family XXVIII—Ameiuridæ. The horned pouts 129
53. Ameiurus catus 129
Order Iniomi 130
Family XXIX—Synodontidæ. The lizzard fishes 130
54. Synodus fœtens 130
Order Haplomi 132
Family XXX—Esocidæ. The pikes, pickerels, and muskallunges 132
55. Esox reticulatus 132
56. Esox americanus 134
Order Cyprinodontes 134
Family XXXI—Cyprinodontidæ. The killifishes 134
57. Cyprinodon variegatus 135
58. Lucania parva 136
59. Fundulus heteroclitus 138
60. Fundulus majalis 140
61. Fundulus ocellaris 141
62. Fundulus diaphanus 143
63. Fundulus luciæ 144
Family XXXII—Pœciliidæ. The top minnows 145
64. Gambusia holbrooki 145
Order Synentognathi 147
Family XXXIII—Belonidæ. The needlefishes 147
65. Tylosurus marinus 148
66. Tylosurus acus 149
67. Ablennes hians 150
Family XXXIV—Scomberesocidæ. The sauries 151
68. Scomberesox saurus 151
Family XXXV—Hemiramphidæ. The balaos and (halfbeaks) 152
69. Hyporhamphus unifasciatus 152
70. Hemiramphus brasiliensis 153
Family XXXVI—Exocœtidæ. The flying fishes 154
71. Exocœtus heterurus 154
Order Anacanthini 155
Family XXXVII—Gadidæ. The codfishes 155
72. Pollachius virens 155
73. Gadus callarias 156
74. Urophycis chuss 159
75. Urophycis regius 160
Family XXXVIII—Merlucciidæ. The hakes 162
76. Merluccius bilinearis 162

Class Pisces—Continued.
Superorder Teleostei—Continued. Page
Order Heterosomata 164
Family XXXIX—Pleuronectidæ. The flounders 164
77. Paralichthys dentatus 165
78. Limanda ferruginea 168
79. Pseudopleuronectes americanus 168
80. Lophopsetta maculata 171
81. Etropus microstomus 172
82. Etropus crossotus 173
83. Neoetropus macrops sp. nov 174
Family XL—Achiridæ. The broad soles 175
84. Achirus fasciatus 175
Family XLI—Cynoglossidæ. The tongue fishes 177
85. Symphurus plagiusa 177
Superorder Acanthopterygii 178
Order Thoracostei 178
Family XLII—Gasterosteidæ. The sticklebacks 178
86. Gasterosteus aculeatus 178
87. Apeltes quadracus 180
Family XLIII—Syngnathidæ. The pipefishes and seahorses 181
88. Syngnathus fuscus 182
89. Syngnathus floridæ 183
90. Syngnathus louisianæ 184
91. Hippocampus hudsonius 185
Order Aulostomi 186
Family XLIV—Fistulariidæ. The cornet-fishes 186
92. Fistularia tabacaria 186
Order Percomorphi 187
Family XLV—Atherinidæ. The silversides 187
93. Menidia menidia 187
94. Menidia beryllina 189
95. Membras vagrans 191
Family XLVI—Mugilidæ. The mullets 192
96. Mugil cephalus 193
97. Mugil curema 196
Family XLVII—Sphyrænidæ. The baracudas 197
98. Sphyræna guachancho 198
99. Sphyræna borealis 198
Family XLVIII—Polynemidæ. The threadfins 199
100. Polynemus octonemus 199
Family XLIX—Scombridæ. The mackerels 200
101. Scomber scombrus 201
102. Pneumatophorus colias 202
103. Scomberomorus maculatus 203
104. Scomberomorus regalis 205
105. Sarda sarda 206
106. Thunnus thynnus 207
Family L—Trichiuridæ. The cutlass fishes 208
107. Trichiurus lepturus 208
Family LI—Xiphiidæ. The swordfishes 209
108. Xiphias gladius 209
Family LII—Stromateidæ. The butterfishes 210
109. Peprilus alepidotus 210
110. Poronotus triacanthus 213

Class Pisces—Continued.
Superorder Acanthopterygii—Continued.
Order Percomorphi—Continued. Page
Family LIII—Carangidæ. The crevallies, pompanoes, etc 216
111. Selar crumenophthalmus 217
112. Seriola dumerili 218
113. Oligoplites saurus 219
114. Chloroscombrus chrysurus 220
115. Caranx hippos 221
116. Caranx crysos 222
117. Caranx latus 223
118. Alectis ciliaris 224
119. Selene vomer 225
120. Vomer setipinnis 226
121. Trachinotus falcatus 228
122. Trachinotus glaucus 229
123. Trachinotus carolinus 229
Family LIV—Pomatomidæ. The bluefishes 231
124. Pomatomus saltatrix 231
Family LV—Rachycentridæ. The crab-eaters 234
125. Rachycentron canadus 235
Family LVI—Percidæ. The perches 236
126. Perca flavescens 236
Family LVII—Etheostomidæ. The darters 237
127. Boleosoma olmstedi 237
Family LVIII—Centrarchidæ. The fresh-water basses and sunfishes 238
128. Pomoxis annularis 239
129. Enneacanthus gloriosus 240
130. Lepomis gibbosus 241
131. Micropterus dolomieu 242
132. Micropterus salmoides 243
Family LIX—Moronidæ. The white basses 244
133. Morone americana 244
134. Roccus lineatus 247
Family LX—Epinephelidæ. The groupers 250
135. Mycteroperca microlepis 250
Family LXI—Serranidæ. The sea basses 251
136. Centropristes striatus 251
Family LXII—Priacanthidæ. The big-eyes 253
137. Priacanthus arenatus 253
138. Pseudopriacanthus altus 254
Family LXIII—Lobotidæ. The tripletails 255
139. Lobotes surinamensis 255
Family LXIV—Lutianidæ. The snappers 256
140. Lutianus griseus 257
Family LXV—Pomadasidæ. The grunts 257
141. Orthopristis chrysopterus 258
142. Hæmulon plumieri 260
143. Bathystoma rimator 260
Family LXVI—Sparidæ. The porgies 261
144. Stenotomus chrysops 261
145. Stenotomus aculeatus 264
146. Lagodon rhomboides 265
147. Archosargus probatocephalus 267
148. Diplodus holbrookii 268

Class Pisces—Continued.
Superorder Acanthopterygii—Continued.
Order Percomorphi—Continued. Page
Family LXVII—Kyphosidæ. The rudderfishes 269
149. Kyphosus sectatrix 269
Family LXVIII—Gerridæ. The mojarras 269
150. Eucinostomus californiensis 270
151. Eucinostomus gula 270
Family LXIX—Sciænidæ. The croakers and drums 271
152. Leiostomus xanthurus 271
153. Sciænops ocellatus 276
154. Larimus fasciatus 278
155. Bairdiella chrysura 279
156. Stellifer lanceolatus 282
157. Micropogon undulatus 283
158. Pogonias cromis 287
159. Umbrina coroides 289
160. Menticirrhus saxatilis 290
161. Menticirrhus americanus 291
162. Menticirrhus littoralis 294
Family LXX—Otolithidæ. The weakfishes 296
163. Cynoscion nebulosus 296
164. Cynoscion nothus 299
165. Cynoscion regalis 300
Family LXXI—Branchiostegidæ. The tilefishes 305
166. Lopholatilus chamæleonticeps 305
Family LXXII—Ephippidæ. The spadefishes 306
167. Chætodipterus faber 306
Family LXXIII—Chætodontidæ. The butterfly fishes 308
168. Chætodon ocellatus 309
Order Cataphracti 309
Family LXXIV—Hemitripteridæ. The sea ravens 309
169. Hemitripterus americanus 310
Family LXXV—Cyclopteridæ. The lump suckers 311
170. Cyclopterus lumpus 311
Family LXXVI—Triglidæ. The sea robins and gurnards 312
171. Prionotus evolans 312
172. Prionotus carolinus 314
173. Prionotus affinis sp. nov 315
Family LXXVII—Cephalacanthidæ. The flying gurnards 316
174. Cephalacanthus volitans 316
Order Pharyngognathi 317
Family LXXVIII—Labridæ. The labrid or lipped fishes 317
175. Tautoga onitis 318
176. Tautogolabrus adspersus 320
Family LXXIX—Scaridæ. The parrotfishes 321
177. Scarus cæruleus 322
Order Gobioidea 322
Family LXXX—Gobiidæ. The gobies 322
178. Gobiosoma bosci 323
179. Gobiosoma ginsburgi sp. nov 324
180. Microgobius holmesi 326
181. Microgobius eulepis 327
182. Mugilostoma gobio sp. nov 327

Class Pisces—Continued.
Superorder Acanthopterygii—Continued. Page
Order Discocephali 328
Family LXXXI—Echeneididæ. The remoras 328
183. Echeneis naucrates 329
Order Jugulares 329
Family LXXXII—Uranoscopidæ. The star-gazers 329
184. Astroscopus guttatus 330
Family LXXXIII—Blenniidæ. The blennies 332
185. Chasmodes bosquianus 332
186. Hypsoblennius hentz 334
187. Blennius fucorum 335
Family LXXXIV—Ophidiidæ. The cusk eels 335
188. Rissola marginata 336
Family LXXXV—Batrachoididæ. The toadfishes 337
189. Opsanus tau 337
Order Xenopterygii 339
Family LXXXVI—Gobiesocidæ. The clingfishes 339
190. Gobiesox strumosus 339
Order Plectognathi 340
Family LXXXVII—Balistidæ. The trigger fishes 340
191. Balistes carolinensis 341
Family LXXXVIII—Monacanthidæ. The filefishes 342
192. Monacanthus hispidus 342
193. Ceratacanthus schœpfi 344
Family LXXXIX—Ostraciidæ. The trunkfishes 345
194. Lactophrys trigonus 346
Family XC—Tetraodontidæ. The swellfishes 346
195. Lagocephalus lævigatus 347
196. Tetraodon maculatus 348
197. Tetraodon testudineus 349
Family XCI—Diodontidæ. The porcupinefishes 349
198. Diodon hystrix 350
199. Chilomycterus schœpfi 350
Order Pediculati 351
Family XCII—Lophiidæ. The anglers 351
200. Lophius piscatorius 352
Family XCIII—Antennariidæ. The frogfishes 353
201. Histrio histrio 353
Family XCIV—Ogcocephalidæ. The batfishes 354
202. Ogcocephalus vespertilio 355
Glossary of technical terms 355
Bibliography 358

NEW GENERA AND SPECIES

GENERA

Neoetropus 174
Mugilostoma 327

SPECIES

Dasyatis americana 64
Neoetropus macrops 174
Prionotus affinis 315
Gobiosoma ginsburgi 324
Mugilostoma gobio 327

49826—28——2