Figure 1.–The Manistee River watershed in northwestern lower Michigan.
Figure 2.–Major tributaries of the Manistee River.
1. Deer Lake Outlet  
2. Frenchman’s Creek  
3. Goose Creek  
4. Portage Creek  
5. Black Creek  
6. Clear Creek  
7. North Branch Manistee  
8. Flowing Well Creek  
9. Morrison Creek  
10. Collar Creek  
11. Sands Creek  
12. Devil Creek  
13. Little Devil Creek  
14. Cannon Creek  
15. Pierson Creek  
16. Willow Creek  
17. Maple Creek  
18. Little Cannon Creek  
19. Silver Creek  
20. Waterhole Creek  
21. Filer Creek  
22. Nelson Creek  
23. Spring Creek  
24. Bourne Creek  
25. Ham Creek  
26. Hopkins Creek  
27. Voice Creek  
28. Bridson Creek  
29. Fife Lake Inlet  
30. Fife Lake Outlet  
31. Gould Creek  
32. Golden Creek  
33. Morissy Creek  
34. Chase Creek  
35. Walton Outlet  
36. Manton (Cedar) Creek  
37. Buttermilk Creek  
38. Silver Creek  
39. Sands Creek  
40. Apple Creek  
41. Blind Creek  
42. Filer Creek  
43. Soper Creek  
44. Anderson Creek  
45. West Branch Anderson Creek  
46. Adams Creek  
47. Cole Creek  
48. East Branch Wheeler Creek  
49. Wheeler Creek  
50. Burkett Creek  
51. Preston Creek  
52. Cotton Creek  
53. Fletcher Creek  
54. Cripple Creek  
55. Small Creek  
56. Tar Creek  
57. Seaton Creek  
58. Slagle Creek  
59. Dead Creek  
60. Cedar Creek  
61. Arguilla Creek  
62. Hinton Creek  
63. Sands Creek  
64. Johnson Creek  
65. Peterson Creek  
66. Snyders Creek  
67. Pine River  
68. North Branch Pine River  
69. Spalding Creek  
70. Sixteen Creek  
71. Fairchild (Negro) Creek  
72. East Branch Pine River  
73. Rose Lake Outlet  
74. Edgett Creek  
75. Diamond Lake Outlet  
76. Sprague Creek  
77. Beaver Creek  
78. Little Beaver Creek  
79. Coe Creek  
80. Dyer Creek  
81. Sellars Creek  
82. Silver Creek  
83. Elm Creek  
84. Poplar Creek  
85. Dowling Creek  
86. Hoxie Creek  
87. Sylvan Creek  
88. Pine Creek  
89. Bear Creek  
90. First Creek  
91. Second or Hatches Creek  
92. Third Creek  
93. Dutchman Creek  
94. Lemon Creek  
95. Healy Lake Outlet  
96. Little Bear Creek  
97. Green’s Creek  
98. Halls Creek  
99. Arner Creek  
100. Big Beaver Creek  
101. Williamson Creek  
102. Little Beaver Creek  
103. Cedar Creek  
104. Chicken Creek  
105. Podunk Creek  
106. Boswell Creek  
107. Chief Creek  
108. Sickle Creek  
109. Claybank Creek
Figure 3.–General sites within watershed.
Figure 4.—The basic life cycle of stream fish with respect to habitat use (adapted from Schlosser 1991).
Figure 5.—Designated trout streams in the Manistee River watershed. Data from Michigan Department of Natural Resources, Fisheries Division.
Figure 6.–Flow duration curves for selected sites on the Manistee and Pine Rivers. Information from United States Geological Survey for period of record.
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Figure 7.–Ratio of high:low flow yields for selected Michigan rivers. Data from Michigan Department of Natural Resources, Fisheries Division.
Figure 8.—Typical daily peaking flow pattern at Tippy Dam.
Figure 9.–Temperature patterns at Alcona peaking project on the Au Sable River, Michigan.
Figure 10.–Gradient (elevation change in ft/mi) of the Manistee River.
Figure 11.—Gradient (elevation change in ft/mi) of the Pine River.
In Idaho streams, undisturbed channels held 8 times greater biomass of trout on the average.

Over 80 years after channelization, biomass of fish remains 80 to 90 percent below original levels.

Figure 12.—Natural and altered channel-cross sections and trout biomass (from Gebhards 1973).
Figure 13a.—Degraded mainstem channel-cross section below Tippy Dam.

Figure 13b.—Aggraded mainstem channel-cross section below Tippy Dam.
Figure 14.–Soil associations in the Manistee River watershed. Source: U.S. Department of Agriculture, U.S. Forest Service, Manistee River Wild and Scenic River Final Study Report and Environmental Impact Statement.
Figure 15.—Public access site and campground locations in the Manistee River watershed. Data from Michigan Department of Natural Resources, Parks and Recreation and United States
Figure 16.—Location of dams in the Manistee River watershed.