

*Tables for Computing
Relative Conditions of Some
Common Freshwater Fishes*



Agricultural Experiment Station
AUBURN UNIVERSITY
E. V. SMITH, Director Auburn, Alabama

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Tables for Computing Relative Conditions of Some Common Freshwater Fishes

W. E. SWINGLE and E. W. SHELL¹

INTRODUCTION

THE TABLES presented in this publication were compiled from length-weight measurements of fishes collected during a 15-year period from Alabama rivers and river impoundments by use of rotenone.² Data were stratified so that no year or river system was more heavily weighted than the others. These tables allow the biologist to rapidly compare the conditions of fish by computing the relative condition factor of LeCren³, which is expressed as follows:

$$Kn = \frac{W}{\hat{W}}$$

where W equals the weight of a fish of a specific length and \hat{W} is the computed weight for the same length, derived from the equation $\hat{W} = aL^b$, for this species in Alabama river systems.

The \hat{W} values are those given in the tables for the specific length of a species.

Lagler⁴ suggested the use of an index of condition of the form $C = WX10^6/L^3$ in preference to Kn . This results in each species having condition indices that form a range of arbitrary numbers

¹ Former Graduate Assistant, Department of Zoology-Entomology, now Biologist, Ala. Dept. of Cons., Dauphin Island, Ala.; and Professor, Department of Fisheries and Allied Aquacultures.

² SWINGLE, WAYNE E. 1965. Length-Weight Relationships of Alabama Fishes. Auburn Univ. (Ala.) Agr. Exp. Sta. Zoology-Entomology Departmental Series Fisheries No. 3.

³ LECREN, E. D. 1951. The Length-Weight Relationship and Seasonal Cycle in Gonad Weight and Condition in the Perch, *Perca fluviatilis*. J. Animal Ecol. 20(2):201-219.

⁴ LAGLER, K. F. 1956. Freshwater Fisheries Biology. 2nd Edition. Wm. C. Brown Co., Dubuque, Iowa. 403 pp.

that vary greatly from species to species and gradually for different sizes of the same species. For example, taking C values from Swingle² for 10-inch paddlefish, largemouth bass, and smallmouth buffalo, the respective values were 8.2, 45.0, and 53.3. Without standards for comparison, use of such a system of comparing condition has no real meaning. For instance, an 8-inch bass weighing 0.24 pound would have C of 46.87, ($C = 0.24 \times 10^5/8^3$). Of itself, this figure is less valuable than the two parameters from which it was derived. One could compute the length-weight equation $W = aL^b$ for a number of populations and learn that the average weight for 8-inch bass derived from this equation was 0.23 pound. It is then obvious that the 0.24-pound bass is in slightly better condition than the average. However, to quantitate the C value in relation to the average, a C must be computed using the average weight, 0.23 pound, giving a value of 44.92, ($C = 0.23 \times 10^5/8^3$). Thus one now has two values of condition, 46.87 for the individual fish and 44.92 for the population average. To express the degree by which the condition of the individual is better than the average, it would seem logical to compute the following ratio $46.87/44.92$, which equals 1.043. This value then indicates that the C value for the individual is 1.043 times the C value for the population average. However, if one had computed the Kn value, he would have $Kn = 0.24/0.23 = 1.043$. Thus the use of Kn for the measurement of condition of a fish results in a value that has a common base regardless of species or size. Kn is always 1.0 when the condition or weight of an individual is equal to the average condition or weight for a specific length. Whenever fish are in poorer condition than average, Kn is less than 1.0, and when condition is better than average Kn is greater than 1.0. For example, respective Kn values of 0.8 and 1.2 for two fish of the same length would indicate that the second weighs 50 per cent more than the first and 20 per cent more than the average or base.

The computation of relative condition factors has provided useful information in a variety of situations. Biologists in Florida have used Kn values in a hatchery to detect heavy parasite infestations in largemouth bass. Bass being cultured in ponds had Kn values averaging about 1.2. At a later date, Kn values dropped below 1.0 and examination of the fish showed them to be heavily parasitized. It may be useful to routinely determine Kn values for broodstock and examine or discard those in poor condition.

² *Ibid.* p. 3.

The following values were computed for an unbalanced bluegill population:

Inch-group	3	4	5	6	7
Kn	0.55	0.33	0.76	0.84	0.68

Not only is it evident that the whole population is crowded, but also that crowding is worse in the 4-inch group.

It has been demonstrated that the condition of fish varies with season, sex, and population. This is illustrated in Tables 1 and 2. Therefore, if a different \hat{W} value is computed during each season, the Kn values derived are not comparable. However, acceptance of standard \hat{W} values, such as are provided in the tables, makes Kn values comparable.

Table 1 gives the relative conditions of male bluegill in populations from two ponds with feeding and one with inorganic fertilization during the spring, summer, fall, and winter. These values were computed by measuring the fish in millimeters and grams and computing a Kn value for each fish using \hat{W} from the tables and averaging the Kn values for all fish in each inch-group. These data show that the bluegills were in the best condition in the summer and the poorest in the winter. The bluegills that received supplemental feed were in better condition than those in the fertilized pond, and both fed and fertilized populations were in better condition than bluegills from the natural waters of Alabama ($Kn = 1.0$). It appears from the data that 4- and 5-inch fish better utilized food organisms produced by fertilization, while all the fish larger than the 4-inch group utilized the pelleted feed.

Table 2 presents the relative conditions of male and female bluegills from fed, fertilized, and natural populations in the fall. Lake Eufaula and Lake Martin are both on rivers that drain the infertile soils of the Piedmont Plateau; therefore, the condition of the bluegills would be expected to be slightly below the state average ($Kn = 1.0$). Lake Eufaula is a fairly new impoundment, while Lake Martin is quite old, and the former receives more domestic sewage than the latter. These factors perhaps account for the better conditions of Eufaula fish. Also it should be noted that there was little difference between the conditions of male and female bluegill from the natural populations, while the male bluegill from both fed and fertilized populations were in better condition than the females.

The use of Kn will probably have its greatest application in

TABLE 1. RELATIVE CONDITIONS OF MALE BLUEGILL FROM POPULATION IN TWO PONDS RECEIVING FEEDING AND ONE RECEIVING INORGANIC FERTILIZATION

Inch group	Fed								Fertilized			
	Pond S-9				Pond E-8				Pond E-7			
	Spring ¹	Summer ²	Fall ³	Winter ⁴	Spring	Summer	Fall	Winter	Spring	Summer	Fall	Winter
2	0.906	-----	-----	-----	1.148	-----	-----	-----	1.216	-----	-----	-----
3	1.287	-----	-----	-----	1.155	1.186	-----	-----	1.080	1.191	-----	-----
4	1.261	1.487	-----	-----	1.124	1.371	-----	-----	-----	1.307	1.195	-----
5	-----	1.515	1.344	-----	-----	1.444	1.385	-----	-----	1.448	1.336	-----
6	1.312	1.533	1.312	1.191	-----	1.315	1.383	1.107	1.164	1.145	1.177	1.121
7	1.364	1.405	1.297	1.197	1.406	1.474	1.373	1.315	1.138	1.178	1.043	1.229
8	1.397	1.515	1.407	1.283	1.391	1.476	1.385	-----	-----	-----	-----	-----

¹ March-May.

² June-August.

³ September-November.

⁴ December-February.

TABLE 2. RELATIVE FALL CONDITIONS OF MALE AND FEMALE BLUEGILLS FROM FED, FERTILIZED, AND NATURAL POPULATIONS

Inch group	Fed				Fertilized		Natural				
	Pond S-9		Pond E-8		Pond E-7		Lake Eufaula		Lake Martin		
	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females	
2	-----	-----	-----	-----	-----	-----	-----	0.936	0.945	0.866	0.855
3	-----	-----	-----	-----	-----	-----	-----	0.945	0.948	0.870	0.865
4	-----	-----	-----	-----	-----	1.195	-----	0.946	0.919	0.880	0.843
5	1.344	1.196	1.385	1.193	1.336	1.148	-----	1.005	0.864	0.930	0.909
6	1.312	1.172	1.383	1.164	1.177	0.991	-----	-----	0.830	1.000	0.954
7	1.297	1.218	1.373	1.233	1.043	-----	-----	-----	-----	1.040	-----
8	1.407	1.304	1.385	1.302	-----	-----	-----	-----	-----	-----	-----

studies of fish populations of reservoirs and other natural waters. Swingle and Swingle⁵ found that rotenone sampling was not effective in detecting fluctuations in year-class abundance of such species as crappie, even though these fluctuations were known to be occurring. However, yearly determination of Kn values for all sizes of crappie should indicate which groups were crowded or most abundant. Similarly, the condition of other species could be monitored and these data used with other sampling data to more accurately determine the status of a species within the total population. Theoretically, when data on the condition of the various sizes of each species within a population had been accumulated over many years and a norm established for a body of water, then any deviation from the norm would indicate some fluctuation taking place within the population or some physical or chemical condition interacting with some segment of the population.

Relative conditions would also appear useful in detecting pollution or any condition that results in prolonged physiological stress on a segment of a fish population.

The tables of length-weight values for each species are arranged in alphabetical order by common name. The length used was total length. Conversion tables for inches-millimeters and grams-pounds are in the Appendix.

In the index to species, the arrangement is alphabetical using the common names of species followed by their scientific names as listed by the American Fisheries Society. One exception is *Cyprinus carpio*, which is listed as the common carp in accordance with world-wide usage. This is the scaled variety found in rivers and impoundments.

⁵ SWINGLE, H. S. AND W. E. SWINGLE. 1968. Problems in Dynamics of Fish Populations in Reservoirs. Proc. Reservoir Fishery Resources Symposium, Athens, Ga.

LENGTH-WEIGHT RELATIONSHIPS OF BIGMOUTH BUFFALO

mm.	$\hat{W}(gm.)$	mm.	$\hat{W}(gm.)$	mm.	$\hat{W}(gm.)$	mm.	$\hat{W}(gm.)$
68	5.3	69	5.5	70	5.7	71	6.0
72	6.2	73	6.5	74	6.8	75	7.0
76	7.3	77	7.6	78	7.9	79	8.2
80	8.5	81	8.9	82	9.2	83	9.5
84	9.9	85	10.2	86	10.6	87	11.0
88	11.3	89	11.7	90	12.1	91	12.5
92	12.9	93	13.3	94	13.8	95	14.2
96	14.7	97	15.1	98	15.6	99	16.1
100	16.6	101	17.1	102	17.6	103	18.1
104	18.6	105	19.1	106	19.7	107	20.2
108	20.8	109	21.4	110	22.0	111	22.6
112	23.2	113	23.8	114	24.4	115	25.1
116	25.7	117	26.4	118	27.1	119	27.7
120	28.4	121	29.2	122	29.9	123	30.6
124	31.4	125	32.1	126	32.9	127	33.7
128	34.4	129	35.3	130	36.1	131	36.9
132	37.7	133	38.6	134	39.5	135	40.3
136	41.2	137	42.1	138	43.1	139	44.0
140	44.9	141	45.9	142	46.9	143	47.9
144	48.9	145	49.9	146	50.9	147	51.9
148	53.0	149	54.1	150	55.2	151	56.3
152	57.4	153	58.5	154	59.6	155	60.8
156	62.0	157	63.2	158	64.4	159	65.6
160	66.8	161	68.1	162	69.3	163	70.6
164	71.9	165	73.2	166	74.5	167	75.9
168	77.2	169	78.6	170	80.0	171	81.4
172	82.8	173	84.2	174	85.7	175	87.2
176	88.6	177	90.2	178	91.7	179	93.2
180	94.8	181	96.3	182	97.9	183	99.5
184	101.1	185	102.8	186	104.4	187	106.1
188	107.8	189	109.5	190	111.3	191	113.0
192	114.8	193	116.6	194	118.4	195	120.2
196	122.0	197	123.9	198	125.7	199	127.6
200	129.6	201	131.5	202	133.4	203	135.4
204	137.4	205	139.4	206	141.4	207	143.5
208	145.5	209	147.6	210	149.7	211	151.9
212	154.0	213	156.2	214	158.4	215	160.6
216	162.8	217	165.0	218	167.3	219	169.6
220	171.9	221	174.2	222	176.6	223	179.0
224	181.4	225	183.8	226	186.2	227	188.7
228	191.1	229	193.6	230	196.2	231	198.7
232	201.3	233	203.8	234	206.5	235	209.1
236	211.7	237	214.4	238	217.1	239	219.8
240	222.6	241	225.3	242	228.1	243	230.9
244	233.8	245	236.6	246	239.5	247	242.4
248	245.3	249	248.3	250	251.2	251	254.2
252	257.2	253	260.3	254	263.3	255	266.4
256	269.5	257	272.7	258	275.8	259	279.0
260	282.2	261	285.5	262	288.7	263	292.0
264	295.3	265	298.7	266	302.0	267	305.4
268	308.8	269	312.2	270	315.7	271	319.2
272	322.7	273	326.2	274	329.8	275	333.4
276	337.0	277	340.6	278	344.3	279	348.0
280	351.7	281	355.4	282	359.2	283	363.0
284	366.8	285	370.6	286	374.5	287	378.4
288	382.3	289	386.3	290	390.3	291	394.3

(Cont.)

LENGTH-WEIGHT RELATIONSHIPS OF BIGMOUTH BUFFALO (Cont.)

292	398.3	293	402.4	294	406.5	295	410.6
296	414.7	297	418.9	298	423.1	299	427.3
300	431.6	301	435.9	302	440.2	303	444.5
304	448.9	305	453.3	306	457.7	307	462.2
308	466.7	309	471.2	310	475.7	311	480.3
312	484.9	313	489.5	314	494.2	315	498.8
316	503.6	317	508.3	318	513.1	319	517.9
320	522.7	321	527.6	322	532.5	323	537.4
324	542.4	325	547.3	326	552.3	327	557.4
328	562.5	329	567.6	330	572.7	331	577.9
332	583.1	333	588.3	334	593.6	335	598.8
336	604.2	337	609.5	338	614.9	339	620.3
340	625.8	341	631.2	342	636.8	343	642.3
344	647.9	345	653.5	346	659.1	347	664.8
348	670.5	349	676.2	350	682.0	351	687.8
352	693.6	353	699.5	354	705.4	355	711.3
356	717.3	357	723.3	358	729.3	359	735.4
360	741.5	361	747.6	362	753.8	363	760.0
364	766.2	365	772.4	366	778.7	367	785.1
368	791.4	369	797.8	370	804.3	371	810.7
372	817.2	373	823.8	374	830.4	375	837.0
376	843.6	377	850.3	378	857.0	379	863.7
380	870.5	381	877.3	382	884.2	383	891.1
384	898.0	385	905.0	386	912.0	387	919.0
388	926.1	389	933.2	390	940.3	391	947.5
392	954.7	393	961.9	394	969.2	395	976.5
396	983.9	397	991.3	398	998.7	399	1,006.2
400	1,013.7	401	1,021.2	402	1,028.8	403	1,036.4
404	1,044.1	405	1,051.7	406	1,059.5	407	1,067.2
408	1,075.0	409	1,082.9	410	1,090.8	411	1,098.7
412	1,106.6	413	1,114.6	414	1,122.6	415	1,130.7
416	1,138.8	417	1,147.0	418	1,155.1	419	1,163.4
420	1,171.6	421	1,179.9	422	1,188.3	423	1,196.6
424	1,205.0	425	1,213.5	426	1,222.0	427	1,230.5
428	1,239.1	429	1,247.7	430	1,256.4	431	1,265.1
432	1,273.8	433	1,282.6	434	1,291.4	435	1,300.2
436	1,309.1	437	1,318.1	438	1,327.0	439	1,336.0
440	1,345.1	441	1,354.2	442	1,363.3	443	1,372.5
444	1,381.7	445	1,391.0	446	1,400.3	447	1,409.6
448	1,419.0	449	1,428.4	450	1,437.9	451	1,447.4
452	1,456.9	453	1,466.5	454	1,476.1	455	1,485.8
456	1,495.5	457	1,505.3	458	1,515.1	459	1,524.9
460	1,534.8	461	1,544.7	462	1,554.7	463	1,564.7
464	1,574.7	465	1,584.8	466	1,595.0	467	1,605.1
468	1,615.4	469	1,625.6	470	1,635.9	471	1,646.3
472	1,656.7	473	1,667.1	474	1,677.6	475	1,688.1
476	1,698.7	477	1,709.3	478	1,720.0	479	1,730.7
480	1,741.4	481	1,752.2	482	1,763.1	483	1,773.9
484	1,784.9	485	1,795.8	486	1,806.8	487	1,817.9
488	1,829.0	489	1,840.1	490	1,851.3	491	1,862.6
492	1,873.9	493	1,885.2	494	1,896.6	495	1,908.0
496	1,919.4	497	1,930.9	498	1,942.5	499	1,954.1
500	1,965.7	501	1,977.4	502	1,989.2	503	2,001.0
504	2,012.8	505	2,024.7	506	2,036.6	507	2,048.6
508	2,060.6	509	2,072.6	510	2,084.7	511	2,096.9
512	2,109.1	513	2,121.3	514	2,133.6	515	2,146.0
516	2,158.4	517	2,170.8	518	2,183.3	519	2,195.8
520	2,208.4	521	2,221.0	522	2,233.7	523	2,246.4
524	2,259.2	525	2,272.0	526	2,284.9	527	2,297.8

(Cont.)

LENGTH-WEIGHT RELATIONSHIPS OF BIGMOUTH BUFFALO (Cont.)

528	2,310.8	529	2,323.8	530	2,336.9	531	2,350.0
532	2,363.1	533	2,376.3	534	2,389.6	535	2,402.9
536	2,416.3	537	2,429.7	538	2,443.1	539	2,456.6
540	2,470.2	541	2,483.8				

LENGTH-WEIGHT RELATIONSHIPS OF BLACK CRAPPIE

mm.	\hat{W} (gm.)	mm.	\hat{W} (gm.)	mm.	\hat{W} (gm.)	mm.	\hat{W} (gm.)
38	0.7	39	0.8	40	0.8	41	0.9
42	0.9	43	1.0	44	1.1	45	1.2
46	1.2	47	1.3	48	1.4	49	1.5
50	1.6	51	1.7	52	1.8	53	1.9
54	2.0	55	2.1	56	2.2	57	2.3
58	2.5	59	2.6	60	2.7	61	2.9
62	3.0	63	3.2	64	3.3	65	3.5
66	3.6	67	3.8	68	4.0	69	4.1
70	4.3	71	4.5	72	4.7	73	4.9
74	5.1	75	5.3	76	5.5	77	5.7
78	5.9	79	6.2	80	6.4	81	6.6
82	6.9	83	7.1	84	7.4	85	7.7
86	7.9	87	8.2	88	8.5	89	8.8
90	9.1	91	9.4	92	9.7	93	10.0
94	10.3	95	10.7	96	11.0	97	11.4
98	11.7	99	12.1	100	12.4	101	12.8
102	13.2	103	13.6	104	14.0	105	14.4
106	14.8	107	15.2	108	15.6	109	16.1
110	16.5	111	16.9	112	17.4	113	17.9
114	18.3	115	18.8	116	19.3	117	19.8
118	20.3	119	20.8	120	21.4	121	21.9
122	22.4	123	23.0	124	23.5	125	24.1
126	24.7	127	25.3	128	25.9	129	26.5
130	27.1	131	27.7	132	28.3	133	29.0
134	29.6	135	30.3	136	31.0	137	31.7
138	32.3	139	33.0	140	33.8	141	34.5
142	35.2	143	36.0	144	36.7	145	37.5
146	38.2	147	39.0	148	39.8	149	40.6
150	41.4	151	42.3	152	43.1	153	43.9
154	44.8	155	45.7	156	46.6	157	47.4
158	48.3	159	49.3	160	50.2	161	51.1
162	52.1	163	53.0	164	54.0	165	55.0
166	56.0	167	57.0	168	58.0	169	59.0
170	60.1	171	61.1	172	62.2	173	63.3
174	64.4	175	65.5	176	66.6	177	67.7
178	68.9	179	70.0	180	71.2	181	72.4
182	73.6	183	74.8	184	76.0	185	77.2
186	78.5	187	79.8	188	81.0	189	82.3
190	83.6	191	84.9	192	86.3	193	87.6
194	88.9	195	90.3	196	91.7	197	93.1
198	94.5	199	95.9	200	97.4	201	98.8
202	100.3	203	101.8	204	103.3	205	104.8
206	106.3	207	107.8	208	109.4	209	111.0
210	112.6	211	114.2	212	115.8	213	117.4

(Cont.)

LENGTH-WEIGHT RELATIONSHIPS OF BLACK CRAPPIE (Cont.)

214	119.0	215	120.7	216	122.4	217	124.1
218	125.8	219	127.5	220	129.2	221	131.0
222	132.8	223	134.5	224	136.3	225	138.1
226	140.0	227	141.8	228	143.7	229	145.6
230	147.5	231	149.4	232	151.3	233	153.3
234	155.2	235	157.2	236	159.2	237	161.2
238	163.2	239	165.3	240	167.3	241	169.4
242	171.5	243	173.6	244	175.8	245	177.9
246	180.1	247	182.3	248	184.5	249	186.7
250	188.9	251	191.2	252	193.4	253	195.7
254	198.0	255	200.4	256	202.7	257	205.1
258	207.4	259	209.8	260	212.2	261	214.7
262	217.1	263	219.6	264	222.1	265	224.6
266	227.1	267	229.7	268	232.2	269	234.8
270	237.4	271	240.0	272	242.7	273	245.3
274	248.0	275	250.7	276	253.4	277	256.2
278	258.9	279	261.7	280	264.5	281	267.3
282	270.2	283	273.0	284	275.9	285	278.8
286	281.7	287	284.6	288	287.6	289	290.6
290	293.6	291	296.6	292	299.6		

LENGTH-WEIGHT RELATIONSHIPS OF BLACKTAIL REDHORSE

mm.	$\hat{W}(gm.)$	mm.	$\hat{W}(gm.)$	mm.	$\hat{W}(gm.)$	mm.	$\hat{W}(gm.)$
89	7.9	90	8.1	91	8.4	92	8.7
93	9.0	94	9.3	95	9.6	96	9.9
97	10.2	98	10.5	99	10.8	100	11.1
101	11.5	102	11.8	103	12.2	104	12.5
105	12.9	106	13.2	107	13.6	108	14.0
109	14.4	110	14.8	111	15.2	112	15.6
113	16.0	114	16.4	115	16.9	116	17.3
117	17.7	118	18.2	119	18.7	120	19.1
121	19.6	122	20.1	123	20.6	124	21.1
125	21.6	126	22.1	127	22.6	128	23.2
129	23.7	130	24.3	131	24.8	132	25.4
133	26.0	134	26.5	135	27.1	136	27.7
137	28.4	138	29.0	139	29.6	140	30.2
141	30.9	142	31.5	143	32.2	144	32.9
145	33.6	146	34.2	147	35.0	148	35.7
149	36.4	150	37.1	151	37.9	152	38.6
153	39.4	154	40.1	155	40.9	156	41.7
157	42.5	158	43.3	159	44.1	160	45.0
161	45.8	162	46.6	163	47.5	164	48.4
165	49.3	166	50.1	167	51.0	168	52.0
169	52.9	170	53.8	171	54.8	172	55.7
173	56.7	174	57.7	175	58.7	176	59.7
177	60.7	178	61.7	179	62.7	180	63.8
181	64.8	182	65.9	183	67.0	184	68.1
185	69.2	186	70.3	187	71.4	188	72.6
189	73.7	190	74.9	191	76.1	192	77.3
193	78.5	194	79.7	195	80.9	196	82.1
197	83.4	198	84.6	199	85.9	200	87.2
201	88.5	202	89.8	203	91.2	204	92.5

(Cont.)

LENGTH-WEIGHT RELATIONSHIPS OF BLACKTAIL REDHORSE (Cont.)

205	93.8	206	95.2	207	96.6	208	98.0
209	99.4	210	100.8	211	102.2	212	103.7
213	105.1	214	106.6	215	108.1	216	109.6
217	111.1	218	112.7	219	114.2	220	115.7
221	117.3	222	118.9	223	120.5	224	122.1
225	123.7	226	125.4	227	127.0	228	128.7
229	130.4	230	132.1	231	133.8	232	135.5
233	137.3	234	139.0	235	140.8	236	142.6
237	144.4	238	146.2	239	148.0	240	149.9
241	151.7	242	153.6	243	155.5	244	157.4
245	159.3	246	161.3	247	163.2	248	165.2
249	167.2	250	169.2	251	171.2	252	173.3
253	175.3	254	177.4	255	179.5	256	181.5
257	183.7	258	185.8	259	187.9	260	190.1
261	192.3	262	194.5	263	196.7	264	198.9
265	201.2	266	203.4	267	205.7	268	208.0
269	210.3	270	212.7	271	215.0	272	217.4
273	219.7	274	222.1	275	224.6	276	227.0
277	229.4	278	231.9	279	234.4	280	236.9
281	239.4	282	242.0	283	244.5	284	247.1
285	249.7	286	252.3	287	254.9	288	257.6
289	260.2	290	262.9	291	265.6	292	268.4
293	271.1	294	273.9	295	276.6	296	279.4
297	282.2	298	285.1	299	287.9	300	290.8
301	293.7	302	296.6	303	299.5	304	302.5
305	305.4	306	308.4	307	311.4	308	314.4
309	317.5	310	320.5	311	323.6	312	326.7
313	329.8	314	333.0	315	336.1	316	339.3
317	342.5	318	345.7	319	349.0	320	352.2
321	355.5	322	358.8	323	362.1	324	365.5
325	368.8	326	372.2	327	375.6	328	379.0
329	382.5	330	385.9	331	389.4	332	392.9
333	396.4	334	400.0	335	403.6	336	407.1
337	410.8	338	414.4	339	418.0	340	421.7
341	425.4	342	429.1	343	432.9	344	436.6
345	440.4	346	444.2	347	448.0	348	451.9
349	455.7	350	459.6	351	463.5	352	467.5
353	471.4	354	475.4	355	479.4	356	483.4
357	487.5	358	491.5	359	495.6	360	499.7
361	503.9	362	508.0	363	512.2	364	516.4
365	520.6	366	524.9	367	529.2	368	533.4
369	537.8	370	542.1	371	546.5	372	550.9
373	555.3	374	559.7	375	564.1	376	568.6
377	573.1	378	577.7	379	582.2	380	586.8
381	591.4	382	596.0	383	600.7	384	605.3
385	610.0	386	614.7	387	619.5	388	624.2
389	629.0	390	633.8	391	638.7	392	643.5
393	648.4	394	653.3	395	658.3	396	663.2
397	668.2	398	673.2	399	678.3	400	683.3
401	688.4	402	693.5	403	698.7	404	703.8
405	709.0	406	714.2	407	719.5	408	724.7
409	730.0	410	735.3	411	740.7	412	746.0
413	751.4	414	756.9	415	762.3	416	767.8
417	773.3	418	778.8	419	784.3	420	789.9
421	795.5	422	801.1	423	806.8	424	812.5
425	818.2	426	823.9	427	829.6	428	835.4
429	841.2	430	847.1	431	852.9	432	858.8
433	864.7	434	870.7	435	876.7	436	882.7
437	888.7	438	894.7	439	900.8	440	906.9

(Cont.)

LENGTH-WEIGHT RELATIONSHIPS OF BLACKTAIL REDHORSE (Cont.)

441	913.1	442	919.2	443	925.4	444	931.6
445	937.9	446	944.2	447	950.5	448	956.8
449	963.1	450	969.5	451	975.9	452	982.4
453	988.9	454	995.4	455	1,001.9	456	1,008.4
457	1,015.0	458	1,021.6	459	1,028.3	460	1,034.9
461	1,041.6	462	1,048.4	463	1,055.1	464	1,061.9
465	1,068.7	466	1,075.5	467	1,082.4	468	1,089.3
469	1,096.2	470	1,103.2	471	1,110.2	472	1,117.2
473	1,124.2	474	1,131.3	475	1,138.4	476	1,145.5
477	1,152.7	478	1,159.9	479	1,167.1	480	1,174.4
481	1,181.7	482	1,189.0	483	1,196.3	484	1,203.7
485	1,211.1	486	1,218.5	487	1,226.0	488	1,233.5
489	1,241.0	490	1,248.5	491	1,256.1	492	1,263.7
493	1,271.4	494	1,279.1	495	1,286.8	496	1,294.5
497	1,302.3	498	1,310.1	499	1,317.9	500	1,325.8
501	1,333.6	502	1,341.6	503	1,349.5	504	1,357.5
505	1,365.5	506	1,373.6	507	1,381.6	508	1,389.7
509	1,397.9	510	1,406.1	511	1,414.3	512	1,422.5
513	1,430.8	514	1,439.1	515	1,447.4	516	1,455.8
517	1,464.2	518	1,472.6	519	1,481.0	520	1,489.5
521	1,498.1						

LENGTH-WEIGHT RELATIONSHIPS OF BLUE CATFISH

mm.	$\hat{W}(gm.)$	mm.	$\hat{W}(gm.)$	mm.	$\hat{W}(gm.)$	mm.	$\hat{W}(gm.)$
38	0.5	39	0.6	40	0.6	41	0.7
42	0.7	43	0.8	44	0.8	45	0.9
46	0.9	47	1.0	48	1.1	49	1.1
50	1.2	51	1.3	52	1.3	53	1.4
54	1.5	55	1.6	56	1.7	57	1.8
58	1.8	59	1.9	60	2.0	61	2.1
62	2.2	63	2.4	64	2.5	65	2.6
66	2.7	67	2.8	68	2.9	69	3.1
70	3.2	71	3.3	72	3.5	73	3.6
74	3.8	75	3.9	76	4.1	77	4.2
78	4.4	79	4.6	80	4.7	81	4.9
82	5.1	83	5.3	84	5.5	85	5.7
86	5.9	87	6.1	88	6.3	89	6.5
90	6.7	91	6.9	92	7.2	93	7.4
94	7.6	95	7.9	96	8.1	97	8.4
98	8.6	99	8.9	100	9.2	101	9.4
102	9.7	103	10.0	104	10.3	105	10.6
106	10.9	107	11.2	108	11.5	109	11.8
110	12.1	111	12.4	112	12.8	113	13.1
114	13.5	115	13.8	116	14.2	117	14.5
118	14.9	119	15.3	120	15.6	121	16.0
122	16.4	123	16.8	124	17.2	125	17.6
126	18.1	127	18.5	128	18.9	129	19.3
130	19.8	131	20.2	132	20.7	133	21.2
134	21.6	135	22.1	136	22.6	137	23.1
138	23.6	139	24.1	140	24.6	141	25.1
142	25.7	143	26.2	144	26.7	145	27.3
146	27.8	147	28.4	148	29.0	149	29.6

(Cont.)

LENGTH-WEIGHT RELATIONSHIPS OF BLUE CATFISH (Cont.)

150	30.1	151	30.7	152	31.3	153	32.0
154	32.6	155	33.2	156	33.8	157	34.5
158	35.1	159	35.8	160	36.4	161	37.1
162	37.8	163	38.5	164	39.2	165	39.9
166	40.6	167	41.3	168	42.1	169	42.8
170	43.6	171	44.3	172	45.1	173	45.9
174	46.6	175	47.4	176	48.2	177	49.0
178	49.9	179	50.7	180	51.5	181	52.4
182	53.2	183	54.1	184	55.0	185	55.9
186	56.7	187	57.6	188	58.6	189	59.5
190	60.4	191	61.3	192	62.3	193	63.3
194	64.2	195	65.2	196	66.2	197	67.2
198	68.2	199	69.2	200	70.2	201	71.3
202	72.3	203	73.4	204	74.4	205	75.5
206	76.6	207	77.7	208	78.8	209	79.9
210	81.1	211	82.2	212	83.4	213	84.5
214	85.7	215	86.9	216	88.1	217	89.3
218	90.5	219	91.7	220	93.0	221	94.2
222	95.5	223	96.7	224	98.0	225	99.3
226	100.6	227	101.9	228	103.2	229	104.6
230	105.9	231	107.3	232	108.7	233	110.0
234	111.4	235	112.8	236	114.3	237	115.7
238	117.1	239	118.6	240	120.1	241	121.5
242	123.0	243	124.5	244	126.0	245	127.6
246	129.1	247	130.6	248	132.2	249	133.8
250	135.4	251	137.0	252	138.6	253	140.2
254	141.8	255	143.5	256	145.1	257	146.8
258	148.5	259	150.2	260	151.9	261	153.6
262	155.4	263	157.1	264	158.9	265	160.7
266	162.4	267	164.2	268	166.1	269	167.9
270	169.7	271	171.6	272	173.5	273	175.3
274	177.2	275	179.1	276	181.1	277	183.0
278	184.9	279	186.9	280	188.9	281	190.9
282	192.9	283	194.9	284	196.9	285	199.0
286	201.0	287	203.1	288	205.2	289	207.3
290	209.4	291	211.5	292	213.7	293	215.8
294	218.0	295	220.2	296	222.4	297	224.6
298	226.9	299	229.1	300	231.4	301	233.6
302	235.9	303	238.2	304	240.5	305	242.9
306	245.2	307	247.6	308	250.0	309	252.4
310	254.8	311	257.2	312	259.6	313	262.1
314	264.6	315	267.0	316	269.5	317	269.1
318	271.9	319	274.8	320	277.7	321	280.7
322	283.6	323	286.6	324	289.6	325	292.6
326	295.6	327	298.7	328	301.8	329	304.9
330	308.0	331	311.1	332	314.3	333	317.5
334	320.7	335	323.9	336	327.2	337	330.5
338	333.8	339	337.1	340	340.5	341	343.9
342	347.3	343	350.7	344	354.1	345	357.6
346	361.1	347	364.6	348	368.2	349	371.7
350	375.3	351	378.9	352	382.6	353	386.2
354	389.9	355	393.6	356	397.4	357	401.1
358	404.9	359	408.7	360	412.6	361	416.4
362	420.3	363	424.2	364	428.2	365	432.1
366	436.1	367	440.2	368	444.2	369	448.3
370	452.4	371	456.5	372	460.6	373	464.8
374	469.0	375	473.2	376	477.5	377	481.8
378	486.1	379	490.4	380	494.8	381	499.2
382	503.6	383	508.0	384	512.5	385	517.0

(Cont.)

LENGTH-WEIGHT RELATIONSHIPS OF BLUE CATFISH (Cont.)

386	521.5	387	526.1	388	530.6	389	535.3
390	539.9	391	544.6	392	549.2	393	554.0
394	558.7	395	563.5	396	568.3	397	573.1
398	578.0	399	582.9	400	587.8	401	592.8
402	597.8	403	602.8	404	607.8	405	612.9
406	618.0	407	623.1	408	628.3	409	633.5
410	638.7	411	643.9	412	649.2	413	654.5
414	659.9	415	665.2	416	670.6	417	676.1
418	681.5	419	687.0	420	692.5	421	698.1
422	703.7	423	709.3	424	715.0	425	720.6
426	726.3	427	732.1	428	737.9	429	743.7
430	749.5	431	755.4	432	761.3	433	767.2
434	773.2	435	779.2	436	785.2	437	791.3
438	797.4	439	803.5	440	809.7	441	815.9
442	822.1	443	828.4	444	834.7	445	841.0
446	847.4	447	853.8	448	860.2	449	866.7
450	873.2	451	879.8	452	886.3	453	892.9
454	899.6	455	906.2	456	913.0	457	919.7
458	926.5	459	933.3	460	940.1	461	947.0
462	953.9	463	960.9	464	967.9	465	974.9
466	982.0	467	989.1	468	996.2	469	1,003.4
470	1,010.6	471	1,017.8	472	1,025.1	473	1,032.4
474	1,039.8	475	1,047.2	476	1,054.6	477	1,062.1
478	1,069.6	479	1,077.1	480	1,084.7	481	1,092.3
482	1,099.9	483	1,107.6	484	1,115.3	485	1,123.1
486	1,130.9	487	1,138.7	488	1,146.6	489	1,154.5
490	1,162.5	491	1,170.5	492	1,178.5	493	1,186.6
494	1,194.7	495	1,202.8	496	1,211.0	497	1,219.2
498	1,227.5	499	1,235.8	500	1,244.1	501	1,252.5
502	1,260.9	503	1,269.4	504	1,277.9	505	1,286.4
506	1,295.0	507	1,303.6	508	1,312.3	509	1,321.0
510	1,329.7	511	1,338.5	512	1,347.3	513	1,356.2
514	1,365.1	515	1,374.0	516	1,383.0	517	1,392.1
518	1,401.1	519	1,410.2	520	1,419.4	521	1,428.6
522	1,437.8	523	1,447.1	524	1,456.4	525	1,465.8
526	1,475.2	527	1,484.6	528	1,494.1	529	1,503.6
530	1,513.2	531	1,522.8	532	1,532.5	533	1,542.2
534	1,551.9	535	1,561.7	536	1,571.5	537	1,581.4
538	1,591.3	539	1,601.3	540	1,611.3	541	1,621.3
542	1,631.4	543	1,641.6	544	1,651.7	545	1,662.0
546	1,672.2	547	1,682.5	548	1,692.9	549	1,703.3
550	1,713.7	551	1,724.2	552	1,734.8	553	1,745.4
554	1,756.0	555	1,766.7	556	1,777.4	557	1,788.1
558	1,798.9	559	1,809.8	560	1,820.7	561	1,831.6
562	1,842.6	563	1,853.7	564	1,864.8	565	1,875.9
566	1,887.1	567	1,898.3	568	1,909.6	569	1,920.9
570	1,932.3	571	1,943.7	572	1,955.1	573	1,966.6
574	1,978.2	575	1,989.8	576	2,001.5	577	2,013.2
578	2,024.9	579	2,036.7	580	2,048.5	581	2,060.4
582	2,072.4	583	2,084.4	584	2,096.4	585	2,108.5
586	2,120.6	587	2,132.8	588	2,145.0	589	2,157.3
590	2,169.7	591	2,182.0	592	2,194.5	593	2,206.9
594	2,219.5	595	2,232.1	596	2,244.7	597	2,257.4
598	2,270.1	599	2,282.9	600	2,295.7	601	2,308.6
602	2,321.5	603	2,334.5	604	2,347.5	605	2,360.6
606	2,373.8	607	2,386.9	608	2,400.2	609	2,413.5
610	2,426.8	611	2,440.2	612	2,453.6	613	2,467.1
614	2,480.7	615	2,494.3	616	2,507.0	617	2,521.7
618	2,535.4	619	2,549.2	620	2,563.1	621	2,577.0
622	2,591.0						

LENGTH-WEIGHT RELATIONSHIPS OF BLUEGILL

<i>mm.</i>	$\hat{W}(gm.)$	<i>mm.</i>	$\hat{W}(gm.)$	<i>mm.</i>	$\hat{W}(gm.)$	<i>mm.</i>	$\hat{W}(gm.)$
38	0.9	39	1.0	40	1.1	41	1.2
42	1.3	43	1.3	44	1.4	45	1.5
46	1.7	47	1.8	48	1.9	49	2.0
50	2.1	51	2.3	52	2.4	53	2.6
54	2.7	55	2.9	56	3.0	57	3.2
58	3.4	59	3.6	60	3.7	61	3.9
62	4.1	63	4.3	64	4.6	65	4.8
66	5.0	67	5.2	68	5.5	69	5.7
70	6.0	71	6.3	72	6.5	73	6.8
74	7.1	75	7.4	76	7.7	77	8.0
78	8.4	79	8.7	80	9.0	81	9.4
82	9.8	83	10.1	84	10.5	85	10.9
86	11.3	87	11.7	88	12.1	89	12.5
90	13.0	91	13.4	92	13.9	93	14.4
94	14.8	95	15.3	96	15.8	97	16.3
98	16.9	99	17.4	100	17.9	101	18.5
102	19.1	103	19.6	104	20.2	105	20.8
106	21.5	107	22.1	108	22.7	109	23.4
110	24.0	111	24.7	112	25.4	113	26.1
114	26.8	115	27.6	116	28.3	117	29.1
118	29.8	119	30.6	120	31.4	121	32.2
122	33.0	123	33.9	124	34.7	125	35.6
126	36.5	127	37.4	128	38.3	129	39.2
130	40.2	131	41.1	132	42.1	133	43.1
134	44.1	135	45.1	136	46.1	137	47.2
138	48.2	139	49.3	140	50.4	141	51.5
142	52.7	143	53.8	144	55.0	145	56.1
146	57.3	147	58.6	148	59.8	149	61.0
150	62.3	151	63.6	152	64.9	153	66.2
154	67.6	155	68.9	156	70.3	157	71.7
158	73.1	159	74.5	160	76.0	161	77.4
162	78.9	163	80.4	164	81.9	165	83.5
166	86.9	167	88.5	168	90.0	169	91.6
170	93.2	171	94.9	172	96.5	173	98.2
174	99.9	175	101.6	176	103.3	177	105.0
178	106.8	179	108.6	180	110.4	181	112.2
182	114.0	183	115.9	184	117.8	185	119.7
186	121.6	187	123.5	188	125.5	189	127.4
190	129.4	191	131.5	192	133.5	193	135.6
194	137.7	195	139.8	196	141.9	197	144.0
198	146.2	199	148.4	200	150.6	201	152.8
202	155.1	203	157.4	204	159.7	205	162.0
206	164.3	207	166.7	208	169.1	209	171.5
210	173.9	211	176.4	212	178.8	213	181.3
214	183.9	215	186.4	216	189.0		

LENGTH-WEIGHT RELATIONSHIPS OF CHAIN PICKEREL

mm.	\hat{W} (gm.)	mm.	\hat{W} (gm.)	mm.	\hat{W} (gm.)	mm.	\hat{W} (gm.)
113	6.6	114	6.8	115	7.0	116	7.2
117	7.4	118	7.6	119	7.8	120	8.0
121	8.2	122	8.4	123	8.6	124	8.8
125	9.1	126	9.3	127	9.5	128	9.8
129	10.0	130	10.2	131	10.5	132	10.7
133	11.0	134	11.3	135	11.5	136	11.8
137	12.1	138	12.4	139	12.6	140	12.9
141	13.2	142	13.5	143	13.8	144	14.1
145	14.4	146	14.7	147	15.1	148	15.4
149	15.7	150	16.1	151	16.4	152	16.7
153	17.1	154	17.4	155	17.8	156	18.2
157	18.5	158	18.9	159	19.3	160	19.7
161	20.0	162	20.4	163	20.8	164	21.2
165	21.7	166	22.1	167	22.5	168	22.9
169	23.3	170	23.8	171	24.2	172	24.7
173	25.1	174	25.6	175	26.0	176	26.5
177	27.0	178	27.5	179	28.0	180	28.5
181	29.0	182	29.5	183	30.0	184	30.5
185	31.0	186	31.5	187	32.1	188	32.6
189	33.2	190	33.7	191	34.3	192	34.8
193	35.4	194	36.0	195	36.6	196	37.2
197	37.8	198	38.4	199	39.0	200	39.6
201	40.2	202	40.9	203	41.5	204	42.2
205	42.8	206	43.5	207	44.1	208	44.8
209	45.5	210	46.2	211	46.9	212	47.6
213	48.3	214	49.0	215	49.7	216	50.4
217	51.2	218	51.9	219	52.7	220	53.4
221	54.2	222	55.0	223	55.8	224	56.5
225	57.3	226	58.1	227	59.0	228	59.8
229	60.6	230	61.4	231	62.3	232	63.1
233	64.0	234	64.9	235	65.7	236	66.6
237	67.5	238	68.4	239	69.3	240	70.2
241	71.1	242	72.1	243	73.0	244	74.0
245	74.9	246	75.9	247	76.9	248	77.8
249	78.8	250	79.8	251	80.8	252	81.8
253	82.9	254	83.9	255	84.9	256	86.0
257	87.1	258	88.1	259	89.2	260	90.3
261	91.4	262	92.5	263	93.6	264	94.7
265	95.8	266	97.0	267	98.1	268	99.3
269	100.5	270	101.6	271	102.8	272	104.0
273	105.2	274	106.4	275	107.7	276	108.9
277	110.1	278	111.4	279	112.7	280	113.9
281	115.2	282	116.5	283	117.8	284	119.1
285	120.4	286	121.8	287	123.1	288	124.5
289	125.8	290	127.2	291	128.6	292	130.0
293	131.4	294	132.8	295	134.2	296	135.7
297	137.1	298	138.6	299	140.0	300	141.5
301	143.0	302	144.5	303	146.0	304	147.5
305	149.0	306	150.6	307	152.1	308	153.7
309	155.3	310	156.8	311	158.4	312	160.0
313	161.7	314	163.3	315	164.9	316	166.6
317	168.2	318	169.9	319	171.6	320	173.3
321	175.0	322	176.7	323	178.4	324	180.2
325	181.9	326	183.7	327	185.5	328	187.3
329	189.1	330	190.9	331	192.7	332	194.5
333	196.4	334	198.2	335	200.1	336	202.0

(Cont.)

LENGTH-WEIGHT RELATIONSHIPS OF CHAIN PICKEREL (Cont.)

337	203.9	338	205.8	339	207.7	340	209.6
341	211.6	342	213.5	343	215.5	344	217.5
345	219.5	346	221.5	347	223.5	348	225.5
349	227.5	350	229.6	351	231.7	352	233.7
353	235.8	354	237.9	355	240.1	356	242.2
357	244.3	358	246.5	359	248.6	360	250.8
361	253.0	362	255.2	363	257.5	364	259.7
365	261.9	366	264.2	367	266.5	368	268.8
369	271.1	370	273.4	371	275.7	372	278.0
373	280.4	374	282.8	375	285.1	376	287.5
377	289.9	378	292.4	379	294.8	380	297.2
381	299.7	382	302.2	383	304.7	384	307.2
385	309.7	386	312.2	387	314.8	388	317.3
389	319.9	390	322.5	391	325.1	392	327.7
393	330.4	394	333.0	395	335.7	396	338.3
397	341.0	398	343.7	399	346.5	400	349.2
401	351.9	402	354.7	403	357.5	404	360.3
405	363.1	406	365.9	407	368.7	408	371.6
409	374.5	410	377.3	411	380.2	412	383.1
413	386.1	414	389.0	415	392.0	416	395.0
417	397.9	418	400.9	419	404.0		

LENGTH-WEIGHT RELATIONSHIPS OF CHANNEL CATFISH

mm.	$\hat{W}/gm.$	mm.	$\hat{W}/gm.$	mm.	$\hat{W}/gm.$	mm.	$\hat{W}/gm.$
63	2.0	64	2.1	65	2.2	66	2.3
67	2.5	68	2.6	69	2.7	70	2.8
71	2.9	72	3.0	73	3.2	74	3.3
75	3.4	76	3.5	77	3.7	78	3.8
79	4.0	80	4.1	81	4.3	82	4.4
83	4.6	84	4.8	85	4.9	86	5.1
87	5.3	88	5.5	89	5.6	90	5.8
91	6.0	92	6.2	93	6.4	94	6.6
95	6.8	96	7.1	97	7.3	98	7.5
99	7.7	100	8.0	101	8.2	102	8.4
103	8.7	104	8.9	105	9.2	106	9.4
107	9.7	108	10.0	109	10.2	110	10.5
111	10.8	112	11.1	113	11.4	114	11.7
115	12.0	116	12.3	117	12.6	118	12.9
119	13.3	120	13.6	121	13.9	122	14.3
123	14.6	124	15.0	125	15.3	126	15.7
127	16.1	128	16.4	129	16.8	130	17.2
131	17.6	132	18.0	133	18.4	134	18.8
135	19.2	136	19.6	137	20.1	138	20.5
139	20.9	140	21.4	141	21.8	142	22.3
143	22.8	144	23.2	145	23.7	146	24.2
147	24.7	148	25.2	149	25.7	150	26.2
151	26.7	152	27.2	153	27.8	154	28.3
155	28.9	156	29.4	157	30.0	158	30.5
159	31.1	160	31.7	161	32.3	162	32.9
163	33.5	164	34.1	165	34.7	166	35.3
167	35.9	168	36.6	169	37.2	170	37.9
171	38.5	172	39.2	173	39.9	174	40.5

(Cont.)

LENGTH-WEIGHT RELATIONSHIPS OF CHANNEL CATFISH (Cont.)

175	41.2	176	41.9	177	42.6	178	43.3
179	44.1	180	44.8	181	45.5	182	46.3
183	47.0	184	47.8	185	48.5	186	49.3
187	50.1	188	50.9	189	51.7	190	52.5
191	53.3	192	54.1	193	55.0	194	55.8
195	56.7	196	57.5	197	58.4	198	59.3
199	60.1	200	61.0	201	61.9	202	62.9
203	63.8	204	64.7	205	65.6	206	66.6
207	67.5	208	68.5	209	69.5	210	70.5
211	71.4	212	72.4	213	73.5	214	74.5
215	75.5	216	76.5	217	77.6	218	78.6
219	79.7	220	80.8	221	81.9	222	83.0
223	84.1	224	85.2	225	86.3	226	87.4
227	88.6	228	89.7	229	90.9	230	92.1
231	93.2	232	94.4	233	95.6	234	96.9
235	98.1	236	99.3	237	100.5	238	101.8
239	103.1	240	104.3	241	105.6	242	106.9
243	108.2	244	109.5	245	110.9	246	112.2
247	113.5	248	114.9	249	116.3	250	117.6
251	119.0	252	120.4	253	121.8	254	123.3
255	124.7	256	126.1	257	127.6	258	129.1
259	130.5	260	132.0	261	133.5	262	135.0
263	136.5	264	138.1	265	139.6	266	141.2
267	147.3	268	149.1	269	150.9	270	152.8
271	154.7	272	156.6	273	158.5	274	160.4
275	162.3	276	164.3	277	166.3	278	168.2
279	170.2	280	172.3	281	174.3	282	176.4
283	178.4	284	180.5	285	182.6	286	184.8
287	186.9	288	189.1	289	191.2	290	193.4
291	195.6	292	197.9	293	200.1	294	202.4
295	204.6	296	206.9	297	209.3	298	211.6
299	213.9	300	216.3	301	218.7	302	221.1
303	223.5	304	226.0	305	228.4	306	230.9
307	233.4	308	235.9	309	238.5	310	241.0
311	243.6	312	246.2	313	248.8	314	251.5
315	254.1	316	256.8	317	259.5	318	262.2
319	264.9	320	267.7	321	270.4	322	273.2
323	276.0	324	278.9	325	281.7	326	284.6
327	287.5	328	290.4	329	293.3	330	296.3
331	299.2	332	302.2	333	305.3	334	308.3
335	331.3	336	314.4	337	317.5	338	320.6
339	323.8	340	326.9	341	330.1	342	333.3
343	336.6	344	339.8	345	343.1	346	346.4
347	349.7	348	353.0	349	356.4	350	359.8
351	363.2	352	366.6	353	370.0	354	373.5
355	377.0	356	380.5	357	384.1	358	387.6
359	391.2	360	394.8	361	398.4	362	402.1
363	405.8	364	409.5	365	413.2	366	416.9
367	420.7	368	424.5	369	428.3	370	432.2
371	436.0	372	439.9	373	443.8	374	447.8
375	451.7	376	455.7	377	459.7	378	463.8
379	467.8	380	471.0	381	476.0	382	480.2
383	484.3	384	488.5	385	492.7	386	497.0
387	501.2	388	505.5	389	509.8	390	514.2
391	518.5	392	522.9	393	527.3	394	531.8
395	536.2	396	540.7	397	545.3	398	549.8
399	554.4	400	559.0	401	563.6	402	568.2
403	572.9	404	577.6	405	582.4	406	587.1
407	591.9	408	596.7	409	601.6	410	606.4

(Cont.)

LENGTH-WEIGHT RELATIONSHIPS OF CHANNEL CATFISH (Cont.)

411	611.3	412	616.2	413	621.2	414	626.2
415	631.2	416	636.2	417	641.3	418	646.4
419	651.5	420	656.6	421	661.8	422	667.0
423	672.2	424	677.5	425	682.8	426	688.1
427	693.4	428	698.9	429	704.2	430	709.6
431	715.1	432	720.6	433	726.1	434	731.7
435	737.2	436	742.8	437	748.5	438	754.1
439	759.8	440	765.6	441	771.3	442	777.1
443	782.9	444	788.8	445	794.7	446	800.6
447	806.5	448	812.5	449	818.5	450	824.5
451	830.6	452	836.7	453	842.8	454	848.9
455	855.1	456	861.3	457	867.6	458	873.9
459	880.2	460	886.5	461	892.9	462	899.3
463	905.8	464	912.2	465	918.7	466	925.3
467	931.8	468	938.4	469	945.1	470	951.7
471	958.4	472	965.2	473	971.9	474	978.7
475	985.6	476	992.4	477	999.3	478	1,006.2
479	1,013.2	480	1,020.2	481	1,027.2	482	1,034.3
483	1,041.4	484	1,048.5	485	1,055.7	486	1,062.9
487	1,070.1	488	1,077.4	489	1,084.7	490	1,092.0
491	1,099.4	492	1,106.8	493	1,114.3	494	1,121.7
495	1,129.2	496	1,136.8	497	1,144.4	498	1,152.0
499	1,159.6	500	1,167.3	501	1,175.0	502	1,182.8
503	1,190.6	504	1,198.4	505	1,206.3	506	1,214.2
507	1,222.1	508	1,230.1	509	1,238.1	510	1,246.2
511	1,254.2	512	1,262.4	513	1,270.5	514	1,278.7
515	1,286.9	516	1,295.2	517	1,303.5	518	1,311.8
519	1,320.2	520	1,328.6	521	1,337.1	522	1,345.6
523	1,354.1	524	1,362.7	525	1,371.3	526	1,379.9
527	1,388.6	528	1,397.3	529	1,406.0	530	1,414.8
531	1,423.6	532	1,432.5	533	1,441.4	534	1,450.4
535	1,459.3	536	1,468.4	537	1,477.4	538	1,486.5
539	1,495.7	540	1,504.8	541	1,514.1	542	1,523.3
543	1,532.6	544	1,541.9	545	1,551.3	546	1,560.7
547	1,570.2	548	1,579.7	549	1,589.2	550	1,598.8
551	1,608.4	552	1,618.0	553	1,627.7	554	1,637.5
555	1,647.2	556	1,657.1	557	1,666.9	558	1,676.8
559	1,686.7	560	1,696.7	561	1,706.7	562	1,716.8
563	1,726.9	564	1,737.1	565	1,747.2	566	1,757.5
567	1,767.7	568	1,778.0	569	1,788.4		

LENGTH-WEIGHT RELATIONSHIPS OF COMMON CARP

mm.	$\hat{W}(gm.)$	mm.	$\hat{W}(gm.)$	mm.	$\hat{W}(gm.)$	mm.	$\hat{W}(gm.)$
38	1.6	39	1.7	40	1.9	41	2.0
42	2.1	43	2.2	44	2.4	45	2.5
46	2.7	47	2.8	48	3.0	49	3.2
50	3.3	51	3.5	52	3.7	53	3.9
54	4.1	55	4.3	56	4.5	57	4.7
58	4.9	59	5.1	60	5.4	61	5.6
62	5.9	63	6.1	64	6.4	65	6.6
66	6.9	67	7.2	68	7.5	69	7.8
70	8.1	71	8.4	72	8.7	73	9.0
74	9.3	75	9.7	76	10.0	77	10.4
78	10.7	79	11.1	80	11.5	81	11.8
82	12.2	83	12.6	84	13.0	85	13.4
86	13.9	87	14.3	88	14.7	89	15.2
90	15.6	91	16.1	92	16.5	93	17.0
94	17.5	95	18.0	96	18.5	97	19.0
98	19.5	99	20.1	100	20.6	101	21.2
102	21.7	103	22.3	104	22.8	105	23.4
106	24.0	107	24.6	108	25.2	109	25.8
110	26.5	111	27.1	112	27.8	113	28.4
114	29.1	115	29.8	116	30.4	117	31.1
118	31.8	119	32.6	120	33.3	121	34.0
122	34.8	123	35.5	124	36.3	125	37.1
126	37.8	127	38.6	128	39.4	129	40.3
130	41.1	131	41.9	132	42.8	133	43.6
134	44.5	135	45.4	136	46.3	137	47.2
138	48.1	139	49.0	140	49.9	141	50.9
142	51.8	143	52.8	144	53.8	145	54.7
146	55.7	147	56.8	148	57.8	149	58.8
150	59.9	151	60.9	152	62.0	153	63.1
154	64.1	155	65.2	156	66.4	157	67.5
158	68.6	159	69.8	160	70.9	161	72.1
162	73.3	163	74.5	164	75.7	165	76.9
166	78.1	167	79.4	168	80.6	169	81.9
170	83.2	171	84.5	172	85.8	173	87.1
174	88.4	175	89.8	176	91.1	177	92.5
178	93.9	179	95.3	180	96.7	181	98.1
182	99.5	183	101.0	184	102.4	185	103.9
186	105.4	187	106.9	188	108.4	189	109.9
190	111.5	191	113.0	192	114.6	193	116.1
194	117.7	195	119.3	196	120.9	197	122.6
198	124.2	199	125.9	200	127.5	201	129.2
202	130.9	203	132.6	204	134.4	205	136.1
206	137.9	207	139.6	208	141.4	209	143.2
210	145.0	211	146.8	212	148.7	213	150.5
214	152.4	215	154.3	216	156.2	217	158.1
218	160.0	219	161.9	220	163.9	221	165.9
222	167.8	223	169.8	224	171.8	225	173.9
226	175.9	227	178.0	228	180.0	229	182.1
230	184.2	231	186.3	232	188.5	233	190.6
234	192.8	235	194.9	236	197.1	237	199.3
238	201.5	239	203.8	240	206.0	241	208.3
242	210.6	243	212.9	244	215.2	245	217.5
246	219.9	247	222.2	248	224.6	249	227.0
250	229.4	251	231.8	252	234.2	253	236.7
254	239.2	255	241.6	256	244.1	257	246.7
258	249.2	259	251.7	260	254.3	261	256.9
262	259.5	263	262.1	264	264.7	265	267.4

(Cont.)

LENGTH-WEIGHT RELATIONSHIPS OF COMMON CARP (Cont.)

266	270.0	267	272.7	268	275.4	269	278.1
270	280.8	271	283.6	272	286.3	273	289.1
274	291.9	275	294.7	276	297.6	277	300.4
278	303.3	279	306.1	280	309.0	281	311.9
282	314.9	283	317.8	284	320.8	285	323.8
286	326.7	287	329.8	288	332.8	289	335.8
290	338.9	291	342.0	292	345.1	293	348.2
294	351.3	295	354.5	296	357.7	297	360.8
298	364.0	299	367.3	300	370.5	301	373.8
302	377.0	303	380.3	304	383.6	305	387.0
306	390.3	307	393.7	308	397.1	309	400.5
310	403.9	311	407.3	312	410.8	313	414.2
314	417.7	315	421.2	316	424.8	317	428.3
318	431.9	319	435.5	320	439.0	321	442.7
322	446.3	323	450.0	324	453.6	325	457.3
326	461.0	327	464.8	328	468.5	329	472.3
330	476.1	331	479.9	332	483.7	333	487.5
334	491.4	335	495.3	336	499.2	337	503.1
338	507.0	339	511.0	340	514.9	341	518.9
342	522.9	343	527.0	344	531.0	345	535.1
346	539.2	347	543.3	348	547.4	349	551.6
350	555.7	351	559.9	352	564.1	353	568.4
354	572.6	355	576.9	356	581.1	357	585.4
358	589.8	359	594.1	360	598.5	361	602.9
362	607.3	363	611.7	364	616.1	365	620.6
366	625.1	367	629.6	368	637.1	369	642.4
370	647.7	371	653.1	372	658.6	373	664.0
374	669.5	375	675.0	376	680.5	377	686.1
378	691.7	379	697.3	380	703.0	381	708.7
382	714.4	383	720.2	384	726.0	385	731.8
386	737.6	387	743.5	388	749.4	389	755.4
390	761.4	391	767.4	392	773.4	393	779.5
394	785.6	395	791.7	396	797.9	397	804.1
398	810.3	399	816.6	400	822.9	401	829.2
402	835.6	403	842.0	404	848.4	405	854.9
406	861.4	407	867.9	408	874.5	409	881.1
410	887.7	411	894.4	412	901.1	413	907.8
414	914.6	415	921.4	416	928.2	417	935.1
418	942.0	419	948.9	420	955.9	421	962.9
422	969.9	423	977.0	424	984.1	425	991.2
426	998.4	427	1,005.6	428	1,012.9	429	1,020.2
430	1,027.5	431	1,034.8	432	1,042.2	433	1,049.6
434	1,057.1	435	1,064.6	436	1,072.1	437	1,079.7
438	1,087.3	439	1,094.9	440	1,102.6	441	1,110.3
442	1,118.1	443	1,125.9	444	1,133.7	445	1,141.5
446	1,149.4	447	1,157.4	448	1,165.3	449	1,173.3
450	1,181.4	451	1,189.4	452	1,197.6	453	1,205.7
454	1,213.9	455	1,222.1	456	1,230.4	457	1,238.7
458	1,247.0	459	1,255.4	460	1,263.8	461	1,272.3
462	1,280.8	463	1,289.3	464	1,297.9	465	1,306.5
466	1,315.1	467	1,323.8	468	1,332.5	469	1,341.3
470	1,350.1	471	1,358.9	472	1,367.8	473	1,376.7
474	1,385.7	475	1,394.7	476	1,403.7	477	1,412.8
478	1,421.9	479	1,431.0	480	1,440.2	481	1,449.5
482	1,458.7	483	1,468.0	484	1,477.4	485	1,486.8
486	1,496.2	487	1,505.7	488	1,515.2	489	1,524.8
490	1,534.4	491	1,544.0	492	1,553.7	493	1,563.4
494	1,573.1	495	1,582.9	496	1,592.8	497	1,602.6
498	1,612.6	499	1,622.5	500	1,632.5	501	1,642.6

(Cont.)

LENGTH-WEIGHT RELATIONSHIPS OF COMMON CARP (Cont.)

502	1,652.7	503	1,662.8	504	1,673.0	505	1,683.2
506	1,693.4	507	1,703.7	508	1,714.1	509	1,724.4
510	1,734.9	511	1,745.3	512	1,755.8	513	1,766.4
514	1,777.0	515	1,787.6	516	1,798.3	517	1,809.0
518	1,819.8	519	1,830.6	520	1,841.4	521	1,852.3
522	1,863.2	523	1,874.2	524	1,885.3	525	1,896.3
526	1,907.4	527	1,918.6	528	1,929.8	529	1,941.0
530	1,952.3	531	1,963.6	532	1,975.0	533	1,986.4
534	1,997.9	535	2,009.4	536	2,021.0	537	2,032.6
538	2,044.2	539	2,055.9	540	2,067.6	541	2,079.4
542	2,091.2	543	2,103.1	544	2,115.0	545	2,127.0
546	2,139.0	547	2,151.0	548	2,163.1	549	2,175.3
550	2,187.4	551	2,199.7	552	2,212.0	553	2,224.3
554	2,236.6	555	2,249.1	556	2,261.5	557	2,274.0
558	2,286.6	559	2,299.2	560	2,311.9	561	2,324.5
562	2,337.3	563	2,350.1	564	2,362.9	565	2,375.8
566	2,388.7	567	2,401.7	568	2,414.7	569	2,427.8
570	2,440.9	571	2,454.1	572	2,467.3	573	2,480.6
574	2,493.9	575	2,507.3	576	2,520.7	577	2,534.2
578	2,547.7	579	2,561.2	580	2,574.8	581	2,588.5
582	2,602.2	583	2,615.9	584	2,629.7	585	2,643.6
586	2,657.5	587	2,671.4	588	2,685.4	589	2,699.5
590	2,713.6	591	2,727.7	592	2,741.9	593	2,756.1
594	2,770.4	595	2,784.8	596	2,799.2	597	2,813.6
598	2,828.1	599	2,842.6	600	2,857.2	601	2,871.9
602	2,886.6	603	2,901.3	604	2,916.1	605	2,931.0
606	2,945.9	607	2,960.8	608	2,975.8	609	2,990.9
610	3,006.0	611	3,021.1	612	3,036.3	613	3,051.6
614	3,066.9	615	3,082.3	616	3,097.7	617	3,113.1
618	3,128.7	619	3,144.2	620	3,159.8	621	3,175.5
622	3,191.2	623	3,207.0	624	3,222.8	625	3,238.7
626	3,254.7	627	3,270.6	628	3,286.7	629	3,302.8
630	3,318.9	631	3,335.1	632	3,351.4	633	3,367.7
634	3,384.0	635	3,400.5	636	3,416.9	637	3,433.5
638	3,450.0	639	3,466.7	640	3,483.3	641	3,500.1
642	3,516.9	643	3,533.7	644	3,550.6	645	3,567.6
646	3,584.6	647	3,601.6	648	3,618.7	649	3,635.9
650	3,653.1	651	3,670.4	652	3,687.8	653	3,705.2
654	3,722.6	655	3,740.1	656	3,757.7	657	3,775.3
658	3,792.9	659	3,810.7	660	3,828.4		

LENGTH-WEIGHT RELATIONSHIPS OF FLATHEAD CATFISH

mm.	$\hat{W}(gm.)$	mm.	$\hat{W}(gm.)$	mm.	$\hat{W}(gm.)$	mm.	$\hat{W}(gm.)$
38	0.7	39	0.7	40	0.8	41	0.8
42	0.9	43	0.9	44	1.0	45	1.1
46	1.1	47	1.2	48	1.3	49	1.4
50	1.4	51	1.5	52	1.6	53	1.7
54	1.8	55	1.9	56	2.0	57	2.1
58	2.2	59	2.3	60	2.4	61	2.6
62	2.7	63	2.8	64	2.9	65	3.1
66	3.2	67	3.4	68	3.5	69	3.7
70	3.8	71	4.0	72	4.1	73	4.3
74	4.5	75	4.7	76	4.8	77	5.0
78	5.2	79	5.4	80	5.6	81	5.8
82	6.0	83	6.2	84	6.5	85	6.7
86	6.9	87	7.1	88	7.4	89	7.6
90	7.9	91	8.1	92	8.4	93	8.7
94	8.9	95	9.2	96	9.5	97	9.8
98	10.1	99	10.4	100	10.7	101	11.0
102	11.3	103	11.6	104	12.0	105	12.3
106	12.6	107	13.0	108	13.4	109	13.7
110	14.1	111	14.5	112	14.8	113	15.2
114	15.6	115	16.0	116	16.4	117	16.8
118	17.2	119	17.7	120	18.1	121	18.5
122	19.0	123	19.4	124	19.9	125	20.4
126	20.8	127	21.3	128	21.8	129	22.3
130	22.8	131	23.3	132	23.8	133	24.4
134	24.9	135	25.4	136	26.0	137	26.5
138	27.1	139	27.7	140	28.3	141	28.9
142	29.4	143	30.1	144	30.7	145	31.3
146	31.9	147	32.5	148	33.2	149	33.8
150	34.5	151	35.2	152	35.8	153	36.5
154	37.2	155	37.9	156	38.6	157	39.4
158	40.1	159	40.8	160	41.6	161	42.3
162	43.1	163	43.9	164	44.7	165	45.4
166	46.2	167	47.1	168	47.9	169	48.7
170	49.5	171	50.4	172	51.2	173	52.1
174	53.0	175	53.9	176	54.8	177	55.7
178	56.6	179	57.5	180	58.4	181	59.4
182	60.3	183	61.3	184	62.3	185	63.3
186	64.2	187	65.2	188	66.3	189	67.3
190	68.3	191	69.4	192	70.4	193	71.5
194	72.6	195	73.6	196	74.7	197	75.8
198	77.0	199	78.1	200	79.2	201	80.4
202	81.5	203	82.7	204	83.9	205	85.1
206	86.3	207	87.5	208	88.7	209	90.0
210	91.2	211	92.5	212	93.8	213	95.1
214	96.3	215	97.7	216	99.0	217	100.3
218	101.6	219	103.0	220	104.4	221	105.7
222	107.1	223	108.5	224	109.9	225	111.4
226	112.8	227	114.2	228	115.7	229	117.2
230	118.7	231	120.2	232	121.7	233	123.2
234	124.7	235	126.3	236	127.8	237	129.4
238	131.0	239	132.6	240	134.2	241	135.8
242	137.5	243	139.1	244	140.8	245	142.1
246	143.9	247	145.7	248	147.6	249	149.4
250	151.3	251	153.2	252	155.1	253	157.0
254	159.0	255	160.9	256	162.9	257	164.9
258	166.9	259	168.9	260	171.0	261	173.0
262	175.1	263	177.2	264	179.3	265	181.4

(Cont.)

LENGTH-WEIGHT RELATIONSHIPS OF FLATHEAD CATFISH (Cont.)

266	183.6	267	185.7	268	187.9	269	190.1
270	192.3	271	194.5	272	196.8	273	199.0
274	201.3	275	203.6	276	205.9	277	208.2
278	210.6	279	213.0	280	215.3	281	217.7
282	220.2	283	222.6	284	225.1	285	227.5
286	230.0	287	232.6	288	235.1	289	237.6
290	240.2	291	242.8	292	245.4	293	248.0
294	250.7	295	253.3	296	256.0	297	258.7
298	261.5	299	264.2	300	267.0	301	269.7
302	272.5	303	275.4	304	278.2	305	281.1
306	283.9	307	286.8	308	289.8	309	292.7
310	295.7	311	298.6	312	301.6	313	304.7
314	307.7	315	310.8	316	313.8	317	316.9
318	322.7	319	325.9	320	329.2	321	332.4
322	335.7	323	339.1	324	342.4	325	345.8
326	349.2	327	352.6	328	356.0	329	359.5
330	363.0	331	366.5	332	370.0	333	373.6
334	377.2	335	380.8	336	384.4	337	388.0
338	391.7	339	395.4	340	399.1	341	402.9
342	406.7	343	410.4	344	414.3	345	418.1
346	422.0	347	425.9	348	429.8	349	433.7
350	437.7	351	441.7	352	445.7	353	449.7
354	453.8	355	457.9	356	462.0	357	466.1
358	470.3	359	474.5	360	478.7	361	482.9
362	487.2	363	491.5	364	495.8	365	500.2
366	504.5	367	508.9	368	513.4	369	517.8
370	522.3	371	526.8	372	531.3	373	535.9
374	540.4	375	545.1	376	549.7	377	554.4
378	559.0	379	563.8	380	568.5	381	573.3
382	578.1	383	582.9	384	587.8	385	592.6
386	597.5	387	602.5	388	607.4	389	612.4
390	617.5	391	622.5	392	627.6	393	632.7
394	637.8	395	643.0	396	648.2	397	653.4
398	658.6	399	663.9	400	669.2	401	674.6
402	679.9	403	685.3	404	690.7	405	696.2
406	701.7	407	707.2	408	712.7	409	718.3
410	723.9	411	729.5	412	735.2	413	740.9
414	746.6	415	752.3	416	758.1	417	763.9
418	769.8	419	775.6	420	781.5	421	787.5
422	793.4	423	799.4	424	805.5	425	811.5
426	817.6	427	823.7	428	829.9	429	836.1
430	842.3	431	848.5	432	854.8	433	861.1
434	867.4	435	873.8	436	880.2	437	886.6
438	893.1	439	899.6	440	906.1	441	912.7
442	919.3	443	925.9	444	932.6	445	939.3
446	946.0	447	952.8	448	959.6	449	966.4
450	973.3	451	980.2	452	987.1	453	994.1
454	1,001.1	455	1,008.1	456	1,015.1	457	1,022.2
458	1,029.4	459	1,036.5	460	1,043.7	461	1,051.0
462	1,058.2	463	1,065.5	464	1,072.9	465	1,080.2
466	1,087.6	467	1,095.1	468	1,102.6	469	1,110.1
470	1,117.6	471	1,125.2	472	1,132.8	473	1,140.5
474	1,148.1	475	1,155.9	476	1,163.6	477	1,171.4
478	1,179.2	479	1,187.1	480	1,195.0	481	1,202.9
482	1,210.9	483	1,218.9	484	1,227.0	485	1,235.0
486	1,243.1	487	1,251.3	488	1,259.5	489	1,267.7
490	1,276.0	491	1,284.3	492	1,292.6	493	1,301.0
494	1,309.4	495	1,317.8	496	1,326.3	497	1,334.9
498	1,343.4	499	1,352.0	500	1,360.6	501	1,369.3

(Cont.)

LENGTH-WEIGHT RELATIONSHIPS OF FLATHEAD CATFISH (Cont.)

502	1,378.0	503	1,386.8	504	1,395.6	505	1,404.4
506	1,413.2	507	1,422.1	508	1,431.1	509	1,440.1
510	1,449.1	511	1,458.1	512	1,467.2	513	1,476.4
514	1,485.5	515	1,494.7	516	1,504.0	517	1,513.3
518	1,522.6	519	1,532.0	520	1,541.4	521	1,550.8
522	1,560.3	523	1,569.8	524	1,579.4	525	1,589.0
526	1,598.7	527	1,608.3	528	1,618.1	529	1,627.8
530	1,637.6	531	1,647.5	532	1,657.4	533	1,667.3
534	1,677.3	535	1,687.3	536	1,697.3	537	1,707.4
538	1,717.5	539	1,727.7	540	1,737.9	541	1,748.2
542	1,758.5	543	1,768.8	544	1,779.2	545	1,789.6
546	1,800.1	547	1,810.6	548	1,821.1	549	1,831.7
550	1,842.4	551	1,853.0	552	1,863.7	553	1,874.5
554	1,885.3	555	1,896.1	556	1,907.0	557	1,918.0
558	1,928.9	559	1,939.9	560	1,951.0	561	1,962.1
562	1,973.2	563	1,984.4	564	1,995.7	565	2,006.9
566	2,018.3	567	2,029.6	568	2,041.0	569	2,052.5
570	2,064.0	571	2,075.5	572	2,087.1	573	2,098.7
574	2,110.4	575	2,122.1	576	2,133.8	577	2,145.7
578	2,157.5	579	2,169.4	580	2,181.3	581	2,193.3
582	2,205.3	583	2,217.4	584	2,229.5	585	2,241.7
586	2,253.9	587	2,266.2	588	2,278.5	589	2,290.8
590	2,303.2	591	2,315.6	592	2,328.1	593	2,340.6
594	2,353.2	595	2,365.8	596	2,378.5	597	2,391.2
598	2,404.0	599	2,416.8	600	2,429.6	601	2,442.5
602	2,455.5	603	2,468.5	604	2,481.5	605	2,494.6
606	2,507.7	607	2,520.9	608	2,534.2	609	2,547.4
610	2,560.8	611	2,574.1	612	2,587.6	613	2,601.0
614	2,614.5	615	2,628.1	616	2,641.7	617	2,655.4
618	2,669.1	619	2,682.8	620	2,696.7	621	2,710.5
622	2,724.4						

LENGTH-WEIGHT RELATIONSHIPS OF FRESHWATER DRUM

mm.	$\hat{W}(gm.)$	mm.	$\hat{W}(gm.)$	mm.	$\hat{W}(gm.)$	mm.	$\hat{W}(gm.)$
17	0.1	18	0.1	19	0.1	20	0.1
21	0.1	22	0.1	23	0.1	24	0.2
25	0.2	26	0.2	27	0.2	28	0.2
29	0.3	30	0.3	31	0.3	32	0.4
33	0.4	34	0.4	35	0.5	36	0.5
37	0.6	38	0.6	39	0.7	40	0.7
41	0.8	42	0.8	43	0.9	44	0.9
45	1.0	46	1.1	47	1.1	48	1.2
49	1.3	50	1.4	51	1.5	52	1.6
53	1.6	54	1.7	55	1.8	56	1.9
57	2.1	58	2.2	59	2.3	60	2.4
61	2.5	62	2.6	63	2.8	64	2.9
65	3.0	66	3.2	67	3.3	68	3.5
69	3.6	70	3.8	71	4.0	72	4.1
73	4.3	74	4.5	75	4.7	76	4.9
77	5.1	78	5.3	79	5.5	80	5.7
81	5.9	82	6.1	83	6.3	84	6.6

(Cont.)

LENGTH-WEIGHT RELATIONSHIPS OF FRESHWATER DRUM (Cont.)

85	6.8	86	7.0	87	7.3	88	7.5
89	7.8	90	8.1	91	8.3	92	8.6
93	8.9	94	9.2	95	9.5	96	9.8
97	10.1	98	10.4	99	10.7	100	11.1
101	11.4	102	11.7	103	12.1	104	12.5
105	12.8	106	13.2	107	13.6	108	13.9
109	14.3	110	14.7	111	15.1	112	15.6
113	16.0	114	16.4	115	16.8	116	17.3
117	17.7	118	18.2	119	18.7	120	19.1
121	19.6	122	20.1	123	20.6	124	21.1
125	21.6	126	22.1	127	22.7	128	23.2
129	23.8	130	24.3	131	24.9	132	25.5
133	26.0	134	26.6	135	27.2	136	27.9
137	28.5	138	29.1	139	29.7	140	30.4
141	31.0	142	31.7	143	32.4	144	33.1
145	33.8	146	34.5	147	35.2	148	35.9
149	36.6	150	37.4	151	38.1	152	38.9
153	39.7	154	40.4	155	41.2	156	42.0
157	42.8	158	43.7	159	44.5	160	45.4
161	46.2	162	47.1	163	47.9	164	48.8
165	49.7	166	50.6	167	51.6	168	52.5
169	53.4	170	54.4	171	55.4	172	56.3
173	57.3	174	58.3	175	59.3	176	60.4
177	61.4	178	62.4	179	63.5	180	64.6
181	65.7	182	66.7	183	67.9	184	69.0
185	70.1	186	71.2	187	72.4	188	73.6
189	74.7	190	75.9	191	77.1	192	78.4
193	79.6	194	80.8	195	82.1	196	83.4
197	84.6	198	85.9	199	87.3	200	88.6
201	89.9	202	91.3	203	92.6	204	94.0
205	95.4	206	96.8	207	98.2	208	99.6
209	101.1	210	102.5	211	104.0	212	105.5
213	107.0	214	108.5	215	110.0	216	111.6
217	113.1	218	114.7	219	116.3	220	117.9
221	119.5	222	121.1	223	122.8	224	124.4
225	126.1	226	127.8	227	129.5	228	131.2
229	133.0	230	134.7	231	136.5	232	138.3
233	140.1	234	141.9	235	143.7	236	145.5
237	147.4	238	149.3	239	151.2	240	153.1
241	155.0	242	156.9	243	158.9	244	160.8
245	162.8	246	164.8	247	166.8	248	168.9
249	170.9	250	173.0	251	175.1	252	177.2
253	179.3	254	181.4	255	183.6	256	185.8
257	187.9	258	190.1	259	192.4	260	194.6
261	196.9	262	199.1	263	201.4	264	203.7
265	206.0	266	208.4	267	210.7	268	213.1
269	215.5	270	217.9	271	220.4	272	222.8
273	225.3	274	227.8	275	230.3	276	232.8
277	235.3	278	237.9	279	240.5	280	243.1
281	245.7	282	248.3	283	250.9	284	253.6
285	256.3	286	259.0	287	261.7	288	264.5
289	267.2	290	270.0	291	272.8	292	275.7
293	278.5	294	281.4	295	284.2	296	287.1
297	290.1	298	293.0	299	296.0	300	298.9
301	301.9	302	305.0	303	308.0	304	311.1
305	314.1	306	317.2	307	320.4	308	323.5
309	326.7	310	329.8	311	333.0	312	336.3
313	339.5	314	342.8	315	346.1	316	349.4
317	352.7	318	356.0	319	359.4	320	362.8

(Cont.)

LENGTH-WEIGHT RELATIONSHIPS OF FRESHWATER DRUM (Cont.)

321	366.2	322	369.6	323	373.1	324	376.6
325	380.1	326	383.6	327	387.1	328	390.7
329	394.3	330	397.9	331	401.5	332	405.2
333	408.8	334	412.5	335	416.3	336	420.0
337	423.8	338	427.5	339	431.3	340	435.2
341	439.0	342	442.9	343	446.8	344	450.7
345	454.7	346	458.6	347	462.6	348	466.6
349	470.7	350	474.7	351	478.8	352	482.9
353	487.0	354	491.2	355	495.3	356	499.5
357	503.8	358	508.0	359	512.3	360	516.6
361	520.9	362	525.2	363	529.6	364	534.0
365	538.4	366	542.8	367	547.3	368	551.8
369	556.3	370	560.8	371	565.4	372	570.0
373	574.6	374	579.2	375	583.9	376	588.6
377	593.3	378	598.0	379	602.8	380	607.5
381	612.3	382	617.2	383	622.0	384	626.9
385	631.8	386	636.8	387	641.7	388	646.7
389	651.7	390	656.8	391	661.8	392	666.9
393	672.0	394	677.2	395	682.4	396	687.6
397	692.8	398	698.0	399	703.3	400	708.6
401	713.9	402	719.3	403	724.7	404	730.1
405	735.5	406	741.0	407	746.5	408	752.0
409	757.5	410	763.1	411	768.7	412	774.3
413	781.1	414	788.4	415	795.7	416	803.1
417	810.6	418	818.1	419	825.6	420	833.2
421	840.9	422	848.6	423	856.3	424	864.1
425	872.0	426	879.9	427	887.9	428	895.9
429	903.9	430	912.1	431	920.2	432	928.5
433	936.8	434	945.1	435	953.5	436	962.0
437	970.5	438	979.0	439	987.6	440	996.3
441	1,005.0	442	1,013.8	443	1,022.7	444	1,031.6
445	1,040.5	446	1,049.6	447	1,058.6	448	1,067.8
449	1,076.9	450	1,086.2	451	1,095.5	452	1,104.9
453	1,114.3	454	1,123.8	455	1,133.3	456	1,142.9
457	1,152.6	458	1,162.3	459	1,172.1	460	1,181.9
461	1,191.8	462	1,201.8	463	1,211.8	464	1,221.9
465	1,232.1	466	1,242.3	467	1,252.5	468	1,262.9
469	1,273.3	470	1,283.8	471	1,294.3	472	1,304.9
473	1,315.5	474	1,326.3	475	1,337.0	476	1,347.9
477	1,358.8	478	1,369.8	479	1,380.8	480	1,391.9
481	1,403.1	482	1,414.4	483	1,425.7	484	1,437.0
485	1,448.5	486	1,460.0	487	1,471.6	488	1,483.2
489	1,494.9	490	1,506.7	491	1,518.6	492	1,530.5
493	1,542.5	494	1,554.5	495	1,566.7	496	1,578.9
497	1,591.1	498	1,603.5	499	1,615.9	500	1,628.4
501	1,640.9	502	1,653.5	503	1,666.2	504	1,679.0
505	1,691.8	506	1,704.7	507	1,717.7	508	1,730.8
509	1,743.9	510	1,757.1	511	1,770.4	512	1,783.8
513	1,797.2	514	1,810.7	515	1,824.3	516	1,837.9
517	1,851.6	518	1,865.4	519	1,879.3	520	1,893.3
521	1,907.3	522	1,921.4	523	1,935.6	524	1,949.8
525	1,964.2	526	1,978.6	527	1,993.1	528	2,007.7
529	2,022.3	530	2,037.1	531	2,051.9	532	2,066.8
533	2,081.7	534	2,096.8	535	2,111.9	536	2,127.1
537	2,142.4	538	2,157.8	539	2,173.2	540	2,188.8
541	2,204.4	542	2,220.1	543	2,235.9	544	2,251.7
545	2,267.7	546	2,283.7	547	2,299.8	548	2,316.0
549	2,332.3	550	2,348.7	551	2,365.1	552	2,381.7
553	2,398.3	554	2,415.0	555	2,431.8	556	2,448.7

(Cont.)

LENGTH-WEIGHT RELATIONSHIPS OF FRESHWATER DRUM (Cont.)

557	2,465.6	558	2,482.7	559	2,499.8	560	2,517.1
561	2,534.4	562	2,551.8	563	2,569.3	564	2,586.9
565	2,604.5	566	2,622.3	567	2,640.2	568	2,658.1
569	2,676.1	570	2,694.2	571	2,713.7	572	2,731.4
573	2,749.2	574	2,767.1	575	2,785.1	576	2,803.1
577	2,821.3	578	2,839.5	579	2,857.8	580	2,876.2
581	2,894.7	582	2,913.3	583	2,932.0	584	2,950.7
585	2,969.5	586	2,988.5	587	3,007.5	588	3,026.6
589	3,045.8	590	3,065.1	591	3,084.4	592	3,103.9
593	3,123.4	594	3,143.1	595	3,162.8	596	3,182.6
597	3,202.5	598	3,222.5	599	3,242.6	600	3,262.8
601	3,283.1	602	3,303.5	603	3,323.9	604	3,344.5
605	3,365.1	606	3,385.9	607	3,406.7	608	3,427.6
609	3,448.6	610	3,469.7	611	3,490.9	612	3,512.2
613	3,533.6	614	3,555.1	615	3,576.7	616	3,598.4
617	3,620.2	618	3,642.1	619	3,664.0	620	3,686.1
621	3,708.3	622	3,730.5	623	3,752.9	624	3,775.3
625	3,797.9	626	3,820.6	627	3,843.3	628	3,866.2
629	3,889.1	630	3,912.2	631	3,935.3	632	3,958.6
633	3,981.9	634	4,005.4	635	4,028.9	636	4,052.6
637	4,076.3	638	4,100.2	639	4,124.1	640	4,148.2
641	4,172.4	642	4,196.6	643	4,221.0	644	4,245.5
645	4,270.0	646	4,294.7	647	4,319.5	648	4,344.4
649	4,369.4	650	4,394.5	651	4,419.7	652	4,445.0
653	4,470.4	654	4,495.9	655	4,521.6	656	4,547.3
657	4,573.1	658	4,599.1	659	4,625.1	660	4,651.3
661	4,677.6	662	4,703.9	663	4,730.4	664	4,757.0
665	4,783.7	666	4,810.5	667	4,837.5	668	4,864.5
669	4,891.6	670	4,918.9	671	4,946.3	672	4,973.7
673	5,001.3	674	5,029.0	675	5,056.9	676	5,084.8
677	5,112.8	678	5,141.0	679	5,169.2	680	5,197.6
681	5,226.1	682	5,254.7	683	5,283.4	684	5,312.3
685	5,341.2	686	5,370.3	687	5,399.4	688	5,428.7
689	5,458.2	690	5,487.7	691	5,517.3	692	5,547.1
693	5,577.0	694	5,607.0	695	5,637.1	696	5,667.3
697	5,697.7	698	5,728.1	699	5,758.7	700	5,789.4
701	5,820.2	702	5,851.2	703	5,882.3	704	5,913.4
705	5,944.7	706	5,976.2	707	6,007.7	708	6,039.4
709	6,071.2	710	6,103.1	711	6,135.1	712	6,167.3
713	6,199.6	714	6,232.0	715	6,264.5	716	6,297.2
717	6,330.0	718	6,362.9	719	6,395.9	720	6,429.1
721	6,462.3	722	6,495.7	723	6,529.3	724	6,562.9
725	6,596.7	726	6,630.6	727	6,664.7	728	6,698.8
729	6,733.1	730	6,767.5	731	6,802.1	732	6,836.8
733	6,871.6	734	6,906.5	735	6,941.6	736	6,976.8
737	7,012.1	738	7,047.6	739	7,083.2	740	7,118.9
741	7,154.7	742	7,190.7	743	7,226.8	744	7,263.1
745	7,299.5	746	7,336.0	747	7,372.6	748	7,409.4
749	7,446.3						

LENGTH-WEIGHT RELATIONSHIPS OF GIZZARD SHAD

<i>mm.</i>	$\hat{W}(gm.)$	<i>mm.</i>	$\hat{W}(gm.)$	<i>mm.</i>	$\hat{W}(gm.)$	<i>mm.</i>	$\hat{W}(gm.)$
38	0.8	39	0.9	40	0.9	41	1.0
42	1.0	43	1.1	44	1.2	45	1.3
46	1.3	47	1.4	48	1.5	49	1.6
50	1.7	51	1.8	52	1.9	53	2.0
54	2.1	55	2.2	56	2.3	57	2.4
58	2.5	59	2.7	60	2.8	61	2.9
62	3.0	63	3.2	64	3.3	65	3.5
66	3.6	67	3.8	68	3.9	69	4.1
70	4.2	71	4.4	72	4.6	73	4.7
74	4.9	75	5.1	76	5.3	77	5.5
78	5.7	79	5.9	80	6.1	81	6.3
82	6.5	83	6.7	84	7.0	85	7.2
86	7.4	87	7.7	88	7.9	89	8.2
90	8.4	91	8.7	92	8.9	93	9.2
94	9.5	95	9.7	96	10.0	97	10.3
98	10.6	99	10.9	100	11.2	101	11.5
102	11.8	103	12.1	104	12.5	105	12.8
106	13.1	107	13.5	108	13.8	109	14.2
110	14.5	111	14.9	112	15.3	113	15.6
114	16.0	115	16.4	116	16.8	117	17.2
118	17.6	119	18.0	120	18.4	121	18.9
122	19.3	123	19.7	124	20.2	125	20.6
126	21.1	127	21.5	128	22.0	129	22.5
130	22.9	131	23.4	132	23.9	133	24.4
134	24.9	135	25.4	136	25.9	137	26.5
138	27.0	139	27.5	140	28.1	141	28.6
142	29.2	143	29.7	144	30.3	145	30.9
146	31.5	147	32.1	148	32.7	149	33.3
150	33.9	151	34.5	152	35.1	153	35.8
154	36.4	155	37.1	156	37.7	157	38.4
158	39.1	159	39.7	160	40.4	161	41.1
162	41.8	163	42.5	164	43.2	165	44.0
166	46.6	167	47.4	168	48.2	169	49.0
170	49.9	171	50.7	172	51.6	173	52.5
174	53.3	175	54.2	176	55.1	177	56.0
178	57.0	179	57.9	180	58.8	181	59.8
182	60.7	183	61.7	184	62.7	185	63.7
186	64.7	187	65.7	188	66.7	189	67.7
190	68.8	191	69.8	192	70.9	193	72.0
194	73.0	195	74.1	196	75.2	197	76.4
198	77.5	199	78.6	200	79.8	201	80.9
202	82.1	203	83.3	204	84.5	205	85.7
206	86.9	207	88.1	208	89.3	209	90.6
210	91.8	211	93.1	212	94.4	213	95.7
214	97.0	215	98.3	216	99.6	217	101.0
218	102.3	219	103.7	220	105.1	221	106.4
222	107.8	223	109.3	224	110.7	225	112.1
226	113.6	227	115.0	228	116.5	229	118.0
230	119.5	231	121.0	232	122.5	233	124.0
234	125.6	235	127.1	236	128.7	237	130.3
238	131.9	239	133.5	240	135.1	241	136.7
242	138.4	243	140.0	244	141.7	245	143.4
246	145.1	247	146.8	248	148.5	249	150.3
250	152.0	251	153.8	252	155.6	253	157.3
254	159.1	255	161.0	256	162.8	257	164.6
258	166.5	259	168.4	260	170.3	261	172.2
262	174.1	263	176.0	264	177.9	265	179.9

(Cont.)

LENGTH-WEIGHT RELATIONSHIPS OF GIZZARD SHAD (Cont.)

266	181.9	267	183.8	268	185.8	269	187.9
270	189.9	271	191.9	272	194.0	273	196.0
274	198.1	275	200.2	276	202.3	277	204.5
278	206.6	279	208.8	280	210.9	281	213.1
282	215.3	283	217.5	284	219.7	285	222.0
286	224.2	287	226.5	288	228.8	289	231.1
290	233.4	291	235.8	292	238.1	293	240.5
294	242.9	295	245.3	296	247.7	297	250.1
298	252.5	299	255.0	300	257.5	301	259.9
302	262.5	303	265.0	304	267.5	305	270.1
306	272.6	307	275.2	308	277.8	309	280.4
310	283.1	311	285.7	312	288.4	313	291.0
314	293.7	315	296.4	316	299.2	317	301.9
318	304.7	319	307.5	320	310.3	321	313.1
322	315.9	323	318.7	324	321.6	325	324.5
326	327.4	327	330.3	328	333.2	329	336.1
330	339.1	331	342.1	332	345.1	333	348.1
334	351.1	335	354.2	336	357.2	337	360.3
338	363.4	339	366.5	340	369.7	341	372.8
342	376.0	343	379.2	344	382.4	345	385.6
346	388.8	347	392.1	348	395.4	349	398.7
350	402.0	351	405.3	352	408.6	353	412.0
354	415.4	355	418.8	356	422.2	357	425.6
358	429.1	359	432.6	360	436.1	361	439.6
362	443.1	363	446.6	364	450.2	365	453.8
366	457.4	367	461.0	368	464.7	369	468.3
370	472.0	371	475.7	372	479.4	373	483.1
374	486.9	375	490.7	376	494.5	377	498.3
378	502.1	379	505.9	380	509.8	381	513.7
382	517.6	383	521.5	384	525.5	385	529.4
386	533.4	387	537.4	388	541.4	389	545.5
390	549.6	391	553.6	392	557.7	393	561.9
394	566.0	395	570.2	396	574.3	397	578.5
398	582.8	399	587.0	400	591.3	401	595.6
402	599.9	403	604.2	404	608.5	405	612.9
406	617.3	407	621.7	408	626.1	409	630.5
410	635.0	411	639.5	412	644.0	413	648.5
414	653.1	415	657.6	416	662.2	417	666.8
418	671.5	419	676.1	420	680.8	421	685.5
422	690.2	423	695.0	424	699.7	425	704.5
426	709.3	427	714.1	428	719.0	429	723.8
430	728.7	431	733.6	432	738.6	433	743.5
434	748.5	435	753.5	436	758.5	437	763.5
438	768.6	439	773.7	440	778.8	441	783.9
442	789.0	443	794.2	444	799.4		

LENGTH-WEIGHT RELATIONSHIPS OF GREEN SUNFISH

mm.	$\hat{W}(gm.)$	mm.	$\hat{W}(gm.)$	mm.	$\hat{W}(gm.)$	mm.	$\hat{W}(gm.)$
38	1.0	39	1.1	40	1.1	41	1.2
42	1.3	43	1.4	44	1.5	45	1.6
46	1.7	47	1.8	48	2.0	49	2.1
50	2.2	51	2.4	52	2.5	53	2.6
54	2.8	55	3.0	56	3.1	57	3.3
58	3.5	59	3.7	60	3.8	61	4.0
62	4.2	63	4.5	64	4.7	65	4.9
66	5.1	67	5.4	68	5.6	69	5.9
70	6.1	71	6.4	72	6.7	73	6.9
74	7.2	75	7.5	76	7.8	77	8.2
78	8.5	79	8.8	80	9.1	81	9.5
82	9.9	83	10.2	84	10.6	85	11.0
86	11.4	87	11.8	88	12.2	89	12.6
90	13.0	91	13.5	92	13.9	93	14.4
94	14.9	95	15.3	96	15.8	97	16.3
98	16.8	99	17.4	100	17.9	101	18.4
102	19.0	103	19.6	104	20.1	105	20.7
106	21.3	107	21.9	108	22.6	109	23.2
110	23.9	111	24.5	112	25.2	113	25.9
114	27.0	115	27.7	116	28.4	117	29.2
118	29.9	119	30.7	120	31.5	121	32.2
122	33.0	123	33.8	124	34.7	125	35.5
126	36.4	127	37.2	128	38.1	129	39.0
130	39.9	131	40.8	132	41.7	133	42.7
134	43.7	135	44.6	136	45.6	137	46.6
138	47.6	139	48.7	140	49.7	141	50.8
142	51.9	143	53.0	144	54.1	145	55.2
146	56.3	147	57.5	148	58.6	149	59.8
150	61.0	151	62.2	152	63.5	153	64.7
154	66.0	155	67.3	156	68.6	157	69.9
158	71.2	159	72.6	160	73.9	161	75.3
162	76.7	163	78.1	164	79.5	165	81.0
166	82.5	167	83.9	168	85.4	169	87.0
170	88.5	171	90.1	172	91.6	173	93.2
174	94.8	175	96.5	176	98.1	177	99.8
178	101.5	179	103.2	180	104.9	181	106.6
182	108.4	183	110.2	184	112.0	185	113.8
186	115.6	187	117.5	188	119.3	189	121.2
190	123.1	191	125.1	192	127.0	193	129.0
194	131.0	195	133.0	196	135.1	197	137.1
198	139.2	199	141.3	200	143.4	201	145.6
202	147.7	203	149.9	204	152.1	205	154.3
206	156.6	207	158.8	208	161.1	209	163.4
210	165.8	211	168.1	212	170.5	213	172.9
214	175.3	215	177.8	216	180.2		

LENGTH-WEIGHT RELATIONSHIPS OF LARGEMOUTH BASS

mm.	$\hat{W}(gm.)$	mm.	$\hat{W}(gm.)$	mm.	$\hat{W}(gm.)$	mm.	$\hat{W}(gm.)$
38	0.7	39	0.7	40	0.8	41	0.8
42	0.9	43	1.0	44	1.1	45	1.1
46	1.2	47	1.3	48	1.4	49	1.5
50	1.6	51	1.6	52	1.7	53	1.9
54	2.0	55	2.1	56	2.2	57	2.3
58	2.4	59	2.6	60	2.7	61	2.8
62	3.0	63	3.1	64	3.3	65	3.5
66	3.6	67	3.8	68	4.0	69	4.2
70	4.3	71	4.5	72	4.7	73	4.9
74	5.1	75	5.4	76	5.6	77	5.8
78	6.0	79	6.3	80	6.5	81	6.8
82	7.0	83	7.3	84	7.6	85	7.9
86	8.1	87	8.4	88	8.7	89	9.0
90	9.4	91	9.7	92	10.0	93	10.3
94	10.7	95	11.0	96	11.4	97	11.8
98	12.1	99	12.5	100	12.9	101	13.3
102	13.7	103	14.1	104	14.6	105	15.0
106	15.4	107	15.9	108	16.3	109	16.8
110	17.3	111	17.8	112	18.2	113	18.8
114	19.3	115	19.8	116	20.3	117	20.9
118	21.4	119	22.0	120	22.5	121	23.1
122	23.7	123	24.3	124	24.9	125	25.5
126	26.2	127	26.8	128	27.4	129	28.1
130	28.8	131	29.5	132	30.2	133	30.9
134	31.6	135	32.3	136	33.0	137	33.8
138	34.5	139	35.3	140	36.1	141	36.9
142	37.7	143	38.5	144	39.3	145	40.2
146	41.0	147	41.9	148	42.8	149	43.7
150	44.6	151	45.5	152	46.4	153	47.3
154	48.3	155	49.3	156	50.2	157	51.2
158	52.2	159	53.2	160	54.3	161	55.3
162	56.4	163	57.4	164	58.5	165	59.6
166	60.7	167	61.9	168	63.0	169	64.2
170	65.3	171	66.5	172	67.7	173	68.9
174	70.1	175	71.4	176	72.6	177	73.9
178	75.2	179	76.5	180	77.8	181	79.1
182	80.5	183	81.8	184	83.2	185	84.6
186	86.0	187	87.4	188	88.8	189	90.3
190	91.8	191	93.3	192	94.8	193	96.3
194	97.8	195	99.3	196	100.9	197	102.5
198	104.1	199	105.7	200	107.3	201	109.0
202	110.7	203	112.3	204	114.0	205	115.8
206	117.5	207	119.2	208	121.0	209	122.8
210	124.6	211	126.4	212	128.3	213	130.1
214	132.0	215	133.9	216	135.8	217	137.7
218	139.7	219	141.6	220	143.6	221	145.6
222	147.7	223	149.7	224	151.8	225	153.8
226	155.9	227	158.1	228	160.2	229	162.4
230	164.5	231	166.7	232	168.9	233	171.2
234	173.4	235	175.7	236	178.0	237	180.3
238	182.7	239	185.0	240	187.4	241	189.8
242	192.2	243	194.6	244	197.1	245	199.6
246	202.1	247	204.6	248	207.1	249	209.7
250	212.3	251	214.9	252	217.5	253	220.2
254	222.8	255	225.5	256	228.2	257	231.0
258	233.7	259	236.5	260	239.3	261	242.1
262	245.0	263	247.9	264	250.7	265	253.7

(Cont.)

LENGTH-WEIGHT RELATIONSHIPS OF LARGEMOUTH BASS (Cont.)

266	256.6	267	259.6	268	262.5	269	265.5
270	268.6	271	271.6	272	274.7	273	277.8
274	280.9	275	284.1	276	287.2	277	290.4
278	293.6	279	296.9	280	300.1	281	303.4
282	306.7	283	310.1	284	313.4	285	316.8
286	320.2	287	323.7	288	327.1	289	330.6
290	334.1	291	337.7	292	341.2	293	344.8
294	348.4	295	352.0	296	355.7	297	359.4
298	363.1	299	366.8	300	370.6	301	374.4
302	378.2	303	382.0	304	385.9	305	389.8
306	393.7	307	397.7	308	401.6	309	405.6
310	409.7	311	413.7	312	417.8	313	421.9
314	426.0	315	430.2	316	434.4	317	438.6
318	442.8	319	447.1	320	451.4	321	455.7
322	460.1	323	464.4	324	468.9	325	473.3
326	477.8	327	482.3	328	486.8	329	491.3
330	495.9	331	500.5	332	505.1	333	509.8
334	514.5	335	519.2	336	524.0	337	528.8
338	533.6	339	538.4	340	543.3	341	548.2
342	553.1	343	558.1	344	563.0	345	568.1
346	573.1	347	578.2	348	583.3	349	588.4
350	593.6	351	598.8	352	604.0	353	609.3
354	614.6	355	619.9	356	625.2	357	630.6
358	636.0	359	641.5	360	647.0	361	652.5
362	658.0	363	663.6	364	669.2	365	674.8
366	680.6	367	686.2	368	691.9	369	697.7
370	703.5	371	709.3	372	715.1	373	721.0
374	727.0	375	732.9	376	738.9	377	744.9
378	751.0	379	757.1	380	763.2	381	769.3
382	775.5	383	781.8	384	788.0	385	794.3
386	800.6	387	807.0	388	813.4	389	819.8
390	826.2	391	832.7	392	839.3	393	845.8
394	852.4	395	859.0	396	865.7	397	872.4
398	879.1	399	885.9	400	892.7	401	899.5
402	906.4	403	913.3	404	920.3	405	927.3
406	934.3	407	941.3	408	948.4	409	955.5
410	962.7	411	969.9	412	977.1	413	984.4
414	991.7	415	999.0	416	1,006.4	417	1,013.8
418	1,021.2	419	1,028.7	420	1,036.2	421	1,043.8
422	1,051.4	423	1,059.0	424	1,066.7	425	1,074.4
426	1,082.2	427	1,089.9	428	1,097.8	429	1,105.6
430	1,113.5	431	1,121.4	432	1,129.4	433	1,137.4
434	1,145.5	435	1,153.6	436	1,161.7	437	1,169.8
438	1,178.0	439	1,186.3	440	1,194.6	441	1,202.9
442	1,211.2	443	1,219.6	444	1,228.1	445	1,236.5
446	1,245.0	447	1,253.6	448	1,262.2	449	1,270.8
450	1,279.5	451	1,288.2	452	1,296.9	453	1,305.7
454	1,314.6	455	1,323.4	456	1,332.3	457	1,341.3
458	1,350.3	459	1,359.3	460	1,368.4	461	1,377.5
462	1,386.6	463	1,395.8	464	1,405.1	465	1,414.3
466	1,423.6	467	1,433.0	468	1,442.4	469	1,451.8
470	1,461.3	471	1,470.8	472	1,480.4	473	1,490.0
474	1,499.7	475	1,509.4	476	1,519.1	477	1,528.9
478	1,538.7	479	1,548.5	480	1,558.4	481	1,568.4
482	1,578.4	483	1,588.4	484	1,598.5	485	1,608.6
486	1,618.7	487	1,628.9	488	1,639.2	489	1,649.5
490	1,659.8	491	1,670.2	492	1,680.6	493	1,691.0
494	1,701.5	495	1,712.1	496	1,722.7	497	1,733.3
498	1,744.0	499	1,754.7	500	1,765.5	501	1,776.3
502	1,787.2	503	1,798.1	504	1,809.0	505	1,820.0

(Cont.)

LENGTH-WEIGHT RELATIONSHIPS OF LARGEMOUTH BASS (Cont.)

506	1,831.0	507	1,842.1	508	1,853.2	509	1,864.4
510	1,875.6	511	1,886.9	512	1,898.2	513	1,909.6
514	1,921.0	515	1,932.4	516	1,943.9	517	1,955.4
518	1,967.0	519	1,978.6	520	1,990.3	521	2,002.0
522	2,013.8	523	2,025.6	524	2,037.5	525	2,049.4
526	2,061.3	527	2,073.3	528	2,085.4	529	2,097.5
530	2,109.6	531	2,121.8	532	2,134.0	533	2,146.3
534	2,158.6	535	2,171.0	536	2,183.4	537	2,195.9
538	2,208.4	539	2,221.0	540	2,233.6	541	2,246.3
542	2,259.0	543	2,271.8	544	2,284.6	545	2,297.4
546	2,310.3						

LENGTH-WEIGHT RELATIONSHIPS OF LONGEAR SUNFISH

mm.	\hat{W} (gm.)	mm.	\hat{W} (gm.)	mm.	\hat{W} (gm.)	mm.	\hat{W} (gm.)
38	1.2	39	1.3	40	1.4	41	1.5
42	1.6	43	1.7	44	1.8	45	2.0
46	2.1	47	2.2	48	2.4	49	2.5
50	2.7	51	2.8	52	3.0	53	3.1
54	3.3	55	3.5	56	3.7	57	3.9
58	4.1	59	4.3	60	4.5	61	4.7
62	4.9	63	5.2	64	5.4	65	5.7
66	5.9	67	6.2	68	6.4	69	6.7
70	7.0	71	7.3	72	7.6	73	7.9
74	8.2	75	8.6	76	8.9	77	9.2
78	9.6	79	9.9	80	10.3	81	10.7
82	11.1	83	11.5	84	11.9	85	12.3
86	12.7	87	13.1	88	13.6	89	14.0
90	14.5	91	14.9	92	15.4	93	15.9
94	16.4	95	16.9	96	17.4	97	17.9
98	18.5	99	19.0	100	19.6	101	20.2
102	20.7	103	21.3	104	21.9	105	22.5
106	23.2	107	23.8	108	24.4	109	25.1
110	25.8	111	26.5	112	27.1	113	27.8
114	28.6	115	29.3	116	30.0	117	30.8
118	31.5	119	32.3	120	33.1	121	33.9
122	34.7	123	35.5	124	36.4	125	37.2
126	38.1	127	39.0	128	39.9	129	40.8
130	41.7	131	42.6	132	43.6	133	44.5
134	45.5	135	46.5	136	47.5	137	48.5
138	49.5	139	50.6	140	51.6	141	52.7
142	53.8	143	54.9	144	56.0	145	57.1
146	58.2	147	59.4	148	60.6	149	61.8
150	63.0	151	64.2	152	65.4	153	66.7
154	67.9	155	69.2	156	70.5	157	71.8
158	73.1	159	74.5	160	75.8	161	77.2
162	78.6	163	80.0	164	81.4	165	82.8
166	84.3	167	85.8	168	87.3	169	88.8
170	90.3	171	91.8	172	93.4	173	94.9
174	96.5	175	98.1	176	99.8	177	101.4
178	103.1	179	104.7	180	106.4	181	108.1
182	109.9	183	111.6	184	113.4	185	115.2
186	117.0	187	118.8	188	120.6	189	122.5
190	124.4						

LENGTH-WEIGHT RELATIONSHIPS OF REDBREAST SUNFISH

mm.	\hat{W} (gm.)	mm.	\hat{W} (gm.)	mm.	\hat{W} (gm.)	mm.	\hat{W} (gm.)
38	1.2	39	1.3	40	1.4	41	1.5
42	1.6	43	1.7	44	1.8	45	1.9
46	2.1	47	2.2	48	2.4	49	2.5
50	2.7	51	2.8	52	3.0	53	3.2
54	3.4	55	3.5	56	3.7	57	3.9
58	4.2	59	4.4	60	4.6	61	4.8
62	5.1	63	5.3	64	5.6	65	5.9
66	6.1	67	6.4	68	6.7	69	7.0
70	7.3	71	7.6	72	8.0	73	8.3
74	8.7	75	9.0	76	9.4	77	9.8
78	10.1	79	10.5	80	11.0	81	11.4
82	11.8	83	12.2	84	12.7	85	13.1
86	13.6	87	14.1	88	14.6	89	15.1
90	15.6	91	16.1	92	16.7	93	17.2
94	17.8	95	18.4	96	19.0	97	19.6
98	20.2	99	20.8	100	21.4	101	22.1
102	22.8	103	23.4	104	24.1	105	24.8
106	25.5	107	26.3	108	27.0	109	27.8
110	28.6	111	29.4	112	30.2	113	31.0
114	31.8	115	32.7	116	33.5	117	34.4
118	35.3	119	36.2	120	37.1	121	38.1
122	39.0	123	40.0	124	41.0	125	42.0
126	43.0	127	44.0	128	45.1	129	46.1
130	47.2	131	48.3	132	49.4	133	50.6
134	51.7	135	52.9	136	54.1	137	55.3
138	56.5	139	57.8	140	59.0	141	60.3
142	61.6	143	62.9	144	64.3	145	65.6
146	67.0	147	68.4	148	69.8	149	71.2
150	72.7	151	74.1	152	75.6	153	77.1
154	78.6	155	80.2	156	81.8	157	83.3
158	85.0	159	86.6	160	88.2	161	89.9
162	91.6	163	93.3	164	95.0	165	96.8
166	98.6	167	100.4	168	102.2	169	104.0
170	105.9	171	107.8	172	109.7	173	111.6
174	113.6	175	115.5	176	117.5	177	119.6
178	121.6	179	123.7	180	125.8	181	127.9
182	130.0	183	132.2	184	134.4	185	136.6
186	138.8	187	141.1	188	143.4	189	145.7
190	148.0	191	150.4	192	152.7	193	155.1
194	157.6	195	160.0	196	162.5	197	165.0
198	167.6	199	170.1	200	172.7	201	175.3
202	178.0	203	180.6	204	183.3	205	186.0
206	188.8	207	191.5	208	194.3	209	197.2
210	200.0	211	202.9	212	205.8	213	208.8
214	211.7	215	214.7	216	217.7		

LENGTH-WEIGHT RELATIONSHIPS OF REDEAR SUNFISH

mm.	$\hat{W}(gm.)$	mm.	$\hat{W}(gm.)$	mm.	$\hat{W}(gm.)$	mm.	$\hat{W}(gm.)$
38	1.0	39	1.1	40	1.2	41	1.3
42	1.4	43	1.5	44	1.6	45	1.7
46	1.8	47	1.9	48	2.0	49	2.2
50	2.3	51	2.4	52	2.6	53	2.7
54	2.9	55	3.0	56	3.2	57	3.4
58	3.5	59	3.7	60	3.9	61	4.1
62	4.3	63	4.5	64	4.7	65	5.0
66	5.2	67	5.4	68	5.7	69	5.9
70	6.2	71	6.5	72	6.7	73	7.0
74	7.3	75	7.6	76	7.9	77	8.2
78	8.5	79	8.9	80	9.2	81	9.5
82	9.9	83	10.2	84	10.6	85	11.0
86	11.4	87	11.8	88	12.2	89	12.6
90	13.0	91	13.5	92	13.9	93	14.4
94	14.8	95	15.3	96	15.8	97	16.3
98	16.8	99	17.3	100	17.8	101	18.3
102	18.9	103	19.4	104	20.0	105	20.6
106	21.1	107	21.7	108	22.3	109	23.0
110	23.6	111	24.2	112	24.9	113	25.5
114	26.2	115	26.9	116	27.6	117	28.3
118	29.0	119	29.8	120	30.5	121	31.3
122	32.1	123	32.8	124	33.6	125	34.4
126	35.3	127	36.1	128	36.9	129	37.8
130	38.7	131	39.6	132	40.5	133	41.4
134	42.3	135	43.3	136	44.2	137	45.2
138	46.2	139	47.2	140	48.2	141	49.2
142	50.2	143	51.3	144	52.4	145	53.4
146	54.5	147	55.7	148	56.8	149	57.9
150	59.1	151	60.3	152	61.4	153	62.6
154	63.9	155	65.1	156	66.4	157	67.6
158	68.9	159	70.2	160	71.5	161	72.9
162	74.2	163	75.6	164	76.9	165	78.3
166	79.8	167	81.2	168	82.6	169	84.1
170	85.6	171	87.1	172	88.6	173	90.1
174	91.7	175	93.2	176	94.8	177	96.4
178	98.1	179	99.7	180	101.4	181	103.0
182	104.7	183	106.4	184	108.2	185	109.9
186	111.7	187	113.5	188	115.3	189	117.1
190	118.9	191	120.8	192	122.7	193	124.6
194	126.5	195	128.4	196	130.4	197	132.4
198	134.4	199	136.4	200	138.4	201	140.5
202	142.6	203	144.7	204	146.8	205	148.9
206	151.1	207	153.3	208	155.5	209	157.7
210	160.0	211	162.2	212	164.5	213	166.8
214	169.1	215	171.5	216	173.9	217	176.3
218	178.7	219	181.1	220	183.6	221	186.0
222	188.6	223	191.1	224	193.6	225	196.2
226	198.8	227	201.4	228	204.0	229	206.7
230	209.4	231	212.1	232	214.8	233	217.6
234	220.3	235	223.1	236	226.0	237	228.8
238	231.7	239	234.6	240	237.5	241	240.4
242	243.4	243	246.4	244	249.4	245	252.4
246	255.5	247	258.6	248	261.7	249	264.8
250	268.0	251	271.2	252	274.4	253	277.6
254	280.9	255	284.2	256	287.5	257	290.8
258	294.2	259	297.6	260	301.0	261	304.4
262	307.9	263	311.4	264	314.9	265	318.4
266	322.0	267	325.6				

LENGTH-WEIGHT RELATIONSHIPS OF REDEYE BASS

mm.	\hat{W} (gm.)	mm.	\hat{W} (gm.)	mm.	\hat{W} (gm.)	mm.	\hat{W} (gm.)
38	0.6	39	0.6	40	0.7	41	0.7
42	0.8	43	0.8	44	0.9	45	1.0
46	1.0	47	1.1	48	1.2	49	1.2
50	1.3	51	1.4	52	1.5	53	1.6
54	1.7	55	1.8	56	1.9	57	2.0
58	2.1	59	2.2	60	2.3	61	2.5
62	2.6	63	2.7	64	2.9	65	3.0
66	3.2	67	3.3	68	3.5	69	3.6
70	3.8	71	4.0	72	4.1	73	4.3
74	4.5	75	4.7	76	4.9	77	5.1
78	5.3	79	5.5	80	5.8	81	6.0
82	6.2	83	6.5	84	6.7	85	7.0
86	7.2	87	7.5	88	7.8	89	8.0
90	8.3	91	8.6	92	8.9	93	9.2
94	9.5	95	9.8	96	10.2	97	10.5
98	10.8	99	11.2	100	11.6	101	11.9
102	12.3	103	12.7	104	13.1	105	13.4
106	13.9	107	14.3	108	14.7	109	15.1
110	15.6	111	16.0	112	16.4	113	16.9
114	17.4	115	17.9	116	18.4	117	18.9
118	19.4	119	19.9	120	20.4	121	20.9
122	21.5	123	22.0	124	22.6	125	23.2
126	23.8	127	24.3	128	25.0	129	25.6
130	26.2	131	26.8	132	27.5	133	28.1
134	28.8	135	29.5	136	30.1	137	30.8
138	31.6	139	32.3	140	33.0	141	33.7
142	34.5	143	35.3	144	36.0	145	36.8
146	37.6	147	38.4	148	39.2	149	40.1
150	40.9	151	41.8	152	42.7	153	43.5
154	44.4	155	45.3	156	46.3	157	47.2
158	48.1	159	49.1	160	50.1	161	51.0
162	52.0	163	53.0	164	54.1	165	55.1
166	56.1	167	57.2	168	58.3	169	59.4
170	60.5	171	61.6	172	62.7	173	63.9
174	65.0	175	66.2	176	67.4	177	68.6
178	69.8	179	71.0	180	72.3	181	73.5
182	74.8	183	76.1	184	77.4	185	78.7
186	80.1	187	81.4	188	82.8	189	84.2
190	85.6	191	87.0	192	88.4	193	89.9
194	91.3	195	92.8	196	94.3	197	95.8
198	97.3	199	98.9	200	100.4	201	102.0
202	103.6	203	105.2	204	106.8	205	108.5
206	110.1	207	111.8	208	113.5	209	115.2
210	116.9	211	118.7	212	120.4	213	122.2
214	124.0	215	125.8	216	127.7	217	129.5
218	131.4	219	133.3	220	135.2	221	137.1
222	139.1	223	141.0	224	143.0	225	145.0
226	147.0	227	149.1	228	151.1	229	153.2
230	155.3	231	157.4	232	159.6	233	161.7
234	163.9	235	166.1	236	168.3	237	170.5
238	172.8	239	175.1	240	177.4	241	179.7
242	182.0	243	184.4	244	186.7	245	189.1
246	191.6	247	194.0	248	196.5	249	198.9
250	201.4	251	204.0	252	206.5	253	209.1
254	211.7	255	214.3	256	216.9	257	219.6
258	222.2	259	224.9	260	227.7	261	230.4
262	233.2	263	236.0	264	238.8	265	241.6

(Cont.)

LENGTH-WEIGHT RELATIONSHIPS OF REDEYE BASS (Cont.)

266	244.5	267	247.3	268	250.2	269	253.2
270	256.1	271	259.1	272	262.1	273	265.1
274	268.1	275	271.2	276	274.3	277	277.4
278	280.5	279	283.7	280	286.9	281	290.1
282	293.3	283	296.6	284	299.9	285	303.2
286	306.5	287	309.9	288	313.2	289	316.7
290	320.1	291	323.5	292	327.0	293	330.5
294	334.1	295	337.6	296	341.2	297	344.8
298	348.4	299	352.1	300	355.8	301	359.5
302	363.3	303	367.0	304	370.8	305	374.6
306	378.5	307	382.3	308	386.2	309	390.2
310	394.1	311	398.1	312	402.1	313	406.1
314	410.2	315	414.3	316	418.4	317	422.6
318	426.7	319	430.9	320	435.2	321	439.4
322	443.7	323	448.0	324	452.4	325	456.7
326	461.1	327	465.6	328	470.0	329	474.5
330	479.0	331	483.6	332	488.1	333	492.7
334	497.4	335	502.0	336	506.7	337	511.4
338	516.2	339	521.0	340	525.8	341	530.6
342	535.5	343	540.4				

LENGTH-WEIGHT RELATIONSHIPS OF SMALLMOUTH BASS

mm.	$\hat{W}(gm.)$	mm.	$\hat{W}(gm.)$	mm.	$\hat{W}(gm.)$	mm.	$\hat{W}(gm.)$
38	0.7	39	0.7	40	0.8	41	0.9
42	0.9	43	1.0	44	1.1	45	1.1
46	1.2	47	1.3	48	1.4	49	1.5
50	1.6	51	1.6	52	1.7	53	1.9
54	2.0	55	2.1	56	2.2	57	2.3
58	2.4	59	2.6	60	2.7	61	2.8
62	3.0	63	3.1	64	3.3	65	3.4
66	3.6	67	3.8	68	3.9	69	4.1
70	4.3	71	4.5	72	4.7	73	4.9
74	5.1	75	5.3	76	5.5	77	5.7
78	5.9	79	6.2	80	6.4	81	6.6
82	6.9	83	7.2	84	7.4	85	7.7
86	8.0	87	8.2	88	8.5	89	8.8
90	9.1	91	9.4	92	9.8	93	10.1
94	10.4	95	10.7	96	11.1	97	11.4
98	11.8	99	12.2	100	12.5	101	12.9
102	13.3	103	13.7	104	14.1	105	14.5
106	14.9	107	15.4	108	15.8	109	16.3
110	16.7	111	17.2	112	17.6	113	18.1
114	18.6	115	19.1	116	19.6	117	20.1
118	20.6	119	21.2	120	21.7	121	22.3
122	22.8	123	23.4	124	24.0	125	24.6
126	25.2	127	25.8	128	26.4	129	27.0
130	27.6	131	28.3	132	28.9	133	29.6
134	30.3	135	31.0	136	31.7	137	32.4
138	33.1	139	33.8	140	34.5	141	35.3
142	36.1	143	36.8	144	37.6	145	38.4
146	39.2	147	40.0	148	40.8	149	41.7
150	42.5	151	43.4	152	44.3	153	45.1

(Cont.)

LENGTH-WEIGHT RELATIONSHIPS OF SMALLMOUTH BASS (Cont.)

154	46.0	155	46.9	156	47.9	157	48.8
158	49.7	159	50.7	160	51.7	161	52.6
162	53.6	163	54.6	164	55.6	165	56.7
166	57.7	167	58.8	168	59.8	169	60.9
170	62.0	171	63.1	172	64.2	173	65.4
174	66.5	175	67.7	176	68.8	177	70.0
178	71.2	179	72.4	180	73.7	181	74.9
182	76.2	183	77.4	184	78.7	185	80.0
186	81.3	187	82.6	188	84.0	189	85.3
190	86.7	191	88.1	192	89.5	193	90.9
194	92.3	195	93.8	196	95.2	197	96.7
198	98.2	199	99.7	200	101.2	201	102.7
202	104.3	203	105.8	204	107.4	205	109.0
206	110.6	207	112.2	208	113.9	209	115.5
210	117.2	211	118.9	212	120.6	213	122.3
214	124.1	215	125.8	216	127.6	217	129.4
218	131.2	219	133.0	220	134.9	221	136.7
222	138.6	223	140.5	224	142.4	225	144.3
226	146.2	227	148.2	228	150.2	229	152.2
230	154.2	231	156.2	232	158.3	233	160.3
234	162.4	235	164.5	236	166.6	237	168.8
238	170.9	239	173.1	240	175.3	241	177.5
242	179.7	243	182.0	244	184.2	245	186.5
246	188.8	247	191.1	248	193.5	249	195.8
250	198.2	251	200.6	252	203.0	253	205.5
254	207.9	255	210.4	256	212.9	257	215.4
258	217.9	259	220.5	260	223.1	261	225.7
262	228.3	263	230.9	264	233.6	265	236.3
266	238.9	267	241.7	268	244.4	269	247.2
270	249.9	271	252.7	272	255.6	273	258.4
274	261.3	275	264.1	276	267.0	277	270.0
278	272.9	279	275.9	280	278.9	281	281.9
282	284.9	283	288.0	284	291.1	285	294.2
286	297.3	287	300.4	288	303.6	289	306.8
290	310.0	291	313.2	292	316.5	293	319.7
294	323.0	295	326.4	296	329.7	297	333.1
298	336.5	299	339.9	300	343.3	301	346.8
302	350.3	303	353.8	304	357.3	305	360.9
306	364.4	307	368.0	308	371.7	309	375.3
310	379.0	311	382.7	312	386.4	313	390.1
314	393.9	315	397.7	316	401.5	317	405.3
318	409.2	319	413.1	320	417.0	321	421.0
322	424.9	323	428.9	324	432.9	325	437.0
326	441.0	327	445.1	328	449.2	329	453.4
330	457.5	331	461.7	332	465.9	333	470.2
334	474.4	335	478.7	336	483.1	337	487.4
338	491.8	339	496.2	340	500.6	341	505.0
342	509.5	343	514.0	344	518.5	345	523.1
346	527.7	347	532.3	348	536.9	349	541.6
350	546.3	351	551.0	352	555.7	353	560.5
354	565.3	355	570.1	356	575.0	357	579.9
358	584.8	359	589.7	360	594.7	361	599.7
362	604.7	363	609.7	364	614.8	365	619.9
366	625.0	367	630.2	368	635.4		

LENGTH-WEIGHT RELATIONSHIPS OF SMALLMOUTH BUFFALO

mm.	$\hat{W}(gm.)$	mm.	$\hat{W}(gm.)$	mm.	$\hat{W}(gm.)$	mm.	$\hat{W}(gm.)$
38	0.8	39	0.8	40	0.9	41	1.0
42	1.0	43	1.1	44	1.2	45	1.3
46	1.4	47	1.5	48	1.6	49	1.7
50	1.8	51	1.9	52	2.0	53	2.1
54	2.2	55	2.4	56	2.5	57	2.6
58	2.8	59	2.9	60	3.1	61	3.2
62	3.4	63	3.6	64	3.8	65	3.9
66	4.1	67	4.3	68	4.5	69	4.7
70	4.9	71	5.1	72	5.4	73	5.6
74	5.8	75	6.1	76	6.3	77	6.6
78	6.8	79	7.1	80	7.4	81	7.7
82	8.0	83	8.3	84	8.6	85	8.9
86	9.2	87	9.5	88	9.9	89	10.2
90	10.6	91	10.9	92	11.3	93	11.7
94	12.1	95	12.5	96	12.9	97	13.3
98	13.7	99	14.1	100	14.6	101	15.0
102	15.5	103	15.9	104	16.4	105	16.9
106	17.4	107	17.9	108	18.4	109	18.9
110	19.5	111	20.0	112	20.6	113	21.1
114	21.7	115	22.3	116	22.9	117	23.5
118	24.1	119	24.7	120	25.4	121	26.0
122	26.7	123	27.3	124	28.0	125	28.7
126	29.4	127	30.1	128	30.9	129	31.6
130	32.3	131	33.1	132	33.9	133	34.7
134	35.5	135	36.3	136	37.1	137	37.9
138	38.8	139	39.6	140	40.5	141	41.4
142	42.3	143	43.2	144	44.1	145	45.1
146	46.0	147	47.0	148	48.0	149	49.0
150	50.0	151	51.0	152	52.0	153	53.1
154	54.1	155	55.2	156	56.3	157	57.4
158	58.5	159	59.7	160	60.8	161	62.0
162	63.2	163	64.3	164	65.6	165	66.8
166	68.0	167	69.3	168	70.5	169	71.8
170	73.1	171	74.4	172	75.8	173	77.1
174	78.5	175	79.9	176	81.2	177	82.7
178	84.1	179	85.5	180	87.0	181	88.5
182	90.0	183	91.5	184	93.0	185	94.6
186	96.1	187	97.7	188	99.3	189	100.9
190	102.5	191	104.2	192	105.9	193	107.5
194	109.2	195	111.0	196	112.7	197	114.5
198	116.2	199	118.0	200	119.8	201	121.7
202	123.5	203	125.4	204	127.3	205	129.2
206	131.1	207	133.0	208	135.0	209	137.0
210	139.0	211	141.0	212	143.1	213	145.1
214	147.2	215	149.3	216	151.4	217	153.6
218	155.7	219	157.9	220	160.1	221	162.3
222	164.6	223	166.8	224	169.1	225	171.4
226	173.8	227	176.1	228	178.5	229	180.9
230	183.3	231	185.7	232	188.2	233	190.6
234	193.1	235	195.7	236	198.2	237	200.8
238	203.4	239	206.0	240	208.6	241	211.2
242	213.9	243	216.6	244	219.3	245	222.1
246	224.9	247	227.6	248	230.5	249	233.3
250	236.2	251	239.0	252	241.9	253	244.9
254	247.8	255	250.8	256	253.8	257	256.8
258	259.9	259	263.0	260	266.1	261	269.2
262	272.3	263	275.5	264	278.7	265	281.9

(Cont.)

LENGTH-WEIGHT RELATIONSHIPS OF SMALLMOUTH BUFFALO (Cont.)

266	285.2	267	288.4	268	291.7	269	295.1
270	298.4	271	301.8	272	305.2	273	308.6
274	312.0	275	315.5	276	319.0	277	322.6
278	326.1	279	329.7	280	333.3	281	336.9
282	340.6	283	344.3	284	348.0	285	351.7
286	355.5	287	359.3	288	363.1	289	366.9
290	370.8	291	374.7	292	378.6	293	382.6
294	386.6	295	390.6	296	394.6	297	398.7
298	402.8	299	406.9	300	411.1	301	415.2
302	419.5	303	423.7	304	428.0	305	432.2
306	436.6	307	440.9	308	445.3	309	449.7
310	454.2	311	458.6	312	463.1	313	467.6
314	472.2	315	476.8	316	481.4	317	486.0
318	490.7	319	495.4	320	500.2	321	504.9
322	509.7	323	514.6	324	519.4	325	524.3
326	529.2	327	534.2	328	539.2	329	544.2
330	549.2	331	554.3	332	559.4	333	564.5
334	569.7	335	574.9	336	580.1	337	585.4
338	590.7	339	596.0	340	601.4	341	606.8
342	612.2	343	617.7	344	623.2	345	628.7
346	634.2	347	639.8	348	645.4	349	651.1
350	656.8	351	662.5	352	668.3	353	674.1
354	679.9	355	685.7	356	691.6	357	697.5
358	703.5	359	709.5	360	715.5	361	721.6
362	727.7	363	733.8	364	740.0	365	746.2
366	752.4	367	758.7	368	765.0	369	771.3
370	777.7	371	784.1	372	790.5	373	797.0
374	803.5	375	810.1	376	816.6	377	823.3
378	829.9	379	836.6	380	843.3	381	850.1
382	856.9	383	863.7	384	870.6	385	877.5
386	884.5	387	891.5	388	898.5	389	905.5
390	912.6	391	919.8	392	926.9	393	934.1
394	941.4	395	948.7	396	956.0	397	963.3
398	970.7	399	978.2	400	985.6	401	993.2
402	1,000.7	403	1,008.3	404	1,015.9	405	1,023.6
406	1,031.3	407	1,039.0	408	1,046.8	409	1,054.6
410	1,062.5	411	1,070.4	412	1,078.3	413	1,086.3
414	1,094.3	415	1,102.4	416	1,110.5	417	1,118.6
418	1,126.8	419	1,135.0	420	1,143.2	421	1,151.5
422	1,159.9	423	1,168.2	424	1,176.7	425	1,185.1
426	1,193.6	427	1,202.2	428	1,210.7	429	1,219.4
430	1,228.0	431	1,236.7	432	1,245.5	433	1,254.2
434	1,263.1	435	1,271.9	436	1,280.9	437	1,289.8
438	1,298.8	439	1,307.8	440	1,316.9	441	1,326.0
442	1,335.2	443	1,344.4	444	1,353.6	445	1,362.9
446	1,372.3	447	1,381.6	448	1,391.1	449	1,400.5
450	1,410.0	451	1,419.0	452	1,492.2	453	1,438.8
454	1,448.5	455	1,458.2	456	1,468.0	457	1,477.8
458	1,487.6	459	1,497.5	460	1,507.5	461	1,517.4
462	1,527.5	463	1,537.5	464	1,547.7	465	1,557.8
466	1,568.0	467	1,578.3	468	1,588.6	469	1,598.9
470	1,609.3	471	1,619.7	472	1,630.2	473	1,640.7
474	1,651.3	475	1,661.9	476	1,672.6	477	1,683.3
478	1,694.0	479	1,704.8	480	1,715.7	481	1,726.6
482	1,737.5	483	1,748.5	484	1,759.5	485	1,770.6
486	1,781.7	487	1,792.9	488	1,804.1	489	1,815.3
490	1,826.7	491	1,838.0	492	1,849.4	493	1,860.9
494	1,872.4	495	1,883.9	496	1,895.5	497	1,907.1
498	1,918.8	499	1,930.6	500	1,942.4	501	1,954.2
502	1,966.1	503	1,978.0	504	1,990.0	505	2,002.0

(Cont.)

LENGTH-WEIGHT RELATIONSHIPS OF SMALLMOUTH BUFFALO (Cont.)

506	2,014.1	507	2,026.2	508	2,038.4	509	2,050.6
510	2,062.9	511	2,075.2	512	2,087.6	513	2,100.0
514	2,112.5	515	2,125.0	516	2,137.5	517	2,150.2
518	2,162.8	519	2,175.5	520	2,188.3	521	2,201.1
522	2,214.0	523	2,226.9	524	2,239.9	525	2,252.9
526	2,266.0	527	2,279.1	528	2,292.3	529	2,305.5
530	2,318.8	531	2,332.1	532	2,345.5	533	2,358.9
534	2,372.4	535	2,385.9	536	2,399.5	537	2,413.1
538	2,426.8	539	2,440.6	540	2,454.4	541	2,468.2
542	2,482.1	543	2,496.0	544	2,510.0	545	2,524.1
546	2,538.2	547	2,552.4	548	2,566.6	549	2,580.8
550	2,595.1	551	2,609.5	552	2,623.9	553	2,638.4
554	2,653.0	555	2,667.5	556	2,682.2	557	2,696.9
558	2,711.6	559	2,726.4	560	2,741.3	561	2,756.2
562	2,771.1	563	2,786.2	564	2,801.2	565	2,816.4
566	2,831.5	567	2,846.8	568	2,862.1	569	2,877.4
570	2,892.8	571	2,908.3	572	2,923.8	573	2,939.3
574	2,955.0	575	2,970.6	576	2,986.4	577	3,002.2
578	3,018.0	579	3,033.9	580	3,049.9	581	3,065.9
582	3,082.0	583	3,098.1	584	3,114.3	585	3,130.5
586	3,146.8	587	3,163.1	588	3,179.6	589	3,196.0
590	3,212.6	591	3,229.1	592	3,245.8	593	3,262.5
594	3,279.2	595	3,296.0	596	3,312.9	597	3,329.8
598	3,346.8	599	3,363.9	600	3,381.0	601	3,398.1
602	3,415.3	603	3,432.6	604	3,449.9	605	3,467.3
606	3,484.8	607	3,502.3	608	3,519.9	609	3,537.5
610	3,555.2	611	3,572.9	612	3,590.7	613	3,608.6
614	3,626.5	615	3,644.5	616	3,662.6	617	3,680.7
618	3,698.8	619	3,717.1	620	3,735.3	621	3,753.7
622	3,772.1	623	3,790.6	624	3,809.1	625	3,827.7
626	3,846.3	627	3,865.0	628	3,883.8	629	3,902.6
630	3,921.5	631	3,940.5	632	3,959.5	633	3,978.6
634	3,997.7	635	4,016.9	636	4,036.2	637	4,055.5
638	4,074.9	639	4,094.3	640	4,113.8	641	4,133.4
642	4,153.0	643	4,172.7	644	4,192.5	645	4,212.3
646	4,232.2	647	4,252.2	648	4,272.2	649	4,292.2
650	4,312.4	651	4,332.6	652	4,352.8	653	4,373.2
654	4,393.6	655	4,414.0	656	4,434.5	657	4,455.1
658	4,475.8	659	4,496.5	660	4,517.2	661	4,538.1
662	4,559.0	663	4,580.0	664	4,601.0	665	4,622.1
666	4,643.2	667	4,664.5	668	4,685.8	669	4,707.1
670	4,728.5	671	4,750.0	672	4,771.6	673	4,793.2
674	4,814.9	675	4,836.6	676	4,858.5	677	4,880.3
678	4,902.3	679	4,924.3	680	4,946.4	681	4,968.5
682	4,990.7	683	5,013.0	684	5,035.4	685	5,057.8
686	5,080.3	687	5,102.8	688	5,125.4	689	5,148.1
690	5,170.8	691	5,193.7	692	5,216.5	693	5,239.5
694	5,262.5	695	5,285.6	696	5,308.7	697	5,332.0
698	5,355.3	699	5,378.6	700	5,402.0	701	5,425.5
702	5,449.1	703	5,472.7	704	5,496.4	705	5,520.2
706	5,544.0	707	5,567.9	708	5,591.9	709	5,616.0
710	5,640.1	711	5,664.3	712	5,688.5	713	5,712.8
714	5,737.2	715	5,761.7	716	5,786.2	717	5,810.8
718	5,835.5	719	5,860.2	720	5,885.1	721	5,909.9
722	5,934.9	723	5,959.9	724	5,985.0	725	6,010.2
726	6,075.4	727	6,060.7	728	6,086.1	729	6,111.6
730	6,137.1	731	6,162.7	732	6,188.3	733	6,214.1
734	6,239.9	735	6,265.8	736	6,291.7	737	6,317.7
738	6,343.8	739	6,370.0	740	6,396.2	741	6,422.5

(Cont.)

LENGTH-WEIGHT RELATIONSHIPS OF SMALLMOUTH BUFFALO (Cont.)

742	6,448.9	743	6,475.4	744	6,501.9	745	6,528.5
746	6,555.2	747	6,581.9	748	6,608.8	749	6,635.7
750	6,662.6	751	6,689.7	752	6,716.8	753	6,744.0
754	6,771.2	755	6,798.6	756	6,826.0	757	6,853.5
758	6,881.0	759	6,908.7	760	6,936.4	761	6,964.2
762	6,992.0	763	7,020.0	764	7,048.0	765	7,076.0
766	7,104.2	767	7,132.4	768	7,160.7	769	7,189.1
770	7,217.6	771	7,246.1	772	7,274.7	773	7,303.4
774	7,332.2	775	7,361.0				

LENGTH-WEIGHT RELATIONSHIPS OF SPOTTED BASS

mm.	$\hat{W}(gm.)$	mm.	$\hat{W}(gm.)$	mm.	$\hat{W}(gm.)$	mm.	$\hat{W}(gm.)$
49	1.1	50	1.2	51	1.3	52	1.4
53	1.5	54	1.5	55	1.6	56	1.7
57	1.8	58	1.9	59	2.0	60	2.1
61	2.3	62	2.4	63	2.5	64	2.6
65	2.7	66	2.9	67	3.0	68	3.2
69	3.3	70	3.5	71	3.6	72	3.8
73	4.0	74	4.1	75	4.3	76	4.5
77	4.7	78	4.9	79	5.1	80	5.3
81	5.5	82	5.7	83	5.9	84	6.1
85	6.4	86	6.6	87	6.8	88	7.1
89	7.3	90	7.6	91	7.9	92	8.2
93	8.4	94	8.7	95	9.0	96	9.3
97	9.6	98	9.9	99	10.3	100	10.6
101	10.9	102	11.3	103	11.6	104	12.0
105	12.3	106	12.7	107	13.1	108	13.5
109	13.9	110	14.3	111	14.7	112	15.1
113	15.5	114	15.9	115	16.4	116	16.8
117	17.3	118	17.8	119	18.2	120	18.7
121	19.2	122	19.7	123	20.2	124	20.8
125	21.3	126	21.8	127	22.4	128	22.9
129	23.5	130	24.1	131	24.6	132	25.2
133	25.8	134	26.5	135	27.1	136	27.7
137	28.4	138	29.0	139	29.7	140	30.3
141	31.0	142	31.7	143	32.4	144	33.1
145	33.9	146	34.6	147	35.3	148	36.1
149	36.9	150	37.7	151	38.4	152	39.2
153	40.1	154	40.9	155	41.7	156	42.6
157	43.4	158	44.3	159	45.2	160	46.1
161	47.0	162	47.9	163	48.8	164	49.8
165	50.7	166	51.7	167	52.7	168	53.7
169	54.7	170	55.7	171	56.7	172	57.8
173	58.8	174	59.9	175	61.0	176	62.1
177	63.2	178	64.3	179	65.5	180	66.6
181	67.8	182	69.0	183	70.2	184	71.4
185	72.6	186	73.8	187	75.1	188	76.3
189	77.6	190	78.9	191	80.2	192	81.5
193	82.9	194	84.2	195	85.6	196	87.0
197	88.4	198	89.8	199	91.2	200	92.7
201	94.1	202	95.6	203	97.1	204	98.6
205	100.1	206	101.6	207	103.2	208	104.8

(Cont.)

LENGTH-WEIGHT RELATIONSHIPS OF SPOTTED BASS (Cont.)

209	106.3	210	107.9	211	109.6	212	111.2
213	112.8	214	114.5	215	116.2	216	117.9
217	119.6	218	121.3	219	123.1	220	124.9
221	126.6	222	128.4	223	130.3	224	132.1
225	134.0	226	135.8	227	137.7	228	139.6
229	141.6	230	143.5	231	145.5	232	147.4
233	149.4	234	151.5	235	153.5	236	155.5
237	157.6	238	159.7	239	161.8	240	163.9
241	166.1	242	168.3	243	170.4	244	172.6
245	174.9	246	177.1	247	179.4	248	181.7
249	184.0	250	186.3	251	188.6	252	191.0
253	193.4	254	195.8	255	198.2	256	200.6
257	203.1	258	205.6	259	208.1	260	210.6
261	213.2	262	215.7	263	218.3	264	220.9
265	223.6	266	226.2	267	228.9	268	231.6
269	234.3	270	237.0	271	239.8	272	242.6
273	245.4	274	248.2	275	251.0	276	253.9
277	256.8	278	259.7	279	262.6	280	265.6
281	268.6	282	271.6	283	274.6	284	277.7
285	280.7	286	283.8	287	286.9	288	290.1
289	293.3	290	296.4	291	299.7	292	302.9
293	306.1	294	309.4	295	312.7	296	316.1
297	319.4	298	322.8	299	326.2	300	329.6
301	333.1	302	336.6	303	340.1	304	343.6
305	347.1	306	350.7	307	354.3	308	357.9
309	361.6	310	365.3	311	369.0	312	372.7
313	376.4	314	380.2	315	384.0	316	387.8
317	391.7	318	395.6	319	399.5	320	403.4
321	407.4	322	411.4	323	415.4	324	419.4
325	423.5	326	427.6	327	431.7	328	435.8
329	440.0	330	444.2	331	448.4	332	452.7
333	457.0	334	461.3	335	465.6	336	470.0
337	474.4	338	478.8	339	483.2	340	487.7
341	492.2	342	496.7	343	501.3	344	505.9
345	510.5	346	515.2	347	519.8	348	524.5
349	529.3	350	534.0	351	538.8	352	543.6
353	548.5	354	553.4	355	558.3	356	563.2
357	568.2	358	573.2	359	578.2	360	583.3
361	588.3	362	593.5	363	598.6	364	603.8
365	609.0	366	614.2	367	619.5	368	624.8
369	630.1	370	635.5	371	640.9	372	646.3
373	651.7	374	657.2	375	662.7	376	668.3
377	673.9	378	679.5	379	685.1	380	690.8
381	696.5	382	702.2	383	708.0	384	713.8
385	719.7	386	725.5	387	731.4	388	737.3
389	743.3	390	749.3	391	755.3	392	761.4
393	767.5	394	773.6	395	779.8	396	786.0
397	792.2	398	798.5	399	804.8	400	811.1
401	817.5	402	823.9	403	830.3	404	836.8
405	843.3	406	849.8	407	856.4	408	863.0
409	869.6	410	876.3	411	883.0	412	889.7
413	896.5	414	903.3	415	910.2	416	917.0
417	924.0	418	930.9	419	937.9	420	944.9
421	952.0	422	959.1	423	966.2	424	973.4
425	980.6	426	987.8	427	995.1	428	1,002.4
429	1,009.8	430	1,017.2	431	1,024.6	432	1,032.0
433	1,039.5	434	1,047.1	435	1,054.6	436	1,062.2
437	1,069.9	438	1,077.6	439	1,085.3	440	1,093.0
441	1,100.8	442	1,108.7	443	1,116.5	444	1,124.4

(Cont.)

LENGTH-WEIGHT RELATIONSHIPS OF SPOTTED BASS (Cont.)

445	1,132.4	446	1,140.4	447	1,148.4	448	1,156.5
449	1,164.6	450	1,172.7	451	1,180.9	452	1,189.1
453	1,197.3	454	1,205.6	455	1,214.0	456	1,222.3
457	1,230.7	458	1,239.2	459	1,247.7	460	1,256.2
461	1,264.8	462	1,273.4	463	1,282.0	464	1,290.7
465	1,299.4	466	1,308.2	467	1,317.0	468	1,325.9
469	1,334.8	470	1,343.7				

LENGTH-WEIGHT RELATIONSHIPS OF THREADFIN SHAD

mm.	$\hat{W}(gm.)$	mm.	$\hat{W}(gm.)$	mm.	$\hat{W}(gm.)$	mm.	$\hat{W}(gm.)$
38	0.6	39	0.7	40	0.7	41	0.8
42	0.8	43	0.9	44	0.9	45	1.0
46	1.1	47	1.1	48	1.2	49	1.3
50	1.3	51	1.4	52	1.5	53	1.6
54	1.7	55	1.8	56	1.8	57	1.9
58	2.0	59	2.1	60	2.2	61	2.3
62	2.5	63	2.6	64	2.7	65	2.8
66	2.9	67	3.1	68	3.2	69	3.3
70	3.4	71	3.6	72	3.7	73	3.9
74	4.0	75	4.2	76	4.3	77	4.5
78	4.7	79	4.8	80	5.0	81	5.2
82	5.4	83	5.6	84	5.7	85	5.9
86	6.1	87	6.3	88	6.5	89	6.8
90	7.0	91	7.2	92	7.4	93	7.6
94	7.9	95	8.1	96	8.4	97	8.6
98	8.8	99	9.1	100	9.4	101	9.6
102	9.9	103	10.2	104	10.5	105	10.7
106	11.0	107	11.3	108	11.6	109	11.9
110	12.2	111	12.5	112	12.9	113	13.2
114	13.5	115	13.8	116	14.2	117	14.5
118	14.9	119	15.2	120	15.6	121	16.0
122	16.3	123	16.7	124	17.1	125	17.5
126	17.9	127	18.3	128	18.7	129	19.1
130	19.5	131	19.9	132	20.4	133	20.8
134	21.3	135	21.7	136	22.2	137	22.6
138	23.1	139	23.5	140	24.0		

LENGTH-WEIGHT RELATIONSHIPS OF WARMOUTH

mm.	\hat{W} (gm.)	mm.	\hat{W} (gm.)	mm.	\hat{W} (gm.)	mm.	\hat{W} (gm.)
38	1.1	39	1.2	40	1.2	41	1.3
42	1.5	43	1.6	44	1.7	45	1.8
46	1.9	47	2.1	48	2.2	49	2.3
50	2.5	51	2.6	52	2.8	53	3.0
54	3.1	55	3.3	56	3.5	57	3.7
58	3.9	59	4.1	60	4.4	61	4.6
62	4.8	63	5.1	64	5.3	65	5.6
66	5.8	67	6.1	68	6.4	69	6.7
70	7.0	71	7.3	72	7.6	73	8.0
74	8.3	75	8.7	76	9.0	77	9.4
78	9.8	79	10.2	80	10.6	81	11.0
82	11.4	83	11.8	84	12.3	85	12.7
86	13.2	87	13.7	88	14.2	89	14.7
90	15.2	91	15.7	92	16.2	93	16.8
94	17.4	95	17.9	96	18.5	97	19.1
98	19.7	99	20.4	100	21.0	101	21.7
102	22.3	103	23.0	104	23.7	105	24.4
106	25.1	107	25.9	108	26.6	109	27.4
110	28.2	111	29.0	112	29.8	113	30.6
114	31.4	115	32.3	116	33.2	117	34.1
118	35.0	119	35.9	120	36.8	121	37.8
122	38.8	123	39.7	124	40.7	125	41.8
126	42.8	127	43.9	128	44.9	129	46.0
130	47.1	131	48.2	132	49.4	133	50.6
134	51.7	135	52.9	136	54.1	137	55.4
138	56.6	139	57.9	140	59.2	141	60.5
142	61.8	143	63.2	144	64.6	145	66.0
146	67.4	147	68.8	148	70.3	149	71.7
150	73.2	151	74.7	152	76.3	153	77.8
154	79.4	155	81.0	156	82.6	157	84.3
158	85.9	159	87.6	160	89.3	161	91.1
162	92.8	163	94.6	164	96.4	165	98.2
166	100.1	167	101.9	168	103.8	169	105.7
170	107.7	171	109.6	172	111.6	173	113.6
174	115.7	175	117.7	176	119.8	177	121.9
178	124.0	179	126.2	180	128.4	181	130.6
182	132.8	183	135.1	184	137.4	185	139.7
186	142.0	187	144.4	188	146.8	189	149.2
190	151.7	191	154.1	192	156.6	193	159.1
194	161.7	195	164.3	196	166.9	197	169.5
198	172.2	199	174.9	200	177.6	201	180.4
202	183.1	203	185.9	204	188.8	205	191.6
206	194.5	207	197.5	208	200.4	209	203.4
210	206.4	211	209.4	212	212.5	213	215.6
214	218.8	215	221.9	216	225.1		

LENGTH-WEIGHT RELATIONSHIPS OF WHITE BASS

mm.	$\hat{W}(gm.)$	mm.	$\hat{W}(gm.)$	mm.	$\hat{W}(gm.)$	mm.	$\hat{W}(gm.)$
63	3.4	64	3.6	65	3.7	66	3.9
67	4.1	68	4.3	69	4.5	70	4.7
71	4.9	72	5.1	73	5.3	74	5.5
75	5.7	76	6.0	77	6.2	78	6.4
79	6.7	80	6.9	81	7.2	82	7.5
83	7.7	84	8.0	85	8.3	86	8.6
87	8.9	88	9.2	89	9.5	90	9.9
91	10.2	92	10.5	93	10.9	94	11.2
95	11.6	96	11.9	97	12.3	98	12.7
99	13.1	100	13.5	101	13.9	102	14.3
103	14.7	104	15.2	105	15.6	106	16.1
107	16.5	108	17.0	109	17.4	110	17.9
111	18.4	112	18.9	113	19.4	114	19.9
115	20.5	116	21.0	117	21.5	118	22.1
119	22.7	120	23.2	121	23.8	122	24.4
123	25.0	124	25.6	125	26.2	126	26.9
127	27.5	128	28.2	129	28.8	130	29.5
131	30.2	132	30.9	133	31.6	134	32.3
135	33.0	136	33.7	137	34.5	138	35.2
139	36.0	140	36.8	141	37.6	142	38.4
143	39.2	144	40.0	145	40.8	146	41.7
147	42.5	148	43.4	149	44.3	150	45.2
151	46.1	152	47.0	153	47.9	154	48.9
155	49.8	156	50.8	157	51.7	158	52.7
159	53.7	160	54.7	161	55.8	162	56.8
163	57.9	164	58.9	165	60.0	166	61.1
167	62.2	168	63.3	169	64.4	170	65.6
171	66.7	172	67.9	173	69.1	174	70.3
175	71.5	176	72.7	177	74.0	178	75.2
179	76.5	180	77.8	181	79.1	182	80.4
183	81.7	184	83.0	185	84.4	186	85.8
187	87.1	188	88.5	189	89.9	190	91.4
191	92.8	192	94.3	193	95.7	194	97.2
195	98.7	196	100.2	197	101.8	198	103.3
199	104.9	200	106.5	201	108.0	202	109.7
203	111.3	204	112.9	205	114.6	206	116.3
207	117.9	208	119.7	209	121.4	210	123.1
211	124.9	212	126.6	213	128.4	214	130.2
215	132.1	216	133.9	217	135.8	218	137.6
219	139.5	220	141.4	221	143.3	222	145.3
223	147.2	224	149.2	225	151.2	226	153.2
227	155.3	228	157.3	229	159.4	230	161.5
231	163.6	232	165.7	233	167.8	234	170.0
235	172.1	236	174.3	237	176.5	238	178.8
239	181.0	240	183.3	241	185.6	242	187.9
243	190.2	244	192.5	245	194.9	246	197.3
247	199.7	248	202.1	249	204.5	250	207.0
251	209.5	252	212.0	253	214.5	254	217.0
255	219.6	256	222.2	257	224.7	258	227.4
259	230.0	260	232.7	261	235.3	262	238.0
263	240.7	264	243.5	265	246.2	266	249.0
267	251.8	268	254.6	269	257.5	270	260.4
271	263.2	272	266.1	273	269.1	274	272.0
275	275.0	276	278.0	277	281.0	278	284.0
279	287.1	280	290.2	281	293.3	282	296.4
283	299.5	284	302.7	285	305.9	286	309.1

(Cont.)

LENGTH-WEIGHT RELATIONSHIPS OF WHITE BASS (Cont.)

287	312.3	288	315.6	289	318.8	290	322.1
291	325.5	292	328.8	293	332.2	294	335.6
295	339.0	296	342.4	297	345.9	298	349.4
299	352.9	300	356.4	301	359.9	302	363.5
303	367.1	304	370.7	305	374.4	306	378.0
307	381.7	308	385.5	309	389.2	310	393.0
311	396.8	312	400.6	313	404.4	314	408.3
315	412.2	316	416.1	317	420.0	318	424.0
319	427.9	320	432.0	321	436.0	322	440.1
323	444.1	324	448.3	325	452.4	326	456.5
327	460.7	328	464.9	329	469.2	330	473.4
331	477.7	332	482.0	333	486.4	334	490.8
335	495.1	336	499.6	337	504.0	338	508.5
339	513.0	340	517.5	341	522.0	342	526.6
343	531.2	344	535.8	345	540.5	346	545.2
347	549.9	348	554.6	349	559.4	350	564.2
351	569.0	352	573.8	353	578.7	354	583.6
355	588.5	356	593.5	357	598.5	358	603.5
359	608.5	360	613.5	361	618.7	362	623.8
363	629.0	364	634.1	365	639.3	366	644.6
367	649.8	368	655.1	369	660.4	370	665.8
371	671.2	372	676.6	373	682.0	374	687.5
375	693.0	376	698.5	377	704.0	378	709.6
379	715.2	380	720.9	381	726.5	382	732.2
383	738.0	384	743.7	385	749.5	386	755.3
387	761.2	388	767.0	389	772.9	390	778.9
391	784.8	392	790.8	393	796.9	394	802.9
395	809.0	396	815.1	397	821.3	398	827.5
399	833.7	400	839.9	401	846.2	402	852.5
403	858.8	404	865.2	405	871.6	406	878.0
407	884.5	408	891.0	409	897.5	410	904.1
411	910.6	412	917.3	413	923.9	414	930.6
415	937.3	416	944.0	417	950.8	418	957.6
419	964.5	420	971.4	421	978.3	422	985.2
423	992.2	424	999.2	425	1,006.2	426	1,013.3
427	1,020.4	428	1,027.5	429	1,034.7	430	1,041.9
431	1,049.2	432	1,056.4	433	1,063.7	434	1,071.1
435	1,078.4	436	1,085.8	437	1,093.3	438	1,100.8
439	1,108.3	440	1,115.8	441	1,123.4	442	1,131.0
443	1,138.6	444	1,146.3				

LENGTH-WEIGHT RELATIONSHIPS OF WHITE CRAPPIE

mm.	$\hat{W}(gm.)$	mm.	$\hat{W}(gm.)$	mm.	$\hat{W}(gm.)$	mm.	$\hat{W}(gm.)$
38	0.7	39	0.7	40	0.8	41	0.8
42	0.9	43	1.0	44	1.0	45	1.1
46	1.2	47	1.3	48	1.4	49	1.5
50	1.5	51	1.6	52	1.7	53	1.8
54	2.0	55	2.1	56	2.2	57	2.3
58	2.4	59	2.6	60	2.7	61	2.8
62	3.0	63	3.1	64	3.3	65	3.4
66	3.6	67	3.8	68	3.9	69	4.1
70	4.3	71	4.5	72	4.7	73	4.9
74	5.1	75	5.3	76	5.5	77	5.8
78	6.0	79	6.2	80	6.5	81	6.7
82	7.0	83	7.3	84	7.5	85	7.8
86	8.1	87	8.4	88	8.7	89	9.0
90	9.3	91	9.6	92	9.9	93	10.3
94	10.6	95	11.0	96	11.3	97	11.7
98	12.0	99	12.4	100	12.8	101	13.2
102	13.6	103	14.0	104	14.4	105	14.9
106	15.3	107	15.7	108	16.2	109	16.7
110	17.1	111	17.6	112	18.1	113	18.6
114	19.1	115	19.6	116	20.1	117	20.7
118	21.2	119	21.8	120	22.3	121	22.9
122	23.5	123	24.1	124	24.7	125	25.3
126	25.9	127	26.5	128	27.2	129	27.8
130	28.5	131	29.2	132	29.9	133	30.6
134	31.3	135	32.0	136	32.7	137	33.5
138	34.2	139	35.0	140	35.7	141	36.5
142	37.3	143	38.1	144	38.9	145	39.8
146	40.6	147	41.5	148	42.3	149	43.2
150	44.1	151	45.0	152	45.9	153	46.9
154	47.8	155	48.7	156	49.7	157	50.7
158	51.7	159	52.7	160	53.7	161	54.7
162	55.8	163	56.8	164	57.9	165	59.0
166	60.1	167	61.2	168	62.3	169	63.5
170	64.6	171	65.8	172	67.0	173	68.1
174	69.4	175	70.6	176	71.8	177	73.1
178	74.3	179	75.6	180	76.9	181	78.2
182	79.5	183	80.9	184	82.2	185	83.6
186	85.0	187	86.4	188	87.8	189	89.3
190	90.7	191	92.2	192	93.6	193	95.1
194	96.6	195	98.2	196	99.7	197	101.3
198	102.9	199	104.4	200	106.1	201	107.7
202	109.3	203	111.0	204	112.7	205	114.4
206	116.1	207	117.8	208	119.5	209	121.3
210	123.1	211	124.9	212	126.7	213	128.5
214	130.4	215	132.2	216	134.1	217	136.0
218	137.9	219	139.9	220	141.8	221	143.8
222	145.8	223	147.8	224	149.9	225	151.9
226	154.0	227	156.1	228	158.2	229	160.3
230	162.4	231	164.6	232	166.8	233	169.0
234	171.2	235	173.4	236	175.7	237	178.0
238	180.3	239	182.6	240	184.9	241	187.3
242	189.7	243	192.1	244	194.5	245	197.0
246	199.4	247	201.9	248	204.4	249	206.9
250	209.5	251	212.0	252	214.6	253	217.2
254	219.9	255	222.5	256	225.2	257	227.9
253	230.6	259	233.3	260	236.1	261	238.9

(Cont.)

LENGTH-WEIGHT RELATIONSHIPS OF WHITE CRAPPIE (Cont.)

262	241.7	263	244.5	264	247.3	265	250.2
266	253.1	267	256.0	268	258.9	269	261.9
270	264.9	271	267.9	272	270.9	273	274.0
274	277.0	275	280.1	276	283.3	277	286.4
278	289.6	279	292.8	280	296.0	281	299.2
282	302.5	283	305.7	284	309.0	285	312.4
286	315.7	287	319.1	288	322.5	289	325.9
290	329.4	291	332.9	292	336.4	293	339.9
294	343.5	295	347.0	296	350.6	297	354.3
298	357.9	299	361.6	300	365.3	301	369.0
302	372.8	303	376.5	304	380.3	305	384.2
306	388.0	307	391.9	308	395.8	309	399.7
310	403.7	311	407.7	312	411.7	313	415.7
314	419.8	315	423.9	316	428.0	317	432.2
318	436.3	319	440.5	320	444.7	321	449.0
322	453.3	323	457.6	324	461.9	325	466.3
326	470.7	327	475.1	328	479.5	329	484.0
330	488.5	331	493.0	332	497.6	333	502.2
334	506.8	335	511.4	336	516.1	337	520.8
338	525.5	339	530.3	340	535.1	341	539.9
342	544.7	343	549.6	344	554.5	345	559.4
346	564.4	347	569.4	348	574.4	349	579.5
350	584.5	351	589.6	352	594.8	353	600.0
354	605.2	355	610.4	356	615.6	357	620.9
358	626.2	359	631.6	360	637.0	361	642.4
362	647.8	363	653.3	364	658.8	365	664.4
366	669.9	367	675.5	368	681.1	369	686.8
370	692.5	371	698.2	372	704.0	373	709.8
374	715.6	375	721.4	376	727.3	377	733.2
378	739.2	379	745.2	380	751.2	381	757.2
382	763.3	383	769.4	384	775.6	385	781.7
386	787.9	387	794.2	388	800.5	389	806.8
390	813.1	391	819.5	392	825.9	393	832.3
394	838.8	395	845.3	396	851.9	397	858.5
398	865.1	399	871.7	400	878.4	401	885.1
402	891.9	403	898.6	404	905.5	405	912.3
406	919.2	407	926.1	408	933.1	409	940.1
410	947.1	411	954.2	412	961.3	413	968.4
414	975.6	415	982.8	416	990.0	417	997.3
418	1,004.6	419	1,011.9				

LENGTH-WEIGHT RELATIONSHIPS OF YELLOW BASS

mm.	$\hat{W}(gm.)$	mm.	$\hat{W}(gm.)$	mm.	$\hat{W}(gm.)$	mm.	$\hat{W}(gm.)$
38	0.6	39	0.6	40	0.7	41	0.7
42	0.8	43	0.9	44	0.9	45	1.0
46	1.1	47	1.1	48	1.2	49	1.3
50	1.4	51	1.5	52	1.6	53	1.7
54	1.8	55	1.9	56	2.0	57	2.1
58	2.2	59	2.3	60	2.5	61	2.6
62	2.7	63	2.9	64	3.0	65	3.2
66	3.3	67	3.5	68	3.7	69	3.8
70	4.0	71	4.2	72	4.4	73	4.6
74	4.8	75	5.0	76	5.2	77	5.4
78	5.7	79	5.9	80	6.1	81	6.4
82	6.6	83	6.9	84	7.1	85	7.4
86	7.7	87	8.0	88	8.3	89	8.6
90	8.9	91	9.2	92	9.5	93	9.8
94	10.2	95	10.5	96	10.9	97	11.2
98	11.6	99	12.0	100	12.4	101	12.8
102	13.2	103	13.6	104	14.0	105	14.4
106	14.9	107	15.3	108	15.8	109	16.2
110	16.7	111	17.2	112	17.7	113	18.2
114	18.7	115	19.2	116	19.8	117	20.3
118	20.8	119	21.4	120	22.0	121	22.6
122	23.2	123	23.8	124	24.4	125	25.0
126	25.6	127	26.3	128	26.9	129	27.6
130	28.3	131	29.0	132	29.7	133	30.4
134	31.1	135	31.8	136	32.6	137	33.4
138	34.1	139	34.9	140	35.7	141	36.5
142	37.3	143	38.2	144	39.0	145	39.9
146	40.8	147	41.6	148	42.5	149	43.5
150	44.4	151	45.3	152	46.3	153	47.2
154	48.2	155	49.2	156	50.2	157	51.2
158	52.3	159	53.3	160	54.4	161	55.5
162	56.6	163	57.7	164	58.8	165	59.9
166	61.1	167	62.2	168	63.4	169	64.6
170	65.8	171	67.1	172	68.3	173	69.6
174	70.8	175	72.1	176	73.4	177	74.8
178	76.1	179	77.5	180	78.8	181	80.2
182	81.6	183	83.0	184	84.5	185	85.9
186	87.4	187	88.9	188	90.4	189	91.9
190	93.5	191	95.0	192	96.6	193	98.2
194	99.8	195	101.4	196	103.1	197	104.7
198	106.4	199	108.1	200	109.8	201	111.6
202	113.3	203	115.1	204	116.9	205	118.7
206	120.6	207	122.4	208	124.3	209	126.2
210	128.1	211	130.0	212	132.0	213	133.9
214	135.9	215	137.9	216	140.0	217	142.0
218	144.1	219	146.2	220	148.3	221	150.4
222	152.6	223	154.8	224	157.0	225	159.2
226	161.4	227	163.7	228	166.0	229	168.3
230	170.6	231	172.9	232	175.3	233	177.7
234	180.1	235	182.6	236	185.0	237	187.5
238	190.0	239	192.5	240	195.1	241	197.6
242	200.2	243	202.9	244	205.5	245	208.2
246	210.9	247	213.6	248	216.3	249	219.1
250	221.8	251	224.7	252	227.5	253	230.3
254	233.2	255	236.1	256	239.1	257	242.0
258	245.0	259	248.0	260	251.0	261	254.1

(Cont.)

LENGTH-WEIGHT RELATIONSHIPS OF YELLOW BASS (Cont.)

262	257.2	263	260.3	264	263.4	265	266.5
266	269.7	267	272.9	268	276.2	269	279.4
270	282.7	271	286.0	272	289.4	273	292.7
274	296.1	275	299.5	276	303.0	277	306.4
278	309.9	279	313.5	280	317.0	281	320.6
282	324.2	283	327.8	284	331.5	285	335.2
286	338.9	287	342.7	288	346.4	289	350.2
290	354.1	291	357.9	292	361.8	293	365.7

APPENDIX

APPENDIX TABLE 1. CONVERSION TABLE—MILLIMETERS AND INCH-GROUPS¹

Inch-group	Millimeter		Inch-group	Millimeter	
	Lower	Upper		Lower	Upper
1	13	38	21	522	546
2	39	63	22	547	571
3	64	89	23	572	597
4	90	114	24	598	622
5	115	139	25	623	648
6	140	165	26	649	673
7	166	190	27	674	698
8	191	216	28	699	724
9	217	241	29	725	749
10	242	267	30	750	775
11	268	292	31	776	800
12	293	317	32	801	825
13	318	343	33	826	851
14	344	368	34	852	876
15	369	394	35	877	902
16	395	419	36	903	927
17	420	444	37	928	952
18	445	470	38	953	978
19	471	495	39	979	1,003
20	496	521	40	1,004	1,029

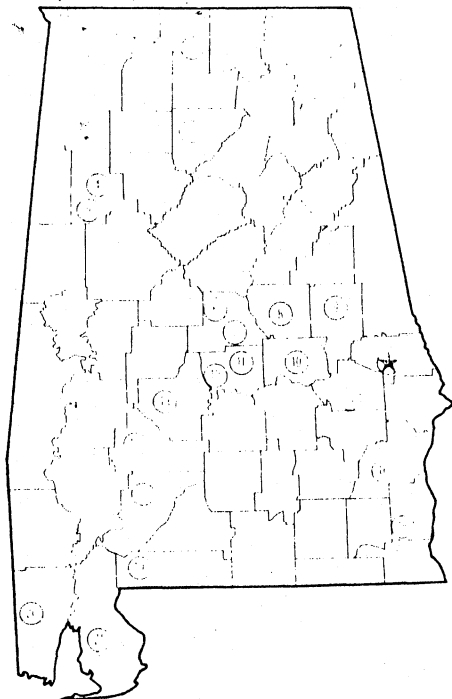
¹ To nearest inch. For example, 1" group contains fish from more than 0.5" up to and including 1.5" in length.

APPENDIX TABLE 2. CONVERSION TABLE—GRAMS TO POUNDS

Grams	Pounds	Grams	Pounds
1	0.0022	120	0.2645
2	0.0044	140	0.3086
3	0.0066	160	0.3526
4	0.0088	180	0.3967
5	0.0110	200	0.4408
6	0.0132	220	0.4849
7	0.0154	240	0.5290
8	0.0176	260	0.5730
9	0.0198	280	0.6171
10	0.0220	300	0.6612
20	0.0441	320	0.7053
30	0.0661	340	0.7494
40	0.0882	360	0.7934
50	0.1102	380	0.8375
60	0.1322	400	0.8816
70	0.1543	420	0.9257
80	0.1763	440	0.9698
90	0.1984	453.6	1.0000
100	0.2204		

AGRICULTURAL EXPERIMENT STATION SYSTEM OF ALABAMA'S LAND-GRANT UNIVERSITY

With an agricultural research unit in every major soil area, Auburn University serves the needs of field crop, live-stock, forestry, and horticultural producers in each region in Alabama. Every citizen of the State has a stake in this research program, since any advantage from new and more economical ways of producing and handling farm products directly benefits the consuming public.



Research Unit Identification

★ Main Agricultural Experiment Station, Auburn

1. Tennessee Valley Substation, Belle Mina.
2. Sand Mountain Substation, Crossville.
3. North Alabama Horticulture Substation, Cullman.
4. Upper Coastal Plain Substation, Winfield.
5. Forestry Unit, Fayette County.
6. Thorsby Foundation Seed Stocks Farm, Thorsby.
7. Chilton Area Horticulture Substation, Clanton.
8. Forestry Unit, Coosa County.
9. Piedmont Substation, Camp Hill.
10. Plant Breeding Unit, Tallassee.
11. Forestry Unit, Autauga County.
12. Prattville Experiment Field, Prattville.
13. Black Belt Substation, Marion Junction.
14. Tuskegee Experiment Field, Tuskegee.
15. Lower Coastal Plain Substation, Camden.
16. Forestry Unit, Barbour County.
17. Monroeville Experiment Field, Monroeville.
18. Wiregrass Substation, Headland.
19. Brewton Experiment Field, Brewton.
20. Ornamental Horticulture Field Station, Spring Hill.
21. Gulf Coast Substation, Fairhope.