

LENGTH-WEIGHT RELATIONSHIPS
OF
ALABAMA FISHES

From: River and Impoundment Surveys, 1949-1964
by Fisheries Staffs of Auburn University
and
Alabama Department of Conservation

Wayne E. Swingle

Fisheries and Allied Aquacultures
Departmental Series No. 1

AGRICULTURAL EXPERIMENT STATION
AUBURN UNIVERSITY

R. Dennis Rouse, Director

June 1965
Revised July 1972

Auburn, Alabama

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The tables presented herein contain length-weight data of Alabama fishes from river and river impoundment surveys conducted by the fisheries staffs of Auburn University Agricultural Experiment Station and the Alabama Department of Conservation, and those surveys made in cooperation with the Tennessee Valley Authority, Georgia Game and Fish Commission, and the Florida Game and Freshwater Fish Commission. The values presented in the following tables represent data collected during the period of 1949 to 1964.

Pages 1 through 81 contain total length-weight values for 95 species of fish arranged alphabetically by common name. The common names used are those given in the American Fisheries Society Special Publication No. 2 (1960), with the following exceptions: The carp, Cyprinis carpio, is called the common carp, following FAO usage to distinguish it from Chinese and Indian carps. The deep-bodied Israeli strain of mirror carp is recorded separately because its length-weight relationships are different from the more cylindrical scaled common carp found in rivers and impoundments. Four species of exotic tilapias are listed as the Java, Bluenose, Congo, and Tampa tilapias. The southern variety of brown bullhead is listed as the speckled (brown) bullhead. Rock bass are listed as northern and southern rock bass.

Data for certain species of fish collected from the rivers and river impoundments are supplemented with data for the same species raised in ponds. This was done to extend the range of the length-weight relationships

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and tables in which pond data were included and designated as such. A few tables of length-weight data from ponds are included for species absent or rarely collected from river waters.

The fish used to obtain these data were measured individually to determine total length and most of them were placed in inch-groups and weighed in aggregate. This procedure undoubtedly reduced the range between maximum and minimum weights for each inch-group.

The values in the tables that follow were calculated by a computer program (Swingle, W. E., 1964, Auburn University Agr. Exp. Sta., Zool.-Ent. Dept. Series, Fisheries No. 1, 19 pp.). They are self-explanatory, with the possible exception of the condition index and calculated weights.

The condition index is of the form:

$$C = \frac{W \times 10^5}{L^3}$$

where W is the average empirical weight in pounds and L is the inch integer for an inch-group. The standard calculated weights are from equations of the form:

$$W = a L^b \text{ or } \log(W) = \log(a) + b \log(L)$$

The parameters a , b , and $\log(a)$, as well as the correlation coefficient, r , and the standard error of the estimate, $s_{y \cdot x}$, are presented in the table beginning on page 81. It was necessary to compute two or more standard length-weight equations for many species to adequately describe the length-weight relationship over the entire range of the data. The range over which a single standard length-weight equation was computed was selected by determining the point (or points) where the increment of increase or decrease in the condition index changed in magnitude. These points were used to divide the data into groups for which a single equation was computed.

The polynomial calculated weights given in the tables are from equations

of the form:

$$W = b_0 + b_1L + b_2L^2 + b_3L^3$$

The parameters b_0 , b_1 , b_2 , and b_3 of this equation are presented in the table beginning on page 83. This table also gives the length intervals over which the equations were calculated, the number of observations (n) used in the calculations, and the number of fish included in these observations. The polynomial equations adequately described the length-weight relationships during a longer length interval for some species than did the standard equations; however, in the tables that follow, the length interval was the same for both equations, unless otherwise indicated.

The author made little use of the condition index other than the selection of length intervals for which a single standard equation adequately described the data, but preferred to use the LeCren relative condition index and a modification of this equation to compare populations and individual fish. For comparisons of condition between individual fish, the relative condition index (LeCren, E.D., 1951, Jour. Animal Ecol., 20(2):201-209), Kn was expressed as follows:

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

where W equals the weight of the individual fish and \hat{W} is the calculated weight computed from the standard equation for a fish of the same length from the same population. For comparisons of the average condition between populations, W became the calculated weight computed from the standard equation for a particular population and \hat{W} became the weight computed from the standard equation for fish of the same length for all populations in the state, i.e. the \hat{W} values are those given under the heading "standard calculated weights" and are taken to represent the "state averages." Thus, the LeCren relative condition index reduces the condition of fish to a multiple of the computed "state average" weight (Figure 1).

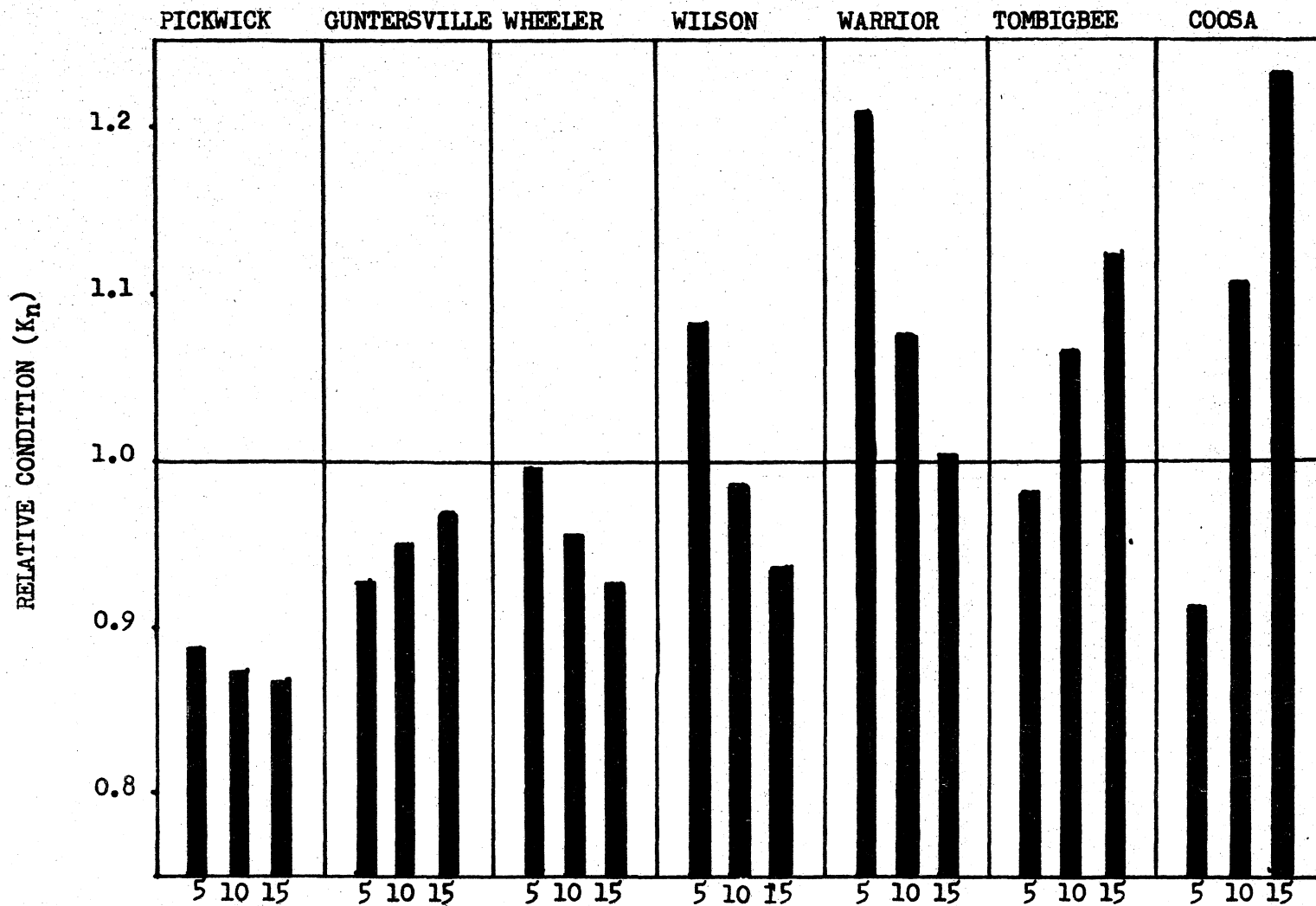


FIGURE 1

COMPARISON OF THE RELATIVE CONDITION OF FRESHWATER DRUM OF LENGTHS 5, 10,
AND 15 INCHES FROM 7 POPULATIONS

INDEX TO SPECIES

		<u>Page</u>
Alabama Hog Sucker	<u>Hypentelium etowanum</u> (Jordan)	1
American Eel	<u>Anguilla rostrata</u> (LeSueur)	2
Atlantic Needlefish	<u>Strongylura marina</u> (Walbaum)	3
Bay Anchovy	<u>Anchoa mitchilli</u> (Val.)	4
Bigeye Chub	<u>Hybopsis aestivalis</u> (Girard)	4
Bigmouth Buffalo	<u>Ictiobus cyprinellus</u> (Val.)	5-6
Black Bullhead	<u>Ictalurus melas</u>	6
Black Crappie	<u>Pomoxis annularis</u> (Raf.)	7
Black Drum	<u>Pogonias cromis</u> (Linn.)	8
Blackspotted Topminnow	<u>Fundulus olivaceus</u> (Storer)	8
Blacktail Redhorse	<u>Moxostoma erythrurum</u> (Raf.)	9
Blacktail Shiner	<u>Notropis venustus</u> (Girard)	10
Blue Catfish	<u>Ictalurus furcatus</u> (LeSueur)	11-12
Bluegill	<u>Lepomis macrochirus</u> (Raf.)	13
Blue Sucker	<u>Cycleptus elongatus</u> (LeSueur)	13
Bluntnose Minnow	<u>Pimephales notatus</u> (Raf.)	14
Brook Silverside	<u>Labidesthes sicculus</u> (Cope)	14
Bullhead Minnow	<u>Pimephales vigilax</u> (Baird & Girard)	14
Chain Pickerel	<u>Esox niger</u> (LeSueur)	15
Channel Catfish	<u>Ictalurus punctatus</u> (Raf.)	16-17
Cherryfin Shiner	<u>Notropis roseipinnis</u> (Hay)	17
Common Carp, Israeli Mirror	<u>Cyprinus carpio</u> (Linn.)	18-19
Common Carp, Scaled	<u>Cyprinus carpio</u> (Linn.)	20-21
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Gizzard Shad	<u>Dorosoma cepedianum</u> (leSueur)	30
Golden Redhorse	<u>Moxostoma erythrurum</u> (Raf.)	31
Golden Shiner	<u>Notemigonus crysoleucas</u> (Mitchill)	32
Goldfish	<u>Carassius auratus</u> (Linn.)	33
Green Sunfish	<u>Lepomis cyanellus</u> (Raf.)	34
Highfin Carpsucker	<u>Carpionodes velifer</u> (Raf.)	35
Largemouth Bass	<u>Micropterus salmoides</u> (Lac.)	36
Largescale Menhaden	<u>Brevoortia patronus</u> (Goode)	37
Logperch	<u>Percina caprodes</u> (Raf.)	37
Longear Sunfish	<u>Lepomis megalotis</u> (Raf.)	38
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Mooneye	<u>Hiodon tergisus</u> (LeSueur)	41
Mosquito Fish	<u>Gambusia affinis</u> (Baird & Girard)	41
Northern Hog Sucker	<u>Hypentelium nigricans</u> (LeSueur)	42
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Paddlefish	<u>Polyodon spathula</u> (Walbaum)	44-45
Pinfish	<u>Lagodon rhomboides</u> (Linn.)	46
Pirate Perch	<u>Aphredoderus sayanus</u> (Gilliams)	47
Pugnose Minnow	<u>Opsopoeodus emiliae</u> (Hay)	47
Quillback	<u>Carpiodes cyprinus</u> (LeSueur)	48
Redbreast Sunfish	<u>Lepomis auritus</u> (Linn.)	49
Redear Sunfish	<u>Lepomis microlophus</u> (Gunther)	49
Redeye Bass	<u>Micropterus coosae</u> (Hubbs & Bailey)	50
Rifle Minnow	<u>Phenacobius catostomus</u> (Jordan)	51
River Carpsucker	<u>Carpiodes carpio</u> (Raf.)	51
River Redhorse	<u>Moxostoma carinatum</u> (Cope)	52
Sauger	<u>Stizostedion canadense</u> (Smith)	53
Shortnose Gae	<u>Lepisosteus platostomus</u> (Raf.)	54
Silverband Shiner	<u>Notropis shumardi</u> (Girard)	55
Silver Chub	<u>Hybopsis storeriana</u> (Kirtland)	55
Silverjaw Minnow	<u>Ericymba buccata</u> (Cope)	56
Silverstripe Shiner	<u>Notropis stilbius</u> (Jordan)	56
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Smallmouth Bass	<u>Micropterus dolomieu</u> (Lac.)	58
Smallmouth Buffalo	<u>Ictiobus bubalus</u> (Raf.)	59-60
Southern Flounder	<u>Paralichthys lethostigama</u> (Jordan & Gilbert)	61
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Speckled Madtom	<u>Noturus leptacanthus</u> (Jordan)	63
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Spotfin Shiner	<u>Notropis spilopterus</u> (Cope)	64
Spotted Bass	<u>Micropterus punctulatus</u> (Raf.)	65
Spotted Gar	<u>Lepisosteus oculatus</u> (Winchell)	66
Spotted Sucker	<u>Minytrema melanops</u> (Raf.)	67
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White Bass	<u>Roccus chrysops</u> (Raf.)	73
White Catfish	<u>Ictalurus catus</u> (Linn.)	74
White Crappie	<u>Pomoxis annularis</u> (Raf.)	75
Yellow Bass	<u>Roccus mississippiensis</u> (Jordan & Eigenmann)	76
Yellow Bullhead	<u>Ictalurus natalis</u> (LeSueur)	77
Tilapia, Bluenose	<u>Tilapia aurea</u> (Linn.)	78
Tilapia, Congo	<u>Tilapia melanopleura</u> (Dum.)	79
Tilapia, Java	<u>Tilapia mossambica</u> (Peters)	80
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Shovelnose Sturgeon	<u>Scaphirhynchus platorynchus</u>	82

BIGMOUTH BUFFALO

Length	Number of Fish	Range in Weight		Average Empirical Weight	Calculated Weights		Condition Index
		Minimum	Maximum		Standard	Polynomial	
2	380	0.0079	-	0.008	0.005	-	98.7
3	19622	0.0136	-	0.014	0.016	-	50.4
4	25900	0.029	0.038	0.032	0.038	-	49.9
5	4514	0.05	0.06	0.06	0.07	-	44.7
6	809	0.10	0.12	0.11	0.13	-	50.1
7	126	0.16	0.38	0.22	0.20	0.26	66.6
8	183	0.27	0.63	0.32	0.30	0.36	63.4
9	9	0.44	0.80	0.74	0.43	0.47	101.2
10	-	-	-	-	0.59	0.60	-
11	8	0.60	-	0.60	0.78	0.78	45.1
12	32	0.70	1.30	0.96	1.02	1.00	55.3
13	310	1.17	1.40	1.25	1.29	1.27	57.0
14	144	1.37	2.48	1.56	1.62	1.60	56.8
15	123	1.80	2.30	2.09	1.99	2.05	62.0
16	122	1.70	2.70	2.30	2.41	2.34	56.1
17	85	2.48	3.17	2.65	2.65	2.70	53.8
18	129	2.75	3.70	3.20	3.20	3.14	54.9
19	109	3.30	3.95	3.93	3.82	3.68	57.3
20	26	4.23	4.63	4.25	4.53	4.33	53.1
21	6	4.44	5.50	4.72	5.32	5.11	51.0
22	11	5.30	8.00	6.32	6.20	6.02	59.3
23	12	6.75	6.85	6.95	7.18	7.09	57.1
24	10	7.43	8.50	8.19	8.27	8.32	59.3
25	15	9.00	10.40	9.76	9.46	9.73	62.46

*Includes data for pond fish.

BLUE CATFISH

Length	Number of Fish	Range in Weight		Average Empirical Weight	Calculated Weights Standard Polynomial		Condition Index
		Minimum	Maximum				
1	1313	0.0004	0.0012	0.00093	-	-	92.7
2	6132	0.00033	0.0071	0.0033	0.0027	0.0007	40.8
3	6121	0.0017	0.033	0.0078	0.0091	0.012	28.8
4	1970	0.008	0.044	0.018	0.021	0.026	27.7
5	1150	0.013	0.13	0.041	0.041	0.045	32.8
6	2358	0.045	0.15	0.062	0.070	0.073	28.5
7	1717	0.043	0.19	0.10	0.11	0.11	29.2
8	1402	0.067	0.28	0.15	0.16	0.16	29.5
9	1361	0.14	0.44	0.24	0.23	0.23	32.7
10	745	0.19	0.52	0.32	0.31	0.32	31.5
11	606	0.30	0.75	0.40	0.41	0.43	30.2
12	473	0.44	1.08	0.53	0.54	0.56	30.6
13	464	-	1.00	0.67	0.68	0.71	30.5
14	390	0.63	1.16	0.88	0.87	0.89	31.9
15	280	0.95	1.46	1.09	1.10	1.10	32.4
16	265	1.04	-	1.36	1.36	1.35	33.3
17	191	1.20	1.95	1.65	1.67	1.66	33.5
18	133	1.05	2.60	1.99	2.03	2.01	34.2
19	111	1.44	3.44	2.45	2.43	2.43	35.7
20	88	2.35	4.19	3.08	2.89	2.91	38.5
21	75	2.87	4.30	3.36	3.40	3.46	36.3
22	61	3.50	4.85	4.03	3.98	4.09	37.9
23	65	4.34	5.75	4.75	4.62	4.80	39.1
24	28	5.13	6.33	5.54	5.33	5.60	40.09

BLUE CATFISH

Length	Number of Fish	Range in Weight		Average Empirical Weight	Calculated Weights		Con- dition Index
		Minimum	Maximum		Standard	Polynomial	
25	33	5.60	7.00	6.42	6.47	6.45	41.1
26	29	6.37	8.75	7.32	7.44	7.07	41.6
27	18	7.19	9.00	8.34	8.51	7.99	42.4
28	21	9.00	10.93	9.64	9.69	9.18	43.9
29	12	9.20	12.90	10.15	10.97	10.61	41.6
30	11	10.50	15.60	12.61	12.38	12.26	46.7
31	9	11.00	15.80	14.39	13.91	14.12	48.3
32	7	14.38	18.10	15.97	15.56	16.15	48.73
33	6	14.15	19.20	16.93	17.37	18.35	47.1
34	8	14.70	19.75	18.79	19.31	20.68	47.8
35	1	-	-	22.00	21.41	23.13	51.31
36	-	-	-	-	23.67	25.66	-
37	1	-	-	27.50	26.09	28.26	54.3
38	3	27.00	28.95	28.27	28.68	30.91	51.51
39	-	-	-	-	31.45	33.58	-
40	4	30.00	41.51	38.63	34.42	36.25	60.35
41	-	--	-	-	37.57	38.90	-
42	2	43.80	45.00	44.40	40.93	41.51	59.9
43	1	-	-	44.0	44.51	44.05	55.34
44	-	-	-	-	48.29	46.51	-
45	1	-	-	49.9	52.31	48.85	54.75
46	-	-	-	-	56.56	51.06	-
47	2	50.00	52.00	51.00	61.05	53.12	49.12

BLUEGILL

Length	Number of Fish	Range in Weight		Average Empirical Weight	Calculated Weights		Condition Index
		min.	max.		Standard	Polynomial	
1	52376	0.00036	0.0090	0.0011	_____	_____	117.9
2	34314	0.0015	0.023	0.0047	0.0049	0.0056	58.3
3	21516	0.0020	0.048	0.016	0.017	0.019	57.8
4	13103	0.020	0.10	0.041	0.042	0.043	63.8
5	8259	0.014	0.14	0.081	0.083	0.084	64.9
6	5020	0.063	_____	0.14	0.15	0.15	66.6
7	1810	0.15	0.40	0.23	0.24	0.24	67.0
8	324	0.20	0.63	0.35	0.35	0.36	68.7
9*	18	0.53	0.91	0.77	_____	_____	105.6
10	7	0.83	1.12	0.96	_____	_____	_____
11	2	1.01	2.04	1.52	_____	_____	_____
12	_____	_____	_____	_____	_____	_____	_____
13	_____	_____	_____	_____	_____	_____	_____
14	1	_____	_____	3.50	_____	_____	_____

BLUE SUCKER

Length	Number of Fish	Range in Weight		Average Empirical Weight	Calculated Weights		Condition Index
		min.	max.		Standard	Polynomial	
18	2	1.55	2.00	1.78	1.83	1.77	30.4
19	-	-	-	-	2.17	2.17	-
20	2	2.30	3.00	2.65	2.56	2.66	33.1
21	1	3.20	-	3.20	2.99	3.19	34.6
22	-	-	-	-	3.46	3.72	-
23	-	-	-	-	3.99	4.22	-
24	-	-	-	-	4.57	4.64	-
25	1	4.95	-	4.95	5.20	4.95	31.7

*Inch-groups 9 to 14 are from ponds

BLUNTNOSE MINNOW

Length	Number of Fish	Range in Weight		Average Empirical Weight	Calculated Weights		Condition Index
		min.	max.		Standard	Polynomial	
2	170	0.0026	0.0064	0.0032	0.0032	0.0036	39.85
3	73	0.0050	0.015	0.0076	0.0087	0.0081	28.10
4	10	0.020	-	0.020	0.018	0.020	31.25

BROOK SILVERSIDE

Length	Number of Fish	Range in Weight		Average Empirical Weight	Calculated Weights		Condition Index
		min.	max.		Standard	Polynomial	
1	16	0.00033	0.00066	0.00050	0.00047	0.00050	50.00
2	259	0.00050	0.0033	0.0019	0.0019	0.0017	23.35
3	36	0.0030	0.0065	0.0044	0.0041	0.0045	16.46
4	1	0.010	-	0.010	0.0072	0.0098	15.62

BULLHEAD MINNOW

Length	Number of Fish	Range in Weight		Average Empirical Weight	Calculated Weights		Condition Index
		min.	max.		Standard	Polynomial	
1	2641	0.000066	0.0033	0.0010	0.00076	0.0011	101.06
2	1519	0.0013	0.0080	0.0030	0.0037	0.0033	37.3

CHAIN PICKEREL

Length	Number of Fish	Range in Weight		Average Empirical Weight	Calculated Weights		Condition Index
		Minimum	Maximum		Standard	Polynomial	
3	1	0.003	-	0.003	0.004	0.0	11.1
4	3	0.013	-	0.013	0.010	0.012	20.8
5	75	0.023	0.028	0.023	0.02	0.016	18.2
6	128	0.039	0.040	0.04	0.04	0.03	18.2
7	52	0.04	0.08	0.06	0.06	0.06	18.8
8	35	0.07	0.09	0.09	0.09	0.09	18.0
9	35	0.12	0.13	0.14	0.13	0.14	18.8
10	11	0.15	0.18	0.18	0.19	0.20	17.9
11	13	0.22	-	0.23	0.25	0.26	17.6
12	12	0.28	-	0.28	0.32	0.34	15.9
13	14	0.37	-	0.39	0.42	0.43	17.7
14	9	0.48	-	0.48	0.53	0.53	17.4
15	6	0.59	1.20	0.79	0.66	0.64	23.4
16	5	0.72	1.10	0.87	0.81	0.77	21.3
17*	15	1.31	-	1.33	1.24	1.22	27.0
18	58	1.29	1.41	1.40	1.44	1.42	24.0
19	34	1.58	1.71	1.67	1.66	1.67	24.4
20	7	1.80	-	1.80	1.90	1.95	22.5
21	4	2.02	-	2.02	2.15	2.24	21.8
22	4	1.92	3.10	2.51	2.43	2.53	23.6
23	6	2.77	-	2.77	2.74	2.81	22.8
24	1	2.79	-	2.79	3.06	3.06	20.2
25	2	3.37	-	3.37	3.46	3.26	21.6

*Chain pickerel in inch-groups 17-25 were from 1 fertilized and 1 unfertilized pond.

CHANNEL CATFISH

Length	Number of Fish	Range in Weight		Average Empirical Weight	Calculated Weights		Condition Index
		Minimum	Maximum		Standard	Polynomial	
1	4856	0.00014	0.0044	0.00084	-	-	83.9
2	19429	0.00037	0.0072	0.0029	-	-	35.8
3	7800	0.00089	0.030	0.0068	0.0079	0.0089	25.2
4	2452	0.0067	0.067	0.019	0.018	0.020	29.3
5	2898	0.013	0.083	0.034	0.035	0.037	26.8
6	2582	0.026	0.13	0.056	0.060	0.062	26.0
7	1734	0.050	0.22	0.094	0.095	0.097	27.3
8	1583	0.080	0.25	0.14	0.14	0.14	27.0
9	1211	-	0.31	0.19	0.20	0.20	26.7
10	1057	0.095	0.53	0.28	0.27	0.28	27.6
11	953	0.23	0.65	0.38	0.37	0.35	28.6
12	750	0.33	0.79	0.50	0.50	0.52	29.0
13	594	0.50	-	0.68	0.65	0.70	30.8
14	434	0.50	1.90	0.83	0.83	0.87	30.3
15	341	0.55	1.38	1.02	1.04	1.07	30.2
16	248	0.50	1.90	1.28	1.29	1.29	31.2
17	149	0.73	2.06	1.57	1.57	1.55	32.2
18	92	1.20	2.40	1.90	1.90	1.86	32.6
19	57	1.70	2.70	2.22	2.27	2.23	32.8
20	29	2.45	3.75	2.89	2.69	2.67	36.1
21	16	3.00	3.75	3.29	3.16	3.18	35.5
22	12	2.00	4.50	3.47	3.68	3.79	32.6
23	3	2.50	4.30	3.60	4.26	4.50	29.6
24	1	-	-	5.3	4.91	5.31	38.3

COMMON CARP, ISRAELI MIRROR *

Length	Number of Fish	Range in Weight		Average Empirical Weight	Calculated Weights		Condition Index
		Minimum	Maximum		Standard	Polynomial	
4	8	0.037	-	0.037	0.036	-	58.6
5	55	0.10	-	0.100	0.071	0.065	80.0
6	264	0.11	-	0.11	0.12	0.10	48.8
7	93	0.14	-	0.14	0.19	0.17	42.0
8	12	0.22	-	0.22	0.29	0.27	42.3
9	82	0.30	0.50	0.50	0.41	0.41	67.9
10	446	0.40	0.70	0.59	0.57	0.58	59.1
11	377	0.65	0.83	0.68	0.75	0.78	51.1
12	478	0.90	1.11	1.02	0.98	1.01	58.8
13	858	1.05	1.65	1.20	1.25	1.28	54.5
14	406	1.43	1.84	1.54	1.56	1.58	56.2
15	193	1.68	2.15	1.95	1.91	1.90	57.8
16	23	2.44	2.60	2.46	2.32	2.46	60.1
17	-	-	-	-	4.00	3.70	-
18	1	4.90	-	4.90	4.64	4.86	84.0
19	5	4.60	-	6.20	5.35	5.94	90.4
20	16	5.65	-	7.55	6.12	6.95	94.4
21	67	6.30	-	8.73	6.95	7.89	94.2
22	77	8.45	9.73	9.70	7.85	8.75	91.1
23	16	9.53	10.20	9.61	8.82	9.54	79.0
24	58	9.78	-	9.78	9.86	10.27	70.7
25	106	10.60	-	10.60	10.97	10.93	67.8
26	89	11.48	-	11.48	12.16	11.52	65.3
27	28	12.56	-	12.56	13.43	12.06	63.8

*Data from ponds.

COMMON CARP, SCALED *

Length	Number of Fish	Range in Weight		Average Empirical Weight	Calculated Weights		Condition Index
		Minimum	Maximum		Standard	Polynomial	
1	3		0.003	0.003	0.001	-	333.33
2	4,800	0.005	0.068	0.005	0.007	-	67.25
3	14,370	0.010	0.100	0.015	0.021	-	57.75
4	8,335	0.022	0.16	0.030	0.046	-	47.02
5	2,897	0.042	0.23	0.073	0.084	0.12	58.25
6	156	0.059	0.30	0.16	0.14	0.19	73.27
7	343	0.10	0.45	0.18	0.21	0.26	51.50
8	52	0.13	0.31	0.23	0.30	0.34	45.18
9	49	0.37	0.50	0.38	0.42	0.44	51.65
10	19	0.40	0.60	0.52	0.56	0.56	52.42
11	35	0.66	0.75	0.67	0.72	0.70	50.46
12	24	0.85	1.00	0.90	0.91	0.87	52.30
13	23	1.00	1.17	1.08	1.14	1.08	49.27
14	30	1.18	1.75	1.39	1.39	1.32	50.78
15	59	1.25	2.06	1.56	1.68	1.61	46.30
16	49	1.60	2.50	1.99	2.01	1.94	48.62
17	81	1.84	2.60	2.11	2.37	2.32	42.88
18	73	2.00	4.00	2.68	2.77	2.76	46.03
19	40	2.08	4.20	3.09	3.21	3.26	45.05
20	35	2.84	4.65	3.59	3.69	3.82	44.81
21	23	3.69	6.00	4.56	4.22	4.45	49.23
22	21	4.13	8.70	5.23	4.79	5.16	49.15
23	8	4.60	7.60	6.00	5.41	5.94	49.31
24	9	6.00	7.90	6.91	6.08	6.80	49.99

*Scaled variety found in rivers.

FATHEAD MINNOW

Length	Number of Fish	Range in Weight		Average Empirical Weight	Calculated Weights		Condition Index
		Minimum	Maximum		Standard	Polynomial	
1	88,049	-	-	0.00079	0.0007	0.0007	78.70
2	71,721	-	-	0.0023	0.0028	0.0022	28.84
3	19,639	-	-	0.0069	0.0061	0.0068	25.42

FLAT BULLHEAD

Length	Number of Fish	Range in Weight		Average Empirical Weight	Calculated Weights		Condition Index
		Minimum	Maximum		Standard	Polynomial	
2	14	0.0020	0.0030	0.0028	0.0029	-	34.82
3	22	0.0096	0.010	0.012	0.011	0.022	44.44
4	7	0.022	0.050	0.027	0.026	0.041	41.98
5	9	0.046	0.10	0.060	0.054	0.061	48.00
6	4	0.10	-	0.10	0.096	0.092	47.45
7	8	0.13	0.20	0.14	0.16	0.14	40.74
8	5	0.19	-	0.21	0.24	0.22	40.03
9	1	0.33	-	0.33	0.35	0.33	45.26

*Pond data

FLATHEAD CATFISH

Length	Number of Fish	Range in Weight		Average Empirical Weight	Calculated Weights		Condition Index
		Minimum	Maximum		Standard	Polynomial	
1	249	0.00040	0.0030	0.0012	-	-	124.9
2	1152	0.0017	0.012	0.0045	0.0033	0.0071	56.2
3	1044	0.0049	0.060	0.0095	0.011	0.0093	35.0
4	294	0.0080	0.038	0.017	0.025	0.021	26.0
5	155	0.010	0.070	0.045	0.047	0.044	35.6
6	184	0.045	0.13	0.080	0.080	0.080	36.8
7	217	0.090	0.20	0.12	0.13	0.13	35.4
8	136	0.10	0.31	0.19	0.18	0.19	37.1
9	124	0.10	0.44	0.27	0.26	0.27	37.3
10	71	0.20	0.60	0.36	0.35	0.37	36.4
11	100	0.38	0.83	0.51	0.46	0.49	38.6
12	87	0.38	0.88	0.62	0.59	0.63	35.7
13	63	0.60	1.07	0.83	0.80	0.85	37.9
14	47	0.80	1.40	1.02	1.01	1.00	37.0
15	39	0.90	1.80	1.26	1.26	1.22	37.3
16	29	1.20	2.00	1.55	1.54	1.50	37.7
17	27	1.50	2.06	1.79	1.87	1.84	36.5
18	21	1.75	2.50	2.12	2.25	2.24	36.4
19	14	2.27	2.90	2.62	2.67	2.70	38.2
20	13	3.00	3.65	3.52	3.14	3.23	44.0
21	11	3.00	4.40	3.68	3.67	3.81	39.7
22	4	4.00	4.70	4.33	4.25	4.46	40.6
23	8	4.00	6.20	5.04	4.90	5.16	41.4
24	2	5.50	7.50	6.50	5.61	5.93	47.0

continued on next sheet

FRESHWATER DRUM

Length	Number of Fish	Range in Weight		Average Empirical Weight	Calculated Weights		Condition Index
		Minimum	Maximum		Standard	Polynomial	
1	104	0.00023	-	0.00032	0.00039	-	31.7
2	1462	0.0017	0.011	0.0046	0.0032	-	57.1
3	13837	0.0033	0.032	0.012	0.011	0.013	44.5
4	17694	0.010	0.10	0.020	0.025	0.034	32.0
5	5553	0.021	0.10	0.043	0.049	0.059	34.4
6	5812	0.042	0.20	0.086	0.086	0.092	39.7
7	7575	0.076	0.31	0.14	0.14	0.14	39.4
8	5363	-	0.37	0.19	0.20	0.20	37.9
9	5166	0.17	0.47	0.29	0.29	0.28	39.8
10	4361	0.20	0.56	0.40	0.40	0.39	40.2
11	2953	0.30	0.88	0.54	0.53	0.53	40.6
12	1712	-	1.10	0.69	0.69	0.69	39.7
13	926	0.49	1.33	0.92	0.87	0.90	41.9
14	484	0.50	1.95	1.19	1.09	1.15	43.3
15	305	0.56	1.90	1.38	1.34	1.45	41.0
16	127	0.60	2.30	1.91	1.62	1.79	46.7
17	68	1.00	2.90	2.26	1.95	2.19	46.0
18	43	1.20	3.30	2.74	2.32	2.65	46.9
19	32	1.55	4.71	3.56	3.22	3.20	51.9
20	17	2.80	4.80	3.94	3.90	3.99	49.2
21	10	3.70	5.60	5.34	4.67	4.86	57.7
22	10	4.60	6.03	5.75	5.56	5.81	54.0
23	5	6.40	8.10	7.06	6.56	6.84	58.0
24	7	7.50	8.45	7.94	7.68	7.95	57.5

GOLDFISH

Length	Number of Fish	Range in Weight		Average Empirical Weight	Calculated Weights		Condition Index
		Minimum	Maximum		Standard	Polynomial	
1	9866	0.001	0.008	0.0012	0.0008	-	120.6
2	89297	0.001	0.02	0.008	0.006	-	101.1
3	123897	0.01	0.02	0.015	0.018	0.018	56.6
4	21451	0.02	0.06	0.03	0.04	0.05	51.1
5	2957	0.04	0.15	0.07	0.08	0.09	55.0
6	537	0.07	0.20	0.13	0.14	0.15	60.1
7	1336	0.12	0.28	0.26	0.21	0.23	76.2
8	1319	0.22	0.48	0.40	0.31	0.33	78.7
9	286	0.39	0.57	0.48	0.44	0.47	66.3
10	126	0.45	0.88	0.72	0.60	0.65	72.0
11	90	0.80	1.07	0.97	0.79	0.86	72.8
12	36	0.50	1.54	1.11	1.01	1.12	64.1
13	30	0.60	1.70	1.45	1.28	1.44	66.2
14	5	1.70	-	1.84	1.58	1.81	67.1
15	2	1.40	2.40	1.90	1.93	2.24	56.3
16	1	3.20	-	3.20	2.33	2.73	78.1

*Pond data

LONGNOSE GAR

Length	Number of Fish	Range in Weight		Average Empirical Weight	Calculated Weights		Condition Index
		Minimum	Maximum		Standard	Polynomial	
2	2	0.002	-	0.002	0.0004	-	25.00
3	-	-	-	-	0.0018	-	-
4	-	-	-	-	0.0043	-	-
5	1	0.008	-	0.008	0.009	-	6.40
6	-	-	-	-	0.015	-	-
7	2	0.014	0.020	0.017	0.025	-	4.95
8	10	0.022	0.034	0.032	0.037	-	6.17
9	7	0.03	0.25	0.106	0.054	0.082	14.50
10	9	0.05	0.10	0.06	0.075	0.097	6.22
11	3	0.10	0.20	0.13	0.10	0.12	10.01
12	11	0.09	0.40	0.16	0.13	0.14	9.00
13	17	0.10	0.81	0.17	0.17	0.17	7.68
14	6	0.17	0.19	0.20	0.21	0.20	7.28
15	2	0.20	-	0.20	0.26	0.24	5.92
16	1	0.38	-	0.38	0.32	0.29	9.27
17	4	0.26	0.32	0.27	0.39	0.35	5.54
18	-	-	-	-	0.47	0.42	-
19	-	-	-	-	0.55	0.51	-
20	2	0.50	1.00	0.75	0.65	0.60	9.37
21	4	0.50	-	0.58	0.75	0.71	6.20
22	1	0.70	-	0.70	0.87	0.84	6.57
23	4	0.90	1.00	0.95	1.00	0.98	7.80
24	1	1.70	-	1.70	1.14	1.14	12.29
25	2	1.50	2.20	1.85	1.30	1.31	11.84

NORTHERN HOG SUCKER

Length	Number of Fish	Range in Weight		Average Empirical Weight	Calculated Weights		Condition Index
		Minimum	Maximum		Standard	Polynomial	
3	1	-	-	0.0090	0.0099	-	33.33
4	1	-	-	0.020	0.023	0.039	31.25
5	5	0.047	0.050	0.050	0.045	0.064	40.00
6	4	-	-	0.10	0.078	0.081	46.29
7	2	0.10	0.11	0.11	0.12	0.10	30.61
8	2	0.15	0.19	0.17	0.18	0.15	33.20
9	1	-	--	0.27	0.26	0.23	37.03
10	2	-	-	0.32	0.36	0.37	31.50
11	1	-	-	0.63	0.47	0.58	47.33

NORTHERN ROCK BASS

Length	Number of Fish	Range in Weight		Average Empirical Weight	Calculated Weights		Condition Index
		Minimum	Maximum		Standard	Polynomial	
1	2	-	-	0.0020	0.0011	-	200.00
2	-	-	-	-	0.0078	-	-
3	1	-	-	0.010	0.024	0.0022	37.03
4	3	-	-	0.037	0.054	0.037	58.33
5	4	-	-	0.085	0.10	0.096	68.00
6	10	-	-	0.19	0.16	0.18	86.57
7	5	-	-	0.28	0.26	0.29	81.63
8	5	-	-	0.42	0.38	0.43	82.03
9	1	-	-	0.60	0.52	0.60	82.30

PADDLEFISH

Length	Number of Fish	Range in Weight		Average Empirical Weight	Calculated Weights		Condition Index
		Minimum	Maximum		Standard	Polynomial	
3	3	0.0100	-	0.010	0.003	-	37.0
4	-	-	-	-	0.006	-	-
5	-	-	-	-	0.12	-	-
6	1	0.015	-	0.015	0.02	0.02	6.9
7	8	0.030	0.081	0.08	0.03	0.04	21.9
8	6	0.036	0.044	0.04	0.05	0.05	7.5
9	14	0.05	0.077	0.06	0.06	0.07	8.7
10	25	0.07	0.10	0.08	0.09	0.09	8.2
11	19	0.10	0.13	0.11	0.12	0.11	8.4
12	11	0.11	0.16	0.13	0.15	0.14	7.6
13	5	0.16	0.30	0.20	0.19	0.17	8.9
14	-	-	-	-	0.23	0.21	-
15	1	0.30	-	0.30	0.28	0.25	8.9
16	1	0.39	-	0.39	0.34	0.31	9.5
17	3	0.40	0.47	0.44	0.40	0.38	9.0
18	2	0.50	0.60	0.55	0.48	0.45	9.4
19	1	0.50	-	0.50	0.56	0.54	7.3
20	10	0.50	0.80	0.62	0.64	0.64	7.8
21	6	0.94	-	0.94	0.74	0.76	10.2
22	5	0.60	1.00	0.76	0.84	0.89	7.1
23	19	1.00	1.35	1.12	0.96	1.04	9.2
24	11	1.00	1.50	1.22	1.13	1.21	8.8
25	12	0.70	2.40	1.42	1.32	1.40	9.1
26	15	1.25	2.00	1.60	1.53	1.61	9.1

PADDLEFISH

Length	Number of Fish	Range in Weight		Average Empirical Weight	Calculated Weights		Condition Index
		Minimum	Maximum		Standard	Polynomial	
27	7	1.50	2.30	1.89	1.76	1.85	9.58
28	11	1.50	3.10	2.36	2.03	2.07	10.76
29	8	2.10	3.30	2.48	2.32	2.31	10.17
30	7	2.00	3.00	2.44	2.64	2.58	9.02
31	4	2.25	3.20	2.74	2.99	2.88	9.18
32	4	2.70	4.20	3.20	3.37	3.21	9.76
33	3	2.75	4.00	3.25	3.79	3.59	9.04
34	3	3.50	4.90	4.38	4.25	4.01	11.15
35	6	3.25	4.50	4.08	4.74	4.49	9.52
36	2	4.75	6.00	5.38	5.28	5.02	11.52
37	-	-	-	-	5.86	5.62	-
38	3	4.25	6.94	5.90	6.48	6.28	10.74
39	5	5.25	8.38	7.03	7.16	7.01	11.84
40	2	9.50	11.38	10.44	7.88	7.81	16.31
41	1	10.00	-	10.00	8.66	8.71	14.50
42	-	-	-	-	9.49	9.69	-
43	5	7.50	11.10	8.87	10.38	10.76	11.15
44	1	11.00	-	11.00	11.33	11.93	12.91
45	1	11.25	-	11.25	12.34	13.20	12.34
46	2	15.25	18.38	16.82	13.42	14.58	17.27
47	1	16.00	-	16.00	14.57	16.07	15.41
48	-	-	-	-	15.78	17.68	-
49	-	-	-	-	17.07	19.41	-
50	-	-	-	-	18.44	21.26	-

REDBREAST SUNFISH

Length	Number of Fish	Range in Weight		Average Empirical Weight	Calculated Weights		Condition Index
		Minimum	Maximum		Standard	Polynomial	
1	31	-	-	0.0020	-	-	196.8
2	19	0.0020	.0095	0.0056	0.0061	0.0051	69.7
3	34	0.011	0.035	0.030	0.021	0.023	111.0
4	48	0.038	0.065	0.044	0.050	0.055	68.1
5	45	0.060	0.19	0.097	0.097	0.11	77.8
6	34	0.13	0.23	0.17	0.17	0.18	77.3
7	46	0.20	0.35	0.29	0.27	0.27	84.8
8	10	0.34	0.50	0.36	0.40	0.40	70.1

REDEAR SUNFISH

Length	Number of Fish	Range in Weight		Average Empirical Weight	Calculated Weights		Condition Index
		min.	max.		Standard	Polynomial	
1	55	0.00067	-	0.0011	-	-	109.1
2	1993	0.0010	0.013	0.0063	0.0053	0.0049	78.3
3	290	0.010	0.040	0.015	0.017	0.018	54.6
4	420	0.015	0.068	0.049	0.041	0.044	76.7
5	550	0.03	0.20	0.076	0.079	0.084	60.5
6	266	0.10	0.25	0.14	0.14	0.14	64.6
7	232	0.17	0.30	0.22	0.21	0.22	63.7
8	124	0.20	0.41	0.32	0.32	0.32	61.9
9	34	0.20	0.53	0.46	0.45	0.45	62.6
10	26	0.50	0.70	0.66	0.62	0.61	66.1

SMALLMOUTH BUFFALO

Length	Number of Fish	Range in Weight		Average Empirical Weight	Calculated Weights Standard Polynomial		Condition Index
		Minimum	Maximum				
3	14	0.0128	0.0133	0.013	0.014		48.41
4	39	0.020	0.050	0.035	0.034		54.28
5	127	0.050	0.125	0.076	0.066		60.85
6	222	0.082	0.135	0.10	0.12	0.14	47.96
7	120	0.17	0.25	0.19	0.18	0.19	54.34
8	35	0.26	0.40	0.25	0.28	0.28	48.90
9	75	0.05	0.56	0.39	0.40	0.39	52.96
10	162	0.08	0.69	0.53	0.55	0.53	53.35
11	261	0.11	1.05	0.73	0.73	0.71	54.65
12	251	0.69	1.50	0.98	0.95	0.93	56.76
13	478	0.84	1.63	1.24	1.21	1.19	56.32
14	601	1.30	2.08	1.57	1.52	1.50	57.21
15	405	1.38	2.50	1.81	1.87	1.86	53.51
16	339	1.80	3.25	2.21	2.28	2.28	54.07
17	225	2.13	3.50	2.67	2.74	2.76	54.32
18	157	2.21	5.50	3.17	3.26	3.31	54.34
19	112	2.54	4.70	3.88	3.84	3.92	56.51
20	70	3.80	5.68	4.80	4.49	4.60	59.99
21	49	4.54	6.30	5.46	5.21	5.36	58.94
22	37	4.60	7.15	6.23	6.00	6.20	58.54
23	10	6.42	8.50	7.10	6.87	7.12	58.37
24	4	6.25	8.06	7.34	7.82	8.13	53.07
25	6	8.00	-	10.05	8.83	9.23	64.32
26	6	9.65	12.60	10.87	9.97	10.43	61.82

SPECKLED (BROWN) BULLHEAD *

Length	Number of Fish	Range in Weight		Average Empirical Weight	Calculated Weights		Condition Index
		Minimum	Maximum		Standard	Polynomial	
1	47150	0.0028	-	0.0034	0.0008	-	338.5
2	11771	0.0030	0.0074	0.007	0.006	-	83.5
3	2920	0.001	0.020	0.017	0.017	-	64.8
4	183	0.020	0.045	0.035	0.037	-	54.3
5	246	0.03	0.10	0.050	0.070	0.038	39.9
6	225	0.07	0.13	0.085	0.115	0.090	39.1
7	77	0.08	0.30	0.13	0.17	0.16	38.2
8	279	0.18	0.26	0.22	0.25	0.26	42.3
9	1405	0.25	0.40	0.32	0.35	0.39	44.0
10	941	0.44	0.75	0.44	0.47	0.53	44.4
11	260	0.52	0.99	0.68	0.61	0.72	51.1
12	301	0.69	1.20	0.98	0.78	0.92	56.7
13	83	0.97	1.19	1.12	0.97	1.16	50.9
14	153	1.19	1.63	1.30	1.19	1.42	47.5
15	206	1.35	2.27	1.57	1.44	1.72	46.4
16	131	1.80	2.16	1.94	1.72	2.05	47.4
17	76	1.99	2.59	2.54	2.04	2.41	51.6
18	36	2.95	-	2.95	2.39	2.80	50.6

*Includes pond data

SPOTTED GAR

Length	Number of Fish	Range in Weight		Average Empirical Weight	Calculated Weights		Condition Index
		Minimum	Maximum		Standard	Polynomial	
6	2	0.02	-	0.020	0.017	0.015	9.3
7	2	0.015	-	0.015	0.03	0.03	4.4
8	10	0.04	0.10	0.05	0.04	0.05	10.2
9	24	0.03	0.19	0.08	0.07	0.07	10.8
10	9	0.05	0.10	0.09	0.09	0.10	8.7
11	6	0.10	0.20	0.15	0.13	0.14	11.0
12	11	0.10	0.31	0.18	0.17	0.18	10.4
13	5	0.19	0.23	0.22	0.22	0.23	9.9
14	3	0.16	0.38	0.23	0.28	0.29	8.5
15	2	0.40	-	0.40	0.36	0.37	11.9
16	1	0.50	-	0.50	0.44	0.46	12.2
17	11	0.50	0.70	0.64	0.57	0.54	13.0
18	6	0.50	0.80	0.60	0.69	0.74	10.3
19	12	0.60	1.50	0.89	0.83	0.91	13.0
20	13	0.70	1.10	0.92	0.99	1.06	11.4
21	13	1.00	3.78	1.44	1.16	1.21	15.6
22	8	1.00	1.72	1.34	1.36	1.36	12.6
23	8	1.20	1.70	1.49	1.58	1.55	12.2
24	5	1.50	2.00	1.78	1.83	1.77	12.9
25	6	1.60	2.70	2.15	2.10	2.05	13.8
26	1	2.00	-	2.00	2.40	2.40	11.4
27	3	2.50	2.66	2.55	2.73	2.84	13.0
28	-	-	-	-	3.09	3.38	-
29	2	4.30	-	4.30	3.48	4.04	17.6

TILAPIA, BLUENOSE*
formerly called Nile Tilapia

Length	Number of Fish	Range in Weight		Average Empirical Weight	Calculated Weights		Condition Index
		min.	max.		Standard	Polynomial	
1	70,531	0.0010	0.0082	0.0015	0.001	-	149.3
2	262,664	0.003	0.014	0.0058	0.007	0.007	73.4
3	232,817	0.014	0.025	0.018	0.023	0.015	66.0
4	203,232	0.038	0.044	0.04	0.05	0.04	64.6
5	128,055	0.066	0.13	0.08	0.10	0.08	63.9
6	54,576	0.13	0.17	0.15	0.17	0.15	67.6
7	14,731	0.21	0.34	0.27	0.26	0.25	78.4
8	13,178	0.36	0.58	0.40	0.38	0.39	77.6
9	4,740	0.34	0.62	0.58	0.53	0.56	79.4
10	2,305	0.60	0.84	0.79	0.72	0.79	79.3
11	1,078	0.98	1.19	1.05	0.95	1.06	78.8
12	511	1.19	1.65	1.48	1.21	1.39	85.5
13	148	1.58	1.92	1.74	1.52	1.78	79.2
14	11	1.81	2.20	1.90	1.88	2.24	69.2

* pond data

TILAPIA, CONGO

Length	Number of Fish	Range in Weight		Average Empirical Weight	Calculated Weights		Condition Index
		min.	max.		Standard	Polynomial	
1	21,756	0.001	0.002	0.0013	0.0009		133.0
2	160,472	0.004	0.008	0.006	0.007	0.006	78.2
3	161,617	0.010	0.019	0.014	0.023	0.018	50.2
4	35,039	0.04	0.12	0.05	0.05	0.05	73.8
5	17,498	0.08	0.10	0.10	0.10	0.10	79.3
6	7,814	0.14	0.22	0.17	0.18	0.18	77.3
7	1,348	0.27	0.32	0.29	0.28	0.30	84.1
8	599	0.40	0.50	0.47	0.41	0.46	91.1
9	308	0.56	0.95	0.63	0.58	0.67	86.1
10	44	0.82	1.00	0.93	0.79	0.94	93.2

* pond data

TILAPIA, JAVA*

Length	Number of Fish	Range in Weight		Average Empirical Weight	Calculated Weights		Condition Index
		min.	max.		Standard	Polynomial	
1	165689	0.00003	0.0103	0.0021	0.001	-	207.6
2	518181	0.0036	0.0187	0.0057	0.007	0.010	71.0
3	369944	0.011	0.0441	0.0163	0.022	0.024	60.6
4	266151	0.025	0.083	0.037	0.05	0.05	57.3
5	136037	0.07	0.15	0.08	0.09	0.08	63.0
6	66818	0.11	0.37	0.13	0.14	0.14	60.9
7	21907	0.19	0.24	0.22	0.21	0.22	64.8
8	4531	0.26	0.70	0.32	0.31	0.33	62.6
9	830	0.35	0.53	0.50	0.42	0.47	68.3
10	636	0.51	0.63	0.67	0.56	0.66	66.9
11	89	0.68	-	0.98	0.73	0.89	73.9
12	89	1.28	-	1.28	0.92	1.18	74.3
13	2	1.60	-	1.60	1.14	1.52	72.8
14	8	1.88	-	1.88	1.39	1.93	68.3

*pond data

SHOVELNOSE STURGEON

Captured at the Mouth of the Cahaba River
in 50 yards of 2" bar gill net
in an 18-hour set

on

21 March 1969

Measurements are total length, including tail filament
which was present on all fish

Inch Group	Total Length		Weight	
	Inches	mm	Pounds	grams
24	24.0	601	0.55	250
26	25.8	644	0.79	359
27	26.6	665	0.99	449
	26.8	670	1.01	459
	26.8	670	0.90	409
	27.1	677	0.84	381
28	27.5	689	1.11	504
	27.6	691	0.83	377
	28.4	711	1.27	577
29	28.6	715	1.22	554
30	29.6	742	1.39	631
34	33.5*	838	2.10	953

* Ripe female

by: Peter A. Hackney

ESTIMATED PARAMETERS OF LENGTH-WEIGHT EQUATIONS

Species	Length* interval	r	s _{y.x}	n	Number of fish	b	ax10 ⁵	log(a)	b ₀	b ₁	b ₂	b ₃
Alabama Hog Sucker	2-8	0.980	0.127	17	81	2.85	45.69	-3.34	0.0626	-0.0449	0.00929	-0.000203
American Eel	5-24	0.955	0.217	74	144	3.47	1.89	-4.72	-0.262	0.0796	-0.0073	0.00027
Atlantic Needlefish	3-17	0.982	0.114	42	65	3.13	3.21	-4.49	-0.0486	0.0214	-0.0028	0.00015
Bay Anchovy	1-2	0.742	0.187	5	34,803	1.09	80.5	-3.09	---	---	---	---
Bigeye Chub	1-5	0.925	0.191	28	552	2.20	59.1	-3.23	-0.00387	0.00696	-0.00306	0.000623
Bigmouth Buffalo	S:2-16 P:2-14	0.984	0.111	104	52,163	3.00	58.7	-3.23	-0.4390	0.1857	-0.0214	0.00132
" "	S:17-27 P:15-27	0.979	0.051	89	549	3.30	22.9	-3.64	-2.6391	0.8686	-0.0702	0.0022
Black Bullhead	1-5	0.970	0.151	14	2,049	3.14	36.4	-3.43	0.0114	-0.0183	0.00816	-0.000598
Black Crappie	1-14	0.972	0.185	174	17,328	2.97	46.78	-3.33	-0.035	0.030	-0.007	0.00093
Black Drum	4-7	0.980	0.088	4	327	3.37	10.4	-3.98	0.531	-0.330	0.0664	-0.00412
Blackspotted Topminnow	1-3	0.733	0.250	23	217	1.619	101.70	-2.993	0.00572	-0.00624	0.00215	0.000097
Blacktail Redhorse	4-20	0.978	0.101	196	906	2.97	41.9	-3.38	0.331	-0.105	0.00994	0.000117
Blacktail Shiner	2-6	0.888	0.196	143	2,829	2.72	39.2	-3.41	-0.0258	0.025	-0.00708	0.000877
Blue Catfish	2-12	0.973	0.139	409	24,035	2.94	35.9	-3.44	-0.0251	0.0166	-0.00278	0.000454
" "	13-24	0.968	0.065	359	2,123	3.36	12.3	-3.91	-0.696	0.213	-0.020	0.00092
" "	25-47	0.986	0.047	96	197	3.55	6.9	-4.16	150.66	-14.33	0.435	-0.00371

*Inch groups fitted by standard (S) and polynomial (P) equations.

ESTIMATED PARAMETERS

Species	Length interval	r	s _{y.x}	n	Number of fish	b	ax10 ⁵	log(a)	b ₀	b ₁	b ₂	b ₃
Bluegill	2-6	0.954	0.157	619	82,212	3.07	58.9	-3.23	-0.0214	0.0216	-0.0066	0.00132
"	7-8	0.770	0.079	198	2,150	2.95	75.4	-3.12	23.37	-8.66	1.06	-0.042
Blue Sucker	18-25	0.951	0.061	6	6	3.19	18.3	-3.74	54.7973	-8.4025	0.4235	-0.0067
Bluntnose Minnow	2-4	0.887	0.161	12	253	2.43	60.17	-3.22	0.00718	-0.00339	0.000021	0.000407
Brook Silversides	1-4	0.870	0.204	21	312	1.96	47.7	-3.32	0.00014	0.00042	-0.00011	0.000155
Bullhead Minnow	1-2	0.868	0.260	75	4,356	2.26	76.4	-3.12	0.0162	-0.0271	0.0138	-0.00172
Chain Pickerel	1-16	0.985	0.093	26	388	3.14	13.4	-3.87	0.1003	-0.0428	0.0052	0.000006
"	17-25	0.910	0.082	23	142	2.61	77.6	-3.11	18.0349	-2.8501	0.1500	-0.0024
Channel Catfish	3-10	0.964	0.132	752	21,317	2.94	31.2	-3.51	-0.0103	0.00659	-0.00104	0.000327
"	11-26	0.965	0.075	703	3,682	3.30	13.8	-3.86	-4.85	0.974	-0.0648	0.00174
Cherryfin Shiner	1-3	0.996	0.0775	4	5,548	3.42	13.6	-3.87	---	---	---	---
Common Carp Israeli	S:4-16 P:4-15	0.983	0.075	36	3,272	3.00	56.4	-3.25	0.4314	-0.1654	0.0188	-0.000085
"	S:17-29 P:-16-29	0.925	0.081	20	490	2.62	239.0	-2.62	-30.0427	2.8737	-0.0584	0.00036
Common Carp Scaled	1-14	0.967	0.184	117	31,344	2.63	123.6	-2.91	0.088	-0.0486	-0.0089	0.00007
Common Carp Scaled	14-30	0.958	0.060	146	352	3.07	38.3	-3.41	-6.818	1.0745	-0.0564	0.00146

ESTIMATED PARAMETERS

Species	Length interval	r	$s_{y.x}$	n	Number of fish	b	$ax10^5$	log(a)	b_0	b_1	b_2	b_3
Creek Chub	1-7	0.960	0.179	25	185	2.58	69.6	-3.16	-0.00899	0.0123	-0.00473	0.000966
Emerald Shiner	2-4	0.835	0.215	42	13,623	2.73	29.7	-3.53	0.0101	-0.0085	0.00203	0.000121
Fathead Minnow	1-3	0.988	0.102	3	179,409	1.93	73.38	-3.13	0.000002	0.0012	-0.00078	0.00038
Flat Bullhead	2-9	0.988	0.112	23	71	3.197	31.4	-3.50	-0.120	0.0864	-0.0176	0.00151
Flathead Catfish	2-12	0.978	0.142	501	3,564	2.89	44.9	-3.35	0.0269	-0.0166	0.00293	0.000219
" "	13-24	0.975	0.0539	193	279	3.18	23.0	-3.64	4.73	-0.726	0.0336	-0.0000517
" "	25-36	0.975	0.052	23	26	3.44	10.6	-3.97	-174.1	17.12	-0.560	0.00656
Flier	2-6	0.999	0.020	5	23	2.51	174.3	-2.76	0.0721	-0.0695	0.0221	-0.00139
Freckled Madtom	1-4	0.927	0.202	11	130	1.95	111.1	-2.95	0.0137	-0.0217	0.0106	-0.00118
Freshwater Drum	1-18	0.983	0.121	1144	73,545	3.00	40.0	-3.40	-0.0707	0.0412	-0.00657	0.000704
" "	19-29	0.941	0.0776	55	99	3.72	5.6	-4.25	2.27	-0.629	0.0342	0.0000755
Gizzard Shad	2-6	0.931	0.164	212	192,307	2.73	58.6	-3.23	-0.0101	0.0138	-0.0047	0.000857
" "	7-17	0.957	0.078	647	74,892	2.89	45.2	-3.34	-1.30	0.419	-0.0431	0.00177
Goldfish	1-16	0.975	0.180	115	251,236	2.90	75.1	-3.12	-0.0403	0.0224	-0.0034	0.0008
Golden Redhorse	2-7	0.914	0.196	79	420	3.12	39.1	-3.41	0.178	-0.137	0.0323	-0.00185
" "	8-21	0.953	0.091	319	1,346	2.77	71.1	-3.15	-0.388	0.0639	-0.00094	0.00028

ESTIMATED PARAMETERS

Species	Length interval	r	$s_{y.x}$	n	Number of fish	b	$ax10^5$	log(a)	b_0	b_1	b_2	b_3
Golden Shiner	1-9	0.953	0.178	47	552,544	2.55	65.7	-3.18	-0.0057	0.0080	-0.0026	0.00054
Green Sunfish	2-4	0.839	0.242	235	8,585	3.01	63.8	-3.20	-0.0268	0.0318	-0.0116	0.00204
" "	5-8	0.788	0.137	118	602	2.97	68.9	-3.16	-2.77	1.33	-0.209	0.0113
Highfin Carpsucker	7-18	0.982	0.064	34	101	3.02	49.8	-3.30	01.56	0.482	-0.0467	0.00194
Largemouth Bass	2-10	0.970	0.139	519	5,984	2.96	49.7	-3.30	0.0173	-0.0113	0.0023	0.000337
Largemouth Bass	11-21	0.949	0.0815	251	490	3.16	32.8	-3.48	11.82	-2.38	0.154	-0.00270
Largescale Menhaden	3-5	0.990	0.0660	5	287	2.59	90.7	-3.04	-0.323	0.213	-0.0424	0.00300
Logperch	2-8	0.904	0.208	109	5,474	2.81	36.4	-3.44	0.0271	-0.0247	0.00716	-0.000355
Longear Sunfish	2-7	0.930	0.171	352	11,649	2.88	83.4	-3.08	-0.0296	0.0246	-0.0054	0.00104
Longnose Gar	2-47	0.973	0.189	82	120	3.12	5.72	-4.24	-0.103	0.0419	-0.004	0.00019
Mooneye	3-12	0.986	0.104	77	550	3.27	20.0	-3.70	0.136	-0.0704	0.00980	-0.0000256
Mosquitofish	1-2	0.303	0.236	5	121	0.48	127.8	-2.89	---	---	---	---
Northern Hog Sucker	3-11	0.986	0.088	14	19	2.98	37.5	-3.43	-0.460	0.256	-0.0433	0.0026
Northern Rock Bass	1-9	0.976	0.151	15	31	2.79	113.4	-2.94	0.0371	-0.0447	0.0106	0.000135
Orangespotted Sunfish	2-6	0.822	0.229	93	5,277	2.53	96.9	-3.01	0.0342	-0.0326	0.0103	-0.000440
Paddlefish	S:6-23 P:6-26	0.983	0.097	120	163	2.88	11.7	-3.93	-0.1382	0.0441	-0.0040	0.00019

ESTIMATED PARAMETERS

Paddlefish	S:24-52 P:27-52	0.972	0.078	93	96	3.81	0.6	-5.20	-14.4930	1.6154	-0.0602	0.00084
Pinfish	2-7	0.994	0.061	6	124	2.48	115.05	-2.94	0.132	-0.114	0.031	-0.002
Pirate Perch	1-3	0.838	0.233	15	44	1.99	133.6	-2.87	0.00704	-0.0102	0.00471	-0.0000545
Pugnose Minnow	1-3	0.915	0.126	15	214	1.44	84.2	-3.34	0.00093	0.00027	0.00019	0.00014
Quillback	1-19	0.987	0.094	95	958	2.83	76.5	-3.12	0.202	-0.103	0.0137	-0.0000116
Redbreast Sunfish	2-8	0.963	0.167	49	267	3.01	76.4	-3.12	-0.00803	0.00042	0.00042	0.000706
Redear Sunfish	2-10	0.967	0.136	323	3,937	2.96	67.9	-3.17	0.00258	-0.00408	0.00171	0.000474
Redeye Bass	2-13	0.987	0.125	56	944	3.12	35.4	-3.45	0.00100	-0.00378	0.00105	0.000410
Riffle Minnow	2-4	0.948	0.111	8	86	2.15	118.9	-2.92	-0.106	0.111	-0.0357	0.00393
River Carpsucker	13-18	0.940	0.044	13	54	2.58	159.9	-2.80	-38.14	7.53	-0.488	0.0109
River Redhorse	10-25	0.989	0.048	30	52	2.94	46.2	-3.33	-1.85	0.394	-0.0261	0.000936
Sauger	5-10	0.896	0.137	75	248	2.88	39.8	-3.40	0.927	-0.379	0.0504	-0.00187
"	11-20	0.956	0.061	110	220	3.02	29.3	-3.53	3.66	-0.811	0.0589	-0.00109
Shortnose Gar	11-26	0.987	0.085	16	26	3.43	4.2	-4.37	0.505	-0.0747	0.0022	0.000167
Silverband Shiner	1-4	0.858	0.242	41	5,713	2.34	55.5	-3.26	0.0035	-0.00555	0.00309	-0.000243
Silver Chub	1-6	0.909	0.263	73	6,919	2.44	58.2	-3.23	0.00146	-0.00194	0.00121	0.0000972
Silverjaw Minnow	1-4	0.945	0.130	19	496	2.09	63.1	-3.20	0.00084	-0.000889	0.0006830	0.000091
Silverstripe Shiner	1-4	0.944	0.143	35	4,509	2.15	58.7	-3.23	0.00092	-0.00156	0.00133	-0.0000594
Silvery Minnow	1-4	0.952	0.146	8	145	2.42	44.3	-3.35	-0.00176	0.00199	0.0000620	0.0000438

ESTIMATED PARAMETERS

Species	Length interval	r	s _{y.x}	n	Number of fish	b	ax10 ⁵	log(a)	b ₀	b ₁	b ₂	b ₃
Skipjack Herring	2-6	0.889	0.193	141	4,762	2.69	48.8	-3.31	-0.0271	0.0247	-0.0062	-0.000780
" "	7-18	0.961	0.109	288	2,519	3.17	20.9	-3.68	0.554	-0.166	0.0155	-0.000124
Smallmouth Bass	2-10	0.960	0.142	160	1,742	2.95	48.8	-3.31	0.11	-0.0759	0.0157	-0.000524
" "	11-19	0.961	0.070	26	44	3.00	47.8	-3.32	5.02	-1.05	0.0693	-0.000968
Smallmouth Buffalo	3-30	0.992	0.058	612	3,830	3.04	49.83	-3.30	0.067	-0.009	-0.002	0.0007
Southern Flounder	2-8	0.946	0.208	10	22	2.42	90.68	-3.04	-0.0283	0.0285	-0.00732	0.000827
Southern Rock Bass	1-9	0.987	0.111	38	116	2.58	140.0	-2.85	-0.0361	0.0427	-0.0120	0.00163
Speckled Bullhead*	1-8	0.957	0.234	103	66,443	2.76	81.9	-3.09	0.0979	-0.0600	0.0088	0.00016
Speckled Chub	1-3	0.961	0.061	7	32	1.217	104.2	-2.98	-0.00203	0.00423	-0.00141	0.000219
" "	3-5	0.853	0.126	19	65	2.77	41.8	-3.38	0.0108	-0.00122	-0.00152	0.000587
Speckled Madtom	1-2	0.647	0.361	13	51	2.59	70.7	-3.15	-0.00013	-0.0015	0.00235	0.0000175
Spot	2-9	0.989	0.114	8	290	3.14	35.65	-3.45	0.078	-0.067	0.016	-0.0007
Spottail Goby	1-5	0.940	0.144	5	81	1.245	402.3	-2.39	-0.00284	0.0123	-0.00533	0.000942
Spotted Bass	2-10	0.973	0.152	537	13,867	3.09	33.6	-3.47	-0.00217	0.00239	-0.0008130	0.000490
Spotted Bass	11-18	0.946	0.0618	106	177	3.06	38.5	-3.41	16.16	-3.30	0.221	-0.00441
Spotted Gar	6-16	0.873	0.165	38	74	3.31	4.6	-4.34	-0.1423	0.0448	-0.0047	0.00027
" "	17-29	0.894	0.096	79	89	3.40	3.8	-4.42	-22.3789	3.1924	-0.1507	0.0025
Spotted Sucker	2-5	0.854	0.185	35	610	3.00	36.9	-3.43	-0.0998	0.0944	-0.0281	0.00304
" "	6-17	0.965	0.0839	343	1,611	2.99	40.6	-3.39	-0.460	0.130	-0.0113	0.000706
Spotfin Shiner	2-3	0.917	0.258	3	2,688	4.12	11.3	-3.94	-0.0387	0.0186	0.0042	-0.00165

*Southern variety of brown bullhead

ESTIMATED PARAMETERS

Species	Length interval	r	$s_{y.x}$	n	Number of fish	b	$ax10^5$	log(a)	b_0	b_1	b_2	b_3
Spotted Sunfish	2-7	0.985	0.088	15	227	2.68	121.01	-2.92	0.0821	-0.0749	0.0216	-0.00120
Stoneroller	2-6	0.883	0.222	7	89	2.39	96.4	-3.02	-0.0733	0.0760	-0.0233	0.00256
Striped Mullet	3-16	0.982	0.083	20	38	2.50	118.57	-2.93	-0.215	0.127	-0.019	0.0012
Striped Shiner	3-6	0.928	0.140	12	53	3.29	25.2	-3.60	-0.422	0.313	-0.0750	0.00623
Threadfin Shad	2-5	0.889	0.207	255	303,855	2.80	44.5	-3.35	-0.0463	0.0476	-0.0150	0.00183
" "	6-13	0.908	0.158	99	5,019	3.16	20.9	-3.68	0.624	-0.238	0.0293	-0.000851
Walleye	4-22	0.993	0.087	32	69	3.11	23.5	-3.63	-0.0120	0.00897	-0.00188	0.000409
Warmouth	2-8	0.940	0.203	320	3,860	3.08	68.0	-3.17	-0.0605	0.0521	-0.0130	0.00181
Weed Shiner	1-4	0.990	0.066	17	335	2.05	94.6	-3.02	-0.0076	0.0131	-0.0055	0.000961
White Bass	3-17	0.978	0.136	305	3,209	2.98	50.1	-3.30	-0.00237	-0.0075	0.00294	0.000289
White Catfish	1-16	0.990	0.133	18	137	3.01	43.3	-3.36	-0.0309	0.0231	-0.00456	0.000714
White Crappie	2-16	0.977	0.169	353	6,305	3.05	43.2	-3.36	0.0222	-0.0167	0.0033	0.000334
Yellow Bass	2-12	0.971	0.137	233	5,071	3.15	36.4	-3.44	0.103	-0.0703	0.0139	-0.000304
Yellow Bullhead	1-14	0.973	0.191	63	371	2.66	93.4	-3.03	0.0115	-0.0071	0.00114	0.00045
Tilapia, Bluenose	1-14	0.990	0.122	144	988,577	2.86	100.1	-3.00	0.0196	-0.0102	0.00032	0.00084
Tilapia, Congo	1-10	0.988	0.129	57	406,495	2.92	95.3	-3.02	0.0076	-0.0029	-0.0012	0.00108
Tilapia, Java	1-14	0.969	0.208	172	1550,912	2.70	112.0	-2.95	-0.0164	0.0174	-0.0040	0.00091
Tilapia, Tampa	1-10	0.989	0.147	13	2,896	2.75	104.3	-2.98	0.0292	-0.0328	0.0087	0.00011

