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A Note on Three Collections of Cyprinodontid Fishes Housed in the  
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# A Note on Three Collections of Cyprinodontid Fishes Housed in the British Museum of Natural History, Including Syntypes and Historically Important Specimens

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## ABSTRACT

We reveal the presence of three North American cyprinodontids in the British Museum of Natural History (BMNH) that have been overlooked by some authors of recent ichthyological literature. Brief descriptions are given of the three specimens and comparisons are made with recently collected material. The BMNH specimen of *Cyprinodon elegans* is a syntype, the specimen of *C. gibbosus* (= *C. variegatus*), although not a type, is of historical importance, and the *C. mydrus* (= *Floridichthys carpio*) specimen was collected by Silas Stearns and we believe should be considered as a syntype.

## INTRODUCTION

After the termination of the Great International Fisheries Exhibition at London in 1883 many fishes were donated to the British Museum of Natural History (BMNH). Two hundred sixty three entries, comprising 292 fish specimens were recorded in their catalog of fishes. The following statement was recorded in the BMNH catalog at the beginning of these cataloged specimens: "Received from the Smithsonian Institution. Number attached to specimens (see catalogue of Coll. of Fishes exhibited by the U.S. Nat. Mus. by T. H. Bean. Washington 1883)". Many of the specimens bear metal tags that exhibit the United States National Museum (USNM) catalog numbers.

One of us (RDS) borrowed 20 specimens of North American fishes that had been donated to the BMNH after the termination of the Great International Fisheries Exhibition, London, 1883. Among the 20 specimens were 3 cyprinodontids: *Cyprinodon elegans* BMNH 1883.12.14.198

(ex USNM 21321), Comanche Springs N. Rio Grande, J. H. Clark; *C. gibbosus* BMNH 1883.12.14.197 (ex USNM 30758), Pensacola, Florida, Silas Stearns, with metal tag 30758 tied to specimen; and *C. mydrus* BMNH 1883.12.14.196 (ex USNM 31931), Pensacola, Florida, Silas Stearns, with metal tag 31931 tied to specimen. These 3 cyprinodontids, plus the remaining 17 specimens on loan, were examined in some detail during April of 1976 before being returned to the BMNH. We also examined five males and five females of recently collected *C. elegans*, *C. variegatus*, and *Floridichthys carpio* for comparison with the three BMNH specimens. We include here morphometric and collection data for these Tulane University (TU) specimens that were used for the comparison. The purpose of this paper is to reveal the existence of these specimens, none of which has been mentioned in any recent literature.

## MATERIALS AND METHODS

We used the following materials for comparison with the BMNH specimens: 1. *C. elegans* TU 97090 (73, 30-49 mm); Texas, Reeves County, irrigation ditch below San Solomon Springs; 18 November 1971; Anthony A. Echelle and Michael M. Stevenson; 2. *C. variegatus* TU 77544 (120, 22-50 mm); Louisiana, St. Bernard Parish, Chandeleur Islands; isolated pools near Monkey Bayou about 50 yards from open beach, about six miles south of Redfish Point; 22 January 1971; Anthony Laska and John Van Conner; and 3. *F. carpio* TU 44002 (31, 19-52 mm) Florida, Monroe County, Atlantic Ocean at Knight's Key near Marathon; 4 March 1967; RDS 4095; R. D. Suttkus, Glenn H. Clemmer, Kenneth Relyea, and Ichthyology Class.

## RESULTS AND DISCUSSION

*Cyprinodon elegans* Baird and Girard 1853

Baird and Girard's 1853 description of *C. elegans* is rather brief, however, Girard (1859) subsequently provided additional information. Besides the brief general description, including color, fin ray counts, and general locality (Rio Grande del Norte), Girard added some specifics, plus illustrations of a male and female. His list of specimens included two USNM catalog numbers: Cat. No. 686 (21 specimens), Comanche Springs, Rio Grande del Norte (Rio Bravo), collected 1851, Col. J. D. Graham, alcoholic specimens, John H. Clark, collector and Cat. No. 687 (11 specimens), Comanche Springs, Rio Grande del Norte (Rio Bravo), collected 1851, Col. J. D. Graham, alcoholic specimens, John H. Clark, collector. According to Eschmeyer (1998), Cat. No. 686 was re-cataloged as USNM 21320 and Cat. No. 687 was re-cataloged as USNM 21321, thus BMNH 1883.12.14.198 is a syntype of *C. elegans*.

The BMNH specimen is 39.5 mm SL with dorsal rays 11; anal rays 10; pectoral fin rays 16-16; pelvic fin rays 6-6; caudal rays branched plus two, 16; and lateral scales 28. The ten (five males, five females) recently collected *C. elegans* (TU 97090) had the following counts: dorsal rays 10 (2) and 11 (8); anal rays 10 (3) and 11 (7); pectoral rays, left side only 15 (2) and 16 (8); pelvic rays 6-6 (1), 7-5 (1), 7-7 (7), and one female without pelvic fins; caudal rays, branched plus two 15 (5) and 16 (5); and lateral scales 26 (2) and 27 (8). Of the twelve morphometrics compared between the BMNH specimen and the ten TU specimens, six measurements for the BMNH specimen were outside the ranges of the TU specimens: dorsal origin to snout, dorsal origin to caudal base, head width, caudal peduncle depth, dorsal fin depressed length, and anal fin depressed length (Table 1).

A sketch made during the April 1976 examination of the BMNH specimen (by RDS) shows a black marginal band on the caudal fin and the description of contact organs on the anal fin was as follows: on posterior margin of second ray, anterior and posterior margin of third ray, anterior margin of fourth, fifth and sixth rays, and a few on anterior and posterior margin of seventh ray; most contact organs were on distal half of rays. Based on color pattern and breeding tubercles, the BMNH specimen is a male and was in nuptial condition at the time of capture.

*Cyprinodon gibbosus* Baird and Girard 1853  
= *Cyprinodon variegatus* Lacepède 1803

*Cyprinodon gibbosus* BMNH 1883.12.14.197 (ex USNM 30758) came from Pensacola, Florida and was collected by Silas Stearns. Baird and Girard's *C. gibbosus* came from brackish waters of Indianola, [Texas]. Based on the different collection localities, the BMNH specimen of *C. gibbosus*, which was included along with other USNM fishes donated to the British Museum and collected by

Silas Stearns, is not type material.

The BMNH specimen is 51.3 mm SL and has the following meristics: dorsal rays 11; anal rays 11; pectoral rays 16-16; caudal rays 16; and lateral scales 27. Based primarily on the depth of the caudal peduncle, we believe the BMNH specimen is a male. The ten (five males and five females) recently collected *C. variegatus* (TU 77544) had the following counts: dorsal rays 11 (2) and 12 (8); anal rays 11 (10); pectoral rays, left side only 15 (4), 16 (5), and 17 (1); pelvic rays 6-6 (1), 7-7 (8), and 8-7 (1); caudal rays 14 (1), 15 (1), 16 (7), and 17 (1); and lateral scales 24 (3), and 25 (7). Of the 14 morphometrics compared between the BMNH specimen and the ten TU specimens, four measurements for the BMNH specimen were outside the ranges of the TU specimens: body depth, interorbital distance, dorsal fin depressed length, and anal fin depressed length (Table 2).

*Cyprinodon mydrus* Goode and Bean 1882  
= *Floridichthys carpio* (Günther 1866)

Goode and Bean's (1882) description of *C. mydrus* is somewhat brief. However, some critical morphological characters were given, such as: dorsal rays 13, anal rays 29 (no doubt this was a typographical error and should have read 9), and humeral scale scarcely as large as the contiguous scales. The specimen came from Pensacola, Florida.

The BMNH specimen of *C. mydrus* (BMNH 1883.12.14.196) was also from Pensacola, Florida, collected by Silas Stearns (ex [USNM] 31931), and there was a metal tag tied to the specimen. This specimen is 39.5 mm SL; dorsal rays 12; anal rays 9; pectoral rays 19-19; pelvic rays 7-7; caudal rays 16; and lateral scales 23. The humeral scale is not enlarged and silver spots were visible on the sides of the specimen, especially on the caudal peduncle. Contact organs were present on the second through sixth anal rays, indicating that the BMNH specimen is a male. The ten (five males and five females) recently collected *F. carpio* (TU 44002) had the following counts: dorsal rays 11 (8) and 12 (2); anal rays 9 (9) and 10 (1); pectoral rays, left only 17 (5) and 18 (5); pelvic rays 7-7 (10); caudal rays 15 (4), 16 (3), and 17 (3); lateral scales 22 (1) and 23 (9); and caudal peduncle scales 16 (10). Of the 15 morphometrics compared between the BMNH specimen and the ten TU specimens, nine measurements for the BMNH specimen were outside the ranges of the TU specimens: dorsal origin to snout, dorsal origin to caudal base, pelvic insertion to snout, head width, caudal peduncle depth, interorbital distance, dorsal fin depressed length, anal fin depressed length, and pectoral fin length (Table 3).

Miller (1974) stated that in 1953 he had suggested that the actual types of *C. mydrus* might be USNM 31931. However, Miller decided that, because Bean did not indicate that USNM 31931 was type material in his listing of specimens being sent to the Fisheries Exhibition (especially since he was coauthor of the original description of *C. mydrus*) the USNM 31931 specimens must not be type material. We differ in our opinion with regards to the for-

mer status of USNM 31931. We think that Bean and Goode's staff probably did not verify which specimens were types. They were likely under the impression that all of the material would be returned to the USNM. We also assume the catalog number USNM 30479 that was given in the original description was incorrect and that Bean and Goode did not carefully proof the manuscript or they would have caught the error farther on in the same paragraph. In a comparison with *C. gibbosus* they stated that *C. mydrus* differed, "...by the smaller number of its anal rays, of which there are 29". No doubt it should have read, "...of which there are 9."

There was an inconsistency about the designation of type material of other specimens sent to BMNH. Bean (1883) listed: *Lucania goodei* [USNM] 23505 (two of the type specimens), St. John's River, Florida, G. B. Goode [collector], whereas the BMNH catalog listed: *L. goodei* BMNH 1883.12.14.194-5, St. John's River, Florida (ex USNM 23505, two of the type specimens), with no identification of the collector. Bean (1883) listed: *C. elegans* [USNM] 21321, Comanche Springs, N. Rio Grande, J. H. Clark (no mention of being type material), whereas the BMNH catalog listed: *C. elegans* BMNH 1883.12.14.198, Comanche Springs, N. Rio Grande, J. H. Clark (no mention of being type material and no mention of the USNM origin). Bean (1883) listed *Plagopterus argentissimus* [USNM] 15776, Colorado Chiquito River, New Mexico, C. G. Newberry, whereas the BMNH catalog listed: *P. argentissimus* BMNH 1883.12.14.239, Colorado Chiquito River (ex USNM 15776). Again, there was no mention by Bean (1883) of the specimens being type material (Gilbert, 1998).

Perhaps the best evidence of the inconsistency in designating type material is that concerning *Dallia pectoralis*. Bean (1880) diagnosed his new genus, *Dallia*, and described the species *D. pectoralis*. There were two series of type material: USNM 23498 (7 specimens) from St. Michaels, Alaska, February 1877, L. M. Turner and USNM 6661 (17 specimens), St. Michaels, Alaska, H. M. Bannister. Bean (1883) listed *D. pectoralis* [USNM] 6661, St. Michaels, Alaska, H.M. Bannister (no mention of being type material). However, Bean (1883) listed another specimen of *D. pectoralis* [USNM] 6661, St. Michaels, Alaska, H. M. Bannister (one of type specimens). Apparently the latter specimen of *D. pectoralis* was cataloged first in the British Museum (BMNH 1883.12.14.155), St. Michaels, Alaska, (ex USNM 6661) as one of the types. The other specimen of *D. pectoralis* was cataloged as BMNH 1883.12.14.172, St. Michaels, Alaska (no other comment). A review of the other North American material in the BMNH that was donated by the United States following the Great International Fisheries Exhibition in 1883 will appear in subsequent papers.

## ACKNOWLEDGMENTS

We express our deep appreciation for the help and courtesies extended to us by the personnel at the British Museum of Natural History during the 1970s and for the loan of specimens. We thank Anthony A. Echelle and Michael Stevenson for the deposition of *C. elegans* specimens into the Tulane University Museum of Natural History. Also we are grateful for the use of the facilities at the Tulane University Museum of Natural History.

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**TABLE 1.** Measurements in thousandths of SL for five male and five female *C. elegans* (TU 97090) and a single specimen of *C. elegans* from the British Museum of Natural History (BMNH 1883.12.14.198: ex USNM 21321).

	<i>C. elegans</i> TU 97090 males (n = 5)		<i>C. elegans</i> BMNH 1883.12.14.198 (n = 1)	<i>C. elegans</i> TU 97090 females (n = 5)	
	Range	X		Range	X
SL (mm)	42.1-49.5	44.7	39.5	39.4-43.0	41.8
Dorsal origin to snout	571-605	587	562	582-604	592
Dorsal origin to caudal base	452-470	458	500	427-446	438
Pelvic insertion to snout	547-575	563	—	533-555	546
Pelvic insertion to caudal base	490-506	497	—	475-501	493
Anal origin to snout	664-705	679	—	661-698	681
Anal origin to caudal base	355-370	362	—	343-371	359
Body, greatest depth	363-405	382	392	326-371	343
Body, greatest width	230-254	243	—	229-245	236
Head, length	305-315	309	312	295-313	304
Head, width	220-237	228	210	221-233	227
Caudal peduncle, depth	169-178	173	185	155-160	158
Interorbital distance	124-128	126	112	111-125	120
Dorsal fin, depressed length	239-261	251	297	213-233	221
Anal fin, depressed length	223-230	227	247	192-215	205
Pectoral fin, length	225-235	229	222	208-228	219
Pelvic fin, length	88-110	99	107	91-101	94

**TABLE 2.** Measurements in thousandths of SL for five male and five female *C. variegatus* (TU 77544) and a single specimen of *C. gibbosus* (= *Cyprinodon variegatus*) from the British Museum of Natural History (BMNH 1883.12.14.197)

	<i>C. variegatus</i> TU 77544 males (n = 5)		<i>C. gibbosus</i> (= <i>C. variegatus</i> ) BMNH 1883.12.14.197 (n = 1)	<i>C. variegatus</i> TU 77544 females (n = 5)	
	Range	X		Range	X
SL (mm)	43.6-49.6	45	51.3	42.3-45.0	43.4
Dorsal origin to snout	495-513	501	522	538-555	545
Dorsal origin to caudal base	547-559	553	543	507-524	514
Pelvic insertion to snout	511-529	519	545	538-585	569
Pelvic insertion to caudal base	524-551	534	—	480-522	504
Anal origin to snout	641-662	655	673	689-710	698
Anal origin to caudal base	398-415	409	—	341-373	357
Body, greatest depth	396-440	414	465	400-437	420
Body, greatest width	206-227	219	—	239-266	257
Head, length	287-303	298	300	304-321	311
Head, width	217-227	221	232	235-251	243
Caudal peduncle, depth	191-208	203	201	174-189	181
Interorbital distance	114-124	119	95	109-126	119
Dorsal fin, depressed length	340-374	354	325	289-315	302
Anal fin, depressed length	236-250	243	171	172-203	187
Pectoral fin, length	247-267	258	241	229-268	248
Pelvic fin, length	129-135	132	129	124-138	130

**TABLE 3.** Measurements in thousandths of SL for five male and five female *F. carpio* (TU 44002) and a single specimen (and possible syntype) of *C. mydrus* (= *F. carpio*) from the British Museum of Natural History (BMNH 1883.12.14.196).

	<i>F. carpio</i> TU 44002 males (n = 5)		<i>C. mydrus</i> (= <i>F. carpio</i> ) BMNH 1883.12.14.196 (n = 1)	<i>F. carpio</i> TU 44002 females (n = 5)	
	Range	X		Range	X
SL (mm)	43.8-51.7	47.5	41.6	41.3-47.7	44.6
Dorsal origin to snout	502-520	512	492	517-527	524
Dorsal origin to caudal base	524-559	538	590	510-544	526
Pelvic insertion to snout	476-506	493	456	495-531	516
Pelvic insertion to caudal base	583-595	589	588	550-588	566
Anal origin to snout	636-693	665	636	670-709	692
Anal origin to caudal base	396-435	419	—	380-402	390
Body, greatest depth	414-424	417	422	408-426	416
Body, greatest width	207-229	215	—	220-238	228
Head, length	318-334	328	324	322-345	337
Head, width	212-231	218	197	227-233	231
Caudal peduncle, depth	216-222	220	228	202-215	207
Interorbital distance	121-123	122	106	118-128	123
Dorsal fin, depressed length	371-397	388	437	309-331	320
Anal fin, depressed length	301-328	314	348	204-229	214
Pectoral fin, length	235-253	243	281	226-245	237
Pelvic fin, length	185-198	191	197	141-164	150