

NOTES ON FISHES COLLECTED BY CAPT. CHAS. BENDIRE, U. S. A.,
IN WASHINGTON TERRITORY AND OREGON, MAY TO OCTOBER,
1881.

By TARLETON H. BEAN.

The United States National Museum has again received from Captain Bendire a consignment of alcoholic fishes secured by him last summer and fall. A large collection previously sent by the captain was only partially examined and reported on in the summer of 1881*; the greater portion of the fishes are yet to be studied.

The lot just received includes eleven species, nearly all of which are well represented by individuals, giving opportunity for comparison of forms which are mostly rare in museums. Captain Bendire's field notes are included in the remarks upon the species to which they apply.

I think there is no reasonable doubt that the material thus brought together will enable us to prove the identity of *Coregonus Couesii* with *C. Williamsonii*, and to make, eventually, a consolidation of several species of *Apocope*.

The following is a list of the species:

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| 1. <i>Uranidea marginata</i> . | 7. <i>Apocope nubila</i> . |
| 2. <i>Coregonus Williamsonii</i> . | 8. <i>Mylochilus caurinus</i> . |
| 3. <i>Oncorhynchus chouicha</i> . | 9. <i>Richardsonius balteatus</i> . |
| 4. <i>Oncorhynchus nerka</i> . | 10. <i>Lampetra tridentata</i> . |
| 5. <i>Acrochilus alutaceus</i> . | 11. <i>Ammocetes plumbea?</i> |
| 6. <i>Rhinichthys transmontanus</i> . | |

1. *Uranidea marginata* Bean.

U. marginata Bean, Proc. U. S. N. M., iv, p. 26.

30324 (383) 5 specimens. Garrison Creek, Wash. Ter., July 1, 1881.
Length of specimens, $2\frac{3}{5}$ to 3 inches.

A.—D. VIII, 18; A. $14\frac{1}{4}$; V. I, 3-4; origin of anal vertically under second ray of dorsal; pectoral reaches to origin of anal; lateral line 24-25, ending under the 14th ray of dorsal; head $3\frac{1}{3}$ in length; depth 5.

B.—D. VIII, 19; A. $14\frac{1}{4}$; V. I, 3; origin of anal vertically under second ray of dorsal; pectoral reaches to origin of anal; lateral line ends under the 13th dorsal ray of left side and the 16th of right side, containing 22 to 25 short tubes; head $3\frac{1}{3}$; depth 5.

C.—D. VIII, 20; A. $14\frac{1}{4}$; V. I, 3; 13th anal ray divided at tip; last anal ray deeply divided; origin of anal under third ray of dorsal; pectoral reaches to vent; lateral line 27, ending under 17th dorsal ray; head $3\frac{1}{3}$; depth 5.

D.—D. VII, 18; A. $14\frac{1}{4}$; V. I, 3; the left ventral has, however, a fourth ray which is quite rudimentary; lateral line 20, ending under 10th dorsal ray.

* Bendire, Notes on Salmonidae, Proc. U. S. N. M. iv, pp. 81-87, June 2, 1881.

2. *Coregonus Williamsonii* Girard.

30301 (344-345)	♀	2 specimens.	Mill Creek, tributary of Walla Walla R.,	May 1, 1881.
30302 (352)	1 spec.		Garrison	" " 9, "
30303 (353)	1	"	"	" " "
30304 (354)	1	"	"	" " "
30305 (355)	1	"	"	" " "
30300 (356)	1	"	"	" " "

Numbers 344 and 345 are the "fresh-water herring" of Mill Creek, "caught with hook and line."

Numbers 352 to 356, inclusive, are the "small-mouthed whitefish caught in Garrison Creek, Walla Walla, by turning the water off. The fish takes a hook occasionally."

Number 344 is a female with the following characters:

Head a little greater than depth of body, 4 in length to end of anal when this is extended backward, slightly more than twice dorsal base. Eye $4\frac{3}{8}$ in head. Maxilla $3\frac{3}{8}$ in head, mandible $3\frac{1}{2}$. 13 or 14 gill-rakers below angle. 13 rows of scales under dorsal base. Scales 10-90-8.

Compare with this the type of *Coregonus Couesii* Milner, from Chief Mountain Lake. This type, number 14146, has: Head a little less than depth of body, $4\frac{1}{2}$ in length to end of extended anal, $1\frac{2}{3}$ times dorsal base. Eye $4\frac{1}{2}$ in head. Maxilla $3\frac{3}{4}$, mandible 3 in head. 14 gill-rakers below angle. 13 rows of scales under dorsal base. Scales 9-88-8.

Number 345 is a female with the following characters: Head a little less than depth of body, $4\frac{1}{3}$ in length to end of extended anal, $1\frac{2}{3}$ times dorsal base. Eye $4\frac{1}{2}$, maxilla $4\frac{1}{4}$, mandible 3 in head. 15 gill-rakers below angle. 13 rows of scales under dorsal base. Scales 10-87-8.

Number 354 shows the following: Head $\frac{7}{8}$ of depth of body, $4\frac{1}{3}$ in length to end of extended anal, $1\frac{1}{2}$ times dorsal base. Eye $4\frac{1}{2}$, maxilla $4\frac{1}{2}$, mandible 3 in head. 14 gill-rakers below angle. 15 rows of scales under dorsal base. Scales 10-90-8.

3. *Oncorhynchus chouicha* (Walb.) Jor. & Gilb.

30290 (363)	Grilse.	Walla Walla R.	May 18, 1881.
30326 (383)		Garrison Creek.	July, "

In determining the species of *Oncorhynchus*, to which the small example number 383 belongs, I have relied upon the numerous anal rays and branchiostegals as a guide.

Number 363, the "salmon grilse" of this invoice, is a handsomely spotted young male $16\frac{1}{2}$ inches long, with the following characters: Gill-rakers 22; branchiostegals 17; a few weak teeth on head of vomer only; teeth in jaws all small, trout-like; dorsal with 11, anal with 16 divided rays; scales from end of dorsal to lateral line 26, from dorsal line midway between dorsal and snout to lateral line 33; lateral line 145; from ventral origin to lateral line 28; pyloric caeca very small and numerous.

4. *Oncorhynchus nerka* (Walb.) Gill & Jor.

30291 (359)	♂ head.	Celilo, 10 miles above the Dalles, Oregon,	May 15, 1881.
30292 (360)	♂	"	" " "
30293 (361)	♀	"	" " "
30294 (362)	♀	"	" " "

Numbers 359-362 are "heads of *Oncorhynchus nerka* caught at Celilo, 10 miles above the Dalles, Oregon, May 15, 1881. Color of fish, as appearing then: Back, steel blue with greenish reflections; sides and belly, pure silvery white. In a number of specimens I examined about that time the vomerine teeth were not perceptible to the touch, but the two rows where they are located can be seen plainly in nearly all the specimens."

Gill-rakers in number 361, 40; branchiostegals 14.

5. *Acrochilus alutaceus* Ag. & Pick. Hard mouth.

30297 (364) 1 specimen, John Day River, Oregon, Aug. 15, 1881.

30298 (369) 1 " " " " " "

Number 368 has: scales 22-89-16; persistent teeth on left side 5, and one deciduous; greatest depth equals head, $4\frac{1}{2}$ in length to end of scales; least depth of caudal peduncle 3 in head; eye $1\frac{1}{3}$ in snout, $4\frac{1}{2}$ in head; greatest width of cartilaginous plate of lower lip equals lower jaw, $3\frac{1}{4}$ in head; longest anal ray nearly $1\frac{1}{2}$ times anal base; pectoral 5, ventral $6\frac{1}{2}$ in length to end of scales; dorsal origin midway between snout and end of scales; D. 10; A. 9; V. 9; length of fish 10 inches.

Number 369 has: scales 22-87-16; persistent teeth 4-5, one deciduous tooth on one side and two on the other; greatest depth of body equal to head, $4\frac{1}{2}$ in length to end of scales; least depth of caudal peduncle 3 in head; eye 5 in head, $1\frac{1}{2}$ in snout; width of cartilaginous plate on lower lip equals lower jaw and 3 in head; longest anal ray $1\frac{1}{2}$ times anal base; pectoral $5\frac{1}{2}$ in length to end of scales; dorsal origin midway between snout and end of scales; ventral 7 in length to end of scales; D. 10; A. 9; V. 9; length of fish 11 inches.

6. *Rhinichthys transmontanus* Cope.

30332 (383) 4 specimens, Garrison Creek, Wash. Ter., July, 1881.

Teeth 2, 4-4, 2; scales in three individuals examined were as follows: 14-77-14, 14-72-14, 14-68 to 70-14. In one of these I counted 68 scales in the lateral line of one side and 70 on the other side.

Dorsal midway between anterior nostril and end of scales, its base equals $\frac{2}{3}$ of its longest ray, which is 6 in length to end of scales; head $4\frac{1}{3}$, depth 5. pectoral 5 in length to end of scales; ventrals reach to vent; pectorals do not extend to ventral origin; D. 8; A. 7; length of specimens $3\frac{1}{2}$ to $4\frac{1}{3}$ inches.

7. *Apocope nubila* (Grd.) Jor. & Gilb.

30323 (383) 5 specimens, Garrison Creek, Wash. Ter., July 1881.

The larger of the two types of *Argyreus nubilis* Grd. has the following characters: Greatest height of body very little more than length of head, $4\frac{1}{4}$ in length to end of scales; upper jaw reaching to vertical through hind margin of posterior nostril; eye 5 in head; snout 3 in head; pectoral $5\frac{1}{2}$, ventral $6\frac{1}{2}$ in length to end of scales; longest dorsal ray equal to longest anal, which equals head without snout; D. 8; A. 7; V. 7; scales 12-60-10; length 4 inches; teeth 2, 4-4, 2, slightly hooked, and with a very narrow groove beneath the hook.

The examples sent by Capt. Bendire show the following characters: Greatest height of body slightly exceeds length of head, $4\frac{1}{2}$ in length to end of scales; upper jaw as in the above; eye $4\frac{1}{2}$ in head; snout $3\frac{1}{4}$ in head; pectoral 5, ventral 6 in length to end of scales; longest dorsal and anal rays as in last; ventral reaches to anal; D. 9; A. 7; V. 7; scales 12 to 13-55 to 30-10 to 12; length 3 to $3\frac{1}{2}$ inches; teeth 2, 4-4, 2.

These specimens show considerable variation in the number of scales in the lateral line, and there is constantly one more dorsal ray than in the types of *A. nubila*; they are, however, certainly not specifically distinct from Girard's form.

I have examined a fish collected by Prof. Jordan in Utah Lake and correctly identified by him with *Apocope vulnerata* Cope. While the teeth of one side of the specimen identified by Prof. Jordan are 1, 4, as he states, on the other side of the same fish I find 2, 4. If this condition occurs frequently the margin of separation between *A. vulnerata* and *A. nubila* will become uncomfortably small, as there will be little left besides the slightly greater number of scales.

Description of a female specimen of *A. nubila*, number 24195, collected by Capt. Bendire at Walla Walla.

D. ii, $7\frac{1}{2}$; A. ii, $6\frac{1}{2}$; V. 8; P. 15; scales 13-53-10; teeth hooked, slightly grooved, 1, 4-4, 1.

Barbels minute. The end of the maxilla reaches the vertical through the anterior margin of the nostril; snout contained 3 times, eye 5 times in length of head. Eye $1\frac{1}{2}$ times in width of interorbital area. Length of head nearly 4 times in total length caudal excluded, $4\frac{1}{2}$ times caudal included. Greatest depth 5 times. Longest dorsal and anal rays equal and contained $5\frac{1}{2}$ times in total length without caudal; pectoral contained 5 times in the same length. Ventral equal to length of head without postorbital part. The origin of the dorsal is a little behind that of the ventrals, about midway between the tip of the snout and the end of the middle caudal rays. Length 81 millimeters.

Color of the alcoholic specimen grayish olive. There is a faint indication of a dark stripe on the nose.

8. *Mylochilus caurinus* (Rich.) Girard.

30299 (342) ♀ 1 specimen, Mill Creek, trib. of Walla Walla R., Apr. 26, 1881.

"Chub, taken Apr. 26, 1881, in Mill Creek, tributary of Walla Walla River, Washington Terr'y."

"Above bluish brown; sides paler. A carmine red stripe along the sides. Belly silvery white. Nose steel blue. Stripe below the eye brick red. Called Red Horse occasionally."

Eye equal to preorbital, $1\frac{1}{2}$ in snout, 5 in head. Maxilla reaching vertical through hind margin of posterior nostril. Head $1\frac{1}{3}$ in depth, $4\frac{2}{3}$ in length to end of scales. Depth $4\frac{1}{3}$ in length to end of scales. Pectoral equals longest dorsal ray, 3 in distance from snout to dorsal. Ventral is under 3rd ray of dorsal, does not reach vent, equals head

without snout. D. 8; A. 8; V. 9; scales 14-74-9; teeth 1, 5-5, 1; length $11\frac{1}{5}$ inches.

While it is certain that the persistent pharyngeal teeth are as stated, I must note that a small tooth was found loose in the tissues covering the dentigerous bones. It may be that this fish had the normal number and two of them were displaced by accident. Four of the teeth of each side are molar-like.

9. Richardsonius balteatus (Rich.) Grd.

30322 (383) ♀ 1 specimen, Garrison Creek, Wash. Ter., July, 1881.

Length of example 4 inches. Teeth 2, 5-5, 2, hooked, without grinding surface. Body compressed, resembling *Notemigonus*. Snout $\frac{2}{3}$ as long as eye, 4 in head. Eye 3 in head. Head $\frac{4}{5}$ of greatest height of body, almost $4\frac{1}{2}$ in length to end of scales. Maxilla 3 in head, mandible $2\frac{1}{2}$. Dorsal behind ventrals, much nearer caudal than end of snout, its base equal to $\frac{1}{4}$ of its distance from snout. Longest dorsal ray equals length of pectoral, $5\frac{1}{2}$ in length to end of scales. Anal basis nearly equals head, $4\frac{2}{3}$ in length to end of scales. Ventral nearly equi-distant from snout and end of scales. D. 10; A. 18; V. 9; scales 12-63-8.

10. Lampetra tridentata (Gairdner) Jor. & Gilb.

30295 (347) 1 specimen, Walla Walla R., Wash. Ter., May 6, 1881.

30296 (351) 1 specimen, Garrison Creek, Wash. Ter., May 9, 1881.

"Lamprey eel." Number 347 is 19 inches long; number 351 is almost exactly as long. The teeth are as in Richardson's description in *Fauna Boreali-Americana*; the dorsals, however, are separated simply by a deep emargination; the base of the first is from one-half to two-thirds as long as that of the second; the second dorsal is higher than the first, and is subcontinuous with the caudal. The length of the space occupied by the gill-openings is contained $8\frac{1}{2}$ times in total length, and is a little more than the length of the head from end of snout to first gill-opening. Greatest height of body 6 in distance from snout to first dorsal.

I have compared the type of *Petromyzon astori* Grd. with *Lampetra tridentata* and find that they are certainly identical, as already pointed out by Professor Jordan. The types of *P. ciliatus* and *P. licidus* have the dorsals separated by a space nearly or quite half as long as the first dorsal, but otherwise they have the characters of *tridentata*.

11. ?Ammocetes plumbea (Ayres).

30321 (383) juv., 1 specimen, Garrison Creek, Wash. Ter., July, 1881.

I am in doubt whether or not this small lamprey, $4\frac{2}{5}$ inches long, is the larval form of the above-named species or not. The maxillary plate is bicuspid, the cusps well separated; the mandibular plate has 7 teeth of uniform size. I am unable to determine the structure of the other teeth. The lips are fringed. Head $8\frac{1}{2}$ in length, equal to space occupied by gill-openings. Dorsals subcontinuous. Height of body almost equal to head. Perhaps this is *Ammocetes cibarius* Girard, and may be distinct from *A. plumbea*.