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TO

DATE

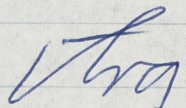
DATE

1969 Nov 18

Dear Bob:

Am including another paper concerning an additional trout fragment from the Esmeralda. I note in an earlier letter of 1964 that you mentioned a fragment of a large salmonid south of Walker Lake. That would roughly be the direction of this Esmeralda jaw, and a little to the east. I saw an entire mandible (one side) taken from a sandstone matrix when I was going over the area with John Mawby, but have never heard if anything was done with this. Bonnie Dalzell still has some of our Salmo cyniclope material.

Sincerely,


Ira La Rivers

BY

INSTRUCTIONS TO SENDER:

1. KEEP YELLOW COPY. 2. SEND WHITE AND PINK COPIES WITH CARBON INTACT.

SIGNED

INSTRUCTIONS TO RECEIVER:

1. WRITE REPLY. 2. DETACH STUB, KEEP PINK COPY, RETURN WHITE COPY TO SENDER.

BIOLOGICAL SOCIETY OF NEVADA

Occasional Papers

No. 3

BOX 8096, RENO, NEV.

1 FEBRUARY 1964



Salmo cyniclope sp. nov., type specimen. X 0.7

**A NEW TROUT FROM THE BARSTOVIAN (MIOCENE)
OF WESTERN NEVADA**
(ISOSPONDYLIFORMES, SALMONOIDEI, SALMONIDAE)

By IRA LA RIVERS, Verdi, Nevada

SALMO CYNICLOPE species novum

General: The type is a medium-sized specimen, in terms of modern sizes in the genus *Salmo*, appearing to be on the order of 20 inches in *standard length* and to differ in no generic way from representatives of modern trout. The fragmental remains

of several specimens were collected at the type locality, showing a noticeable size range for individuals dying here (presumably under the same spatial and temporal conditions). While it is possible to reconstruct virtually an entire specimen from the individual fragments collected up to this writing, only certain features of the skull — particularly those surrounding the buccal cavity — seem diagnostic and that portion which shows these features best *in toto* forms the basis for the illustration above. This part of an individual is represented by both mirror halves, although the one illustrated shows the most detail.

Specific: The figured fragment (Biological Society of Nevada #50A) is a portion of a crushed skull showing the two DENTARIES, the left MAXILLARY, sections of the PRE-MAXILLARIES, what I can only interpret with present comparative material as a robust left PALATINE and other mingled skull elements among which the HYOMANDIBULAR and DERMETHMOID bones seem evident. The entire skull appears to have been flattened and rolled dorso-ventrally during the process of crushing so that, as is evident in the illustration, the DENTARIES separated anteriorly but not posteriorly, the PALATINE came to rest well below the dentaries, and the single, well-outlined MAXILLARY is impressed below the palatine. Shifting of skull elements caudad is also markedly evident, with PALATINE and MAXILLARY lying well behind their normal position. The robustness of the DENTARIES cannot be judged by the actual appearance of these structures in *Salmo cyniclope* since the crushing to which the skull was subjected has flattened the exteriorly convex — interiorly concave lower jaws so that they appear much wider than they actually were in life. However, even allowing for this distortion, these jaws appear to be distinctly heavier and more massive than in modern species.

Another fragment (BSN #50B) which will supplement the type above, is a small, thin piece containing an excellent outline of a right MAXILLARY, indistinct at its extreme anterior end and nearly in contact above with a portion of a JUGAL (SUB-ORBITAL #2), an entire and very typical SUBORBITAL #3 and a part of SUBORBITAL #4.

Of the DENTARIES, the LEFT DENTARY is most complete and measures 60 mm. in length. The LEFT DENTARY ANGLE (=angle formed between the posterior dorsal angle, the anterior end and the posterior ventral angle) is 28° , indicat-

ing considerable distortion by flattening. The visible teeth are concentrated near the tip of the DENTARY, behind them being an apparent hiatus and then sparse teeth on the shaft posteriorly. The anteriorly-massed teeth are quite sizeable and robust. The MAXILLARY has strong, prominent teeth for its entire length (55 mm.), and its huskiness is attested to by its median width of 7 mm.

Affinities: The anal fin, while not complete, is apparently nearly so and suggests the shorter fin of *Salmo* rather than the longer one of *Oncorhynchus*. As mentioned, *Salmo cyniclope* is a distinctly heavier and more massive species than such as *Salmo clarki-Salmo gairdneri* which might be its modern derivatives.

Matrix: From Dr. Richard H. Olson's petrographic report (Nevada Bureau of Mines) I extract the following information: "represents tuffaceous strata which have been strongly silicified—not 'welded,' but secondarily cemented by amorphous siliceous material, probably opal . . . it represents an 'air fall' of extremely fine-grained volcanic glass and probably could have been classified as a vitric tuff prior to its cementation by secondary silica."

Type data: NEVADA (*Pershing County*, Rabbithole; 10-11 June 1961, I. La Rivers; 12-13 Oct. 1963, La Rivers & Richard H. Olson). Type deposited as BSN #50A in the collections of the Biological Society of Nevada, Verdi.

Age and associated biota: Dr. Daniel Axelrod was kind enough to provide the following observations: "The flora is small, yet appears to represent an assemblage composed of lake-and-stream border plants (*Salix hesperia*, *Betula thor*, *Quercus simulata* and *Populus* sp.) and a deciduous-hardwood forest (*Acer columbianum*, *Liquidamber pachyphyllum* and *Quercus hannibali*) in which were scattered conifers (*Pinus florissanti* and *Picea* sp.). The plants point to a well-watered region, probably with 40 inches of yearly rain, well distributed throughout the seasons, with moderate ranges of temperature. In terms of Pacific Coast Tertiary ages, this flora would be Middle Miocene in the marine record (Temblor-Caliente), but would be regarded as Upper Miocene (Barstovian) by mammalian paleontologists" (*in litt.* 1963).

The horizon also contains as yet unidentified pelecypods, gastropods and ostracods. Immediately east of the fish stratum, the writer has found isolated float fragments of mammal bones,

so the locality may eventually yield identifiable remains of this group.

Etymology: *Cyniclus*, "rabbit" and *-ope*, "hole."

Some general considerations: The nearest known fish-yielding beds are about 60 air-line miles SSW of Rabbit-hole (BSN Locality #50) at the SE edge of the Sahwawe Mountains just above Granite Springs Valley (=BSN Locality #52). These are diatomites containing the stickleback *Gasterosteus doryssus* (Jordan) 1907 and the topminnow *Fundulus nevadensis* (Eastman) 1917. These two fishes were described from Hazen diatomites about 35 air-line miles SSW of Sahwawe (=BSN Locality #10, 2 miles SSW of Hazen, and BSN Locality #43, 5 miles SSW of Hazen). These are younger fishes, however, than *Salmo cyniclope*, their age being established as Clarendonian (Lower Pliocene)*. The only other cold-blooded vertebrate of comparable Tertiary age known for the general area is the Clarendonian frog *Rana johnsoni* La Rivers 1953, an exceptionally complete specimen of which has been found at the Eagle-Picher diatomite workings 20 miles west of Lovelock (BSN Locality # 44) between Rabbit-hole and Sahwawe.

At this writing, the author has a catalogue of over 50 Nevada Mio-Pliocene localities which have yielded fish remains.

*As corrected by the writer (La Rivers 1953: 80) after having long been recorded as Pleistocene in age.

REFERENCE

La Rivers, Ira. 1953. A lower Pliocene frog from western Nevada. *Journal Paleontology* 27(1): 77-81.

