

PROCEEDINGS
OF THE
CALIFORNIA ACADEMY OF SCIENCES
FOURTH SERIES

VOL. III, pp. 259-264

DECEMBER, 21, 1912

NOTES ON ASCAPHUS, THE DISCOGLOSSOID TOAD
OF NORTH AMERICA

BY JOHN VAN DENBURGH
Curator of the Department of Herpetology

More than twelve years have passed since Dr. Stejneger¹ announced the discovery of a single specimen of a costate toad—the first representative of the *Discoglossidae* found anywhere in the Western Hemisphere. During these twelve years there has appeared no additional information regarding this extremely interesting toad; and there has been some room for suspicion that the original specimen might, in some way, have been brought over from the Old World. The finding of additional specimens, therefore, is a matter of much interest.

The type specimen described by Dr. Stejneger was caught by Mr. Cloud Rutter, August 19, 1897, near Humptulips, Chelalis County, Washington. This locality has an elevation of about 265 feet.

In 1905, my friend Dr. E. C. Van Dyke visited Mt. Rainier, in the Mt. Rainier National Park in the eastern part of Pierce County, Washington, and, between July 15 and 31, collected for me five specimens of amphibians. These were one *Rana pretiosa*, one *Ambystoma macrodactylum*, one *Chondrotus paroticus*, the unique type of *Plethodon vandykei*, and a single specimen of *Ascaphus truei*. Unfortunately, all these specimens were destroyed in the great San Francisco fire of

¹Proc. U. S. Nat. Mus., XXI, 1899, pp. 899-901, pl. LXXXIX.

April, 1906. The *Ascaphus* was secured on the southeast side of Mt. Rainier, in the vicinity of Reflection Lake, at an altitude of about 4861 feet.

In 1911, it became possible to send Mr. Slevin on a collecting trip through western California, Oregon, and Washington, and I requested him to look most carefully for *Ascaphus* both at Humptulips and on Mt. Rainier. At Humptulips, late in July, he was unsuccessful, but on Mt. Rainier, in the middle of August, he secured three specimens of this toad. He has given me the following notes regarding their capture:

"On August 16 and 17, I took three specimens of *Ascaphus* on the southwest side of Mt. Rainier, in what is known as Indian Henry's Hunting Grounds, at about 6000 ft. elevation. All three were found on bright sunny mornings between 10:30 and noon, in a small slow-flowing stream. The one first taken jumped out of the brush into a small pool about four feet wide, five or six feet long, and two or three feet deep. It swam for a few seconds, just as a toad does; and when I attempted to catch it with my forceps, it went to the bottom and settled just like a frog—remaining perfectly motionless, its color blending with the color of the rocks and earth at the bottom of the pool. The second one I noticed in the same place, and I first saw him swimming about the middle of the pool just as I stepped down on the bank. While I was attempting to capture this specimen a third one jumped into the pool from the bank directly opposite me and went straight to the bottom. I collected both of these specimens, but a careful search and beating of brush in the vicinity failed to discover any more. All three specimens were kept in a tin can, well punctured for ventilation, but they died within ten or twelve hours after capture."

These specimens are now numbers 30393, 30394 and 30395 of the Academy's collection. All appear to be adult males with enlarged testes and very large pads on the inner surface of the carpus. They measure from snout to anus: (No. 30394) 40 mm., (No. 30393) 41 mm., and (No. 30395) 42 mm.

The skin is nearly smooth in No. 30395, which has only a few warts over the pelvis and femur; but is moderately rough in No. 30394, which has warts or small tubercles scattered over the entire upper surface and sides of the head and body, and the upper surface of the arm, thigh, and leg. The para-

toid gland is not strongly developed, but may be made out as a glandular postocular ridge descending along the side of the neck.

By far the most remarkable external feature of these toads is the *tail*! This is well-developed in the three specimens at hand, and was present also in the one collected by Dr. Van Dyke (No. 6907). It extends back from six to eight millimeters from the posterior surface of the thighs, is about four millimeters wide, and about three and a half deep at its base. The cloaca is continued from its usual position into this structure, and ends in a large, swollen orifice just in front and below the tip of the "tail." This structure, at first glance, suggests that the specimens were but recently transformed, but the ossification of the skeleton and the development of the testes show that they are adult. It is possible that this "tail" may be a sexual organ.

The pupil is vertical. No tympanum can be distinguished. The small round patches of vomerine teeth are between the anterior part or middle of the choanae, and are about equidistant from the internal edges of these openings and from each other. The tongue is very broadly attached, but is slightly free all around its edge.

The hind foot has one rounded tubercle at the base of the first toe. On the lower surface of the carpus are three pads—a very large inner one, and a small one on the base of each of the two outer metacarpals.

The coloration is dull grayish or brownish slate above, with a light gray band, bordered behind with blackish brown, crossing the head over the anterior halves of the upper eyelids. There is a blackish streak from the snout to the eye and from the eye along the paratoid. Some irregular black markings may be made out on the sides, back, and limbs, with a tendency to form longitudinal streaks. The "tail" has a light dorsal stripe, bordered on each side by dark brown streaks. Most of the warts are lighter than the ground color. The lower surfaces are yellowish white clouded with slate. There is a row of white dots along the rim of the lower jaw.

No. 30393, which was intermediate in size and roughness of skin, has been prepared as a skeleton. The following notes were made before this was done, and the skin has been pre-

served. The heels cross by the width of the tarsus. The extended heel reaches the anterior border of the eye. The limb tubercles, web, paratoid, etc., are as in No. 30394. Measurements are:

Snout to anus.....	41.	mm.
Snout to base of "tail".....	37.	"
"Tail"	8.	"
Width of head.....	13.5	"
Hind limb	52.	"
Heel to tip of longest toe.....	23.	"

There are *ten* vertebrae, of which the first is the atlas and the tenth the sacrum. The vertebrae are opisthocoelous. The first vertebra has no diapophyses. All the other vertebrae have diapophyses, those of the fifth being shortest. The extreme widths of the vertebrae and lengths of ventral surface of centra are:

1 vertebra	2.5 mm. wide,	1.5 long
2 "	4.25 "	.9 "
3 "	4.25 "	1. "
4 "	4.75 "	1.1 "
5 "	3.6 "	1.2 "
6 "	4.2 "	1.25 "
7 "	4. "	1.4 "
8 "	4. "	1.5 "
9 "	4. "	1.5 "
10 "	6. "	.8 "

The sacral diapophyses increase in breadth from .7 to 1.5 mm.

The coccyx is subcylindrical, with a dorsal ridge. It is 8.4 mm. long, .7 mm. in diameter near the middle, and 1 mm. at the ends. A pair of small diapophyses increase its breadth near the sacrum to 2.1 mm.

The diapophyses of the second, third, and fourth vertebrae bear short ribs. The ribs attached to the third vertebra are longest, measuring 1.5 mm. Those on the second vertebra are .75 mm. long; while those of the fourth vertebra are only about .25 mm. in length.

The skull is 12 mm. long, and 12 mm. wide. It articulates with the atlas by means of two condyles, which are about twice as broad as high, are borne by the exoccipital, and border the foramen magnum inferiorly. The fronto-parietals are 7 mm. long, narrow, well ossified, and completely separated by a

fontanelle. The prefrontals are fairly large, and touch the fronto-parietals. The quadrate is rather small. The squamosal and pterygoid are well-developed. The inner process of the pterygoid reaches the anterior surface of the auditory capsule, while the anterior process passes forward with the maxilla to meet the palatine. The parasphenoid extends forward anterior to the palatines; its lateral processes are well-developed, and reach nearly to the border of the large foramina in the auditory capsules. These capsules extend laterally 3.5 mm. from the mid-line of the skull; each displays at the posterior and inferior aspect of its lateral portion a foramen 1 mm. in diameter, covered by a delicate membrane, the fenestra ovalis. The membrane, however, may be heavily covered with a deposit of the chalky material which is found in the cavity of the auditory capsule. I have not found any evidence of eustachian tubes. The lower jaw is entirely without teeth. The upper jaw bears a series of very small teeth. There are two small rounded patches of vomerine teeth.

The shoulder girdle is arciferous, the right side lying on the ventral surface of the left. The clavicles are well ossified, but little curved, and meet medially. There appears to be no omosternum. The coracoids are rather short (3 mm.) with expanded ends. The precoracoid cartilages are narrow, but the epicoracoid expansions are very broad. The scapula is rather small, completely ossified, and broadly fused with the clavicle. The suprascapula is composed of two portions: an anterior bony bar 4.5 by 1 mm., narrowing to .6 mm. at its middle; and a broad cartilaginous plate, 5.5 by 4 mm. in greatest dimensions, bordering the bony bar above and posteriorly.

The metasternum has been injured in preparing the specimen, but it appears to have been a simple transverse bar of cartilage.

The humerus is 10.5 mm. long. It bears a very strong proximal crest, and the condyloid ridges are so largely developed that the breadth of the humerus in this region is 3 mm., while in the middle of the shaft it is only 1 mm.

The radius and ulna are completely fused into a single bone 7 mm. long.

The carpus is composed of an ulnare, a radiale, a radial and an ulnar centrale, and four distal carpals.

There are four well-developed metacarpals, of which the external one articulates with the ulnar centrale, while the others are borne by the distal carpalia.

The four digits are made up of 2, 2, 3, and 3 straight phalanges. The terminal phalanges taper to rounded ends.

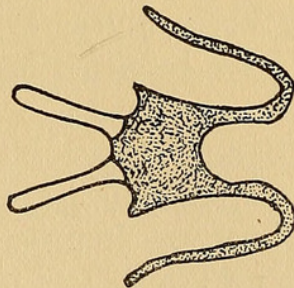
The ilia are very slender. They measure 9.5 mm. long, .7 mm. wide and .5 mm. thick. The posterior end of the ilium is much enlarged, and forms about the anterior upper half of the acetabulum, the remainder being supplied by the ischium. The acetabulum is not completely closed. At the interior and ventral aspect of the pelvis, at the lower margin of the sutures between the ilia and ischia, are two thin plates of calcified cartilage about 1.5 mm. in diameter, which probably represent the pubes.

The femur is very slender. Its length is 15 mm., and its least diameter is 1 mm. It bears a strong proximal keel.

The tibio-fibula is 16.5 mm. long by .9 mm. in diameter near its center, but broadens at the ends to 2.4 mm.

The tarsus is formed of the usual proximal and distal portions. The former comprises the astragalus and calcaneum, about 9 mm. long, which are fused for a distance of 2 mm. proximally and 1 mm. distally. These bones are quite slender. The more distal tarsal bones are four in number—one at the end of the astragalus, one bearing the same relation to the calcaneum, a smaller one between these, and a still smaller one at the base of the first metatarsal.

There are five metatarsals corresponding to the five toes. Beginning with the inner one, the toes are composed of 2, 2, 3, 4, and 3 straight, somewhat tapering phalanges.



The hyoid is well developed, has long anterior processes, and is shaped as shown in the accompanying cut.

The alimentary canal of this specimen contained a small bright red spider and the remains of two beetles of different species.



Van Denburgh, John. 1912. "Notes on Ascaphus, the Discoglossid toad of North America." *Proceedings of the California Academy of Sciences, 4th series* 3, 259–264.

View This Item Online: <https://www.biodiversitylibrary.org/item/98465>

Permalink: <https://www.biodiversitylibrary.org/partpdf/69946>

Holding Institution

Smithsonian Libraries and Archives

Sponsored by

Biodiversity Heritage Library

Copyright & Reuse

Copyright Status: NOT_IN_COPYRIGHT

This document was created from content at the **Biodiversity Heritage Library**, the world's largest open access digital library for biodiversity literature and archives. Visit BHL at <https://www.biodiversitylibrary.org>.