

## TWO NEW SPECIES OF *HYPSIGLENA* FROM WESTERN NORTH AMERICA<sup>(1)</sup>

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During the past few years it has been my privilege to study a large series of snakes belonging to the genus *Hypsiglena*. In starting this study it was the writer's intent to learn more concerning the less common snakes of Utah. As the study progressed a few specimens from out of the state were studied for comparison. These proved so interesting that a study of the genus has since been undertaken. During the course of these investigations it has become apparent that two new species should be recognized from the Pacific Coast area.

Sixteen specimens taken from the north and central sections of California were easily segregated from other forms. A distinctive nuchal blotch readily distinguishes one of the new forms and because of this I have assigned to it the name

### ***Hypsiglena nuchalatus* Tanner sp. nov.**

DESCRIPTION OF THE TYPE, B. Y. U. No. 3008: Total length 175 mm.; tail length 22 mm.; ratio of tail length to total length 12.57 per cent; head length 9.6 mm.; width 5.5; diameter of eye 1.5 mm.; eye to nostril 1.7 mm. The dorsal scales are smooth and in 19-19-17-16 rows. The first reduction to 17 scales occurs on the right side by combining the fifth and sixth rows. The second reduction to 16 scale rows occurs at the 192nd ventral by combining the third and fourth rows. On the tail the dorsals reduce to eleven rows at the second caudal and to six rows at the tenth caudal. There are 196 ventrals, the anal scale is divided, and there are 43 subcaudals. The terminal scale is single and slightly elongated.

The head is 42.5 per cent longer than wide and slightly convex above. The rostral is rounded, moderately pointed, and three times as wide at the base as long, convex above and concave below. Internasal wider than long, prefrontal 1/4 wider than long. Frontal 1/4 longer than wide, its length being less than the width of a parietal. The nasals are divided, and over twice as long as wide, the openings being located near the center but closer to the dorsal suture. Loreal moderate to large, not in contact with the lower preocular, and twice as long as wide. There are two subequal preoculars, the dorsal scale three times the larger. Eye moderate in size, the diameter of orbit equal to one half the distance from eye to tip of snout; two subequal post-oculars, the dorsal scale two times the larger or more. Temporals 1-2-3, the one in contact with the oculars the largest; seven

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supralabials in the following order of increasing size 1, 3, 2, 7, 4, 5, 6, the 5th and 6th nearly equal. The first labial extends laterally between the nasal and the second labial to make contact with the loreal; the 3rd and 4th enter the orbit; and the 5th is in contact with the lower post-ocular. Mental moderate in size and only slightly wider than long, the lateral edges curve concavely to form a point which projects part way between the first pair of infralabials. There are ten infralabials, the first pair contact on the mid-ventral line, and the first six pair are in contact with the genials, the sixth pair is the larger; two pair of equal size, nine gulars between the genials and the first ventral, the anterior pair of gulars lies between the posterior chin-shields, but does not completely divide them. There are six gulars between the 9th infralabial and the midventral line.

COLOR IN ALCOHOL: The upper surface is brownish-gray with a series of large dark brown spots extending from the nape region posterior to the tip of the tail. The spots extend from the 7th to the 13th row, and are two scales in length (a few nearly three); the scales of the spots have a light center with the edges dark brown to black. Those scales between and lateral to the spots are flecked with innumerable small brown spots. Tail spots distinct. Lateral to and alternating with the vertebral spots, is a row of smaller spots on the 4-6 rows (principally on the 5th). Another row of smaller spots opposite the dorsal ones is found principally on the third row. Under parts are white and immaculate.

The head plates are brown with a few dark blotches on the frontal and parietals. There is a large dark brown spot which extends entirely across the nape region, and appears as an irregular band or collar, the band is twenty scales across and at the dorsal nine scales long. The lateral edge of the bar on each side is extended anteriorly across the temporals through the eye to the nasal where it terminates. A few dark markings are present on the labials. Dorsal spots on body, 58, on tail 18.

DENTATION: There are four smaller maxillary teeth followed by a pair of large ungrooved fanglike teeth.

DIAGNOSIS: A species of *Hypsiglena* which differs from *torquata ochrorhynchus* in having a more elongate snout and a narrower head; body and tail spots distinct, and with a dark brown or black bar across the nape region. Dorsal scale formula normally 19-19-17-15 and with only 7-7 supralabials.

TYPE: A small female collected by Stanley and Allen Mulaik on March 20, 1941, at Lemoncove, Tulare County, California. This specimen, No. 3008, is deposited in the Herpetological collection of the Brigham Young University.

PARATYPES: University of California Nos. 19207, 19328, 19329, 19330, Sequoia National Park, Tulare County; 20486, Paynes Creek, Tehama County; 24118, Oroville, Butte County. L. M. Klauber Nos. 20233, 20293, 22501, Visalia, Tulare County; Stanford University No. 8070, Mt. Diablo, Alameda County; and California Academy of Science No. 30876, Contra Costa County. All paratypes have been returned to the above mentioned institutions.

SCALATION OF NUCHALATUS: Scale rows are 19-19-17-15 in 9 specimens, the remaining 7 specimens show formulas varying from



21-19-17-15 to 21-21-19-17-15. In only two specimens is there more than 19 rows at the 100th ventral. The highest of these is 113. In all specimens except the type there is a reduction to 15 rows anterior to the vent. In the type the reduction is only to 16 rows, the one side not reducing; however, the scales do become smaller to accommodate the extra row. In all specimens the apical pit in the dorsals is distinct, but the keeled condition of the scales just above the vent on each side varied from no keels in the type to distinct keels in some of the males. Faint keels were observed in three of the five females and in only one male were they not noticeable.

The ventrals varied as follows: males 179-191, average 184.72; females 195-201, average 197.8; caudals, males 47-53, average 48.1, females 42-46, average 44.4. The ventral-caudal total 226-243 in males to 237-246 in females. The anal is divided in all specimens.

The nasal is large and divided, the suture passing through the nasal opening. The supralabials are 7-7 in all specimens except three which are 8-8. The reduction has produced larger labials with the 3rd and 4th labials entering the orbit, and in several specimens the first labial is in contact with the loreal, in those specimens in which contact is not made the two scales are very near each other. The infralabials are 10-10, loreal 1-1 except three specimens which have 1-2; oculars 2-2, two specimens have only one preocular on one side; temporals 1-2-3.

The head is proportionately longer and narrower than other species which I have studied. This fact is emphasized by the elongate rostral which projects well beyond the mental.

In general the color pattern is much the same. The dorsal spots range from 45-61 in males and 51-67 in females, those specimens with more than 19 scale rows have three lateral rows of spots, those with only 19 rows have 2 lateral rows of spots. All spots are distinct. This is not the case in most specimens studied from adjoining areas in which the tail spots are often indistinct. The nape region is covered by a dark nuchal blotch which is 8 or 9 scales long at the dorsal and which extends laterally to within 2-4 scales of the ventrals. The lateral edge of the nuchal blotch extends anteriorly to the orbit, and dorsally it projects forward to contact the parietals. In a few specimens the lateral projection is divided posterior to the supralabials. There is no light nuchal band separating the head plates from the nuchal blotch. Those dorsal scales anterior to the nuchal blotch are the same color as those posterior to it. Except for a few flecks on the genials and lower labials of some specimens the under parts are white.



RANGE: Thus far this species has been taken only along the western slopes of the Sierra Nevada Mountains from Tulare County in the south to Tehama County in the north. It appears to extend well up the slope of the mountains as well as down into the San Joaquin and Sacramento Valleys. Extensive collecting will undoubtedly extend its range to the north and west.

RELATIONSHIP AND INTERGRADITIONS: *Nuchalatus* seems to represent an offshoot of the more wide spread species *ochrorhynchus*. Intergrades are available from three localities, LMK. 8792, Limon, Kern County; MMZ. 78234, 60 miles west of Maricopa, Santa Barbara County, California, and SU. 1214, Los Gatos, Santa Clara County, California. In all specimens the color pattern is more like that of *nuchalatus* than *ochrorhynchus*. The Limon specimen is similar also in that the dorsal rows reduce to 19 at the 98th ventral, otherwise it is more nearly like *ochrorhynchus*. The Santa Barbara specimen has only 7 supralabials as does *nuchalatus*, otherwise it is like *ochrorhynchus*. The scalation of the Los Gatos specimen, except for the ventral-caudal counts, is strikingly similar to *ochrorhynchus*. To date too few specimens are available from the areas of intergradation to complete the picture. It seems logical to expect the *nuchalatus-ochrorhynchus* intergrades to appear in Kern and Santa Barbara Counties. It is possible, however, that intergradations will appear farther north along the coast.

REMARKS: In 1938 Mr. L. M. Klauber in discussing "The Subspecies of the Spotted Night Snake," said "It is true that there is an evident correlation between habitat and scale counts, desert areas producing a higher ventral count than more humid regions." While this appears to be the case with *ochrorhynchus* in southern California, it is not true of *nuchalatus* in which the highest counts occur in specimens collected higher on the slopes in the more humid regions. Specimens collected on the desert side of the Sierra Nevadas (Mona and Enyo Counties) have lower count than *nuchalatus*. Other genera are known to produce higher or lower ventral counts as one moves east from the Pacific Coast. Van Denburgh and Slevin in 1919 showed that *Pituophis* increased from west to east, while V. M. Tanner, 1933, found *Charina* to decrease from west to east. Just why two species of *Hypsiglena* should show such an arrangement is not clear at this time.

The sexual dimorphism is very distinct in *nuchalatus*. In no instance was there any overlapping of ventral counts. In fact, four scales separated the highest male (191) from the lowest female (195).



The largest specimen is a male measuring 352 mm.; the smallest is a female measuring 160 mm.; the average length for the entire group (male and female) is 253.81 mm. A series of 88 specimens from the Great Basin produced an average of 322.56 mm., 52 Arizona specimens average 322.11 mm., 82 specimens taken on the Pacific side of San Diego County average 273.34 mm. While there are insufficient specimens available to arrive at any conclusions, it does appear that *nuchalatus* is a smaller species than those forms to the east and south.

### *Hypsiglena slevini* Tanner sp. nov.

DESCRIPTION OF THE TYPE: Total length 217 mm., tail length 41 mm., ratio of tail length to total length 18.9 per cent; head length 11.7 mm., width 7.2 mm.; diameter of orbit 2.3 mm.; orbit to nostril 1.8 mm. The dorsal scales are smooth each bearing a single apical pit and in 21-23-21-19-17-15 rows, 23 rows extend from the 38th to the 114th ventral. There are 190 ventrals; the anal scale is divided and there are 68 subcaudals.

The head is 38.4 per cent longer than wide, rounded anterior to the eyes and flat posteriorly across the parietals; the supraoculars are slightly elevated producing a concave condition between the eyes; the rostral is blunt, not wedging between the internasals nor extending far beyond the mental; from a dorsal view it is seen as a very narrow scale extending across the snout. Internasal nearly square widest posteriorly, prefrontals much wider than long, the lateral suture level with the nasal opening; the frontal is twice as long as wide, widest at the anterior, narrower at the center between the eyes. Parietals large and in contact with both postoculars. Nasal plate divided, the posterior scale the larger. Loreal single and moderate in size; two subequal preoculars, the dorsal scale is three times wider than long, lower small and wedged between the third and fourth labials; eye large; postoculars 2-2, the dorsal scale the larger; temporals 1-2-4. Supralabials 8-8, in the following order of increasing size 1, 2, 3, 4, 5, 8, 7, 6; the fourth and fifth enter the orbit. Infralabials 10-10, the first pair in contact on the mid-ventral line, the sixth largest; mental moderate in size, triangle shaped; two pair of genials the posterior pair longer; six gulars between the posterior genial and the first ventral.

COLOR IN ALCOHOL: The upper surface is cream color with a series of brown spots extending from the nape to the tip of the tail. The spots extend across the body from the 8th to the 16th dorsal row and are two scales in length; the scales of the spots are, except for a dark spot on the apex, uniformly brown; between the spots the scales are free from color markings except for an occasional patch of small flecks. Lateral to the dorsal spots are three rows of smaller brown spots, alternating with the dorsal row and each other. The rows of spots are found on the following dorsal scale rows, first row 1-2, second row 2-4, third row 5-7; the scales lateral to the dorsal spots have considerably more flecking than those scales between the spots; the tail spots are distinct. Body spots 52, tail spots 26, under parts cream to straw color and without markings.

The head plates are mottled, with no definite arrangement or markings. The nape region is distinctly spotted, with two large dorsal posterior spots nine scales



long, and six wide at the anterior; three smaller dorsal anterior spots which are as wide as long, and two lateral spots which extend from four scales posterior to the labials anterior to the eye. The sutures of the supralabials anterior to the eyes are dark; the lower labials have smaller dark patches.

DENTATION: There are five smaller maxillary teeth followed by two ungrooved fanglike teeth.

DIAGNOSIS: A *Hypsiglena* characterized by a high ventral and subcaudal count, and by the parietals contacting the lower postoculars. The snout is blunt and the eye is large. The color pattern is also distinct.

TYPE: California Academy of Science specimen No. 53631, a male collected by Joseph R. Slevin, June 14, 1921 at Puerto Escondido, Lower California.

REMARKS: So distinctive are the head plates in this species that little difficulty should be encountered in separating it from other species. Also in this species the subcaudal count is higher than in any other species examined.

It is a real pleasure to name this snake for Mr. Joseph R. Slevin.

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