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Porcellio quadriseriatus (Isopoda) at Dallas, Texas

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The eastern Mediterranean species, *Porcellio* (*Proporcellio*) *quadriseriatus* Verh. (which for some years has been locally very abundant near Southern Methodist University at Dallas), was first found in the summer and fall of 1925 in a rubbish- and stone dump on a corner of the campus.² Again in 1927 I found it abundant in a restricted distribution, and sent a dozen individuals (from a collection of several hundred) to the American Museum of Natural History and the U.S. National Museum. In June and July of 1928 (repeated in 1929 and 1930) I again collected several hundred specimens from a compost heap on the campus, as well as in the University greenhouse. Many of the females contained young in their brood-chambers. As the species with us is minute and very active, most of my collections were taken with potato traps (Geiser, 1928), without loss of even very young and juvenile forms. More than a thousand individuals of this species were found in the above-mentioned localities during the last two weeks of May, 1932. All were "sexed" to learn the sex-ratio, and representative samples of the two sexes were measured (Table I.) Many gravid females of the collection were also examined to determine the size of representative broods (Tables II, III).

In June, July, and September of 1936 I again found this species, this time in a mule barn east of the University power plant. I measured some thousand specimens of this collection (Table IV). Representative gravid females were again studied from those collections to ascertain brood-sizes; the data are summarized in Table II.

Verhoeff (1917, p. 167) described this species from the type locality of Rehoboth near Jaffa, Palestine. In his 1923 paper (p. 225), Verhoeff gave measurements of the species as follows: 'males from Rehoboth (7.5 mm.) and Chuldah (9.5 mm.), and a young female from Rehoboth (4.5 mm.)' His measurements exceed greatly my usual findings for this species (as will be seen from my tables, especially Table IV).

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²See Geiser (1933, pp. 29-30), and Van Name (1936, pp. 236-38).

In my June 4-14, 1932 collection, the average lengths of 377 males and 638 females were *ca.* 3.7 and 4.2 mm., respectively. In small unselected populations of adults only (Table I), greater lengths were found; but only a small percentage of the populations there given had a length in excess of 6.9 mm. Probably the specimens on which Verhoeff based his descriptions were older, more conspicuous ones. In the 1936 collections (Table I), it is to be noted that those taken earlier in the year had a higher percentage of larger individuals; while the converse was true for collections taken later in the year. In the June 4-14, 1936 collection, 35% of the males and 22% of the females had a length of 6 mm; in the July 4-14, 1936 collection, only 2% of the males and 6% of the females had that length. It appears probable that many of the older individuals die under field conditions with the onset of warm weather, and that there is greater survival among the younger individuals.³

The brood-size with our *Porcellio quadriseriatus* is much smaller than those reported for many other species. Pierce (1907), writing from Dallas, found broods of *Porcellio laevis* ranging from 8 to 30; Gräve (1913), a maximum of 200 for *Armadillidium vulgare*, and a range for *Porcellio scaber* of 18-45. Collinge (1915) found the following ranges: *Porcellio scaber* (12-30), *Armadillidium vulgare* (30-60), and *Oniscus asellus* (30-50). Hatchett (1947) in his monograph on the isopods of Michigan found ranges in brood-size for the species he especially studied as follows: *Armadillidium vulgare* (5-62), *Cylisticus convexus* (10-40), *Porcellio scaber* (6-42), and *Tracheoniscus rathkei* (6-29). In his very careful studies he found a positive correlation (0.75) between the size of the females and the number of young carried in the brood-pouch.

This relation appears true also in my *Porcellio quadriseriatus*, as Table II (and III) shows. In my 1936 individuals (Table II), the early-season gravid females were larger, and had larger average broods; later in the season the females were smaller, with fewer young in their marsupia. There was a marked tendency for greater body-length and larger broods to go together.

The data of Table IV are of interest as showing the ratio

³Schobl (1880) found a very high mortality among gravid females of *Porcellio scaber*, which he considered due to the highly-weakening ecdyses immediately preceding egg-laying, as a result of which the females succumbed in large numbers.

of the sexes in *Porcellio quadriseriatus*. Sex was determinable in 2 mm. males, for at that age the characteristic copulatory appendages were at least indicated. At lengths of less than 4 mm., the males were in excess, while the reverse was true in the larger classes. For the collection as a whole, the males constituted 37%, and the females 63%, of the population.

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TABLE I

DISTRIBUTION OF SAMPLE POPULATIONS OF *Porcellio quadriseriatus* IN DIFFERENT SIZE-CLASSES, (by percents)

Length (mm.)	3	4	5	6	7	8	9	10	Ave. L.
15 My-1 Je '32									
Males (100)	1	10	28	27	26	6	1	1	6.196 mm.
Females (100)	1	14	38	28	18	—	—	—	5.728
4-14 Je '36									
Males (100)	2	20	43	27	8	—	—	—	5.489
Females (100)	10	20	48	21	1	—	—	—	5.099
4-14 J1 '36									
Males (100)	31	50	17	1	1	—	—	—	?
Females (100)	40	41	12	6	—	—	—	—	?

TABLE II

SIZE OF MARSUPIAL BROODS OF *Porcellio quadriseriatus*

Date	No. of Females	Size* of Females		Brood Size		
		Range	Average	Range	Average	Median
15 My-1 Je 1932	45	5.0-8.1	6.3	6-28	13.6	13
4-14 Je 1936	31	4.3-7.0	5.4	4-16	9.3	9
4-14 J1 1936	17	4.3-5.4	4.45	3-13	6.5	6
11S1936	32	3.3-5.5	4.0	1-10	4.6	5

(*) in millimeters.

TABLE III
TABULAR VIEW FOR 45 FEMALES (15 May - 1 June, 1932), WITH
NUMBERS OF YOUNG CONTAINED IN THEIR MARSUPIA.

mm.	.0	.1	.2	.3	.4	.5	.6	.7	.8	.9
4	6, 9	9	—	—	9, 11 15	12, 16	—	9, 11	—	—
5	9, 9, 10 11, 12 13, 13 14, 14	14, 14	13, 13	12	—	11, 12	—	—	16, 16	—
6	11, 13 14, 14	—	—	—	—	—	—	—	—	—
7	11, 13 14, 15 16, 18 19, 20, 22	—	14, 15 16, 18	—	—	17, 18	—	—	—	—
8	—	28	—	—	—	—	—	—	—	—

TABLE IV
SEX- AND LENGTH-DATA OF A POPULATION OF 1015 *Porcellio*
quadriseriatus COLLECTED AT DALLAS, JUNE 4-14, 1936.

Length (mm.)	2	3	4	5	6	7	8	Total
Males	22	227	111	17	19	4	0	377
Females	8	113	308	179	29	1	0	638

Two New Texas Species of *Physostegia* (Labiatae)

Lloyd H. Shinnors

PHYSOSTEGIA praemorsa Shinnors, sp. nov. Perennis arrhizomatosa caule glabro 25-55 cm. alto, foliis anguste oblongis vel oblongo-oblan-
ceolatis glabris acutis acute serratis ca. 2.5-7 cm. longis 0.5-1.2 cm. latis;
inflorescentiae parte superiore cum bracteis calycibusque dense pubes-
cente parce glandulosa; corolla 2.2-3 cm. longa; nuculis glabris 4 mm.
longis.

Perennial by basal offsets, without rhizomes, but with numerous
fleshy fibrous roots. Stem glabrous, 25-55 cm. high; internodes 1-3 cm.
long. Leaves glabrous, subsucculent, narrowly oblong or oblong-
oblan-
ceolate, acute, sharply and rather closely serrate except in basal
 $\frac{1}{4}$ or $\frac{1}{3}$ with teeth directed forward, sessile or the lower with slight
narrowed petiolar base; blades of middle stem leaves 2.5-7 cm. long
by 0.5-1.2 cm. wide; upper leaves slightly reduced, passing abruptly
into the small leafy bracts of the inflorescence. Inflorescence a simple
spike-like raceme, with flowers about 3-5 cm. apart; upper part of
inflorescence, bracts, and calyxes finely and densely pubescent with
whitish erect hairs 0.1 mm. long, with scattered gland-tipped hairs
of the same length. Bracts oblong-lanceolate or narrowly ovate-
lanceolate, those near middle of inflorescence 3-5 mm. long. Pedicels
at first scarcely evident, becoming as much as 2.5 mm. long in fruit.
Calyx asymmetrically funnelform, 6-7 mm. long (the ovate-lanceolate
teeth 1-2 mm. long) in flower, up to 10 mm. (teeth 2.5 mm.) in fruit.
Corolla 2.2-3 cm. long, finely puberulent without (less densely so than
the calyx), light violet toward base, nearly white with violet dots
toward mouth. Nutlets 4, glabrous, black-brown, 4 mm. long, asym-
metrically 3-sided with sharp angles, dorsally convex and 2.5 mm.
wide, the two ventral faces unequal, concave. TYPE: chalk outcrop,