

Indian Spiders of the Genus *Ordgarius* (Araneae: Araneidae)

Thumar R. H.

Department of Zoology, B. P. Baria Science Institute, Navsari -396445, Gujarat- India

Dholakia A. H.

Department of Zoology, Sir P. T. Sarvajanik College of Science, Athwalines, Surat- 395001, Gujarat – India

Ade P.P.

Department of Zoology, Shri Shivaji College of Arts, Commerce and Science, Akola 444001, Maharashtra- India

ABSTRACT

The common orb-weaver spider of the family Araneidae is a large family comprising more than 169 genera and 3098 species occurring worldwide (WBC NMB, 16.5, 2015) among them 28 genera and 163 species are found in India (ISC, 2015). Genus *Ordgarius* Keyserling, 1886 is known from India to Japan and Indonesia, as far as India is concerned 03 species were reported (ISC, 2015). Present paper deals with the specimens collected from Agroecosystem of Agriculture University, Navsari, Gujarat-India. Specimens were collected during both summer and rainy seasons from Banana and Papaya crops. This paper describes the species from genus *Ordgarius*, along with redescription and diagnostic characters.

KEYWORDS : *Ordgarius*, tubercles, agriculture, Gujarat

INTRODUCTION:

Ordgarius keyserling, 1886 is a genus of Australasian bolas spiders belonging to the family Araneidae. These spiders are known for its typical behavior, of throwing out a strand of silk with a sticky ball on the end to catch its prey and emits components of sex pheromones to attract the moth-prey. It's a very interesting spider to study and it is known as Bolas spider. Recently 11 species are known world-wide. Eleven species have been reported from East-Asia, Southeast, South Asia and Oceania (WSC, NMBE 16.5, 2015), out of these, 03 species are found in India. They are *O. hobsoni* (O. P. Cambridge, 1877); *O. sexspinosus* (Thorell, 1894); *Ordgarius hexaspinus* (Saha & Raychaudhuri, 2004). In India Tikader, 1982 reported *O. hobsoni* and *O. sexspinosus*, from localities in Maharashtra than no data are found after 1982 about this species. Present study is based on the specimens collected from Banana and Papaya crops from Agriculture University, Navsari, Gujarat-India and it might be the first record after 34 years. According to this information and based on its occurrence in new environment, the first record of *Ordgarius* species is clearly a case of accidental introduction.

MATERIALS AND METHODS:

Female and male both are collected by visual searching under the leaves of Papaya crop during early morning on September, 2015 from Navsari Agriculture University, Navsari, Gujarat, India. Photographs of live and preserved specimen were taken with Stereo Zoom Binocular microscope, model Olympus, SZ 61, with attached 1.3 mega pixel Cat Cam I 30 camera bearing measurement scale. All measurements are in millimeters. The material was preserved in 70 % ethyl alcohol properly.

TAXONOMY

Araneidae Clerck, 1757

Ordgarius* Keyserling, 1886*Genus: *Ordgarius***

Materials examined: Both adult and juveniles female of *O. hobsoni* and adult female and male of *O. sexspinosus*.

Diagnosis: The genus *Ordgarius* resembles to the genus *Mastophora*, in general appearance, feature of copulatory organs, hunting methods and sexual dimorphism. The most remarkable difference between two genus is the length of legs. The 1st legs of *Ordgarius* spiders are almost as long as 11nd legs (Table 1-3), but the 1st legs are larger than 11nd legs in *Mastophora* spiders (Gertsch, 1955). This differences are on the basis of their hunting position. *Ordgarius* spiders hold the bolas thread with one of their 11nd legs (Shinkai & Takano, 1984). While *Mastophora* spiders holds with one of their 1st

legs (Gertsch, 1955; Stowe, 1986). The shape of tubercles on cephalothorax of the two genera are also different (Gertsch, 1955).

Description: Carapace convex, longer than wide, upper side armed with a few symmetrically placed, various shaped, tooth like tubercles. Median ocular area (MOA) wider than long; Median eyes situated on a tubercles as well as lateral eyes. Sternum slightly larger than wide. Legs are without spines other than a row of weak spines on prolateral sides of metatarsi and tibiae of 1st and 11nd legs. Abdomen large, wider than long; widely rounded laterally and tuberculate dorsally with shoulder hump or swelling; tubercles provided with tuft of hairs. Female epigynum simple. Male patella without macrosetae.

***Ordgarius hobsoni* (O. P. Cambridge, 1877) (Plates 1-7)**

Cyrtaracan hobsoni O. P. Cambridge, 1877 p. 562;
***Ordgarius hobsoni* Simon, 1895, p. 885 --- Pocock, 1900, p.230 --- Tikader, 1965, p.92; 1982, p.137, figs. 256-257**

Specimens examined. Syntype: 1 female, 5 juvenils & 2 egg sacs from Banana Crops Agri. Uni. Navsari, Gujarat-India (Plate:1-7).

Description: Female: Total length 7.02; Carapace length 4.03, width 3.07; Abdominal length 4.59, width 6.60; Length of legs as shown in Table 1.

Coloration: Cephalothorax dull/dark brown, legs yellowish with dark brown bands, abdomen dark brown, tubercles reddish brown.

Cephalothorax : Carapace slightly longer than wide, narrowing in front, clothed with pubescence, armed with one small and one large conical tubercle on midline and two small tubercles at the posterior end of cephalic region, both sides of cephalic parts are attached with two more tubercles (Plate 3 & 6). MOA wider than long (Length/width 0.24/0.41), situated on little elevation (Plate 5 & 6), lateral eyes sub equal and close. Sternum heart shaped, dark brown, wider than long (Length/ width 1.37/1.54). Labium brown in color, wider than long (Length/ width 0.68/1.04). Chelicerae with three promarginal and one retromarginal teeth (Plate 4). Legs clothed with hairs but no spines, metatarsi and tibiae of 1st and 11nd legs prolaterally with a row of weak spines (Plate7).

Abdomen: Wider than long, clothed with hairs, provided with numerous dark brown, rounded tubercles. Dorsum of abdomen provided with a large median yellowish white patch anteriorly (Plate 3). Epigyne without any scape. Egg sac cream of silver white, with many points (Plate 1 & 2).

Juveniles: Carapace dark brown in color. Abdomen dark brown spotted with black and light brown with shoulder swelling, ventrally without any marking. Legs yellowish white with dark brown annulations (Plate7).

Total length 1.35 mm long ; 0.96 mm. wide, Carapace: 0.61mm long ; 0.52mm wide, MOA: 0.11 long ; 0.18mm. wide Sternum: 0.31 L., 0.33 W.; Labium: 0.12 L., 0.09 W.; Maxilla: 0.11 L., 0.07 W.; Chelicerae: 0.17 long with 1- promarginal & 2- retro marginal teeth, Palp : 0.49mm. long Abdomen: 0.85mm. long ; 0.96mm. wide (plate: 7).



Plate 1. Natural habitat & web



Plate 2. Egg sac with spiderling

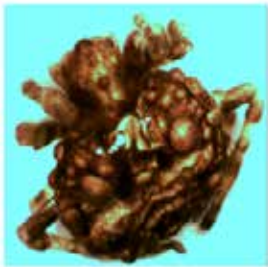


Plate 3. Dorsal view

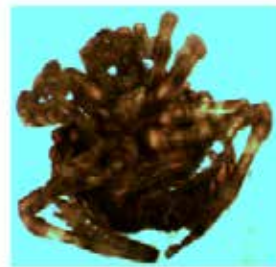


Plate 4. Ventral view



Plate 5. Front view

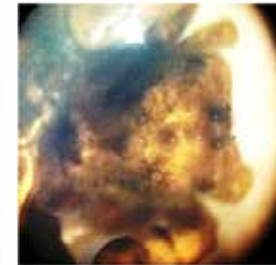


Plate 6. Tubercles & eyes

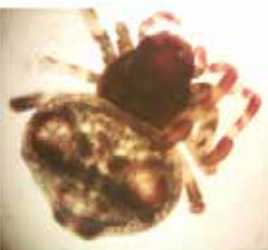


Plate 7. Juvenile Dorsal view and ventral view

Range. India: Navsari, Gujarat. Bombay, Puna, Maharashtra. Sri Lanka: Punduloya.

Remarks: The collected specimens exactly match with the female syntype from India in every feature with exception of their tubercles found both sides of cephalic parts and coloration of egg sac. Though the feature of female abdomen bearing rounded tubercles of the present specimen is unique in the genus, on the basis of morphological features these specimens appears to be closer to *O. hobsoni* (Tikader, 1982, figs. 256)

Table 1. Measurement of leg segments of *O. hobsoni* female (O.P. Cambridge, 1877) in mm.

Leg	Coxa	Trochanter	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
I	1.20	0.93	2.67	0.89	2.76	2.47	0.89	11.81
II	1.03	0.88	2.60	0.79	2.62	2.42	0.90	11.24
III	0.83	0.63	1.93	0.65	1.95	1.63	0.67	8.27
IV	0.77	0.74	2.42	0.80	2.34	1.63	0.78	9.48

Table 2. Measurement of leg segments of Juvenile *O. hobsoni* (O.P. Cambridge, 1877) in mm.

Leg	Coxa	Trochanter	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
I	0.18	0.09	0.40	0.21	0.35	0.32	0.26	1.81
II	0.14	0.09	0.37	0.18	0.33	0.30	0.24	1.65
III	0.09	0.08	0.13	0.08	0.13	0.16	0.14	0.81
IV	0.14	0.08	0.34	0.11	0.15	0.13	0.21	1.16

***Ordgarius sexspinosus* (Thorell, 1894) (Plates 8 -17)**

Notocentria sexspinosus Thorell, 1894, p. 48, *Caerostis cuspidatus* : Workmen, 1896, p. 26,

***Ordgarius sexspinosus*:** Pocock, 1900, p.230; *Cladomelea mundhuva* : Tikader, 1963, p. 97, 1982, p. 135. Figs. 251 - 255.

Specimens examined. Syntype: 3 female & 2 male from Papaya crops Agri. Uni. Navsari, Gujarat-India.

Description:

Female: Cephalothorax dark brown, legs yellowish with dark brown bands, abdomen dark brown with transverse whitish brown line, each shoulder yellowish brown, caudal tubercles whitish. Ventrally reddish brown with two pairs of white spots and a large patch (Plate 8 & 9). Carapace wider than long, narrowing in front, clothed with pubescence and hairs, strongly elevated anteriorly, armed with one small and one large curved projection (horn like tubercles) on midline and four distinctive tubercles (two projecting forward and two projecting laterally) at the posterior end of cephalic region (Plate 10 & 11). Median ocular area of cephalic region elevated and projected, wider than long (Length/width 0.26/0.32). Both anterior median and posterior median eyes sub-equal (Length 0.31/0.32); lateral eyes close, anterior lateral eye slightly larger than the posterior lateral eye and situated on a gentle raise ; anterior row of eyes procurved as seen from in front and posterior row strongly recurved as seen from above (Plate 8, 10 &11). Chelicerae with two promarginal and one or two retro marginal teeth. Maxilla broad with distinct scopulae; labium slightly wider than long (Length/ width 0.18/0.23), sternum heart shaped, longer than wide (Length/ width 0.64/0.56) narrow but blunt posteriorly, clothed with hairs (Plate 9 & 12). Legs moderately strong, clothed with hairs; metatarsi and tibia of 1st and 11nd legs prolaterally with a row of weak spines. Abdomen wider than long, narrowing behind, overlapping on chepalothorex, dorsum with rounded shoulder humps and with two pairs of caudal tubercles. Epigyne simple with small scape (Plate 8, 9 & 10). One pair of white patches in between epigastric furrow and spinnerets and four white spots around spinnerets. Anterior pair of spinneret longer than posterior pair (Plate 13).

Total length 3.74; Carapace length 1.39, width 1.51; Abdominal length 2.35, width 2.83; Length of legs as shown in Table 3.

Male: Cephalothorax dark brown with black marking. Abdomen dark brown mottled with blackish brown, ventrally blacking brown with one pair of white spots. Carapace wider than long, narrowing in front, clothed with pubescence and hairs, strongly elevated anteriorly, armed with one small and one large curved projection on midline and four distinctive tubercles at the posterior end of cephalic region (Plate 14 & 15). Median ocular area of cephalic region elevated and projected, wider than long (Length/width 0.09/0.16), anterior width/posterior width 0.16/0.14. Chelicerae with two promarginal and one or two retro marginal teeth. Maxilla broad with distinct scopulae; labium wider than long (Length/ width 0.11/0.18), sternum heart shaped, longer than wide (Length/ width 0.47/0.41) narrow but blunt posteriorly, clothed with hairs (Plate 15). Legs moderately strong, clothed

with hairs; metatarsi and tibia of Ist and IInd legs prolaterally with a row of weak spines. Male palp (Plate 16-17) embolus spiniform, terminal apophysis weakly sclerotized, conductor and median apophysis well sclerotized, patella without microsetae. Abdomen wider than long, narrowing behind, overlapping on cephalothorax, dorsum with rounded shoulder swelling (Plate 14).

Total length 1.87; Carapace length 0.85, width 0.77; Abdominal length 0.96, width 1.33; Length of legs as shown in (Table 3).



Plate 8. Dorsal view



Plate 9. Ventral view



Plate 10. Lateral view



Plate 11. Cerapace dorsal view



Plate 12. Cerapace ventral view



Plate 13. Spinnerets

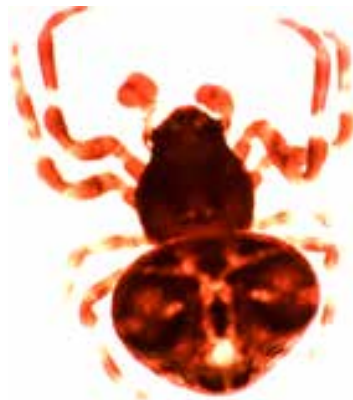


Plate 14. Dorsal view



Plate 15. Ventral view



Plate 16. Male palp ventral & dorsolateral

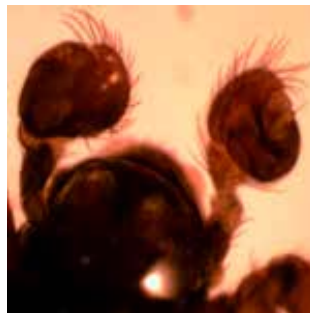


Plate 17. Male palp dorsal & ventrolateral view

Table 3. Measurement of leg segments of *O. sexspinosus* (Thorell, 1894) (Female / Male in mm.)

Leg	Coxa	Trochanter	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
I	0.47/0.25	0.21/0.17	1.14/0.37	0.48/0.32	1.01/0.56	0.79/0.41	0.45/0.29	4.55/2.37
II	0.38/0.22	0.39/0.17	0.88/0.42	0.42/0.24	0.75/0.46	0.60/0.38	0.42/0.30	3.79/2.19
III	0.32/0.17	0.25/0.15	0.63/0.36	0.25/0.15	0.41/0.24	0.22/0.20	0.23/0.21	2.31/1.48
IV	0.36/0.20	0.31/0.17	0.63/0.47	0.36/0.17	0.58/0.32	0.31/0.21	0.27/0.23	2.90/1.77

Range. India: Navsari, Gujarat. Bombay, Puna, Maharashtra. Burma (= Myanmar): Tharrawaddy. Malaysia: Singapore. Japan.

Remarks. Since it was an immature specimen examination of epigynum of syntype was not possible. The present specimens on the basis of its general appearance resemble to Indian *O. sexspinosus* Tikader, 1963.

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