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Redescription and new locality records of *Cryptothele ceylonica* O. Pickard-Cambridge, 1877 from Sri Lanka (Araneae: Zodariidae)

SURESH P. BENJAMIN[1*] & NARUWAN DAYANANDA[1,2]
[1]*National Institute of Fundamental Studies, Hantana Road, Kandy, Sri Lanka.*
[*]*Corresponding author:* *suresh.benjamin@gmail.com;* *https://orcid.org/0000-0003-4666-0330*
[2] *ngdayananda23@gmail.com;* *https://orcid.org/0000-0002-5338-7283*

Cryptothele L. Koch, 1872 is a genus of litter-dwelling, slow-moving zodariid spiders characterized by bodies and legs covered with thick, erect curved setae that retain mud and debris (Marusik & Omelko 2013). There are eight species and two subspecies in *Cryptothele*, that are distributed in Australia, the Mariana Islands, New Guinea, the Seychelles, South and Southeast Asia, Samoa, and Fiji (Koch 1872; Pickard-Cambridge 1877; Simon 1884, 1890, 1893; Thorell 1890; Pocock 1901; Kulczyński 1911; Marusik & Omelko 2012, 2013; World Spider Catalog 2023). However, except for three species, *Cryptothele alluaudi* Simon, 1893, *C. collina* Pocock, 1901, and *C. verrucosa* L. Koch, 1872, the rest are known from descriptions that are over a century old (Marusik & Omelko 2013).

Cryptothele is represented in Sri Lanka by a single species: *Cryptothele ceylonica* O. Pickard-Cambridge, 1877 (World Spider Catalog 2023). It is known only from its original description, which was said to be based on an adult female specimen (Pickard-Cambridge 1877). However, the type received from OUMNH at our request is a subadult female. Fortunately, recent fieldworks conducted around the country suggest that this species is widely distributed in Sri Lanka and is the only species found on the island. Thus, the main purpose of this paper is to provide a re-description of *C. ceylonica*, including detailed images, based on type and newly collected material from Sri Lanka.

Fieldwork was conducted in all climatic regions of Sri Lanka. All spiders were collected from litter by sieving and hand collection methods. Specimens for the morphological study were preserved in 70% ethanol and identified using an Olympus SZX7 stereomicroscope. Photographs of palpi, epigynes and intact spiders were taken with Leica MC170 HD camera mounted on a Leica M205C stereo microscope using Leica Application Suite software version 4.6.2 (Leica Microsystems Limited, Germany). Images were merged with Zerene stacker image stacking software version 1.04. All measurements are in millimeters (mm). Body length was measured as carapace length plus opisthosoma length (excluding spinnerets). The material listed are currently deposited in the National Institute of Fundamental Studies, Kandy, Sri Lanka (NIFS).

Abbreviations: NIFS—National Institute of Fundamental Studies, Kandy, Sri Lanka; RTA—retrolateral tibial apophysis; T—tegulum; TE—tegular extension; OUMNH—Oxford University Museum of Natural History; AME—anterior median eye; PME—posterior median eye; PLE—posterior lateral eye; PER—posterior eye row.

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Taxonomy

ZodariidaeThorell, 1881

Cryptothele L. Koch, 1872

Type species: *Cryptothele verrucosa* L. Koch, 1872, by monotypy.

Cryptothele ceylonica O. Pickard-Cambridge, 1877 (Fig. 1)

Cryptothele ceylonica O. Pickard-Cambridge, 1877: 563, plate LVI, fig. 4a-e (adult ♀).

Type material. Holotype subadult ♀ from **SRI LANKA**, leg. G.H.K. Thwaites. No additional data given, in OUMNH, no museum number, bottle number B392, examined.

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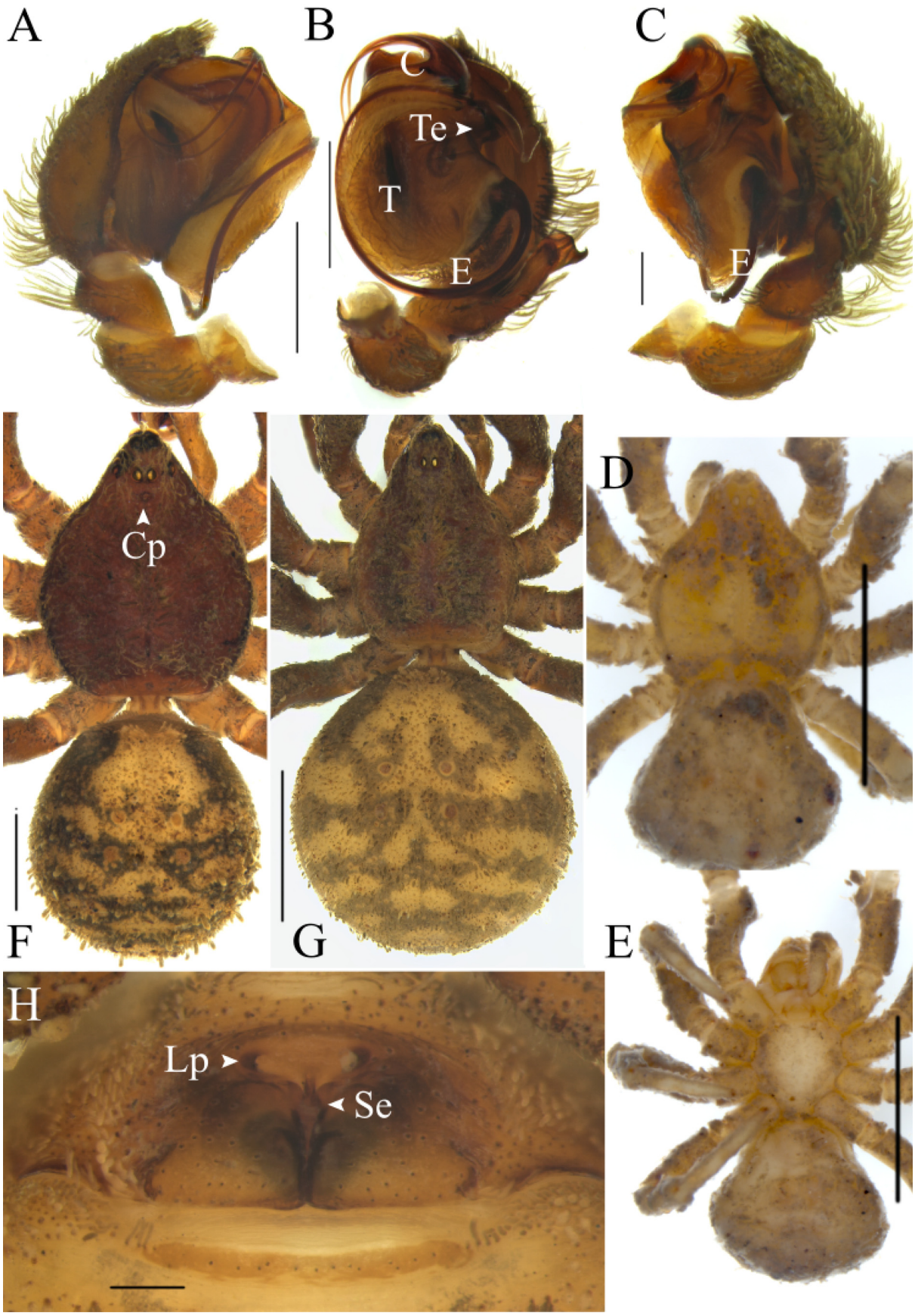

FIGURE 1. *Cryptothele ceylonica* O. Pickard-Cambridge, 1877. A–C. Male left palp; D–E. Juvenile holotype female (OUM-NH); F. Male habitus (IFS_Zod_006); G. Female habitus (IFS_Zod_007); A. Prolateral; C. Retrolateral; D, F–G. Dorsal; B, E, H. Ventral. Abbreviations: C, conductor; Cp, cephalic pit; E embolus; Lp, lateral pocket; Se, septum; T, tegulum, Te, tegular extension. Scale lines = 0.2 mm (C, H), 0.5 mm (A, B), 1 mm (F), 2.0 mm (D, G, E).

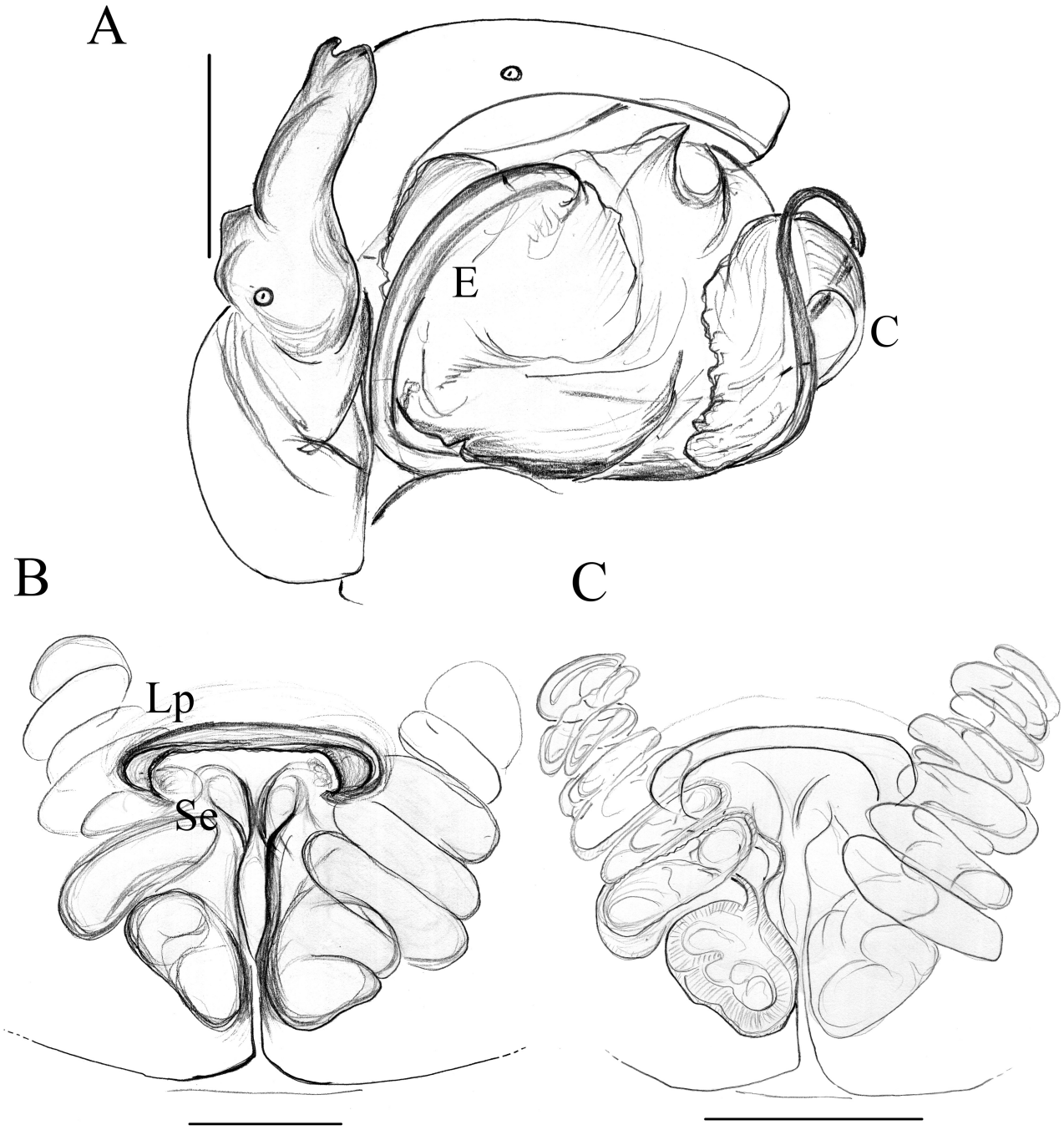

FIGURE 2. *Cryptothele ceylonica* O. Pickard-Cambridge, 1877. A. Male right palp, retrolateral; B, epigynum, ventral; C, vulva, ventral view. Abbreviations: C, conductor; E embolus; Lp, lateral pocket; Se, septum. Scale lines = 0.2 mm (A, B), 0.1 mm (C, D).

Other material examined.- 1♂ (IFS_ZOD_193): **SRI LANKA**, Central Province, Kandy District, Dunumadalawa Forest, 701m, 07°16'38"N 80°38'69"E, 6.II.2017, leg. N. Athukorala *et al*. 1♂ (IFS_ZOD_017): Central Province, Kandy District, Gannoruwa Forest, 575m, 07°17'16"N 80°35'47"E, 30.VII.2016, leg. N. Athukorala *et al*. 1♂ (IFS_ZOD_192): Central Province, Kandy District, Kandy, Deltota, Loolcandura Estate, 1480m, 07°08'45"N 80°41'53"E, 14.XI.2012, leg. S. P. Benjamin *et al*. 3♂ (IFS_ZOD_002, 003, 010): Central Province, Kandy District, Panvila, Dikhinna Village, 939m, 10°22'00"N 80°43'00"E, 17.XII.2012, leg. N. Athukorala *et al*. 1♂ (IFS_ZOD_019): Central Province, Kandy District, Uda Peradeniya, 874m, 07°14'58"N 80°36'43"E, 15.XII.2016, leg. N. Athukorala & S. Ranasinghe. 2♂ 1♀ (IFS_ZOD_013, 189, 190): Central Province, Kandy District, Udawattakele Forest, 580m, 07°17'54"N 80°38'29"E, 11.V.2015, leg. N. Athukorala *et al*. 1♂ (IFS_ZOD_199): Central Province, Matale District, Elahera/Pallegama Road, 3km to Pallegama,

267m, 07°32'16"N 80°40'20"E, 3.II.2016, leg. S. P. Benjamin & N. Athukorala. 1♀ (IFS_ZOD_012): Central Province, Matale District, Gammaduwa, Knuckles Range, 918m, 07°34'45.6"N 80°41'55.3"E, 18.XI.2009, leg. S. P. Benjamin & S. Batuwita. 1♂ 2♀ (IFS_ZOD_021, 191, 202): Central Province, Matale District, IFS Arboretum, 180m, 07°51'34"N 80°40'28"E, 24.VIII.2010, leg. S. P. Benjamin & S. Batuwita. 1♂ (IFS_ZOD_020): Central Province, Matale District, Riverstone, Knuckles Range, 1088m, 07°31'47.82"N 80°44'23.32"E, 2.II.2010, leg. S. Batuwita & P. M. H. Sandamali. 1♀ (IFS_ZOD_200): Central Province, Nuwara Eliya District, Horton plains, 2148m, 06°47'55"N 80°47'39"E, 30.I.2019, leg. S. P. Benjamin *et al*. 1♀ (IFS_ZOD_015): Eastern Province, Ampara District, Ekgal Aru Sanctuary, 80m, 07°09'44"N 81°37'14"E, 10.II.2010, leg. S. P. Benjamin & S. Batuwita. 1♀ (IFS_ZOD_009): North Central Province, Anuradhapura District, Mihintale Sanctuary, 123m, 08°21'10.60"N 80°30'14.54"E, 6.VI.2014, leg. C. Clayton & N. Athukorala. 1♂ (IFS_ZOD_016): North Central Province, Anuradhapura District, Padaviya, 56m, 08°48'0"N 80°45'0"E, 10.I.2012, leg. N. Athukorala. 1♀ (IFS_ZOD_005): North Central Province, Polonnaruwa District, Parakrama Samudraya, 57m, 07°53'51"N 80°59'14"E, 1.XII.2009, leg. N. Athukorala. 1♀ (IFS_ZOD_011): North Western Province, Kurunegala District, Ethagala range, 190m, 07°29'11.23"N 80°22'21.64"E, 8.IV.2015, leg. S. P. Benjamin *et al*. 1♀ (IFS_ZOD_014): North Western Province, Puttalam District, Wilpattu NP, Surroundings of Malai Villu, 16m, 08°30'47"N 79°54'15"E, 5.IV.2018, leg. S. P. Benjamin *et al*. 1♂ (IFS_ZOD_018): Northern Province, Mannar District, Giant's Tank Sanctuary (Site 1), 27m, 08°52'59"N 80°03'44"E, 4.IV.2018, leg. S. P. Benjamin *et al*.

Diagnosis.- Males of *C. ceylonica* are closely related to the males of *Cryptothele alluaudi* Simon, 1893 as both share a similar tegular extension but can be separated from the latter species by the round tegulum (vs. oval in *C. alluaudi*) (compare Fig. 1B with Marusik & Omelko 2012: figs 5–8). Females of *C. ceylonica* can be separated from females of *C. alluaudi* by the shorter septum (SE) (vs. longer in *C. alluaudi*) (compare Fig. 1H with Marusik & Omelko 2012: figs 4). Females of *C. ceylonica* can be separated from females of *C. collina* Pocock, 1901 by the presence of lateral pockets of the epigynum (vs. anterior hood in *C. collina* (compare Figs 1H with Sankaran & Joseph 2022: fig. 1c).

Supplementary description.- *Female* (IFS_Zod_007) (Figures 1G, H): Total length 6.30. Carapace 2.25 long, 1.95 wide. Opisthosoma 3.50 long, 3.35 wide. Eye measurements: AME 0.10, PME 0.08, PLE 0.08; AME-AME 0.06, PME-PME 0.08, PLE-PME 0.16. Leg measurements: I 4.14 (1.38, 0.66, 0.78, 0.72, 0.60), II 3.54 (1.17, 0.51, 0.66, 0.68, 0.52), III 3.23. (1.05, 0.48, 0.60, 0.62, 0.48), IV 4.27 (1.40, 0.68, 0.81, 0.74, 0.64). Leg formula 4123. Body covered with thick layer of dirt and soil particles (Figs 1F, G). Carapace flattened, yellowish brown, rugose, constricted laterally, covered with dense layer of bent bristles and hairs. Cephalic pit behind PER. AMEs largest. Spinnerets brown, covered with tuft of coarse hairs. Legs short, strong, brownish yellow. Palpi, yellowish brown, furnished with coarse bristles and hairs. *Genitalia* (Figs 1A–B, C, 2A–C): epigyne sclerotized, with paired lateral plates and a narrow median septum. Vulva with long spirally coiled copulatory ducts with an anterior turning point and lateral globular spermathecae (Figs 2B, C).

Male (IFS_Zod_006) (Figs 1A–C, F, 2A). Total length 5.30. Carapace 2.54 long, 1.89 wide. Opisthosoma 2.25 long, 2.16 wide. Eye measurements: AME 0.10, PME 0.08, PLE 0.08, AME-AME 0.06, PME-PME 0.08, PLE-PME 0.16. Leg measurements: I 3.86 (1.35, 0.63, 0.70, 0.66, 0.52), II 3.56 (1.29, 0.57, 0.60, 0.62, 0.48), III 3.42 (1.26, 0.54, 0.58, 0.60, 0.44), IV 4.21 (1.44, 0.64, 0.79, 0.72, 0.62). Leg formula 4123. *Palpi* (Figs 1A-C, 2A): RTA stout, distolaterally with claw-like process, bulbus round. Tegulum round with triangular terminal extension (Figs 1B, 2A). Conductor transparent, distinct in shape (Figs 1A–C, 2A). Embolus filiform, encircling tegulum, with short embolar base, originating proximo-lateral to tegulum (Figs 1B, 2A).

Variations.- In males, the total body length varies within a range of 5.50,Carapace 2.90 long, 1.93 wide. Opisthosoma 2.50 long, 2.20 wide (IFS_ZOD_017) to 4.30, Carapace 2.20 long, 1.60 wide. Opisthosoma 2.00 long, 1.90 wide (IFS_ZOD_020). In females, it deviates from 7.5, Carapace 3.30 long, 2.92 wide. Opisthosoma 4.10 long, 3.85 wide (IFS_ZOD_011) to 4.5, Carapace 1.93 long, 1.62 wide. Opisthosoma 2.42 long, 2.20 wide (IFS_ZOD_012).

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