

Description of a new species of *Hersiliola* and the male of *Duninia rheimsae* Marusik & Fet, 2009 from Iran (Araneae: Hersiliidae)

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Abstract: *Hersiliola artemisiae* sp. nov. is described from central and south-central regions of Iran. In addition, the male of *Duninia rheimsae* Marusik & Fet, 2009 is described for the first time and compared with two other congeners, *D. darvishi* Mirshamsi & Marusik, 2013 and *D. baehrae* Marusik & Fet, 2009.

Key words: Aranei, spider, fauna, Iranian Plateau, Middle East

1. Introduction

The spider family Hersiliidae Thorell, 1870 is a relatively small, globally distributed family comprising 196 fossil and extant species placed in 23 genera (<http://wsc.nmbe.ch>). To date, ten morphospecies belonging to four genera are known in Iran: *Bastanius* Mirshamsi, Zamani & Marusik, 2016; *Duninia* Marusik & Fet, 2009; *Hersilia* Audouin, 1826; and *Hersiliola* Thorell, 1870 (Mirshamsi et al., 2013, 2016; <http://www.spiders.ir/>). *Duninia* includes three species, all of which are endemic or subendemic to Iran, namely *D. baehrae* Marusik & Fet, 2009; *D. darvishi* Mirshamsi & Marusik, 2013; and *D. rheimsae* Marusik & Fet, 2009 (Zamani et al., 2016). The latter species is known only from the female, from the environs of Tehran. In this study, the male of this species is described for the first time, based on fresh material collected from Tehran Province, and comparisons with the males of other congeners are provided. In addition, a new species of *Hersiliola* from central and south-central Iran is described and illustrated.

2. Materials and methods

Illustrations for *Duninia rheimsae* were produced using an Olympus DP-71 camera attached to an Olympus SZH-10 stereomicroscope at Ferdowsi University of Mashhad. For specimens of *Hersiliola*, photographs were provided

using an Olympus E-520 camera attached to an Olympus SZX16 stereomicroscope at the Zoological Museum of the University of Turku. In order to provide a complete depth of field, several images were combined using Zerene Stacker focus stacking software. The epigynes were macerated with KOH and colored after being positioned in an alcohol/water solution of Chlorazol Black for a few minutes. All measurements are in millimeters. Terminology of the copulatory organs follows Marusik and Fet (2009). The depositories of the studied material are the Zoological Museum of Ferdowsi University of Mashhad (ZMFUM), the Zoological Museum of the University of Tehran (ZUCT), and Senckenberg Museum, Frankfurt am Main (SMF).

3. Results and discussion

Family Hersiliidae Thorell, 1870

Duninia Marusik & Fet, 2009

Duninia rheimsae Marusik & Fet, 2009

Duninia rheimsae Marusik & Fet, 2009: 98, f. 8.7, 11.5-7 (♀)

(Figures 1A-1D and 2A-2C)

Material examined: 3♂♂ 3♀♀ 1 sub.♀♀ (ZMFUM), IRAN: *Tehran Province*, southern macrolopes of Alborz Mts., 35°49'N 51°27'E, July 2014 (A. Zamani); 1♂ (ZUCT),

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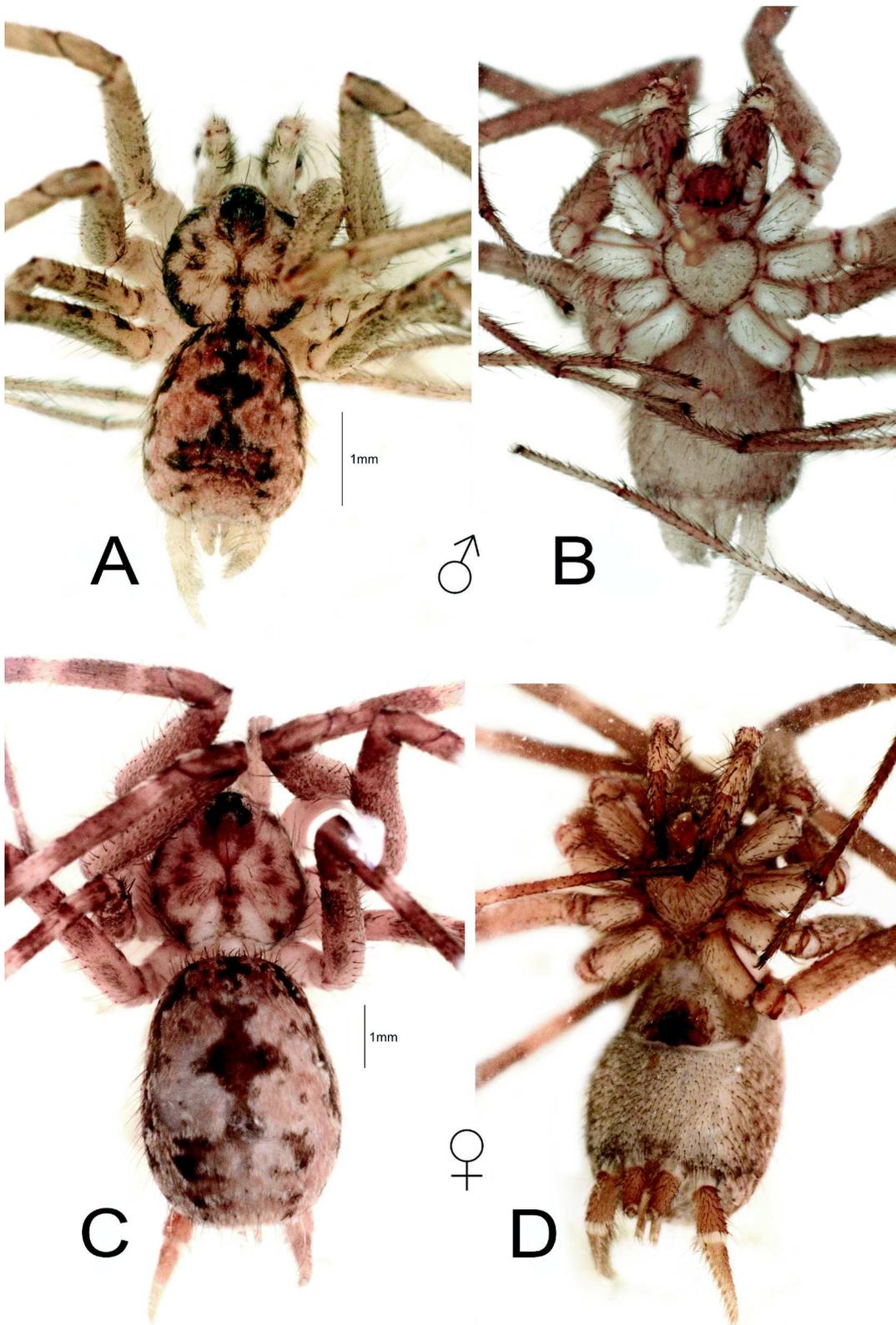


Figure 1. Habitus of *Duninia rheimsae*: A) male, dorsal; B) male, ventral; C) female, dorsal; D) female, ventral.

Tehran Province, Damavand District, August 2015 (A. Zamani).

Comparative material examined: *D. baehrae*: 4♂♂ (ZMFUM), IRAN: *Khorasan-e-Razavi Province*, Fariman, April 2011 (O. Mirshamsi); *D. darvishi*: Holotype ♂ (SMF), IRAN: *Khorasan-e-Razavi Province*, Gonabad, 6 km south of Kakhk (by the road), Maqas Village, July 2011 (O. Mirshamsi); 1♂ (ZMFUM), IRAN: *South Khorasan Province*, Birjand, 32°51'47"N, 59°6'3"E, June 2010 (A. Talebi) (new range extension, southernmost record in the whole known range).

Note: This species was described based on a subadult female with developed epigyne and three juvenile specimens from ca. 80 km E of Tehran, Damavand District, Aroo Village, Iran.

Diagnosis. Males (Figures 1A, 1B, and 2A–2C) can be distinguished from *D. darvishi* by the shape of the embolus and their massive, incus-like tegular apophysis (Figures 2D–2F) and from *D. baehrae* by shorter embolus and larger, claw-like tegular apophysis (Figures 2G–2I). Females (Figures 1C and 1D) can be distinguished from *D. baehrae* by smaller epigyne and body size, and from *D. darvishi* by converging receptacles (almost touching each other) and flat epigyne (saddle-like in *D. darvishi*, see Mirshamsi et al., 2013: 350, figs. 4e–4g).

Description. *Male* (3 specimens): Body length: 5.36–6.49 (5.83); carapace 2.10–2.41 (2.23) long, 2.11–2.44 (2.25) wide. General appearance as shown in Figures 1A and 1B. General coloration yellowish-brown; carapace longer than wide, yellowish-brown with dark marginal markings, radial spots, and Y-shaped mark behind eyes and median groove; ocular area dark brown with black eye borders (Figure 1A); abdomen with distinct dark pattern as illustrated in Figure 1A with cardiac mark and four distinct transverse bands; labium, endites, and sternum light yellowish brown (Figure 1B); legs yellowish-brown, femora without distinct dark annulations; coxae IV separated from each other by less than one diameter.

Palp as in Figures 2A–2C; bulb globular, basal portion of seminal duct thick; tegular apophysis claw-like, large and located on the apical portion of tegulum, parallel to the cymbial axis; embolus thicker than the tegular apophysis; embolus short, flattened, and slightly bent distally; embolus 2.5 times shorter than the apical portion of the cymbium.

Female: Described by Marusik and Fet (2009) (Figures 1C and 1D).

Distribution and ecology. This species is known only from Tehran Province, northern Iran. Specimens were collected from dry, mountainous habitats, mostly at high elevations (about 2000 m). Males were found to be adult during late summer, while females seem to be adult from late spring to the middle of autumn. They build weak, irregular webs under large, flat stones and cover their numerous egg sacs by small particles of stone and wood.

Hersiliola Thorell, 1870

Hersiliola artemisiae sp. nov.

(Figures 3A, 3B, and 4A–4D)

Type material: Holotype ♀ (SMF), IRAN: *Kerman Province*, Jiroft, Ramoon, September 2015 (B. Zadhoush). Paratype ♀ (SMF), IRAN: *Isfahan Province*, Shahreza County, March 2015, March 2015 (A. Zamani).

Etymology. This species is named after Artemisia I of Caria (fl. 480 BC), queen of Halicarnassus, who fought as an ally of Xerxes I, King of Persia, against the independent Greek city states during the second Persian invasion of Greece.

Diagnosis. This species is closely related to *H. afghanica* Roewer, 1960 from Afghanistan, from which it can be distinguished by a much narrower septum (septum as wide as lateral arms of median plate in *H. afghanica*) and the position of the upper loop of the duct on the inner ventral wall of the receptacle and its different shape (duct located on the upper side of the receptacle in *H. afghanica*).

Description. *Female (paratype):* Body 4.1 long; carapace 1.9 long, 1.8 wide; clypeus height 0.42. ALE 0.08, AME 0.15, PLE 0.11, PME 0.10. Measurements for segments of leg I: coxa 0.75, femur 2.65, patella 0.85, tibia 2.40, metatarsus 2.80, tarsus 0.95; femur I/carapace length ratio 1.39. General appearance as shown in Figures 3A and 3B. Carapace light yellowish-brown with dark margins, radial dark stripes and median dark band; cephalic part separated from the thoracic part by a dark V-shaped spot, with dark feather-like extensions in the upper part, behind PLE. Ocular area dark brown with black eye borders (Figure 3A); labium, endites, and sternum light yellowish-brown. Abdomen light brown with a brown cardiac mark with darker margins, transverse stripes, and dark sides. Venter of abdomen without pattern. Legs yellowish-brown, femora without distinct dark annulations; coxae IV separated from each other by less than one diameter (Figure 3B). Vulva and epigyne as in Figures 4A–4D. Insemination duct relatively short with 2.5 coils (Figure 4A); windows distinct (Figure 4B). Upper loop of coil located on the inner ventral wall of the receptacle (Figure 4C); accessory glands digitiform (Figure 4C); septum less than half as wide as lateral arms of median plate (Figure 4D).

Male: Unknown.

Distribution. Known only from Isfahan and Kerman provinces of Iran.

Comments. There is a minor difference in the epigynes of the two examined specimens: the lower epigynal margin is straight in the Kerman specimen (Figures 4A and 4B), while it is slightly convex in the specimen from Isfahan (Figures 4C and 4D); to us, it seems like an intraspecific variation, but findings of more specimens and especially males is necessary to confirm this.

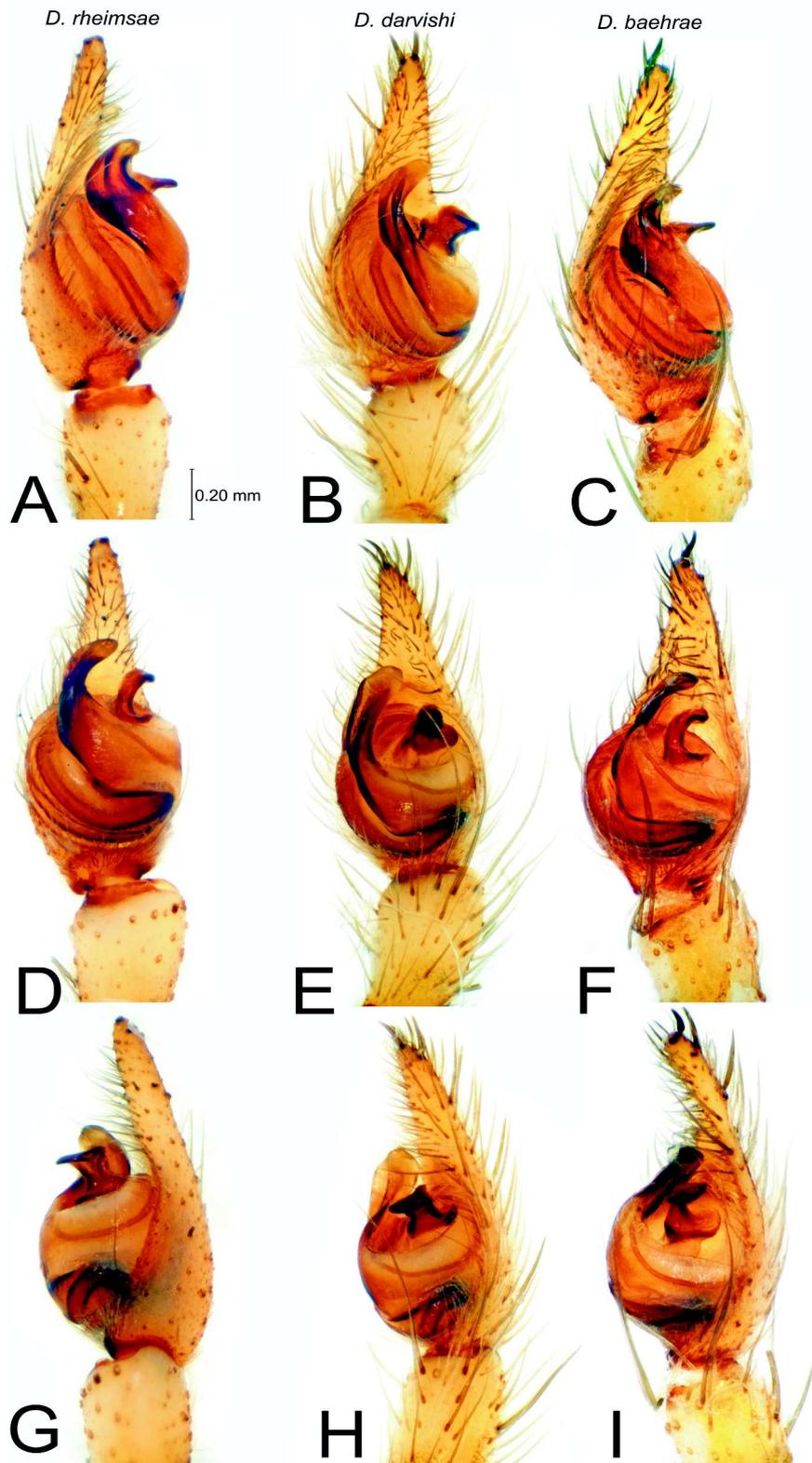


Figure 2. Male palp of *D. rheimsae* (A, D, G), *D. darvishi* (B, E, H), and *D. baehrae* (C, F, I). A-C prolateral; D-F ventral; G-I retrolateral.

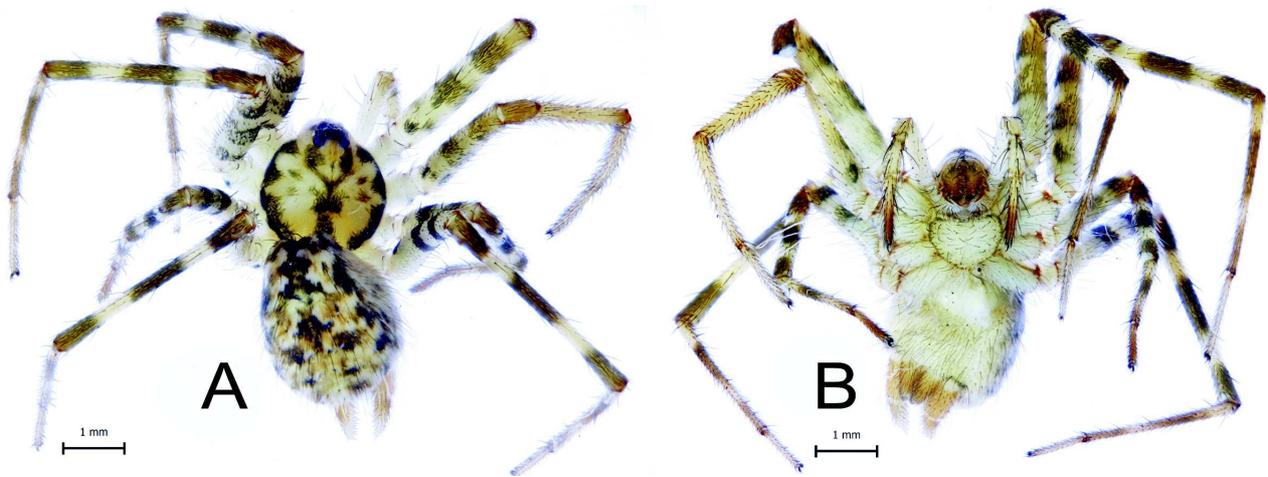


Figure 3. Habitus of the paratype of *Hersiliola artemisiae* sp. nov.: A) dorsal; B) ventral.

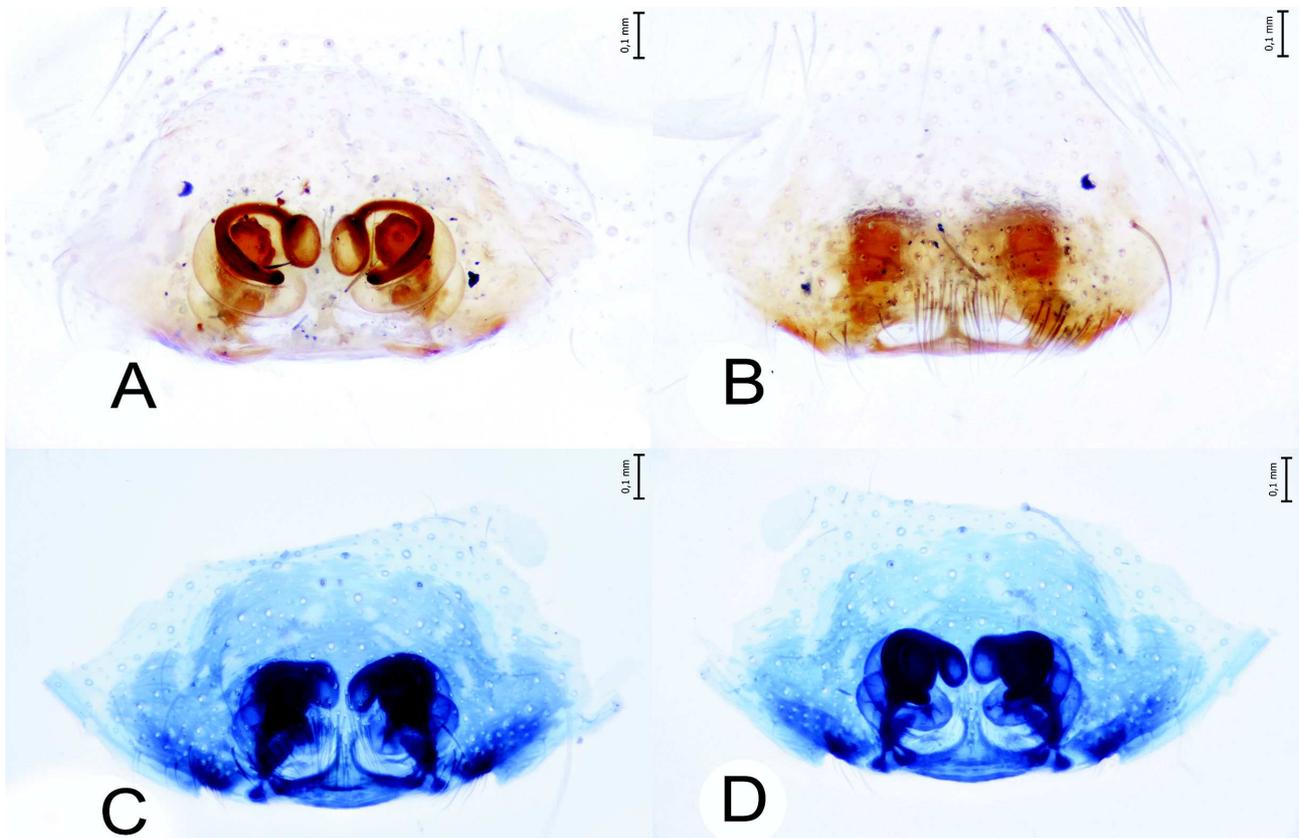


Figure 4. Epigyne of *Hersiliola artemisiae* sp. nov.: A, D) dorsal; B, C) ventral. A, B- holotype, before coloration; C, D- paratype, after coloration.

Nomenclatural acts

This work and the nomenclatural acts it contains have been registered in ZooBank. The ZooBank Life Science Identifier (LSID) for this publication is: <http://zoobank.org/urn:lsid:zoobank.org:pub:186D7C40-770C-4CC0-BBED-64B105482CEB>

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