



PRESS RELEASE

Naturkundemuseum Stuttgart Naturhistorisches Museum Wien

Some like it hot!

A new freshwater crustacean from the hottest place on earth.

Stuttgart/Vienna 10.08.2020. During an expedition in desert Lut, known as the hottest place on planet Earth, in the year 2017, Dr. Hossein Rajaei from the Stuttgart State Museum of Natural History and Dr. Alexander V. Rudov from Tehran University discovered a crustacean. After the scientific examinations of these specimens by Dr. Martin Schwentner, Crustacea specialist from the Natural History Museum of Vienna, it turned out that they belong to a new species of freshwater Crustacea. The biologists named the new species *Phallocryptus fahimii* and published it in the scientific journal „Zoology in the Middle East“.

The Lut desert - also known as Dasht-e Lut - is the second largest desert in Iran, located between 33° and 28° parallels and with its 51,800 km² larger than Switzerland. This desert holds the current record for the highest ever-recorded surface temperature. Based on 2006 satellite measurements, the NASA reported a record surface temperature of 70.7°C, which more recently has been increased to even 80.3°C. Dark pebbles that heat up are one of the causes of these record temperatures. Mean daily temperatures range from -2.6°C in winter to 50.4°C in summer with annual precipitation not exceeding 30 mm per year.

Almost deprived of vegetation, the Lut desert harbors a diverse animal life, but no permanent aquatic biotops. After rain falls, non-permanent astatic water bodies are filled including the Rud-e-Shur river from north-western Lut. Here a diverse community of Archaea has been described but aquatic life in the Lut remains highly limited. To better understand the desert's ecology, biodiversity, geomorphology and paleontology a group of highly motivated researchers undertook three expeditions into the Lut from 2015 to 2017. Dr. Hossein Rajaei, an entomologist from State Museum of Natural History Stuttgart, was on board in two of those expeditions. In a small seasonal lake in southern part of the desert, he found a Crustacea species from the order Anostraca. These are also known as fairy shrimps and reproduce via "resting eggs". "These resting eggs are able to survive for decades in the dried-out sediment and will hatch in an upcoming wet season, when the aquatic habitat refills. They are perfectly adapted to live in deserts environments. Their ability to survive even in the Lut desert highlights their resilience", says Dr. Martin Schwentner, who has worked with similar crustaceans from the Australian deserts in the past.

"During an expedition to such an extreme place you are always on alert, in particular when finding water. Discovering crustaceans in this otherwise hot and dry environment was really sensational", reports Dr. Hossein Rajaei, who is an expert for butterflies. The newly identified species belongs to the genus *Phallocryptus* of which only four species were previously known from different arid and semiarid regions. *Phallocryptus fahimii* differs in its overall morphology and its genetics from all other known *Phallocryptus* species. It was named in



honor of the Iranian conservation biologist, Hadi Fahimi, who took part in the 2017 expedition in desert Lut and who we tragically lost in the airplane crash of flight 3704 on 18 February 2018.

For editorial staff:

Original Publication:

Schwentner, M., Rudov, A. V. & Rajaei, H. 2020. Some like it hot: *Phallocryptus fahimii* n.sp. (Crustacean: Branchiopoda: Anostraca: Thamnocephalidae) from the hottest place on planet Earth. *Zoology in the Middle East*, DOI: <https://doi.org/10.1080/09397140.2020.1805139>

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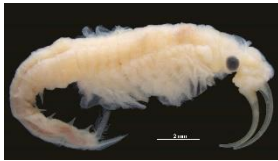
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Description: New species *Phallocryptus fahimii* discovered in the desert Lut, the hottest place on planet Earth.

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Lebensraum_Phallocryptus_fahimii_Wueste_Lut_SMNS_H.Rajaei.jpg

Description: Habitat of the new species *Phallocryptus fahimii* in the Lut desert.

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Hossein_Rajaei_Expedition_Wueste_Lut_SMNS_H.Rajaei.jpg:

Description: Dr. Hossein Rajaei, entomologist, during the expedition to Lut desert.

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Wueste_Lut_wissenschaftliche_Expedition_2017_SMNS_H.Rajaei.jpg:

Description: Scientific expedition in the desert Lut.

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Wueste_Lut_Expedition_2017_SMNS_H.Rajaei.jpg:

Description: Desert Lut in Iran, the hottest place on Earth.

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