= Hemilepistus reaumuri =

Hemilepistus reaumuri is a species of woodlouse that lives in and around the deserts of North Africa and the Middle East , " the driest habitat conquered by any species of crustacean " . It reaches a length of 22 mm (0 @.@ 87 in) and a width of up to 12 mm (0 @.@ 47 in) , and has seven pairs of legs which hold its body unusually high off the ground . The species was described in the Description de l 'Égypte after the French Campaign in Egypt and Syria of 1798 ? 1801 , but was first formally named by Henri Milne @-@ Edwards in 1840 as Porcellio reaumuri . It reached its current scientific name in 1930 after the former subgenus Hemilepistus was raised to the rank of genus .

H. reaumuri occurs at great population densities and fills an important niche in the desert ecosystem . It feeds on plant leaves , obtains most of its water from moisture in the air and sand , and is in turn an important prey item for the scorpion Scorpio maurus . H. reaumuri is only able to survive in such arid conditions because it has developed parental care of its offspring . Adults dig burrows which are inhabited by family groups , which are recognised using pheromones . The burrows are 40 ? 50 cm (16 ? 20 in) deep , and the woodlice retreat to the relatively cool and moist conditions of the burrow when surface conditions are unfavourable . The territorial limit of each colony is marked with a faecal embankment .

= = Description = =

Hemilepistus reaumuri is approximately 22 millimetres (0 @.@ 87 in) long , and 9 ? 12 millimetres (0 @.@ 35 ? 0 @.@ 47 in) wide . In common with other woodlice , it has seven pairs of legs and a pair of conspicuous antennae . It is classified in the family Trachelipodidae ; within that family , it is placed in the genus Hemilepistus because of the presence of tubercles only on the head and the nearby parts of the thorax .

H. reaumuri differs from other desert woodlice in a number of respects . It is crepuscular , while other species are nocturnal . Apart from at the highest temperatures , it is also positively phototactic (is attracted to sunlight) , while other species are negatively phototactic (move away from bright light) . Compared to other woodlice , H. reaumuri walks in an unusual manner , with its body held high off the ground .

= = Distribution = =

Hemilepistus reaumuri is found in the steppes , semideserts and deserts of North Africa , and the Middle East , and occasionally on the margins of salt lakes . This has been described as " the driest habitat conquered by any species of crustacean " . H. reaumuri is most closely associated with loess soils in the Sahara Desert and Negev Desert , although its range extends from eastern Algeria to western Syria .

= = Ecology = =

Hemilepistus reaumuri is an important part of the desert ecosystem . It has been found at population densities of up to 480 @,@ 000 individuals per hectare , which is equivalent to a biomass of 19 @.@ 2 kg / ha ; in comparison , desert mammals are estimated to have a combined biomass of 39 @.@ 9 kg / ha . The main predator of H. reaumuri is the scorpion Scorpio maurus , and it may compose up to 70 % of the scorpion 's diet . It appears to be vulnerable to attack only on the surface ; no predators are known to attack H. reaumuri in its underground burrows .

Hemilepistus reaumuri can only escape the heat of the desert by constructing a burrow , which is time @-@ consuming and energetically costly . One parent must therefore guard the burrow while the other forages for food . H. reaumuri can spend up to ten months of the year returning to the surface to forage , which is far longer than species which do not dig burrows , such as Armadillidium vulgare or Armadillo officinalis . Although they will forage at temperatures as high as 35 ° C (95 ° F) , these woodlice retreat to their burrow when the temperature is too high . They are also unable to

tolerate air with a relative humidity below 6 % , which often occurs at depths of up to 30 centimetres (12 in) in the desert soil in the hottest months , and the burrows are therefore dug at least 40 ? 50 cm (16 ? 20 in) deep . The burrows are vertical , with a single entrance 9 ? 12 mm (0 @.@ 35 ? 0 @.@ 47 in) in diameter , and there may be up to 20 burrows per square metre (nearly 2 per square foot) in favourable areas . If a foraging woodlouse cannot find the burrow entrance on its return , it employs a complex and efficient strategy to find it again . It begins with a spirally widening search , and develops into a more meandering approach the longer it is unable to find the burrow .

Hemilepistus reaumuri has a significantly higher biomass than other herbivores in the Negev Desert , making it an important part of herbivore ? omnivore food chains . They spend the day provisioning their burrows with leaf material from the surface of the desert , sometimes resting under stones or in crevices of rocks . Their faeces accumulates on the surface , and forms a " faecal embankment " , similar to a levee , which demarcates the extent of the home territory of the colony in the burrow . The plants Artemisia herba @-@ alba and Haloxylon scoparium are the most abundant bushes in the Negev desert , and seem to make up most of the diet of H. reaumuri .

The bulk of the water intake of Hemilepistus reaumuri is by taking up water vapour from saturated air and by eating damp sand . Water loss is minimised by the rectal epithelium , which absorbs water , ensuring that the faeces is drier than the food the animal consumed . Evaporation of water through the permeable exoskeleton may , however , provide a valuable cooling effect .

= = Life cycle = =

Hemilepistus reaumuri is the only species of Hemilepistus to have developed parental care of its offspring , and it is only because of this development that the species can survive in the desert . It is monogamous , and , unusually , both parents tend the young .

The colonies are quiescent during the winter , and young individuals emerge in February and March to establish new burrows . Sheltered sites below bushes are chosen , although larger males will often try to pair with a female who has already established a burrow , sometimes ousting her male partner . The anatomy of H. reaumuri is not specialised for digging , and the excavation is a slow process , taking place only in early spring . The first 3 ? 5 centimetres (1 @.@ 2 ? 2 @.@ 0 in) are dug by a single woodlouse , which then stops to guard the new burrow . Eventually , it will allow one other woodlouse of the opposite sex to enter , and they then engage in a ritual which often lasts for hours , before copulating .

The female bears 50 ? 100 live young , typically in May . The young remain in the burrow for 10 ? 20 days , being provided with food by their parents . On leaving the burrow , they are wary of other families , and adults may catch other adults ' offspring and feed them to their own , but do not normally attack their own children . Members of each social group recognise each other using pheromones . Each pair only produces one brood , and the life of an individual of H. reaumuri is typically around 15 months long , considerably shorter than the 2 ? 4 year lifespans of woodlice from more mesic habitats , such as Armadillidium vulgare , Porcellio scaber or Philoscia muscorum .

= = Taxonomic history = =

Hemilepistus reaumuri was illustrated in volume 21 of the Description de l 'Égypte , researched during Napoleon 's campaign in Egypt and Syria of 1798 ? 1801 , and dedicated to René Antoine Ferchault de Réaumur . The section on Crustacea was begun by Marie Jules César Savigny but finished by Jean Victoire Audouin after Savigny 's health deteriorated . The species was not given a formal scientific name , however , until Henri Milne @-@ Edwards did so in 1840 , calling it Porcellio reaumuri . Although initially placed in the genus Porcellio , it was later moved by G. H. A. Budde @-@ Lund in 1879 to his new subgenus Hemilepistus , which was raised from a subgenus of Porcellio to the rank of genus by Karl Wilhelm Verhoeff in 1930 . Several species names that were previously thought to be synonyms of H. reaumuri have been re @-@ examined , and found to refer to a species in a different family , now known as Porcellio brevicaudatus .