IMBIBITION OF PRECIPITATED FOG BY NAMIB DESERT SCORPIONS

The Namib Desert is one of the most arid areas on the planet, annually receiving an average rainfall of 7-64 mm (coast to 110 km inland to the east; Seely 1978). However, sections of the desert within ~50 km of the coast of the Atlantic Ocean are subject to periodic but heavy fogs. Fog precipitates on any rise, e.g., rocks, plants and even animals.

On the morning of 13 August, 1989, a thick fog covered the Namib Desert from the coast to at least as far inland as the Desert Ecological Research Unit of Namibia at Gobabeb (60 km east of the coast). At 0800 hours, a large (> 80 mm length) *Parabuthus villosus* (Peters) was observed 15 cm above the ground on grass at Swartbank, ~40 km SE of Walvis Bay. The temperature was 12-15° C; consequently the scorpion was sluggish. It slowly moved its chelicerae over the grass stems. Water covered these stems and it was obvious that the scorpion was collecting and drinking water. We observed this behavior for 40 min before we left.

Desert scorpions obtain water in a variety of ways. Some scorpions drink surface water in the field (e.g., *Centruroides exilicauda* (Wood) [= *C. sculpturatus* Ewing], Hadley 1990). This behavior also is often observed in the laboratory (W. D. Sissom personal communication). Apparently many (most?) species never drink but derive all their water directly from the hemolymph of their prey or via

water of metabolism (see Hadley 1990). This is the only report of a scorpion using fog as a source of water.

Many Namib desert species imbibe precipitated fog (Seely 1978 for references). Several species of tenebrionids are perhaps the best known fog drinkers. Some of these beetles increase their catchment area by elevating their abdomens; some dig trenches that trap fog (Seely and Hamilton 1976). Other Namib desert insects, spiders, lizards and snakes are all known to drink fog. The observation that scorpions also drink precipitated fog increases the taxonomic diversity of species that practice such a behavior. This method of water acquisition is particularly important in the coastal section of the Namib desert; rainfall decreases monotonically from the east to west and the coastal section receives very little rain (< 10 mm/year). Conversely, fog precipitation decreases from west to east until it is largely unimportant > 110 km inland. Up to 161 mm of fog water precipitates annually near the coast.

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Gary A. Polis, Department of Biology, Vanderbilt University, Nashville, Tennessee 37235 USA; and **Mary K. Seely**, Desert Ecological Unit of Namibia, P.O. Box 953, Walvis Bay 9190, SWA/Namibia.

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