

DIRECT INJURY, MYIASIS, FORENSICS

**Pyemotes herfsi** (Acari: Pyemotidae), a Mite New to North America as the Cause of Bite Outbreaks

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**ABSTRACT**

High incidences of red, itching, and painful welts on people in the midwestern United States led to the discovery of a European species of mite, *Pyemotes herfsi* (Oudemans) (Acari: Pyemotidae), preying on gall-making midge larvae on oak leaves. The mites’ great reproductive potential, small size, and high capacity for dispersal by wind make them difficult to control or avoid.

**KEY WORDS** *Pyemotes herfsi*, mite, itching bites

The first news report of an outbreak of itching and painful bites in the midwestern United States concerned football players from Western Colorado State College after attending a picnic at a park at Pittsburg State University (PSU), Pittsburg, KS, on 26 August 2004, where, on the same day, they played against the PSU team. The news (local and regional newspapers and TV) of the outbreaks resulted in 75–100 calls a day to the Crawford County Public Health Office from Pittsburg residents complaining of similar “insect bites.” During that time, an unrecorded number of patients visited the city hospital and 50 students with “pruritic rashes” were seen 23–27 August by the PSU Student Health Center. Typical bites were red welts ~2 cm in diameter with a central vesicle (Fig. 1A) and were itchy and painful when scratched, often resulting in secondary bacterial infection. Most puzzling was the lack of any insect being seen or felt during the act of biting. The Kansas Department of Health and Environment requested assistance from the Centers for Disease Control and Prevention (CDC), Atlanta, GA, and the Department of Entomology, Kansas State University (KSU), Manhattan, KS, in determining the cause of the mysterious bites. Entomologists from the University of Nebraska, Lincoln, NE, where similar bites were being reported, and from PSU joined in the search.

**Materials and Methods**

Five CDC traps (John W. Hock Co., Gainesville, FL) baited with 0.5 kg of dry ice were operated for two nights (8 and 14 September 2004) in Pittsburg, KS, where bite incidence was running high. Fluorescent light traps operated in the county by the Kansas Cooperative Extension Survey were inspected for biting insects. Three of us (A.B.B., R. B., and D. G.) spent three evenings (14–16 September) in the high bite incidence park at PSU collecting flying biting insects that alighted on our exposed necks and shoulders (the most common sites of bites). Leaf litter and lawn debris were collected at the PSU park and placed in Tullgren funnel extractors (Burkard Manufacturing Co. Ltd., Rickmansworth, England) overnight.

**Results and Discussion**

Mosquitoes (Diptera: Culicidae) and biting midges (Diptera: Ceratopogonidae) were collected with the CDC traps but in numbers too small to account for the high incidence of bites. Collections by fluorescent light traps yielded no unusual biting insects. Efforts by three of us (A.B.B., R. B., and D. G.) to collect flying biting insects that alighted on our exposed necks and shoulders (the most common sites of bites). Leaf litter and lawn debris were collected at the PSU park and placed in Tullgren funnel extractors (Burkard Manufacturing Co. Ltd., Rickmansworth, England) overnight.