

# Abundance of wind scorpions (Solifugae: Eremobatidae) in riparian forests disturbed by grazing, fire, and flood in Central New Mexico, USA

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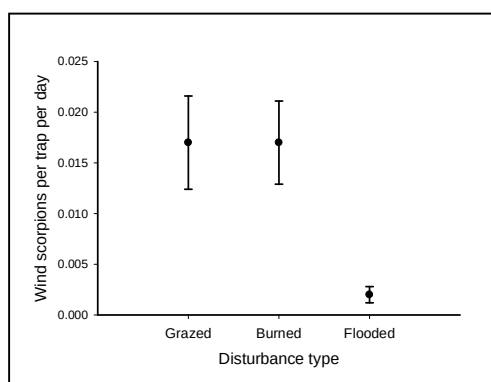
**Introduction** Historically, flood was the primary disturbance structuring riparian plant and animal communities in the southwestern United States. In many areas, however, livestock grazing and wildfire occur more frequently than flooding. Research has shown that changes in flood and fire frequency affect the composition of riparian surface-active arthropod communities (Bess et al. 2002, Ellis et al. 2001). Less is known about effects of grazing on these species. In this paper, we report abundances of the predatory pallid wind scorpion (*Eremobates pallipes*) in riparian forest plots subjected to flooding, wildfire, and cattle grazing.

**Materials and methods**During the spring and summer of 2004, we installed pitfall trap arrays in eight plots along the Middle Rio Grande in central New Mexico. We selected plots non-randomly to sample the range of disturbance types. Arrays consisted of four plastic cups buried below the soil surface. Each plot contained 9 to 14 arrays. We opened each array of traps for a six-day period occurring between May 5 and June 15 and a later six-day period between June 23 and Aug 5. We calculated the number of wind scorpions captured in each plot as well as the number captured per trap per day.

**Results** The plot with the greatest number of wind scorpion captures had been burned but not flooded or grazed, followed by the plot that had been grazed and the plot that had been grazed and burned (Table 1). Traps located in plots that were previously flooded or experienced no disturbance had the fewest captures (Fig. 1).

**Table 1. Disturbance history and number of wind scorpions captured at each study plot.**

| Plot            | Disturbance history                  | # wind scorpions captured | # captured per trap per day |
|-----------------|--------------------------------------|---------------------------|-----------------------------|
| RGC 1           | Occasionally flooded                 | 0                         | 0                           |
| RGC 2           | Occasionally flooded, burned in 2000 | 1                         | 0.004                       |
| Chavez 1        | No recent disturbance                | 2                         | 0.01                        |
| Chavez 2        | Burned in 2002                       | 24                        | 0.08                        |
| San Francisco 1 | Frequently grazed                    | 13                        | 0.04                        |
| San Francisco 2 | Frequently grazed, burned in 2003    | 8                         | 0.03                        |
| San Pedro 1     | Occasionally flooded                 | 1                         | 0.005                       |
| San Pedro 2     | Occasionally flooded, burned in 1996 | 1                         | 0.003                       |



**Conclusion** Our results show spatial variation in the number of wind scorpions captured along the Middle Rio Grande. Number of captures varied between disturbance types, but inference into the effects of fire, grazing and flood is limited by our study design. Experimental manipulations should be conducted to tease apart effects of multiple disturbances on this and other arthropod species.

Fig. 1. Mean number of wind scorpions captured per day in each disturbance type. Bars represent standard errors.

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 Ellis, L.M., C.S. Crawford, and M.C. Molles. 2001. Influence of annual flooding on terrestrial arthropod assemblages of a Rio Grande riparian forest. *Regulated Rivers: Research and Management* 17: 1-20.