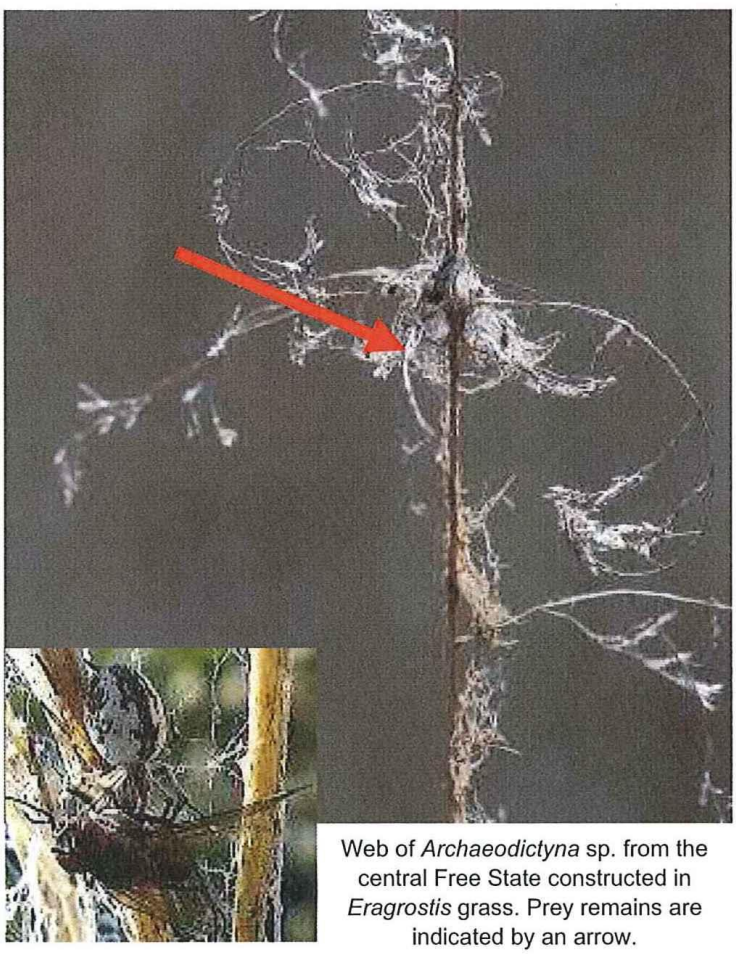
SURVEYS

PREY OF AN ARCHAEODICTYNA SP. (CONT)

This brief study indicates that these small web-building spiders feed on a variety of prey that is captured in their webs. None of the prey species exceeded 4mm in length, suggesting that larger prey cannot be sedated, or that the webs strands are to weak to effectively capture larger prey.

Contact: Charles Haddad at Haddad.sci@ufs.ac.za



Web of *Archaeodictyna* sp. from the central Free State constructed in *Eragrostis* grass. Prey remains are indicated by an arrow.

Inset: The dictynid sp. from the Free State feeding. Photograph: Allen Jones

EFFECTS OF LONG-TERM BURNING REGIMES ON SAVANNA SPIDER ASSEMBLAGES

Fire is a key ecological process that shapes African savannas and, in response to the general lack of information on the role of fire in structuring ecosystems, a long-term experimental burn plot trial was initiated in Kruger National Park (KNP), South Africa in 1954.

The focus of this experiment was to investigate the effects of long-term burning regimes on vegetation and, therefore, to date, this study has focussed mainly on the response of vegetation to long-term burning regimes with minimal work being conducted on animals. There is an enormous lack of studies on the effects of long-term burning regimes on fauna, especially invertebrates, and this is a global problem. This is particularly alarming since fire-driven biomes possess an enormous number and diversity of invertebrates, all of which have pivotal roles to play in ecosystem functioning.

Recently, KNP adjusted its mission statement to include the conservation of biodiversity as a whole, including both fauna and flora, which led to more studies on the effects of long-term burning regimes on fauna. A recent pioneering study by Catherine L. Parr (University of Oxford) and colleagues (published in 2004) looked at the effects of long-term burning regimes on ants, making use of the experimental burn plots in KNP. This provided new insights into the possible effects that these burning regimes may be having on invertebrate fauna.

In order to build on these results, I have embarked on a study investigating the effects of long-term burning regimes on spiders under the supervision of Kate Parr, and Berndt Janse van Rensburg from the University of Pretoria's Zoology and Entomology Department, and in collaboration with Ansie Dippenaar-Schoeman. This study will also make use of the experimental burn plots in KNP. Spiders were chosen because they are: a) important predators in ecosystems; b) greatly affected by changes in vegetation structure because they are a very diverse group with many different habitat guilds (e.g. ground-dwelling, leaf litter-dwelling, web-building etc.); and c) affected by changes in prey assemblages that may arise in response to different burning regimes.

We are looking at the possible effects of four different burning regimes across a rainfall gradient within KNP on spider assemblage composition. The burning regimes (each representing a different season and frequency combination) that we are investigating are: August annual burns, August triennial burns, December triennial burns and unburned areas that have remained virtually unburned since 1954. These burning regimes have remained relatively unaltered since 1954 and are, thus, considered suitable for studies on the long-term, cumulative effects of burning regimes. The late winter fires tend to have a high intensity because of a build-up of fuel (dead grass, leaves etc.) over winter, whereas the summer fires tend to be of a low intensity. We expect that spider diversity will be highest in areas that are burned less frequently, or not at all, and that the diversity will be highest in areas that are subjected to "cool" summer fires compared to areas that are subjected to "hot" winter fires. The simplistic rationale behind this is that infrequently burned areas and areas that are subjected to relatively "cool" fires have a more complex vegetation structure, leading to a greater diversity of available niches, which are able to accommodate a wider diversity of different guilds of spiders. More frequently burned areas and areas subjected to relatively "hot" fires tend to have a much simpler, open vegetation structure, which could possibly lead to the exclusion of certain species of spiders because their specific habitat or niche requirements are not available.

Furthermore, we will be examining a wide variety of possible effects of these burning regimes on vegetation structure and, in turn, spider assemblage composition, to understand better the effects that fire, used as a management tool in our conservation areas, may have on our invaluable invertebrate fauna. This will hopefully spark further interest in research on the effects that prolonged fire regimes may have on these generally overlooked assets, and lead to better-informed decision making in conservation circles.

Contact: Bradley Reynolds at bnreynolds@zoology.up.ac.za