DAVIS EXPEDITION FUND

REPORT ON EXPEDITION/PROJECT

Expedition/Project Title: Impact of the invasive little red fire ant *Wasmannia auropunctata* on the herpetofauna of the West African rainforest

Location: Gabon, West Africa

Group Members: Amy Beavan, Jamie McWilliam, Nico Rumboll, Emilie van Strydonk, Josephine Beynon

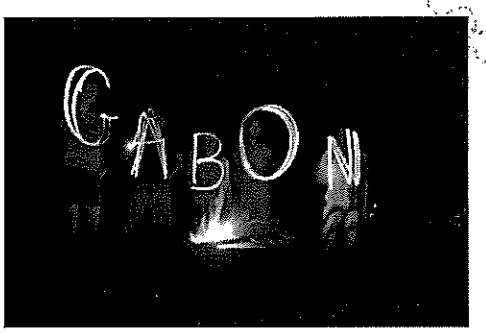
Aims: Measure the effect of the little red fire ant Wasmannia auropunctata in the gallery forest of Lope National Park.

OUTCOME (not less than 300 words):-

See attached report.

Expedition Gabon 2008

Impact of the invasive little red fire ant *Wasmannia auropunctata* on the Herpetofauna of the West African rainforest



GABON: University of Edinburgh team members from left to right are; G- Emlie van Strydonck, A- Nico Rumboll, B- Jose Beynon, O- Jamie McWilliam and N- Amy Beavan.

In June of this year a team of five Edinburgh university undergraduate biologists and ecologists completed a highly successful expedition to the heart of Western Equatorial Africa where a conservation research project was carried out to assess the impact of a globally prominent and devastating invasive species of fire ant, *Wasmannia auropunctata* on reptile and amphibian communities.

The little red fire ant, *Wasmannia auropunctata* originally from South America is listed as one of the 100 worst invaders in the world by the Invasive Species Specialist Group. In the last century, global anthropogenic transport has facilitated the establishment of populations in tropical regions all over the world.

Our project location was Lope National Park, Gabon where the infestation of *W. Auropunctata* is a major problem. Consequently continuous assessment of the ant spread is being carried out at the SEGC (Station d'Etudes des Gorilles et des Chimpanzés) which include ecological impact assessments for the ants effects on avifauna and insect communities. The immediate need for fact based evidence on the invasive impact of fire ants and basic inventorial information on Gabonese herpetofauna supports the scientific justification for our project.

Methods

In order to make our assessment, ground dwelling Herpetofauna were used as an indicator group and were sampled in forest and savannah habitats. On-going monitoring of the distribution of *W. auropunctata* within the study area was used to delegate sites. Ten sets of paired sites were allocated for traps; five in infested zones and five in non infested zones. A pit fall array trapping method was employed (Corn and Bury, 1990).

Results

The overall trend of our findings can be seen in figure 2 below. We trapped more specimens in non-infested areas. A paired t-test and an ANOVA (table 1) was performed on the data produced a P value of 0.067, which is close to formal

significance and therefore there is good reason to suspect that infestation has an effect on number of individuals caught. There is no significant effect of site.

Table 1. Results from ANOVA carried out with ant infestation and number of specimens caught at sites.

Source of variation	df	SSQ	MS	F	P
Infested	1	0.017176	0.017176	4.34	0.067
Site	9	0.059412	0.006601	1.67	0.229
Error	9	0.035619	0.003958		
Total	19	0.112207			

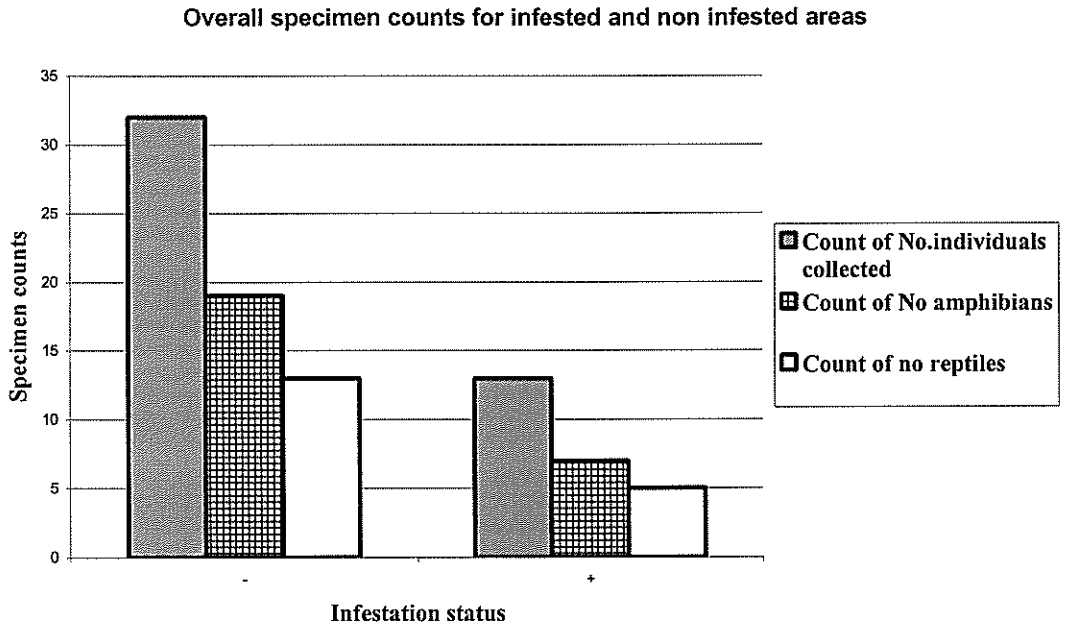


Figure 1: Graph showing specimen counts for infested and non-infested zones.

Four species of reptile; Brown flanked skink *Trachylepsis affinis*, White lipped skink *Trachylepsis albilabris*, Weilers tree snake *Dipsadoboa weileri* and Gabon plated lizard *Gerrhosaurus nigrolineatus* and three species of amphibian; *Bufo regularis*, *Cardioglossa gracilis* and *Hyperolius tuberculatus* were identified using Pauwells and Vande weghe (2008). We also discovered that *T. albilabris* is not listed as existing in Lope National park and so our project has helped to identify another species native to the park.

Conclusion

It can be inferred that *W. auropunctata* is impacting herpetofauna communities at Lope. Statistically there is a 6.7% chance that the trends observed in our data could have occurred by chance. This illustrates that it is likely that there is an underlying ecological factor responsible for the difference which can reasonably be assumed to be *W. auropunctata.* As we have the precise locations of our sites mapped it would be possible for a future project to continue with the study. Our primary collaborator

holds a management position within Lope national park and will be considering our results in management plans for the park. Meanwhile we hope to publish the findings of our project in order to increase awareness of the continual invasion of *Wasmannia auropunctata* within Gabon and hopefully encourage further research.

References

Corn, P. S, Bury, B.R. (1990) 'Sampling Methods for Terrestrial Amphibians and Reptiles' *United States Department of Agriculture, Forest Service, General Technical Report* PNW-GTR-256

Pauwels, O. and Vande weghe, J.P. *Reptiles du Gabon*. Smithsonian Institution, (2008

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