**APPLICATION**

***orchaRd*: An R package for visualisation of meta-analysis and meta-regression with orchard plots**

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Short title: The Orchard Plot

# Abstract

1.

2.

3.

Enhancing the interpretability of meta-regression: modelling heteroskedasticity, estimating marginal and conditional group means and visualising with the orchard plot

1) heteroskedasticity (one categorical variable)

2) marginal group means (two categorical variables)

3) conditional group means (one categorical and one contentious variable) - probably publication year (Publication bias)

1 % of categorical moderators

2 whether it is meta-regression or sub-group analysis (less powerful)

3 encouraging full models (single meta-regression or multiple meta-regression)

4 what % of continuous variable

5 which ones consider heteroskedasticity or heteroscedasticity – ever????

6 % of papers acknowledging stats package or visualisation packages (where they clearly used it)

**KEYWORDS**

caterpillar plot, evidence synthesis, graphical tool, credible interval, credibility interval, summary forest plot, meta-regression

# 1 | INTRODUCTION

First = The rise of meta-analysis in ecology and evolution - Categorical moderators dominate - Orchard plot

Second = 3 issues – 1) hetero, - multi-moderator models = marginal means and conditional means – we solve this

Third = What we do

Forest plots, also

1) heteroskedasticity (one categorical variable)

2) marginal group means (two categorical variables)

3) conditional group means (one categorical and one contentious variable) - probably publication year (Publication bias)

“forest-like plots were prevalent (71% 72 papers)”

“orchard plots fill a fruitful niche as they can be used to visualise the results of meta-regression analysis with categorical moderator as in commonplace in ecology and evolution”

# 2 | SURVEY

We examined 102

Clearly, forest-like plots ar

## 2.1 | Xxxx

English

## 2.2 | XXXXX

Eklöf and c

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# 3 | SOFTWARE CAPABILTIES

Clearly, forest-like plots are

TABLE 1???

## 3.1 | Heteroskedasticity

English

## 3.2 | Marginal means

Eklöf and c

## 3.3 | Conditional means

## 3.4 | Other capabilities

# 4 | PLEA AND PROPOSAL

Figure legend -

# 5 | CONCLUSION AND FUTURE DEVELOPMENT

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SN and DWAN conceived the initial idea and wrote the first draft, ….. All authors contributed to the design of the study and to editing and commenting on drafts.

# CONFLICT OF INTEREST

The author reported no conflict of interest

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# REFERENCES

# FIGURE LEGENDS

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**FIGURE 2.**

**FIGURE**

**FIGURE 1**

**FIGURE 2**

**FIGURE 3**