

# High Proportion Of Data Deficient Taxa Hinders Conservation Of Potential Fungal EDGE Species

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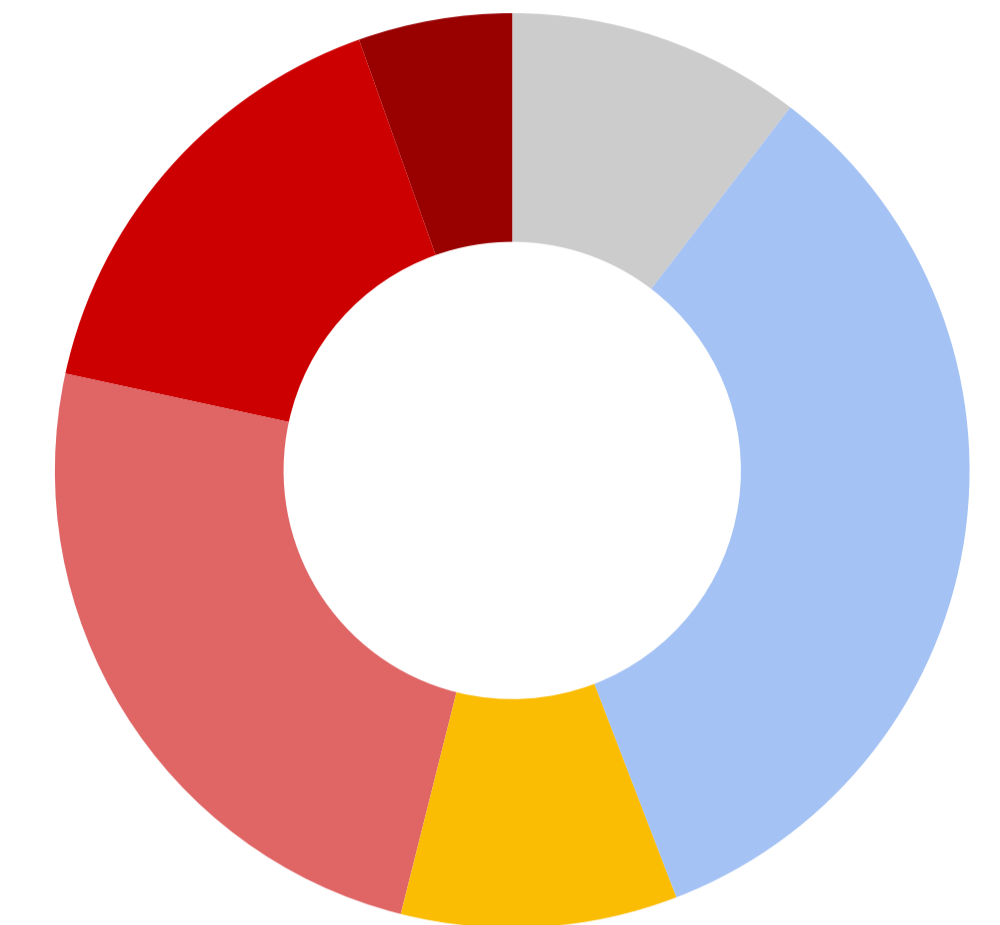
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## 1 INTRODUCTION

- Fungi are severely underrepresented on the IUCN Red List of Threatened Species (only 625 species)<sup>1</sup>.
- The published Red List includes a high proportion of threatened species, not least because priority was given to species suspected to be threatened. This may not be representative of the global state of fungal biodiversity.

We analysed a total of 94 species in monotypic lineages to help mitigate this bias in the published Red List and inform a future list of fungal species which are Evolutionarily Distinct and Globally Endangered (EDGE)<sup>2</sup>. Extinction of fungal EDGE species would represent a significant loss of evolutionary history and potential.

### Red List categories of published fungal species<sup>1</sup> (Sep. 2023)



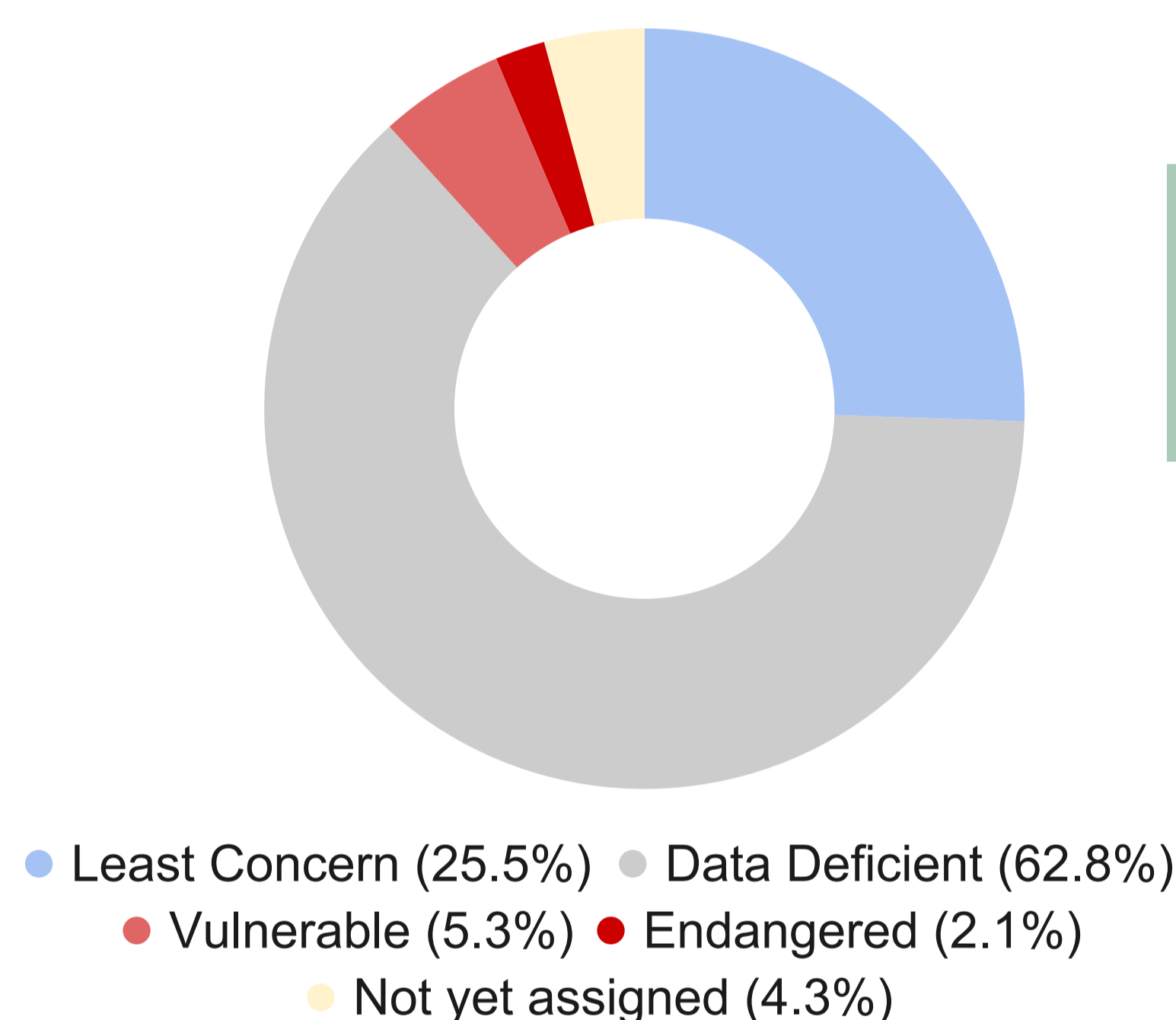
● Data Deficient (10.4%) ● Least Concern (33.8%)  
● Near Threatened (9.8%) ● Vulnerable (24.5%)  
● Endangered (16.2%) ● Critically Endangered (5.4%)

## 2 METHODS

- Using Index Fungorum<sup>3</sup>, 94 Agaricomycete species in monotypic lineages were selected from high profile orders (Boletales, Cantharellales, Russulales) along with monotypic families, including Agaricales and Polyporales.
- 84 of these species were preliminarily assessed in this study.
- Dataset covers different geographical regions, taxonomic groups, ecological guilds and likely categories of threat.

## 3 RESULTS

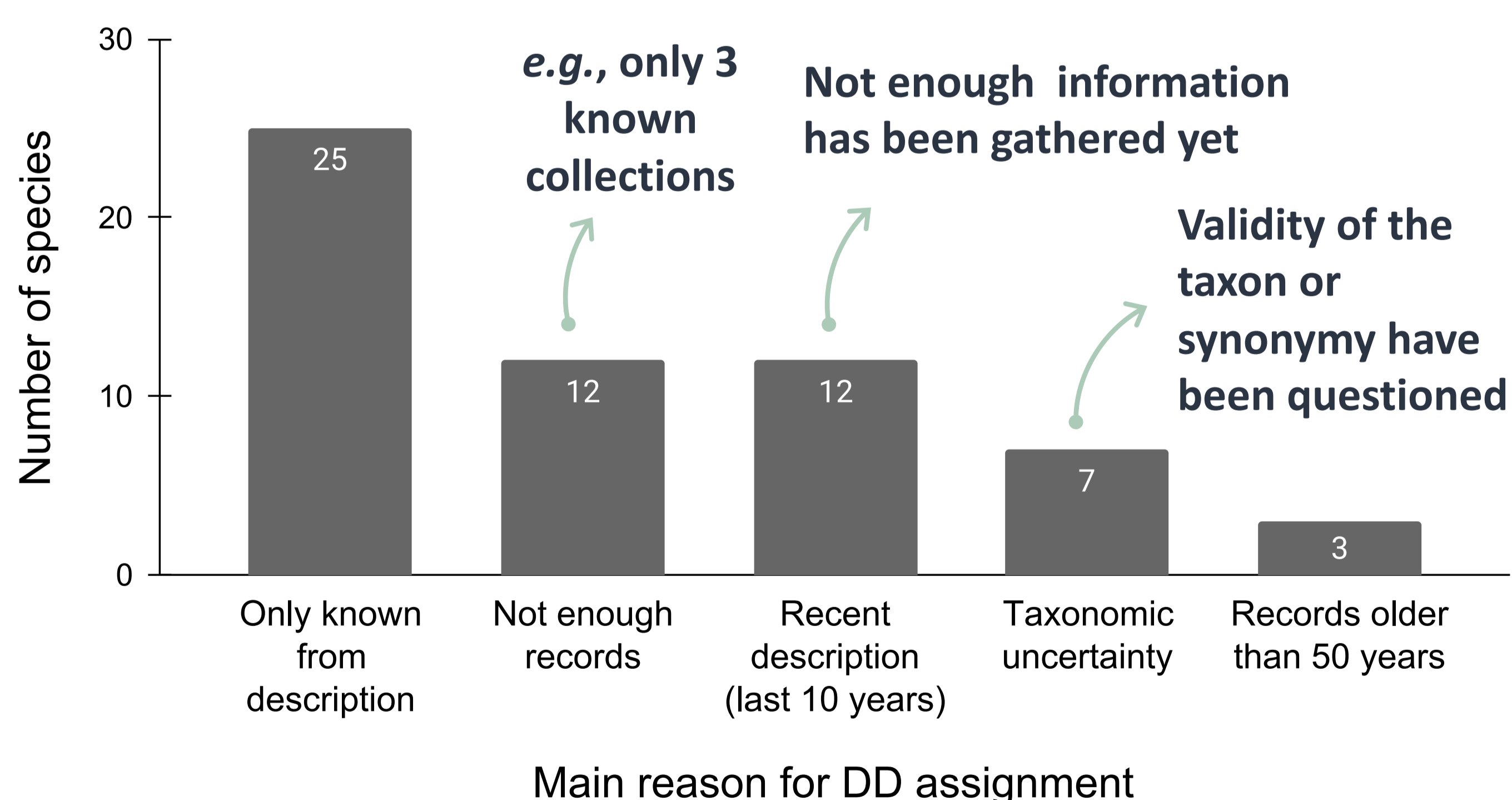
### Over 60% of species were assessed as Data Deficient (DD)



What leads to the high prevalence of the DD category?



### Lack of records and insufficient search efforts limited Red List assessments



### Only seven species have been assigned to threatened categories

*Bondarcevomyces taxi*, *Chlorogaster dipterocarpi*,  
*Fevansia aurantiaca*, *Durianella echinulata*, *Gymnogaster boletoides*  
*Echinodontium japonicum*, *Cupreoboletus poikilochromus*

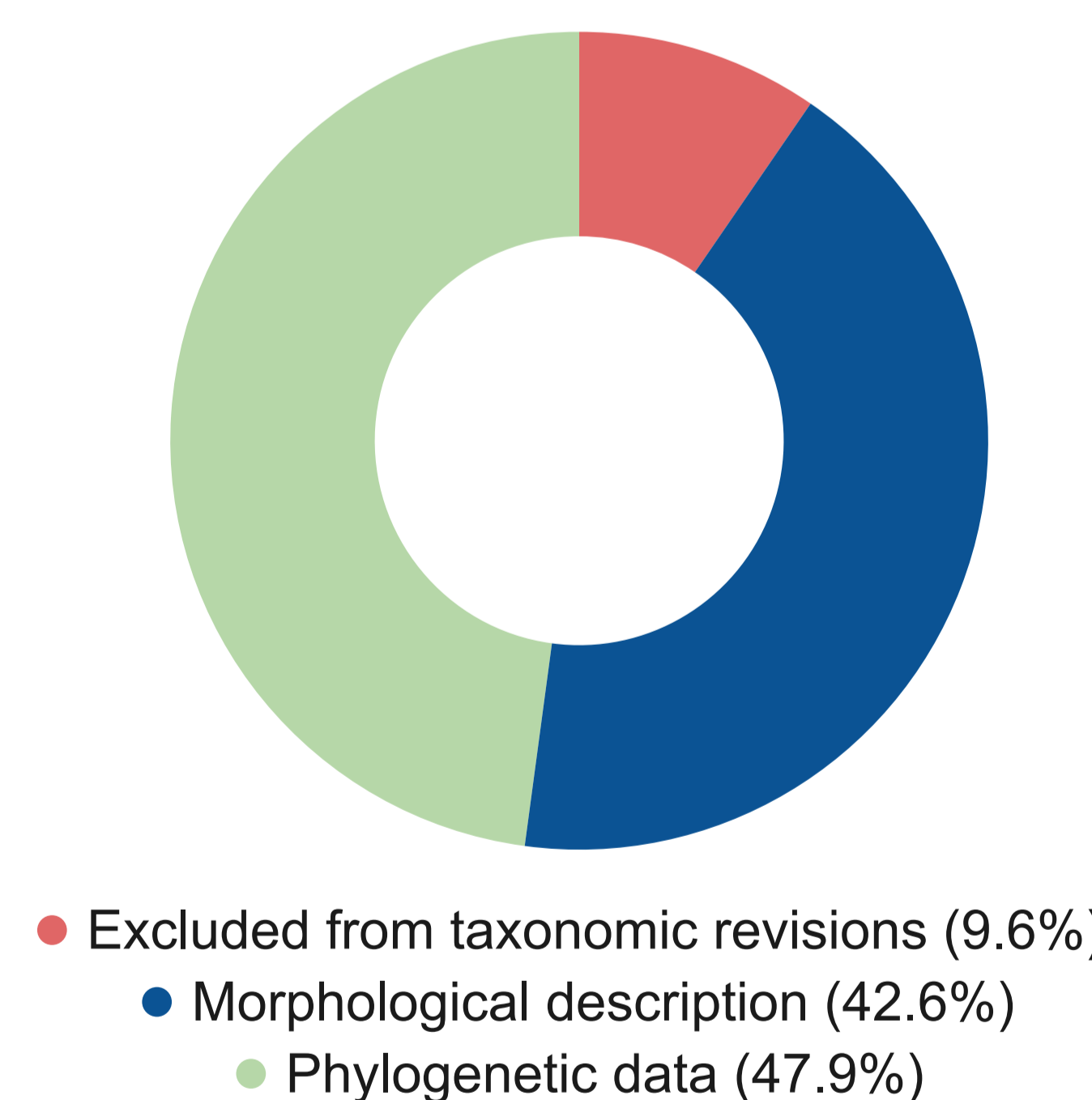


*Cupreoboletus poikilochromus*  
(photo by Federico Calceda)



*Durianella echinulata*  
(photo by Roy Halling)

### Basis for monotypic assignment



The EDGE approach considers both extinction threat and phylogenetic isolation. However, for most species no phylogenetic studies were available.

No discernible differences in global regions, growth form or ecological guilds were identified that may have contributed to differences in category.

## 4 CONCLUSIONS

- Prevalence of DD species in monotypic genera hinders potential application of the EDGE approach for fungi and the establishment of conservation priorities that consider evolutionary distinctiveness.
- Monotypic assignments in fungi should be confirmed under modern taxonomic standards.
- There is an urgent need to increase taxonomic knowledge and promote search efforts for DD species.

## REFERENCES

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- Index Fungorum. Royal Botanic Gardens Kew. <http://www.indexfungorum.org>.

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