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A standard method for predicting conservation status from herbarium specimens in the context of a new phylogeny and taxonomy of *Loudetia*

BY

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A thesis submitted to the Faculty of Science of the University of the Witwatersrand, Johannesburg, in fulfilment of the requirements for the degree of Doctor of Philosophy.

Johannesburg, March 2007.

Dedication

To my mother, Modester, for her support, my wife Elifa, daughters Helen and Linda and sons Ezra and Sam for their endurance of hardships during my 6-year absence.

DECLARATION

I declare that this thesis is my own original work. It is being submitted in fulfilment of the requirements for the degree of Doctor of Philosophy in the Faculty of Science, University of the Witwatersrand, Johannesburg. The research findings of other workers provided the background and they have been used for comparison in the present thesis. These have been duly acknowledged.

Dickson Athanasius Kamundi March 2006

Layout

A general introduction of issues covered in chapters 2-5 and a review of literature, including the taxonomic and conservation status of *Loudetia* species, morphometric and phylogenetic methods, is presented under general introduction in Chapter 1. Chapter 2 contain a taxonomic clarification of the *Loudetia simplex* complex. Chapter 3 covers a phylogenetic hypothesis of species of *Loudetia* and *Loudetiopsis*, including an investigation of the determination of discrete character states from quantitative characters and an updated classification of *Loudetia*. Chapter 4 presents an updated enumeration of species of *Loudetia*. A new method of predicting risk in species using herbarium specimens is presented in Chapter 5. Findings of this thesis are summarized in chapter 6: general discussion and conclusions.

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