PLANT SCIENCE TODAY
Vol 12(3): 1-4
https://doi.org/10.14719/pst.6556

eISSN 2348-1900

RESEARCH ARTICLE

New record and range expansion of *Mesosphaerum suaveolens* (L.) Kuntze (Lamiaceae) in Southern Zimbabwe

Alfred Maroyi*

Department of Biotechnology and Biological Sciences, University of Fort Hare, Alice 5700, South Africa

*Correspondence email - amaroyi@ufh.ac.za

Received: 05 December 2024; Accepted: 28 March 2025; Available online: Version 1.0: 09 August 2025; Version 2.0: 22 August 2025

Cite this article: Maroyi A. New record and range expansion of *Mesosphaerum suaveolens* (L.) Kuntze (Lamiaceae) in Southern Zimbabwe. Plant Science Today. 2025; 12(3): 1-4. https://doi.org/10.14719/pst.6556

Abstract

In the present study, we report a new distribution range of *Mesosphaerum suaveolens* (L.) Kuntze in Southern Zimbabwe, commonly known as bush mint or pignut, which is native to tropical America and has now been recorded as a naturalized and invasive species in Zimbabwe. This new record is based on field identification of species populations growing in the wild, diagnosis and verification of the species identity using herbarium specimens and a thorough literature review. A detailed species description and dichotomous key are provided to distinguish *M. suaveolens* from a closely related *M. pectinatum* (L.) Kuntze. Both species are rapidly spreading in Zimbabwe due to high environmental adaptability and reproductive capacity, enabling the species to thrive in a wide range of habitats in the country. The findings of this study call for the need to monitor the invasion of *M. suaveolens* in the country as the species poses a major threat to biodiversity, ecosystem health and bio-resources.

Keywords: Lamiaceae; *Mesosphaerum suaveolens;* naturalised; Southern Africa; weeds; Zimbabwe

Introduction

In the Lamiaceae family, *Mesosphaerum* P. Browne has historically been recorded in the Andean region, extending into the mountains of Mexico and Central America (1, 2). The genus *Mesosphaerum* comprises approximately 25 species, characterized by an inflorescence with numerous flowers on an elongated leafy panicle of peduncles. The inflorescence of *Mesosphaerum* species is characterized by weakly capitate cymes, subtended by small bracteoles not forming an involucre, often with white hairs in the throat and the gynoecium lacking a stylopodium (1, 2). Recent field work in Southern Zimbabwe in March to May 2022 yielded new records of an invasive alien species, *Mesosphaerum suaveolens* (L.) Kuntze (Fig. 1). Detailed taxonomic studies showed that *M. suaveolens* was only known from three floristic regions, that is, central, eastern and northern floristic regions (3–7). Therefore, the population of *M. suaveolens* recorded in Ngundu village, Chivi district in Masvingo is a new distributional range record of the species in the Southern Zimbabwe floristic region. The findings of this study call for the need to monitor the invasion of *M. suaveolens* in the country as the species is known to be a major threat to biodiversity, ecosystem health and bio-resources (8). In this study, a distribution map of *M. suaveolens* in Southern Zimbabwe (Fig. 2), its description and illustration are provided. A dichotomous key, based on vegetative characters to distinguish *M. suaveolens* from *M. pectinatum* (L.) Kuntze, a well-known weed that has invaded several hectares in the tropics and the Old World is provided (9-13). A dichotomous key for *M. suaveolens* from *M. pectinatum* is essential for ecological management and conservation because it enables rapid and accurate species identification.

Materials and methods

Field work to assess the floristic diversity and composition in Southern Zimbabwe was conducted from March to April 2022 in the Chibi district. Comparative studies of herbarium material were undertaken at the National Herbarium of Zimbabwe (SRGH), Harare, Zimbabwe to establish the positive identity of the collected specimen. Collected *M. suaveolens* specimens were compared with two herbarium specimens of the species kept at SRGH, herbarium numbers SRGH 120451 and SRGH 80245. Both SRGH 120451 and SRGH 80245 specimens were collected in Zimbabwe by A. Hull on 17 June 1997 in Gokwe District and in Mana Pools National Park in Hurungwe district, respectively. Diagnostic characters used for identification included stem texture, leaf shape and texture, inflorescence arrangement, size and colour and fruit structure, shape and size. The morphological features of the plant specimen were examined using the trinocular lens and dissection microscope. The photographs of the vegetative, flowering and/or fruiting parts along with the other associated plant species in the natural habitat of *M. suaveolens,* were taken for reference and future use with a Canon digital camera EOS 750D. The plant specimens of *M. suaveolens* bearing both vegetative and flowering parts

Fig. 1. *Mesosphaerum suaveolens* (L.) Kuntze photographed in the Chibi District, Southern Zimbabwe. A) Plant habit showing the species habitat and B) Plant habit with flowers and fruit capsules. (Photographs: Alfred Maroyi)

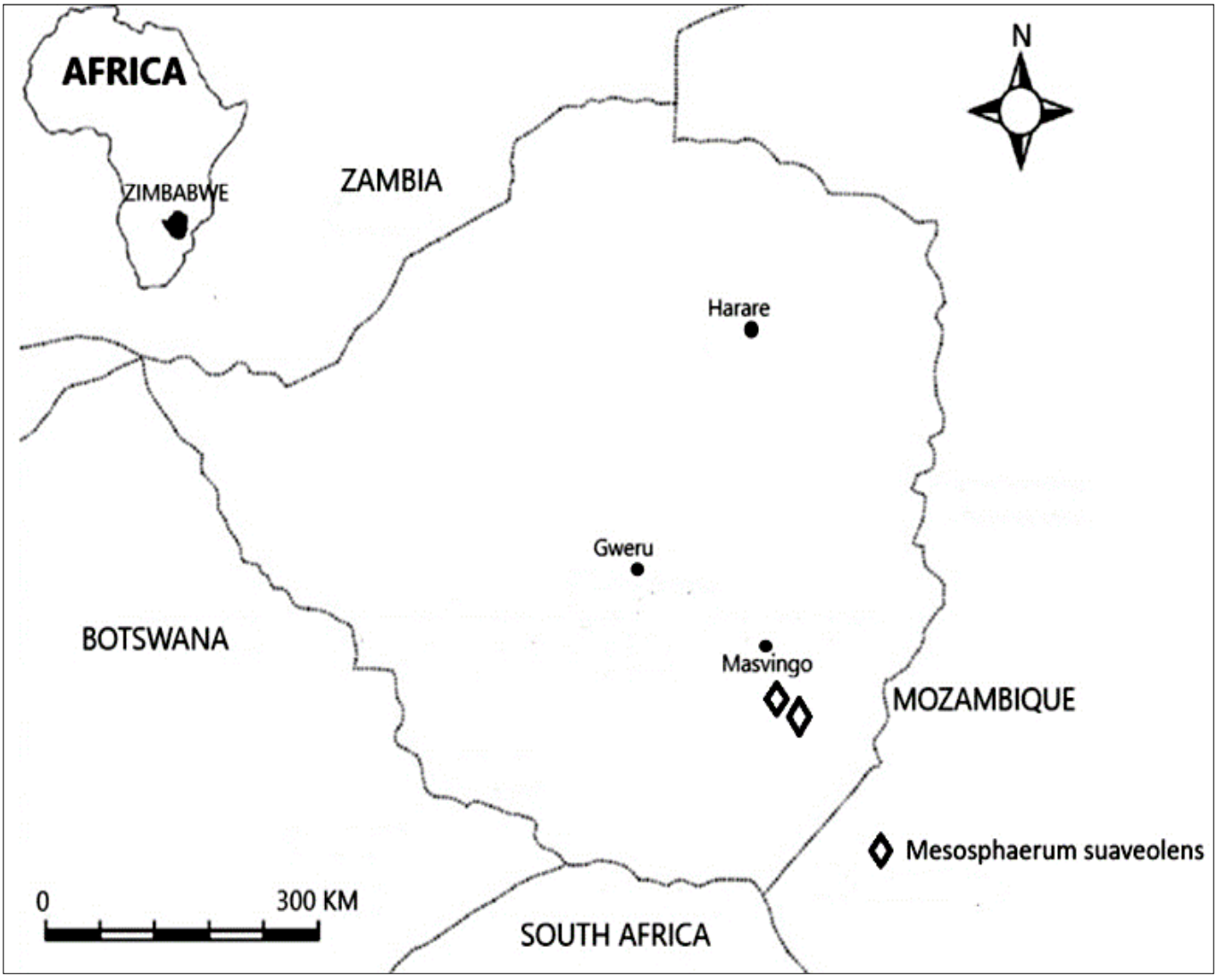

Fig. 2. Distribution of *Mesosphaerum suaveolens* in Southern Zimbabwe.

were collected, dried, pressed and prepared as herbarium specimens using standard herbarium techniques (14, 15). Voucher specimens of *M. suaveolens* were deposited at SRGH and the Giffen Herbarium (UFH), University of Fort Hare, South Africa, as future reference material (4, 5).

Results and Discussion

Key based on vegetative characters to distinguish *M. suaveolens* from *M. pectinatum*

Stems hispid, leaf base mostly cordate, rounded or truncate, leaf lamina ovate to broadly ovate, dark green in colour, inflorescence usually loose, a lax axillary cyme usually 2-5-flowered, fruiting calyx campanulate, corolla blue, nutlets ovoid ……. *M. suaveolens*

Stems glabrous to slightly pubescent, leaf base cuneate, leaf lamina ovate to ovate-elliptic, light green in colour, inflorescences usually with panicles of cymes usually 20-40-flowered, calyx tubular, corolla creamish, nutlets oblong ……..… *M. pectinatum*

Mesosphaerum suaveolens (L.) Kuntze in Revis. Gen. Pl. 2: 525 (1891) (Fig. 1)

= *Ballota suaveolens* L. Syst. Nat. 10: 1100 (1759)

= *Bystropogon graveolens* Blume Sert. Angl. 19 (1789)

= *Bystropogon suaveolens* (L.) L'Hér. Sert. Angl. 19 (1789)

= *Gnoteris cordata* Raf. Sylva Tellur. 76 (1838)

= *Gnoteris villosa* Raf. Sylva Tellur. 76 (1838)

= *Hyptis suaveolens* (L.) Poiteau Ann. Mus. Hist. Nat. 7: 473 (1806)

= *Hyptis ebracteata* R.Brown W.T.Aiton Hortus Kew 3: 391 (1811)

= *Hyptis plumieri* Poiteau Ann. Mus. Hist. Nat. 7: 473 (1806)

= *Hyptis graveolens* (Blume) Mart. Ex Benth. A.P.de Candolle Prodr. 12: 126 (1848)

= *Hyptis graveolens* Schrank Denkschr. Königl.-Baier. Bot. Ges. Regensburg 2: 52 (1822)

= *Hyptis congesta* Leonard J. Washington Acad. Sci. 17: 70 (1927)

= *Marrabium indicum* Blanco Fl. Filip. 477 (1837)

= *Schaueria graveolens* (Blume) Hassk. Flora 25: 25 (1842)

Lectotype: Jamaica, Browne s.n., type designated by Epling in 1949 (1)

Erect annual herb or short-lived perennial herb, subshrub or shrub, aromatic, robust, branched, up to 2 m tall, sometimes with woody rootstock. Stems are hollow, much branched, round-quadrangular, stickily hispid with simple and gland-tipped hairs which are dense at the nodes. Petiole slender and hispid, 0.5-3 cm long. Leaves are simple, opposite, decussate, leaf blade ovate to broadly obovate, 3-5 cm x 2-4 cm^2, gland-dotted, adaxially olive green, abaxially pilose, densely pubescent beneath, base rounded to shallow cordate, oblique, margin serrulate, apex subacute to obtuse. Inflorescence a verticillate, 2-5-flowered cyme, arranged racemosely towards the end of branches in the axil of smaller leaves, bracteoles persistent, peduncle up to 1 cm long, calyx campanulate, erect to oblique, 5 mm long, in fruit up to 10 mm, strongly 5-ribbed, with five setaceous teeth. Corolla tubular, tube cylindric to swollen on 1 side, nearly cylindric to narrowly funnel form, 6-8 mm long, blue to violet, limb bilabiate, upper lip 2-lobed, lower lip 3-lobed, pubescent outside. Stamens densely pubescent, not exceeding median lobe of anterior corolla lip, anterior pair slightly longer, inserted at the base of median lobe of anterior corolla lip, posterior pair inserted above the middle of corolla tube. The disc is subequal, prominent, acute at apex and does not exceed half the length of the ovary. Fruit usually consisting of 2 nutlets, nutlet narrowly oblong, up to 4 mm x 3 mm^2, faintly rugose, brown to black, smooth or dotted, with 2 basal white scars.

Habitat

Mesosphaerum suaveolens forms large clumps, growing along roadsides, disturbed areas such as fallow land, cultivated and overgrazed areas, canals and watering points. The species appears to have naturalised and become invasive in localised areas. Due to its high reproductive capacity and adaptability, *Mesosphaerum suaveolens* is rapidly spreading in Southern Zimbabwe (8).

Phenology

Flowers were observed from March to April, while fruits were observed in May, a trend observed in other regions.

Distribution

Mesosphaerum suaveolens is registered as naturalised and invasive along roadsides and in disturbed habitats close to habitation in Southern Zimbabwe (Fig. 2).

Specimens examined

Zimbabwe: Chibi district, 11 km from Ngomahuru tollgate, in Chibi towards Ngundu Growth Point, along the Harare-Beitbridge road, sandy soils, roadside, density of *M. suaveolens* ranged between 7.4 to 11.2 individuals/m^2, S20° 25'E30°43', alt. 994.7 m, 28 April 2022, A. Maroyi 1911 (SRGH, UFH); Chibi district, 4 km from Ngundu Growth Point, along the Harare-Beitbridge road, rocky and sandy soils, roadside, density of *M. suaveolens* ranged between 8.1 to 12.3 individuals/m^2, S19°59' E 31°32', alt. 987.3 m, 17 April 2022, A. Maroyi 1908 (SRGH, UFH).

Conclusion

The new distribution range of *M. suaveolens* in Southern Zimbabwe represents a new addition to the floral diversity and composition of the Southern Zimbabwe floristic region. Results of the current study imply that *M. suaveolens* may have a wider distribution and may be present in some suitable habitats in the country. Rapid proliferation and unprecedented spread of *M. suaveolens* pose a serious threat to the survival of native plant species in the country. Considering its current invasion patterns, mechanical removal of mature and regenerating *M. suaveolens* specimens at regular intervals is recommended. Such critical management interventions will curb the spread of *M. suaveolens* and prevent further harm to the ecosystem.

Acknowledgements

I want to thank the reviewers for their constructive and helpful comments, which have significantly improved the quality and clarity of this manuscript.

Compliance with ethical standards

Conflict of interest: No conflict of interest is associated with this research

Ethical issues: None

References

1. Harley RM, Pastore JFB. A generic revision and new combinations in the Hyptidinae (Lamiaceae), based on molecular and morphological evidence. Phytotaxa. 2012;58:1–55. https://doi.org/10.11646/phytotaxa.58.1.1
2. Harley RM, Pastore JFB, Soares AS, Fernando EMP, Mota M. *Mesosphaerum caatingense* (Lamiaceae), a new species from the semi-arid Caatinga Region of Northeast Brazil. Kew Bull. 2019;74:12. https://doi.org/10.1007/S12225-019-9795-4
3. Mapaura A, Timberlake J. A checklist of Zimbabwean vascular plants. Pretoria (South Africa): Southern African Botanical Diversity Network Report No. 33, SABONET. 2004.
4. Maroyi A. The casual, naturalised and invasive alien flora of Zimbabwe based on herbarium and literature records. Koedoe. 2012;54:Art. #1054. https://doi.org/10.4102/koedoe.v54i1.1054
5. Maroyi A. Data on introduced plants in Zimbabwe: Floristic changes and patterns of collection based on historical herbarium records. Data Brief. 2017;15:348–69. https://doi.org/10.1016/j.dib.2017.09.046
6. Paton AJ, Bramley G, Ryding O, Polhill RM, Harvey YB, Iwarsson M, et al. Lamiaceae. In: Timberlake JR, Martins ES, editors. Flora Zambesiaca volume 8 part 8. Richmond (UK): Royal Botanic Gardens, Kew. 2013:1–346.
7. Hyde MA, Wursten BT, Ballings P, Palgrave CM. *Mesosphaerum suaveolens*. In: Flora of Zimbabwe [Internet]. 2024 [cited 2023 Nov 18]. https://www.zimbabweflora.co.zw/speciesdata/species.php?species_id=149570
8. Mishra AP, Chandra N, Kumar A, Sharma S, Singh G. *Mesosphaerum suaveolens* (L.) Kuntz.A serious threat to Uttarakhand's first Ramsar site, India. Species. 2023;24:e57s1558. https://doi.org/10.54905/disssi.v24i74.e57s1558
9. Csurhes S, Edwards R. Potential environmental weeds in Australia. Canberra (Australia): Queensland Department of Natural Resources. 1998.
10. Lemmens RHMJ, Bunyapraphatsara N. Plant resources of South-East Asia 12: Medicinal and poisonous plants 3. Leiden (The Netherlands): Backhuys Publishers. 2003.
11. Terblanche K, Diederichs N, Douwes E, Terblanche C, Petterson T, Boulle J, et al. General invasive alien plant control: Insight into best practice, removal methods, training and equipment. Durban (South Africa): EThekwini Municipality. 2013. https://doi.org/10.13140/RG.2.1.2678.2246
12. Setyawati T, Narulita S, Bahri IP, Raharjo GT. A guidebook to invasive plant species in Indonesia. Jakarta (Indonesia): Ministry of Environment and Forestry. 2015.
13. Randall RP. A global compendium of weeds. 3rd Edition. Perth (Australia): Western Australia. 2017.
14. Bridson DM, Forman L. The herbarium handbook. 3rd Edition. Richmond (UK): Royal Botanic Gardens, Kew. 1998.
15. Victor JE, Koekemoer M, Fish L, Smithies S, Mössmer M. Herbarium essentials: The Southern African Herbarium user manual. Pretoria (South Africa): Southern African Botanical Diversity Network Report 25. SABONET. 2004.

Additional information

Peer review: Publisher thanks Sectional Editor and the other anonymous reviewers for their contribution to the peer review of this work.

Reprints & permissions information is available at https://horizonepublishing.com/journals/index.php/PST/open_access_policy

Publisher's Note: Horizon e-Publishing Group remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Indexing: Plant Science Today, published by Horizon e-Publishing Group, is covered by Scopus, Web of Science, BIOSIS Previews, Clarivate Analytics, NAAS, UGC Care, etc
See https://horizonepublishing.com/journals/index.php/PST/indexing_abstracting

Copyright: © The Author(s). This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution and reproduction in any medium, provided the original author and source are credited (https://creativecommons.org/licenses/by/4.0/)

Publisher information: Plant Science Today is published by HORIZON e-Publishing Group with support from Empirion Publishers Private Limited, Thiruvananthapuram, India.