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## Additions to the fern flora of Ethiopia

### Abstract

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A list of 26 species collected by the authors during field work in Bale, Harerge, Shewa and Sidamo (SE Ethiopia) in 1998 is presented. Two species are recorded as new to the Ethiopian flora and 24 species are new records for single provinces.

### 1. Introduction

In this paper new records for the flora of Ethiopia or for single regions are given. The material was collected during a period of field work in Ethiopia from 8.-21. January 1998, in the administrative regions of Bale, Harerge, Shewa and Sidamo. The collecting localities are shown in Fig. 1. The main vegetation types, in which the collections were made, are various types of *Acacia-Commiphora* bushland, *Combretum-Terminalia* woodland, upland rain forest, montane forest and Afroalpine vegetation.

All data were checked with the publications by Ballard (1941), Bizzari (1975), Burrows (1990), Cei & Pichi Sermolli (1940), Cufodontis (1952, 1969a, b), Faden (1994), Friis & al. (1982, 1987), Friis & Vollesen (1998), Hedberg (1971), Holttum (1974), Kornas & al. (1982), Pichi Sermolli (1955, 1957, 1962, 1963, 1964, 1965, 1966, 1977, 1978), Schelpe (1970) and Thulin (1993).

The recorded species are arranged alphabetically by families. New records for Ethiopia are marked with two asterisks (\*\*), novelties for a province with one (\*). One or more references to relevant taxonomic or floristic literature are cited under the species name. Habitat descriptions are based on own field observations. The specimens are deposited in the herbarium of the Ghent University (GENT) and duplicates will be sent to the National Herbarium of Ethiopia in Addis Abeba (ETH).

### 2. List of species

#### ACTINIOPTERIDACEAE

\* *Actiniopteris dimorpha* Pic. Serm.

Ref. – Pichi Sermolli (1962, 1963), Kornas & al. (1982), Burrows (1990), Thulin (1993)



Fig. 1. Map showing the Ethiopian collecting localities mentioned in the text – 1. Jijiga; 2. Babile; 3. Harar; 4. Dire Dawa; 5. Bedesa; 6. Awash; 7. Nazret; 8. Addis Ababa; 9. Tulu Bolo; 10. Butajira; 11. Ziway; 12. Negele; 13. Shashemene; 14. Wendo Genet; 15. Dinsho (Guré); 16. Goba; 17. Mt Batu; 18. Dolo Mena; 19. Dila; 20. Yabelo; 21. Mega.

HARERGE: 5 km E of Babile, valley of Daketa, degraded woodland with *Ruttya fruticosa*, outcrop of granitic rocks, c. 1600 m, 9°12'47"N, 42°21'53"E, 12.1.1998, *Viane RV7071*; 37 km E of junction to Bedesa, along Awash - Harar road, 9°12'21"N, 41°06'06"E, 1850 m, limestone outcrop along roadside overgrown with secondary vegetation (*Opuntia* sp. ...), 13.1.1998, *Viane RV7094 & RV7095*.

## ADIANTACEAE

\* *Anogramma leptophylla* (L.) Link

Ref. – Cufodontis (1952), Pichi Sermolli (1966), Burrows (1990)

BALE: Goba - Dolo Mena road (over Mt Batu, N slope), 17 km S of Goba (centre), 6°54'03"N, 39°54'28"E, 3700 m, rocks with *Erica* sp., giant *Lobelia* sp., *Helichrysum splendidum*, *Alchemilla johnstonii*, mosses and lichens, 16.1.1998, *Viane RV7128*.

\* *Cheilanthes coriacea* Decne.

Ref. – Cufodontis (1952), Thulin (1993)

HARERGE: 37 km E of junction to Bedesa, along Awash - Harar road, 9°12'21"N, 41°06'06"E, 1850 m, limestone outcrop along roadside overgrown with secondary vegetation (*Opuntia* sp. ...), 13.1.1998, *Viane RV7091* & *RV7092*; between Dire Dawa and junction Addis Ababa - Harar road, 6.3 km NW of junction, 9°29'29"N, 41°45'42"E, 1750 m, below granite boulder in little stream bed, 11.1.1998, *Viane RV7066*.

\* *Cheilanthes inaequalis* (Kunze) Mett.

Ref. – Pichi Sermolli (1977), Friis & Vollesen (1998)

SIDAMO: C. 68 km NE from junction with main road (Mega - Yabelo), 4°17'56"N, 38°49'18"E, c. 1420 m, open woodland savanna with *Acacia* sp., granitic outcrop along trackside, 19.11.1998, *Viane RV7248*.

\*\* *Cosentinia vellea* (Aiton) Tod.

Ref. – Thulin (1993)

SEWEA: 64 km E of Nazret, 8°50'24"N, 39°43'03"E, c. 1350 m, lava field inside big (Garibaldi) caldera, along roadside, 14.1.1998, *Viane RV7101*.

*Distribution.* – Mediterranean region, Madeira, Canary Is., Cape Verde Is., N Africa, Somalia, Middle East.

\* *Doryopteris concolor* var. *kirkii* (Hook.) R.E. Fr.

Ref. – Cufodontis (1952), Friis & al. (1982)

HARERGE: 5 km E of Babile, valley of Daketa, 9°12'47"N, 42°21'53"E, c. 1600 m, degraded woodland with *Ruttya fruticosa*, outcrop of granitic rocks at, 12.1.1998, *Viane RV7072*. — SEWEA: 64 km E of Nazret, 8°50'24"N, 39°43'03"E, c. 1350 m, lava field inside big (Garibaldi) caldera, along roadside, 14.1.1998, *Viane RV7100*.

\* *Pellaea schweinfurthii* (Hieron.) Diels

Ref. – Pichi Sermolli (1977), Friis & Vollesen (1998)

BALE: C. 35 km S of Dolo Mena, along track from Dolo Mena to Negele, 1160 m, open *Acacia* forest, 18.1.1998, *Viane RV7236*.

\* *Pellaea viridis* var. *glauca* (Sim) Sim

HARERGE: 32 km W of Jijiga, 9°15'15"N, 42°37'04"E, c. 1540 m, granitic outcrop, degraded vegetation with *Opuntia* sp. and *Acacia* scrub, 12.1.1998, *Viane RV7078*.

## ASPLENIACEAE

\* *Asplenium buettneri* Hieron.

Ref. – Pichi Sermolli (1977), Friis & al. (1982)

HARERGE: 5 km E of Babile, valley of Daketa, 9°12'47"N, 42°21'53"E, c. 1600 m, degraded woodland with *Ruttya fruticosa*, outcrop of granitic rocks, 12.1.1998, *Viane RV7073*.

\* *Asplenium dalhousiae* Hook.

Ref. – Cufodontis (1952)

HARERGE: 37 km E of junction to Bedesa, along Awash - Harar road, 9°12'21"N, 41°06'06"E,

1850 m, limestone outcrop along roadside overgrown with secondary vegetation (*Opuntia* sp. ...), 13.1.1998, *Viane RV7089*.

\* *Asplenium demerkense* Hieron.

Ref. – Cufodontis (1952), Friis & al. (1982)

BALE: Goba - Dolo Mena road (over Mt Batu, N slope), Sanetti Plateau, 21 km S of Goba, 6°53'00"N, 39°54'17"E, 3860 m, rocks along road with giant *Lobelia*, *Helichrysum splendidum*, *Alchemilla johnstonii*, mosses and lichens, 16.1.1998, *Viane RV7141, RV7142 & RV7164*; Goba - Dolo Mena road (over Mt Batu, S slope), Harena escarpment, 52 km S of Goba, 6°46'36"N, 39°44'45"E, 3150 m, elfin forest with *Hagenia abyssinica* and *Erica arborea* covered with mosses and lichens, 16.1.1998, *Viane RV7159*.

\* *Asplenium formosum* Willd.

Ref. – Pichi Sermolli (1977)

SIDAMO: C. 6 km N of Dila, basalt rocks at bridge over Bora Coca river, 6°29'29"N, 38°19'00"E, c. 1800 m, 20.1.1998, *Viane RV7255*.

\* *Asplenium sandersonii* Hook.

Ref. – Cufodontis (1952), Friis & Vollesen (1998)

BALE: Goba - Dolo Mena road (over Mt Batu, S slope), 6°33'03"N, 39°46'06"E, 1630 m, forest, 18.1.1998, *Viane RV7225 & RV7228*.

\* *Asplenium trichomanes* subsp. *quadrivalens* D. E. Mey.

Ref. – Cufodontis (1952)

BALE: 3 km W of Dinsho (Guré), 7°06'37"N, 39°45'42"E, 2900 m, roadside rocks along rivulet, 15.1.1998, *Viane RV7115 & RV7116*. — SHEWA: Road Shashemene - Ziway - Butajira, 108 km S of junction to Tulu Bolo, 8°09'40"N, 38°25'44"E, c. 2010 m, old overgrown lava field, 21.1.1998, *Viane RV7287*.

Note. – Cufodontis (1952) did not mention a subspecies

\*\* *Asplenium uhligii* Hieron.

BALE: Goba - Dolo Mena road (over Mt Batu, N slope), 6°54'03"N, 39°54'28"E, 3450-3870 m, rocks with *Erica* sp., giant *Lobelia* sp., *Helichrysum splendidum*, *Alchemilla johnstonii*, mosses, lichens, 16.1.1998, *Viane RV7121, RV7122, RV7127, RV7139, RV7140, RV7143, RV7144, RV7145, RV7165 & RV7179*; Goba - Dolo Mena road (over Mt Batu, S slope), 6°46'36"N, 39°44'45"E, 2850-3150 m, elfin forest with *Hagenia abyssinica* and *Erica arborea* covered with mosses, 16.1.1998, *Viane RV7158, RV7180, RV7193 & RV7198*.

Distribution. – Togo, Nigeria, Cameroon, Congo, Kenya, Uganda, Tanzania, Malawi and Zimbabwe.

#### DENNSTAEDTIACEAE

\* *Microlepia speluncae* (L.) T. Moore

Ref. – Pichi Sermolli (1977), Friis & al. (1982), Friis & Vollesen (1998)

BALE: C. 15 km NW of Dolo Mena, 6°31'38"N, 39°44'43"E, 1600 m, park boundary along rivulet, 18.1.1998, *Viane RV7235*.

\* *Pteridium aquilinum* (L.) Kuhn

Ref. – Cei & Pichi Sermolli (1940), Cufodontis (1952), Friis & Vollesen (1998)

BALE: S side of Mt Batu, *Hagenia* forest, 2700 m, trackside, 18.1.1998, *Viane RV7215*.

#### DRYOPTERIDACEAE

\* *Tectaria gemmifera* (Fée) Alston

Ref. – Burrows (1990), Friis & Vollesen (1998)

BALE: C. 15 km NW of Dolo Mena, 6°31'38"N, 39°44'43"E, 1600 m, park boundary along rivulet, 18.1.1998, *Viane RV7230*.

#### HYMENOPHYLLACEAE

\* *Trichomanes pyxidiferum* var. *melanotrichum* (Schltdl.) Schelpe

Ref. – Pichi Sermolli (1955), Friis & al. (1982), Burrows (1990), Friis & Vollesen (1998)

BALE: C. 63 km from Goba, 6°43'18"N, 39°43'18"E, 2380 m, forest with bamboo (grazed), 17.1.1998, *Viane RV7210*; Goba - Dolo Mena road (over Mt Batu, S slope), 6°33'03"N, 39°46'06"E, 1630 m, forest, 18.1.1998, *Viane RV7226* & *RV7227*.

#### OLEANDRACEAE

\* *Arthropteris monocarpa* (Cordem.) C. Chr.

Ref. – Pichi Sermolli (1978), Friis & Vollesen (1998)

BALE: C. 63 km from Goba, 6°43'18"N, 39°43'18"E, 2380 m, forest with bamboo (grazed), 17.1.1998, *Viane RV7212*.

#### POLYPODIACEAE

\* *Drynaria volkensis* Hieron.

Ref. – Cei & Pichi Sermolli (1940), Cufodontis (1952, 1969a), Friis & Vollesen (1998)

BALE: C. 63 km from Goba, 6°43'18"N, 39°43'18"E, 2380 m, forest with bamboo (grazed), 17.1.1998, *Viane RV7211*.

\* *Pyrrhosia schimperiana* (Mett. ex Kuhn) Alston

Ref. – Cufodontis (1952), Burrows (1990), Friis & Vollesen (1998)

SHEWA: Road Shashemene - Ziway - Butajira, 108 km S of junction to Tulu Bolo, 8°09'40"N, 38°25'44"E, 2010 m, old overgrown lava field, 21.1.1998, *Viane RV7283*.

#### PTERIDACEAE

\* *Pteris catoptera* Kunze

Ref. – Burrows (1990), Friis & Vollesen (1998)

BALE: C. 15 km NW of Dolo Mena, 6°31'38"N, 39°44'43"E, 1600 m, park boundary along rivulet, 18.1.1998, *Viane RV7234*.

\* *Pteris dentata* Forssk.

Ref. – Ballard (1941), Cufodontis (1952), Friis & al. (1982), Burrows (1990)

SIDAMO: Wendo Genet, 25 km S of Shashemene, 7°04'41"N, 38°38'32"E, 2080 m, secondary forest with hot springs, on mossy, NW exposed boulders, 21.1.1998, *Viane RV7274*.

#### THELYPTERIDACEAE

\* *Amauropelta bergiana* (Schlechtend.) Holttum

Ref. – Pichi Sermolli (1964), Cufodontis (1969a), Friis & al. (1982), Friis & Vollesen (1998)

BALE: C. 15 km NW of Dolo Mena, 6°31'38"N, 39°44'43"E, 1600 m, park boundary along rivulet, 18.1.1998, *Viane RV7232*.

\* *Pseudocyclosorus pulcher* (Bory ex Willd.) Holttum

Ref. – Holttum (1974), Friis & al. (1982)

BALE: C. 15 km NW of Dolo Mena, 6°31'38"N, 39°44'43"E, 1600 m, park boundary along rivulet, 18.1.1998, *Viane RV7231*.

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