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Bryophytes collected during the 12th “Iter Mediterraneum” (Tunisia, 24 March – 4 April, 2014). First contribution

Abstract

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Part of the bryophytes collected during Iter Mediterraneum XII is listed. Some noteworthy species were found: *Dicranella howei*, had so far been recorded only doubtfully from Tunisia; *Funaria hygrometrica*, *Grimmia laevigata*, *Grimmia trichophylla*, *Imbricbryum alpinum*, *Pogonatum nanum*, *Rhynchostegium riparioides*, *Scleropodium touretii*, *Scorpiurium circinatum*, *Thamnobryum alopecurum*, *Timmia barbuloidea*, *Tortella squarrosa*, *Tortula muralis* and *Tortula vahliana*, had not been reported from that country for more than half a century.

Key words: Flora of Tunisia, Bryophytes, Itinera Mediterranea, OPTIMA.

Introduction

During the 12th Iter Mediterraneum of OPTIMA, held in Tunisia from 24 March to 4 April 2014, bryophyte specimens were collected by G. Domina and F. M. Raimondo. The material, 428 specimens in total, is deposited in the *Herbarium Mediterraneum Panormitanum* (PAL).

In this contribution a preliminary list is presented, limited to the so far identified species. Nomenclature and statement of presence in Tunisia follow Ros & al. (2007) for the liverworts and Ros & al. (2013) for the mosses.

Results

55 taxa (1 hornwort, 11 liverworts, 44 mosses) belonging to 30 genera of 26 families have been identified. The presence of *Dicranella howei*, a species reported from Tunisia but doubtfully, is confirmed. Moreover, 14 taxa that had not been recorded from Tunisia for at least than half a century have been found again. They are marked with an asterisk (*) in the following list. Figures in **bold** refer to the numbered col-

lecting localities detailed in Greuter & Domina (2015: 23-25, Table 1). To make the paper self-contained, locality data are nevertheless repeated here.

ANTHOCEROTOPHYTINA (hornworts)

Phymatoceros bulbiculosus (Brot.) Stotler & al. – **18**: Gouv. Bizerte, coast c. 6.5 km NNW Bizerte, near the Roman grottos, 0-60 m a.s.l., 37°19'59"N, 9°50'43"E, 29/3/2014, *Raimondo 1*.

MARCHANTIOPHYTINA (liverworts)

Calypogeia fissa (L.) Raddi – **40**: Gouv. Jendouba, NE of Aïn Draham, 730 m a.s.l., 36°47'23"N, 8°41'22"E, 3/4/2014, *Raimondo 2*.

Cephaloziella turneri (Hook.) Müll. Frib. – **40**: Gouv. Jendouba, NE of Aïn Draham, 730 m a.s.l., 36°47'23"N, 8°41'22"E, 3/4/2014, *Raimondo 3*.

Conocephalum conicum (L.) Dumort. – **39**: Gouv. Jendouba, 4.5 km S of Aïn Draham, roadside, 680-700 m a.s.l., 36°44'20"N, 8°40'57"E, 3/4/2014, *Raimondo 4*.

Frullania dilatata (L.) Dumort. – **40**: Gouv. Jendouba, NE of Aïn Draham, 730 m a.s.l., 36°47'23"N, 8°41'22"E, 3/4/2014, *Raimondo 5*; **41**: Gouv. Jendouba, 2.8 km S of Aïn Draham, c. 1 km NE of the sport training centre, 660-670 m a.s.l., 36°45'16"N, 8°49'17"E, 4/4/2014, *Raimondo 6*.

Jungermannia gracillima Sm. – **41**: Gouv. Jendouba, 2.8 km S of Aïn Draham, c. 1 km NE of the sport training centre, 660-670 m a.s.l., 36°45'16"N, 8°49'17"E, 4/4/2014, *Raimondo 7*.

Lunularia cruciata (L.) Lindb. – **40**: Gouv. Jendouba, NE of Aïn Draham, 730 m a.s.l., 36°47'23"N, 8°41'22"E, 3/4/2014, *Raimondo 8*.

Porella platyphylla (L.) Pfeiff. – **40**: Gouv. Jendouba, NE of Aïn Draham, 730 m a.s.l., 36°47'23"N, 8°41'22"E, 3/4/2014, *Raimondo 9*.

Reboulia hemisphaerica (L.) Raddi – **40**: Gouv. Jendouba, NE of Aïn Draham, 730 m a.s.l., 36°47'23"N, 8°41'22"E, 3/4/2014, *Raimondo 10*.

Riccia gougetiana Durieu & Mont. var. *gougetiana* – **5**: Gouv. Nabeul, Massif of Jebel Sidi Abderrahmane, c. 9 km NW Al Middah, NW of small village, 200-280 m a.s.l., 36°46'45"N, 10°45'31"E, 25.3.2014, *Domina 11*.

Targionia hypophylla L. – **37**: Gouv. Jendouba, El Feidja National Park, track to a small forest house ENE of the Park Centre, 850-865 m a.s.l., 36°30'25"N, 8°19'47"E, 3/4/2014, *Raimondo 12*.

BRYOPHYTINA (mosses)

Barbula unguiculata Hedw. – **10**: Gouv. Nabeul, c. 1.6 km NW of El Haouaria, coast near the Phoenician-Roman caves, 5-70 m a.s.l., 37°3'28"N, 10°59'46"E, 26/3/2014, *Domina 13*.

Bryum dichotomum Hedw. – **5**: Gouv. Nabeul, Massif of Jebel Sidi Abderrahmane, c. 9 km NW Al Middah, NW of small village, 200-280 m a.s.l., 36°46'45"N, 10°45'31"E, 25.3.2014, *Domina 14*.

Dicranella heteromalla (Hedw.) Schimp. – **24**: Gouv. Bizerte, city of Bizerta, promenade by the beach hotels, 10 m a.s.l., 37°16'51"N, 9°52'38"E, 31/3/2014, *Raimondo 15*.

- **Dicranella howei* Renaud & Cardot – **10**: Gouv. Nabeul, c. 1.6 km NW of El Haouaria, coast near the Phoenician-Roman caves, 5-70 m a.s.l., 37°3'28"N, 10°59'46"E, 26/3/2014, *Domina 16*; **21**: Gouv. Bizerte, Cap Serrat, E slope and around houses on the beach, 0-50 m a.s.l., 37°13'13"N, 9°13'24"E, 30/3/2014, *Raimondo 17*.
- Didymodon insulanus* (De Not.) M. O. Hill – **40**: Gouv. Jendouba, NE of Aïn Draham, 730 m a.s.l., 36°47'23"N, 8°41'22"E, 3/4/2014, *Raimondo 18*.
- Didymodon luridus* Hornsch. – **10**: Gouv. Nabeul, c. 1.6 km NW of El Haouaria, coast near the Phoenician-Roman caves, 5-70 m a.s.l., 37°3'28"N, 10°59'46"E, 25.3.2014, *Domina 19*; **17**: Gouv. Bizerte, Jebel Ichkeul, S of Lake Ichkeul, c. 8 km W of Menzel Bourgiba, peninsula N and hill W of the mineral well, 0-100 m a.s.l., 37°8'20"N, 9°41'32"E, 29/3/2014, *Raimondo 20*.
- Encalypta vulgaris* Hedw. – **12**: Gouv. Zaghuan, Massif of Jebel Zaghuan, road to Jebel Zaghuan from the NW side, 500-630 m a.s.l., 36°21'53"N, 10°5'25"E, 27/3/2014, *Domina 21*.
- Fissidens bryoides* Hedw. var. *bryoides* – **21**: Gouv. Bizerte, Cap Serrat, E slope and around houses on the beach, 0-50 m a.s.l., 37°13'13"N, 9°13'24"E, 30/3/2014, *Raimondo 22*.
- Fissidens serrulatus* Brid. – **40**: Gouv. Jendouba, NE of Aïn Draham, 730 m a.s.l., 36°47'23"N, 8°41'22"E, 3/4/2014, *Raimondo 23*.
- Fissidens taxifolius* Hedw. subsp. *taxifolius* – **40**: Gouv. Jendouba, NE of Aïn Draham, 730 m a.s.l., 36°47'23"N, 8°41'22"E, 3/4/2014, *Raimondo 24*.
- **Funaria hygrometrica* Hedw. – **37**: Gouv. Jendouba, El Feidja National Park, track to a small forest house ENE of the Park Centre, 850-865 m a.s.l., 36°30'25"N, 8°19'47"E, 3/4/2014, *Raimondo 25*; **21**: Gouv. Bizerte, Cap Serrat, E slope and around houses on the beach, 0-50 m a.s.l., 37°13'13"N, 9°13'24"E, 30/3/2014, *Raimondo 26*.
- **Grimmia laevigata* (Brid.) Brid. – **36**: Gouv. Jendouba, El Feidja National Park, between the Park Centre and the watch tower, on rocks, 710-770 m a.s.l., 36°29'34"N, 8°18'19"E, 3/4/2014, *Raimondo 27*.
- Grimmia lisae* De Not. – **40**: Gouv. Jendouba, NE of Aïn Draham, 730 m a.s.l., 36°47'23"N, 8°41'22"E, 3/4/2014, *Raimondo 28*.
- Grimmia pulvinata* (Hedw.) Sm – **16**: Gouv. Ben Arous, Jebel Ressayas, c. 3.5 km SW of Dawwar at Talib 'Ali, 80-200 m a.s.l., 36°36'24"N, 10°19'20"E, 28/3/2014, *Domina 29*.
- **Grimmia trichophylla* Grev. – **21**: Gouv. Bizerte, Cap Serrat, E slope and around houses on the beach, 0-50 m a.s.l., 37°13'13"N, 9°13'24"E, 30/3/2014, *Raimondo 30*.
- Homalothecium sericeum* (Hedw.) Schimp. – **40**: Gouv. Jendouba, NE of Aïn Draham, 730 m a.s.l., 36°47'23"N, 8°41'22"E, 3/4/2014, *Raimondo 31*; **12**: Gouv. Zaghuan, Massif of Jebel Zaghuan, road to Jebel Zaghuan from the NW side, 500-630 m a.s.l., 37°8'20"N, 9°41'32"E, 27/3/2014, *Domina 32*.
- Hypnum cupressiforme* Hedw. var. *cupressiforme* – **40**: Gouv. Jendouba, NE of Aïn Draham, 730 m a.s.l., 36°47'23"N, 8°41'22"E, 3/4/2014, *Raimondo 33*; **41**: Gouv. Jendouba, 2.8 km S of Aïn Draham, c. 1 km NE of the sport training centre, 660-670 m a.s.l., 36°45'16"N, 8°49'17"E, 4/4/2014, *Raimondo 34*; **21**: Gouv. Bizerte, Cap Serrat, E slope and around houses on the beach, 0-50 m a.s.l., 37°13'13"N, 9°13'24"E, 30/3/2014, *Raimondo 35*.

- *Imbribryum alpinum* (Huds. ex With.) N. Pedersen – **41**: Gouv. Jendouba, 2.8 km S of Aïn Draham, c. 1 km NE of the sport training centre, 660-670 m a.s.l., 36°45'16"N, 8°49'17"E, 4/4/2014, *Raimondo* 36.
- Kindbergia praelonga* (Hedw.) Ochyra – **40**: Gouv. Jendouba, NE of Aïn Draham, 730 m a.s.l., 36°47'23"N, 8°41'22"E, 3/4/2014, *Raimondo* 37; **37**: Gouv. Jendouba, El Feidja National Park, track to a small forest house ENE of the Park Centre, 850-865 m a.s.l., 36°30'25"N, 8°19'47"E, 3/4/2014, *Raimondo* 38.
- Leptodon smithii* (Hedw.) F. Weber & D. Mohr – **40**: Gouv. Jendouba, NE of Aïn Draham, 730 m a.s.l., 36°47'23"N, 8°41'22"E, 3/4/2014, *Raimondo* 39; **34**: Gouv. Jendouba, 1 km N of Aïn Draham, 770-780 m a.s.l., 36°47'24"N, 8°41'3"E, 2/4/2014, *Raimondo* 40; **25**: Gouv. Bizerte, c. 5 km SW of Bizerta, N Habib Arifa, along the road in parallel to the highway, 20-25 m a.s.l., 37°14'53"N, 9°55'3"E, 31/3/2014, *Raimondo* 41.
- Leucodon sciuroides* (Hedw.) Schwägr. – **40**: Gouv. Jendouba, NE of Aïn Draham, 730 m a.s.l., 36°47'23"N, 8°41'22"E, 3/4/2014, *Raimondo* 42; **37**: Gouv. Jendouba, El Feidja National Park, track to a small forest house ENE of the Park Centre, 850-865 m a.s.l., 36°30'25"N, 8°19'47"E, 03/4/2014, *Raimondo* 43; **34**: Gouv. Jendouba, 1 km N of Aïn Draham, 770-780 m a.s.l., 36°47'24"N, 8°41'3"E, 2/4/2014, *Raimondo* 44.
- Nogopterium gracile* (Hedw.) Crosby & W. R. Buck – **40**: Gouv. Jendouba, NE of Aïn Draham, 730 m a.s.l., 36°47'23"N, 8°41'22"E, 3/4/2014, *Raimondo* 45; **25**: Gouv. Bizerte, c. 5 km SW of Bizerta, N Habib Arifa, along the road in parallel to the highway, 20-25 m a.s.l., 37°14'53"N, 9°55'3"E, 31/3/2014, *Raimondo* 46.
- Orthotrichum affine* Schrad. ex Brid. – **34**: Gouv. Jendouba, 1 km N of Aïn Draham, 770-780 m a.s.l., 36°47'24"N, 8°41'3"E, 2/4/2014, *Raimondo* 47.
- Orthotrichum diaphanum* Schrad. ex Brid. – **40**: Gouv. Jendouba, NE of Aïn Draham, 730 m a.s.l., 36°47'23"N, 8°41'22"E, 3/4/2014, *Raimondo* 48; **25**: Gouv. Bizerte, c. 5 km SW of Bizerta, N Habib Arifa, along the road in parallel to the highway, 20-25 m a.s.l., 37°14'53"N, 9°55'3"E, 31/3/2014, *Raimondo* 49.
- Orthotrichum rupestre* Schleich. ex Schwägr. – **40**: Gouv. Jendouba, NE of Aïn Draham, 730 m a.s.l., 36°47'23"N, 8°41'22"E, 3/4/2014, *Raimondo* 50; **36**: Gouv. Jendouba, El Feidja National Park, between the Park Centre and the watch tower, on rocks, 710-770 m a.s.l., 36°29'34"N, 8°18'19"E, 3/4/2014, *Raimondo* 51.
- *Pogonatum nanum* (Hedw.) P. Beauv. – **41**: Gouv. Jendouba, 2.8 km S of Aïn Draham, c. 1 km NE of the sport training centre, 660-670 m a.s.l., 36°45'16"N, 8°49'17"E, 4/4/2014, *Raimondo* 52; **21**: Gouv. Bizerte, Cap Serrat, E slope and around houses on the beach, 0-50 m a.s.l., 37°13'13"N, 9°13'24"E, 30/3/2014, *Raimondo* 53.
- Ptychostomum capillare* (Hedw.) Holyoak & N. Pedersen – **40**: Gouv. Jendouba, NE of Aïn Draham, 730 m a.s.l., 36°47'23"N, 8°41'22"E, 3/4/2014, *Raimondo* 54; **24**: Gouv. Bizerte, city of Bizerta, promenade by the beach hotels, 10 m a.s.l., 37°16'51"N, 9°52'38"E, 31/3/2014, *Raimondo* 55; **25**: Gouv. Bizerte, c. 5 km SW of Bizerta, N Habib Arifa, along the road in parallel to the highway, 20-25 m a.s.l., 37°14'53"N, 9°55'3"E, 31/3/2014, *Raimondo* 56; **21**: Gouv. Bizerte, Cap Serrat, E slope and around houses on the beach, 0-50 m a.s.l., 37°13'13"N, 9°13'24"E, 30/3/2014, *Raimondo* 57.
- Ptychostomum torquescens* (Bruch & Schimp.) Ros & Mazimpaka – **1**: Gouv. Ben Arous, Massif of Bou Kornine, c. 3-4 km SSE of Hammam-Lif, 120-300 m a.s.l., 36°42'15"N, 10°20'31"E, 24.3.2014, *Domina* 58.

- **Rhynchostegium riparioides* (Hedw.) Cardot – **40**: Gouv. Jendouba, NE of Aïn Draham, 730 m a.s.l., 36°47'23"N, 8°41'22"E, 3/4/2014, *Raimondo* 59.
- **Scleropodium touretii* (Brid.) L. F. Koch – **40**: Gouv. Jendouba, NE of Aïn Draham, 730 m a.s.l., 36°47'23"N, 8°41'22"E, 3/4/2014, *Raimondo* 60; **16**: Gouv. Ben Arous, Jebel Ressayas, c. 3.5 km SW of Dawwar at Talib 'Ali, 80-200 m a.s.l., 36°36'24"N, 10°19'20"E, 28/3/2014, *Domina* 61.
- **Scorpiurium circinatum* (Bruch) M. Fleisch. & Loeske – **24**: Gouv. Bizerte, city of Bizerta, promenade by the beach hotels, 10 m a.s.l., 37°16'51"N, 9°52'38"E, 31/3/2014, *Raimondo* 62; **1**: Gouv. Ben Arous, Massif of Bou Kornine, c. 3-4 km SSE of Hammam-Lif, 120-300 a. s. l., 36°42'15"N, 10°20'31"E, 24.3.2014, *Domina* 63.
- Sphagnum auriculatum* Schimp – **41**: Gouv. Jendouba, 2.8 km S of Aïn Draham, c. 1 km NE of the sport training centre, 660-670 m a.s.l., 36°45'16"N, 8°49'17"E, 3/4/2014, *Raimondo* 64.
- Syntrichia laevipila* Brid. – **40**: Gouv. Jendouba, NE of Aïn Draham, 730 m a.s.l., 36°47'23"N, 8°41'22"E, 3/4/2014, *Raimondo* 65; **34**: Gouv. Jendouba, 1 km N of Aïn Draham, 770-780 m a.s.l., 36°47'24"N, 8°41'3"E, 2/4/2014, *Raimondo* 66.
- **Thamnobryum alopecurum* (Hedw.) Nieuwl. ex Gangulee var. *alopecurum* – **37**: Gouv. Jendouba, El Feidja National Park, track to a small forest house ENE of the Park Centre, 850-865 m a.s.l., 36°30'25"N, 8°19'47"E, 3/4/2014, *Raimondo* 67.
- **Timmiella barbulooides* (Brid.) Mönk. – **17**: Gouv. Bizerte, Jebel Ichkeul, S of Lake Ichkeul, c. 8 km W of Menzel Bourgiba, peninsula N and hill W of the mineral well, 0-100 m a.s.l., 37°8'20"N, 9°41'32"E, 29/3/2014, *Raimondo* 68.
- Tortella flavovirens* (Bruch) Broth. var. *flavovirens* – **1**: Gouv. Ben Arous, Massif of Bou Kornine, c. 3-4 km SSE of Hammam-Lif, 120-300 m a.s.l., 36°42'15"N, 10°20'31"E, 24.3.2014, *Domina* 69.
- Tortella nitida* (Lindb.) Broth. – **10**: Gouv. Nabeul, c. 1.6 km NW of El Haouaria, coast near the Phoenician-Roman caves, 5-70 m a.s.l., 37°3'28"N, 10°59'46"E, 25.3.2014, *Domina* 70.
- **Tortella squarrosa* (Brid.) Limpr. – **1**: Gouv. Ben Arous, Massif of Bou Kornine, c. 3-4 km SSE of Hammam-Lif, 120-300 m a.s.l., 36°42'15"N, 10°20'31"E, 24.3.2014, *Domina* 71.
- Tortula subulata* Hedw. – **40**: Gouv. Jendouba, NE of Aïn Draham, 730 m a.s.l., 36°47'23"N, 8°41'22"E, 3/4/2014, *Raimondo* 72.
- **Tortula muralis* Hedw. – **1**: Gouv. Ben Arous, Massif of Bou Kornine, c. 3-4 km SSE of Hammam-Lif, 120-300 m a.s.l., 36°42'15"N, 10°20'31"E, 24.3.2014, *Domina* 73.
- **Tortula vahaliana* (Schultz.) Mont. – **21**: Gouv. Bizerte, Cap Serrat, E slope and around houses on the beach, 0-50 m a.s.l., 37°13'13"N, 9°13'24"E, 30/3/2014, *Raimondo* 74.
- Trichostomum brachydontium* Bruch – **40**: Gouv. Jendouba, NE of Aïn Draham, 730 m a.s.l., 36°47'23"N, 8°41'22"E, 3/4/2014, *Raimondo* 75; **24**: Gouv. Bizerte, city of Bizerta, promenade by the beach hotels, 10 m a.s.l., 37°16'51"N, 9°52'38"E, 31/3/2014, *Raimondo* 76; **17**: Gouv. Bizerte, Jebel Ichkeul, S of Lake Ichkeul, c. 8 km W of Menzel Bourgiba, peninsula N and hill W of the mineral well, 0-100 m a.s.l., 37°8'20"N, 9°41'32"E, 29/3/2014, *Raimondo* 77; **1**: Gouv. Ben Arous, Massif of Bou Kornine, c. 3-4 km SSE of Hammam-Lif, 120-300 a.s.l., 36°42'15"N, 10°20'31"E, 24.3.2014, *Domina* 78.

- Weissia condensa* (Voit) Lindb. var. *condensa* – **5**: Gouv. Nabeul, Massif of Jebel Sidi Abderrahmane, c. 9 km NW Al Middah, NW of small village, 200-280 m a.s.l., 36°46'45"N, 10°45'31"E, 25.3.2014, *Domina* 79; **16**: Gouv. Ben Arous, Jebel Rensas, c. 3.5 km SW of Dawwar at Talib ‘Ali, 80-200 m a.s.l., 36°36'24"N, 10°19'20"E, 28/3/2014, *Domina* 80.
- Zygodon rupestris* Schimp. ex Lorentz – **40**: Gouv. Jendouba, NE of Aïn Draham, 730 m a.s.l., 36°47'23"N, 8°41'22"E, 3/4/2014, *Raimondo* 81; **34**: Gouv. Jendouba, 1 km N of Aïn Draham, 770-780 m a.s.l., 36°47'24"N, 8°41'3"E, 2/4/2014, *Raimondo* 82.

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