

**APPENDIX. Supplementary data to the article:**

Metodiev, L. 2019. Rare and little-known ammonites from the Lower and Middle Jurassic of the Western and Central Balkan Mts (Bulgaria). *Geologica Balcanica* 48 (1), 3–41.

Table A1

*Ammonite whorl dimensions as measured in this study. Measurements (in mm) were taken at the maximum preserved diameter*

| Specimen   | Diameter (D) | Whorl height (Wh) | Wh/D | Whorl breadth (Wb) | Wb/D | Umbilical width (U) | U/D  | Determination   | Stage/substage<br>Ammonite Zone   |
|------------|--------------|-------------------|------|--------------------|------|---------------------|------|---|---|
| Fig. 2a    | –            | 23.0              | –    | –                  | –    | 35.0                | –    | <i>Platypleuroceras brevispina</i> (J. de C. Sowerby)                             | lower Pliensbachian<br><i>Uptonia jamesoni</i> Zone   |
| Fig. 2b, c | ~32.5        | 11.4              | 0.35 | 7.2                | 0.22 | 12.0                | 0.37 | <i>Fucinicer</i> ex gr. <i>costicillatum</i> (Fucini) – <i>detractum</i> (Fucini) | lower Pliensbachian<br><i>Beaniceras luridum</i> / <i>Aegoceras maculatum</i> zones boundary interval |
| Fig. 2d, e | –            | 68.5              | –    | 36.5               | –    | –                   | –    | <i>Tropidoceras flandrini</i> (Dumortier)   | lower Pliensbachian<br><i>Uptonia jamesoni</i> Zone   |
| Fig. 2f, g | 39.5         | 10.7              | 0.27 | 7.5                | 0.19 | 19.3                | 0.49 | <i>Uptonia bronni</i> (Roemer)  | lower Pliensbachian<br><i>Uptonia jamesoni</i> Zone   |
| Fig. 2h    | at 28.0      | 8.6               | 0.31 | 6.3                | 0.22 | 15.0                | 0.54 | <i>Uptonia bronni</i> (Roemer)  | lower Pliensbachian<br><i>Uptonia jamesoni</i> Zone   |
| Fig. 2i, j | 26.4         | 10.0              | 0.38 | 9.0                | 0.34 | 11.3                | 0.43 | <i>Pleuroceras solare</i> (Phillips)  | upper Pliensbachian<br><i>Pleuroceras spinatum</i> Zone   |
| Fig. 3a    | 37.0         | 16.0              | 0.43 | –                  | –    | 6.0                 | 0.16 | <i>Vacekia stephensi</i> Buckman  | Aalenian<br><i>Brasilia bradfordensis</i> Zone  |
| Fig. 3b    | ~28.0        | 9.5               | 0.33 | –                  | –    | 10.0                | 0.37 | <i>Brasilia geisingensis</i> Dietze et al. [m]                                    | Aalenian<br><i>Brasilia bradfordensis</i> Zone  |
| Fig. 3c    | –            | –                 | –    | –                  | –    | –                   | –    | <i>Brasilia geisingensis</i> Dietze et al. [M]                                    | Aalenian<br><i>Brasilia bradfordensis</i> Zone  |
| Fig. 4a, b | 159.0        | 77.0              | 0.48 | 29.0               | 0.18 | 31.0                | 0.19 | <i>Csernyeiceras verpillierense</i> (Roman & Boyer)                               | Aalenian<br><i>Leioceras opalinum</i> Zone  |
| Fig. 5a, b | 33.0         | 16.0              | 0.48 | 9.0                | 0.27 | 7.5                 | 0.23 | <i>Witchellia laeviuscula</i> (J. de C. Sowerby)                                  | lower Bajocian<br><i>Witchellia laeviuscula</i> Zone  |
| Fig. 5c, d | 40.0         | 17.0              | 0.43 | 11.0               | 0.28 | 12.0                | 0.30 | <i>Witchellia pseudoromanoides</i> Dietze, Chandler & Schweigert                  | lower Bajocian<br><i>Witchellia laeviuscula</i> Zone  |
| Fig. 5e    | 33.8         | 15.2              | 0.44 | –                  | –    | 9.2                 | 0.28 | <i>Witchellia pseudoromanoides</i> Dietze, Chandler & Schweigert                  | lower Bajocian<br><i>Witchellia laeviuscula</i> Zone  |

Table A1  
(Continued)

| Specimen   | Diameter (D) | Whorl height (Wh) | Wh/D | Whorl breadth (Wb) | Wb/D | Umbilical width (U) | U/D  | Determination  | Stage/substage<br>Ammonite Zone                                 |
|------------|--------------|-------------------|------|--------------------|------|---------------------|------|--|---|
| Fig. 5f    | ~49.0        | ~23.0             | 0.47 | 10.2               | 0.21 | 11.5                | 0.23 | <i>Witchellia</i> aff. <i>romanooides</i> (Douville) | lower Bajocian<br><i>Witchellia laeviuscula</i> Zone            |
| Fig. 5g, h | 55.0         | 20.8              | 0.38 | 13.0               | 0.24 | 19.0                | 0.25 | <i>Witchellia patefactor</i> (Buckman)               | lower Bajocian<br><i>Witchellia laeviuscula</i> Zone            |
| Fig. 5i    | 49.0         | 19.0              | 0.39 | -                  | -    | 17.6                | 0.36 | <i>Witchellia</i> cf. <i>falcata</i> Buckman         | lower Bajocian<br><i>Witchellia laeviuscula</i> Zone            |
| Fig. 5j    | 47.0         | 18.0              | 0.38 | -                  | -    | 16.5                | 0.35 | <i>Witchellia</i> cf. <i>falcata</i> Buckman         | lower Bajocian<br><i>Witchellia laeviuscula</i> Zone            |
| Fig. 5k-n  | -            | 41.4              | -    | 24.9               | -    | ~24.0               | -    | <i>Witchellia glauca</i> Buckman                     | lower Bajocian<br><i>Witchellia laeviuscula</i> Zone            |
| Fig. 6a, b | 27.8         | 9.3               | 0.33 | 8.3                | 0.30 | 11.7                | 0.42 | <i>Pelekodites moisyi</i> (Brasil)                   | lower Bajocian<br><i>W. laeviuscula</i> - <i>O. sauzei</i> Zone |
| Fig. 6c, d | 24.2         | 8.0               | 0.23 | 7.0                | 0.29 | 10.0                | 0.41 | <i>Pelekodites moisyi</i> (Brasil)                   | lower Bajocian<br>? <i>Otoites sauzei</i> Zone                  |
| Fig. 6e    | 38.5         | 13.5              | 0.35 | -                  | -    | 16.0                | 0.42 | <i>Pelekodites aurifer</i> (Buckman)                 | lower Bajocian<br><i>Witchellia laeviuscula</i> Zone            |
| Fig. 6f, g | ~32.0        | 10.0              | 0.31 | 9.5                | 0.30 | 13.0                | 0.41 | <i>Pelekodites aurifer</i> (Buckman)                 | lower Bajocian<br><i>Witchellia laeviuscula</i> Zone            |
| Fig. 6h, i | 37.6         | 11.8              | 0.31 | 12.2               | 0.32 | 15.0                | 0.40 | <i>Pelekodites nannomorphus</i> (Buckman)            | lower Bajocian<br><i>Witchellia laeviuscula</i> Zone            |
| Fig. 7a    | 24.0         | 9.2               | 0.38 | -                  | -    | 8.7                 | 0.36 | <i>Sonninia corrugata</i> (J. de C. Sowerby)         | lower Bajocian<br><i>Otoites sauzei</i> Zone                    |
| Fig. 7b    | 21.0         | 8.5               | 0.40 | -                  | -    | 8.0                 | 0.38 | <i>Sonninia corrugata</i> (J. de C. Sowerby)         | lower Bajocian<br><i>Otoites sauzei</i> Zone                    |
| Fig. 7c, d | 26.5         | 9.4               | 0.35 | 12.4               | 0.47 | 10.0                | 0.38 | <i>Sonninia corrugata</i> (J. de C. Sowerby)         | lower Bajocian<br><i>Otoites sauzei</i> Zone                    |
| Fig. 7e, f | -            | 12.0              | -    | 10.0               | -    | 10.0                | -    | <i>Sonninia</i> ex gr. <i>propinquans</i> (Bayle)    | lower Bajocian<br><i>Otoites sauzei</i> Zone                    |
| Fig. 7g    | ~63.0        | 28.0              | 0.44 | -                  | -    | 19.5                | 0.31 | <i>Sonninia</i> aff. <i>propinquans</i> (Bayle)      | lower Bajocian<br><i>Otoites sauzei</i> Zone                    |
| Fig. 8a, b | 49.8         | 18.5              | 0.37 | 32.0               | 0.64 | 21.0                | 0.42 | <i>Epalxites anceps</i> (Quenstedt)                  | lower Bajocian<br><i>Otoites sauzei</i> Zone                    |

Table A1  
(Continued)

| Specimen    | Diameter (D) | Whorl height (Wh) | Wh/D   | Whorl breadth (Wb) | Wb/D | Umbilical width (U) | U/D  | Determination   | Stage/substage<br>Ammonite Zone  |
|-------------|--------------|-------------------|--------|--------------------|------|---------------------|------|---|--|
| Fig. 8c, d  | 39.6         | 14.0              | 0.35   | 20.3               | 0.51 | 17.6                | 0.44 | <i>Epalxites laticostatus</i><br>Westermann                       | lower Bajocian<br><i>O. sauzei/S. humphriesianum</i> Zone                    |
| Fig. 8e, f  | 48.0         | 17.0              | (0.35) | 23.5               | 0.49 | 20.0                | 0.42 | <i>Gerzenites postrugosus</i><br>Westermann                       | lower Bajocian<br>? <i>Stephanoceras humphriesianum</i> Zone                 |
| Fig. 8g, h  | 30.0         | 10.0              | 0.33   | 16.0               | 0.53 | 12.0                | 0.40 | <i>Gerzenites postrugosus</i><br>Westermann                       | lower Bajocian<br>? <i>Stephanoceras humphriesianum</i> Zone                 |
| Fig. 9a     | 47.0         | 23.0              | 0.49   | –                  | –    | 11.5                | 0.24 | <i>Bradfordia (Iokastelia)</i><br><i>costidensa</i> Imlay         | lower Bajocian<br><i>Otoites sauzei</i> – <i>S. humphriesianum</i> Zone      |
| Fig. 9b     | 50.6         | 24.3              | 0.48   | 11.5               | 0.23 | 13.0                | 0.26 | <i>Bradfordia (Iokastelia)</i><br><i>praeradiata</i> (Douvillé)   | lower Bajocian<br>? <i>Witchellia laeviuscula</i> Zone                       |
| Fig. 9c     | 49.1         | 27.0              | 0.55   | –                  | –    | 7.0                 | 0.14 | <i>Alcidia mamertensis</i> (Waagen)                               | lower Callovian<br><i>Macrocephalites gracilis</i> Zone                      |
| Fig. 9d–f   | 71.5         | 32.0              | 0.45   | 11.0               | 0.15 | 14.6                | 0.20 | <i>Alcidia aperta</i> (Spath)                                     | upper Callovian<br><i>Pseudopeltoceras</i> spp. Zone                         |
| Fig. 10a    | ~45.0        | 17.5              | 0.39   | –                  | –    | 13.7                | 0.30 | <i>Bullatimorphites?</i> sp. [m]                                  | lower Bathonian<br><i>Siemiradzka repljanensis</i> Zone                      |
| Fig. 10b    | ~40.0        | 13.0              | 0.33   | –                  | –    | 12.0                | 0.30 | <i>Bullatimorphites?</i> sp. [m]                                  | middle Bathonian<br><i>Procerites progracilis</i> Zone                       |
| Fig. 10c    | 61.5         | 28.0              | 0.46   | 22.0               | 0.36 | 15.0                | 0.24 | <i>Kheraicerias bullatus</i><br>(d'Orbigny) [M]                   | lower Callovian<br><i>Macrocephalites herveyi</i> Zone                       |
| Fig. 10d, e | 29.5         | 9.0               | 0.31   | 13.0               | 0.44 | 12.0                | 0.41 | <i>Hemigarantia julii</i> (d'Orbigny)                             | upper Bathonian<br><i>Procerites hodsoni</i> – <i>Oxycerites oppeli</i> Zone |
| Fig. 10f    | ~41.0        | 16.0              | 0.39   | 20.0               | 0.49 | 10.5                | 0.26 | <i>Kheraicerias bullatus</i><br>(d'Orbigny) [m]                   | lower Callovian<br><i>Macrocephalites herveyi</i> Zone                       |
| Fig. 11a, b | 45.0         | 15.0              | 0.33   | –                  | –    | 21.5                | 0.48 | <i>Lobosphinctes costulatusus</i><br>(Buckman)                    | upper Bajocian<br><i>Parkinsonia parkinsoni</i> Zone                         |
| Fig. 11c, d | 70.0         | 23.0              | 0.33   | 14.0               | 0.20 | 31.0                | 0.44 | <i>Siemiradzka mangoldi</i> sp. n.<br>[m]                         | upper Bathonian<br><i>Oxycerites oppeli</i> Zone                             |
| Fig. 11e    | 60.5         | 23.0              | 0.38   | 17.0               | 0.28 | 23.0                | 0.38 | <i>Homoeoplanulites mouterdei</i><br>Mangold, Martin & Prieur [m] | upper Bathonian<br><i>Procerites hodsoni</i> Zone                            |

Table A1  
(Continued)

| Specimen    | Diameter<br>(D) | Whorl height<br>(Wh) | Wh/D      | Whorl breadth<br>(Wb) | Wb/D   | Umbilical<br>width (U) | U/D       | Determination   | Stage/substage<br>Ammonite Zone                         |
|-------------|-----------------|----------------------|-----------|-----------------------|--------|------------------------|-----------|---|---|
| Fig. 12a–c  | 67.0            | 27.0                 | 0.40      | 23.6                  | 0.35   | 22.0                   | 0.33      | <i>Homoeoplanulites</i> ex gr. <i>moorei</i><br>(Oppel, in Neumayr) | lower Callovian<br><i>Macrocephalites gracilis</i> Zone |
| Fig. 13a    | 76.4            | 26.0                 | 0.34      | 18.4                  | 0.24   | 33.0                   | 0.43      | <i>Binatisphinctes</i> aff. <i>binatus</i><br>(Leckenby) [m]        | upper Callovian<br><i>Pseudopeltoceras</i> spp. Zone    |
| Fig. 13b    | 150.6           | 42.0                 | 0.28      | 28.0                  | 0.19   | 76.0                   | 0.50      | <i>Binatisphinctes</i> cf. <i>hamulatus</i><br>(Buckman) [M]        | upper Callovian<br><i>Pseudopeltoceras</i> spp. Zone    |
| Fig. 13c, d | 74.5            | 26.5                 | 0.36      | 16.0                  | 0.21   | 25.8                   | 0.35      | <i>Binatisphinctes</i> ex gr.<br><i>rjasanensis</i> (Teisseyre)     | upper Callovian<br><i>Pseudopeltoceras</i> spp. Zone    |
| Fig. 13e    | 72.2            | 26.0                 | 0.37      | 14.8                  | 0.20   | 29.8                   | 0.41      | <i>Binatisphinctes rossicus</i><br>(Siemiradzki)                    | upper Callovian<br><i>Pseudopeltoceras</i> spp. Zone    |
| Fig. 13f    | ~57<br>at 45.0  | 16.6<br>9.0          | –<br>0.20 | –<br>–                | –<br>– | 29.0<br>20.0           | –<br>0.44 | <i>Choffatia poculum</i><br>(Leckenby) [?m]                         | upper Callovian<br><i>Pseudopeltoceras</i> spp. Zone    |
| Fig. 13g    | ~48.0           | 17.5                 | 0.36      | –                     | –      | 18.7                   | 0.39      | <i>Choffatia</i> sp. cf. <i>Choffatia trina</i><br>(Buckman)        | upper Callovian<br><i>Pseudopeltoceras</i> spp. Zone    |
| Fig. 13h    | 62.0            | 21.5                 | 0.35      | –                     | –      | 31.0                   | 0.48      | <i>Alligaticeras</i> aff. <i>rotifer</i><br>(Brown)                 | upper Callovian<br><i>Pseudopeltoceras</i> spp. Zone    |