The literature on Triassic, Jurassic and earliest Cretaceous dinoflagellate cysts: supplement 2

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Since the publication of two literature compilations in 2012 and 2013, 89 further contributions on Triassic, Jurassic and earliest Cretaceous (Berriasian) dinoflagellate cysts have been discovered or were issued recently (i.e. between April 2013 and March 2014). These studies are mostly on the Late Jurassic and Early Cretaceous of Europe. They are all listed herein with digital object identifier (doi) numbers where applicable, and a description of each item as a string of keywords. The 15 most significant publications are briefly summarised.

Keywords: dinoflagellate cysts; Triassic; Jurassic; earliest Cretaceous; literature compilation and synthesis

1. Introduction

The literature on Triassic to earliest Cretaceous (Berriasian) dinoflagellate cysts has been comprehensively compiled and reviewed by Riding (2012, 2013). These papers listed 1347 and 94 publications respectively on this topic, with each citation having a string of keywords detailing the scope of the study. During the 12 months since the finalisation of Riding (2013), i.e. as of March 2014, the author has compiled 68 relevant published items which were previously inadvertently overlooked, together with 21 recently-published papers (i.e. issued between April 2013 and March 2014).

These 89 publications are largely on the Late Jurassic and Early Cretaceous of Europe (Table 1), and are listed in Appendix 1 below. Papers on West Europe are most numerous

(19), and comprise 21.3% of the overall total (Table 1). This bias towards the Late Jurassic, and the pronounced Euro-centric trend, were also noted by Riding (2012, 2013). The nine (10.1%) and eight (9.0%) contributions from North America and Australasia respectively represent significant advances. Similarly, East Europe and the Middle East were well-represented with seven papers (7.9%) each. Six publications (6.7%) were on the Arctic, and there were four (4.5%) each from (North) Africa and South America. China and the Indian subcontinent contributed one paper (1.1%) each. During 2013–2014, there were apparently no publications from Antarctica, Central America and sub-Arctic Russia. Twenty three papers (25.8%) were based on material from two or more geographical regions, or with no specific geographical focus (Table 1). Papers specifically on other palynomorph groups such as pollen and spores are not included here.

Partington et al. (1993) is one of the most important publications on the Jurassic biostratigraphy of northwest Europe. These authors defined 33 regionally significant condensed marine successions which contain maximum flooding surfaces for the latest Triassic (Rhaetian) to the earliest Cretaceous (Berriasian/Ryazanian) of the North Sea. These condensed successions have allowed the subdivision of this interval into 32 genetic stratigraphical sequences for the North Sea which were calibrated biostratigraphically using dinoflagellate cysts, foraminifera, ostracoda and radiolaria. In addition to the paper itself, there are two separate, large foldout diagrams (Partington et al. 1993, enclosures 1, 2) inside the back cover of the main volume which document the genetic sequence stratigraphy and the supporting biostratigraphical data. In Riding (2012) these important documents were not mentioned; the complete reference is given herein below.

The contributions of Chen (2013), Riding & Michoux (2013) and van de Schootbrugge et al. (2013) were listed only with digital object identifier (doi) numbers in Riding (2013) because, at that time, these papers were published online only. The volume and page details for each of these three publications are given in the references below.

2. Major recent papers

Fifteen of the 89 publications listed in Appendix 1 are deemed to be especially scientifically significant, and these are briefly reviewed below in two subsections. All dinoflagellate cysts at and below species level mentioned in this section are listed in Appendix 2 with full author citations.

2.1. Pre-2013 publications

Norris (1978) concerns the phylogeny and suprageneric classification of fossil dinoflagellates. This author erected a new dinoflagellate cyst classification which included three orders, four suborders and 34 families. Following the formal classification, Norris (1978, p. 23–28) gave a perceptive account of the evolutionary and stratigraphical relationships of the dinoflagellate fossil record subdivided into five intervals including the Late Triassic–Early Jurassic, Middle Jurassic and Late Jurassic–Early Cretaceous. The two range charts of the families (Norris 1978, figs. 1, 3) are especially interesting. The latter illustrates the significant diversifications during the Early Jurassic, Middle Jurassic and Early Cretaceous. The apparent extinctions of several dinoflagellate cyst families in the Late Cretaceous to Paleogene reflects a sustained decline in diversity during that interval (MacRae et al. 1996, figs. 1–4). An updated dinoflagellate cyst phylogeny was given by Fensome et al. (1993, fig. 192).

Antonescu & Avram (1980) is a comprehensive account, written in French, of the integrated biostratigraphy of the Lower Cretaceous (Upper Berriasian–Lower Aptian) strata of the Sviniţa area in the Banat region of western Romania. Sviniţa is located on the River Danube, and is within the Pannonian Basin. The material these authors studied is from the Murguceva and Sviniţa formations, and was dated independently using ammonites and calpionellids. Antonescu & Avram (1980) established four dinoflagellate cyst biozones. These are the *Druggidium apicopaucicum* and *Phoberocysta neocomica* biozone (Late Berriasian–Valanginian), the *Oligosphaeridium complex* and *Druggidium deflandrei* biozone (Hauterivian), the *Dingodinium albertii* (now *Dingodinium cerviculum*) and *Meiourogonyaulax stoveri* biozone (Early Barremian), and the *Prolixosphaeridium parvispinum* biozone (Late Barremian–Early Aptian). These units are all concurrent range biozones except the *Dingodinium albertii* and *Meiourogonyaulax stoveri* biozone, which is a peak (acme) zone. The *Druggidium apicopaucicum* and *Phoberocysta neocomica* biozone was subdivided into two subbiozones. The lower interval is of Late Berriasian–Early Valanginian age, and is characterised by *Druggidium apicopaucicum*. The upper subbiozone includes prominent *Biorbifera johnewingii*, *Dapsilidinium warrenii* and *Oligosphaeridium*? *asterigerum*, and is entirely Valanginian in age. The stratigraphical extents of the abundant and relatively diverse dinoflagellate cyst floras were illustrated semiquantitatively in three large range charts, and the assemblages were comprehensively illustrated (Antonescu & Avram (1980, pls. I–III and IV–XIV respectively). However, these authors did not include any other diagrams or maps. The overall nature of the associations, and the stratigraphical distributions, of the Lower Cretaceous dinoflagellate cysts from western Romania described by Antonescu & Avram (1980) are extremely reminiscent of coeval associations from the North Atlantic area between the USA and North Africa (Habib 1975; Habib & Drugg 1983, 1987; Ogg 1994) and southern Europe (Monteil 1992a,b). It seems clear therefore that there was a distinctive western Tethyan dinoflagellate cyst province during the Early Cretaceous which comprised the North Atlantic region east of Mexico and the Gulf of Mexico, eastward into southern Europe. This phytogeoprovince was characterised by taxa such as *Amphorula metaelliptica*, *Biorbifera johnewingii*, *Dapsilidinium warrenii* and *Druggidium* spp., and is clearly separated from the Boreal and Subboreal provinces. The latter encompass northern Europe and the Arctic which are characterised by distinctly different and more diverse dinoflagellate cyst floras during the Early Cretaceous (see, for example, Heilmann-Clausen 1987).

The Jurassic marine palynology of the northern part of the Moesian Platform in Romania was studied by Moldovanu (1984), who recognised 15 dinoflagellate cyst associations. These were numbered alphanumerically from J1b (Toarcian) to J3c (Late Tithonian). Moldovanu (1984) used five species of the genus *Nannoceratopsis* to characterise the Toarcian to Late Bajocian interval. These were *Nannoceratopsis triceras* (Toarcian–Aalenian, J1b–J2a), *Nannoceratopsis deflandrei* (Aalenian, J2a), *Nannoceratopsis senex* (now *Nannoceratopsis deflandrei* subsp. *senex*) (Late Aalenian–Bajocian, J2a–b), *Nannoceratopsis gracilis* (Early Bajocian, J2b) and *Nannoceratopsis spiculata* (Late Bajocian, J2c). *Carpathodinium predae* was used to define the Late Bajocian to Bathonian J2c–d assemblage. The Early Bathonian J2d marine palynomorph association was named after *Leptodinium subtile*. *Nannoceratopsis pellucida* gives its name to the J2e interval which is of Late Bathonian age. Association J2e–f, of Bathonian–Early Callovian age, was named after *Leptodinium regale* (now *Rynchodiniopsis*? *regalis*). *Ctenidodinium ornatum* was considered by Moldovanu (1984) to characterise the Callovian (J2f) assemblage. The distinctive species *Histiophora ornata* is the index taxon for the Late Callovian–Early Oxfordian J2f–J3a assemblage. The Oxfordian dinoflagellate cyst association termed J3a by Moldovanu (1984) was named after *Scriniodinium*? *oxfordianum*. This form is, however, likely to be a junior synonym of the distinctive species *Scriniodinium crystallinum* according to Riding & Fensome (2002, p. 18). The chorate species *Systematophora areolata* was used as the nominate taxon for the Kimmeridgian J3b assemblage. The *Belodinium dysculum* flora (J3b–c) is of Kimmeridgian–Early Tithonian age. The youngest interval is the Late Tithonian

Cannosphaeropsis mutabilis (J3c) association. "*Cannosphaeropsis mutabilis*" has never been validly described (Fensome & Williams 2004, p. 103), thus it is assumed that the J3c association of Moldovanu (1984) should be named after *Gochteodinia mutabilis*. Moldovanu (1984) also suggested correlations between her biostratigraphical scheme and the work of Beju (1971) on the Bajocian to Kimmeridgian successions of the Carpathian Foreland of Romania.

Fensome et al. (1993) is the first and only suprageneric classification scheme for both living and fossil dinoflagellates. Based on the seminal work of Evitt (1985), the principal criteria for this classification are the various tabulation patterns. Prior to Fensome et al. (1993), dinoflagellate cyst classifications such as Sarjeant & Downie (1966, 1974), Norris (1978) and Dörhöfer & Davies (1980) were based largely on relatively superficial features such as overall shape, the number and degree of separation of wall layers, and archaeopyle style. The principal breakthrough of this major work was that it represented the first attempt to unify the classification schemes of both thecate dinoflagellates and dinoflagellate cysts. The introductory section (Fensome et al. 1993, p. 1–36) provides an excellent summary of the characteristics of dinoflagellates, with emphasis on tabulation patterns. The major part of this work is the systematic section (Fensome et al. 1993, p. 37–191, in which all the taxonomic subdivisions to the Family level are described. Fensome et al. (1993, p. 205–209) briefly reviewed the phylogeny of dinoflagellates. It is clear that the dinoflagellates are an early protistan group, probably emerging during the Late Precambrian (Taylor 1980). The Middle Triassic to Middle Jurassic appearance and diversification of fossil dinoflagellates was illustrated (Fensome et al., 1993, fig. 192), although this diagram lacks a chronostratigraphical dimension.

Kramers & Dolby (1993) is an open file report on the Jurassic stratigraphy and palynology of west-central Alberta, western Canada with the principal emphasis on the Jurassic-Cretaceous boundary, which has significant economic importance. The report comprises data and interpretations on core descriptions, palynology and correlations. The detailed results of 268 palynological analyses, undertaken by G. Dolby, were given in Appendix 1 (Kramers & Dolby 1993, p. 14–115), which comprises the overwhelming majority of this publication.

Antonescu & Baltreş (1998) largely comprises a lithostratigraphical study of the Nalbant Formation of North Dobrogea in Romania. The Nalbant Formation is dominated by turbidites, comprises seven members and is Norian to Callovian/Oxfordian in age. The Bositra Clays (Bajocian–Bathonian) and the Obretin Formation (Callovian–

Kimmeridgian/?Tithonian) of the Scythien Platform were also considered (Antonescu & Baltreş 1998, fig. 1). These three units were studied palynologically, and the palynomorph content of key successions was described in running text (Antonescu & Baltreş 1998, p. 166–175). Selected dinoflagellate cysts and other palynomorphs were extensively illustrated (Antonescu & Baltreş 1998, pl. I–VII).

Feist-Burkhardt (1999, 2012) are two biostratigraphy reports commissioned by *Nationale Genossenschaft für die Lagerung Radioaktiver Abfälle* (NAGRA). This organisation is actively researching potential geological sites to store waste materials and exploring for geothermal heat resources. NAGRA have drilled many exploratory boreholes and naturally have investigated these successions in detail. Feist-Burkhardt (1999, 2012) represent extremely detailed investigations of several cored boreholes in the Jurassic strata of Germany and Switzerland. Both reports represent assessments of biostratigraphy using both indigenous marine and terrestrially-derived palynomorphs. The abundant and diverse dinoflagellate cyst assemblages allow the high-resolution biostratigraphical subdivision of the boreholes studied. Detailed range charts and colour photographic plates were provided in both reports. Feist-Burkhardt (1999, p. A9–A25) has especially extensive montages of photomicrographs of dinoflagellate cysts.

Backhouse & Balme (2002) is a major study of the Upper Triassic to Lower Jurassic successions in the northern Carnarvon Basin, offshore northwest Australia. These intervals, especially the Upper Triassic strata, host significant gas reserves and hence are extremely economically important. Backhouse & Balme (2002) studied new material and synthesised legacy data in order to erect a palynomorph zonation for this interval in the Carnarvon Basin, and throughout the Northwest Shelf of Australia. The revised biozonation of Backhouse & Balme (2002) was integrated into a sequence stratigraphical scheme. Furthermore, the palynomorph spectra were interpreted in terms of their palaeoecological significance. For example, the *Hebecysta balmei* microplankton zone represents a major marine incursion, and is underlain and overlain by swamp facies. This report was extensively illustrated (Backhouse & Balme 2002, pls. 1–21).

Khowaja-Ateequzzaman et al. (2006) is a major compilation of data on the dinoflagellate cysts from the Mesozoic and Cenozoic successions throughout India. This report alphabetically lists all the genera of fossil dinoflagellates which have been reported from the sedimentary basins of India during the previous 30 years. For each genus the individual species are listed in alphabetic order, together with the ages and locations where they have been reported, with full references to the relevant publications. This was a huge compilation exercise and comprises 1643 entries for 225 and 663 dinoflagellate cyst genera and species respectively. Naturally the reference list includes all the publications on Mesozoic and Cenozoic dinoflagellate cysts from the Indian Subcontinent and this, in itself, is an extremely important resource. No range charts or photographic plates were included however.

Birkenmajer & Gedl (2012) documented the Jurassic and Cretaceous geology and marine palynology of the Maruszyna IG-1 Deep Borehole, which was drilled in the southernmost part of the Pieniny Klippen Belt in south Poland. This important borehole penetrated two large nappe structures. Five of the 29 samples examined were interpreted as being of Jurassic age. The horizons at 1790.2 m and 1458.5 m (samples 10 and 9 respectively) were determined to be of Early Bajocian age. Samples 8 and 7, from 1341.8 m and 1225.5 m respectively, are Aalenian. This situation with younger material apparently underlying older strata is apparently a function of stratigraphical inversion within the Branisko Nappe. Sample 4 at 846 m was dated as Early Bathonian, and lies within the overlying Pieniny Nappe. The palynofloras were extensively illustrated (Birkenmajer & Gedl 2012, figs. 5–26).

2.2. Post-2013 publications

During the year prior to the finalisation of this contribution (i.e. between April 2013 and March 2014), four important papers were published. Gedl (2013) investigated the dinoflagellate cyst biostratigraphy of the Jurassic–Cretaceous Grajcarek Unit from Szczawnica-Zabaniszcze in the Pieniny Klippen Belt, southern Poland. The eight samples examined from the Szlachtowa Formation are dominated by species of *Dissiliodinium* and *Nannoceratopsis*, and this unit is interpreted as being Aalenian to Early Bajocian in age (Gedl 2013, figs. 3, 12). The Opaleniec Formation at Szczawnica-Zabaniszcze consistently produced abundant dinoflagellate cysts in the 10 samples studied (Gedl 2013, fig. 10). These include *Chytroeisphaeridia chytroeides*, *Ctenidodinium combazii*, *Endoscrinium asymmetricum*, *Meiourogonyaulax caytonensis* (as *Lithodinia caytonensis*) and *Nannoceratopsis pellucida*. The age of the Opaleniec Formation was interpreted as Late Bathonian, possibly extending to the Early Callovian. The overlying Pieniny Limestone, Kapuśnica and Wronine formations were deduced to be of Early Cretaceous (Late Barremian–Albian) age.

The palynostratigraphy of the uppermost Jurassic and lowermost Cretaceous succession at Chuangde in Gyangzê County, southern Xizang (Tibet), China was studied by

Li et al. (2013). Chuangde lies within the Himalayan Tethys, and the palynomorphs are consequently of high thermal maturity due to the high heat flow in this profoundly tectonically active region. The blackened nature of the dinoflagellate cysts and pollen/spores made identification of both somewhat difficult. Based on the palynomorphs, the Jurassic-Cretaceous boundary was identified in the uppermost Weimei Formation. Much of the Weimei Formation yielded abundant poorly-preserved palynomorphs tentatively attributed to the pollen genus *Classopollis*. However, palynomorph diversity significantly increased in the uppermost Weimei Formation and the lowermost Gyabula Formation (Li et al. 2013, table 1). The dinoflagellate cysts apparently include both characteristically Australasian and European taxa. Furthermore, the presence of characteristically Tethyan forms such as *Amphorula* sp. and *Lanterna sportula* is significant.

Mafi et al. (2013) is an investigation of the marine palynomorphs from the Middle to Upper Jurassic Dalichai Formation of northeast Iran. These authors reported non-quantitative data for diverse and well-preserved dinoflagellate cyst associations which were subdivided into four biozones. The units were the *Cribroperidinium crispum* (Late Bajocian), *Dichadogonyaulax sellwoodii* (Bathonian–Early Callovian), *Ctenidodinium continuum* (Callovian) and *Ctenidodinium tenellum* (Early Oxfordian) biozones. These floras are markedly similar to coeval assemblages reported from northwest Europe (e.g. Riding & Thomas 1992, Poulsen & Riding 2003). This indicates that there was no significant dinoflagellate cyst provincialism between northwestern Tethys and greater Europe during the Late Bajocian to Early Oxfordian interval. However, coeval assemblages in northern Europe and the Arctic tend to be significantly higher in diversity than their Tethyan counterparts (Borges et al. 2011, 2012). However, the relative uniformity in Bajocian to Oxfordian dinoflagellate cyst floras between the Middle East and Europe is in stark contrast to the ammonite faunas from northeast Iran, which are distinctly sub-Mediterranean in character.

The principal purpose of Williams et al. (2013) was to erect the Niton Member. This lithostratigraphical unit is a distinctive, sandstone-dominated, highly bioturbated member of the Jurassic Fernie Formation of west-central Alberta in western Canada. The Niton Member is regionally mappable, and is Late Oxfordian to Early Kimmeridgian in age based on palynological evidence. Relatively abundant and diverse marine palynofloras allow a subdivision into lower and upper assemblages. These are Late Oxfordian to Early Kimmeridgian and Early Kimmeridgian in age respectively based on an assessment of the stratigraphical ranges of key taxa (Williams et al. 2013, fig. 5A).

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References

Antonescu E, Avram E. 1980. Corrélation des dinoflagellés avec les zones d'ammonites et de calpionelles du Crétacé inférieur de Şviniţa – Banat. Annuaire de l’Institut de Géologie et de Géophysique 56:97–132.

Antonescu E, Baltreş A. 1998. Palynostratigraphie de la Formation de Nalbant (Trias-Jurassique) de la Dobrogea du Nord et des Formations Jurassiques du sous-sol du Delta de Danube (Plate-forme Scythienne). Geo-Eco-Marina 3:159–187.

Backhouse J, Balme BE. 2002. Late Triassic palynology of the northern Carnarvon Basin. Minerals and Energy Research Institute of Western Australia Report 226, 181 p.

Beju D. 1971. Jurassic microplankton from the Carpathian Foreland of Roumania. Annales Instituti Geologici Publici Hungarici 54:276–317.

Birkenmajer K, Gedl P. 2012. Jurassic and Cretaceous strata in the Maruszyna IG-1 Deep Borehole (Pieniny Klippen Belt, Carpathians, Poland): lithostratigraphy, dinoflagellate cyst biostratigraphy, tectonics. Studia Geologica Polonica 135:7–54.

Borges MEN, Riding JB, Fernandes P, Pereira Z. 2011. The Jurassic (Pliensbachian to Kimmeridgian) palynology of the Algarve Basin and the Carrapateira outlier, southern Portugal. Review of Palaeobotany and Palynology 163:190–204.

Borges MEN, Riding JB, Fernandes P, Matos V, Pereira Z. 2012. Callovian (Middle Jurassic) dinoflagellate cysts from the Algarve Basin, southern Portugal. Review of Palaeobotany and Palynology 170:40–56.

Chen Y-Y. 2013. *Palaecysta* gen. nov., the greatest *Systematophora* imposter no more: introducing a lineage of latest Jurassic to Early Cretaceous (Tithonian–Hauterivian) dinoflagellate cysts from Madagascar. Palynology 37:259–297.

Dörhöfer G, Davies EH. 1980. Evolution of archeopyle and tabulation in Rhaetogonyaulacinean dinoflagellate cysts. Life Sciences Miscellaneous Publications of the Royal Ontario Museum, 91 p.

Evitt WR. 1985. Sporopollenin dinoflagellate cysts. Their morphology and interpretation. American Association of Stratigraphic Palynologists Foundation, Dallas, 333 p.

Feist-Burkhardt S. 1999. Sondierbohrung Benken: - Palynostratigraphie des Mittleren Jura. (Teil A). Nationale Genossenschaft für die Lagerung Radioaktiver Abfälle, Interner Bericht, Wettingen, Switzerland, 25 p.

Feist-Burkhardt S. 2012. Palynostratigraphie des Mittleren Jura: Teil I – Bohrungen Benken, Schlattingen-1 und Weiach sowie einige Aufschlussproben der Lägern und deren Korrelation. Teil II – Bohrung Riniken, Aufschlussproben Bernhardholz, Dangstetten und Lägern.

Nationale Genossenschaft für die Lagerung Radioaktiver Abfälle (Wettingen, Switzerland) Arbeitsbericht, NAB 12-57, 71 p.

Fensome RA, Williams GL. 2004. The Lentin and Williams index of fossil dinoflagellates. 2004 edition. American Association of Stratigraphic Palynologists Contributions Series No. 42, 909 p.

Fensome RA, Taylor FJR, Norris G, Sarjeant WAS, Wharton DI, Williams GL. 1993. A classification of fossil and living dinoflagellates. Micropaleontology Press Special Paper 7, 351 p.

Gedl P. 2013. Dinoflagellate cysts from the Szlachtowa Formation (Jurassic) and adjacent deposits (Jurassic–Cretaceous) of the Grajcarek Unit at Szczawnica-Zabaniszcze (Pieniny Klippen Belt, Carpathians, Poland). Geological Quarterly 57:485–502.

Habib D. 1975. Neocomian dinoflagellate zonation in the western North Atlantic. Micropaleontology 21:373–392.

Habib D, Drugg WS. 1983. Dinoflagellate age of Middle Jurassic–Early Cretaceous sediments in the Blake-Bahama Basin. Initial Reports of the Deep Sea Drilling Project 76:623–638.

Habib D, Drugg WS. 1987. Palynology of Sites 603 and 605, Leg 93, Deep Sea Drilling Project. Initial Reports of the Deep Sea Drilling Project 93:751–775.

Heilmann-Clausen C. 1987. Lower Cretaceous dinoflagellate biostratigraphy in the Danish Central Trough. Danmarks Geologiske Undersøgelse Serie A Nr. 17, 89 p.

Khowaja-Ateequzzaman, Garg R, Mehrotra NC. 2006. A catalogue of dinoflagellate cysts from India. Diamond Jubilee Special Publication. Birbal Sahni Institute of Palaeobotany, Lucknow, 167 p.

Kramers JW, Dolby G. 1993. Jurassic/Cretaceous boundary in west-central Alberta. Alberta Research Council Open File Report 1993-26, 115 p.

Li Jianguo, Peng Jungang, Batten DJ. 2013. Palynostratigraphy of a Jurassic–Cretaceous transitional succession in the Himalayan Tethys, southern Xizang (Tibet), China. Cretaceous Research 46:123–135.

MacRae RA, Fensome RA, Williams GL. 1996. Fossil dinoflagellate diversity, originations, and extinctions and their significance. Canadian Journal of Botany 74:1687–1694.

Mafi A, Ghasemi-Nejad E, Ashouri A, Vahidi-Nia M. 2013. Dinoflagellate cysts from the Upper Bajocian–Lower Oxfordian of the Dalichai Formation in Binalud Mountains (NE Iran): their biostratigraphical and biogeographical significance. Arabian Journal of Geosciences, doi:10.1007/s12517-013-0976-4.

Moldovanu M. 1984. Palynology of the Jurassic deposits in the sunken Northern area of the Moesian Platform. University of Bucharest Laboratory of Palaeontology, 75 Years 1906–1981, Special Volume:55–66.

Monteil E. 1992a. Quelque nouvelles especes-index de kystes de dinoflagellés (Tithonique–Valanginien) du sud-est de la France et de l'Ouest de la Suisse. Revue de Paléobiologie 11:273–297.

Monteil E. 1992b. Kystes de dinoflagellés index (Tithonique–Valanginien) du sud-est de la France. Proposition d'une nouvelle zonation palynologique. Revue de Paléobiologie 11:299–306.

Norris G. 1978. Phylogeny and a revised supra-generic classification for Triassic-Quaternary organic-walled dinoflagellate cysts (Pyrrhophyta). Part II. Families and sub-orders of fossil dinoflagellates. Neues Jahrbuch für Geologie und Paläontologie Abhandlungen 156:1–30.

Ogg G. 1994. Dinoflagellate cysts of the Early Cretaceous North Atlantic Ocean. Marine Micropaleontology 23:241–263.

Partington MA, Copestake P, Mitchener BC, Underhill JR. 1993. Biostratigraphic calibration of genetic stratigraphic sequences in the Jurassic-lowermost Cretaceous (Hettangian to

Ryazanian) of the North Sea and adjacent areas. In: Parker JR, editor. Petroleum Geology of Northwest Europe: Proceedings of the 4th Conference. The Geological Society, London, 371–386 plus enclosures 1 and 2.

Poulsen NE, Riding JB. 2003. The Jurassic dinoflagellate cyst zonation of Subboreal Northwest Europe. In: Ineson JR, Surlyk F, editors. The Jurassic of Denmark and Greenland. Geological Survey of Denmark and Greenland Bulletin 1:115–144.

Riding JB. 2012. A compilation and review of the literature on Triassic, Jurassic, and earliest Cretaceous dinoflagellate cysts. American Association of Stratigraphic Palynologists Contributions Series No. 46, 119 p. plus CD ROM.

Riding JB. 2013. The literature on Triassic, Jurassic and earliest Cretaceous dinoflagellate cysts: supplement 1. Palynology 37:345–354.

Riding JB, Thomas JE. 1992. Dinoflagellate cysts of the Jurassic System. In: Powell AJ, editor. A stratigraphic index of dinoflagellate cysts. British Micropalaeontological Society Publications Series. Chapman and Hall, London, 7–97.

Riding JB, Fensome RA. 2002. A review of *Scriniodinium* Klement 1957, *Endoscrinium* (Klement 1960) Vozzhennikova 1967 and related dinoflagellate cyst taxa. Palynology 26:5–33.

Riding JB, Michoux D. 2013. Further observations on the Jurassic dinoflagellate cyst *Gonyaulacysta dentata* (Raynaud 1978) Lentin & Vozzhennikova 1990 emended Riding 2012. Review of Palaeobotany and Palynology 196:51–56.

Sarjeant WAS, Downie C. 1966. The classification of dinoflagellate cysts above generic level. Grana Palynologica 6:503–527.

Sarjeant WAS, Downie C. 1974. The classification of dinoflagellate cysts above generic level: a discussion and revisions. Birbal Sahni Institute of Palaeobotany Special Publication 3:9–32.

Taylor FJR. 1980. On dinoflagellate evolution. BioSystems 13:65–108.

van de Schootbrugge B, Bachan A, Suan G, Richoz S, Payne JL. 2013. Microbes, mud and methane: cause and consequence of recurrent Early Jurassic anoxia following the end-Triassic mass extinction. Palaeontology 56:685–709.

Williams SK, Krause FF, Knopp ST, Davies EH, Poulton TP, DeBuhr CL. 2013. The Niton Member: A new Oxfordian to Kimmeridgian (Jurassic) glauconitic sandstone member, Fernie Formation, west-central Alberta subsurface – sedimentology, biostratigraphy and regional considerations. Bulletin of Canadian Petroleum Geology 61:211–240.

Appendix 1. List of Literature

Contributions on Triassic to earliest Cretaceous dinoflagellate cysts issued after the publication of Riding (2012, 2013), and papers encountered after these compilations were made, are listed in alphabetical/chronological order below. The reference format used is much the same as in Riding (2013), which was slightly modified from Riding (2012). In the present contribution however, doi numbers are included where these are available. Fifteen papers which are deemed to be of major significance are asterisked. The language in which a paper was written in is indicated if it is not in English. A synthesis of the scope of each item is given as a string of keywords in parentheses after each citation. These keywords summarise the principal subject matter, age range, major geographical region(s) and country/countries. A distinction is made between publications which present new data (‘primary data’), and those which compile, review or summarise existing data (‘compilation’). Some abstracts are listed here; these are denoted by the word ‘summary’ in the keyword string. For the purposes of this work, the world is subdivided into 13 major geographical regions. These are Africa, Central America, North America, South America, Antarctica, the Arctic, Australasia, China, East Europe, West Europe, the Indian subcontinent, the Middle East and Russia (Table 1).

A

AL-AMERI, T.K., and AL-MUSAWI, F.A. 2011. Hydrocarbon generation potential of the uppermost Jurassic–basal Cretaceous Sulaiy formation, South Iraq. *Arabian Journal of Geosciences*, 4: 53–58 (doi: 10.1007/s12517-009-0064-y).
(organic geochemistry; palaeoecology; palynofacies; petroleum geology; primary data; Late Jurassic–Early Cretaceous [Tithonian–Valanginian]; Middle East [southern Iraq])

AL-AMERI, T.K., and AL-NAGSHBANDI, S.F. 2014. Age assessments and palynofacies of the Jurassic oil source rocks succession of North Iraq. *Arabian Journal of Geosciences*, doi: 10.1007/s12517-013-1245-2, 13 p. (online only).
(biostratigraphy; palynofacies; petroleum geology; pollen and spores; primary data; Middle Jurassic–earliest Cretaceous [Bajocian–Berriasian]; Middle East [northern Iraq])

AL-AMERI, T.K., AL-JUBOURI, N.M., ISA, M.J., and AL-AZZAWI, R.E. 2013. Hydrocarbons generation potential of the Jurassic–Lower Cretaceous Formation, Ajeel field, Iraq. *Arabian Journal of Geosciences*, 6: 3725–3735 (doi: 10.1007/s12517-012-0636-0).
(biostratigraphy; organic geochemistry; palaeothermometry; palynofacies; petroleum geology; pollen and spores; primary data; Middle Jurassic–earliest Cretaceous [Bathonian–Berriasian]; Middle East [central Iraq])

ALAUG, A.S., MAHMOUD, M.S., DEAF, A.S., and AL-AMERI, T.K. 2013. Palynofacies, organic geochemical analyses and hydrocarbon potential of some Upper Jurassic-Lower Cretaceous rocks, the Sabatayn-1 well, Central Yemen. *Arabian Journal of Geosciences*, doi: 10.1007/s12517-013-0961-y, 16 p. (online only).
(organic geochemistry; palaeoecology; palynofacies; petroleum geology; pollen and spores; primary data; Late Jurassic–Early Cretaceous [Oxfordian–Valanginian]; Middle East [central Yemen])

*ANTONESCU, E., and AVRAM, E. 1980. Corrélation des dinoflagellés avec les zones d'ammonites et de calpionelles du Crétacé inférieur de Şviniţa – Banat. *Annuaire de l’Institut de Géologie et de Géophysique*, 56: 97–132 (in French with an English abstract).
(ammonites; biostratigraphy; calpionellids; correlation; primary data; Early Cretaceous [Berriasian–Aptian]; East Europe [Romania])

*ANTONESCU, E., and BALTREŞ, A. 1998. Palynostratigraphie de la Formation de Nalbant (Trias-Jurassique) de la Dobrogea du Nord et des Formations Jurassiques du sous-sol du Delta de Danube (Plate-forme Scythienne). *Geo-Eco-Marina*, 3: 159–187 (in French with an English abstract).
(biostratigraphy; lithostratigraphy; sedimentology; primary data; Late Triassic–Late Jurassic [Norian–?Tithonian]; East Europe [Romania])

ALBERT, N.R., EVITT, W.R., and STEIN, J.A. 1984. Morphology of new Late Jurassic and Early Cretaceous dinoflagellate cysts from California and Alaska. *Palynology*, 8: 233 (abstract).
(morphology; summary; Late Jurassic–Early Cretaceous [Oxfordian–Valanginian]; North America [central-southern Alaska, California, USA])

B

*BACKHOUSE, J., and BALME, B.E. 2002. Late Triassic palynology of the northern Carnarvon Basin. *Minerals and Energy Research Institute of Western Australia (MERIWA) Report*, No. 226, 181 p.
(biostratigraphy; lithostratigraphy; palaeoecology; palynofacies; palynozonation; petroleum geology; pollen and spores; systematics; primary data; Late Triassic–Early Jurassic [Carnian–Hettangian/Sinemurian]; Australasia [northern Carnarvon Basin, northwest Australia])

BARTOLINI, A., BONNOT, A., BOULILA, S., CHATEAU-SMITH, C., COLLIN, P.-Y., ENAY, R., FORTWENGLER, D., GALBRUN, B., GARDIN, S., HUAULT, V., HURET, E., JARDAT, R., MARCHAND, D., PELLENARD, P., RAYNAUD, D., and THIERRY, J. 2013. *Integrated stratigraphy of some key Callovian-Oxfordian boundary sections in South-East France. Contribution to the choice of the Global Boundary Stratotype Section and point (GSSP) of the Oxfordian Stage*. Fortwengler, D., Marchand, D., Pellenard, P., Thierry, J., and Chateau-Smith, C. (eds.). Oxfordian GSSP Workshop 30th September–2nd October 2013. Field Guide 2013. Groupe Français d'Etude du Jurassique (GFEJ), 95 p.
(ammonites; biostratigraphy; calcareous nannofossils; chemostratigraphy; chronostratigraphy; field guide; foraminifera; gamma-ray spectrometry; Global Boundary

Stratotype Section and Point (GSSP); magnetic susceptibility; Milankovitch cyclicity; ostracods; Subalpine Basin; Terres Noires Formation; primary data; Middle–Late Jurassic [Callovian–Oxfordian]; West Europe [southeast France])

*BIRKENMAJER, K., and GEDL, P. 2012. Jurassic and Cretaceous strata in the Maruszyna IG-1 Deep Borehole (Pieniny Klippen Belt, Carpathians, Poland): lithostratigraphy, dinoflagellate cyst biostratigraphy, tectonics. *Studia Geologica Polonica*, 135: 7–54.
(biostratigraphy; lithostratigraphy; palynofacies; structural geology; tectonics; primary data; Middle Jurassic–Late Cretaceous [Aalenian–Bathonian and Valanginian–Maastrichtian]; East Europe [Poland])

BRADSHAW, M., and CHALLINOR, A.B. 1992. 7. Australasia. *In*: Westermann, G.E.G. (ed.). *The Jurassic of the Circum-Pacific*. Cambridge University Press, Cambridge, UK, 162–180.
(ammonites; belemnites; biostratigraphy; bivalves; brachiopods; lithostratigraphy; palaeoecology; palaeogeography; pollen and spores; regional geology; compilation; Late Triassic–earliest Cretaceous [Rhaetian–Berriasian]; Australasia [Australia, New Zealand])

BRENNER, W., and FOSTER, C.B. 1994. Chlorophycean algae from the Triassic of Australia. *Review of Palaeobotany and Palynology,* 80(3–4): 209–234 (doi: 10.1016/0034-6667(94)90002-7).
(Chlorophycean [green] algae; palaeoecology; review; systematics; taxonomy; primary data; Early–Late Triassic [Induan–Norian]; Australasia [Western Australia])

BURGER, D. 1995. Timescales: 9. Cretaceous. Australian Phanerozoic timescales. Biostratigraphic charts and explanatory notes. Second series. *AGSO (Australian Geological Survey Organisation) Record*, 1995/38, 36 p.
(ammonites; biostratigraphy; calcareous nannofossils; chronostratigraphy; eustasy; foraminifera; geomagnetism; holistic stratigraphy; plants; pollen and spores; vertebrates; compilation; latest Jurassic–latest Cretaceous [Tithonian–Maastrichtian]; Australasia [Australia]; worldwide)

D

DEHBOZORGI, A., SAJJADI, F., and HASHEMI, H. 2013. Middle Jurassic palynomorphs of the Dalichai Formation, central Alborz Ranges, northeastern Iran: Paleoecological inferences. *Science China: Earth Sciences*, 56(12): 2107–2115 (doi: 10.1007/s11430-013-4697-z).
(biostratigraphy; palaeoecology; pollen and spores; primary data; Middle Jurassic [Bajocian–Callovian]; Middle East [northeast Iran])

DETTMANN, M.E., MOLNAR, R.E., DOUGLAS, J.G., BURGER, D., FIELDING, C., CLIFFORD, H.T., FRANCIS, J., JELL, P., RICH, T., WADE, M., RICH, P.V., PLEDGE, N., KEMP, A., and ROZEFELDS, A. 1992. Australian Cretaceous terrestrial faunas and floras: biostratigraphic and biogeographic implications. *Cretaceous Research*, 13: 207–262 (doi: 10.1016/0195-6671(92)90001-7).
(biostratigraphy; correlation; insects; nonmarine sediments; palaeoclimatology; palaeoecology; palaeogeography; plants; pollen and spores; vertebrates; compilation; latest Jurassic–Early Cretaceous [Tithonian–Aptian]; Australasia [Australia])

DONOVAN, A.D., DJAKIC, A.W., IOANNIDES, N.S., GARFIELD, T.R., and JONES, C.R. 1993. Sequence stratigraphic control on Middle and Upper Jurassic reservoir distribution within the UK Central North Sea. *In*: Parker, J.R. (ed.). *Petroleum Geology of Northwest Europe: Proceedings of the 4th Conference.* The Geological Society, London, UK, 251–269.
(biostratigraphy; lithostratigraphy; palaeogeography; petroleum geology; sequence stratigraphy; compilation; Late Triassic–Early Cretaceous [Norian–Hauterivian]; West Europe [Central North Sea])

E

EATON, G.L. 1980. Nomenclature and homology in peridinialean dinoflagellate plate patterns. *Palaeontology*, 23(3): 667–688.
(homologous plates; Kofoidian tabulation system; tabulation; compilation; Late Triassic–Jurassic–Holocene [undifferentiated]; no specific geographical focus)

EDWARDS, L.E. 1993. 7. Dinoflagellates. *In*: Lipps, J.H. (ed.). *Fossil Prokaryotes and Protists*. Blackwell Scientific Publications, Boston, USA, 105–127.
(biostratigraphy; biology/palaeobiology; classification; ecology; evolution; history; morphology; review article; textbook; compilation; Late Triassic [undifferentiated]–Holocene; no specific geographical focus)

EDWARDS, D., BALDAUF, J.G., BOWN, P.R., DORNING, K.J., FEIST, M., GALLAGHER, L.T., GRAMBAST-FESSARD, N., HART, M.B., POWELL, A.J., and RIDING, R. 1993. 3. 'Algae'. *In*: Benton, M.J. (ed.). *The Fossil Record 2*. Chapman and Hall, London, UK, 15–40.
(Acritarcha; Bacillariophyta; biostratigraphy; Charophyta; Chlorophyta; classification; Euglenophyta; Haptophyta; *incertae sedis*; Prasinophyta; protists; Rhodophtyta; systematics; compilation; Early Triassic–Quaternary [Induan–Holocene]; no specific geographical focus)

EVITT, W.R., and PIERCE, S.T. 1975. Early Tertiary ages from the coastal belt of the Franciscan Complex, northern California. *Geology*, 3(8): 433–436 (doi: 10.1130/0091-7613(1975)3<433:ETAFTC>2.0.CO;2).
(biostratigraphy; Franciscan Complex; pollen; regional geology; reworking; primary data; Late Jurassic [Oxfordian–Kimmeridgian], Cretaceous [undifferentiated–Albian–Maastrichtian] and Paleogene [undifferentiated]; North America [California, U.S.A.])

F

*FEIST-BURKHARDT, S. 1999. Sondierbohrung Benken: - Palynostratigraphie des Mittleren Jura. (Teil A). *Nationale Genossenschaft für die Lagerung Radioaktiver Abfälle (NAGRA, Wettingen, Switzerland) Interner Bericht (unpublished)*, 25 p. (in German).
(biostratigraphy; miscellaneous aquatic palynomorphs; pollen and spores; reworking; primary data; Early–Middle Jurassic [Toarcian–Bathonian]; West Europe [Switzerland])

*FEIST-BURKHARDT, S. 2012. Palynostratigraphie des Mittleren Jura: Teil I – Bohrungen Benken, Schlattingen-1 und Weiach sowie einige Aufschlussproben der Lägern und deren Korrelation. Teil II – Bohrung Riniken, Aufschlussproben Bernhardholz, Dangstetten und

Lägern. *Nationale Genossenschaft für die Lagerung Radioaktiver Abfälle (NAGRA, Wettingen, Switzerland) Arbeitsbericht*, NAB 12-57, 71 p. (in German).
(biostratigraphy; boreholes; correlation; miscellaneous aquatic palynomorphs; pollen and spores; reworking; primary data; Early–Late Jurassic [Toarcian–Oxfordian]; West Europe [Germany, Switzerland])

FELESTTEEN, A.W., EL-SOUGHIER, M.I., MOHAMED, M.S., and MONGED, M.N.S. 2013. Hydrocarbon source potential of the Jurassic sediments of Salam-3X borehole, Khalda Concession, Northern Western Desert, Egypt. *Arabian Journal of Geosciences*, doi: 10.1007/s12517-013-0997-z, 14 p. (online only).
(organic geochemistry; palaeoecology; palaeothermometry; palynofacies; petroleum geology; pollen and spores; primary data; Early–Late Jurassic [undifferentiated–Tithonian]; North Africa [Western Desert, Egypt])

*FENSOME, R.A., TAYLOR, F.J.R., NORRIS, G., SARJEANT, W.A.S., WHARTON, D.I., and WILLIAMS, G.L. 1993. A classification of fossil and living dinoflagellates. *Micropaleontology Press Special Paper*, No. 7, 351 p.
(evolution; historical review; integrated suprageneric classification; morphology; phylogeny; taxonomy; compilation; Late Triassic–Holocene [undifferentiated]; no specific geographical focus)

FENSOME, R.A., MacRAE, R.A., MOLDOWAN, J.M., TAYLOR, F.J.R., and WILLIAMS, G.L. 1996. The early Mesozoic radiation of dinoflagellates. *Paleobiology*, 22(3): 329–338.
(biogeochemistry; biostratigraphy; diversity; evolution; morphology; phylogeny; radiation; compilation; Late Triassic–Pliocene [Carnian–undifferentiated]; no specific geographical focus)

FENSOME, R.A., SALDARRIAGA, J.F., and TAYLOR, F.R.J. “MAX”. 1999. Dinoflagellate phylogeny revisited: reconciling morphological and molecular based phylogenies. *Grana*, 38(2–3): 66–80. doi: 10.1080/00173139908559216.
(acritarchs; biogeochemistry; biostratigraphy; evolution; life cycles; molecular phylogenetics; phylogeny; ultrastructure; morphology; compilation; Late Triassic–Pliocene [Carnian–undifferentiated]; no specific geographical focus)

FISK, L.H., KUMAR, A., RIDING, J.B., and RÖPER, M. 2013. Observations and preliminary interpretations regarding the age and depositional environment of the Late Jurassic Solnhofen Formation – evidence from palynomorphs. *In*: Clark, M., Lucas-Clark, J., and Fisk, L.H. (eds.). *AASP – The Palynological Society 46th Annual Meeting, San Francisco, California, USA, October 20th–24th 2013, Abstracts and Program*, 84–85.
(acritarchs; biostratigraphy; fossil lagerstätten; palaeoclimate; palaeoecology; pollen and spores; summary; Late Jurassic [undifferentiated]; West Europe [Germany])

FRAKES, L.A., BURGER, D., APTHORPE, M., WISEMAN, J., DETTMANN, M., ALLEY, N., FLINT, R., GRAVESTOCK, D., LUDBROOK, N., BACKHOUSE, J., SKWARKO, S., SCHEIBNEROVA, V., McMINN, A., MOORE, P.S., BOLTON, B.R., DOUGLAS, J.G., CHRIST, R., WADE, M., MOLNAR, R.E., McGOWRAN, B., BALME, B.E., and DAY, R.A. (AUSTRALIAN CRETACEOUS PALAEOENVIRONMENTS GROUP). 1987. Australian Cretaceous shorelines, stage by stage. *Palaeogeography, Palaeoclimatology, Palaeoecology,* 59: 31–48 (doi: 10.1016/0031-0182).
(biostratigraphy; palaeogeography; sea levels; shorelines; tectonics; compilation; latest Jurassic–latest Cretaceous [Tithonian–Maastrichtian]; Australasia [Australia])

G

GARLAND, C.R. 1993. Miller Field: reservoir stratigraphy and its impact on development. *In*: Parker, J.R. (ed.). *Petroleum Geology of Northwest Europe: Proceedings of the 4th Conference.* The Geological Society, London, UK, 401–414.
(biostratigraphy; petroleum geology; sedimentology; compilation; Late Jurassic [Kimmmeridgian–Tithonian]; West Europe [Northern North Sea])

*GEDL, P. 2013. Dinoflagellate cysts from the Szlachtowa Formation (Jurassic) and adjacent deposits (Jurassic–Cretaceous) of the Grajcarek Unit at Szczawnica-Zabaniszcze (Pieniny Klippen Belt, Carpathians, Poland). *Geological Quarterly*, 57(3): 485–502 (doi: 10.7306/gq.1106).
(biostratigraphy; lithostratigraphy; primary data; Middle Jurassic and Early Cretaceous [Aalenian–Callovian and Barremian–Albian]; East Europe [southern Poland])

GLASMANN, J.R., and WILKINSON, G.C. 1993. Clay mineral stratigraphy of Mesozoic and Paleozoic red beds, Northern North Sea. *In*: Parker, J.R. (ed.). *Petroleum Geology of Northwest Europe: Proceedings of the 4th Conference.* The Geological Society, London, UK, 625–636.
(biostratigraphy; clay minerals; geochemistry; geothermometry; petroleum geology; compilation; Late Triassic [Norian–Rhaetian]; West Europe [Northern North Sea])

GUERSTEIN, G.R., FENSOME, R.A., and WILLIAMS, G.L. 1998. A new areoligeracean dinoflagellate from the Miocene of offshore eastern Canada and its evolutionary implications. *Palaeontology*, 41(1): 23–34.
(biostratigraphy; phylogeny; taxonomy; compilation and primary data; Middle Jurassic–Miocene [Bathonian–Messinian]; North America [offshore East Canada])

H

HARRISON, J.C., WALL, J.H., BRENT, T.A., POULTON, T.P., and DAVIES, E.H. 1999. Rift-related structures in Jurassic and Lower Cretaceous strata near the Canadian polar margin, Yukon Territory, Northwest Territories and Nunavut. *Geological Survey of Canada Current Research 1999-E*, 47–58.
(ammonites; biostratigraphy; bivalves; correlation; foraminifera; regional geology; seismic stratigraphy; structural geology; tectonics; compilation; earliest Jurassic–Early Cretaceous [Hettangian–Aptian]; Arctic [Arctic Canada])

HSSAIDA, T., BENZAGGAGH, M., and RIDING, J.B. 2013. New biostratigraphic data on the dinoflagellate cysts of the Upper Jurassic Series from the External Rif Belt (Internal Prerif and Mesorif zones, Morocco). *In*: Clark, M., Lucas-Clark, J., and Fisk, L.H. (eds.). *AASP – The Palynological Society 46th Annual Meeting, San Francisco, California, USA, October 20th–24th 2013, Abstracts and Program*, 108.
(biostratigraphy; summary; Late Jurassic [Oxfordian–Tithonian]; North Africa [Morocco])

I

IVANOVA, D., LAKOVA, I., PAVLISHINA, P., and KOLEVA-REKALOVA, E. 2002. Joint biostratigraphy and lithofacies of Berriasian and Valanginian limestones from subsurface sections in NE Bulgaria. *Geologica Balcanica*, 32(2–4): 63–67.
(biostratigraphy; calcareous microfossils; lithofacies; lithostratigraphy; primary data; Late Jurassic–Early Cretaceous [Tithonianian–Valanginian]; East Europe [northeast Bulgaria])

K

KENT, D.V., and GRADSTEIN, F.M. 1985. A Cretaceous and Jurassic geochronology. *Geological Society of America Bulletin*, 96(11): 1419–1427 (doi: 10.1130/0016-7606(1985)96<1419:ACAJG>2.0.CO;2).
(biostratigraphy; geochronology; magnetostratigraphy; compilation; Early Jurassic–Late Cretaceous [Pliensbachian–Cenomanian]; no specific geographical focus)

*KHOWAJA-ATEEQUZZAMAN, GARG, R., and MEHROTRA, N.C. 2006. *A catalogue of dinoflagellate cysts from India*. Diamond Jubilee Special Publication. Birbal Sahni Institute of Palaeobotany, Lucknow, 167 p.
(bibliography; biostratigraphy; catalogue; lithostratigraphy; compilation; Late Triassic–Quaternary [undifferentiated]; the Indian subcontinent [India])

*KRAMERS, J.W., and DOLBY, G. 1993. Jurassic/Cretaceous boundary in west-central Alberta. *Alberta Research Council (ARC) Open File Report*, 1993-26, 115 p.
(biostratigraphy; correlation; lithostratigraphy; palaeogeography; regional geology; primary data; Early Jurassic–Early Cretaceous [Pliensbachian–Aptian]; North America [west-central Alberta, West Canada])

L

LEEREVELD, H., and WILPSHAAR, M. 1995. Boreal-Tethyan correlation of the Lower Cretaceous by means of dinoflagellate cysts. *Stuifmail*, 8(1): 13–23.
(biostratigraphy; compilation; summary; Early Cretaceous [Berriasian–Albian]; no specific geographical focus; pan-Northern Hemisphere [Boreal and Tethyan realms])

LEEREVELD, H., MAHMOUD, M.S., and LELOUX, J. 1990. Stratigraphic evaluation of Early Cretaceous sporomorph assemblages from Egypt and Tunisia. *Stuifmail*, 13(3): 1–2. (biostratigraphy; palynofacies; pollen and spores; primary data; Late Jurassic–Early Cretaceous [Kimmeridgian–Berriasian and Hauterivian–Albian]; North Africa [Egypt, Tunisia])

LELONO, E.B., and NUGRAHANINGSIH. 2012. Australian palinomorphs (*sic*.) from the Buya Formation of the Sula Island. *Scientific Contributions Oil & Gas* (Jakarta), 35(3): 115–127.
(biostratigraphy; lithostratigraphy; palaeooceanography; petroleum geology; pollen and spores; primary data; Middle–Late Jurassic [Bathonian–Tithonian]; Australasia [Sula Islands, North Maluku, Indonesia])

LELOUX, J. 1991. Dinoflagellates of the Sidi Khalif Formation at the Jb. Meloussi, central Tunisia. *Stuifmail*, 9(1): 22–28.
(biostratigraphy; palaeoecology; palynofacies; reworking; primary data; Late Jurassic–Early Cretaceous [Tithonian–Berriasian]; North Africa [Tunisia])

*LI JIANGUO, PENG JUNGANG, and BATTEN, D.J. 2013. Palynostratigraphy of a Jurassic–Cretaceous transitional succession in the Himalayan Tethys, southern Xizang (Tibet), China. *Cretaceous Research,* 46: 123–135 (doi: 10.1016/j.cretres.2013.08.012).
(biostratigraphy; correlation; palaeogeography; pollen and spores; primary data; latest Jurassic–earliest Cretaceous [Tithonian–Berriasian]; China [Tibet, southwest China])

LINDSTRÖM, S., VOSGERAU, H., PIASECKI, S., NIELSEN, L.H., DYBKJÆR, K., and ERLSTRÖM, M. 2009. Ladinian palynofloras in the Norwegian–Danish Basin: a regional marker reflecting a climate change. *Geological Survey of Denmark and Greenland Bulletin,* 17: 21–24.
(biostratigraphy; palaeoclimate; palaeoecology; pollen and spores; compilation; Middle Triassic–Late Jurassic [Ladinian–Tithonian]; West Europe [Denmark, Norway])

LOSERT, J. 1986. Jurassic Rock Creek Member in the subsurface of the Edson area (west-central Alberta). *Alberta Research Council (ARC) Open File Report,* 1986-3, 43 p.

(biostratigraphy; correlation; lithostratigraphy; palaeoecology; regional geology; well logs; primary data; Late Jurassic–Early Cretaceous [Oxfordian–Albian]; North America [west-central Alberta, West Canada])

LOSERT, J. 1990. The Jurassic-Cretaceous boundary units and associated hydrocarbon pools in the Niton Field, west-central Alberta. *Alberta Research Council (ARC) Open File Report*, 1990-1, 41 p.
(biostratigraphy; bivalves; correlation; foraminifera; lithostratigraphy; palaeoecology; petroleum geology; regional geology; well logs; primary data; Middle Jurassic–Early Cretaceous [Bajocian–Aptian]; North America [west-central Alberta, West Canada])

LUTERBACHER, H. 1994. 4.2. Remarks on the subdivision of the Upper Jurassic of southern Germany by dinoflagellates. *In*: LEINFELDER, R.R. (editor and coordinator), KRAUTTER, M., LATERNSER, K., NOSE, M., SCHMID, D.U., SCHWEIGERT, G., WERNER, W., KEUPP, H., BRUGGER, H., HERRMANN, R., REHFELD-KIEFER, U., SCHROEDER, J.H., REINHOLD, C., KOCH, R., ZEISS, A., SCHWEIZER, V., CHRISTMANN, H., MENGES, G., and LUTERBACHER, H. 1994. The origin of Jurassic reefs: current research developments and results. *Facies*, 31: 28–31.
(ammonites; biostratigraphy; compilation; Late Jurassic [Oxfordian–Kimmeridgian]; West Europe [Germany])

M

MacRAE, R.A., FENSOME, R.A., and WILLIAMS, G.L. 1996. Fossil dinoflagellate diversity, originations, and extinctions and their significance. *Canadian Journal of Botany*, 74(11): 1687–1694 (doi: 10.1139/b96-205).
(biotic turnover; database; diversity; evolution; palaeoecology; phylogeny; plankton; sea levels; compilation; Middle Triassic–Quaternary [Anisian–undifferentiated]; no specific geographical focus)

*MAFI, A., GHASEMI-NEJAD, E., ASHOURI, A., and VAHIDI-NIA, M. 2013. Dinoflagellate cysts from the Upper Bajocian–Lower Oxfordian of the Dalichai Formation in

Binalud Mountains (NE Iran): their biostratigraphical and biogeographical significance. *Arabian Journal of Geosciences*, doi: 10.1007/s12517-013-0976-4, 10 p. (online only).
(biostratigraphy; palaeogeography; primary data; Middle–Late Jurassic [Bajocian–Oxfordian]; Middle East [northeast Iran])

MAFI, A., GHASEMI-NEJAD, E., ASHOURI, A., and VAHIDI-NIA, M. 2014. A note on the discovery of the suturocavate dinoflagellate cyst (*Limbodinium absidatum*) in the Middle East (Binalud Mountains, NE Iran). *Journal of African Earth Sciences*, 92: 21–24 (doi: 10.1016/j.jafrearsci.2013.12.012).
(biostratigraphy; lithostratigraphy; palaeogeography; primary data; Middle–Late Jurassic [Callovian–Oxfordian]; Middle East [northeast Iran])

McLAUGHLIN, R.J., SLITER, W.V., FREDERIKSEN, N.O., HARBERT, W.P., and McCULLOCH, D.S. 1994. Plate motions recorded in tectonostratigraphic terranes of the Franciscan Complex and evolution of the Mendocino Triple Junction, northwestern California. *U.S. Geological Survey Bulletin,* No. 1997, 60 p.
(biostratigraphy; Franciscan Complex; pollen and spores; regional geology; reworking; tectonics; terranes; primary data; Late Jurassic [Oxfordian–Kimmeridgian], Late Cretaceous [undifferentiated] and Paleogene [Paleocene–Eocene]; North America [northern California, USA])

*MOLDOVANU, M. 1984. Palynology of the Jurassic deposits in the sunken Northern area of the Moesian Platform. *University of Bucharest Laboratory of Palaeontology, 75 Years 1906–1981, Special Volume*: 55–66.
(biostratigraphy; biozonation; correlation; primary data; Early–Late Jurassic [Toarcian–Tithonian]; East Europe [Romania])

MONTRESOR, M., PROCACCINI, G., and STOECKER, D.K. 1999. *Polarella glacialis*, gen. nov., sp. nov. (Dinophyceae): Suessiaceae are still alive! *Journal of Phycology*, 35(1): 186–197 (doi: 10.1046/j.1529-8817.1999.3510186.x).
(evolution; molecular phylogenetics; morphology; phylogeny; sea ice; taxonomy; compilation and primary data; Late Triassic–Early Jurassic–Quaternary [undifferentiated–Holocene]; Antarctica, no specific geographical focus)

MUNSTERMAN, D.K., VERREUSSEL, R.M.C.H., HOUBEN, A.J.P., and KERSTHOLT-BOEGEHOLD, S.J. 2013. The value of palynology in enhancing regional stratigraphic models; an updated dinoflagellate cyst, spore and pollen standard from the Late Jurassic-Early Cretaceous of The Netherlands. *In*: Clark, M., Lucas-Clark, J., and Fisk, L.H. (eds.). *AASP – The Palynological Society 46th Annual Meeting, San Francisco, California, USA, October 20th–24th 2013, Abstracts and Program*, 143.
(biostratigraphy; pollen and spores; summary; Middle Jurassic–Early Cretaceous [Callovian–Berriasian]; West Europe [The Netherlands])

N

NICOLL, R.S. 2002. Conodont biostratigraphy and palaeogeography of the Triassic on the western, northwestern and northern margins of the Australian Plate. *In*: Keep, M., and Moss, S.S. (eds.). *The sedimentary basins of Western Australia 3. Proceedings of the Petroleum Exploration Society of Australia Symposium, Perth, Western Australia*, 167–179.
(biostratigraphy; chronostratigraphy; conodonts; palaeogeography; pollen and spores; tectonics; compilation; Middle–Late Triassic [Anisian–Rhaetian]; Australasia [Burma, Indonesia, Papua New Guinea, Timor, Northern Territory, Western Australia], China [southwest China])

NICOLL, R.S., and FOSTER, C.B. 1998. Revised biostratigraphic (conodont-palynomorph) zonation of the Triassic of Western and northwestern Australia and Timor. *In*: Purcell, P.G., and Purcell, R.R. (eds.). *The sedimentary basins of Western Australia 2. Proceedings of the Petroleum Exploration Society of Australia, Perth, Western Australia*, 129–139.
(biostratigraphy; chronostratigraphy; conodonts; correlation; pollen and spores; compilation; Middle–Late Triassic [Anisian–Rhaetian]; Australasia [Timor, Western Australia])

*NORRIS, G. 1978. Phylogeny and a revised supra-generic classification for Triassic-Quaternary organic-walled dinoflagellate cysts (Pyrrhophyta). Part II. Families and sub-orders of fossil dinoflagellates. *Neues Jahrbuch für Geologie und Paläontologie, Abhandlungen*, 156(1): 1–30.
(biostratigraphy; evolution; morphology; phylogeny; suprageneric classification; taxonomy; compilation; Late Triassic–Pliocene [undifferentiated]; no specific geographical focus)

P

PATERSON, N.W., MANGERUD, G., ASK, M., MØRK, A., and BJÆRKE, T. 2013. Palynology of the Upper Triassic succession on Hopen, Arctic Norway. *In*: Clark, M., Lucas-Clark, J., and Fisk, L.H. (eds.). *AASP – The Palynological Society 46th Annual Meeting, San Francisco, California, USA, October 20th–24th 2013, Abstracts and Program*, 155.
(biostratigraphy; palynofacies; pollen and spores; summary; Late Triassic [Carnian–Norian]; Arctic [Hopen Island, Svalbard region])

PIEŃKOWSKI, G. 2004. The epicontinental Lower Jurassic of Poland. *Polish Geological Institute Special Papers*, 12, 152 p.
(biostratigraphy; correlation; eustasy; lithostratigraphy; sedimentology; sequence stratigraphy; compilation; Early Jurassic [Hettangian–Toarcian]; East Europe [Poland])

POULTON, T.P., DETTERMAN, R.L., HALL, R.L., JONES, D.L., PETERSON, J.A., SMITH, P., TAYLOR, D.G., TIPPER, H.W., and WESTERMANN, G.E.G. 1992. 4. Western Canada and United States, *In*: Westermann, G.E.G. (ed.). *The Jurassic of the Circum-Pacific*. Cambridge University Press, Cambridge, UK, 29–92.
(ammonites; biostratigraphy; bivalves; lithostratigraphy; regional geology; compilation; Middle–Late Jurassic [Bajocian–Tithonian]; Arctic [Arctic Canada])

Q

QUATTROCCHIO, M.E., MARTÍNEZ, M.A., CARPINELLI PAVISICH, A., and VOLKHEIMER, W. 2006. Early Cretaceous palynostratigraphy, palynofacies and palaeoenvironments of well sections in northeastern Tierra del Fuego, Argentina. *Cretaceous Research*, 27(4): 584–602 (doi: 10.1016/j.cretres.2005.11.012).
(biostratigraphy; palaeoecology; palynofacies; pollen and spores; tectonics; primary data and compilation; Early–Late Cretaceous [Berriasian–Cenomanian]; South America [Tierra del Fuego, southern Argentina])

QUATTROCCHIO, M.E., VOLKHEIMER, W., BORRROMEI, A.M., and MARTÍNEZ, M. 2011. Changes of the palynobiotas in the Mesozoic and Cenozoic of Patagonia: a review. *Biological Journal of the Linnean Society*, 103(2): 380–396 (doi: 10.1111/j.1095-8312.2011.01652.x).
(evolution; floral history; palaeoecology; palaeogeography; pollen and spores; plants; compilation; Early–Late Jurassic [Pliensbachian–Tithonian]; South America [Patagonia, southern Argentina])

R

RATTEY, R.P., and HAYWARD, A.B. 1993. Sequence stratigraphy of a failed rift system: the Middle Jurassic to Early Cretaceous basin evolution of the Central and Northern North Sea. *In*: Parker, J.R. (ed.). *Petroleum Geology of Northwest Europe: Proceedings of the 4th Conference.* The Geological Society, London, UK, 215–249.
(biostratigraphy; lithostratigraphy; palaeogeography; petroleum geology; seismic stratigraphy; sequence stratigraphy; structural geology; compilation; Middle Jurassic–Early Cretaceous [Aalenian–Berriasian]; West Europe [Central and Northern North Sea])

RIDING, J.B. 2013. The palaeobiology of Triassic and Jurassic dinoflagellate cysts. *In*: Clark, M., Lucas-Clark, J., and Fisk, L.H. (eds.). *AASP – The Palynological Society 46th Annual Meeting, San Francisco, California, USA, October 20th–24th 2013, Abstracts and Program*, 170.
(evolution; mass extinction; oceanic anoxic event; palaeobiology; palaeoecology; palaeothermometry; summary; Late Triassic–Late Jurassic [Ladinian–Oxfordian]; no specific geographical focus)

RIDING, J.B., and DETTMANN, M.E. 2013. The first Australian palynologist: Isabel Clifton Cookson (1893–1973) and her scientific work. *Alcheringa,* 38: 97–129 (doi: 10.1080/03115518.2013.828252).
(biography; biostratigraphy; botany; fungi; history; palaeobotany; pollen and spores; compilation; Late Jurassic–Holocene [Oxfordian–Holocene]; South America [Chile], Arctic [Arctic Canada, Svalbard], Australasia [Australia, Papua New Guinea], West Europe [England])

RUHL, M., BONIS, N.R., REICHART, G.-J., SINNINGHE-DAMSTÉ, J.S., and KÜRSCHNER, W.M. 2011. Atmospheric carbon injection linked to end-Triassic mass extinction. *Science*, 333(6041): 430–434 (doi: 10.1126/science.1204255).
(climate change; mass extinction; methane injection; organic geochemistry; vegetation; volcanism; compilation; primary data; Triassic [Rhaetian]; West Europe [Austria, England])

RUHL, M., DEENEN, M.H.L., ABELS, H.A., BONIS, N.R., KRIJGSMAN, W., and KÜRSCHNER, W.M. 2010. Astronomical constraints on the duration of the early Jurassic Hettangian stage and recovery rates following the end-Triassic mass extinction (St Audrie's Bay/East Quantoxhead, UK). *Earth and Planetary Science Letters*, 295(1–2): 262–276 (doi: doi:10.1016/j.epsl.2010.04.008).
(astrostratigraphy; cyclostratigraphy; mass extinction; organic geochemistry; volcanism; primary data; Late Triassic [Rhaetian]; West Europe [England])

S

SARJEANT, W.A.S. 1960. The mystery of the hystrichospheres. *Journal of the University of Sheffield Geological Society,* 3(6): 262–268.
(classification; history; hystrichospheres; review article; compilation; Late Jurassic [Oxfordian]; West Europe [England])

SARJEANT, W.A.S. 1965. The Xanthidia. *Endeavour*, 24(91): 33–39.
(acritarchs; morphology; review article; xanthidia; compilation; Late Triassic–Holocene [undifferentiated]; Australasia [Australia], West Europe [England, Switzerland])

SARJEANT, W.A.S. 1967. The Xanthidia – the solving of a palaeontological problem. *The Mercian Geologist*, 2(3): 245–266.
(acritarchs; biography; biostratigraphy; Christian Gottfried Ehrenberg (1795–1876); classification; history; hystrichospheres; prasinophytes; review article; xanthidia; compilation; Middle Jurassic–Holocene [undifferentiated]; Arctic [Spitzbergen], West Europe [England, France, Germany])

SARJEANT, W.A.S. 1970. Xanthidia, palinospheres and ‘hystrix’. A review of the study of fossil unicellular microplankton with organic cell walls. *Microscopy*, 31(9): 221–253. (acritarchs; biography; biostratigraphy; Christian Gottfried Ehrenberg (1795–1876); classification; history; hystrichospheres; morphology; palaeoecology; palinospheres; prasinophytes; review article; xanthidia; compilation; Precambrian–Holocene [undifferentiated]; North America (Canada), Arctic [Spitzbergen], West Europe [England, France, Germany, Norway, Spain], Russia [undifferentiated])

SMITH, K., and RITCHIE, J.D. 1993. Jurassic volcanic centres in the Central North Sea. *In*: Parker, J.R. (ed.). *Petroleum Geology of Northwest Europe: Proceedings of the 4th Conference.* The Geological Society, London, UK, 519–531. (biostratigraphy; mantle plume; seismic reflection; volcanism; primary data; Early Jurassic [Sinemurian]; West Europe [Central North Sea])

STANLEY, G.D. Jr. 2006. Photosymbiosis and the evolution of modern coral reefs. *Science*, 312 (5775): 857–858 (doi: 10.1126/science.1123701). (coral reefs; corals; evolution; extinctions; Family Suessiacea; photosymbiosis; review article; compilation; Triassic–Jurassic [undifferentiated]; no specific geographical focus)

STANLEY, G.D. Jr., and VAN DE SCHOOTBRUGGE, B. 2009. Chapter 2. The evolution of the coral–algal symbiosis. *In*: van Oppen, M.J.H., and Lough, J.M. (eds.). *Coral Bleaching. Patterns, processes, causes and consequences.* Ecological Studies 205, Springer-Verlag, Berlin, Heidelberg (Germany), 7–19. (biostratigraphy; coral bleaching; evolution; Family Suessiaceae; photosymbiosis; reefs; review article; scleractinian corals; compilation; Late Triassic–Early Jurasssic [Carnian–Toarcian]; Australasia [northwest Australia], North Africa [Libya], West Europe [Austria, Germany, Sweden])

STEFFEN, D. 1993. Influence des variations eustatiques sur la distribution de la matière organique dans les roches sedimentaires: exemple des dépôts berriasiens des Bassins Vocontien, Ultrahelvétique et du Yorkshire. *Publications du Departement de Geologie et de Paléontologie, Université de Genève*, No. 13, 117 p.

(biostratigraphy; eustasy; organic geochemistry; sequence stratigraphy; palynofacies; primary data; latest Jurassic-earliest Cretaceous [Tithonian–Berriasian]; West Europe [England, France, Switzerland])

STEFFEN, D., and GORIN, G. 1993a. Palynofacies of the Upper Tithonian – Berriasian deep sea carbonates in the Vocontian Trough (SE France). *Bulletin des Centres de Recherches Exploration-Production Elf-Aquitaine,* 17(1): 235–247.
(biostratigraphy; sequence stratigraphy; palaeoecology; palynofacies; primary data; latest Jurassic-earliest Cretaceous [Tithonian–Berriasian]; West Europe [France])

STEFFEN, D., and GORIN, G. 1993b. Chapter 5. Sedimentology of organic matter in Upper Tithonian–Berriasian deep-sea carbonates of southeast France: evidence of eustatic control. *In:* Katz, B., and Pratt, L. (eds.). Source rocks in a sequence stratigraphic framework. *AAPG (American Association of Petroleum Geologists) Studies in Geology*, 37: 49–65.
(biostratigraphy; eustasy; sequence stratigraphy; palynofacies; petroleum geology; primary data; latest Jurassic-earliest Cretaceous [Tithonian–Berriasian]; West Europe [France])

STUKINS, S., JOLLEY, D.W., McILROY, D., and HARTLEY, A.J. 2013. Middle Jurassic vegetation dynamics from allochthonous palynological assemblages: An example from a marginal marine depositional setting; Lajas Formation, Neuquén Basin, Argentina. *Palaeogeography, Palaeoclimatology, Palaeoecology*, 392: 117–127 (doi 10.1016/j.palaeo.2013.09.002).
(palaeoecology; pollen and spores; statistics; taphonomy; vegetation dynamics; primary data; Middle Jurassic [Bajocian]; South America [Argentina])

STUKINS, S., McILROY, D., and RIDING, J.B. 2013. Comparative biostratigraphy and palaeoenvironment analysis between the upper and lower Lajas Formation, Neuquén Basin from Portada Covunco and Sierra de Chacaico. *In*: Clark, M., Lucas-Clark, J., and Fisk, L.H. (eds.). *AASP – The Palynological Society 46th Annual Meeting, San Francisco, California, USA, October 20th–24th 2013, Abstracts and Program*, 184.
(biostratigraphy; palaeoecology; pollen and spores; summary; Middle Jurassic [Bajocian–Callovian]; South America [Argentina)

SUKAMTO, R., and WESTERMANN, G.E.G. 1992. 8. Indonesia and Papua New Guinea. *In*: Westermann, G.E.G. (ed.). *The Jurassic of the Circum-Pacific*. Cambridge University Press, Cambridge, UK, 181–193.
(ammonites; belemnites; biostratigraphy; bivalves; foraminifera; lithostratigraphy; palaeoecology; palaeogeography; radiolaria; regional geology; compilation; Middle Jurassic–earliest Cretaceous [Callovian–Berriasian]; Australasia [Papua New Guinea])

T

TRAVERSE, A. 1988. Chapter 12. Late “Mesophytic” “non-pollen” palynomorphs. *In*: *Paleopalynology*. Unwin Hyman, London, UK, 240–254.
(acritarchs; biology; history; life cycle; megaspores; morphology; synthesis; textbook; compilation; Late Triassic–Jurassic [undifferentiated and Pliensbachian–Kimmeridgian]; Arctic [northern Alaska, East Greenland]; West Europe [England])

TRAVERSE, A. 1988. Chapter 13. Jurassic–Cretaceous palynology: end of the “Mesophytic.” Advent and diversification of angiosperms. *In*: *Paleopalynology*. Unwin Hyman, London, UK, 255–288.
(acritarchs; angiosperms; biostratigraphy; evolution; Cretaceous–Paleogene event; megaspores; normapolles pollen; pollen and spores; provincialism; compilation; Early–Late Cretaceous [undifferentiated–Cenomanian]; North America [northwest Alberta, Canada; Wyoming, USA])

TRAVERSE, A. 2008. Chapter 12. Triassic–Jurassic megaspores, dinoflagellates, other microplankton. *In*: *Paleopalynology, second edition*. Landman, N.H., and Jones, D.S. (eds.). *Topics in Geobiology*, 28: 325–345, Springer, Dordrecht, The Netherlands.
(acritarchs; biology; history; life cycle; megaspores; morphology; synthesis; textbook; compilation; Late Triassic–Jurassic [undifferentiated and Pliensbachian–Kimmeridgian]; Arctic [northern Alaska, East Greenland]; West Europe [England])

TRAVERSE, A. 2008. Chapter 13. Jurassic–Cretaceous palynology: end of the “Mesophytic.” Advent and diversification of angiosperms. Dynamic evolution of

dinoflagellates. *In*: *Paleopalynology, second edition*. Landman, N.H., and Jones, D.S. (eds.). *Topics in Geobiology*, 28: 347–390, Springer, Dordrecht, The Netherlands.
(acritarchs; angiosperms; biostratigraphy; Cretaceous–Paleogene event; evolution; megaspores; normapolles pollen; pollen and spores; provincialism; compilation; Middle Jurassic–Late Cretaceous [Callovian–Cenomanian]; Australasia [Australia, Indonesia, New Zealand], North America [northwest Alberta, Canada; Wyoming, USA])

W

WARRINGTON, G. 1987. The Late Triassic and Early Jurassic palynomorph succession in Somerset, England. *Palynology*, 11: 257 (abstract).
(ammonites; biostratigraphy; lithostratigraphy; summary; Late Triassic–Early Jurassic [Carnian–Toarcian]; West Europe [England])

WIERZBOWSKI, A., and ROGOV, M.A. 2013. Biostratigraphy and ammonites of the Middle Oxfordian to lowermost Upper Kimmeridgian in northern Central Siberia. *Russian Geology and Geophysics,* 54: 1083–1102 (doi: 10.1016/j.rgg.2013.07.02).
(ammonites; biostratigraphy; correlation; phylogeny; taxonomy; compilation and primary data; Late Jurassic [Oxfordian–Kimmeridgian]; Arctic [North Siberia, northern Russia])

WIGGINS, V.D. 1987. Upper Triassic (Late Carnian–Early Norian) dinocyst assemblages from northern Alaska. *Palynology*, 11: 258 (abstract).
(biostratigraphy; summary; Late Triassic [Carnian–Rhaetian]; Arctic [northern Alaska])

*WILLIAMS, S.K., KRAUSE, F.F., KNOPP, S.T., DAVIES, E.H., POULTON, T.P., and DeBUHR, C.L. 2013. The Niton Member: A new Oxfordian to Kimmeridgian (Jurassic) glauconitic sandstone member, Fernie Formation, west-central Alberta subsurface — sedimentology, biostratigraphy and regional considerations. *Bulletin of Canadian Petroleum Geology*, 61(3): 211–240 (doi: 10.2113/gscpgbull.61.3.211).
(biostratigraphy; lithostratigraphy; petroleum geology; petrology; regional geology; trace fossils; primary data; Late Jurassic [Oxfordian–Kimmmeridgian]; North America [west-central Alberta, West Canada])

Z

ZAKHAROV, V.A., ROGOV, M.A., DZYUBA, O.S., ŽÁK, K., KOŠT'ÁK, M., PRUNER, P., SKUPIEN, P., CHADIMA, M., MAZUCH, M., and NIKITENKO, B.L. 2014. Palaeoenvironments and palaeoceanography changes across the Jurassic/Cretaceous boundary in the Arctic realm: case study of the Nordvik section (north Siberia, Russia). *Polar Research*, 33: 19714, http://dx.doi.org/10.3402/polar.v33.19714, 19 p. (online only). (ammonites; belemnites; biodiversity; biostratigraphy; bivalves; eustasy; foraminifera; Jurassic-Cretaceous boundary; palaeoceanography; palaeoclimatology; palaeoecology; prasinophytes; spores; stable isotope geochemistry; primary data; latest Jurassic–earliest Cretaceous [Tithonian–Berriasian]; Arctic [North Siberia, northern Russia])

Appendix 2. List of dinoflagellate cyst species and subspecies

This Appendix alphabetically lists all valid, formally-defined dinoflagellate cyst taxa below generic level which are mentioned in this contribution with full author citations. References to the author citations can be found in Fensome & Williams (2004).

Amphorula metaelliptica Dodekova 1969
Belodinium dysculum Cookson & Eisenack 1960
Biorbifera johnewingii Habib 1972
Carpathodinium predae (Beju 1971) Drugg 1978
Chytroeisphaeridia chytroeides (Sarjeant 1962) Downie & Sarjeant 1965
Cribroperidinium crispum (Wetzel 1967) Fenton 1981
Ctenidodinium combazii Dupin 1968
Ctenidodinium continuum Gocht 1970
Ctenidodinium ornatum (Eisenack 1935) Deflandre 1938
Ctenidodinium tenellum Deflandre 1938
Dapsilidinium warrenii (Habib 1976) Lentin & Williams 1981
Dichadogonyaulax sellwoodii Sarjeant 1975
Dingodinium cerviculum Cookson & Eisenack 1958 (formerly *Dingodinium albertii* Sarjeant 1966)

Druggidium apicopaucicum Habib 1973

Druggidium deflandrei (Millioud 1969) Habib 1973

Endoscrinium asymmetricum Riding 1987

Gochteodinia mutabilis (Riley in Fisher & Riley) Fisher & Riley 1982

Hebecysta balmei (Stover & Helby 1987) Below 1987

Histiophora ornata Klement 1960

Lanterna sportula Dodekova 1969

Leptodinium subtile Klement 1960

Meiourogonyaulax caytonensis (Sarjeant 1959) Sarjeant 1969 (formerly *Lithodinia caytonensis* (Sarjeant 1959) Gocht 1976)

Meiourogonyaulax stoveri Millioud 1969

Nannoceratopsis deflandrei Evitt 1961

Nannoceratopsis deflandrei Evitt 1961 subsp. *senex* (van Helden 1977) Ilyina in Ilyina et al. 1994 (formerly *Nannoceratopsis senex* van Helden 1977)

Nannoceratopsis gracilis Alberti 1961

Nannoceratopsis pellucida Deflandre 1938

Nannoceratopsis spiculata Stover 1966

Nannoceratopsis triceras Drugg 1978

Oligosphaeridium? *asterigerum* (Gocht 1959) Davey & Williams 1969

Oligosphaeridium complex (White 1842) Davey & Williams 1966

Phoberocysta neocomica (Gocht 1957) Millioud 1969

Prolixosphaeridium parvispinum (Deflandre 1937) Davey et al. 1969

Rynchodiniopsis? *regalis* (Gocht 1970) Jan du Chêne et al. 1985 (formerly *Leptodinium regale* Gocht 1970)

Scriniodinium crystallinum (Deflandre 1938) Klement 1960

Scriniodinium? *oxfordianum* Sarjeant 1962

Systematophora areolata Klement 1960

Caption for Table 1:

Table 1. A breakdown of the 89 publications on Triassic to earliest Cretaceous dinoflagellate cysts compiled herein, based on the geographical region(s) and the initial letter of the family name of the first author.