(1999), SCHÖNLAUB & HISTON (2000), HUBMANN et al. (2003), SCHÖNLAUB et al. (2004), VENTURINI (2006), HISTON et al. (2007).

Untere Bischofalm-Schiefer / Lower Bischofalm Shale

THOMAS J. SUTTNER, HANS P. SCHÖNLAUB

Validity: Invalid; the graptolite bearing section at the Obere Bischofalm was discovered by STACHE (1872); the section was studied in detail by JAEGER (in FLÜGEL et al., 1977) and later by SCHÖNLAUB (1985a); important biostratigraphic studies have been performed by JAEGER & SCHÖNLAUB (1980).

Type area: ÖK50-UTM, map sheets 3108 Sillian, 3109 Oberdrauburg, 3110 Kötschach-Mauthen, 3111 Spittal an der Drau, 3116 Sonnenalpe Naßfeld (ÖK50-BMN, map sheets 196 Obertilliach, 197 Kötschach, 198 Weißbriach, 199 Hermagor).

Type section: -

Reference section(s): Area around Lake Zollner (SCHÖNLAUB, 1981), N 46°36'21" / E 13°04'17"; Obere Bischofalm (N 46°35'57" / E 13°03'11"), Feistritzgraben, Gundersheimer Alm road (Oberbuchach section), Collendiaul, Dellacher Alm, Nölblinggraben (SCHÖNLAUB, 1985a).

Derivation of name: After the locality Bischofalm in the Carnic Alps (Austria).

Synonyms: Graptoliten-Schiefer (STACHE, 1872); Lower Graptolitic Shales (FLÜGEL et al., 1977).

Lithology: Black alaun shale and lydites, greyish green shale.

Fossils: Conodonts, graptolites.

Origin, facies: Marine siliciclastics, pelagic unit (Distal Siliciclastic Facies).

Chronostratigraphic age: Llandovery–Ludlow.

Biostratigraphy: *acuminatus–nilssoni* graptolite zones (FLÜGEL et al., 1977; JAEGER & SCHÖNLAUB, 1980).

Thickness: 10–20 m.

Lithostratigraphically higher rank unit: Bischofalm Nappe (informal).

Lithostratigraphic subdivision: -

Underlying unit(s): Bischofalm Quartzite (conformable contact).

Overlying unit(s): Middle and Upper Bischofalm Shale (conformable contact).

Lateral unit(s): Nölbling Formation.

Geographic distribution: Carnic Alps.

Remarks: -

Complementary references: HABERFELNER (1931), HERITSCH (1936), SCHÖNLAUB (1969a, 1985a, 1991, 1998), RANTITSCH (1992a), JAEGER & SCHÖNLAUB (1994), VAI (1998), SCHÖNLAUB & HISTON (2000), SCHÖNLAUB et al. (2004), VENTURINI (2006), HISTON et al. (2007).

Cardiola-Formation / Cardiola Formation

THOMAS J. SUTTNER, HANS P. SCHÖNLAUB

Validity: Invalid; first named "Cardiola-Horizont" by STACHE (1884: p. 329); later well described by GAERTNER (1931); additional biostratigraphic and sedimentological investigations were carried out by WALLISER (1964) and SCHÖNLAUB (1985a); a summary on this unit is provided by KREUTZER (1992b) and later by BRETT et al. (2009).

Type area: ÖK50-UTM, map sheets 3109 Oberdrauburg, 3110 Kötschach-Mauthen, 3116 Sonnenalpe Naßfeld, 4114 Bad Eisenkappel (ÖK50-BMN, map sheets 197 Kötschach, 212 Vellach, 213 Bad Eisenkappel).

Type section: -

Reference section(s): Cellon avalanche gully (WALLISER, 1964), N 46°36'32" / E 12°56'23"; Rauchkofel northern wall, Kellerwand, Rauchkofelboden (BRETT et al., 2009); Seeberg Aufbruch (KUPSCH et al., 1971).

Derivation of name: After the bivalve *Cardiola* (STACHE, 1884: p. 331).

Synonyms: Untersilurische Schichten [partim] (STACHE, 1874); Cardiola-Horizont (STACHE, 1884); Grauer Plattenkalk (FRECH, 1887); Cardiola-Niveau (GEYER, 1894); Cardiola-schichten (GEYER, 1894); Bunte Flaser- oder Bänderkalke und Kalkphyllite des Obersilur [partim] (GEYER, 1899); Cardiolaniveau (GAERTNER, 1931); Cardiola-Niveau (GAERTNER, 1931); Cardiola Beds (SCHÖNLAUB, 1970).

Lithology: Dark grey to black limestone with interbedded layers of marl and shale.

Fossils: Acritarchs (PRIEWALDER, 1987), bivalves (KRIZ, 1979, 1999), brachiopods (PLODOWSKI, 1971, 1973), cephalopods (RISTEDT, 1968; BOGOLEPOVA, 1998; HISTON, 1999), chitinozoans (PRIEWALDER, 1997), conodonts (WALLISER, 1964; SCHÖNLAUB, 1979), graptolites (JAEGER, 1975), radiolarians (KREUTZER, 1994), rugose corals (PICKETT, 2007), trace fossils (HISTON & SCHÖNLAUB, 1999), trilobites (HAAS, 1969).

Origin, facies: Marine limestone, pelagic unit (Plöcken Facies).

Chronostratigraphic age: Ludlow.

Biostratigraphy: *siluricus* conodont zone (WALLISER, 1964); *potens* orthocerid zone (HISTON et al., 1999).

Thickness: 0.5–4 m.

Lithostratigraphically higher rank unit: Plöcken Facies (informal).

Lithostratigraphic subdivision: -

Underlying unit(s): Kok Formation (conformable contact).

Overlying unit(s): Alticola Limestone (conformable contact).

Lateral unit(s): Nölbling Formation.

Geographic distribution: Carnic Alps (Plöcken Area), Karavanke Mountains (Seeberg area).

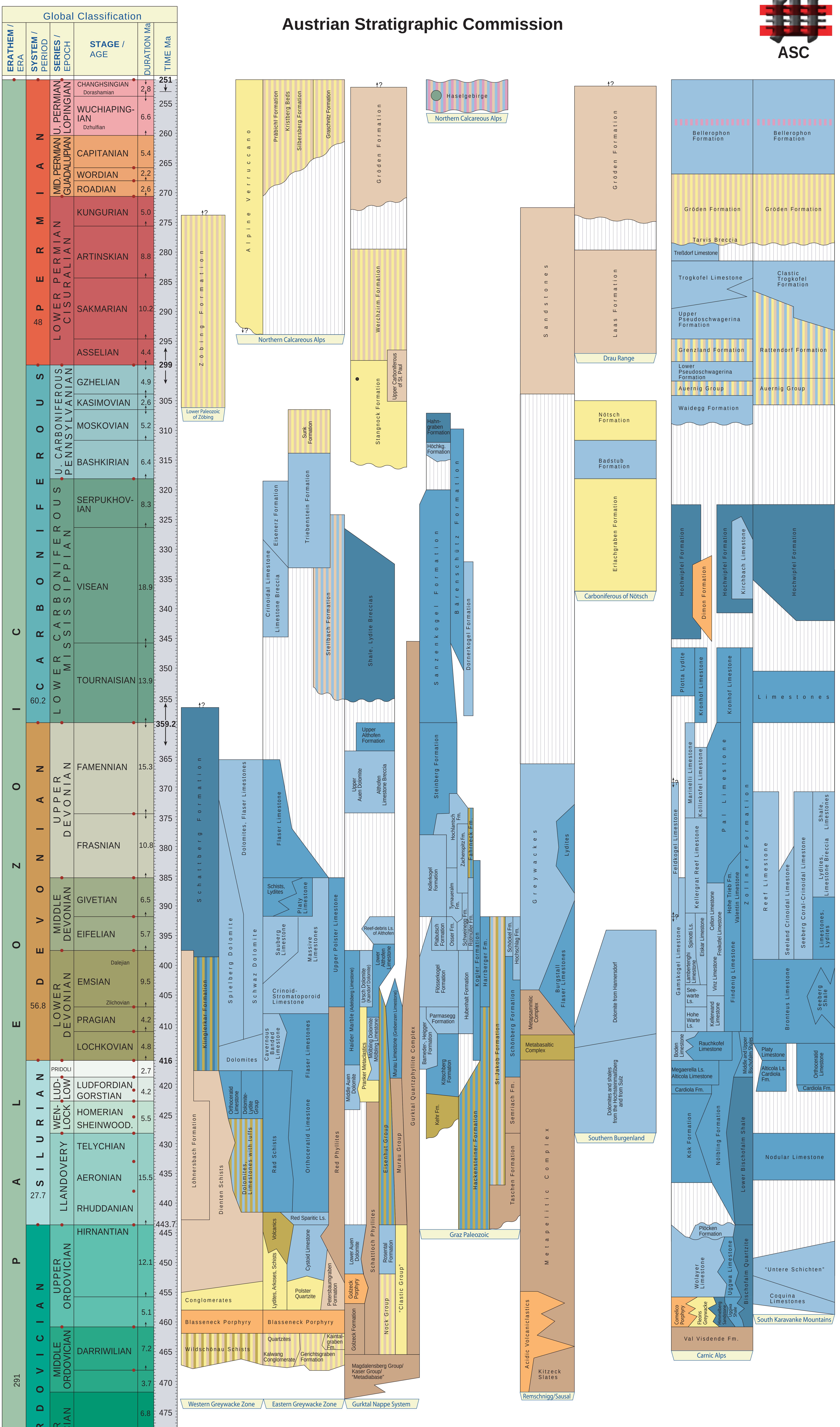
Remarks: -

Complementary references: TELLER (1886b, 1887), SPITZ (1909), HERITSCH (1929), WALLISER (1957), FLÜGEL (1965), PÖLSLER (1967), RISTEDT (1969), MANARA & VAI (1970), SCHÖNLAUB (1980b, 1985a, 1991, 1997, 1998), SIEWERT (1984), SCHÖNLAUB et al. (1997, 2004), WENZEL (1997), VAI (1998, 1999), FERRETTI et al. (1999), HISTON et al. (1999), SCHÖNLAUB & HISTON (1999, 2000), PRIEWALDER (2000), CORRADINI et al. (2003).

Austrian Stratigraphic Chart 2004 - Paleozoic

(sedimentary successions)

Austrian Stratigraphic Commission



Legend

- pelagic, offshore, siliciclastic
- pelagic, nearshore, calcareous
- shallow marin, neritic
- terrestrial-continental, coarse clastic
- terrestrial-continental, fine clastic
- evaporite (chloride, sulphate)
- rhyolite, dacite
- (basaltic) andesite, trachyandesite
- basalt
- phyllite
- mixed-facies (in corresponding colors)

- coal (may include several seams)
- ? position/age doubtful/controversial
- | equal units
- \ older unit left \ younger unit right
- hiatus
- unconformity
- GSSP

Fm. Formation

Ls. Limestone

Cutout and English adaptation of the "Die Stratigraphische Tabelle von Österreich 2004": Geological Survey of Austria

The Austrian Stratigraphic Chart 2004 - Paleozoic is a supplement of:
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