

(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, Delacher 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 alau 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 investiga-

tions 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 Bänderkalk 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).

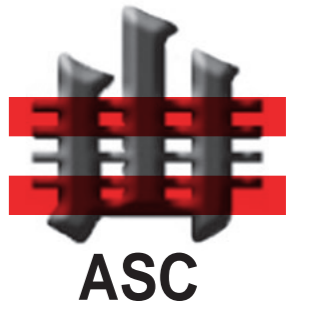
Remarks: -

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).

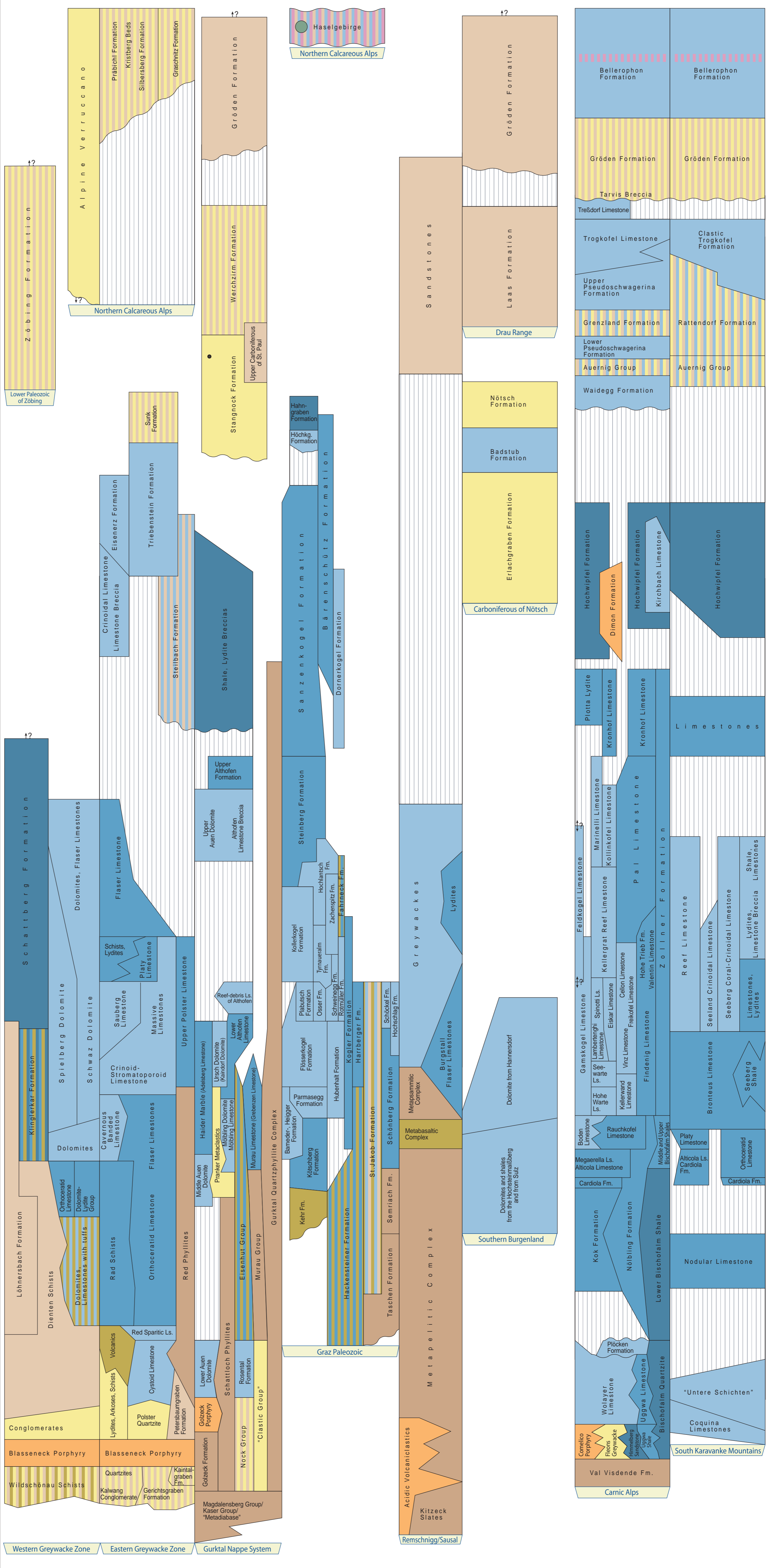
Austrian Stratigraphic Chart 2004 - Paleozoic

(sedimentary successions)

Austrian Stratigraphic Commission



ERA	SYSTEM / PERIOD / SERIES / EPOCH	STAGE / AGE	DURATION Ma	Global Classification					
				ERATHM / ERA	SYSTEM / PERIOD / SERIES / EPOCH				
PALEOZOIC	PERMIAN	CHANGHSINGIAN / Dorashanian	251	PERMIAN	MID PERMIAN / GUADALUPIAN / LOPINGIAN				
		WUCHIAPINGIAN / Dzhulfian	255						
		CAPITANIAN	260						
		WORDIAN	265						
		ROADIAN	270						
		PERMIAN	LOWER PERMIAN / CISURALIAN			KUNGURIAN	275		
						ARTINSKIAN	280		
						SAKMARIAN	285		
						ASSELIAN	290		
		PERMIAN	UPPER PERMIAN / CARBONIFEROUS / PENNSYLVANIAN			GZHELIAN	295	PERMIAN	LOWER PERMIAN / CISURALIAN
KASIMOVIAN	300								
MOSKOVIAN	305								
BASHKIRIAN	310								
PERMIAN	UPPER PERMIAN / CARBONIFEROUS / PENNSYLVANIAN			SERPUKHOVIAN	315				
				VISEAN	320				
					325				
PERMIAN	LOWER PERMIAN / MISSISSIPPIAN			TOURNAISIAN	330	PERMIAN	LOWER PERMIAN / MISSISSIPPIAN		
				335					
				340					
		345							
		350							
		355							
		359.2							
		365							
		370							
		375							
PERMIAN	UPPER DEVONIAN	FAMENNIAN	380	PERMIAN	UPPER DEVONIAN				
		FRASNIAN	385						
		GIVETIAN	390						
		EIFELIAN	395						
		DEVONIAN	LOWER DEVONIAN			EMSIAN	400		
						405			
		PRAGIAN	410						
		LOCHKOVIAN	415						
		PERMIAN	LOWER DEVONIAN			LUDFORDIAN / GORSTIAN	420	PERMIAN	LOWER DEVONIAN
						HOMERIAN / SHEINWOOD	425		
TELYCHIAN	430								
AERONIAN	435								
RHUDDANIAN	440								
HIRNANTIAN	443.7								
445									
450									
455									
460									
PERMIAN	UPPER ORDOVICIAN	DARRIWILIAN	465	PERMIAN	UPPER ORDOVICIAN				
		470							
		475							
		480							
		485							
		488.3							
		490							
		495							
		500							
		PERMIAN	MIDDLE CAMBRIAN			PAIBIAN	505	PERMIAN	MIDDLE CAMBRIAN
510									
515									
520									
525									
530									
535									
540									
542									
CAMBRIAN	LOWER CAMBRIAN				545	CAMBRIAN	LOWER CAMBRIAN		
		550							
		555							
		560							
		565							
		570							
		575							
		580							
		585							
		590							



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

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

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