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Figures:

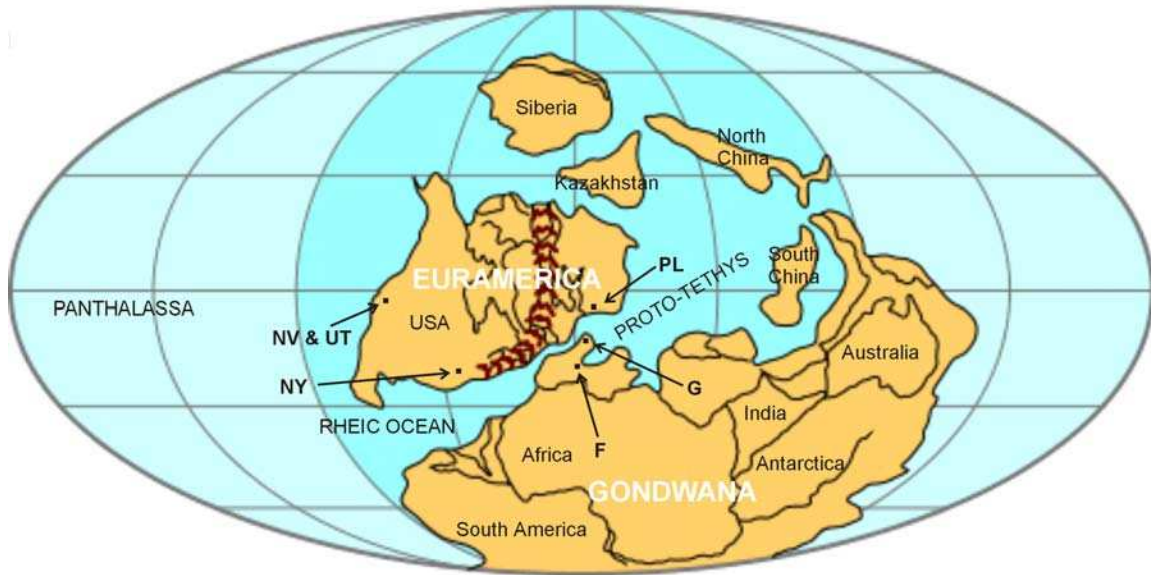


FIGURE 1. Late Devonian palaeogeographic reconstruction (based on Scotese and McKerrow, 1990) showing location of study areas. NV = Nevada; UT = Utah; NY = New York State; F = France; G = Germany; and PL = Poland. Other F-F tentaculitoid localities are also shown (e.g. South China and North Africa).

UPPER DEVONIAN	Famennian	—	<i>praesulcata</i>	Extinctions	
		—	<i>expansa</i>		
		—	<i>posterea</i>		
		—	<i>trachytera</i>		
		—	<i>marginifera</i>		
		—	<i>rhomboidea</i>		
	L	M <i>crepida</i>	UKH		
	M				
	E				
	L	M <i>triangularis</i>	LKH		
	M				
	E				
	Frasnian	—	<i>linguiformis</i> (formerly Um <i>gigab</i>)		Extinctions
		L	M <i>rhenana</i> (formerly Lower and Upper <i>gigab</i>)		
E					
—		<i>jamieae</i> (formerly A. <i>triangularis</i>)			
L		<i>has si</i> (formerly A. <i>triangularis</i>)			
E		<i>has si</i> (formerly Upper <i>asymmetricab</i>)			
—	<i>punctata</i> (formerly Middle <i>asymmetricab</i>)				

FIGURE 2. The Late Devonian standard conodont zonation, showing the approximate timing of the Lower and Upper Kellwasser Horizons in classic German boundary sections, and the position of the Frasnian / Famennian mass extinction.

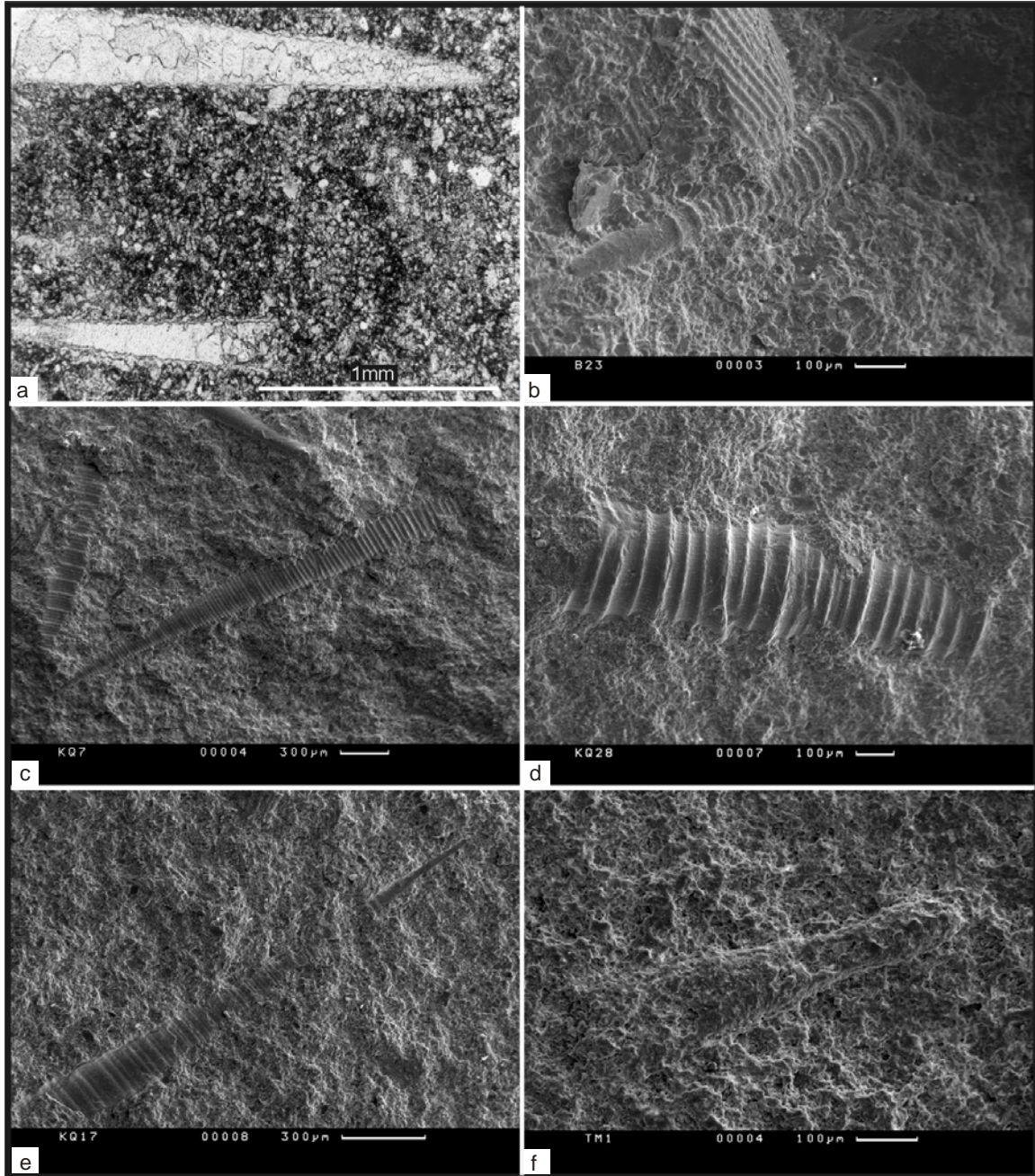
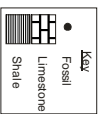
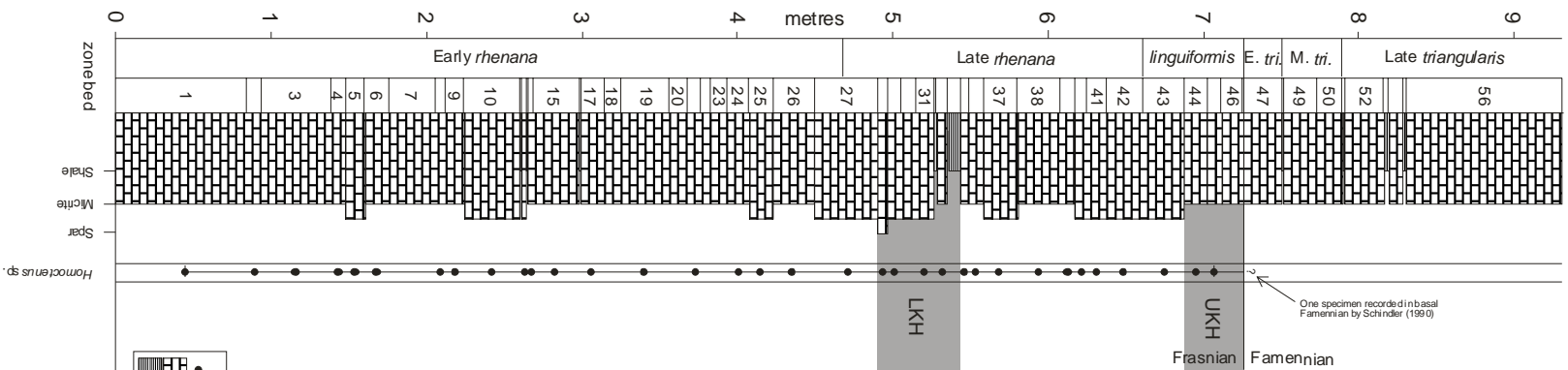


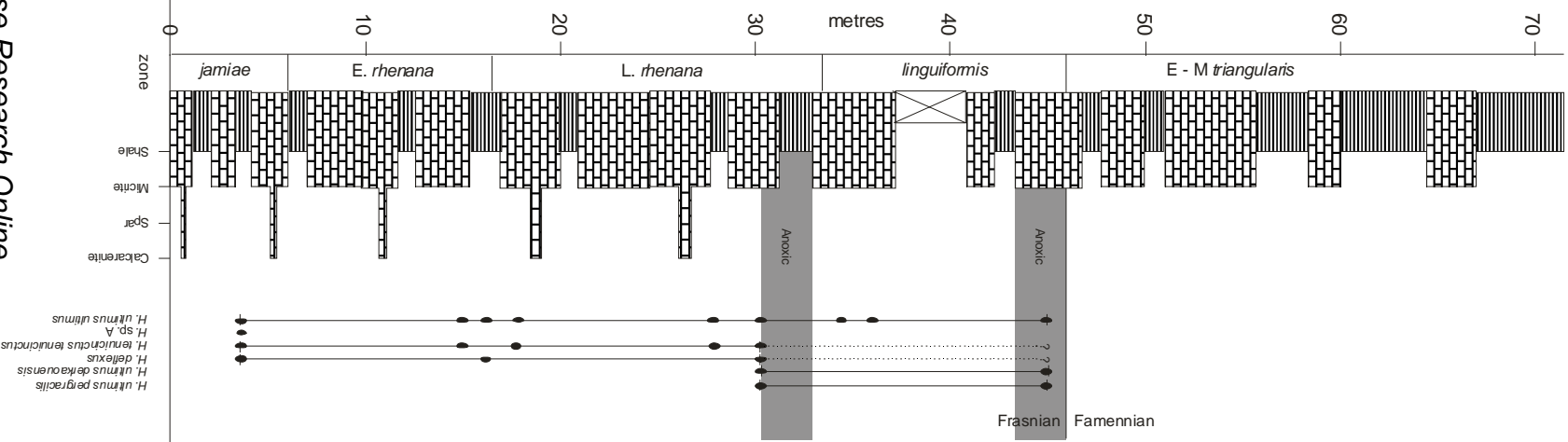
FIGURE 3. 3a) Homoctenids in thin-section from the Lower Kellwasser Horizon, La Serre. Original (probably calcite) shell material is visible at high magnification, which displays laminae. The lower shell contains a small, inverted cone within its juvenile chamber. This appears to be a fragment of another tentaculitoid which has been washed

into the shell (cone in cone appearance). Note the diagnostic depressed, angulate rings on the inner shell wall, repeating the appearance of the outer surface; 3b) *Homoctenus tenuicinctus* ssp. from the Lower Kellwasser Horizon, Steinbruch Benner; 3c) *Homoctenus ultimus ultimus* from the *jamiae* Zone, Kowala Quarry. At the top of the figure is a homoctenid with a smooth juvenile portion. This would originally have had rings, but they have not been preserved; 3d) Adult stage fragment of *Homoctenus tenuicinctus tenuicinctus* from Early *rhenana* Zone, Kowala Quarry. Note the slightly irregular shape which is occasionally observed in this species in the late stages of growth (Sauerland, 1983); 3e) An unnamed species, *Homoctenus* sp. A from the *jamiae* Zone, Kowala Quarry. Note tripartite arrangement of rings, which diagnostically separates this specimen from the similar *Homoctenus tenuicinctus neglectus*; 3f) Tentaculitoid from the *punctata* Zone at Tempiute Mountain. This photograph demonstrates the poor preservation of these examples. This specimen appears smooth and has a characteristic bulb shaped end, typical of styliolinids. (Scale bars are provided for reference).

Benner



Kowala



- H. ultimus pograllis
- H. ultimus dekaouensis
- H. delixus
- H. tenuicinctus tenuicinctus
- H. sp. A
- H. ultimus ultimus

FIGURE 4. Stratigraphic logs of Steinbruch Benner section, Germany, and Kowala Quarry, Poland, showing the position of the Kellwasser Horizons (LKH and UKH in Germany and anoxic equivalents in Poland) and beds which yield species belonging to *Homoctenus*. Conodont zonation after Schindler (1990), and Racki (1990). ? = possible occurrence.

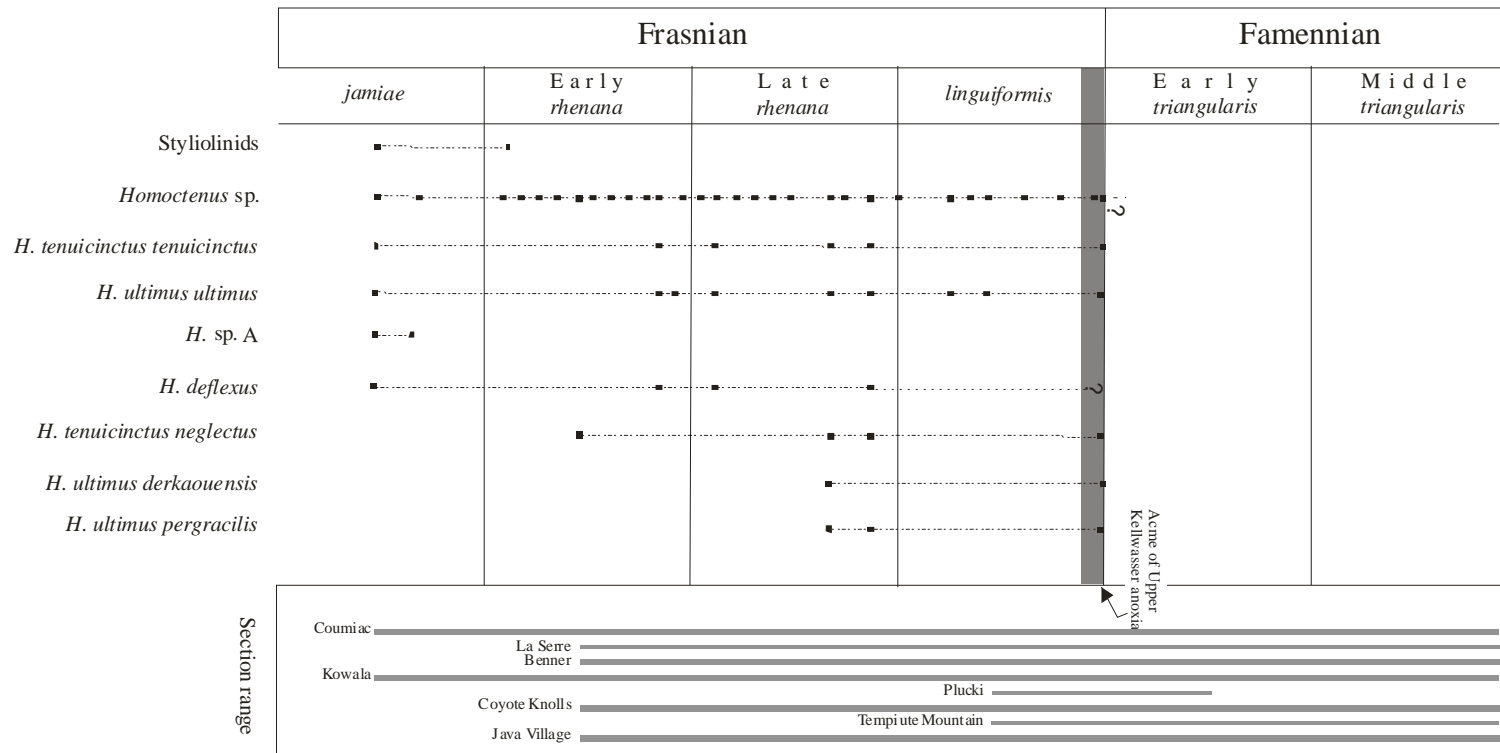


FIGURE 5. Stratigraphic range of tentaculitoids during the Frasnian and Famennian in sections in this study. “?” = Rare specimens of *Homoctenus* in Famennian of Germany and France (Schindler, 1990) and New York (Over, 1997).