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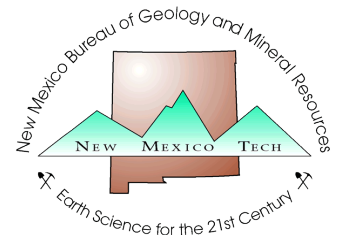
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# *Sciponoceras gracile* (Shumard)

## Common Upper Cretaceous guide fossil in New Mexico

by William A. Cobban, Paleontologist, U.S. Geological Survey, Denver, Colorado

*Sciponoceras gracile* is an ammonite that belongs to a group of straight or nearly straight forms known as baculites, a name derived from the Upper Cretaceous genus *Baculites* (Latin, *baculum*, a rod or staff, and *ites*, stone). *Sciponoceras* is of early Late Cretaceous age (middle and late Cenomanian). Members of the genus are fairly small, and most are less than 20 mm in diameter at their larger end. The shell has a very low angle of taper, usually a degree or two. Ornament, other than ventral ribs, may or may not be present, but all specimens have constrictions at some growth stage (Fig. 1). These constrictions, which represent thickened parts of the shell, are only visible on the internal molds. Fig. 1E is a good example; most of the specimen has retained its shell material, and only two constrictions are visible, where the shell is missing.

*Sciponoceras gracile*, originally described as *Baculites gracilis* Shumard (1860, p. 596), came from the Eagle Ford Formation of northern Texas, where the species is abundant. The whereabouts of the type or type specimens is unknown. Specimens from the Eagle Ford are

well preserved and are mostly uncrushed internal molds of limestone. Diameters at the larger end of the shells are usually 10 to 15 mm, but can be as much as 25 to 30 mm. Eagle Ford specimens are straight and have subelliptical to nearly circular cross sections. Ornament on the internal molds consists of fairly uniform ribs that arise at midflank and arch forward on crossing the venter, where they are strongest. These ribs usually number 5 to 7 in a distance that is equal to the diameter of the shell. Constrictions, spaced at 1 to 1½ shell diameters, parallel the ribs. On some individuals, the constrictions completely encircle the internal molds and cross the dorsal side with faint forward arching. The suture is rather simple with somewhat rectangular lobes and saddles. Wright and Kennedy (1981, fig. 38) have presented some excellent photographs of seven good examples of *S. gracile* from the Eagle Ford of Texas.

Many localities of *S. gracile* have been found in New Mexico (Fig. 2). The New Mexico specimens are like those from Texas, except none has been collected that exceeds 20 mm in diameter. An occa-

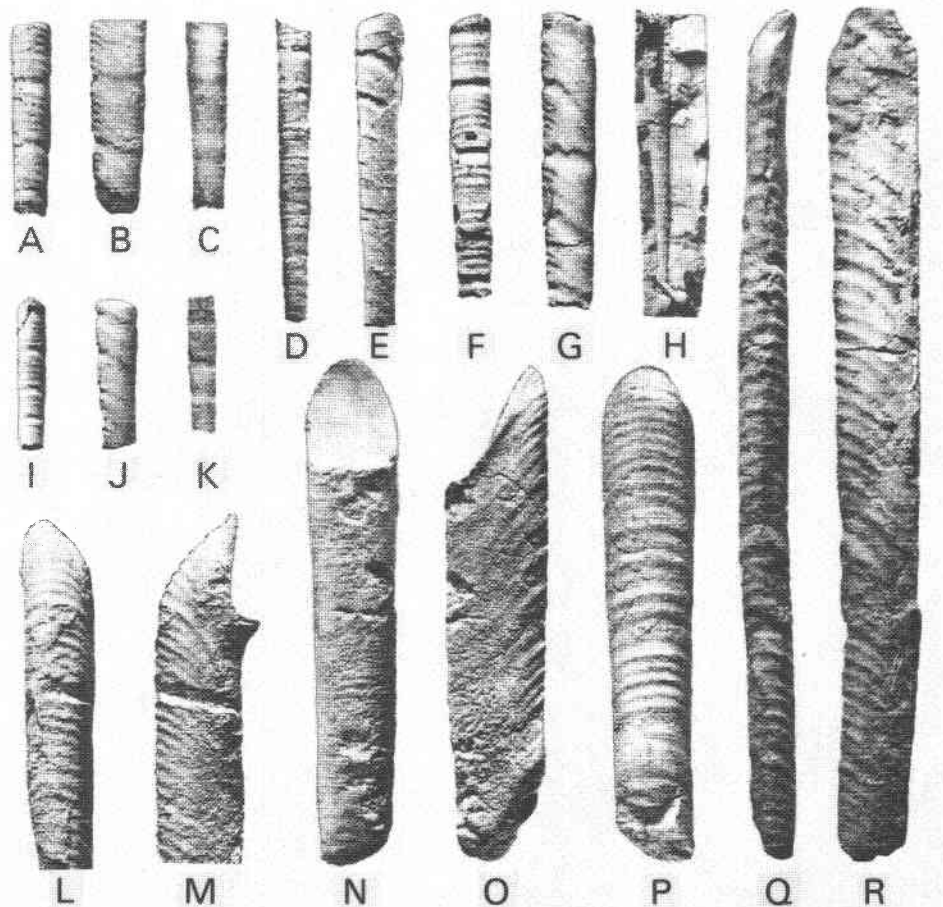


FIGURE 1—*Sciponoceras gracile* (Shumard). All natural size except H, which is twice natural size. A–C, ventral, lateral, and dorsal views of hypotype USNM 356912, from USGS Mesozoic locality D5780 in SE¼ sec. 8, T5S, R2E, Socorro County, New Mexico; D and E, ventral and lateral views of hypotype USNM 387358, from USGS Mesozoic locality D11760 in center of sec. 24, T17S, R13W, Grant County, New Mexico; F and G, ventral and lateral views of hypotype USNM 356913, from USGS Mesozoic locality D11529 in NE¼ sec. 11, T18S, R18W, Grant County, New Mexico; H, lateral view (× 2) of hypotype USNM 387359 that has an initial coil (arrow) on the small dislocated end, from USGS Mesozoic locality 951 near Kanab, Utah; I–K, ventral, lateral, and dorsal views of hypotype USNM 387360, from same locality as F and G; L and M, ventral and lateral views of hypotype USNM 356911, from same locality as A–C; N–P, dorsal, lateral, and ventral views of hypotype USNM 387361, from USGS Mesozoic locality D6793 in NW¼ sec. 23, T7N, R8W, Cibola County, New Mexico; Q and R, ventral and lateral views of hypotype USNM 387362, from same locality as A–C.

sional specimen has a complete aperture, which is curved away from the ventral side and slightly flared (Fig. 1M) like a specimen from the Greenhorn Limestone near Pueblo, Colorado (Cobban and Scott, 1972, pl. 17, figs. 23, 24). Specimens smaller than 2 mm in diameter are not present in the collections from New Mexico. A very small juvenile from a limestone concretion from the Tropic Shale of southern Utah reveals that the species begins with an initial coil of about 0.7-mm diameter (Fig. 1H). This coil consists of a protoconch and one complete whorl. Initial coils will probably be found in the limestone concretions in the Bridge Creek Limestone Member of the Mancos Shale in western New Mexico. Similar initial coils, although of smaller diameter (about 0.5 mm), are present on juvenile *Baculites codyensis* Reeside collected by me in 1940 from a limestone concretion in the Marias River Shale in northern Montana (Cobban, 1951b, p. 13, loc. 33). The Montana specimens, which are of Santonian age, are younger than *S. gracile*. Landman (1982) described initial coils of baculites that may have come from the concretion found by me.

*Sciponoceras gracile* was indicated as a guide fossil to the base of rocks of Turonian age in the Western Interior of the United States in 1951 (Cobban, 1951a, fig. 2) and soon after was recommended as a zonal index fossil (Cobban and Reeside, 1952, p. 1017). Later evidence indicated that this zone was more properly assigned to the upper Cenomanian (Cobban, 1971, p. 5). The species has since been found at many localities in Europe. Wright and Kennedy (1981, p. 115) record it from the "Upper Cenomanian, Plenus Marls, *Metoicoceras geslinianum* Zone of southern England and correlatives in Bed C in Devon, perhaps also occurring at the base of the Middle Chalk. Widespread elsewhere at the same level in France (Sarthe, Normandy), southern Germany, the United States, Mexico and perhaps Angola."

In New Mexico, *S. gracile* occurs at many localities in the Greenhorn Limestone or in calcareous rocks of Greenhorn age (Fig. 2). In the Raton Basin, the species has been found in limestone beds in the basal part of the Bridge Creek Member of the Greenhorn Limestone. Farther west at Lamy, the species was recorded as *Baculites gracilis* by Rankin (1944, p. 10). *Sciponoceras gracile* occurs in chalky limestone beds in the Greenhorn Limestone Member of the Mancos Shale at many localities along the east and south sides of the San Juan Basin. Pike (1947, table 1) listed many localities along the west flank of the basin, but some of these records may be based on other species, such as *Baculites yokoyamai* Tokunaga and Shimizu. In west-central New Mexico, *S. gracile* has been collected at many places from chalky limestone beds and from limestone concretions in the basal part of the Bridge Creek Limestone beds (e.g., Hook and others, 1983, p. 25). East and southeast of Socorro, *S. gracile* is found in the basal part of the Bridge Creek Limestone Member of the Mancos Shale (Hook, 1983, p. 171; Tabet, 1979, p. 13). Farther southwest, in the Truth-or-Consequences area, the species occurs in concretionary limestone in the Bridge Creek Limestone beds of the Mancos Shale. In the Deming-Silver City area farther west, *S. gracile* has been collected from limestone beds and limestone concretions in the Bridge Creek Member of the Colorado Formation (Hook and Cobban, 1981, fig. 3).

Molluscan fossils associated with *S. gracile* at most localities include the bivalves *Inoceramus pictus* J. de C. Sowerby, *Pycnodonte newberryi* (Stanton), and *Exogyra levis* Stephenson, and the ammonites *Euomphaloceras (Kanabicerias) septemseriatum* (Cragin) and *Metoicoceras geslinianum* d'Orbigny. Other ammonites that have been found with *S. gracile* in New Mexico are *Moremanoceras scotti* (Moreman), *Pseudocalycoceras dentonense* (Moreman), *Sumitoceras bentonianum* (Cragin), *Calycoceras naviculare* (Mantell), *Allocrioceras annulatum* (Shumard), *Worthoceras vermiculus* (Shumard), and *W. gibbosum* Moreman. Gastropods and small echinoids are also present at many localities in south-central and west-central New Mexico. Coral thickets occur locally.

The specimens shown in Fig. 1 were photographed by R. E. Burkholder formerly of the U.S. Geological Survey, Denver, Colorado. These specimens, all hypotypes, are stored in the National Museum of Natural History in Washington, D.C., and have USNM catalog numbers.

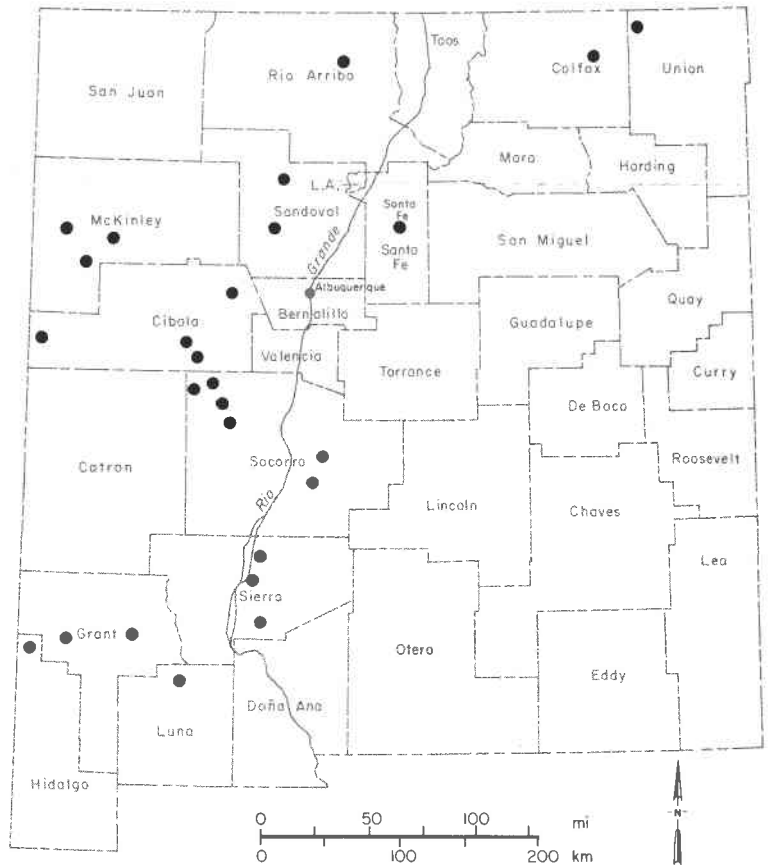


FIGURE 2—Localities (•) where *Sciponoceras gracile* has been collected in New Mexico.

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