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## On the taxonomic status of some tubulospinose *Globotruncana* from the Campanian of Mexico

### ABSTRACT

The taxonomic position of some specimens of *Globotruncana* Cushman with peripheral tubulospines is discussed. These specimens are restricted to the Campanian *Globotruncanita elevata* Zone of Mexico. It is postulated that they may belong to *Globotruncana spinea* Kikoine.

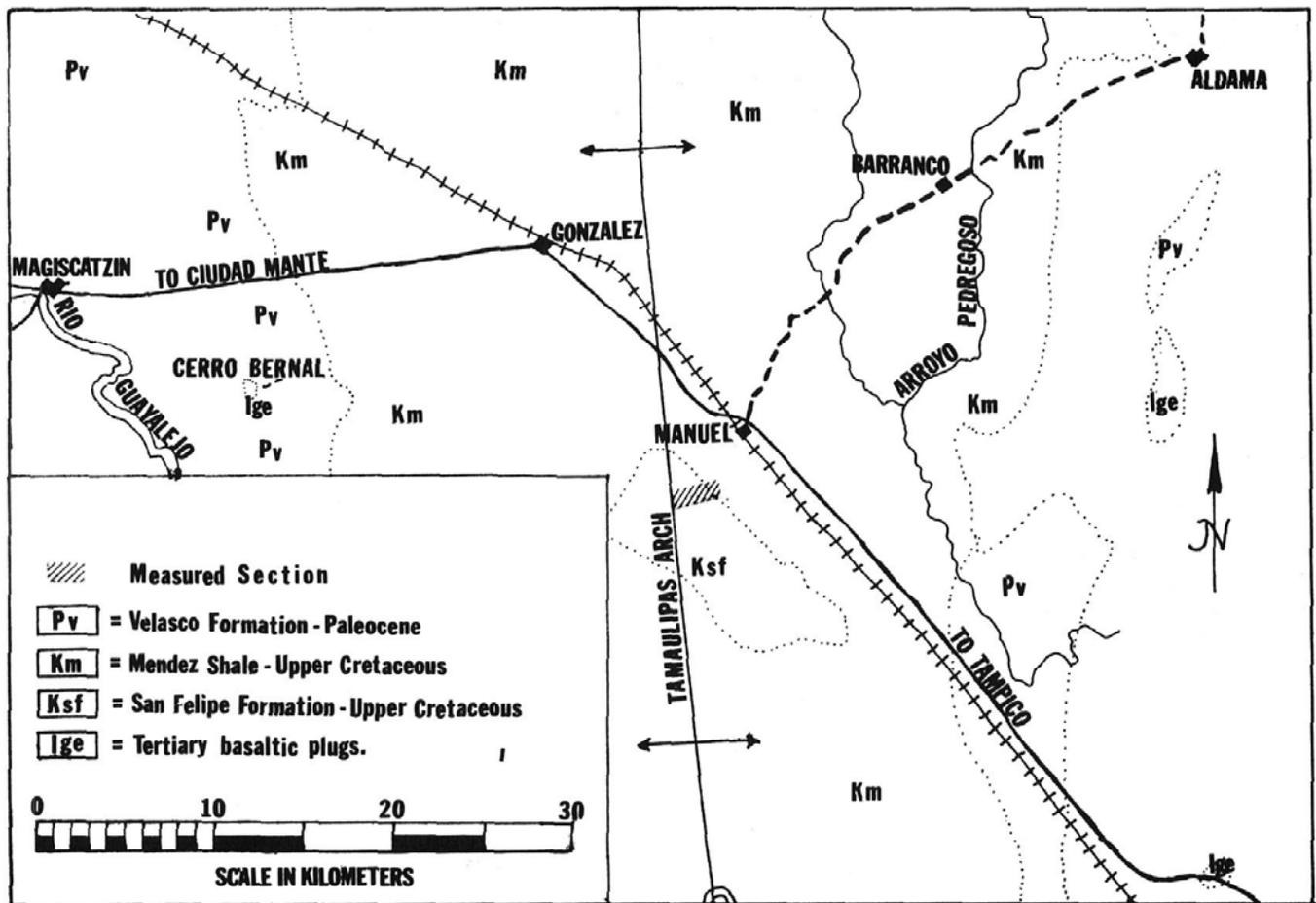
### INTRODUCTION

During the study of the stratigraphic distribution of Upper Cretaceous foraminifera of northeastern Mexico, I found several specimens of *Globotruncana*. These are easy to recognize because of the biconvex test, with the periphery possessing a narrow double keel in the chambers of the last whorl and a tubulospine in some of the final chambers. They were difficult to refer to any of the previously described species of *Globotruncana*; however, a comparative morphological analysis of the specimens found with them indicate that they may belong to *Globotruncana spinea* Kikoine. This taxon has been reported from only a few places in the world.

The illustrated specimen was photographed with a Carl-Zeiss Photomicroscope. The location of the San Felipe Formation outcrop where the specimen was obtained is shown in text-figure 1.

### DISCUSSION

About 23 specimens of *Globotruncana* having peripheral tubulospines were found in thin sections of limestone from the San Felipe Formation outcropping about 5 km. south of Estación Manuel, Tamaulipas (text-figure 1). These specimens can be described as follows: test trochospiral, spiral side always more convex than umbilical side (T'X/TX from 0.490 to 0.830); first whorl, when visible, formed by spherical chambers; penultimate whorl umbilicoconvex formed by single-keeled chambers; last whorl with first chambers having narrow double keel, final chambers with well-developed tubulospine, umbilicus wide, with umbilical shoulders. To date only two Campanian globotruncanid species with peripheral tubulospines have been described in the literature: *Globotruncana spinea* Kikoine and *Globotruncanita calcarata* (Cushman). A third species, *G. falsocalcarata*, that also displays peripheral tubulospines has recently been described from the Maastrichtian of the Quseir area, Eastern Desert (U.A.R.) by Kerdany and Abdelsalam (1969). The tubulospinose specimens of *Globotruncana* found are associated with a Campanian faunal assemblage. They are more likely to belong to *G. spinea* rather than *G. calcarata* because the former shows a peripheral double keel and a biconvex instead of planoconvex test. The description of the specimens from the Campanian of Mexico outlined above fits remarkably well with the morphological features that could be displayed in an axial section of that species; furthermore, it was originally described from the Hendaye section of France, which corresponds to the Campanian.



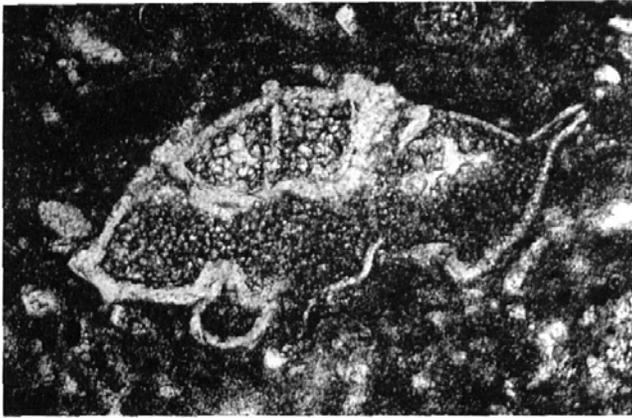
TEXT-FIGURE 1

Generalized geological map of southern Tamaulipas, Mexico, showing distribution of sedimentary rocks in the area and the location of the San Felipe Formation outcrop where tubulospinose specimens were found.

The phylogenetic origin of *G. spinea* is still uncertain. Kikoine (1947, p. 21) suggested that it is related to *Globotruncanita calcarata* (Cushman), representing a transitional stage between *Globotruncana arca* (Cushman) and *Globotruncanita calcarata* (Cushman). On the other hand, Pessagno (1967, p. 354) considered that *G. spinea* evolved from *G. lapparenti* (Brotzen). I believe the thin section analysis of isolated specimens of *G. spinea* is still needed to arrive at final conclusions about the evolution of this taxon. Unfortunately, the original illustrations of *G. spinea* given by Kikoine are rather sketchy, making it difficult to undertake detailed comparative morphological studies. The re-examination and re-illustration of the holotype would greatly help to clarify the description of this species, but I was unable to locate the holotype of *G. spinea*, which was supposed to have been deposited in Kikoine's personal collection.

#### STRATIGRAPHIC DISTRIBUTION

The tubulospinose specimens herein referred to as *Globotruncana spinea* Kikoine are associated with *Globotruncana lapparenti* (Brotzen), *G. stephensoni* Pessagno, *G. ventricosa* White and *Globotruncanita elevata* (Brotzen). This assemblage indicates a Campanian age. *Globotruncana spinea* has been reported from only a few places in the world. It was originally described from the Campanian of France (Kikoine, 1947). Ayala-Castañares (1954, p. 410) noted that *G. spinea* is present in the samples from the Tampico-Tuxpan region, Mexico; however, he did not give any illustrations of these specimens. Edgell (1957, p. 115, pl. 2 figs. 1-3) described and illustrated *G. spinea* from the Santonian of Australia. Pessagno (1967, p. 354) cited this species from the upper part of the San Felipe Formation (lower Campanian) in the Tampico area. I examined the washed residue of several samples from



TEXT-FIGURE 2  
Axial section of tubulospinose specimen of *Globotruncana*, herein referred to *G. spinea* Kikoine, San Felipe Formation, Campanian, *Globotruncanita elevata* Zone. Maximum diameter: 482  $\mu$ .

the upper part of the San Felipe Formation from the Tampico-Tuxpan region, but did not find any specimens referable to *G. spinea*.

#### CONCLUSION

The morphological comparison of the features displayed by *G. spinea*, as seen from apertural view on the holotype illustrated by Kikoine (1947, p. 21), enabled me to refer the tubulospinose specimens of *Globotruncana* from the San Felipe Formation (Campanian, *Globotruncanita elevata* Zone) of Mexico to this species.

#### ACKNOWLEDGMENTS

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