APPLICATION: EXPORT PERMIT FOR COUNCIL FOR GEOSCIENCE

Description of Material: CGS-431

Specimen CGS 431 is a small (~3.5 cm long), partially preserved skull and lower jaw of *Prolacerta,* a Triassic reptile closely related to archosaurs. The specimen consists of the medial and posterior part of the orbits, as well as the braincase, occiput and posterior part of the lower jaw (see Figures 1 and 2). The most important parts of the skull have been exposed through mechanical preparation and in general the preservation is very good. Little preparation has been done on the palate (Figure 2). Fossils of early diapsids are rare and this is an important specimen. This specimen shows preservation typical of the *Lystrosaurus* or lower *Cynognathus* assemblage zones, but unfortunately it lacks locality data.

Figure 1: Dorso-lateral view (from the right side) of specimen CGS-341. Ruler scale is in centimeters.

Reason for Export:
The CGS was approached by Dr. R.J. Butler of the GeoBio-Center, Ludwig Maximilian University in Munich, Germany to loan the specimen for further research. Dr. Butler wants to do micro-CT scanning on the specimen in order to conduct a detailed study, together with his student Mr. M. Ezcurra, on *Prolacerta's* braincase and associated structures. This will be done at the facilities of the Museum für Naturkunde in Berlin.

Figure 2: Ventral view (from the right side) of specimen CGS-341. Ruler scale is in centimeters.

Motivation:

The origin and inter-relationships of crocodiles, dinosaurs and birds have long been contentious with a lot of researchers focusing on the morphology of the neurocranium. The good preservation and proposed CT scanning on CGS-341 will allow previously unknown and scientifically important details of the braincase and neurocranial anatomy of *Prolacerta* to be studied, thereby making an important contribution to understanding the early evolutionary radiation of the lineage leading to crocodiles and birds.

Dr Butler is a young palaeontologist who has published extensively on Triassic terrestrial vertebrates and the origin of archosauromorphs. He is currently a funded Research Group Leader (funded by the DFG Emmy Noether Programme), leading the Archosauromorph Research Group, based at the GeoBio Center of the University of Munich. This group focuses on the early evolutionary radiations of Archosauromorpha

and Archosauria, major groups of vertebrates that include birds, dinosaurs, crocodilians, pterosaurs and many other extinct clades.

The CT-scanning that Dr Butler proposes to undertake on the fossil specimen, will take place at a world-class facility and constitutes a non-invasive technique that will not cause any damage to the specimen. The CGS therefore supports the use of this technology. No additional preparation of the specimen is currently planned and Dr. Butler will only be allowed to do so with the permission of the CGS.

If the application is approved, the specimen will be carried by hand by Dr. Fernando Abdala of the BPI to the annual SVP conference where he will deliver the fossil to Dr. Butler. Dr. Butler will be responsible for safe return of the specimen to the CGS.

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