# TAPHONOMIC HISTORY OF THE ICHNOFOSSIL *OPHIOMORPHA* ISP. OF THE COASTAL PLAIN OF RIO GRANDE DO SUL (QUATERNARY)


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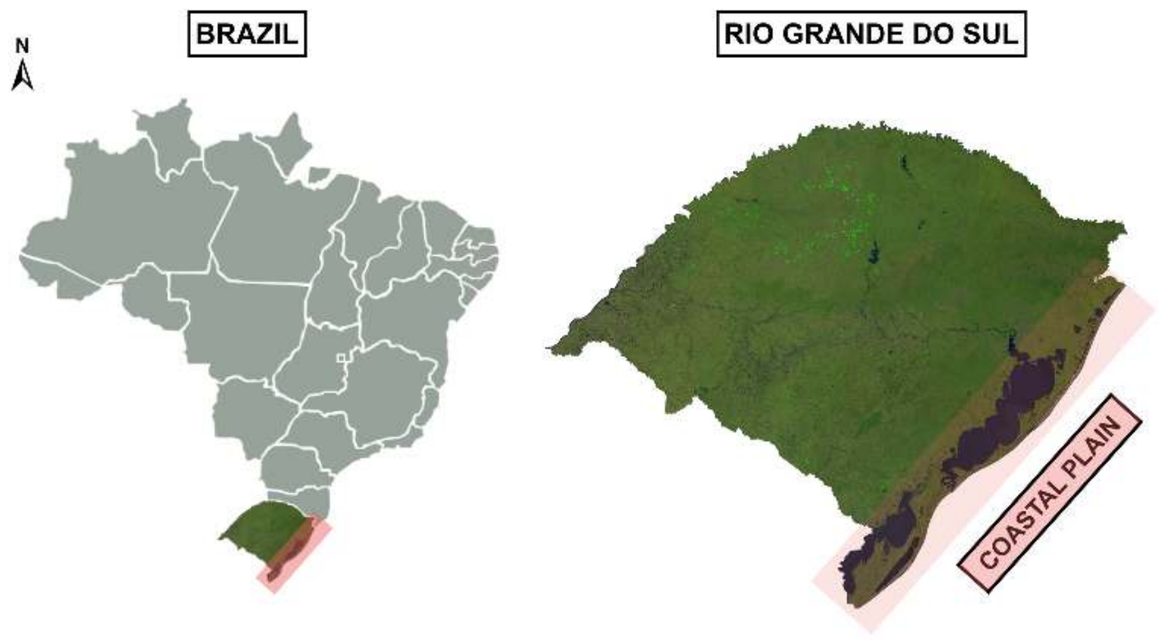
### RESEARCH OBJECTIVE

The aim of this masters research is to accomplish paleontological studies, with an ichnological focus, of the ichnofossil *Ophiomorpha* isp., crustacean decapod burrow (Decapoda: Thalassinidea: Callianassidae), collected ex situ (beach face) and in situ (ichnofossil outcrop) in the Coastal Plain of Rio Grande do Sul (CPRS), in the Quaternary Period.

### STUDY SITE




### RESEARCH DESIGN

#### Morphological Analyses

✦ Measurements of the external (A) and internal (B) diameter, wall width (in cross section) (C) and pellets diameter (D) and organization (Figure 1).

✦ Petrographic Blades.

✦ Scanning Electron Microscopy (SEM).

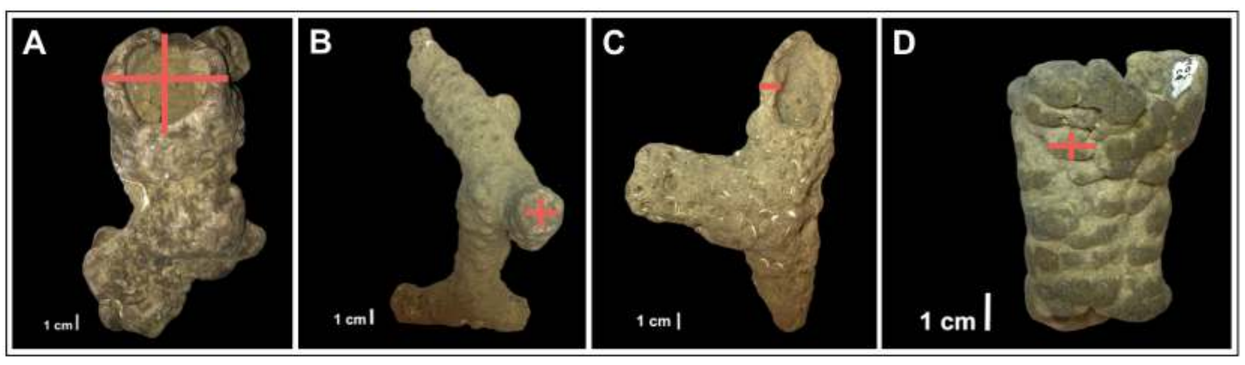



Figure 1. Measurements taken from the *Ophiomorpha* trace fossil collected ex situ by LGP along the Coastal Plain of Rio Grande do Sul (CPRS). (A) - external diameter; (B) - internal diameter; (C) - wall width; (D) - pellets diameter.

#### Chemical Analyses

✦ X-ray Diffraction (XRD).

✦ Energy Scattering X-ray Spectroscopy (EDS).

#### Dating Analyses

✦ Thermoluminescence (TL).

✦ Optically Stimulated Luminescence (OSL).

### EXPECTED CONTRIBUTIONS

✦ Confirm the ichnotaxonomy of the trace fossils *Ophiomorpha* isp. collected ex situ and in situ (at least the best preserved specimens).

✦ Understand the taphonomic stages of *Ophiomorpha* found ex situ, since their construction to its deposition on the current beach face, through the stages of fossilization, diagenesis and reworking.

✦ Provide an absolute dating for selected specimens of *Ophiomorpha* isp. Found ex situ.

✦ Compare qualitatively the *Sergio mirim* burrows (Figure 2) with the *Ophiomorpha* of the CPRS, verifying possible compatibilities of morphology, size and pellet organization (Figure 3).

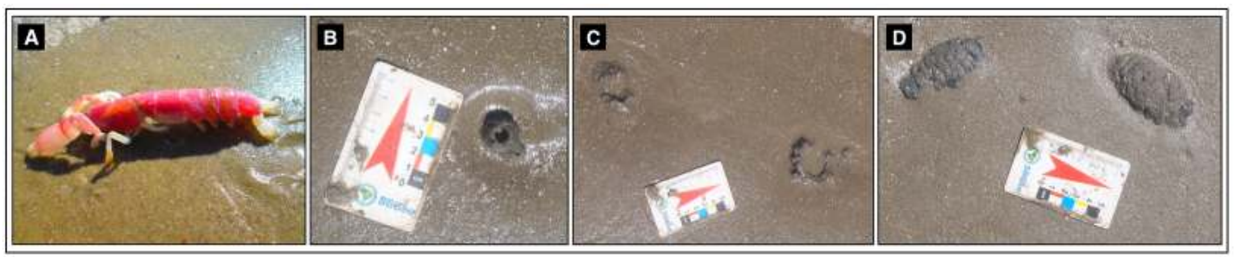



Figure 2. Decapod crustacean responsible for building burrows morphologically similar to *Ophiomorpha* on the coast of RS and its current burrow; (A) - *Sergio mirim* (Rodrigues, 1966) modified from Alcântara (2015); (B) - burrow entrance in plant; (C) - burrow in cross section; (D) - plan view of horizontal tunnels showing the pellets organization.

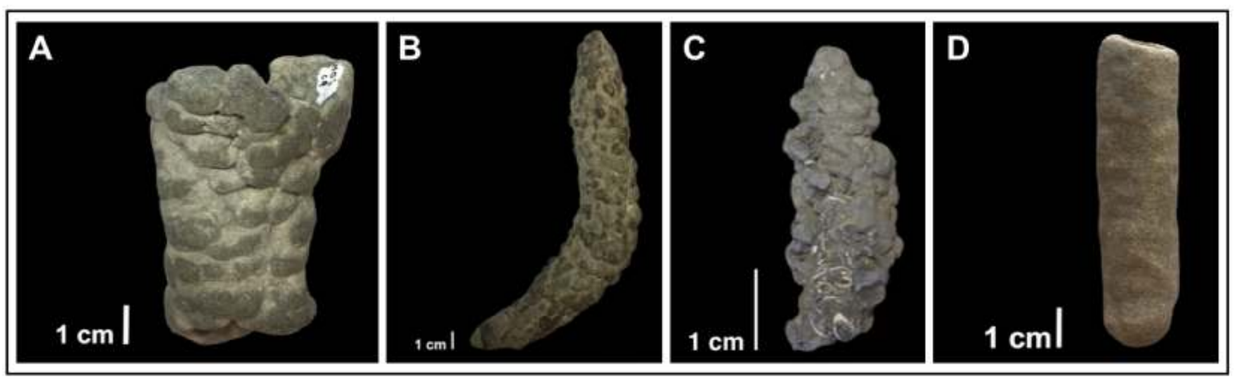



Figure 3. *Ophiomorpha* collected ex situ by the LGP along the Coastal Plain of Rio Grande do Sul (CPRS), where the types of pellets organization are evidenced. (A) - brick-like pellets; (B) - individual pellets organization; (C) - pellets organized two by two; (D) - eroded pellets.

✦ Also, it is expected to verify if there are variations between recent burrows (*Sergio mirim*) and Pleistocene trace fossils (in situ and ex situ) and if there is a relationship between this variation along with climate and sea level fluctuations which occurred in the Quaternary Period in the CPRS.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