

A72 The Growth of Bryozoan Colonies on Immersed Human Bones: How Can It Help to Estimate the Minimum Postmortem Interval?

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Learning Overview: After attending this presentation, attendees will have a better appreciation of anthropological cases with bones colonized by marine organisms such as bryozoans.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by providing information about the potential usefulness of bryozoan colony development on human bones.

Human bones are regularly discovered in seas or oceans, and forensic institutes near coastal regions are frequently asked for an analysis. In such cases, the interpretation of lesions and the dating of skeletal remains can be delicate. Indeed, the marine environments are different from the terrestrial ones and are also very variable. Specific taphonomic changes or fauna intervention can also occur on the immersed remains. Sometimes, marine species adhere to the bone surface, and this occurrence can hinder the interpretation or, on the contrary, can be useful for some part of the anthropological examination.¹ However, the forensic literature is relatively limited concerning those situations.

This study reports the case of an incomplete human skull discovered in a fishing net from a trawler in the North Sea, approximately 10 kilometers away from the French coasts. The cranial vault presented characteristic lesions of a prolonged marine immersion, with a chalky surface texture and an overall bleaching and battering of the bone surface. Several bryozoan colonies were observed on different outer surfaces of the skull and especially on its lower part. Three postmortem set lesions were also present on the calvaria, associating linear abrasions of the outer table centered by penetrating holes exposing the diploe. Those lesions were compatible with an interaction with a part of a fishing net, with one net removing some of the Bryozoan colonies.

Bryozoa (phylum), also known as Ectoprocta, are aquatic and microscopic invertebrates that form colonies made from individuals called zooids of about 0.5mm in size. They are included in an organic or inorganic exoskeleton that may persist after the death of bryozoans. Their growth speed varies depending on the species, and also on local food, quality of the substrate, and physical parameters of the environment.² The bryozoan colony growth form varies, according to the pattern of addition of zooids: it starts as a single zooid and new ones are added sequentially in a regular arrangement, in a line, at the tips of branches or along an edge (of the substrate or an erect species). After identification of the bryozoan species and consulting the literature concerning their growth speed, a minimal immersion time of the bones could be determined. In the presented case, colonies have the characteristics of *Membranipora sp.*, which size corresponds to a growth time that could vary from a few months to multiple years. This estimation could be completed by adding the period of skeletonization of the remains in the marine environment and the bone surface colonization by bryozoans. However, a recent review of the literature emphasizes the lack of standardized methodology about the study of the different bryozoan species and growth forms.³ The biology of such organisms is indeed complex, and a cooperation between professionals in the forensic field and marine biologists seems to be crucial in order to develop this approach, create a specific database, and participate in the estimation of the minimum postmortem interval.

Reference(s):

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2. Sorg et al. Forensic Taphonomy in Marine Contexts. Haglund. *Forensic Taphonomy: The Postmortem Fate of Human Remains*. CRC Press, 1996: 485-522.
3. Smith and Key Jr. Growth geometry and measurement of growth rates in marine bryozoans: A review. *18th international bryozoology association conference*. Bryozoan Studies 2019: 139-156.

Taphonomy, Postmortem Interval Estimation, Forensic Anthropology