



CREATING EMU SKELETON: FROM CARCASS TO MUSEUM SPECIMEN

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ABSTRACT

The skeleton of emu was prepared from the carcass waste of emu presented in the postmortem Hall of Guru Angad Dev Veterinary & Animal Sciences University, Ludhiana. Sequential steps involved were hot water maceration, degreasing, bleaching, categorization of bones, articulation and labelling of skeleton. The skin, adipose tissue and muscles were removed from bones. Bones were boiled in a container of hot water followed by removal of flesh collected on top of container. Further the bones were scrapped, scrubbed and simmered in borax to disintegrate collagen and cartilage. Later, bones were degreased using xylene and washed in detergent and dried at room temperature. To make bones brighter and whiter they were bleached using 3-6% solution of hydrogen peroxide. Different bones were identified and separated into axial and appendicular skeleton. The bones were then articulated on wooden stand with wires in proper position to form skeleton. The skeleton was varnished to increase the shelf life and aesthetic appearance. The present study concluded that the postmortem waste can be used as museum specimen and can also be used for teaching, research and extension work. This is the most economical, efficient and rapid method for utilization of postmortem waste as a museum specimen.

Key Words: Carcass, Emu, Skeleton

1. INTRODUCTION

Skeleton is a hard bony framework of the body which helps in supporting and protecting the vital organs of the animals. Skeletons are important part of studying osteology in veterinary gross anatomy laboratories and museum. Various phylogenetic investigations related to growth and age used skeletons to study functional morphology (Bemis et al., 2004; Burke and Feduccia, 1997). Large group of skeletons provide a good base to assess geographic size variation in species and aids in identification of fossils and bones from archaeological sites (Olson, 2003). Skeleton collection is very important for studying the indices for body size and age of the extinct species kept in the museums (Gofur and Khan, 2010). So, Emu being a flightless bird on which very less study has been conducted, as a result this study was made to devise a rapid, efficient and cheap method of preparation of emu skeleton which will play an important role in studying the evolutionary descent of emu in relation to its phylogeny. So, the present research was done to study and investigate the effective, rapid and economic method of skeleton preparation of flightless bird like Emu.

2. MATERIAL AND METHODS

Post-mortem waste of 6 emus was collected from the post-mortem hall of Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana. The raw post-mortem waste was collected and processed involving various steps of waste management and utilization (Mussa et al., 2015).

2.1 Step 1: DESKINNING: In which skin, adipose tissue and muscles were removed from bones using knife and blades.

2.2 Step 2: HOT WATER MACERATION: In this step, Bones were boiled in a container of hot water followed by removal of flesh collected on top of container and the bones were scrapped, scrubbed and simmered in borax to disintegrate collagen and cartilage.

2.3 Step 3: DEGREASING: In this step, Bones were degreased using xylene and washed in detergent and dried at room temperature.

2.4 Step 4: BLEACHING: In this step, Degreased bones were bleached using 3-6% solution of hydrogen peroxide to make them look more brighter and now bones were ready to be used for skeleton making.

2.5 Step 5: CATEGORIZING DIFFERENT BONES: In this step, Different bones were identified and categorized as bones of axial and appendicular skeleton.

2.6 Step 6: ARTICULATION: The bones were then articulated on wooden stand with wires in proper position using drill to form the articulated skeleton.

3. RESULTS AND DISCUSSION

The emu carcass was skinned, macerated in hot water, degreased in xylene. The bones were washed thoroughly and then bleached by using 3-6% solution of hydrogen peroxide (Fig 1). The time taken for all these processes was very less i.e. 3 days, as reported by Selby (1987) in skeleton preparation of adult mice. In contrast to present study, the conventional method of skeleton preparation with maceration required 1 to 2 months (Gofur and Khan, 2010), which was very tedious and time consuming process. The aim of the study was to develop an efficient, quick and economic method of skeleton preparation of birds and animals to display in the museum.

After completing the above steps, all the bones were identified and categorized as bones of forelimb (Fig 2), hindlimb (Fig 3), ribcage (Fig 4), bones of vertebral column (Fig 5), skull and mandible (Fig 6). After categorization, these bones were articulated with their respective segments using drill machine to make holes through the bones and wires were passed through these holes to articulate the bones. Bones of digits, skull and mandible were joined with help of glue. After articulation of all bones, the skeleton was mounted on a wooden table with the help of an iron rod to maintain its shape and form. A completely articulated skeleton of emu was prepared, varnished, and labelled (Fig 7 and 8).

The present study concluded that the postmortem waste can be used as museum specimen as well as for teaching, research and extension work. This is an economical, efficient and rapid method used for utilization of postmortem waste over conventional burial method of disposing postmortem waste. This procedure ensured efficient usage of post-mortem waste and will be able to reduce the number of animals slaughtering for making skeletons. Thus, helping in preservation of skeletons of extinct and endangers species in the museum.



Fig 1. Collection of Emu Bones



Fig 2. Bones of Forelimb



Fig 3. Bones of Hindlimb



Fig 4. Bones of Ribcage



Fig 5. Sequential arrangement of different vertebrae



Fig 6. Skull of Emu

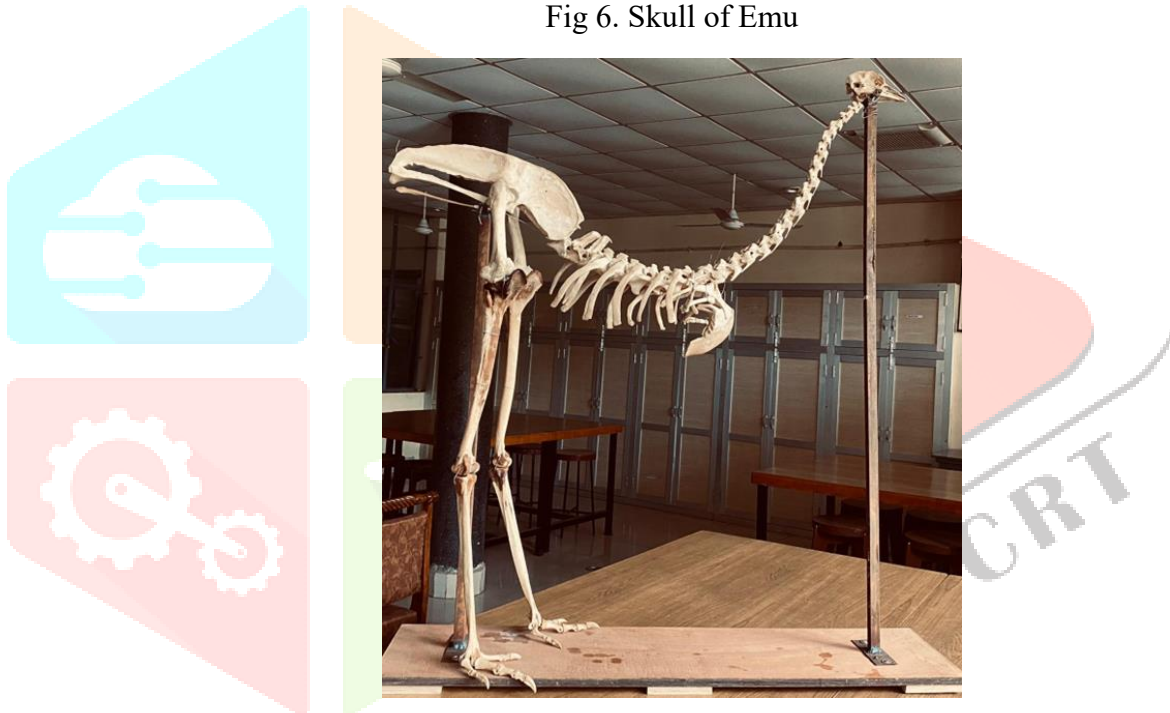


Fig 7. Emu skeleton mounted on wooden stand with the help of rod and wires.



Fig 8. Labelled Emu skeleton for Museum display

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