A Conservative Method of Dissection (of Monitor Lizards)

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Dissections were performed with special permissions from museum collections. Special measures were taken to ensure the maximum preservation of specimen integrity. After each specimen ID was verified, most specimens were wrapped in a tight layer of cheesecloth and temporarily sealed in a plastic jacket (to protect against desiccation). The specimen was inserted tail first, into one or more layers of a thick ply plastic bag, covering them up to their forelimbs. 70% ethanol was poured into the bag until the cheesecloth layer is saturated and ethanol begins to pool in the bag. Electrical tape was applied over the plastic and wrapped tightly around the midsection. The skin is then carefully retracted, in one piece. This is achieved by alternating frequently between cutting and loosening, often using blunt instruments to lift skin from muscle, in advance of the scalpel blade. Typically, the primary incision is ventral (say, anatomical left). It traces the mandibles and travels superiorly toward the posterior edge of the external ear (anatomical right). Behind the ear, a long, lateral, posteriorly travelling incision is made, that ideally, is hidden beneath a natural lateral skin fold. The lateral cut is not a straight line but conforms to the fold, the path of which brings the scalpel near to the scapula. Once the lateral cut was established, the scalpel was returned to the (anatomical) right ear to work on the nape of the neck. Stemming from the initial incision, the posterior curve of the parietal was traced until the (anatomical) left ear was reached. The scalpel then travels toward the venter (nearly vertically), tracing the posterior contour of the ear, as was done on the opposite side, until the current scalpel pathway unites with the primary mandibular incision. Once the paths are merged, the skin was retracted as much as possible, in one large flap that was skewed toward the (anatomical) right side of the body, partially covering the arm. The

dissection then relocates to the existing incision near the scapula (anatomical right). This incision was then forked (split), with one path travelling posteriorly, crossing above the arm but low enough to reveal most of the supra scapula, and continued on a posterior trajectory for one or more additional vertebral lengths. The second path runs under the arm and stops there. The dissection then relocated to the other side of the body. A new incision was made to free the (anatomical) left arm from the flap of retracted skin. Unlike the previous incisions, this was a compound cut that did not unite with any existing incisions. The cut was roughly circular, and targeted the pockets of naturally loose, wrinkled skin that often surrounds the base of the arm. The skin on the arm itself was not retracted. Once the circular cut was completed, the retracted skin was pulled/maneuvered over the now independent arm. Dorsally, the growing skin flap was retracted until the full supra-scapula was visible on both sides of the body. During this step, it was necessary to revisit the cuts on the opposite side, lengthening them to allow for further retraction on the side currently being dissected. Once the field was fully exposed, the plastic jacket was opened, the retracted skin was bound against the body with cheesecloth, the ethanol was refreshed, and the jacket was resealed, covering the retracted skin. At this stage, the hyoid was not yet visible.

Typically, the vertebrae were exposed first, by removing two strips of dorsal muscles and then digging and scraping at bone until the spaces between the dorsal processes were visible. Superficial muscle layers were then removed. An effort was made to remove them in large, intact sheets that would later be re-administered to the body. Gradually, the hyoid was cleared of muscle. After data collection, the dorsal muscle strips were replaced, along with other large muscle pieces. Fragments were inserted loosely beneath the skin, stored in a small jar, or sewn into a cheesecloth pouch that can be attached to the specimen. The retracted skin was then unbound, refitted over the body and sutured with appropriately strong, archival string (cotton or ideally, Irish linen). Curved, thick, stainless steel surgical needles, grasped with needle nose pliers were used on large

specimens. The needles occasionally broke off in the skin. Dissection sessions ranged from 2.5 −17 hours. >160 scalpel blades were used over the course of data collection.