

Skin-Plus-Skeleton Preparation As the Standard Mammalian Museum Specimen

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Techniques for preparing mammal study skins have been presented in detail by various authors (Ingles, 1954; Hall, 1962). The traditional technique has emphasized the skin-plus-skull method. Recent mammalogists have routinely collected a taxon series consisting of skin-plus-skull specimens, occasionally a few skeletons, and, less commonly,

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fluid-preserved specimens. In consideration of the decreasing availability of funds for specimen acquisition, the complexity of recent legal restrictions placed upon the collector, and the increasing destruction of natural habitats, the value of each newly-acquired specimen, particularly topotypes, must be recognized. We therefore propose that the following skin-plus-skeleton, rather than skin-plus-skull, method serve as the usual technique for preserving mammal specimens.

Although the skin-plus-skeleton specimen is not new to mammalogy, the procedure has been rarely used. Miller (1932) briefly described this method, but it was not mentioned in either of two recent publications on techniques for preparing mammalian specimens (Brown and Stoddart, 1977; Nagorsen and Peterson, 1980). The procedure for preparing a skin-plus-skeleton specimen is similar to that used in preparing the traditional skin-plus-skull specimen, but with some modifications. While skinning the specimen, care is taken to cut only the appendages on the right side of the body. The left fore and hind limbs should be skinned to the carpus and tarsus. In the case of a small mammal, the skin should separate from the limbs by pulling; with a large mammal, the skin should be excised. Skin on the foot should be removed entirely to facilitate cleaning of the skeleton. The skeleton is then loosely tied in a curled position (to prevent loss of parts) and suspended in the open air to dry. Owing to the bilateral symmetry of mammals, a specimen is prepared that consists of a skeleton with complete appendicular elements on the left side, and a study skin with the manus and pes on the right side (Figure 1). The phallus is kept with the skin, everted, so that it may be rehydrated for later study. This method of preparation yields a skin and skeleton from each specimen, thus requiring totally fewer specimens for a skin-and-skeleton series than would otherwise be required if the traditional method were used. Furthermore, the skin-plus-skeleton specimen requires no more time to prepare (in the field) than the skin-plus-skull specimen. Where some museum preparators may find the small amount of additional time spent cleaning and labeling the post-cranial skeleton somewhat prohibitive, we would stress the value of at least a representative series of skin-plus-skeleton specimens. The Museum of Southwestern Biology, University of New Mexico, and the Museum of Zoology, Louisiana State University,

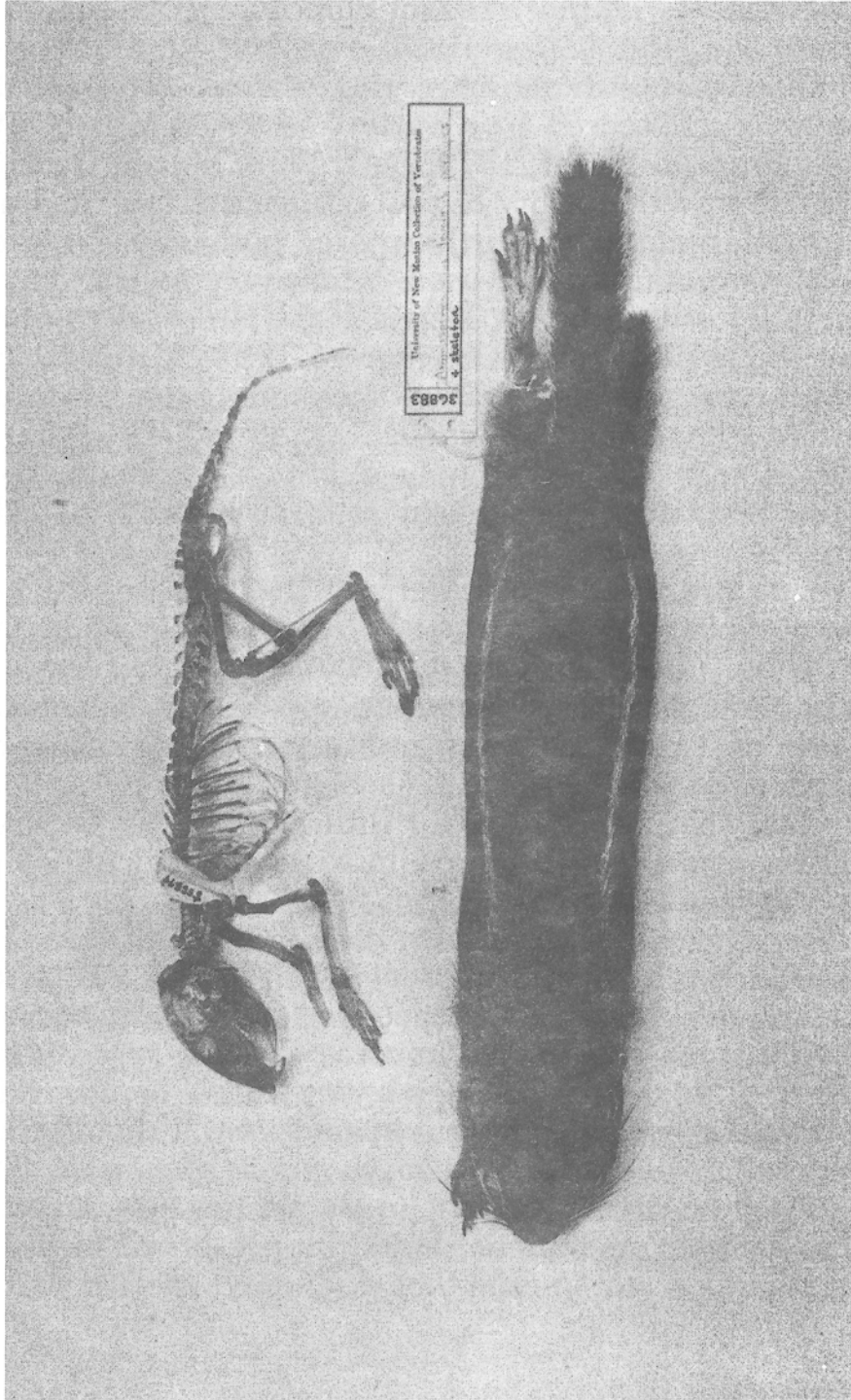


Figure 1. Illustration of the skin-plus-skeleton specimen.

have employed this technique as the standard procedure for several years and have encountered no difficulties in preparation or curation of the specimens.

Whereas systematic studies have historically relied upon craniometrics, the more recent blending of systematic, evolutionary, phenetic, functional morphologic, and ecologic disciplines necessitates more post-cranial osteological investigation. Research in a variety of fields (Stains, 1959; Siegel and Van Meter, 1973; Best, 1978; Smartt, 1978) has demonstrated the utility of post-cranial material in studies of recent mammals. Furthermore, post-cranial material from living mammals is used extensively in comparative studies of fossil mammals (Harris, 1963; James, 1963; Hutchison, 1968; Emry and Thorington, 1982). Unfortunately, studies requiring post-cranial skeletons have continually suffered from a dearth of available material. The skin-plus-skeleton technique, routinely applied, would clearly increase the quantity of skeletal material in museum collections.

We do not intend to underplay the value of fluid-preserved specimens, and, further, suggest that each series include a subseries of such specimens (preserved while fresh). However, fluid-preserved specimens do not allow easy access to skeletal parts, and this mode of preservation is of secondary value for osteological studies. Additionally, soft parts that are desired for future study can be readily removed from the specimen in the field and either preserved in fluid or frozen.

In summary, we urge the replacement of the skin-plus-skull specimen by the skin-plus-skeleton specimen as a standard mammalogical procedure for the preparation of museum study specimens. In cases where a series is to be collected, the content of each series will, of course, reflect the needs of the collector, but in any event it should consist of skin-plus-skeleton (not skin-plus-skull) specimens plus a series of fluid-preserved specimens. Where time is limited, any remaining specimens should be preserved in fluid or prepared as skeleton-only (not skull-only) specimens.

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