LOCATOR DATABASE FOR MANAGING TISSUE COLLECTIONS FOR SYSTEMATIC STUDIES

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Systematic studies among taxa include many sorts of molecular comparisons which use a variety of materials such as tissue samples, DNA extracts, cell lineages, and so on. This material is stored and should be managed differently than traditional specimen-voucher collections. Tissue samples can be used up in a study, they can deteriorate in an accidental thaw, can take different forms, and so on. The most reliable method to preserve proteins and DNA for these sorts of studies is to store tissue samples in ultralow freezers (below -70°C). Storing samples in ultralow freezers is a very expensive way of preservation, so it is very important to use space efficiently. Secondly, it is important to minimize the time the freezer is open to avoid thaw, so samples must be able to be located quickly and efficiently. Thirdly, tissue collections are consumable so policies and practices must be in place to track their use. These constraints make it necessary for a storage and inventory system that is flexible and efficient. Tasks and priorities in the collection determine the database structure of the underlying inventory system.

Based on our experience, we present useful methods for building databases for managing tissue collections. Database developers have to use a locator approach. This approach is different than the taxon-based systems used to manage traditional skin voucher collections. Locator databases track the position and movement of individual tissue tubes within the freezer network. This network is composed of a tube, box, rack, and freezer and assigned a number based on its position. This position, marked by a unique number is a record in the tissue database. Each record includes fields that describe the nature of the sample at its given place. Fields can be connected to tables that store other important data on the material. We store tissue catalogue number (NK number) and tissue type codes. The NK number then cross-references with other data tables to give taxonomic and geographic information. Because even one ultralow freezer can hold a huge number of tissue samples (-35,000), it is very important to plan the structure of the database in a careful manner for the best performance of the computer system. The most common information from this database includes not only the position of the sample, but also its use such as loan activity. This program also produces reports and can compute the efficiency of usage of space in the freezer complex. We have found a need to upgrade our system for managing our large database to meet the needs of increasing usage and value of this resource.

ADVANTAGES OF 3D GEOMETRIC MORPHOMETRICS FOR CONSERVATION AND CLASSIFICATION OF WILDCATS

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An ongoing debate exists regarding the morphological characterization and taxonomic status of the wildcat (Felis s. silvestris) in Europe. Hybridization between domestic (F. s. catus) and wildcats creates a serious threat to wildcat populations, and its evaluation becomes critical for conservation plans. In this study, we analyzed a sample of 85 wild and domestic cat skulls, from Edinburg, England, and Spain, using geometric morphometric techniques based on three dimensional coordinates. Eighty five landmarks were digitized on the dorsal and ventral side of the skull, using a 3-Draw digitizer (Polhemus, Inc.). Following earlier work and other data, three groups (OTUís) of cats were considered in the analysis: presumably pure wildcats (Wildcat T1), presumably hybrids (Wildcat T2), and Domestics.

The variation observed in our analysis suggest a united pattern of morphological affinities: wildcats T1 and domestics at the extremes, with wildcats T2 in between, though much closer to domestics than to wildcats T1. Wildcats T2 shared many features of domestic cats and overlapped with them in multivariate analysis. Also, a cluster analysis of individual skulls performed as a starting point of the study and using overall Procrustes residuals, provided reasonably sound and unbiased evidence to assign specimens of wildcats T1 to a separate group from wildcats T2, because the latter showed more affinity with domestic cat skulls. These results are consistent with the hypothesis that there exists two distinct morphological groups within what should correspond to the wildcat population living in Scotland. Computed values of the Shauenberg (1969) index, one of the most reliable classification criteria for wildcats, shows the expected grouping of domestics and wildcats T1. This appraisal about the composition of our cat sample is only based on one biological aspect, their morphometric characteristics. The extent to which this separation of cat groups conforms with the real taxonomic status of the populations studied should be assessed and completed with detailed ecological, behavioral, and genetic studies, for which our data can serve to identify the groups to be tested.

To enable simple use of standard measurements for classifica-