MOLLUSCANSPECIESIDENTIFICA TIONUSING ARTIFICIAL NEURALNETWORKS

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Conventional identification methods in biology involve either the use of diagnostic keys or the comparison method. Diagnostic keys work on the principle of exclusion. The number of taxa being considered is gradually decreased until the specimen is "keyed out", using one rule at a time. This method has inherent limitations that can lead to errors in identification. Besides the existence of poorly constructed keys, perhaps the most common problem is that the user fails to recognise particular cha ra cter (s) used in the key and makes a mistake along the way. Often this can be detected as one progresses further along the kye but sometimes it may lead to incorrect identification. Lack of qualitative characters amongst the taxa considered may also hamper key construction and use. The comparison method, in contrast, is a polythetic method. The specimen in question is matched with illustrations so that characters are compared and used together all at once. Rapid and accurate identification can be accomplished, provided good illustrations and detailed diagnoses are at hand. However, when these are not available, as is often the case for molluscs in Southeast Asia, matching of specimen to illustration becomes increasingly unreliable and highly subjective. New species, and taxa with inherent intraspecific variation, are particularly problematic . In view of these shortcomings, we made an attempt to see if artificial neural computing methods can provide useful solutions. Neural networks differ from keys in that they explore many competing hypotheses simultaneously. In this paper we present preliminary results of using commercially available artificial neural network software to use information inherent in gastropod shell morphometric data for species identification. Linear shell dimensions of several species of mangrove Littorinidae were used to train and subsequently test the effectiveness of a neural network on a desktop computer. Tests consisted of "asking" the computer to identify a series of *Littoraria* individuals based entirely on shell measurements. Although there are limitations , our results suggest that artificial neural networks are a promising, robust alternative to existing methods of species identification.