Evolutionary theory

Science, Biology

Evolutionary Theory

Species have been traditionally defined biologically as organisms that can freely interbreed giving rise to a viable offspring. However, as more studies are being carried out, more information about species is being discovered which has led to development of new concepts about species and their evolution can be conceptualized under the new available evidence. The discovery of new species of organisms is usually placed within the taxon genus. Currently, numerous species have not been named and as such lumping of organisms together as belonging to the genus and species classes may be incorrect as the case in the repopulation program in the Islands of St. Kitts and a neighboring Island of Nevis. These two species of rodents appear to be identical in morphological features and that is the reason why they were taken to be of the same species. However, their morphological similarities have nothing to do their genetic make ups since the DNA (Deoxy-Ribonucleic acid) are quite distinct from each other. The differences in DNA can be explained through concepts of evolutionary theories of natural selection of stabilizing selection and diversifying selection

Natural Selection-Stabilizing Selection

This is a type of natural selection that experiences genetic diversity decrease in a population that that is stabilizing. It has been argued that this is the most common way through which natural selection takes place. As such, the stabilization process employs negative selection which results in organisms with intermediate phenotypes being selected. In the case of the two islands, it is quite clear that the rodents from the St. Kitts Island underwent a

stabilizing selection because their traits seem to be normal or not very much different from those of the rodents from the other island of Nevis. Probably, the two islands were connected and after a natural disaster like an earth quake, they became separated. It follows that those rodents that had intermediate phenotypes were selected over those that had extreme phenotypes hence the development of the new distinct species.

Natural selection-diversifying selection

Diversifying selection is used to refer to the exact opposite of stabilizing selection whereby the extreme phenotypes in organisms are naturally selected over the intermediate phenotypes. This can be explained by the studies done by Charles Darwin in the Galapagos Island with regards to the finch populations. In his observation, Darwin could clearly discern that the finch birds had descended from one species but over time they had developed into distinct species. From the data that was collected from the two rodents species in the different islands indicates that the selection of the rodents from the Nevis Island was from the extreme individuals which led to their survival. In such a scenario, it may have been probably that the prevailing environmental conditions only favored those individuals that were found at the extreme sides of the spectrum. The rodents from the Nevis Island are clearly on the extreme side of the spectrum given that for instance one cannot account for the average length and its inconsistency with the speed of the species (0. 8 m/s). Naturally, this species would have been faster than the St. Kitts Species which is faster at 2. 2 m/s.

Conclusion

It is clear that these two species evolved from one single species over time

and space. Although their ancestor was the same, they evolved differently due to environmental conditions that were different on the two islands. On the St. Kitts Island, the rodents underwent stabilizing selection while the rodents on the Nevis Island underwent diversifying selection.

Works Cited

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