E-Content

entitled

"Stabilizing Selection"

Stabilizing selection promotes constancy in a population. If environmental interactions remains constant (or unchanged) through time, stabilizing selection prevails and thus evolutionary change is arrested. Stabilizing selection leads to the elimination of organisms having overspecialized characters and maintains homogenous population which is genetically constant. It favours the average or normal phenotypes. It describes the change when extreme individuals are eliminated from the population. So, the intermediate values for a given trait are favoured over the extreme values. The result of this process is a reduced variability in the population. Most selection that occurs in populations is stabilizing and homeostatic because it tends to maintain the status quo.

Under stable conditions, intermediates in a population typically leave more descendants, on the average, than do the extremes. We say that they are more "fit." An individual's "fitness" is measured by the proportion of its genes left in the population gene pool. Selection of this sort, which continually crops the extremes and tends to hold constant the intermediate or average phenotype, is termed stabilizing selection.

Stabilizing selection is often shown on a graph as a modified bell curve where the central portion is narrower and taller than the normal bell shape (Fig.1).



Fig.1 Graphical presentation of the Stabilizing Selection

Examples of Stabilizing Selection

Human birth weight:

The birth weight of newborns provides a good example of a human character that has been subjected to stabilizing selection. Infants with low birth weight will be weak and experience health problems, while large babies will have problems passing through the birth canal. Babies with average birth weight are more likely to survive than a baby that is too small or too large. The intensity of that selection has decreased as medicine has improved. Researchers are of the opinion that the optimum birth weight is 7.3 pounds. Newborn infants less than 5.5 pounds and greater than 10 pounds have the highest probability of mortality. Given the strong stabilizing influence of weeding out the extremes, the optimum birth weight is associated with the lowest mortality.

Coat coloration:

In several animals is tied to their ability to hide from predator attacks. Small animals with coats that match their environments more closely are more likely to survive than those with darker or lighter coats: stabilizing selection results in an average coloration that's not too dark or too light.

Cactus spine density:

Cacti have two sets of predators: peccaries which like to eat cactus fruits with fewer spines and parasitic insects which like cacti that have very dense spines to keep their own predators away. Successful, longlived cacti have an average number of spines to help ward off both.

> Dr. Saumen Chakrabarti Associate Professor Department of Zoology Women's College, Agartala, Tripura, India