

## SIBLING SPECIES

Sibling species are defined as the sympatric populations that are morphologically similar if not identical but are reproductively isolated i.e., these are species according to biological species concept but are morphologically indistinct. According to morphological species concept these populations cannot be classified as separate species but are called "biological races". These biological races are indistinguishable from each other except for slight morphological differences. Mayr (1942) has used the term 'sibling species' to these biological races.

Example 1: Sibling species occur in almost all animal groups but they are more common in insects. A well studied example of sibling species is offered by genus *Drosophila* in which most of the species complexes contain groups of sibling species, *D. pseudo-obscura* and *D. persimilis* are so identical in their morphology that these are described as two races of the same species by Lancefield (1924). The salivary gland chromosomes of these two races are sibling species are markedly different, the gene arrangement in their chromosomes is also different. Moreover there are minor differences in the sex comb, male genitalia and relative wing size. These two races coexist over a wide area without naturally occurring hybrids. With these observations these biological

species are now established as two distinct species and are described as 'sibling species'. In addition to morphological and chromosomal differences, these two species exhibit differences in ecological, physiological and sexual behaviour.

2. A number of species of genus *Anopheles* were found to represent sibling species. *Anopheles maculipennis*, *A. atroparvus*, *A. labranchei*, *A. sacharovi* and *A. subalpinus* were all found to exhibit marked similarities in the adult structure. The detailed structure study revealed that all these differ in geographic distribution, feeding habits, ability to transmit malaria, breeding habits and mating and with no hybrids existing in nature. Sibling species resemble in their morphological details and differences whatsoever observed are minor, but these exhibit differences in their habits ecology and physiology. These could be recognised by the differences in their breeding habit, breeding period and sexual behaviour.

### SIGNIFICANCE OF SIBLING SPECIES

1. These provide an opportunity to test the validity of biological species concept with regards to morphological species concept.
2. These are of great practical importance in

applied biology, medical entomology and in agricultural pest control.

3. Sibling species help in understanding the process of speciation.