

Genetics and Reproduction

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## Genetics and Reproduction

### Introduction

Research has shown that female snakes in the wild are able to produce offspring devoid of having any interaction with the male species (Smith & Schuett, 2015). This has refuted the claims that asexual reproduction only occurs in invertebrates.

Reproduction refers to the process by which a living organism gives rise or birth to another (offspring), but of the same type.

Reproduction in the female copperhead snakes is classified into two categories, sexual and asexual, hence the classification as the facultative parthenogenetic class.

### Asexual Reproduction

A nonsexual reproduction is the manner in which an active creature gives birth to a young one devoid of the synthesis of gametes. According to specialists, the copperhead snake (*Agkistrodon contortix*) do not need a male to reproduce (Smith & Schuett, 2015). This is a situation referred to as parthenogenesis. In the female copperhead snake, parthenogenesis occurs after an unfertilized egg cell develops into an embryo. The females that reproduce asexually are considered to be clones of their female parents. Therefore, the young ones are female. This is because the young ones have two ovaries, but the testes are missing. Parthenogenesis raises the level of homozygosity in the progeny and further suggests that the method is a terminal synthesis automixis. Second polar body combines with the egg nucleus, and thus homozygosity occurs in all the chromosomes, including those involved in determining sex.

Extensive homozygosity results in the conservation of species. This is due to the fixing of potentially harmful inherent recombination. Preservation of gene reduction leads to reduced evolutionary adaptation, and therefore species will not vary. Copperhead snakes show facultative

parthenogenesis. They, therefore, develop an understanding of parthenogenesis in species of vertebrates that are not scientifically introduced.

### **Sexual Reproduction**

Sexual reproduction results from the union of female and male gametes from different parentages. This type of reproduction depends on meiosis, a distinctive category of nuclear splitting that leads to four gamete cells being formed. In this particular species, meiosis comprises reducing separation b meiosis of  $2n$  cells (diploid) to  $n$  cells (haploids). Sexual reproduction in copperhead snakes results in increased diversity due to the following reasons;

1. Haploid daughter cells are produced, and they later become gametes.
2. Genetic variation is introduced when first, crossing over and non-sister chromatids originating from tetrad exchange genetic components. Secondly, when the crossing over permits the shuffling of alleles leading to the recombination of genes.
3. The genetic variety of the offspring and the gametes are increased.
4. Numerous possible amalgamations of genes may occur in the daughter cells.

My opinion is that sexual reproduction is the best mode for the copperhead snake because it results in genetic variation.

Reference

Smith, C. F., & Schuett, G. W. (2015). Putative Pair-bonding in *Agkistrodon Contortrix* (Copperhead). *Northeastern Naturalist*, 22(1), N1-N5.

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