

Romantic Reproductive Biology of Swinger of the Sea (Seahorse, *Hippocampus* sp.)

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The Earth is the house of more than 100 million different living organisms where all the species uses the same mechanisms for capturing and storing energy, manufacturing proteins, and transmitting information [1]. Among the habitats for 100 million living organisms on the earth, Ocean is the largest and the most important habitat for aquatic organisms of which maximum 5% has been explored until now [1-2]. Living organisms in the Ocean are different from each other based on the mode of reproduction, courtship and mating behavior. The extreme diversity of mating systems among the animals in the ocean depends on the population densities, frequencies of reproduction, and the spatio-temporal distribution of reproductive females [3]. In this paper, some interesting and peculiar characteristics of seahorse have been summarized including the mating and courtship behavior of the Seahorse, *Hippocampus* sp.

The seahorse genus *Hippocampus* exhibits a wide range of inter- and intra-specific variation, for example in skin filaments, color, and body proportions. For centuries, people have been fascinated by their unique appearance and unusual reproductive strategy. They exhibit highly specialized horse-shaped head, an elongated snout, absence of pelvic fins and caudal fin, and a prehensile tail, which distinguishes them from other teleost [7-8]. Around 40 seahorse species have been reported occurring varied in size and appearance among which, Denise's pygmy seahorse is the tiniest seahorse (2 centimeters long) species in the world while the big-bellied seahorse is the largest that grows up to 33 centimeters in length. Their lifespan varies from one to years based on the species and habitats conditions [6-9].

Classification

Kingdom: Animalia

Phylum: Chordata

Class: Osteichthyes

Order: Gasterosteiformes

Family: Syngnathidae

Genus: *Hippocampus*

Bonding

The seahorses, the swingers of the sea makes bonding with a mate which lasts only over a single breeding season or until a more attractive and fairy female comes along. But it is very difficult for a bonded seahorse to find a new mate after a breeding season due to the poor swimming capabilities and lower population density [4]. *Hippocampus whitei*, the Australian seahorse species are found to stick with a single mate for the whole life [11-14]. Female seahorses generally have vibrant coloring and are larger in size in order to attract a mate.

Romance

Seahorses are truly unique, and not just because of their unusual equine shape. Every morning, the male and female seahorse come out and dance together to make their bonding stronger. Their body color gets changed with their movement together and the dance also helps them to know the reproductive status each other. The tail of seahorse is prehensile which helps to anchor themselves to the blades of seagrass [7].

Mating

Unlike most other fish, they are monogamous and mate for life. The male seahorses compete more intensely than males in finding perfect mating partners during both the first and final days of courtship [6]. In some cases, females are more intended to access mating partner but the competing males are more active than females [4]. During the initial period of matting, the males and females remain apart during the night, but after dawn they will come together in a side by side position, brighten, and engage in courtship behavior for about 2 to 38 minutes [6-11]. The male seahorse stronger than other males become successful in matting, are also more active in courtship and competition [15].

Pregnancy

Seahorse pregnancy is incredibly complex where more than 3,000 different genes are involved. The most interesting fact is that the Seahorses are the only animal species on Earth in which the male bears the unborn young [7-12]. The female seahorse transfers

her eggs to the male, where the eggs get fertilized. The female seahorse transfers the eggs in male's pouch, the male releases sperm to fertilize the eggs as they enter and cares for the developing babies through an 18 day pregnancy period [5]. The male broods the embryos in a specialized abdominal pouch, providing them with nutrition, oxygen and a controlled environment [7-14].

Birth

Seahorse birth is even more of a mystery than seahorse pregnancy. Seahorse dads protect embryos from infection, producing antibacterial and antifungal molecules to ward off pathogens [9,13,15]. With around one week to go, instead of packing a hospital go-bag, seahorse dads start producing hatching signals. These signals cause the embryos to hatch out from their thin membranes and swim freely inside the brood pouch [11-13]. As the embryos take up more room, the pouch begins to stretch, much like the belly of a very pregnant human. After 10 days to 6 weeks, the male gives birth to relatively few, independent young that then disperse in the plankton [6].

But the bonding of seahorse for the reproductive purpose can be the cause of their death. Generally, the seahorses hide behind the rocks and seagrass at the bottom of the bay. When they come out for mating, swim up into the open water and become exposed to predation [11-14]. In addition, the mystery of male pregnancy has not been solved yet. More researches can explore the actual cause behind male pregnancy in seahorse [11-12]. Seahorse populations are declining dramatically, 25 to 50 percent years. Overexploitation is the most devastating threat to the existence of seahorse species. So proper measures should be taken for the management and conservation seahorse [14]. Sound knowledge of the life history of species is essential for their conservation and management.

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