

# Pipefish mating patterns change over time

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Reproductive behaviour is a very interesting subject in biology and has been addressed by many studies for centuries. Lately, many behavioural ecologists became interested in studying mating systems of different species. Mating systems are defined by the number of mates one sex has access to. In nature we can find mating systems ranging from monogamy, where neither sex has access to more than one mating partner, to polygynandry, where each individual, whether male or female, gains access to more than one mate. Alternatively, we can find polyandry and polygyny, where either females or males, respectively, have access to more than one individual of the opposite sex.

For an individual to mate it has to be chosen by an individual of the opposite sex or outcompete adversaries of the same sex. All of us have noticed that in many species there is a clear difference between the sexes, where one sex is larger, more colourful or with different behaviours relative to the opposite sex. Sexual selection was an idea put forward by Darwin when he noticed that individuals who were more colourful or larger had an advantage over their competitors and were able to copulate more often. He explained this saying that those individuals had a higher intrinsic quality and were able to develop more elaborated secondary sexual characters (e.g. colourful feathers). Even if many studies have addressed questions regarding the description of mating system and the intensity of sexual selection, some gaps in the current knowledge of these subjects require attention. Both mating systems and sexual selection can vary widely even in very closely related species, but how they vary within a species is still poorly understood.

In this study I investigated whether the mating system and the intensity of sexual selection are static or dynamic over time. To achieve this goal I captured individuals from a wild population of pipefish, a fish belonging to the family of seahorses and seadragons (*Syngnathidae*), across their breeding season. We know that environmental variables influence mating patterns, and during the breeding season many variables such as temperature vary widely. Hence, I expect that both mating patterns and the intensity of sexual selection would fluctuate during a breeding season.

According to my expectations both mating patterns and the intensity of sexual selection varied. The number of eggs a male received decreased from the onset of the breeding season to the end, and fewer males were also pregnant close to the end. The number of mates was on average constant during the breeding season, but larger males tended to have more mates during the onset than smaller males, while during the end of the season the number of mates did not vary with male size. Females were also found to mate with more than one male. Additionally, both members in mating pairs were of approximately the same size during the onset, while at the end males from a wide variety of sizes were mating with relatively smaller females. In summary, this species is polygynandrous, and sexual selection intensity seems to decrease as the breeding season progresses. Thus, it is important to consider time when addressing questions regarding mating systems and sexual selection. If time is dismissed as a key variable, one can easily overlook the important dynamics occurring within the mating arenas, hampering our full understanding of mating system evolution and sexual selection.