**General context on evolution, trade-offs and fitness for sexual cannibalism**

**“**The concept of sexual selection involves the selective forces acting on the sexes in the context of reproduction and how these selective forces act differently on each sex in this context. Darwin (1871) pointed out that two types of selective forces may operate during reproduction: (1) intrasexual selection resulting from competition within one sex for individuals of the opposite sex and (2) intersexual selection resulting from preferential choice by one sex for individuals of the opposite sex.”; If a male can mate with only one female due to cannibalism and if female reproductive success is limited by the ability of females to induce males to submit to cannibalism, then males capable of judging the fitness of their potential mates would be favored by selection, and, in turn, intersexual selection would favor the advertisement of fitness by females through more elaborate female courtship. (Thornhill 1976)

Intraspecific cannibalism can occur as a consequence of a stressful or overpopulated context. However, studies suggest that the phenomenon of sexual cannibalism cannot only be explained by those factors. The benefits of general intraspecific cannibalism are described (competitive and nutritional benefits) but often don’t work with sexual cannibalism which is quite specific. Two important factors to assess the benefit of male sexual cannibalism in males are the expected number of mating a male can have during its lifetime and the proportional increase in the male’s offspring if cannibalism occur. On mechanism used to ensure paternity is the use of genital plugs. There’s also some sperm displacement mechanisms, as the last male to put its sperm is more likely to be the father of the offspring. Prolonged copulation also seems to reduce the female probability to remate and the latency of a new mating. The potential number of mating in a male’s life depend on: its lifespan, its capacity to locate females, its time investment on courtship or defending its female, morphological constraints like braking its genitalia, the time to produce new sperms. The sex ratio could also have an impact and it was hypothesized that sexual cannibalism could be linked with competition between females too. (Buskirk, Frohlich, et Ross 1984 and the sources within this document).

**Sexual cannibalism in the *Dolomedes* genus**

The *Dolomedes* genus is know for the important presence of sexual cannibalism where the females tend to be extremely aggressive towards male during courtship and often end by killing or eating them (Use many different sources).

**Sexual cannibalism in *Dolomedes triton***

It has been observed in *D. triton* that cannibalism accounts for 5% of the preys observed, where cannibals are often females or big juveniles. It has been hypothesized that cannibalism might be important for the evolution of habitat use patterns between the different developmental stages. It has also been hypothesized that sexual cannibalism in this species would not relay on a true male sacrifice as they shouldn’t have difficulties to find another mate and that they tried to escape the female aggression (Zimmermann et Spence 1989).

**Sexual cannibalism in *Dolomedes fimbriatus***

It has been described that females were extremely aggressive during mating trials and that female mating status didn’t have any impact on the aggressiveness. Attacks given from immediate proximity had a higher kill rate than attack performed at distance. It was finally hypothesized that sexual cannibalism might be an adaptative strategy for the female. (« Courtship Behavior and Sexual Cannibalism in the Semi-Aquatic Fishing Spider, Dolomedes Fimbriatus (Clerck) (Araneae: Pisauridae) » 2023)

**What is known in *Dolomedes minor***

It has only been hypothesized that males avoided already mated females to reduce cannibalism risks. It was also observed the presence of some broken emboli parts in the female genitalia, maybe as a consequence of some hurry mattings (Vink et Dupérré 2010).