DOCTORAL CANDIDATE:	Hanna Nyborg Støstad
DEGREE:	Philosophiae Doctor
FACULTY:	Faculty of Mathematics and Natural Sciences
DEPARTMENT:	Natural History Museum
AREA OF EXPERTISE:	Evolutionary biology
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DATE OF DISPUTATION:	26th of October 2018

DISSERTATION TITLE: *The evolution and function of sperm head morphology in songbirds*

Til tross for at alle spermier har samme funksjon, nemlig å befrukte egg, varierer de svært i fasong og størrelse. Støstad beskriver hvordan noen sangfuglarter har utviklet skrueformete spermier istedenfor rette eller runde spermier. Forskere har før nå ikke kunne forklare hvorfor det er slik. Støstad har analysert over 2000 prøver fra 36 arter og har funnet at disse skrueformete spermiene svømmer raskere men har til gjengjeld oftere skader, noe som kan bidra til å forklare hvorfor ikke alle fugler har utviklet denne formen. Samtidig vil også miljø i form av dietten spille inn på spermiekvaliteten.

Despite the similar function of all sperm cells – to fertilise the egg – there is a remarkable diversity in sperm shape and length. Songbirds have helical sperm, in the shape of a screw, and this distinctive shape is more extreme in some songbird species than in others. Støstad's thesis investigates the evolution of this helical shape, demonstrating that there is an association between the extent of the helical shape and sperm swimming speed. This means that the more extremely helical sperm seem to swim faster than straighter sperm; but the thesis also shows that they are more fragile. This evolutionary trade-off can help us understand why "screw-shaped" sperm have evolved in some species, whereas others have straight or round sperm.

In addition to the evolutionary history of sperm head shape, Støstad also found that the current environment can influence sperm function. High blood levels of linoleic acid, a fatty acid which is found abundantly in sunflower seeds, are associated with increased rates of sperm abnormalities in greenfinches and hawfinches. This is an early indication that supplementary feeding may be detrimental for the reproductive health of wild finches.