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Research Project

Competition between two Natricine species, the native Viperine Snake (*Natrix maura*) and the introduced Dice Snake (*N. tessellata*)

Project funded by own resources

Project title Competition between two Natricine species, the native Viperine Snake (*Natrix maura*) and the introduced Dice Snake (*N. tessellata*)

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Organisation / Research unit

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Status Completed

Species competing inter-specifically for resources has been well studied. Chances of invasion begins to increase once resources within a population begins to increase (Davis 2003), therefore creating instability for native populations. Competition for resources, such as habitat, could potentially lead to the exclusion of a species following “the competitive exclusion principle” by Hardin (1960). This principle means that when shared resources are met by coexisting species, competition will occur. Species which share similar morphology and are normally isolated from one another, tend to share the same resource requirements. An issue can occur when two such similar species occur in the same area, which normally do not coexist. This has occurred between two semi-aquatic Natricine snake species: viperine snake, *Natrix maura* (Linnæus, 1758), and the dice snake, *Natrix tessellata* (Laurenti, 1768).

N. maura and *N. tessellata* populations used in this study are located between the cities of Lausanne and Villeneuve, in the canton of Vaud, Switzerland. These two populations reside on the shore of Lake Geneva (also known as Lake Lemman). The area has been developed and consists of villages, vineyards, roads, and railways. For instance, much of the shoreline has railroads constructed along side of it. The riparian region of Lake Geneva consists of a rocky, partially vegetated slope terrain (Metzger et. al. 2009). *N. maura* is a native species to the shores of Lake Geneva, while *N. tessellata* (Morton 1925) has been introduced. Both species are found along this shoreline and it has also been documented that *N. tessellata* has partially colonize some habitat areas that are unfavorable to *N. maura* (Metzger et. al. 2009).

Ursenbacher et. al. (Submitted) previously documented *N. maura* to have an average decline of 4.4% each year. The exact reason for this decline is unknown, but it is thought to be correlated with the introduction of *N. tessellata* because of its similarities in ecological niches, such as habitat preference and diet it shares with *N. maura* (Metzger et. al. 2009). Due to *N. maura*'s decline, it has been listed as “critically endangered” in Switzerland (Monney and Meyer 2005). The natural distribution of *N. tessellata* does not include Lake Geneva and it is believed to have been released to Lake Geneva between 1925 and 1935 (Gautschi et al. 2002). This project focused on the study of the competition between both species at different levels: i) use of the habitat; ii) feeding behaviour; iii) thermal preferences.

Financed by

Other funds

Add publication

Published results

100471, Metzger, Cesar; Ursenbacher, Sylvain; Christe, Philippe, Testing the Competitive Exclusion Principle using various niche parameters in a native (*Natrix maura*) and an introduced (*N. tessellata*) colubrid, 0173-5373, Amphibia-Reptilia, Publication: JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)

986474, Mazza, G.; Monney, J. -C.; Ursenbacher, S., Structural Habitat Partitioning of *Natrix tessellata* and *Natrix maura* at Lake Geneva, Switzerland, 978-3-9812565-4-3, The dice snake, *Natrix tessellata* : biology, distribution and conservation of a Palaearctic species, Publication: Book Item (Buchkap., Lexikonartikel, jur. Kommentierung, Beiträge in Sammelbänden etc.)

986475, Metzger, C.; Christe, P.; Ursenbacher, S., Diet Variability of Two Convergent Natricine Colubrids in an Invasive-Native Interaction, 978-3-9812565-4-3, The dice snake, *Natrix tessellata* : biology, distribution and conservation of a Palaearctic species, Publication: Book Item (Buchkap., Lexikonartikel, jur. Kommentierung, Beiträge in Sammelbänden etc.)

2803540, Dubey, Sylvain; Christe, Philippe; Formenti, Vanessa; Staub, Emilie; Schuerch, Johan; Glaizot, Olivier; Ursenbacher, Sylvain, Introduced Freshwater Blenny Influences the Diet and Body Condition of the Invasive Dice Snake in Lake Geneva, 0022-541X, The journal of wildlife management, Publication: JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)

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