

Low genetic variation is traditionally considered as a threat to the viability of different populations. Many studies confirm its effects on species' fecundity, survival and adaptation to natural ecological variations. The current anthropic effects on ecosystems introduce new and fast variations to which populations of different species have to adapt fast. Predictably, the ability to adapt to novel conditions may depend, in a great manner, on the genetic diversity of each population. In threatened species and in isolated populations, which is the case of the Natterjack Toad (*Bufo calamita*) in the Basque Country, the differences in genetic diversity can be notable. To examine if the vulnerability of these populations depends on their level of genetic variation, we determined experimentally the lethal concentration (LC50) of a common herbicide (glyphosate) on tadpoles originating from eggs obtained in captivity. The tests were done using individuals originating from two isolated populations with low level of genetic variation and from two populations close to the former ones but with high level of genetic variation. Our results indicate that the populations with low genetic diversity tolerate lower doses of herbicide; hence, they support the hypothesis that genetic diversity affects the capacity to tolerate human induced environmental stress. Therefore, genetic diversity should be taken into account in species conservation plans and in habitat management.

P-84

BEHAVIOURAL EFFECTS OF ENDOSULFAN ON AMPHIBIAN TADPOLES (RANA TEMPORARIA) USING VIDEO-TRACKING AND VISUAL TECHNIQUES

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Pesticides, such as Endosulfan, are known as one of the major causes of amphibian declines. They affect survival, growth rates and time to metamorphosis but also behavioural patterns. Looking at behaviour is particularly relevant to assess toxicity risks at environmental concentrations when other biomarkers are not directly affected. The recent advances of computerized techniques, such as video-tracking, make it possible to gather very detailed data on space use and locomotor patterns which can be joined to usual direct visual observations. In this study, we applied these modern techniques, notably the use of Ethovision XT software to quantify the short-term effect of Endosulfan on common frog tadpoles in a replicated design in controlled laboratory conditions. 140 tadpoles were kept separately for the video-tracking analysis and in 20 group of ten individuals for repeated visual observations. Speed, mobility, activity and space use were almost reduced in the presence of the pesticide. Abnormal behaviours such as lying on the flank and swirling (fast rotation) were produced at the highest concentration. Feeding was negatively affected and consequently growth was almost reduced in presence of the highest concentrations. These results show that Endosulfan is highly toxic to amphibians at environmental concentrations at the scale of behaviour, and this after only one day of exposure for the first effects. Because of this immediate low dose effect, this pesticide should not be used anymore, and this particularly at proximity of wetlands. On another hand, this study highlights the interest of new quantitative techniques to analyse behaviour.

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