

INVAXEN-BE

INvasive biology of *XENopus laevis* in Europe: ecology, impact and predictive models

DURATION
 01/06/2014 – 31/05/2017

BUDGET
 187 919 €

PROJECT DESCRIPTION

Detailed information on the invasive potential of a species is crucial to assess likely future impacts on biodiversity and to improve the scientific basis for decision-making on biological invasions. Therefore, INVAXEN aims to study the invasive biology of *X. laevis* which is one of the world's most widely distributed amphibians with invasive populations established worldwide. To achieve this goal, INVAXEN aims to study all relevant aspects of the invasion ecology and adaptive ability of this species in order to develop a robust predictive species distribution model. This model will allow predicting the potential future spread of this species outside of its current invasive range. INVAXEN addresses key topics of the ERANET BiodivERSA call.

Objectives

X. laevis is at present, known to be invasive in at least four European countries and the suggested suitable climatic space in Europe covers over one million square kilometres making this a species of pan-European concern. Knowledge on the invasive and native biology of *X. laevis* as well as on the factors that promote its spread is essential towards a better understanding of its invasive potential. INVAXEN unites a team of experts that will provide complementary data to better understand the biology, dispersal patterns, physiology, and impact on local populations as well as the invasive potential of *X. laevis*. The main objectives of INVAXEN are (1) to describe the biology and ecology of the European invasive populations and their impact on the local fauna (C.N.R.S, partner 1 and CBA, partner 2), (2) to study the species' dispersal capacity and colonization ability (C.N.R.S), (3) to investigate the origin, impact and evolution of invasive populations (RBINS, partner 3), (4) to describe the biology of *X. laevis* in its native habitat (CIB, partner 4) and (5) to develop a robust predictive species distribution model (ZFMK, partner 5).

Methodology

Partner 1 and 2 will document life history traits in the invasive populations (France, Portugal), assess the role of *X. laevis* as a carrier of amphibian blood and intestinal parasites in the areas where it is invasive, evaluate the impacts on the local pond/stream communities and evaluate the ongoing eradication program of this species in Portugal. Additionally, partner 1 aims to get insight in the dispersal capacities of *X. laevis* by investigating the temperature and hydric dependence of performance traits and by quantifying the impact of these variables on metabolism and locomotion. Partner 3 will assess genetic diversity and population structuring of invasive populations, estimate gene flow among invasive populations and implement a landscape based interpretation of the population genetic data to identify invasion pathways. Partner 4 will document life history, physiological and performance traits in the native populations. Partner 5 will compare the native and invasive realized niches with the fundamental niches of the populations as quantified by physiological performance tests, relate these results with the population genetic information and generate predictive maps indicating the invasion potential of *X. laevis*.



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Interaction between the different partners

The project management is under the supervision of the project coordinator (A. Herrel, France). All members of the team will meet twice the first year and once yearly after that. During meetings partners will review i.a. (i) comparison of actual progress with the project plan, (ii) revision of the project plan if needed, (iii) identification and resolution of any problems, (iv) monitoring and control of project expenditures, (v) review of financial planning. A key role of the project meetings is to ensure that the work plan remains relevant and on track and that all data is shared across partners allowing optimal integration of work packages. This will be assessed continuously through informal contacts, formal progress reports and formal research meetings.

Expected results and/or products

INVAXEN will provide the first detailed assessment of the invasive potential of *X. laevis* which is crucial to predict and prevent future invasions of *X. laevis* and its impact on biodiversity. Results will be disseminated to a scientific audience by publications in journals and presentations at conferences and to a wider audience of policy makers through i.a. participation in local conservation and interest group meetings. We will promote public awareness of project outputs through i.a. interviews, website, etc.



CONTACT INFORMATION

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