**THESIS**

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| **TITLE** | Ecological morphology of the Suisun Marsh fish assemblage: the effect of alien fishes on trophic functioning. |
| RESEACRH QUESTION | Does the invasion of alien species change the food web within a fish assemblage? |
| SUPERVISOR | Leo Nagelkerke / Peter Moyle |
| LOCATION | UC Davis, California / Wageningen |
| PERIOD | September 2014 – February 2015 |
| LINK FOR MORE INFORMATION LINK IS MADE BY AFI SECRETARIAT! | |
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**MORE INFORMATION (if available)**

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| SHORT DESCRIPTION |
| The fish assemblages in the San Francisco Estuary are invaded by a large number of alien fish species. A total of 58 species are reported, of which 24 are alien (>40%). The invasion of so many alien species and the abundance of a number of them have changed the species composition of the fish assemblage, but may also have altered its trophic functioning, influencing food web structure. Trophic functioning is assumed to be reflected in the morphology of the fish species. A detailed study of trophic traits with a causal and quantitative effect on feeding performance will potentially clarify changes in trophic functioning of the fish assembly as a whole. Research questions are 1) What is the extent of changes in trophic functioning as a result of species changes in the fish assemblage?; 2) Did the taxonomic changes in the fish assemblage lead to equally large changes in trophic diversity?; 3) Are alien species in general more generalist than native species?; 4) Can the success of invasion be (partly) resulting from competition for resources by alien fish species? Suisun Marsh on the coast of California is used as a case study for this approach. The functional changes resulting from these massive taxonomic shifts in the fish assemblage will be studied by measuring 25–30 trophic traits in the 18 common to abundant species. Measurements will result in a ‘trophic profile’ per species. By weighting these trophic profiles for the estimated abundance/biomass per species an overall trophic indicator of the fish assemblage can be calculated. Such an indicator can be used to assess the changes in the trophic state of the fish assemblage before and after invasion of alien species. |

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| RESEARCH AIM/ SCOPE |
| * Identify the trophic functioning of the alien and indigenous fish species of Suisun Marsh * Relate (the changes in) food-web functioning to species changes. |

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| REQUIREMENTS |
| * Affinity with organismal biology / anatomy * Quantitative interest * Precise worker * Affinity with statistical (multivariate) analyses |

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| OTHER INFORMATION |
| The student will be trained in comparative morphology in Wageningen before going to UC Davis for fieldwork in October-December. At UC Davis the student will work in the group of Prof. Peter Moyle.  For more information please contact Dr. Leo Nagelkerke at AFI  [leo.nagelkerke@wur.nl](mailto:leo.nagelkerke@wur.nl) |