Natural Environment Group (NEG) Project Bidding Pro Forma 2025/6

Please complete all sections and read the eligibility criteria and timescale at http://www.solentems.org.uk/natural_environment_group/NEG_Projects/.

Project Title:	**Drug accumulation in fish of the Solent**
Project Sponsor/Lead (and full contact details):	Nic Bury n.r.bury@soton.ac.uk School of Ocean and Earth Science, University of Southampton, Southampton, European Way SO14 3ZH
Full Address that any Purchase Order should be made out to:	Nic Bury School of Ocean and Earth Science, University of Southampton, Southampton, European Way SO14 3ZH
Project Description and Objectives:	Pharmaceuticals are ubiquitous in global waters including those around the Solent. These compounds are of growing environmental concerns, because there are exceptional potent chemicals that target human and veterinary target molecules which are also found in other species. Consequently, a drug may activate these targets in non-target species, e.g. fish, leading to consequences that may be adverse. To cause an effect the drug must reach the target. A drug enters a fish via the water or diet and then circulates the body in the blood to reach the different organs. It is the concentration in the blood that determines if an adverse effect is likely. Thus, the aim of the project is to directly measure the concentration of up to 20 drugs in the drug classes antidepressants (e.g., sertraline, venlafaxine, citalopram, imipramine) and antipsychotic (e.g., haloperidol, carbamazepine) predicted to affect

	fish behaviour as well as glucocorticoids (e.g., dexamethasone, halcinonide), predicted to effect immune response, in fish plasma or whole bodies from the Solent. From these values we can estimate the potential impact by comparing the fish plasma concentration to those human plasma concentrations known to illicit a response, the therapeutic dose.
What is the value of the project to the Solent Marine Sites (SEMS), other designated sites or areas of conservation interest?	The benefit to the SEMS is a knowledge of potential impact of drugs to fish in the Solent. It is only with robust scientific knowledge that we will be able to establish if this group of chemicals is having a ecological impact and help advise policy makers and regulators on potential solutions.
Project Outputs:	The output will be a report to the Natural Environment Group and a peer-reviewed paper reporting these observations.
Project Timescale and Milestones:	Sample collection and preparation in Summer 2025 and analysis in Autumn 2025. Report and paper submitted by the end of 2025.
Overall Project Cost (£): *Please detail other funding sources secured/sought. Please note there is a £2k cap.*	£4000
Funding contribution sought from NEG (£): *The amount requested should be match funded.*	£2000
Will the project still go ahead without NEG funding?	Yes, but with a far less number of chemicals and fish species samples
Geographical coverage of the project: *The project must cover some aspect of the coastal or marine environment of the Solent.*	Fish are sourced from the inlet of the Marchwood power station in Southampton waters as part of the monthly fish population monitoring by Pisces Conservation and our colleague Dr Chris Goatley, University of Southampton.
Please list any project partners:	None
Additional information to support the Bid:	The project proposed forms part of Louise O'Neill's PhD looking at the impact of drugs in the marine environment. She is a self-funded part-time student and thus we have limited resources for her project, and

	thus the request to the NEG. The £2000 request will specifically buy the necessary standards for the LC-MS/MS analysis. Each standard is in the region of £50 - 150 (e.g. Carbamazepine, Sigma-Aldrich cat nos:99446, £56 and sertraline, S-021, £51, haloperidol, Y0001518, £119 and dexamethasone, D-085, £102). The cost of other consumables (solid phase extraction cartridges, solvents, vials) and LC/MS-MS machine time for analysis and our time will be covered by myself at UoS.

Submission date:

Please email completed forms to solentforum@hants.gov.uk by 21 March.