



Smart Lobster: monitoring the burrow emergence behaviour of the Norway lobster (*Nephrops norvegicus*)

The Marine Institute is currently providing access to the EMSO SmartBay observatory for an exciting new project titled Smart Lobster. This project aims to monitor the burrow emergence behaviour of the Norway lobster (*Nephrops norvegicus*) in Galway Bay with the use of an underwater camera on the EMSO SmartBay observatory. The observatory is located on the seabed (20m to 25m depth) off the coast of Spiddal in Galway Bay and this area is one of the North East Atlantic fishery grounds for this species (more commonly known as Norway lobster, Dublin Bay prawn, langoustine or scampi). The project will also involve the use of a new autonomous imaging device which has been designed for long-term deployment.

The chief scientist on the project is Dr. Jacopo Aguzzi from the Institute of Marine Sciences (ICM-CSIC, <http://www.icm.csic.es>) in Barcelona, Spain with Marine Institute scientists Jennifer Doyle and Dr. Colm Lordan (members of the ICES working group on *Nephrops*, WGNAPS) providing specialist fishery management and policy knowledge. The scientists will evaluate and analyse the video footage provided by the camera to assess the digging activity and maintenance of burrows by *Nephrops* and also the role of ecological and environmental factors that modulate burrow emergence (e.g. social aggressive territorial interactions and the presence of prey or predators). The results of this study will have implications for stock assessment of this species, allowing standardisation of demographic data obtained with trawl nets (fishery-dependent sampling) and towed sledges (fishery-independent sampling) upon animals' burrow emergence variability.

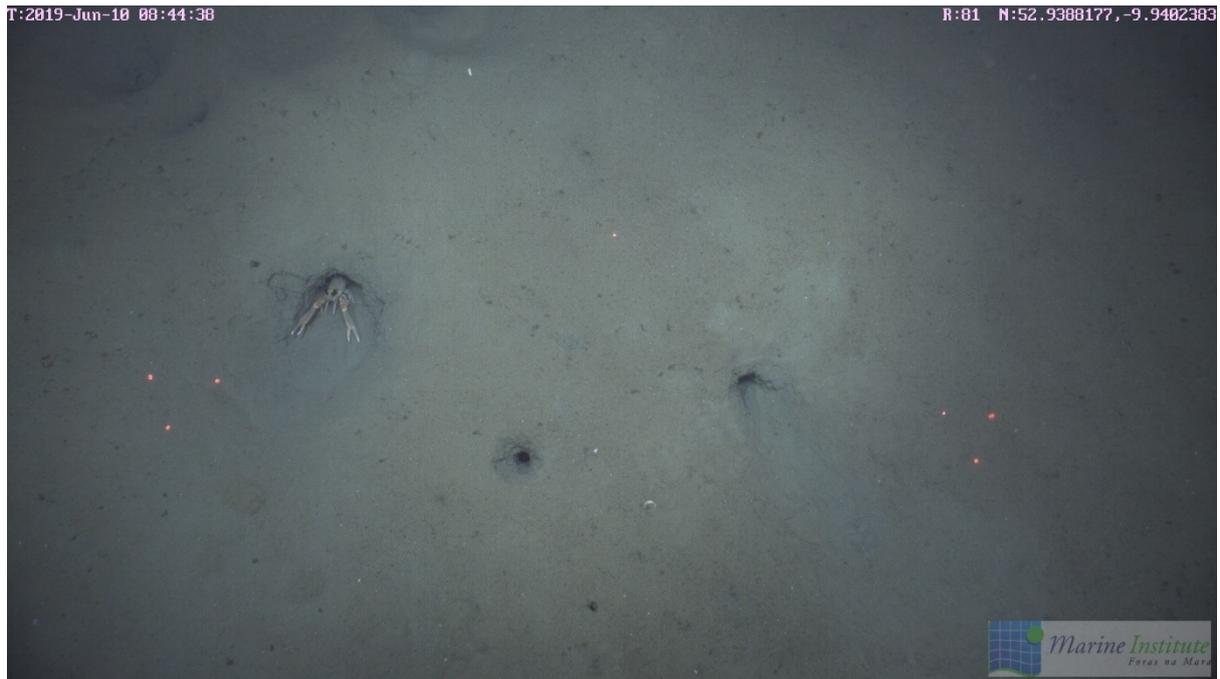


Figure 1. Example of *Nephrops* emerging from a burrow

The operational aspects of the project are being coordinated by the Marine Institute's Research Infrastructure Section. A steel frame was constructed for use in monitoring the activity of the *Nephrops norvegicus* and was deployed by a team of divers on 27th May 2020. The camera and the imaging device will be used to record the activity of up to 15 *Nephrops norvegicus* within the frame over the next 12 months.

Commenting on the facilities provided by the EMSO SmartBay observatory, Dr. Aguzzi said “coastal cabled observatories of this kind represent an excellent opportunity to provide pilot studies to technologically advance more classic stock assessment approaches, providing new ecological data in multidisciplinary and highly-integrated fashion”.

Mr Alan Berry, Marine Institute's Research Infrastructure Manager noted that “By supporting and promoting national research infrastructure such as the EMSO SmartBay observatory in Galway Bay, the Marine Institute facilitates world class scientific research and the production of new knowledge for improving marine ecosystem management.”

The Smart lobster project is one of four transnational access projects being funded by the EMSO-Link project (Grant Agreement 731036).



Figure 2. Smart Lobster frame deployed underwater © Nick Pfeiffer

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