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Name of the Institution / Company **Universitat Politècnica de València**
Applicant Name and surname **Dr. Gabriela Andreu García & Dr. Isabel Pérez Arjona**
Title **Acoustical and video image techniques for the characterisation of Bluefin tuna biomass**
ACRONYM **THUNMETRICS**
Summary The aim of the project is to contribute to the development of new tools both for the monitoring of the incipient Bluefin tuna aquaculture and for wild stock estimations, as a natural continuation of the previous project ACUSTUNA, "Acoustics and biometrics of Bluefin tuna (thunnus thynnus), CTM2015-70446-R", financed in the same program in the period 2016-19. The methodological approach has been validated successfully in the previous project, and it includes the analysis of underwater video images, fish sounds and acoustic backscattering data to study captive Bluefin tuna characteristics as size distribution, growing rate and condition, as well as animal behavior related with reproduction or external stimuli. Recording and analysis of the sound emitted by tuna is a novelty of the present proposal, in addition to optical and acoustical bakscattering information. Working with echosounding, fish sound recordings and synchronised optical (stereoscopic videos) information from the same scene allows us to have a triple source of information from the same individuals detected with different sensors. The optical information ensures that the signals detected by the echosounders and the recorded sound by an hydrophone array correspond to characterised isolated individuals. Evenmore, with the use of an stereoscopic acquisition system we can obtain 3D biometric measurements and the spatial orientation of fish. This information permits to include in the analysis both the size and the physiological condition variable that should be correlated with target strength variations as well as the time and frequency characteristics of the tuna-emitted sounds. Video images and echosounder echograms offer behavioural information and together with the sound emitted occasionally by these individuals allow to describe ethological patterns.