

## **LANDERPICK, A REMOTE OPERATED TOWED VEHICLE TO COST-EFFECTIVELY DEPLOY AND RECOVER LIGHTWEIGHT OCEANOGRAPHIC LANDERS**

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**Abstract:** Landers are modular structures equipped with miscellaneous sensors and equipment which are positioned directly on the seabed to operate autonomously for a defined timeframe. A drawback of landers intended to operate for prolonged periods is the high cost of recovery systems, typically depending on buoyancy modules plus expendable ballast, or requiring ROVs assistance. LanderPick concept consists of the design of a specific towed vehicle to deploy and recover lightweight oceanographic landers not provided with recovery elements, but having a capture mesh that facilitates their hitching. The LanderPick vehicle is technically a ROTV (Remote Operated Trawled Vehicle) controlled through a standard coaxial electromechanical cable that allows real-time control from the vessel. Navigation is enabled by a low-light high-definition camera, aided by spotlights. Small propellers aid in the final precision approach maneuvers. A mechanical release allows the precise placement at the sea bottom of landers carried as a payload, as well as their recovery by means of a triple hook. Pilot deployments started in 2021 in southern Biscay, consisting of short-term deployments for lapse-time photos and mid to long term arrays of several landers at complex topography spots (a canyon and a seamount). More than 20 deployments and 15 recapture operations were made so far at depths from 200 to 1000 meters without failures. The LanderPick novel cost-effectively approach allows to conceive monitoring systems based on the deployment of swarms of low-cost landers, thus bridging the gap between the large spatial- but not temporal- coverage of ROV-type systems versus the extensive temporal- albeit low spatial- coverage of a single-point eulerian system (Brandt et.al. 2016). Experiments in which it is necessary to locate landers with great precision are also feasible.

**Key words:** Landers, ROTV, sea-floor characterization, environmental monitoring.

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- LanderPick demonstrative video available at [https://www.youtube.com/watch?v=fCteTEEm\\_iw](https://www.youtube.com/watch?v=fCteTEEm_iw)