

# Flemish Research Institute for Agriculture, Fisheries and Food (ILVO)

## // Website research infrastructure

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## // Contact research infrastructure

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Sampling, observation & survey infrastructure




Experimental facilities & analysis capacity



Data & information management and computing infrastructure

Infrastructure Categories	Infrastructure
	<ul style="list-style-type: none"> <li>8 m sampling beam trawl (40 mm) <sup>2,3</sup></li> <li>6 m survey beam trawl (20 mm) <sup>2,3</sup></li> <li>4 m survey beam trawl (40 mm) <sup>2,3</sup></li> <li>8 m twin beam trawl (experimental) <sup>2,3</sup></li> <li>8 m sampling beam trawl (22 mm) *</li> <li>3 m survey beam trawl (22 mm) *</li> <li>Hyperbenthic sledge (1mm &amp; 0.5 mm nets) *</li> <li>Rinsing &amp; sorting machine (cfr. shrimps) *</li> <li>Sieving table (mesh size 1mm) *</li> <li>Several Van Veen grabs (0.1m<sup>2</sup>) *</li> <li>Several sorting and (digital) measuring tables <sup>2</sup></li> <li>Fish and invertebrate survival equipment <sup>3,*</sup></li> </ul>
	<p>Fixed platforms, moorings and ladders</p> <p>Several boeys, mooring weights, fish and invertebrate cages *</p>
	<p>Field instrumentation</p> <ul style="list-style-type: none"> <li>Drone with RGB-camera, hyperspectral camera and thermal camera <sup>2,3</sup></li> <li>CTD <sup>2</sup></li> <li>Acoustic equipment for underwater measurements <sup>2,3</sup></li> </ul>

	<p>Overview</p>
	<p>Type of laboratory / analyses</p> <ul style="list-style-type: none"> <li>The laboratory complex includes: chemical analysis, genomics, microbiology, microscopy (MCL), seafood and wetlab, toxicology, otoliths. Also several experimental and aquaculture lab facilities/rooms available. Each laboratory has adequate and high quality instrumentation, described below. <sup>2,3</sup></li> <li>Analyses with regard to the marine environment (fishing gear, seawater), sediment, epibenthos, macrobenthos, plankton, demersal and pelagic fish, microbiome <sup>2,3</sup></li> </ul> <p><a href="https://www.ilvo.vlaanderen.be/Default.aspx?TabID=6539#.W_ffLWZReJB">https://www.ilvo.vlaanderen.be/Default.aspx?TabID=6539#.W_ffLWZReJB</a></p>
	<p>Class or accreditation</p> <p>All laboratories work according to the criteria of the NBN EN ISO/IEC 17025 standard</p>
	<p>Analysis equipment, services and techniques</p> <p><b>Equipment</b> Design and performance of fishing gear:</p> <ul style="list-style-type: none"> <li>Tension meter: measures the tension in the fishing line with digital recording per second <sup>2,3</sup></li> <li>Underwater camera: high quality video recordings of fishing and other underwater activities <sup>2,3</sup></li> <li>Scanmar, Marport: acoustic equipment for measuring net characteristics during fishing <sup>2,3</sup></li> <li>OMEGA Mesh Gauge <sup>2,3</sup></li> <li>2 pulse generators for laboratory experiments <sup>2,3</sup></li> <li>2 pulse generators (400W) to generate electric fields in the net <sup>2,3</sup></li> <li>1 pulse wing for electric fishing on shrimp <sup>2,3</sup></li> <li>2 winches for communication &amp; energy supply to pulse generators or pulse wing <sup>2,3</sup></li> <li>8 go pro's with waterproof housings with spare batteries &amp; memory cards + 5 mounting racks for go pro's to protect them and attach them in the nets <sup>2,3</sup></li> <li>4 bulletcamera's for realtime underwater imaging + mobile winch for communication and energy supply <sup>2,3</sup></li> <li>Several professional deepfreezers (incl. -80°C) and refrigerators (upto 1400 litres) <sup>2</sup></li> </ul>

	<b>Analysis equipment, services and techniques (continuation)</b>	<p>Chromatography equipment:</p> <ul style="list-style-type: none"> <li>GC-MS (PTV injection, SPME), LC-MS<sup>2</sup>, LC-HRMS, LC-UV, LC-fluorescence, GC-ECD <sup>2,3</sup></li> <li>Chemical extraction and clean-up: PLE, soxhlet, GPC, SPE, etc. <sup>2</sup></li> <li>5 X Stereomicroscopes (bin- and triocular) (LEICA resp. 165C (2) &amp; M205C (3)) + 2 digital cameras <sup>2,3</sup></li> <li>Sort &amp; rinsing installation (macrobenthos) and certified sieves (0.5 &amp; 1 mm) <sup>2</sup></li> <li>Muffle furnace (30 - 3000°C), Lab ovens, rinsing machines, fume hoods, etc.*</li> <li>Several analytical balances (readability down to 0.01 mg) <sup>2</sup></li> <li>Malvern Mastersizer 2000 (sediment analysis) <sup>2,3</sup></li> </ul> <p>Genomics equipment:</p> <ul style="list-style-type: none"> <li>LAF cabinets, centrifuge (tubes, well-plates), thermomixers, PCR, qPCR (Roche Light-cycler), dPCR (Biorad), electrophoretic units, Qiaxcel, Geldoc system, Nanodrop 2000, Quantus Fluorometer, autoclave (Tuttnauer 385e), bead beater (FastPrep-24), homogenisation of samples (IKA tube mill) <sup>2,3</sup></li> </ul> <p><b>Services</b></p> <ul style="list-style-type: none"> <li>Authenticity tests for fish and seafood (including mixed samples) <sup>2,3</sup></li> <li>Otolith daily growth rings <sup>2,3</sup></li> <li>Survival and toxicology experiments <sup>2,3</sup></li> </ul> <p><b>Techniques</b></p> <ul style="list-style-type: none"> <li>Chromatographic analyses of organic compounds (ILVO) and inorganic compounds (in co-operation with CODA-CERVA) <sup>2,3</sup></li> <li>Microplastic determination in different matrices <sup>2,3</sup></li> <li>Exposure experiments for aqueous organisms in climate controlled exposure rooms <sup>2,3</sup></li> <li>DNA barcoding and quantification of fish, seafood, macrobenthos <sup>2,3</sup></li> <li>Metabarcoding benthos (micro, meio, macro, epi, fish) <sup>2,3</sup></li> <li>Genotype-by-sequencing of invasive and commercially important marine organisms <sup>2,3</sup></li> <li>Microscopic and macroscopic species determination <sup>2,3</sup></li> <li>Stomach content analyses <sup>2,3</sup></li> </ul> <p><a href="http://www.ilvo.vlaanderen.be/language/en-US/EN/Services-and-Products.aspx">www.ilvo.vlaanderen.be/language/en-US/EN/Services-and-Products.aspx</a></p>
	<b>Aquaculture experimental facilities</b>	<ul style="list-style-type: none"> <li>10 tanks of 500 l on a separate recirculation system for general purposes <sup>2,3</sup></li> <li>For feed experiments and survival tests: 20 small (30 l) fish tanks on one recirculation system under controlled light and temperature conditions <sup>2,3</sup></li> <li>2 tanks of 2000 l on a separate recirculation system under controlled light and temperature conditions</li> <li>10 tanks of 1000 l on a separate recirculation system under controlled light and temperature conditions <sup>2,3</sup></li> <li>17 small (120 l) fish tanks on a recirculation system <sup>2,3</sup></li> <li>5 large fish tanks (2,000 l) on one recirculation system <sup>2,3</sup></li> <li>Various fish tanks from a few litres up to 3,000 l <sup>2,3</sup></li> <li>Various tanks for fish eggs and larvae with their own recirculation system or flow through <sup>2,3</sup></li> <li>4 aquaria (60 x 30 x 35 cm – 50 l) available to perform exposure experiments with toxic chemicals <sup>2,3</sup></li> <li>Exposure room with a separate recirculation and cooling system. It contains 16 cilindro-conical tanks (11 l) and 10 small fish tanks (120 l). Either flow-through or recirculation are available <sup>2,3</sup></li> <li>A direct connection to the sea to pump up seawater (stored in a tank of 40 m<sup>3</sup>) <sup>2,3</sup></li> <li>Various recirculation systems for stocking (fish and shrimp) and testing of: 8 medium-sized fish tanks (570 l) and 18 small fish tanks (100 l). Separate room with its own cooling and recirculation system <sup>2,3</sup></li> </ul>
	<b>Marine land-based facilities for engineering</b>	<p>A towing tank is available (6.6 m x 1.5 m x 0.7 m (7 m<sup>3</sup>))</p>
	<b>Num. models, spec. software and comp. IR</b>	<p>Server for analysis of next generation sequencing data</p>
	<b>Marine libraries</b>	<p>Macrobenthos determination keys</p>
	<b>Marine data centers</b>	<ul style="list-style-type: none"> <li>Fisheries data (otoliths, catches, discards, effort, VMS, economic, fuel) <sup>2,3</sup></li> <li>DNA barcodes macrobenthos</li> </ul>
	<b>Collections</b>	<p>Macrobenthos reference collection (BNS)</p>