

Information on plankton sorting centers and existing taxonomic expertise

Taxonomists are a threatened species and taxonomic skills are vanishing quickly. It is of high importance to know which taxonomic expertise is present, and where it is situated. Therefore it is adequate to list taxonomic centers to present their competence, experience and processing abilities on particular groups of zooplankton. In the case of many laboratories there are numerous samples, which have not been analyzed so far. Therefore, we identified and reviewed the centers capable of helping to solve this problem. Information on sorting centers was collected over the last three years and details on seven institutions willing to present offers as well as their taxonomic expertise are given in the table below:

no	centre name	postal address	contact person name	e-mail	how many years in business	capacity	taxonomic expertise	spatial coverage	quality control procedures and certificates	other information
1	NMFRi Plankton Sorting and Identification Center in Szczecin	Krolewiczka Kazimierza 4, pawilon E 71-550 Szczecin tel. +48 914-554-463 fax. +48 914-227-203 zsiop@mir.gdynia.pl	Ms Wanda Kalandyk Head of Center	wanda.kalandyk@mir.gdynia.pl	since 1974	7,000 samples annually	zooplankton marine invertebrates, identification of fish larvae and classifying fish eggs by developmental stages	North Pacific Ocean (western coast of United States and Canada), North Atlantic Ocean (including Gulf of Mexico, Greenland Sea, Norwegian Sea, North Sea and Baltic Sea), Persian Gulf, Gulf of Oman	laboratory, identification, and counting procedures as well as quality control procedures are based on client demands	experience includes US-CPR survey and ballast waters samples
2	"Materialhof"	Werkstätten Materialhof, Bahnhofstraße 12-16, 24768 Rendsburg, www.materialhof.de	Mr. Jörn Reichert, Head of Laboratory	Joern.Reichert@materialhof.de	since 2003		taxonomic sorting & classification of meiofauna, mesozooplankton, and makrozoobenthos (marine and limnic); measuring of organisms by size and weight (including wet and dryweight); statistical analysis of results; determining the food composition of fish larvae (stomach sample analysis)	Focus & expertise on North- and Baltic Sea Plankton	inter-laboratory comparisons, inter-calibration exercises and taxonomic workshops of the German Federal Environment Agency, Member of the German Marine Monitoring Programme	so far expertise in zooplankton from stomach contents of herring and sprat
3	"Aqua Ecology"	Oldenburg (Lower Saxony) +49-441-38116-250 http://www.aquaeology.de/sites/default/files/ex.php?file=aquaeology_startpage_en	Dr. Claus-Dieter Dürselen, Head of Center	info@aquaeology.de	since 2002	depending on order situation ~100-400 per year	analysis of phytoplankton, zooplankton, phyto-benthos, macrophytes, macrozoobenthos, fishes; work includes quantitative determination down to species level zooplankton: marine, estuarine and freshwater organisms; qualitative and quantitative analysis of species of all taxonomic groups; developmental stages of copepods; analysis of size classes, biomass; respiration	zooplankton of the Antarctica, the outer Ems River, and the North Sea (Helgoland Roads time series)	For quality assurance reasons, AquaEcology regularly participates in inter-laboratory comparisons, inter-calibration exercises and taxonomic workshops. Furthermore, the institute is going to get accredited for the biological and chemical analysis following DIN EN ISO/IEC 17025. AquaEcology cooperates with the working group "biology" of the quality assurance centre of the German Federal Environment Ministry.	sampling, mesocosm experiments, research cruises; standard statistical procedures; data management and software; data storage and documentation
4	Huntsman Marine Science Centre; ARC (Atlantic Reference Centre)	1 Lower Campus Road, St. Andrews, New Brunswick, Canada E5B 2L7 Phone: (506) 529-1203 Fax: (506) 529-1212	Dr. Gerhard Pohle, Lou Van Guelpen	gpohle@huntsmanmarine.ca , lrc@afmpo.gc.ca	since 1977	variable, depending on demand, usual volume circa 1000/year	Marine zooplankton, marine and freshwater ichthyoplankton and adults; staging, identification, biomass determination; marine and freshwater macro zoobenthos	NW Atlantic, Arctic, Antarctic	Standard protocols are in place but specific quality assurance and quality control procedures are often customized based on client needs; includes quality assessment work for other parties	Access to vast research collection holdings (147,000+ lots); collection digitization (Specfy); research cruises, data analysis, report writing and presentation
5	The Centre for Environment, Fisheries and Aquaculture Science (Cefas)	Cefas Plankton Laboratory, Pakefield Road, Lowestoft, Suffolk, England NR33 0HT	Mr. Stephen Milligan (Plankton Ecology Team Leader) or Dr Sophie Pitois	stephen.milligan@cefas.co.uk , sophie.pitois@cefas.co.uk	Since 1902 (111 years)	4,000 Phytoplankton samples for full community analysis, 2,000 - 5,000 zooplankton samples depending on analysis required and method of collection.	Phytoplankton from marine, coastal and transitional waters for full community analysis and HAB species to accredited UKAS 17025 standard. The sorting of marine zooplankton for invertebrates, identification of fish eggs & larvae, aging of fish eggs by developmental stages. Other marine zooplankton analysis includes qualitative and quantitative analysis of species of all taxonomic groups down to species level where possible; developmental stages of copepods; analysis of size classes.	North Sea, Irish Sea, UK territorial waters and European shelf seas from NW Ireland to S Biscay.	Phytoplankton analysis to UKAS 17025 standard. Annual participation in BEQUALM phytoplankton intercomparison. Participation in taxonomic workshops e.g. IOC Phytoplankton Copenhagen, Phyto & Zooplankton MBA Plymouth, Fish Larvae IMAKES, Ijmsuden. No known zooplankton intercomparisons but liaising with SAHFOS, Plymouth regarding this.	Use of image analysis equipment to gather size information for zooplankton. Zooscan recently purchased and currently being assessed fully before implementation. Experience includes processing of marine microlitter samples. Further experience includes the operation and handling of a variety of plankton sampling gears including Gulf VII's, BIONESS, Benthic sledge.
6	The Sir Alister Hardy Foundation for Ocean Science (SAHFOS)	The Laboratory, Caded Hill, Plymouth PL1 2PB, UK	Dr Claudia Castellani or Tanya Jonas (tj@sahtos.ac.uk)	cw@sahtos.ac.uk	since 1931	Annually ~ 6000 CPR samples analysed for phytoplankton and zooplankton. There is flexibility to undertake other phytoplankton and mesozooplankton sample analysis depending on number of samples and analysis required.	Quantitative and qualitative analysis of mesozooplankton and phytoplankton from marine pelagic and coastal waters. Many groups identified to species level others to genera. Copepods separated to developmental stages if required.	Current (2013) North Sea, Irish Sea, English Channel, Barents Sea, Norwegian Sea, North Atlantic (east and west) South Atlantic (Scotia Sea), North Pacific (east and west and Bering Sea). Past experience with samples from the Baltic Sea, Mediterranean, Indian Ocean and from around South Africa	Annual participation in BEQUALM for Phytoplankton. Rigorous internal quality control following Ships of Opportunity (SOPs). We are currently investigating (with NMBAQO) to setting up a zooplankton quality assurance scheme akin to the BEQUALM for phytoplankton. We are also applying for ISO standard accreditation for zooplankton taxonomic analysis.	Training for setting up of CPR surveys and taxonomic analysis of plankton samples. Bespoke zooplankton training. Advanced statistical analysis of plankton data. CPR data archive and documentation. Regular organisation of international taxonomic workshop for both zooplankton and phytoplankton and training of students.
7	APEM Limited	Diamond Centre, Unit 7, Works Road, Letchworth Garden City, Hertfordshire SG6 1LW, UK.	Tim Worsfold	t.worsfold@apemltd.co.uk	Since 1987	up to 3000/year	Survey and identification expertise for marine and freshwater zooplankton, phytoplankton, benthic macrofauna, fish and in situ records of conspicuous fauna, flora and biotopes.	Extensive experience for UK territorial waters and northern Europe, with additional experience for Mediterranean, West Africa, Caspian Sea and Gulf Region	In-house quality control protocol. Working towards UKAS accreditation for zooplankton (already in place for macrobenthos)	Largest capacity of marine invertebrate identification expertise in UK. Access to continually expanding literature, reference and image collections.