

Proficiency Test SYKE 7/2011

**Boreal lake littoral and NE Baltic benthic
macroinvertebrate taxonomic identification**

**Kristian Meissner, Katarina Björklöf, Marko Jaale,
Katriina Könönen, Jouko Rissanen and Mirja Leivuori**



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Helsinki 2012

Finnish Environment Institute



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Finnish Environment Institute SYKE

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Alkusanat

Suomen ympäristökeskus (SYKE) on toiminut ympäristöalan kansallisena vertailulaboratoriona vuodesta 2001 lähtien. Toiminta perustuu ympäristöministeriön määräykseen, mikä on annettu ympäristönsuojelulain (86/2000) nojalla. Vertailulaboratorion tarjoamista palveluista yksi tärkeimmistä on pätevyyskokeiden ja muiden vertailumittausten järjestäminen. SYKEN laboratoriot on FINAS-akkreditointipalvelun akkreditoima testauslaboratorio T003 ja kalibrointilaboratorio K054 (SFS-EN ISO/IEC 17025) sekä vertailumittausten järjestäjä Profitest SYKE PT01 (SFS-EN ISO/IEC 17043, www.finas.fi).

Tämä pätevyyskoe on toteutettu SYKEN vertailulaboratorion pätevyysalueella ja se antaa tietoa osallistujien pätevyyden lisäksi tulosten vertailukelpoisuudesta myös yleisemmällä tasolla. Pätevyyskokeen onnistumisen edellytys on järjestäjän ja osallistujien välinen luottamuksellinen yhteistyö.

Parhaat kiitokset yhteistyöstä kaikille osallistujille!

Preface

The Finnish Environment Institute (SYKE) is an appointed National Reference Laboratory in the environmental sector by the Ministry of the Environment according to section 24 of the Environment Protection Act (86/2000) since 2001. The duties of the reference laboratory service include providing proficiency tests and other interlaboratory comparisons for analytical laboratories and other producers of environmental information. SYKE laboratories has been accredited by the Finnish Accreditation service as the testing laboratory T003 and the calibration laboratory K054 (EN ISO/IEC 17025) and as the proficiency testing provider Profitest SYKE PT01 (EN ISO/IEC 17043, www.finas.fi).

This proficiency test has been carried out under the scope of the SYKE reference laboratory and it provides information about performance of the participants as well as comparability of the results at a more general level. The success of the proficiency test requires confidential co-operation between the provider and participants.

Thank you for your co-operation!

Helsingissä 10. huhtikuuta 2012 / Helsinki 10 April 2012



Marja Luoto

Laboratorionjohtaja / Chief of Laboratory

1 *Introduction*

The Finnish Environment Institute (SYKE) includes a national environmental reference laboratory established under the Environmental Protection Act (2000). The duties of SYKE's reference laboratory include co-ordinating proficiency tests for analytical laboratories and other producers of environmental information. The proficiency testing service (Profest SYKE) is part of the SYKE Laboratory Management System based on the EN ISO/IEC 17025 standard (2005). The majority of Profest SYKE proficiency testing services conform to the requirements of ISO/IEC 17043 (2010), ISO 13528 (2005), and IUPAC technical report (Thompson et al. 2006). The Profest SYKE is accredited by the Finnish Accreditation Service as a proficiency testing provider (PT01, ISO/IEC 17043, www.finas.fi). The organizing of macroinvertebrate proficiency test does not yet belong to the accredited scope. The macroinvertebrate proficiency test SYKE PK 7/2011 is the third macroinvertebrate proficiency test organized by SYKE since 2003.

2 *Aim and scope the proficiency test*

The test PK 07/2011 test was held to assess the proficiency and reliability of professional and semi-professional identification of macroinvertebrate taxa routinely encountered during NE Baltic coastal or boreal lake littoral monitoring. The test material included many taxa used in Finnish application of the EU Water Framework Directive's (WFD) ecological status assessment. Participants could choose to take part in either the test on littoral macroinvertebrates, the test for NE Baltic coastal macroinvertebrates, or both.

The tests are in accordance with the WFD's demand for quality assurance of biological and in line with SYKE's aim to broaden the scope of its accredited methods towards biological proficiency testing. As taxonomic identification of macroinvertebrates is routinely done only by a single analyst, Profest SYKE conducted the macroinvertebrate proficiency test for individual taxonomists rather than the organisation they represent. Therefore participants received personal diplomas indicating the percentage of correctly identified taxa for the test they participated in while organizations were not certified.

3 *Staff and organisation of the test*

Contact persons: Kristian Meissner, person in charge, Fresh Water Centre
Katarina Björklöf, coordinator, Laboratory Centre
Mirja Leivuori, coordinator, Laboratory Centre

Expert panel: Kristian Meissner, Jyväskylä office, Finnish Environment Institute, Freshwater Centre
Marko Jaale, Finnish Environment Institute (SYKE), Marine Research Centre
Katriina Könönen, Finnish Environment Institute (SYKE), Marine Research Centre
Terhi Lensu, Jyväskylä office, Finnish Environment Institute (SYKE), Freshwater Centre

Assisting expert: Jouko Rissanen, Marine Research Centre, Baltic macroinvertebrate identification

External expert: Heikki Hämäläinen, Senior Lecturer, University of Jyväskylä, freshwater macroinvertebrates

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Erik Palmenin aukio 1, FI-00560 Helsinki, Finland

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The test was coordinated by the contact persons. The members of the expert panel and the assisting expert were responsible for the sample preparation and in the Baltic test also the validity assessment of complaints. In addition, an external expert provided an independent assessment on the validity of some complaints related to the freshwater test material.

4 *Invitation and participants*

Starting in May 2011, taxonomic requirements and other information on the test were made available on SYKE's Profctest website: www.environment.fi > Finnish Environment ... > Laboratories > Reference laboratory... > Proficiency testing ... > 7/2011. The web site featured the requirements. The first circular was sent to all former participants of tests as well as to Finnish universities that offer training in macroinvertebrate taxonomy in May 2011. In addition, information on the test was distributed at international meetings. The deadline for binding registrations was set in October and the test material was to be distributed in November. We kindly acknowledge Lars Ericsson's (SLU) help in successfully advertising the test to potential Swedish participants. We received around 40 contacts in all of which 20 participated (table 1). Despite the fact that students could participate at half price, the majority of participants were employed or self-employed.

Table 1. List of the names, nationality and institutions of participants in the different macroinvertebrate tests.

Name	Lake littoral	Baltic coastal	Nationality	Institution
Evander, Dan	x	x	SWE	Hushållningssällskapet Rådgivning Nord AB
Iso-Tuisku, Jussi	x	x	FI	Kokemäenjoen vesistön vesiensuojeluyhdistys ry.
Majuri, Pekka	x	x	FI	Pöyry Finland Oy, Water and Environment
Mettinen, Aki	x	x	FI	Länsi-Uudenmaan vesi ja ympäristö ry
Nyman, Curt	x	x	FI	Toimi Curt Nyman
Paasivirta, Lauri	x	x	FI	Kala- ja vesitutkimus Oy
Saarikari, Vesa	x	x	FI	Lounais- Suomen vesi- ja ympäristötutkimus oy
Salmelin, Johanna	x	x	FI	Etelä-Pohjanmaan ELY-keskus
Suurkuukka, Heli	x	x	FI	University of Oulu
Leppä, Markus	x		FI	Probenothos Oy
Nilsson, Carin	x		SWE	Medins Biologi AB
Anttila-Huhtinen, Marja		x	FI	Kymijoen vesi ja ympäristö ry
Ceitlina, Maija		x	LTV	Latvian Institute of Aquatic Ecology
Katajisto, Tarja		x	FI	SYKE
Kersen, Priit		x	EST	Estonian Marine Institute, University of Tartu
Krasniewski, Wojciech		x	POL	Institute of Meteorology and Water Management National Research Institute, Maritime Branch Gdynia
Könönen, Katriina		x	FI	SYKE
Lindell-Jokinen, Annette		x	Fi	Lounas-Suomen vesi- ja ympäristötutkimus Oy
Liungman, Annika		x	Fi	Medins Biologi AB
Rådman, Petra		x	SWE	Umeå Marine Sciences Centre, Umeå University
Suonpää, Anu		x	FI	Länsi-Uudenmaan vesi ja ympäristö ry
Total number	11	19		

5 *Timetable*

After the registration deadline the test material was posted to participants on November 10th, 2011. Participants were requested to return by e-mail the test results by December 31th, 2011. The first results were received on the 16th of November. Upon arrival, results were checked against the master lists and participants were given an initial estimate of the percentage of correctly identified individuals in an email. Detailed results on the participants test success were provided to participants on the 9th of January via email, after all results were received by the organizers. Participants were asked to contact Kristian Meissner or Marko Jaale if they disagreed with the detailed result. All complaints were dealt with by February 15th, 2012 and printed diplomas were sent out to all participants on February 22nd.

6 *Test material*

The test material was composed on sample material gathered during different monitoring and research projects. Part of the Baltic material was initially conserved in formalin. All material was spot checked by taxonomic experts prior to sample assembly and then transferred to one sample vial filled with 70% ethanol. Samples were composed of 50 individuals belonging to either 28 littoral or 35 Baltic taxa. Because the taxa composition in littoral samples varied, littoral samples were individually numbered and randomly assigned to participants. Samples were accompanied with detailed printed instructions to participants. Instructions included guidelines on how and when to report results as well as a request to the participants to list the taxonomic keys used to reach their results.

7 *Taxonomic identification by participants*

A detailed list of the required taxonomic resolution of both tests was given on the Profest website. During registration the use of microscopes at the SYKE field offices was offered to participants lacking own equipment. With this offer, Profest SYKE wanted to encourage and enable semi-professionals and student participants to take part in this test. However, despite the offer, all participants used their own equipment and taxonomic keys to identify the sample specimens.

8 *Evaluation criteria and results*

Despite efforts to provide error free material to participants, some sample preparation errors became apparent in both tests when initial results and the complaints arrived. Initially spotted errors were due to counting errors of the persons preparing sample (i.e. in 6 samples the number of individuals in a sample deviated from 50). In cases where the participant observed a deviation of the sent number of specimens from 50, the complaint was always solved to the benefit of the participant. In conclusion, the relative proportion of justified complaints to the total number of individuals sent to participants was low, (i.e. 5 ‰) pointing to the very high overall taxonomic reliability of the test material (Figure 1).

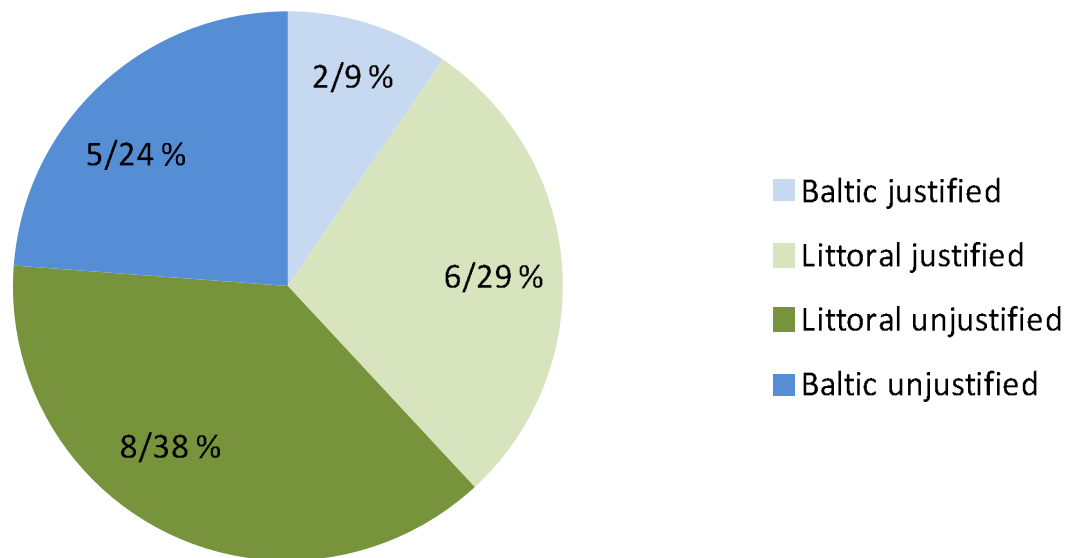


Figure 1: The number and percentage of justified and unjustified complaints on the taxonomic identity of sent specimens in the littoral and Baltic coastal test material.

To ensure participant anonymity, results were handled only by the contact person in charge of the test. Analytical experts evaluated the validity of complaints concerning Baltic taxa and reported the verdict to the person in charge. Most complaints regarding littoral taxa were solved by the person in charge but in some cases, a secondary opinion was obtained from a highly experienced external taxonomist. Samples were presented anonymously to the experts to ensure the anonymity of the complaining party.

While overall average success of all participants was high (i.e. above 70 % in all cases) there was considerable variation between participants (Fig. 2). The average proportion of misidentified specimens per participant was low and ranged between 5% for the littoral test to 7% in the Baltic coastal test (Fig. 3). The highest number of misidentified specimens was 10 in the littoral and 15 in the Baltic test corresponding to 18% and 30 % of all specimens in the test material, respectively.

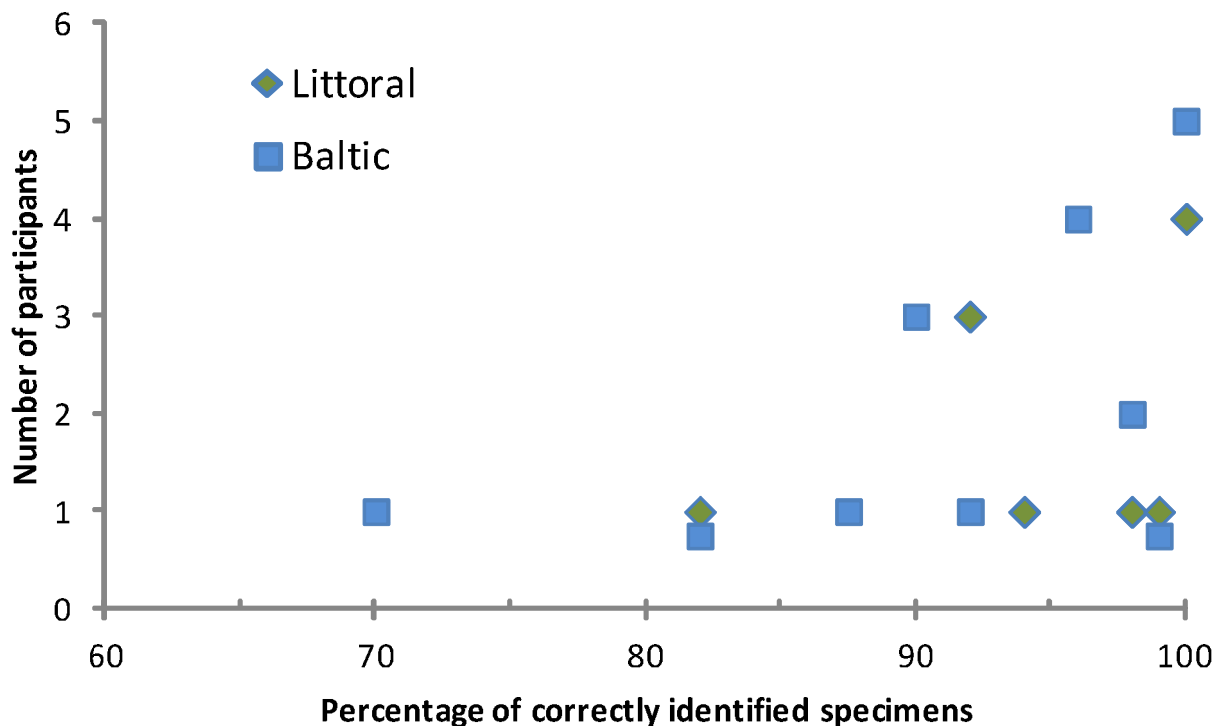


Figure 2. The distribution of test success in the different tests. Some results for participants in the Baltic coastal test are slightly offset to improve readability of the figure.

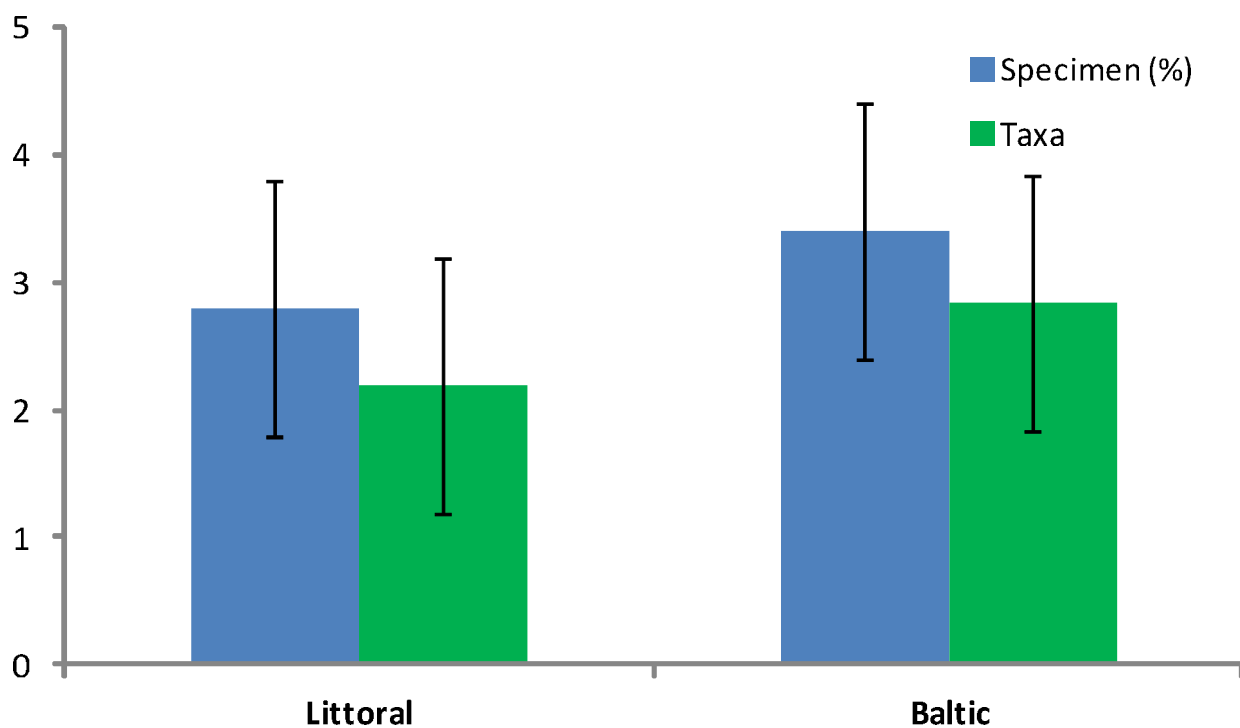


Figure 3. The average percentage of misidentified specimens and the average number of misidentified taxa in the littoral and Baltic coastal proficiency test ($\pm 1SE$)

The average proportion of misidentified taxa per participant was 8% for both littoral and Baltic coastal taxa (Fig. 3). The highest number of misidentified taxa in the littoral test was 9 whereas in the Baltic test it was 8 corresponding to 18% and 16% of all taxa in the test material, respectively.

The most often misidentified littoral species was *Gyraulus albus* with 27% of all its specimens being misidentified (Table 2). Amongst the Baltic species, the most commonly misidentified was *Potamopyrgus antipodarum*, with 56% of all its distributed specimens being misidentified (Table 3).

Table 2. List of the number of littoral coastal taxa that were misidentified in the test material. The proportion of misidentified specimens to the number of specimens provided to participants is given in brackets. Numbers of false taxa identities assigned to the test material are also provided.

Taxa	Misidentified	False taxa identity
HIRUDINEA		
<i>Erpobdella octoculata</i>	1 (0.05)	
GASTROPODA		
<i>Planorbarius corneus</i>		1
<i>Gyraulus albus</i>	3 (0.27)	
<i>Gyraulus laevis</i>		2
<i>Pisidium</i> sp.	2 (0.18)	
<i>Sphaerium</i> sp.		2
EPHEMEROPTERA		
<i>Heptagenia dalecarlica</i>	1 (0.05)	
<i>Kageronia fuscogrisea</i>	1 (0.05)	
<i>Caenis horaria</i>		1
<i>C. luctuosa</i>	1 (0.05)	
PLECOPTERA		
<i>Nemoura</i> sp.	1 (0.05)	
<i>Nemoura cinerea</i>		2
MEGALOPTERA		
<i>Sialis lutaria</i>	1 (0.05)	
<i>Sialis morio</i>		1
TRICHOPTERA		
Ecnomidae		
<i>Ecnomus tenellus</i>	1 (0.05)	
<i>Cyrnus flavidus</i>	1 (0.05)	
<i>Holocentropus dubius</i>		1
<i>Holocentropus picicornis</i>		1
<i>Tinodes waeneri</i>	2 (0.09)	
<i>Agrypnia</i> sp.		1
<i>Phryganea grandis</i>		1
<i>P. bipunctata</i>	2 (0.10)	
<i>Molanna</i> sp.		2
<i>Molannodes tinctus</i>	1 (0.05)	
<i>Aeshna grandis</i>	1 (0.09)	
<i>Aeshna</i> sp.		1
<i>Somatochlora</i> sp.	1 (0.09)	
<i>Leucorrhinia</i> sp.		1
COLEOPTERA		
Elmidae		
<i>Oulimnius tuberculatus</i>	1 (0.05)	
<i>Normandia nitens</i>		1

Table 3. List of the number of Baltic coastal taxa that were misidentified in the test material. The proportion of misidentified specimens of the number of specimens provided to participants is given in brackets. Numbers of false taxa identities assigned to the test material are also provided

Taxa	Misidentified	False taxa identity
BRYOZOA		
<i>Electra crustulenta</i>		1
CNIDARIA		
<i>Hydra</i> spp.	1 (0.06)	
PLATYHELMINTHES		
<i>Turbellaria</i> spp.	5 (0.28)	
POLYCHAETA		
<i>Hediste diversicolor</i>		1
<i>Bylgides sarsi</i>	1 (0.06)	
<i>Pygospio elegans</i>		2
<i>Manayunkia aestuarina</i>	3 (0.17)	
<i>Marenzelleria</i> spp.	4 (0.04)	
<i>Fabricia stellaris</i>	1 (0.06)	
OLIGOCHAETA		2
GASTROPODA		
<i>Bithynia tentaculata</i>		2
<i>Hydrobia</i> spp.	1 (0.06)	9
<i>Potamopyrgus antipodarum</i>	10 (0.56)	1
<i>Lymnaea</i> spp.	2 (0.11)	
<i>Limapontia capitata</i>		5
<i>Tenellia adspersa</i>		1
HYDRACARINA		1
CLADOCERA		
<i>Cergopagis pengoi</i>		1
OSTRACODA	2 (0.11)	
MYSIDA		
<i>Mysis relicta</i>		1
<i>Mysis mixta</i>	3 (0.17)	
<i>Hemimysis anomala</i>		1
<i>Praunus flexuosus</i>		1
ISOPODA		
<i>Idotea balthica</i>	2 (0.11)	
<i>Idotea granulosa</i>		2
<i>Monoporeia affinis</i>	1 (0.01)	1
<i>Pontoporeia femorata</i>	1 (0.01)	
<i>Gammarus oceanicus</i>	2 (0.11)	1
<i>Gammarus zaddachi</i>		2
<i>Gammarus salinus</i>	3 (0.17)	1
<i>Corophium lacustre</i>	2 (0.11)	
<i>Corophium volutator</i>		2
<i>Calliopius laeviusculus</i>		1
<i>Leptocheirus pilosus</i>	2 (0.11)	
DECAPODA		
<i>Palaemon adspersus</i>	2 (0.11)	1
<i>Palaemon elegans</i>	2 (0.11)	2
LEPIDOPTERA		1

Eight littoral and nine Baltic taxa in the test material, corresponding to 28% and 26% of all taxa were always correctly identified (Table 4).

Table 4. Amount of always correctly identified Baltic and littoral taxa. The number of total individuals is given in brackets.

Baltic taxa	Littoral taxa
NEMATODA	HIRUDINEA
<i>Halicryptus spinulosus</i> (18)	<i>Glossiphonia complanata</i> (11)
GASTROPODA	<i>Helobdella stagnalis</i> (22)
<i>Theodoxus fluviatilis</i> (18)	CRUSTACEA
BIVALVIA	<i>Pallasea quadrispinosa</i> (22)
<i>Mytilus trossulus</i> (36)	EPHEMEROPTERA
<i>Macoma balthica</i> (18)	<i>Ephemera vulgata</i> (22)
MYSIDA	TRICHOPTERA
<i>Neomysis integer</i> (18)	<i>Cyrnus trimaculatus</i> (10)
ISOPODA	<i>Lepidostoma hirtum</i> (22)
<i>Saduria entomon</i> (36)	<i>Athripsodes</i> sp. (22)
<i>Asellus aquaticus</i> (18)	<i>Mystacides</i> sp. (44)
<i>Jaera</i> spp. (18)	
DIPTERA	
<i>Chironomidae</i> (18)	

9 Evaluation of performance and discussion

Participant performance was generally good, with 76% of all participants scoring higher than 90% correct and still 60% of all participants scoring 95% or better. Perfect results were achieved by 30% of all participants.

Taxa misidentification affected roughly $\frac{3}{4}$ of all sent taxa. Mostly, taxa were misidentified once or twice, but some taxa seemed to cause more difficulties than others. In the littoral test, misidentified taxa were mainly either the gastropods or trichopterans and proportions varied mainly around 5- 10% of the sent specimens. In the Baltic coastal test the general error rate was around 10%. Gastropod identification in the Baltic test proved most difficult as 56% of all *Potamopyrgus antipodarum* specimens were misidentified mainly as *Hydrobia* spp. Such a high error rate suggests that this species is routinely misidentified in Baltic coastal monitoring. In littoral samples, the most commonly misidentified species was *Gyraulus albus* suggesting that for this species too errors during routine monitoring are high. While in general the taxonomic results can be regarded reliable, the wide spread of misidentified taxa suggests the need for more focused taxonomic training of experts. In Finland, small steps into this direction were taken in November 2011, when the Finnish Limnological Society founded a subgroup for benthic macroinvertebrates and held a two day workshop on mayfly taxonomy. The workshop attracted high popularity and attendance demonstrating the demand for such workshops to maintain the high quality of professional and semi-professional taxonomic identifications. Profest 07/2011 revealed potential problems related to the identification of some littoral species. Due to the difficulty of distinguishing young larvae of *Lype* to species level, the organizers accepted test results that correctly identified the specimens to the genus *Lype*. This decision will also affect standardized taxonomic requirements for the Finnish national macroinvertebrate biomonitoring as here too, *Lype* identifications will be recommended to be performed only to genus level. Similarly, since small larvae of *Plectrocnemia conspersa* and *Polycentropus irrotatus* are hard to distinguish we will recommend keying small specimens of these taxa to the Polycentropodidae- level only. To avoid problems related to specimen quality in test samples and to ensure equality among all participants we envision future macroinvertebrate taxonomic proficiency tests to rely at least in part on digitized samples.

10 *Feedback from participants and observations of the organizers*

Less than half of the participants gave feedback regarding the test. Feedback on the arrangements and timetables of the test was positive. The contact persons received no comments about the test fee or the registration process which may be taken as an indication that participants were mostly satisfied with these arrangements.

Feedback on the test material concentrated on the quality of provided specimens. While many found the test material to be adequate, some participants felt that the provided specimens were too small for detailed identification. Three participants noted that had they encountered these small specimens in regular monitoring samples, they would have left the identification of these small specimens at the genus level. Several participants suggested that in future tests small specimens should have been delivered in a separate vial in to increase their detectability. Participants generally commended SYKE ProfTest on organizing this kind of tests as they felt it alerted them to potential personal knowledge gaps in taxonomic skills. Several Finnish participants suggested that documented test success should be compulsory prerequisite to the right to feed macroinvertebrate data into Finnish national database. Presently, no such legal basis for the establishment of such prerequisites for institutions providing macroinvertebrate identification services exists in Finland.

The organizers were overall content with the test. Set timetables for sample distribution and reports on initial results were met and internal communication between the different branches and offices of ProfTest functioned satisfactorily. A delay in the organizers response to initial Baltic test complaints and the delay in the provision of final diplomas to the participants was recorded. Three inaccurate diplomas were distributed; this mistake was immediately rectified once it became apparent to the person in charge.

A preliminary evaluation of the reported taxonomic keys used in keying the test material revealed large variation amongst the keys used for Baltic coastal identification. Unfortunately, no conclusions on the use of either Baltic or freshwater taxonomic literature can be made due to the scarcity of literature lists provided by participants.

In future tests more effort to market the test to both an international audience and students will be undertaken.

11 *Summary*

The Finnish Environment Institute (SYKE) conducted a benthic macroinvertebrate taxa identification proficiency test in which 20 participants took part. Participants could choose between both the lake littoral and North-eastern Baltic coastal macroinvertebrate identification test. Participant performance was generally good, with 76% of all participants scoring higher than 90% correct and still 60% of all participants scoring 95% or better. Perfect results were achieved by 30% of all participants.

On average, 2.1 taxa were misidentified in the littoral, and 2.8 in the Baltic coastal identification test. A closer analysis of the variation between individual results revealed that mistakes were made for common species in both tests. Overall, only ¼ of all the taxa sent were always correctly identified by all participants.

The result clearly demonstrates the need for macroinvertebrate taxonomic identification tests and identified some of the needs for the development of quality assurance in macroinvertebrate identification. Future tests will be conducted on a regular basis for lotic, lentic profundal and littoral and Baltic coastal macroinvertebrates. The inclusion of digitized samples in future tests, increased international and semi-professional (e.g. student) participation are major future aims.

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Kuvailulehti

Julkaisija	Suomen ympäristökeskus (SYKE)	Julkaisu-aika 2012
Tekijä(t)	Kristian Meissner, Katarina Björklöf, Marko Jaale, Katriina Könönen, Jouko Rissanen and Mirja Leivuori	
Julkaisun nimi	Pätevyyskoe SYKE 7/2011 Järvilitoraalin ja pohjoisen Itämeren pohjaeläinten määrityskokeen loppuraportti	
Julkaisun osat/ muut saman projektin tuottamat julkaisut	Julkaisu on saatavana vain internetistä. www.ymparisto.fi/julkaisut	
Tiivistelmä	SYKE järjesti syksyllä pohjaeläinvertailun johon osallistui 20 määrittäjää. Määrittäjät osallistuivat määrityskokeessa joko järvien litoraali- tai rannikkopohjaeläinosioon tai kumpaankin. Kokeeseen 76% osallistuneista tunnisti yli 90% yksilöistä oikein, ja 60% osallistuneista tunnisti yli 95% yksilöistä oikein. Täysin virheettömiä määritystuloksia saavuttivat 30% osallistuneista määrittäjistä. Yksilöiden määrityksissä tehdyt virheet vastaavat keskimäärin järvien litoraalinäytteissä 2,1 ja Itämeren rannikkojen näytteissä 2,8 väärin määritettyä taksonia kokonaismäärän ollessa 28 järvinäytteissä ja 35 Itämeren rannikkojen näytteissä. Lähetetyistä taksonista määritettiin noin ¼ osaa aina oikein. Määritysvirheiden jakautumisen tarkempi analyysi paljasti virheiden olevan verrattain yleisiä yleistenkin taksonien osalta. Määrityskokeen tulos korostaa tarvetta järjestää pohjaeläinten määrityskokeita eri habitaateille (järvien syväne-, litoraali-, jokien koski- ja rannikkofaunat) säännöllisesti myös tulevaisuudessa ja yleisesti laajentaa pohjaeläintenmäärityksen laadunvarmennusta. Tulevaisuudessa pyritään sisällyttämään digitoituja näytteitä ja lisäämään kansainvälistä ja puoliammattilaisten (lähinnä opiskelijat) osallistumista.	
Asiasanat	vertailulaboratorion kehittäminen, biologiset määritykset, pohjaeläimet, sisävedet, rannikko, järvi, litoraali, pätevyyskoe.	
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Author(s)	Kristian Meissner, Katarina Björklöf, Marko Jaale, Katriina Könönen, Jouko Rissanen and Mirja Leivuori		
Title of publication	Proficiency test SYKE 7/2011 Boreal lake littoral and NE Baltic benthic macroinvertebrate taxonomic identification		
Parts of publication/ other project publications	The publication is available only on the internet www.ymparisto.fi/julkaisut		
Abstract	<p>The Finnish Environment Institute (SYKE) conducted a benthic macroinvertebrate taxa identification proficiency test in which 20 participants took part. Participants could choose between both the lake littoral and North-eastern Baltic coastal macroinvertebrate identification test. Participant performance was generally good, with 76% of all participants identifying more than 90% correct and still 60% of all participants identifying 95% or better. Perfect results were achieved by 30% of all participants.</p> <p>On average of a total of 28 taxa in the littoral test and 35 in the Baltic test, on average 2.1 taxa were misidentified in the littoral, and 2.8 in the Baltic coastal identification test. A closer analysis of the variation between individual results revealed that mistakes were made for common species in both tests. Overall, only 25 % of all the taxa sent were always correctly identified by all participants.</p> <p>The result clearly demonstrates the need for macroinvertebrate taxonomic identification tests and identified some of the needs for the development of quality assurance in macroinvertebrate identification. Future tests will be conducted on a regular basis for lotic, lentic profundal and littoral and Baltic coastal macroinvertebrates. The inclusion of digitized samples in future tests, increased international and semi-professional (e.g. student) participation are major future aims.</p>		
Keywords	reference laboratory, biological identification, macroinvertebrates, freshwater, Baltic, lake, coastal, proficiency test		
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Sammandrag	<p>SYKE genomförde en provningsjämförelse för botteninvertebrater under hösten 2011 som hade 20 deltagare. Deltagarna kunde välja mellan att delta i identifiering av sjö- eller kustlittoralbottenfauna eller i båda.</p> <p>Jämförelsen hade totalt 28 taxon i sjö- och kustlittoralprovena och 35 taxon i östersjöprovena. Av deltagarna identifierade 76 % över 90 % av individerna och 60 % av deltagarna identifierade 95 % rätt. Helt felfria analysresultat uppnådde 30 % av deltagarna. Felidentifieringarna motsvarade i medeltal i sjö- och kustlittoralprovena 2,1 och i östersjöprovena 2,8 misidentifierade taxon. En fjärdedel av de utskickade taxonerna identifierades alltid rätt. En noggrannare analys visade att felen var relativt vanliga också bland vanliga arter.</p> <p>Provningsjämförelsens resultat visar tydligt att provningsjämförelser för bottenfauna behövs med jämna mellanrum också i framtiden för olika habitat (sjöbäckenet, -littoralen åars och forsars faunor). Dessutom behövs andra metoder för att bättra kvalitetssäkringen av analyser av bottenfauna. I framtiden ska provningsjämförelserna bestå av digitaliserade prover och antalet internationella deltagare samt studeranden ska ökas.</p>	
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