



Animal &
Plant Health
Agency

Annual Report (2022 to 2023)

The National Reference Laboratory for *Trichinella*
and *Echinococcus*

1 April 2022 to 31 March 2023



© Crown copyright 2020

You may re-use this information (excluding logos) free of charge in any format or medium, under the terms of the Open Government Licence v.3. To view this licence visit www.nationalarchives.gov.uk/doc/open-government-licence/version/3/ or email PSI@nationalarchives.gsi.gov.uk

Data Protection:

For information on how we handle personal data visit www.gov.uk and search Animal and Plant Health Agency Personal Information Charter.

This publication is available at www.gov.uk/government/publications

Any enquiries regarding this publication should be sent to us at

nrl.parasitology@apha.gov.uk

www.gov.uk/apha

APHA is an Executive Agency of the Department for Environment, Food and Rural Affairs and also works on behalf of the Scottish Government, Welsh Government and Food Standards Agency to safeguard animal and plant health for the benefit of people, the environment and the economy.

Contents

1. Introduction.....	1
1.1 The National Reference Laboratory (NRL) for <i>Trichinella</i> and <i>Echinococcus</i>	1
1.2 Core functions and duties of the NRL for <i>Trichinella</i> and <i>Echinococcus</i>	2
1.3 Proficiency Testing.....	4
1.4 Official Laboratories	6
2.0 Results for the <i>Trichinella</i> EQA PT scheme distribution between April 2021 to March 2022	8
2.1 Results of the <i>Trichinella</i> EQA PT scheme distribution in March 2022	8
2.2 Results of the <i>Trichinella</i> EQA PT scheme distribution in June 2022	10
2.3 Results for the <i>Trichinella</i> EQA PT scheme distribution in September 2022	12
2.4 Results for the <i>Trichinella</i> EQA PT scheme distribution in December 2022.....	13
2.5 Results for the <i>Trichinella</i> EQA PT scheme distribution in March 2023.....	15
2.6 Results for the <i>Trichinella</i> EQA PT scheme for a 12-month rolling period	15
3.0 NRL EQAs for 2022.....	17
3.1 <i>Trichinella</i> EQA March 2022	17
3.2 <i>Echinococcus</i> EQA March 2022.....	18
4. Other NRL Activities	19
4.1 NRL recruitment.....	19
4.2 Meetings Attended	Error! Bookmark not defined.
5. References.....	19
Appendix 1 - Additional <i>Trichinella</i> and <i>Echinococcus</i> Surveillance Contracts.....	21
1. <i>Trichinella</i> testing of wild boar (WB) in England and Wales (contract OG0236)	21
2. <i>Trichinella</i> testing of wild boar in Scotland (Project OG0248).....	21
3. <i>Echinococcus multilocularis</i> surveillance in UK foxes 2021 to 2022	22
4. <i>Echinococcus multilocularis</i> surveillance in UK foxes 2022 to 2023.....	23

1. Introduction

1.1 The National Reference Laboratory (NRL) for *Trichinella* and *Echinococcus*

The Food Standards Agency (FSA) is the Competent Authority (CA) for the purpose of retained Regulation (EU) 2017/625 on Official Feed and Food Controls in the UK and has a legal obligation to designate National Reference Laboratories (NRLs).

The Animal and Plant Health Agency (APHA) is an executive agency of DEFRA (Department for Environment, Food and Rural Affairs) and as such provides impartial advice and testing services (to government and other agencies) that may be used to inform and assist with policy decisions. With a wide range of experience in Parasitology, the APHA laboratories at York continue to maintain expertise and diagnostic capability and are consequently well placed to cover the UK for parasitic diseases particularly for *Trichinella* and *Echinococcus*.

The NRL supplies trichinae required for the Proficiency Testing (PT) scheme that assesses the performance of Official Laboratories (OLs) in the detection of *Trichinella* in meat. The York NRL was United Kingdom Accreditation Service (UKAS) accredited in March 2017 for the wild boar digest assay for the detection of *Trichinella* (SOP PARA 050) and for a Polymerase Chain Reaction (PCR) method for the detection of *Echinococcus multilocularis*, *Echinococcus granulosus* and other cestodes (PARA 026, PARA 027 and PARA 029).

The NRL supports and participates in a Quality Assurance (QA) Scheme for *Trichinella* through collaboration with colleagues at APHA Sutton Bonington QA Unit (VetQas). Additionally, the York laboratory takes part in an annual External Quality Assurance EQA Scheme for *Trichinella* and *Echinococcus* run by the European Reference laboratory for Parasites (EURLP).

1.2 Core functions and duties of the NRL for *Trichinella* and *Echinococcus*

1.2.1 Core Activity 1 - Secretariat Services

- a) All relevant information and advice was reviewed, assessed and either discussed verbally with the FSA for immediate action/dissemination or included in quarterly interim reports if more appropriate.
- b) Contact information for the UK OLs was held on a central database and this information was regularly reviewed and updated. Contacts are well established with regular electronic as well as face to face communication through dissemination of proficiency testing results, technical enquiries, sample management and contract management. All new OLs were required to participate in one-to-one training and familiarisation visits by NRL technical staff, initiating an ongoing transparent and supportive relationship with OL staff.
- c) Results of initial and ongoing audits of OLs were communicated to the FSA within 4 weeks of each visit. All NRL and OL activity were formally reported to the FSA at least quarterly and more regularly (monthly) if appropriate and were documented
 - PT results for each laboratory as well as results for a rolling 12-month period
 - OCL communications
 - EURL ring trial results
 - scientific developments
- d) A dedicated webpage was maintained by the NRL on the GOV.UK site and this will be reviewed at least quarterly to ensure that information on methods of analyses, SOPs, latest developments and other background information is up to date and relevant. The website will be revised on receipt of any relevant changes to regulations or standards for testing or upon change of any relevant contact details.

1.2.2 Core Activity 2 - Advice and representation within UK and Internationally

- e) Scientific and technical advances in testing methodology and analysis (for both *Trichinella* and *Echinococcus*) was subject to ongoing (and documented) review by the NRL lead or test consultant via literature searches, participation in relevant

research and surveillance and via APHA CPD training for disease consultants. The NRL lead or test consultant maintained awareness of any emerging analytical issues or developments at a national or international level and recommended action to address them, advising the FSA, OLS and other relevant laboratories accordingly.

- f) The NRL lead was available to provide technical assistance and advice on best scientific practice to the FSA for the implementation of coordinated control plans and was available to the OLS to provide technical advice and training for the duration of the contract. The NRL lead and a deputy is conversant with the Trichinella Contingency Plan for the UK and the testing regimes in place for confirmation of suspect or non-negative cases. The NRL will be available to respond to and notify the FSA in such cases.
- g) The NRL lead or test consultant is expected to attend the annual workshop of the National Reference Laboratories for Parasites, usually held in May and hosted by the EURL at the Istituto Superiore di Sanita. However, due to the ongoing issues around Brexit, the NRL was not included within the invitation list for the 17th Annual Workshop of the National Reference Laboratories for Parasites hosted by the EURLP in 2022 and did not attend.

1.2.3 Core Activity 3 - Compliance assessment via audits and ring trials

- a) The NRL maintained a pool of competent staff at ISO:17025 level for diagnostic testing and NRL function. These staff were available to carry out initial and ongoing training of OL laboratory staff during the period of the contract. Auditing of all OLS will be carried out on a biannual basis.
 - b) Proficiency testing of all the OLS will be coordinated as follows:
 - the NRL liaised with the Quality Assurance Unit (QAU) for continuation of the existing PT scheme and assure participation of all registered OLS
 - the NRL maintained a supply of Trichinae for PT sample spiking using reference material purchased from the EURL
 - the NRL provided the QAU with spiked reference material for use in quarterly proficiency test distributions (March, June, September and December)

- the NRL advised on, direct and coordinate these 4 distributions per year of the PT scheme samples
- PT data and results were stored on a database
- the NRL evaluated, analysed and commented on the results and reported these to the labs involved and the FSA following collation of the results
- underperforming laboratories were visited for audit and retraining in the first and second instance if appropriate

1.3 Proficiency testing

A significant part of the NRL function is to train, audit and monitor approved *Trichinella* testing facilities in the UK. The NRL is responsible for reporting to the FSA who grant and maintain designations and it is a requirement that all designated *Trichinella* testing laboratories to participate in a Proficiency Testing (PT) scheme, which is an External Quality Assurance EQA scheme to monitor performance. The PT scheme is run by APHA Quality Assurance Unit (QAU).

This is an independent unit that prepares, distributes and collates the results from a wide range of PT schemes. The NRL provides the trichinae samples for the *Trichinella* PT (PT0111) scheme to order. Trichinae of *Trichinella spiralis* are harvested from an infected mouse.

Trained staff in designated laboratories are required to examine the samples and participation in the PT scheme will test their ability to detect and discern the presence or absence of trichinae in the samples. Four distributions are sent to participating laboratories throughout the year in March, June, September and December when each laboratory is sent 4 test samples.

Trichinae are spiked into each of the 4 formalised samples and the concentration of trichinae (sample target) is varied between distributions and samples (with the numbers determined by the VetQas QAU). Sample targets are the same for all laboratories at each distribution.

The sum of total number of trichinae spiked into each of the 4 samples is then used as the target result and the sum of the actual recovery for each sample is used to calculate the

percentage recovery for each laboratory. The results of the distributions are made available to the NRL by Vetqas QAU for scrutiny, comment and feedback to laboratories each quarter. Specific advice is given if low recovery was achieved. The pass criteria for acceptable recovery rates are taken from the publication by Rossi and Pozio (2008) and Rossi et al. (2015).

For samples spiked with 4 or more larvae, the detection of at least 50% is considered acceptable whereas for samples spiked with 1 to 3 larvae, the detection of at least 1 larva is considered acceptable. The UK *Trichinella* PT scheme is based on the use of formalized trichinae and the FSA stipulates that a result of at least 75% recovery rate is regarded as satisfactory. If this standard is not achieved, the NRL investigates the reasons why and if necessary, undertakes a visit and makes a recommendation to the FSA on the course of action.

To ensure consistent action and to ensure that all self-testing laboratories are clear about the course of action, should their recovery drop below the required standard, a decision tree is used (Table 1).

Table 1: Action Decision Tree for assessing results from the quarterly PT exercises

First instance

Result	Action
Nil return	Not operational (Note 1) – NRL recommendation to FSA to revoke designation
Nil return	Operational – NRL to investigate and make recommendation to FSA
Below 50%	NRL to investigate and make recommendation to FSA
Below 75%	NRL to investigate and make recommendation to FSA
75% or above	Satisfactory result received – No action by NRL

Second instance (following an unsatisfactory first instance outcome)

Result	Action
Nil return	Not operational – NRL recommendation to FSA to revoke designation
Nil return	Operational – NRL recommendation to FSA to revoke designation
Below 50%	NRL recommendation to FSA to revoke designation
Below 75%	NRL to investigate and make recommendation on reason and course of action to FSA

Third instance (following an unsatisfactory second instance outcome)

Result	Action
Below 75%	NRL recommendation to FSA to revoke designation. FSA to subsequently make the decision on removal of designation and send letter.

Note 1 - not operational can be defined as a change in circumstance resulting in no legal requirement for *Trichinella* testing. It can also be defined as non-participation or consistent failure within the VetQas Proficiency testing scheme.

Reference material such as formalised trichinae, photographs of apparatus and videos of live trichinae are kept at the NRL and are readily available to testing laboratories for refresher training of staff. The laboratories continue to have the opportunity to request further interim QA samples from the NRL to assist with internal training and may request help with training or further inspection from the NRL to help identify problem areas at any time.

1.4 Official laboratories

In March 2022, there were 11 designated *Trichinella* self-testing facilities and 3 contracted government laboratories in operation, including the NRL. Table 2 shows the list of all

designated operational laboratories during 2022 to 2023 and a full list of contact details is maintained by the NRL and is also available on the [FSA website](#).

Table 2: List of approved government contracted and self-testing official laboratories (OL) carrying out *Trichinella* testing in 2022 to 2023

OL ID	OL type
1706	government
1787	government
1921	government
1150	self-tester
1443	self-tester
1447	self-tester
1620	self-tester
1632	self-tester
1824	self-tester
2475	self-tester
2658 (Official laboratory surrendered designation on 6 th February 2023)	self-tester
2993	self-tester
3145	self-tester
3638	self-tester

2.0 Results for the *Trichinella* EQA PT scheme distribution between April 2021 to March 2022

Results of the *Trichinella* EQA PT scheme for this reporting period will cover the performance of 15 testing laboratories (12 self-testers and 3 government contracted labs).

2.1 Results of the *Trichinella* EQA PT scheme distribution in March 2022

A total of 13 *Trichinella* testing facilities participated in the March 2022 distribution (Table 3). Of the participating laboratories, 85% successfully passed the March 2022 *Trichinella* PT distribution scoring between 85 to 100% in overall *trichinae* recovery rate. Testing facilities 1447 and 1632 failed the distribution scoring an overall recovery rate of 69%. Testing facility 1447 also recorded a false positive in sample 22/4016.

Table 3: Individual sample results (raw data and %) from the March 2022 *Trichinella* EQA PT scheme for government contracted and self-testing laboratories (Note: (F) denotes a failure and (O) denotes overcounting)

Sample ID	22/4013	22/4014	22/4015	22/4016	Overall score (%)
Intended	3 (100%)	6 (100%)	4 (100%)	0 (100%)	13 (100%)
1150	3 (100%)	5 (83%)	4 (100%)	0 (100%)	12 (92%)
1443	3 (100%)	6 (100%)	4 (100%)	0 (100%)	13 (100%)
1447	3 (100%)	4 (67%)	2 (50%)	1 (N/A)	9 (69%) Plus False Positive (F)
1620	3 (100%)	4 (67%)	4 (100%)	0 (100%)	11 (85%)
1632	1 (33%)	4 (67%)	4 (100%)	0 (100%)	9 (69%) (F)
1706	3 (100%)	6 (100%)	4 (100%)	0 (100%)	13 (100%)
1787	3 (100%)	6 (100%)	4 (100%)	0 (100%)	13 (100%)
1824	3 (100%)	6 (100%)	4 (100%)	0 (100%)	13 (100%)
1921	3 (100%)	6 (100%)	4 (100%)	0 (100%)	13 (100%)
2475	3 (100%)	6 (100%)	4 (100%)	0 (100%)	13 (100%)
2993	3 (100%)	6 (100%)	3 (75%)	0 (100%)	12 (92%)
3145	3 (100%)	5 (83%)	3 (75%)	0 (100%)	11 (85%)
3638	3 (100%)	4 (67%)	4 (100%)	0 (100%)	11 (85%)

2.2 Results of the *Trichinella* EQA PT scheme distribution in June 2022

A total of 12 *Trichinella* testing facilities participated in the June 2022 distribution (Table 4). Of the participating laboratories 50% successfully passed this *Trichinella* PT distribution scoring between 80 to 100% in overall *trichinae* recovery rate. Testing facilities 1150 (33%) and 2658 (47%) failed the distribution.

Testing facilities 1447, 1620, 2475 and 3145 all achieved an overall recovery rate of 73%. Consequently, with respect to the 75% pass rate required for the FSA meat hygiene facilities these facilities failed this distribution.

It is important to note however, that participants 1447, 1620, 2475, and 3145 all achieved the detection of at least 50% in samples spiked with 4 or more (22/4029 and 22/4032) and the detection of at least 1 larva in samples spiked with 1 to 3 larvae (22/4031), which is considered acceptable according to the European Reference Laboratory for Parasites.

No false positive or false negatives were recorded by any of the participating facilities.

Testing facilities 1632 and 1921 did not participate in this distribution. On investigation by the NRL, the reason behind the nil return was due to human error. In the case of 1921, an appropriate non-conformance in relation to the receipt of PT samples was raised and relevant actions have been taken. The NRL reiterated that participation in the quarterly proficiency testing assessment is a requirement to maintaining a testing facilities designation so procedures must be in place to ensure participation.

Table 4: Individual sample results (raw data and %) from the June 2022 *Trichinella* EQA PT scheme for government contracted and self-testing laboratories. (Note: (F) denotes a failure and (O) denotes overcounting)

Sample ID	22/4029	22/4030	22/4031	22/4032	Overall score (%)
Intended	7 (100%)	0 (100%)	3 (100%)	5 (100%)	15 (100%)
1150	0 (0%)	0 (100%)	2 (67%)	3 (60%)	5 (33%) (F)
1443	7 (100%)	0 (100%)	2 (67%)	4 (80%)	13 (87%)
1447	5 (71%)	0 (100%)	2 (67%)	4 (80%)	11 (73%) (F)
1620	4 (57%)	0 (100%)	2 (67%)	5 (100%)	11 (73%) (F)
1632	N/A	N/A	N/A	N/A	Nil return
1706	7 (100%)	0 (100%)	3 (100%)	2 (40%)	12 (80%)
1787	6 (86%)	0 (100%)	3 (100%)	3 (60%)	12 (80%)
1824	7 (100%)	0 (100%)	2 (67%)	5 (100%)	14 (93%)
1921	N/A	N/A	N/A	N/A	Nil return
2475	5 (71%)	0 (100%)	2 (67%)	4 (80%)	11 (73%) (F)
2658	3 (43%)	0 (100%)	1 (33%)	3 (60%)	7 (47%) (F)
2993	7 (100%)	0 (100%)	3 (100%)	5 (100%)	15 (100%)
3145	4 (57%)	0 (100%)	2 (67%)	5 (100%)	11 (73%) (F)
3638	6 (86%)	0 (100%)	3 (100%)	4 (80%)	13 (87%)

2.3 Results for the *Trichinella* EQA PT scheme distribution in September 2022

A total of 14 *Trichinella* testing facilities participated in the September 2022 distribution (Table 5). All participating laboratories successfully passed this *Trichinella* PT distribution scoring between 75 to 100% in overall *trichinae* recovery rate.

No false positive or false negatives were recorded by any of the participating facilities.

Table 5: Individual sample results (raw data and %) from the September 2022 *Trichinella* EQA PT scheme for government contracted and self-testing laboratories.

Sample ID	22/4041	22/4042	22/4043	22/4044	Overall score (%)
Intended	4 (100%)	5 (100%)	3 (100%)	0 (100%)	12 (100%)
1150	4 (100%)	5 (100%)	3 (100%)	0 (100%)	12 (100%)
1443	4 (100%)	5 (100%)	3 (100%)	0 (100%)	12 (100%)
1447	4 (100%)	5 (100%)	2 (67%)	0 (100%)	11 (92%)
1620	4 (100%)	3 (60%)	2 (67%)	0 (100%)	9 (75%)
1632	3 (75)	3 (60%)	3 (100%)	0 (100%)	9 (75%)
1706	4 (100%)	5 (100%)	3 (100%)	0 (100%)	12 (100%)
1787	4 (100%)	5 (100%)	3 (100%)	0 (100%)	12 (100%)
1824	4 (100%)	5 (100%)	3 (100%)	0 (100%)	12 (100%)
1921	4 (100%)	5 (100%)	3 (100%)	0 (100%)	12 (100%)
2475	4 (100%)	5 (100%)	3 (100%)	0 (100%)	12 (100%)
2658	4 (100%)	5 (100%)	3 (100%)	0 (100%)	12 (100%)
2993	4 (100%)	5 (100%)	3 (100%)	0 (100%)	12 (100%)

Sample ID	22/4041	22/4042	22/4043	22/4044	Overall score (%)
3145	4 (100%)	2 (40%)	3 (100%)	0 (100%)	9 (75%)
3638	4 (100%)	4 (80%)	3 (100%)	0 (100%)	11 (92%)

2.4 Results for the *Trichinella* EQA PT scheme distribution in December 2022

A total of 13 *Trichinella* testing facilities participated in the December 2022 distribution (Table 7). Of the participating laboratories 92% successfully passed this *Trichinella* PT distribution scoring between 79 to 100% in overall *trichinae* recovery rate.

Testing facility 1824 failed the distribution after recording a false positive in 22/4054. Following an investigation by the NRL, testing facility 1443 confirmed that this was a result of a clerical error. Consequently, this will be treated as a 'rogue' result (such as extenuating circumstances) and providing this facility scores more than 75% in the next PT round, there should be no question about their competence to carry out the testing. Testing facility 1632 overcounted by 8 trichinae in 22/4053 resulting in an overall recovery rate of 143%.

Following an investigation by the NRL, the testing facility confirmed that this was due to a clerical error during submission. It was recommended that additional controls are put in place at both testing facilities to avoid a recurrence during the submission of results.

Two other testing facilities (1921, 3638) overcounted in one of the three samples containing trichinae in the distribution. Both 1921 and 3632 overcounted by 1 trichina in samples 22/4055 and 22/4056 respectively, resulting in an overall recovery rate of 107%.

Testing facility 3145 did not participate in this distribution. A recommendation to revoke their designation was not made due to this being the first instance of non-participation.

Table 6: Individual sample results (raw data and %) from the December 2022 *Trichinella* EQA PT scheme for government contracted and self-testing laboratories. (Note: (F) denotes a failure and (O) denotes overcounting)

Sample ID	22/4053	22/4054	22/4055	22/4056	Overall score (%)
Intended	3 (100%)	0 (100%)	4 (100%)	7 (100%)	14 (100%)
1150	3 (100%)	0 (100%)	4 (100%)	7 (100%)	14 (100%)
1443	3 (100%)	0 (100%)	4 (100%)	7 (100%)	14 (100%)
1447	3 (100%)	0 (100%)	2 (50%)	7 (100%)	12 (86%)
1620	3 (100%)	0 (100%)	3 (75%)	5 (71%)	11 (79%)
1632	11 (367%)	0 (100%)	3 (75%)	6 (86%)	20 (143%) (O)
1706	3 (100%)	0 (100%)	4 (100%)	7 (100%)	14 (100%)
1787	3 (100%)	0 (100%)	4 (100%)	6 (86%)	13 (93%)
1824	3 (100%)	4 (N/A)	0 (N/A)	7 (100%)	14 (100%) (F)
1921	3 (100%)	0 (100%)	5 (125%)	7 (100%)	15 (107%) (O)
2475	3 (100%)	0 (100%)	4 (100%)	7 (100%)	14 (100%)
2658	3 (100%)	0 (100%)	4 (100%)	7 (100%)	14 (100%)
2993	3 (100%)	0 (100%)	4 (100%)	7 (100%)	14 (100%)
3145	N/A	N/A	N/A	N/A	Nil return
3638	3 (100%)	0 (100%)	4 (100%)	8 (114%)	15 (107%) (O)

2.5 Results for the *Trichinella* EQA PT scheme distribution in March 2023

The NRL and other OLs will participate in the March 2022 *Trichinella* EQA distribution on 18 April 2023. Results on the performance of the NRL as well as that of all the *Trichinella* OL facilities will be received from VetQas in May 2023.

2.6 Results for the *Trichinella* EQA PT scheme for a 12-month rolling period

To summarise the performance of the contracted government (1706, 1787 and 1921) and self-testing laboratories in the *Trichinella* EQA exercises, the average trichinae recovery rates have been calculated for each EQA distribution over the last 12 months (Table 7). All false positives, nil returns and over scoring were removed during this calculation.

On average, the contracted government laboratories performed better than the self-testing laboratories, averaging a 95% recovery over the last 4 PT distributions. However, this represents a slight drop from the 99% recovery rate achieved during the 4 distributions in 2021 to 2022.

Over the last 12 months self-testing laboratories also generally performed well and achieved an average recovery rate of 87% for this period. This also represents a slight drop from the 90% recovery rate recorded in 2021 to 2022.

Table 7: Overall trichinae recovery rate (%) recovered by government contracted and self-testing laboratories over a 12-month rolling period. (Note: (F) denotes a failure and (O) denotes overcounting. 12 month average only includes samples participated in and without overcounting, false positives and false negatives.

OL ID	March 2022	June 2022	September 2022	December 2022	Over 12 months
1150	92	33 (F)	100	100	91
1443	100	87	100	100	96
1447	69 (False Positive) (F)	73 (F)	100	86	80
1620	85	73 (F)	75	79	78
1632	69 (F)	N/A	75	143	69 (F)
1706	100	100	100	100	94
1787	100	80	100	93	93
1824	100	93	100	100 (False positive and false negative) (F)	91 (F)
1921	100	N/A	100	107 (O)	100
2475	100	100	100	100	100
2658	69 (F)	40 (False Positive) (F)	100	100	74 (F)
2993	92	100	100	100	98
3145	100	77	92	88	78
3638	85	87	92	107	91

Overall, the NRL is pleased with the results achieved over the last 12-month rolling period of *Trichinella* PT's. However, lab 1632 has under-performed during *Trichinella* PT's over the last 12 months, failing to score the required 75% *trichinae* recovery rate during one of the distributions, and also recording a false positive during this period. They have been

invited for NRL training date in April and have been audited which revealed no major faults with the facility.

3.0 NRL EQAs for 2022

3.1 *Trichinella* EQA March 2022

The NRL participated in the EURLP led International Proficiency Testing in March 2022 (week 14 to 18 March 2022). Meatballs inoculated with live *Trichinella* larvae and *Echinococcus* (worms for sedimentation and DNA for molecular diagnosis and speciation) were received at the NRL on 16 March 2022 and processed by the NRL technical staff at York.

Three samples were received for each test and results were reported within the deadline submission date. The live *Trichinella* digests were conducted on 16 March 2022 and reported onto the EURLP website using the provided logon details.

The result of the EURLP led International *Trichinella* Proficiency Testing Scheme (PT-01) from March 2022 was obtained in July and is shown in Table 8.

Table 8: EURLP PT-01 testing distribution from March 2022 showing trichinae recovery rate (raw data and %), and the difference between spiked and recovered larvae (Δ).

Meat	Weight (grams)	Code	Spiked Larvae	Recovered Larvae (Raw data and %)	Δ (Delta)
Pork	100	8212	0	0 (100%)	0
Pork	100	9689	3	1 (33%)	2
Pork	100	2274	5	4 (80%)	1

3.2 *Echinococcus* EQA March 2022

The *Echinococcus* Sedimentation and Counting Technique (SCT) for the detection of adult worms in the mucosa (PT-05) was conducted and reported on 21 March 2022. The NRL received a final evaluation of 'positive', as one or more *Echinococcus* spp. adult worms were recovered in spiked samples and no worm was recovered in the samples which were not spiked (Table 9).

Table 9: Results from the EURLP PT-05 showing the recovery of *Echinococcus* spp. adult worms from each sample.

Sample	Number of spiked worms	Number of recovered worms	Evaluation
EG79	0	0	Correct
EG80	0	0	Correct
EG81	20	19	Correct

The results for the molecular identification of *Echinococcus* at the species level (PT-08) were completed and reported on 21 March 2022. The NRL received a final evaluation of 'positive' as all species were correctly identified (Table 10).

Table 10: Results from the EURLP PT-08 showing the recovery of *Echinococcus* spp. adult worms from each sample.

Item code	Result observed	Result expected	evaluation
EGM58	<i>E. multilocularis</i>	<i>E. multilocularis</i>	Correct
EGM59	<i>E. granulosus sensu lato</i>	<i>E. granulosus s.l</i>	Correct
EGM60	Negative	Negative	Correct

4. Other NRL Activities

4.1 NRL recruitment

The NRL has successfully recruited 2 Assistant Parasitologists who joined the team in October 2022.

5. References

Learmount, J., Zimmer, I. A., Conyers, C., Boughtflower, V.D., Morgan, C. P., Smith, G. C. (2012). A diagnostic study of *Echinococcus multilocularis* in red foxes (*Vulpes vulpes*) from Great Britain. *Vet. Parasitol.* 190: 447-453.

Rossi, P., Marucci, G., Lalle, M., Casulli, A., Possenti, A., Pozio, E. (2015). Proficiency testing carried out by the European reference Laboratory for Parasites. *Accred Qual Assur* 20: 311-317.

Rossi, P. and Pozio, E. (2008). Guidelines for the detection of *Trichinella* larvae at the slaughterhouse in a quality assurance system. *Ann Ist Super Sanità*, 44: 195-199.

Report prepared by Alex Kent, NRL Lead

National Reference Laboratory for *Trichinella* and *Echinococcus*, APHA, York.

Date: 17/05/2023

cc List:

Rashmi Seneviratne (SSLP, FSA); Valerie Mcfarlane (SSLP, FSA), David Franklin (SSLP, FSA); Kevin Waggott (Operations, FSA); Moira Williams (Meat Hygiene Policy Team, FSA); Billy Armstrong (Operational Policy and Delivery, FSA, Northern Ireland), Kelly White (FSS).

Appendix 1 - Additional *Trichinella* and *Echinococcus* Surveillance Contracts

1. *Trichinella* testing of wild boar (WB) in England and Wales (contract OG0236)

Summaries detailing wild boar sample ID, collection date, sample origin, kill date, test date, report date, digest number and results are provided to FSA operations monthly. Numbers of wild boar samples submitted per month from April to August have consistent throughout the year to date (Table 11). Numbers of wild boar samples submitted per month from April 2022 to March 2023 are shown in Table 11. No *Trichinella* species were isolated from any of the submitted samples.

2. *Trichinella* testing of wild boar in Scotland (Project OG0248)

The Service Level Agreement (SLA) for monitoring *Trichinella* in Feral Wild Boar in Scotland signed between APHA and Food Standards Scotland (FSS) remains ongoing. Summaries detailing wild boar sample ID, collection date, sample origin, kill date, test date, report date, digest number and results are provided to FSS operations monthly. Between April 2022 and March 2023, the NRL received a total of 26 samples. No *Trichinella* species were isolated from any of the submitted samples.

Table 11: Monthly figures for *Trichinella* Testing of Wild Boar from April 2022 to March 2023

Month	Sample Number	Cumulative Samples
April 2022	65	65
May 2022	54	119
June 2022	21	140
July 2022	37	177
August 2022	30	207
September 2022	54	261
October 2022	28	289
November 2022	19	308
December 2022	12	320
January 2023	30	350
February 2023	34	384
March 2023	25	409

3. *Echinococcus multilocularis* surveillance in UK foxes 2021 to 2022

For the 2021 to 2022 surveillance, the NRL collected a total of 868 foxes provided by a network of pest controllers between March 2021 to February 2022. Foxes underwent post-mortem and NRL technical staff retrieved faecal samples which were frozen for subsequent analysis. A total of 358 faecal samples retrieved from foxes across the UK were spatially selected to be included in the 2021 to 2022 surveillance and tested for *E. multilocularis* using the methodology described by Learmount et al. (2012). The final report

was sent on 14 June 2021 with the conclusion that no positive result for *E. multilocularis* was observed.

4. *Echinococcus multilocularis* surveillance in UK foxes 2022 to 2023

For the 2022 to 2023 surveillance, the NRL had collected a total of 818 foxes provided by a network of pest controllers between March 2022 to February 2023. Foxes underwent post-mortem and NRL technical staff retrieved faecal samples which were frozen for subsequent analysis. A total of 523 faecal samples retrieved from foxes across the UK were spatially selected to be included in the 2022 to 2023 surveillance and tested for *E. multilocularis* using the methodology described by Learmount et al. (2012).