

**¹MedVetNet Programme,
WiREDZ (Wildlife Related Emerging Diseases and Zoonoses) Special
Interest Group**

**Minutes and discussions of the WiREDZ meeting,
Budapest, 10-12 December 2008.**

Preface to delegates

First, thank you for your patience in waiting for these notes on the MedVetNet WiREDZ meeting in Budapest. Thank you Jane Errington for writing these notes.

Purpose of meeting

23 WiREDZ workers from 13 countries attended. Topics discussed included -

- lists of important WiREDZ in each country, and in Europe
- Methods of wildlife disease surveillance in each delegate's country
- approaches to wildlife disease surveillance across Europe
- European wildlife disease networks
- The Med-Vet-Net WILDLIST register of wildlife disease scientists
- the importance of focusing on wildlife
- specific wildlife diseases of importance in Europe.
- diagnostic methods

European WiREDZ networks – web sites?

On page 10-11 , it would be helpful if web sites could be provided for the list?

This is a shortened version of the meeting notes. Appendix 1 gives an example of the questionnaire sent to delegates. The completed questionnaires and Power point presentations are in a much larger format, copies of which may be obtained from Paul Duff.

WiREDZ meeting – matters arising and the future

Page 19-21 – Approach to WiREDZ/Wildlife disease surveillance across Europe, and
– How to improve wildlife disease surveillance in Europe.

It would be good to develop these 2 themes.

Can we maintain the WILDLIST and its webmaster.

With no further funds, future activity would probably have to be of a voluntary nature, however bearing this in mind, there could be post-meeting discussions, specifically –

- How would you like to see the WiREDZ SIG develop?
- How would you like to see the WILDLIST develop?

Finally, on behalf of all the three chairpersons – Dolores Gavier-Widen, Karoly Erdelyi and Paul Duff, can we thank you all for your contributions.

Attendees – addresses have been removed however most delegates can be contacted by navigating the WILDLIST website <http://www.medvetnet.orgwiredzreg>

Joint Chairpersons

Paul Duff (PD) – Veterinary Laboratories Agency, UK
Dolores Gavier-Widen (DG-W) – Sweden
Karoly Erdelyi (KE) – Hungary

Delegates

Miklós Gyuranecz (MG) – Hungary
Rachelle Avigad (RA) – DEFRA, UK
Richard Lea (RL) – University of Nottingham School of Veterinary Medicine, UK
Paddy Sleeman (PS) – University College, Cork, Republic of Ireland
Antti Oksanen (AO) – Finnish Food Safety Authority, Evira, Finland
Wojciech Iwaniak (WI) – National Veterinary Research Institute, Poland
Billinis Charalambos (BC) – University of Thessaly, Faculty of Veterinary Medicine, Greece
Justyna Bien (JB) – Witold Stefański Institute of Parasitology of the Polish Academy of Sciences, Poland
Ignasi Marco Sanchez (IMS) – Servei d'Ecopatologia de Fauna Salvatge (SEFaS). Universitat Autònoma de Barcelona, Spain
Danjiella Horvatec (DH) – Faculty of Veterinary Medicine, University of Zagreb, Croatia
Artem Metlin (AM) – Federal Governmental Institution, Federal Centre for Animal Health, Russia
Ladislav Molnar (LM) – University of Veterinary Medicine, Slovakia
Raimundas Lelesuis (RL) – Veterinary Institute of Lithuanian Veterinary Academy, Lithuania
Gabor Czirjak (GC) – University of Agricultural Sciences and Veterinary Medicine Cluj-Napoca, Faculty of Veterinary Medicine, Department of Infectious Diseases, Romania
Relja Beck (RB) – Faculty of Veterinary Medicine, University of Zagreb, Department for Parasitology and Parasitic Diseases, Croatia
Sara Savic (SS) – Scientific Veterinary Institute “Novi Sad”, Serbia
Lisa Yon (LY) – University of Nottingham School of Veterinary Medicine. Twycross Zoo, UK
Marja Isomursu (MI) – Finnish Food Safety Authority (Evira), Finland
Alfonso Carbonero (AC) – Cordoba University Faculty of Veterinary Science, Spain
Jane Errington (JE) – Veterinary Laboratories Agency, UK

Apologies

Lorraine McElhinney - UK
Kastriot Korro – Albania
Nasir Sinanovic - Bosnia and Herzegovina

Agenda

Med-Vet-Net

WiREDZ Special Interest Group

Budapest Meeting 10-12th December 2008 - Programme

1. Wednesday 10th December 2008

18.30

Informal meet-up in Hotel foyer, or bar if the foyer is too busy.

18.45

Leaving for a before dinner walk in the city centre and visiting the Budapest Christmas market by the river Danube.

20.30

Dinner at the hotel restaurant.

2. Thursday 11th December 2008

8.30 am

Introduction and welcome (Chair 1) - 10 mins.

Domestic issues (KE) - 5 mins.

Programme meeting introduction objectives (Chair3) - 10 mins.

9.00

Round the table introductions - name, country, institute, area of interest - 15 minutes.

9.15 - 10.30

Delegates Powerpoint presentations - 6 minutes each, followed by 1 or 2 questions.

10.30 - 11.00

Coffee break – ground floor.

11.00 - 11.15

Focus on objectives of different WiREDZ networks in Europe (Chair 1).

11.15 - 11.30

The future of the WILDLIST (Chair 2).

11.30 - 11.45

Questions – discussion.

11.45 - 12.05

PCR Technology from basics (Jane Errington, UK).

12.05 - 12.25

New technologies for wildlife disease diagnostics (Richard Lea, UK).

12.30 - 13.30

Lunch – at the hotel restaurant.

13.30 - 14.30

Delegate Powerpoint presentations – continued.

14.30 – 15.00

WiTech (Richard Lean and Lisa Yon).

15.00 – 15.20

Coffee break – ground floor.

15.20 – 15.55

Workshop: Rabies.

15.55 – 16.30

Workshop: Bovine TB.

16.30 – 16.45

The wildlife disease scientist – policy maker relationship (Rachelle Avigad, UK).

16.45 – 17.15

Delegate Powerpoint presentations – continued.

17.15 – 17.30

Domestic arrangements and summary of day by Chair 3.

End of day session

20.00

Dinner at hotel restaurant.

3. Friday 12th December 2008

08.30 – 08.45

Introduction.

08.45 – 09.00

Brucellosis in wildlife (Wojciech Iwaniak, Poland).

09.00 – 10.30

Round-table session - with opportunity for each delegate to say a few concluding words, a time for reflections and future actions.

10.30 – 11.50

Coffee break – ground floor.

11.00 – 11.45

Meeting summary.

Closing remarks.

12.00

Lunch at the hotel restaurant.

Departure.

Introduction

Chair 1 - Paul Duff (PD) - Opened the meeting and introduced MedVetNet and its objectives.

See Appendix 1

Chair 2 - Karoly Erdelyi (KE) - Introduced himself and presented apologies from delegates unable to attend.

Chair 3 - Dolores Gavier-Wilden (DG-W) - Introduced herself and welcomed the delegates.

The delegates then introduced themselves.

Delegate Presentations

Rachelle Avigad – presentation not available

RA added that there are 4 main reasons for government intervention in animal health and welfare according to the Animal Health and Welfare Strategy for Great Britain;

- To protect human health
- To protect and promote the welfare of animals
- To protect the interests of the wider economy, environment and society
- International trade

RA stressed that the list of diseases given on her presentation included both diseases present within Great Britain and exotic diseases of concern.

Richard Lea – appendix 2 **Please note that the appendices consisting of delegate Powerpoint presentations are a large file, copies of which may be available on request.**

Paddy Sleeman – appendix 3

PS offered delegates copies of the University College Dublin bi-annual report which includes information on bovine tuberculosis in badgers including results of vaccination efforts and also information on surveillance for Avian Influenza.

PS added that other diseases of interest in Ireland include;

- Blue tongue virus
- Avian influenza
- Trichinella
- Squirrel pox
- FMD

Other institutes dealing with wildlife in Ireland include;

- Department of Agriculture in Northern Ireland (DANI)
- Queens University, Belfast

Antti Oksanen – appendix 4

Wojciech Iwaniak – appendix 5

Other diseases of interest include;

- Mycobacterium avium
- Trichenella
- Salmonella

Charalambos Billinis – appendix 6

Justyna Bien – appendix 7

Ignasi Marco Sanchez – appendix 8

Wildlife research work funded by government

Tuberculosis - Differences between north and south of Spain with regard to hunting.

Southern part of Spain has many hunting estates with high density of animals, sometimes mixed with domestic animals, and a high incidence of TB. Northern Spain has free-ranging animals and less incidence of TB.

Danijela Horvatek – appendix 9

A discussion ensued regarding the problems with collaboration between institutes in some countries.

IMS explained that in Spain collaboration between institutes is actively encouraged. Three year project started in 2006 providing €2 million for research projects, plus another €2 million in 2008 for extra collaborative research. An email list was developed to encourage exchange of information at a cost of €48,000.

LM added that in Slovakia there used to be a “shark-like” attitude to getting work.

This has been changed by a rule that there must be 3 institutes collaborating on a project to secure funding and balance out the work.

PS stated that Spain was very quick to recognise that wildlife diseases and conservation were linked and thus funding came from conservation as well as veterinary sources.

Artem Metlin – appendix 10

Many institutes are involved in wildlife diseases in the Russian Federation. There are about 80 regions, each of which will have a local veterinary institute and some may also have an agricultural institute.

Two main institutes are;

- The National Academy of Agriculture

- The Ministry of Agriculture and Forestry

There are no established communication networks between the institutes.

Ladislav Molnar – appendix 11

Special interest in tick-borne diseases – effects due to global warming. Altitude level for ticks has increased over 600 metres.

LM gave a description of the hosts and disease types surveyed in Slovakia and explained that each animal species has a different disease of greatest importance.

Five major institutions are involved in wildlife work in Slovakia, but funding is only given when a minimum of 3 of them collaborate on a project.

Raimundas Lelesuis – appendix 12

RL's work involves molecular biology, serology and virology testing. Unfortunately the institute he works for is getting smaller.

The wildlife work in Lithuania is funded by the government.

Wild boar samples come from hunters.

Gabor Czirjak – appendix 13

Working on Salmonellosis in wild birds and reptiles.

Main area of interest is host-bacteria interaction.

Avian botulism and cholera have caused mortality problems in Romania

PD – is there any zoonotic risk from avian botulism and cholera?

GC – Botulism causes many deaths in birds but is not a zoonotic problem.

PD – are there any other countries that have seen mass mortality caused by avian botulism?

Show of hands revealed only England and Hungary (game birds). Some lower levels of mortality also seen in Finland.

Relja Beck – appendix 14

AO – Do you see Giardia in ruminants?

RB – Giardia had been detected in deer and Roe Deer. Sampling of 400 Roe Deer revealed a prevalence of just 0.9%.

Sara Savic – appendix 15

“Novi Sad” is in the northern part of Serbia and SS's work covers only half of the wildlife species in Serbia. The area has 89 hunting regions.

The institute receives samples from project work or if a problem is identified in the hunting grounds. None of the work is managed by government.

All Serbian rabies work is performed by a single, separate institute.

Lisa Yon – appendix 16

A number of universities are involved with wildlife work in the UK including University of Liverpool Vet School.

LY was asked if there was any surveillance work performed on FMD in wildlife in the UK.

PD responded that it was decided not to look at wild deer for FMD antibodies, though they did look at some farmed deer in 2001. The official conclusion after the 2001 outbreak was that FMD was not extended by wild deer.

PS stated that FMD antibodies were detected in wild goats and deer in County Down in Northern Ireland.

Marja Isomursu – appendix 17

The Finnish Game and Fisheries Research Institute performs much work on rabies ecology.

GC – Have there been any human cases of *Trichinella*?

MI – There have been 8 cases in the last 150 years, no new cases since 1970s. *Trichinella* has been found in swine

RA – Is there targeted surveillance for rabies in racoon dogs?

MI – Yes, we particularly want to sample animals from the south-eastern part of the country.

LY – Are there particular wildlife species in which rabies is especially prevalent?

MI – During the last outbreak in 1988-89 the racoon dogs were most affected.

LY – Has anything been seen since then?

MI – No, not in wildlife.

PD – Is garden bird feeding common in Finland.

MI – Yes, mainly in the winter, but also some summer feeding also.

Alfonso Carbonero – appendix 18

There is a lot of coccidiosis and *E. coli* in game Partridge.

Tuberculosis is seen particularly in cervids and wild boar. An increase in the diseases has been observed with an increase in intensive rearing of the animals. Sarcoptic mange in Spain is largely under control, but is now also observed in cervids and foxes.

There is no rabies in Spain.

There are many other institutes working with wildlife – most veterinary faculties will have projects relating to wildlife.

CB – Which Blue Tongue Virus (BTV) serotype is seen in Spain?

AC – In 2004 serotype 4, within 2 years this was controlled with vaccination. Last year serotype 1 was seen. This year, 8 months ago, serotype 8 was seen. It's

believed that the earlier outbreaks originated from north Africa. The latest outbreak probably occurred through importation of animals from northern Europe.

AC later added some information about BTV in Spain – there was an outbreak of BTV in 2002 in the Balearic islands. The strain was type 2.

Paul Duff – appendix 19

Work involves investigation of unusual or mass mortalities of wildlife in England and Wales.

Brucellosis in wildlife includes marine brucellosis – one isolate from an otter, several from seals and dolphins.

Important wildlife diseases list was based on funding.

Also should have included squirrel pox a disease of significant conservation interest

Delores Gavier-Wilder – appendix 20

Large predator numbers are increasing in Sweden, particularly brown bears and wolves.

Karoly Erdelyi & Miklos Gyuranecz– appendix 21

Long history of wildlife disease work in Hungary.

Other individuals perform work on wildlife diseases in Hungary, most are associated with game management and wildlife research departments. There is also interest at the vet school pathology department and at the Institute for Wildlife Conservation.

DG-W – Do you see cases of tuberculosis in fallow deer.

KE – No, there are a couple of deer farms. Every 3-4 years we get cases. All domestic livestock and farmed game is supposed to be tuberculin tested each year. There have been no serious outbreaks but there a couple of places that have produced positive tests.

Badger populations were low until the past 5 years. Unfortunately there is no funding for surveillance.

Billinis Charalambos – appendix 22

Several wildlife species affected by paratuberculosis including sheep, goat, red fox, black rat, European hare and house mouse.

PD – Was the paratuberculosis diagnosed using culture?

BC – Yes, we use culture and PCR targeting the IS900 sequence.

PD – Any lesions?

BC – Yes, a lot.

PD – do you have much paratuberculosis in deer.

BC – I don't know.

Focus on objectives

PD chaired a round table discussion identifying disease networks.

PD detailed 5 networks/organisations;

1. OIE (Office International d'Épizooties) – World Animal Health Organisation, based in Paris

Each year the OIE asks the chief veterinary officer of every country for list of wildlife diseases diagnosed in that country.

The list of diseases is separated into;

- OIE reportable diseases – most important (zoonotic or economic)
- OIE wildlife disease list – non-reportable diseases

Only 60% of countries reply to the request for disease details.

The UK has participated for 10 years. First report was 3 pages long, report is now 35 pages long. Every group working on wildlife diseases is contacted for info on disease findings. No UK group has ever refused.

The annual report to the OIE can be used as a focus for collaboration within a country. The report must have the country's CVO's approval. The report does not contain details of prevalence of disease.

2. EWDA (European Wildlife Disease Association)

This is the European branch of the Wildlife Disease Association (WDA).

- PD is chairman of the EWDA
- None profit organisation
- Anyone can join
- Cheapest membership is \$22 per year (associate member)
- Covers all countries in Europe, all species, all diseases including scanning and targeted surveillance.
- Good umbrella organisation for wildlife diseases in Europe

3. GEEFSM (Groupe d'Études sur l'Eco-pathologie de la Faune Sauvage de Montagne) - Group for the Study of the Ecology of Diseases in Mountain Wildlife Sometimes called the 'Alpinists'. Group meets annually. Members currently include Spain, France, Austria, Switzerland and Italy.

Anyone may join. Membership fee (meeting subscription) is €20

4. EU WiREDZ

5. EU WiTech

The floor was opened for delegates to give names of networks/organisations they were aware of in their countries.

- WAVES – Wild Animal Veterinary ? Site – based in Spain. Covers the Mediterranean. Involved in wildlife diseases, ecology and management.
- SAC – Scottish Agricultural College - Small database.
- IHA - Institute of Animal Health, Pirbright.
- Action Rabies - world rabies charity – American based charity responsible for World Rabies Day.
- Arctic Parasitology – new group.
- DINARAS – wildlife project for Lynx preservation in Mediterranean areas.
- Echinorisk – Risk assessment and prevention of alveolar echinococcosis (EU).
- Alliance For Rabies Control.
- Rabies Bulletin Europe – useful bulletin published by World Health Organisation (WHO).
- Russian Bat Network.
- EAZWV - European Association of Zoo and Wildlife Veterinarians.
- IUCN - International Union for Conservation of Nature. Veterinary specialist group. Holds a database of disease/species experts for each country. Dormant at current time.
- Society for Zoonotic Diseases – produce a journal of vector borne and zoonotic diseases.
- SEEEP - Southeastern and Eastern European Parasitological Society
-
- EFSA – European Food Safety Authority.
- EPIZONE – the Network of Excellence for Epizootic Disease Diagnosis and Control.
Mainly virology based – lyssavirus, classical swine fever and Q-fever.
Sub-group called “WildServe Harmonisation” mainly working on lyssavirus and classical swine fever.
- EDEN – Emerging Disease in a changing European Environment.
- Many countries have their own national wildlife networks, often initiated by reference laboratories.

KE asked delegates dealing with wildlife diseases in connection with conservation issues to contact him in his capacity as co-ordinator for the IUCN. He also reminded delegates about the Hungarian national wildlife association.

WiLDLIST

PD informed delegates of the need for a webmaster for the WiLDLIST. A discussion followed about how the WiLDLIST could be improved;

- Disseminate information about meetings and conferences.
- Ability to search list by country or institution.

It was agreed that the WiLDLIST was useful for veterinary diagnosticians, scientists, etc.

Jane Errington gave a presentation titled **PCR technology from basics.**
Appendix 23

WildTech Consortium

Richard Lea gave a presentation on the work of the WildTech consortium, titled **Novel technologies for wildlife disease diagnostics.**
Appendix 24

Questions followed;

RA – Do you look for association between the array results and clinical signs in the animal?

RL – Yes, there is some matching of results to clinical signs, but the work is used mainly to predict disease outbreaks.

LY – the database will include clinical signs and this should allow the two aspects to be linked.

RA – Do you have concerns about detecting sub-clinical infection?

RL – Results are backed up by the 'gold standard' test.

DG-W – A team of partners and associate partners will help to provide information about the cases to assist with interpretation of the results. The information is collected and collated to provide a back up.

DG-W gave information regarding the countries/delegates who were currently involved with WildTech.

PB – What was behind the EU thinking for this project?

RL – An integrated pro-active approach was required for effective surveillance.

Lisa Yon gave a presentation on the work of the WildTech consortium entitled **WildTech consortium - An Overview.** Appendix 25

A handout to accompany the presentation was provided – appendix 26.

Questions followed;

RA – Is it aimed at an EU level or will it discriminate smaller regions than that?

LY – The database will allow discrimination at a smaller level. The risk assessments will cover specific regions or specific diseases as a demonstration of this capability. Ultimately it would be at a country-wide rather than EU-wide level.

PD – Is there any way WildTech can support the WiLDLIST after MedVetNet.

LY – Yes, the WiLDLIST is a tremendous resource and we would like to support it. We would be happy to endorse and provide support for any additional funding.

PD – Will you be involving non-EU countries. Can non-associate partners be involved.

LY – Yes, we have a number of non-EU associate partners. We welcome involvement from EU and non-EU countries.

PD – Who should they contact

LY – They should contact Dolores (DG-W)

DG-W – There are 2 work packages within this project. The first is called work package 4 and covers European wildlife disease surveillance. Billinis Charalambos (BC) is the work package leader and is in charge of all the associate partners within Europe.

Work package 5 is for wildlife disease surveillance outside of Europe. Dolores Gavier-Widen (DG-W) is in charge of associate partners from outside Europe. Associate partners involved include Russia, United Arab Emirates, China, Turkey and Botswana.

DG-W – can people become associate partners at this stage?

RL – I don't see a problem with that. One of the useful outcomes of this meeting is identifying the interests in specific diseases in specific countries as that will help us to select the appropriate diseases to include on the array chips.

DG-W – so people here have a second opportunity to join at this stage?

RL – Yes

DG-W - How do they do that formally? Do they send a letter or email to me for outside Europe and BC for EU countries?

RL – yes

DG-W – there is a problem with definition – does Europe mean EU states or countries in Europe?

LY – It refers to EU member states.

DG-W – so non-member states should send their letter to me.

RB – Will all members send samples to a single centralised laboratory or will the work be carried out all over Europe?

LY – Initially it will be one centralised lab. Ultimately there will probably be some technology transfer to colleagues in other labs.

Artem Metlin gave a presentation titled **Rabies Updates**

Appendix 27

Questions followed;

AO – Do you know what happens to all of the bait?

AM – We know wild boar eat almost half of them.

AO – How does that affect the epidemiology of rabies?

AM – The 25 – 30 baits per square kilometre was calculated as the optimal number and included the effects of competition from the wild boars.

AO – It is claimed that the fox populations of central Europe have increased because of rabies vaccination.

AM – This is true.

LM – Do you know if multiple consumption of the baits can kill a fox?

AM – we have performed tests that show that a dog can eat 15 baits and show no ill effects.

PS – In Ireland we've been using baits that include fish bait to vaccinate badgers.

The baits have been taken by cormorants in coastal areas.

With oral vaccines the construction of the bait is very important.

LM – Can you calculate from the amount of tetracycline how many baits an animal has eaten?

AM – You can examine the teeth and see effects of tetracycline, but this is not without problems.

KE – You can only see the last 2 baits in the dentine layer. In the cementine layer you can detect more baits, but the preparation is more tricky.

MI – How long does the tetracycline remain in the dentine?

AM – Some studies have shown it may be for their whole life.

KE – Or it may be recycled.

MI – What do you think of hunting and rabies control as hunting increases movement and contact between animals. Do you think banning hunting altogether from some areas would be beneficial?

AM – You could ban hunting from rabies free areas to prevent migration.

KE – Hunting cannot exert such a pressure on wild animal populations unless they are very small.

DG-W – In some cases culling is good to keep numbers under control. In some areas of Sweden the Red foxes are becoming very numerous and are extending their habitat and moving higher up into the mountains and are competing with the Arctic fox which is an endangered species. So Red foxes are culled in targeted areas.

Bovine TB Workshop

Paddy Sleeman chaired a roundtable workshop/discussion on TB.

The findings were as follows;

Species affected

- Ireland – Badgers, red and fallow deer (not final hosts), humans and cattle (spill-over hosts).
- Sweden – No bovine TB. Fallow deer – now eradicated.
- Spain – Wild boar (main reservoir), few badgers (1 field case), goats (south east of Spain).
- Finland – No bovine TB.
- Serbia – Domestic animals. Non in deer, no badgers tested.

- Croatia – Wild boar, domestic pigs, rock ibex (from Saudi Arabia), dog (one case).
- UK – a range of livestock and wild species.
- Romania – Human bovine TB, cattle, wild boar (main reservoir).
- Lithuania – Bovine TB. No wildlife studies.
- Slovakia – Mouflon, red deer, wild boar. Studies on badgers ongoing.
- Russia – Cattle, humans. Wildlife status not known.
- Poland – Cattle, wild boar. Studies on wildlife ongoing.

Prevalence

- Ireland – TB not found on islands (population goes extinct). Mainland has a prevalence of 16 – 50% in badgers, particularly in areas of intensive cattle rearing.
- Spain – 40 - 100% in boars in fenced estates, 24% in Catalonian wild boar, 30% in Andalucian goats. Red deer have lower prevalences.

Management

- Ireland – Badgers are culled after an outbreak.

Unsure how TB spills from badgers to cattle

? badgers eating feed in cattle yards in winter

? badger urine on pasture in spring

TB spills from deer to badgers – strain typing has confirmed identical strains in both animals.

- Spain - Goats and sheep are culled.
Central and southern Spain – vaccination of wild boar using bait.
Northern Spain – Positive cattle culled (was 44% prevalence). Now observing if prevalence in wild boar reduces from initial 24% prevalence.

In Ireland a 4 area project involved the removal of badgers from 2 of the areas. The prevalence of TB in cattle declined in those areas.
But removal of animals from an area can stimulate migration – this can be a problem.

There is evidence that cattle (milk cows) will approach dead badgers and lick them. The dominant cow (or deer) tend to be the ones that lick badger carcasses, thus the best animals in a herd are most likely to become infected with TB this way. Recent studies involving the placement of cameras in carcasses showed wild boar and red deer both eat animal carcasses.

Test and slaughter schemes work best in countries without a wildlife reservoir.

Ireland has annual TB testing.

England has TB testing at intervals determined by herd and parish histories, this can range between 1 – 4 years. Pre-movement testing is required for herds that require testing at 1 – 2 year frequencies.

There is a new herd health approach – as herd sizes increase there is less focus on individual cattle and more emphasis on the herd as a whole.

In Ireland the prevalence of TB in cattle is reducing dramatically. The vaccination project is being rolled out in Kilkenny (central Ireland) but it will take 5 years before the results are known.

Rachelle Avigad gave a presentation titled **The Wildlife Disease Scientist – Policy Maker Relationship**

Presentation not available

Questions followed;

PD – How are events prioritised? How do you choose which disease to pursue with a limited budget?

RA – We prioritise events in line with the Animal Health and Welfare Strategy and we are currently working on a project trialling a scoring and weighting system to produce an objective, balanced judgement for prioritisation.

PD – Would the scoring policies be open?

RA – I am not sure of the answer to this question but would be happy to check with the relevant colleagues.

PD – The UK is an island, is there any system to prioritise the disease threats from exotic wildlife disease?

RA – That will be taken into consideration in the scoring system.

Miklos Gyuranecz gave a presentation titled **Tularemia**

Appendix 28

Questions followed;

LM – Where is the most positive area of Hungary?

MG – Almost the whole country, but especially the area around lake Balaton and the hills because of the tick populations.

LM – Are any other species affected?

MG – We have looked at hamsters but didn't find any Tularemia. It has been detected in common voles and mice in Germany

AO – Why do Italians import wild hares?

MG – They import them for hunting.

DG-W – Are they farmed or wild hares?

MG – They are wild hares. They catch them to export, one hare is worth €100.

RA – Do you know why there is such a fluctuation in prevalence?

MG – We don't know.

Relja Beck gave a presentation titled **Investigating Zoonotic Parasites**

Presentation not available

Questions followed;

PD – What is the best tissue to archive?

RB – I chose spleen because it is a vector borne disease.

PD – Giardia – do you see evidence of clinical disease in wild animals?
RB – We don't see any evidence of clinical disease.

Wojciech Iwaniak gave a presentation titled **Occurrence Of Brucellosis In Wild Animals In Poland**
Appendix 29

Questions followed;

RB – What dilution of the meat juice do you use?
WI – About 1 to 30.

RB – this would be a useful method when serum is of poor quality.
WI – Yes.

SS – Does this mean that every time you receive a sample it includes a sample of meat?

WI – Yes, we ask for it to be included. We have to pay our local vets in the field.

LM – Does the site the meat is taken from matter?
WI – No, it doesn't matter.

BC – Do you know the sensitivity and specificity of all the tests you use for Brucella?
WI – They differ, for instance the Rose Bengal test is a screening test.

AO – We have a seal health program in Finland. What would you recommend for testing seals for brucella?

WI – First Rose Bengal then CFT and competitive ELISA.

DG-W – How do you prepare the meat juice?

WI – We freeze the meat and then thaw it overnight on the bench.

RB – We thaw it in the fridge. It's better to thaw it slowly because the temperature remains more constant and it's better for the antibodies.

A discussion about the best temperature for thawing the meat followed.

DG-W – How much lower is the sensitivity of the meat juice as compared to serum?

WI – It's lower.

RB – The sensitivity is at least one tenth that of serum.

PD – If you can't get serum from a wild animal is taking a piece of meat a good alternative?

WI – Yes.

PD – What size should the piece be?

WI – At least 10 cm cubed.

PD – Should the meat juice be clear?

WI – Yes it should be clear, just like serum.

PD – Were all the wildlife Brucella isolates Brucella suis?

WI – Yes

PD – No melitensis, no abortus?
WI – No

PD – You have a whole range of tests, why don't you just use the PCR?
WI – Culture is still the gold standard.

Paul Duff gave a demonstration on how to register on the WiREDZ WildList website.

Karoly Erdelyi gave a presentation titled **West Nile Virus In Hungary – Conservation Issues**.
Appendix 30

Questions followed;

DG-W – What lesions do you see with the Usutu virus infection?

KE – They use immunohistochemistry and in situ hybridisation. PCR systems are used in my institute, followed by sequencing.

Some cross reaction occurs so conjugates for West Nile can be used for Usutu virus in immunohistochemistry.

We process brain, heart muscle, spleen, liver, lung and intestines and embed them in paraffin blocks and process them for immunohistochemistry. We also test the brain with PCR in parallel.

DG-W – with Usutu virus, what do the birds die of?

KE – They usually have necrotic hepatitis and a splenitis, so it's a little bit different from West Nile Virus.

DH – You have a surveillance program in Hungary, are only the birds of prey found to be virus positive?

KE – Yes. The symptoms in wild birds of prey are that they get weak and don't eat and the disease develops very quickly. They stop eating because they develop co-ordination problems, and also impaired vision.

They die very quickly in many cases. Some birds survive, especially older birds. If they get therapy they can survive but it can take up to a month to fully recover.

Approach to WiREDZ/Wildlife Disease Surveillance

A round table discussion chaired by Paul Duff

Delegates were asked how they would design an approach to wildlife surveillance. A series of questions were posed.

1. What are the most important diseases that would require targeted surveillance?

Trichinella
Brucellosis
Rabies
Tuberculosis
Avian Influenza

Less important diseases were listed as;

Lyme disease
West Nile Virus
Echinococcosis
Tularemia

2. What is the most effective way to collect specimens?

- Passive surveillance would be covered by examination of samples routinely submitted to regional laboratories.
- Targeted surveillance would involve active culling and sampling.

Serbia was cited as an example. Serbia has friendly agreements with the hunting associations. Government field vets inspect all hunted carcasses before they are consumed.

3. How should specimens be moved from the field to the testing laboratory?

The problems of specimen movement were discussed.

- Sending samples through the post - not allowed in many countries.
- Specially trained sample collectors - dependent on size of country.
- Location of testing laboratories - may need several regional testing centres.
- Use of courier services - best option but may be cost prohibitive.

It was agreed that the choice of transportation of specimens to laboratories would be dependent on the particular disease involved.

4. Should there be a single diagnostic testing centre or several regional laboratories?

The implications were raised regarding the transportation of infected carcasses for long distances.

Passive surveillance – a de-centralised testing system may be most appropriate
Targeted surveillance – specimen testing could be centralised. This may have the advantage of better standardisation of testing methods.

It was agreed that test validation and quality assurance pertaining to wildlife diseases were very important.

No decision was made regarding the need for specialist wildlife laboratories versus general diagnostic laboratories.

5. Should there be a single, standardised protocol for wildlife post-mortems across Europe?

It was agreed that there was some justification for a basic, standardised European protocol that could include identification, sex, location etc. The precise post-mortem

examination would depend on what disease was suspected and so a protocol would need flexibility to be adapted accordingly.

It was agreed that pathology was generally part of passive surveillance so a standard protocol would be useful to regulate the collection and storage of samples. With targeted surveillance the objectives are unknown and would be less suited to a stringent, standardised protocol.

6. What would be the requirements for laboratory testing?

It was agreed that the laboratory methods used must be defined and validated.

7. Results and diagnosis.

Concerns were raised regarding the intellectual property rights of results and data. The ownership of the data would have to be defined.

The usefulness of a central database was discussed. All agreed it would be ideal, but some countries are reluctant to publicise their findings.

It was suggested that summaries of findings could be reported to an OIE database, but some countries would need permission from government before publishing.

8. How can European networking best be achieved?

Discussions about how best to achieve networking between European countries resulted in the following ideas;

- Annual meeting – very useful
- Shared database
- European journal or bulletin

It was agreed that currently there was not enough networking between European countries.

The need for disease specific networks was discussed. It was agreed by all that such networks would be very useful, but it was difficult to find individuals with whom to network.

The Wildlist will help as it will list contacts by country, species and disease specialism.

Following the question and answer session, the importance of vectors was discussed.

There is no general information about vectors. Vector ecology is very important but not always well understood.

Vector studies are very difficult – identifying insects is a problem as there are no specialists.

How to improve wildlife surveillance in Europe.

A roundtable discussion chaired by Dolores Gavier-Winden (DG-W)

DG-W outlined some of the areas where wildlife surveillance improvement is needed;

- Sample quality
- Increased geographical area
- More pathogenic species
- Improved communication and collaboration

An open forum discussion followed;

1. How do we continue networking?

- Each country could have a wildlife group
- Chair person contactable through the EWDA.
- Responsible for learning about and contacting other networks.

2. How can we improve communication and collaboration?

- Make contact with other countries, e.g. Iceland, Estonia.
- Source money for meetings – this can be difficult.
- Rabies Bulletin has a contact for every country. Similar specialist email lists could be compiled

It was reiterated to encourage colleagues to register with WildList

3. What will happen if Wild List disappears?

- Could WildList be taken over by another large project, e.g. WildTech?
- The list may have to move from 'home to home' to find funding.
- An independent version of the list would be useful but financial resources would need to be found.

4. Could a project-based sponsor be found?

- Sponsors tend to be looking for sales so wildlife based projects are not as appealing to them.
- Could the European Union Commission be approached or should the WildList remain independent of the EU?
- Might the OIE or WHO fund the list?
- The OIE currently relies on governments to provide information. They rely on governments reporting everything including official and unofficial disease reports. Most governments seem to collect data from official diagnostic institutes but don't include data from university research or other people publishing data on wildlife disease. The OIE would like to have this additional data so WildList could provide a means of collecting it and producing a report every year.

Appendix 27

WildTech Consortium

Presented by Lisa Yon, BSc, DVM, PhD, MRCVS

Lecturer in Zoo & Wildlife Medicine, University of Nottingham School of Veterinary Medicine
Head of Research, Twycross Zoo

EU Grant to Detect Wildlife Pathogens

Work programme: FP7 Cooperation Work Programme: Food, Agriculture and Fisheries and Biotechnology

KBBE-2007-1-1-05: **Using new technologies to identify (re-) emerging pathogens from wildlife reservoirs** (Call FP7-KBBE-2007-2A)

WildTech Consortium

- €6 million
- 4 years
- Co-ordinated by University of Nottingham
- 12 Multidisciplinary Partners
- 24 Associate Partners

Objective:

To establish a framework for pan-European surveillance for wildlife disease

WildTech Co-ordinating group

University of Nottingham & Twycross Zoo

Duncan Hannant: co-ordinator

Richard Lea: epidemiology/risk analysis

Paul Barrow: nucleic acid technology

Lisa Yon: external communications

Suzanne Boardman: network director

database design & management

WildTech Consortium partners

1. University of Nottingham
2. Institute for Animal Health, Pirbright (UK)
3. Friedrich Loeffler Institute, Jena (Germany)
4. Central Institute of Wageningen University (Netherlands)
5. Veterinary Laboratories Agency (UK)
6. Clondiag (Germany)
7. Institute of Biomedical Research and Technology (Greece)
8. State Veterinary Institute, Uppsala (Sweden)
9. Croatian Veterinary Institute (Croatia)

- 10. Ecole Nationale Veterinaire de Lyon (France)
- 11. Scottish Agricultural College (UK)
- 12. University of Saskatchewan (Canada)

WildTech: Generation of tools for wildlife disease surveillance

Screening for multiple pathogens by nucleic acid and serological microarrays

- Bacteria, viruses, parasites
- Known and novel infectious agents

State of the art wildlife disease data management system

Epidemiology: prevalence, distribution

Networks among and between wildlife specialists, technologists

Strong links with international organisations

- OIE

The Associate Partners

- Comprise a network of wildlife experts
EU and non-EU
- Provision of unique collections of samples
- Benefit from data analysis – diseases of interest
- Ultimately multi-pathogen
- Epidemiology
- Access to information on wildlife disease (e.g. WildPro)
- Links to other databases
- Meetings and seminars: technology transfer

Nucleic acid array technology

Microarray technology:

- Screening of a single sample for multiple pathogens (viral, bacterial, parasitic)
- High through-put
- Specific oligonucleotide array
- Detection & identification of evolving and unknown infectious agents
- Random oligonucleotide sets

Bioinformatics:

- predict genome evolution in rapidly evolving viruses

The serology arrays

- High through-put serological screening
- Based on multiplex assays
- ELISA technology on a miniaturised scale

Development of an Integrator Database

- Based on ZIMS

- Designed for zoos to manage their captive animals on an individual basis, and not for population level monitoring of disease.
- Elements of other databases
- GIS/Mapping
- Must be able to communicate with other databases
 - E.g., WISDOM,

Epidemiology and Risk Analysis

- Quantify the temporal and spatial analysis of wildlife pathogens & geographic distribution of risk factors
 - Overview of health status in the EU
- Quantify emergent disease risks
 - Based on changing pathogen distributions
- Recommendations on policy actions based on risk assessment

Assess Spread of Selected Diseases

- **Archived wildlife samples**
 - Validate assays
 - Preliminary investigation
- **Wildlife disease:** Monitor and model patterns of spread, associated risks
- **Epidemiological framework:** produce generic action plan in case of emerging epizootics among wildlife
- **Reduce disease risks**

The Ultimate Goal:

- The 4 year WildTech project is designed to develop and validate the tools necessary to carry out world wide surveillance of wildlife disease.
- This framework for pan-European surveillance for wildlife disease will then be accessible to international and national bodies e.g., the OIE

Appendix 1

	<p>Med-Vet-Net WiREDZ Special Interest Group Budapest meeting 10-12th December 2008.</p>	
<p>What is Med-Vet-Net?</p>		
<p>It is an EU sponsored network across the EU, looking at food-borne zoonoses. There are 10 partner organisations.</p>		
<p>The Med-Vet-Net Programme finishes in March 2009.</p>		
<p>Med-Vet-Net has about 30 Workpackages and many Special Interest Groups (SIGs).</p>		
<p>The WiREDZ SIG started in October 2007</p>		
	<p>Med-Vet-Net WiREDZ Special Interest Group Budapest meeting 10-12th December 2008.</p>	
<p>Why WiREDZ?</p>		
<p>WiREDZ = <u>w</u>ildlife <u>r</u>elated <u>e</u>merging <u>d</u>iseases and <u>z</u>oonoses</p>		
<ul style="list-style-type: none">• Acronym to specify the study of wildlife disease (wd).• WiREDZ can be used to mean wildlife disease.• Wildlife disease requires a multi-disciplinary approach• To indicate the study of wildlife disease as a science.		
	<p>Med-Vet-Net WiREDZ Special Interest Group Budapest meeting 10-12th December 2008.</p>	
<p>WiREDZ OBJECTIVES</p>		
<ul style="list-style-type: none">• WILDLIST register of WiREDZ scientists through all Europe• WILDLIST self maintained simple register• To hold a WiREDZ SIG meeting – Budapest 2008 • To discuss wildlife disease networks in Europe• To discuss how wildlife disease surveillance is done in each country• To discuss a broad European approach to wildlife disease surveillance in Europe		

Appendix 2



Med-Vet-Net WiREDZ Special Interest Group

Budapest meeting 10-12th December 2008.

Questionnaire for all delegates

1. Please complete all questions

2. And Email the completed Powerpoint to Karoly Erdelyi

1. Your name please? –Richard Lea

2. Your Country? - UK

3. Your Institute? – ()U. Nottingham School of Veterinary Medicine

4. Your Institute's web site? www.nottingham.ac.uk/vet

5. What work do you do with wildlife disease ? –

EU project to detect present, emerging and re-emerging pathogens in wildlife

6. What wildlife work does your Institute do?

EU grant as above

Reproductive health of captive zoo animals – zoonoses from wildlife.

Links with Twycross zoo (behavior, nutrition, parasitology), Parasitology



Med-Vet-Net WiREDZ Special Interest Group

Budapest meeting 10-12th December 2008.

Questionnaire for all delegates

1. Please complete all questions

2. And Email the completed Powerpoint to Karoly Erdelyi



What are the most important wildlife diseases (WiREDZ) in your country

1. Bluetongue

2. Foot and Mouth Disease

3. TB

4. Avian Influenza

5. Salmonellosis



Med-Vet-Net WiREDZ Special Interest Group

Budapest meeting 10-12th December 2008.

Questionnaire for all delegates

1. Please complete all questions

2. And Email the completed Powerpoint to Karoly Erdelyi



What other Institutes in your country work with wildlife diseases(WiREDZ) – if possible please provide the Email and web site addresses of these institutes –

1. VLA-DEFRA

2. CSL (Central Science Laboratory)

3. IAH (Institute for Animal Health)

4. IOZ/ZSL (Institute of Zoology, Zoological Society of London)