



OTHER ANIMAL HEALTH ISSUES

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### OTHER ANIMAL HEALTH ISSUES

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## BRUCELLOSIS

### AN EVALUATION OF IRISH CATTLE HERDS WITH INCONCLUSIVE SEROLOGICAL EVIDENCE OF BOVINE BRUCELLOSIS

*Martin Hayes, Seán Ashe (DAFF), Daniel Collins, Simon More (UCD CVERA), Séamus Power, Kevin Kenny, Michael Sheahan, Garry O'Hagan (DAFF)*

There is concern that the interpretation of serological results may become increasingly problematic, as brucellosis prevalence falls in Ireland. This study seeks to clarify the infection status of Irish herds and animals where serological results are inconclusive.

### AN EVALUATION OF POLICY OPTIONS, INCLUDING CHANGES TO THE PRE-MOVEMENT TEST, WITHIN THE NATIONAL BRUCELLOSIS ERADICATION PROGRAMME

*Seán Ashe, Martin Hayes, Brendan Walsh, Rob Doyle (DAFF), Simon More (UCD CVERA)*

It is prudent to review current eradication strategies, including the use of pre-movement testing (currently, all breeding cattle over 12 months of age), as brucellosis prevalence continues to fall in Ireland. In this study, we are using quantitative risk assessment methodology to evaluate the impact of a range of policy changes on the probability of new disease outbreaks.

### AN OUTBREAK OF BOVINE BRUCELLOSIS IN COUNTY CLARE, DURING 2005

*Martin Hayes, Ascinta Kilroy (DAFF), Simon More (UCD CVERA), Seán Ashe, Séamus Power (DAFF)*

In the latter stages of the national brucellosis eradication programme, information from epidemiological field investigations provides an opportunity to continually evaluate the effectiveness of existing disease control measures. This study describes an investigation of an outbreak of bovine brucellosis in a locality in County Clare, Ireland, during 2005.

## EQUINE INFECTIOUS ANAEMIA

### EQUINE INFECTIOUS ANAEMIA IN IRELAND DURING 2006

*Simon More, Inma Aznar (UCD CVERA), Pat Brangan, John Larkin, Dorothy Bailey, Tom Myers, Pat Lenihan, Brian Flaherty (DAFF), Des Leadon (Irish Equine Centre)*

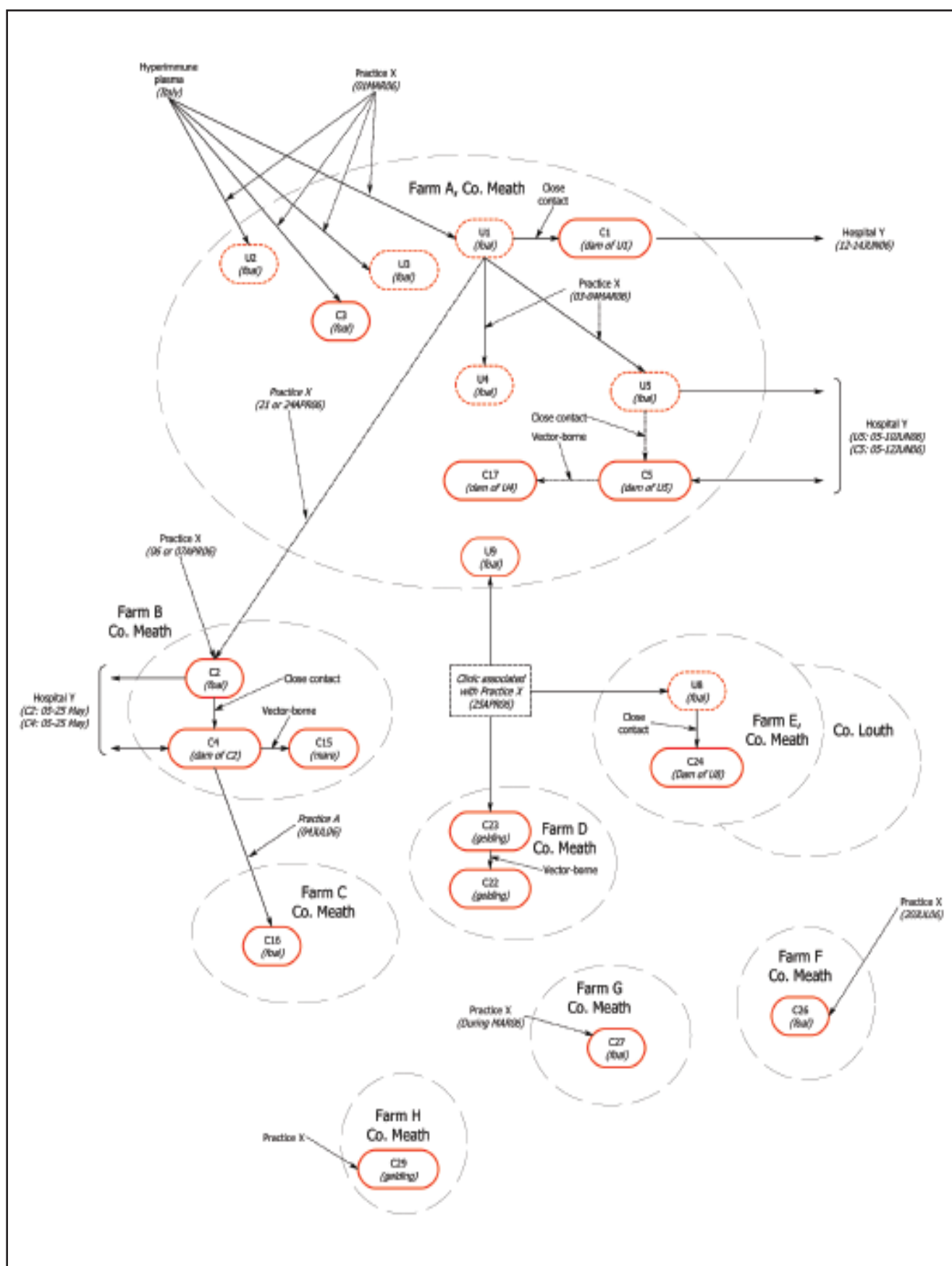
Featured in the 'Selected reports' section

Equine infectious anaemia (EIA) was confirmed in Ireland on 15 June 2006. Over the following six months, until 10 December 2006, a total of 38 EIA cases were identified. This was the first outbreak of this disease in Ireland with evidence of transmission of infection. A detailed epidemiological investigation has been undertaken, with the following objectives:

- To provide an overview of the outbreak, the national response (control and eradication strategies, resource issues, linkages with industry and the international community) and lessons learned;
- To determine the source of infection and modes of transmission;
- To address aspects of the diagnosis and clinical presentation; and
- To report the results of an investigation of nosocomial transmission within an equine veterinary hospital.



A mare (case 17) that was infected during the 2006 EIA outbreak in Ireland



## TSEs

### A QUANTITATIVE ASSESSMENT OF BSE RISK IN STORAGE FACILITIES FOLLOWING MBM REMOVAL AND CLEANING

*Inma Aznar, Simon More (UCD CVERA), John Griffin, John Mullen (DAFF)*

The Irish slaughter sector produces approximately 150,000 tonnes of animal by-product (raw offal and bone) per year. From 2000 until 01 June 2003, DAFF subsidized the rendering of animal by-products into meat and bone meal (MBM), and the subsequent storage of approximately 172,000 tonnes of MBM, awaiting disposal. The objective of the study was to assess the bovine spongiform encephalopathy (BSE) risk posed to cattle from several of these facilities, following MBM removal and cleaning.

### NATIONAL MAPS

2006



The location of confirmed BSE cases in Ireland during 2006

2007



The location of confirmed BSE cases in Ireland during 2007



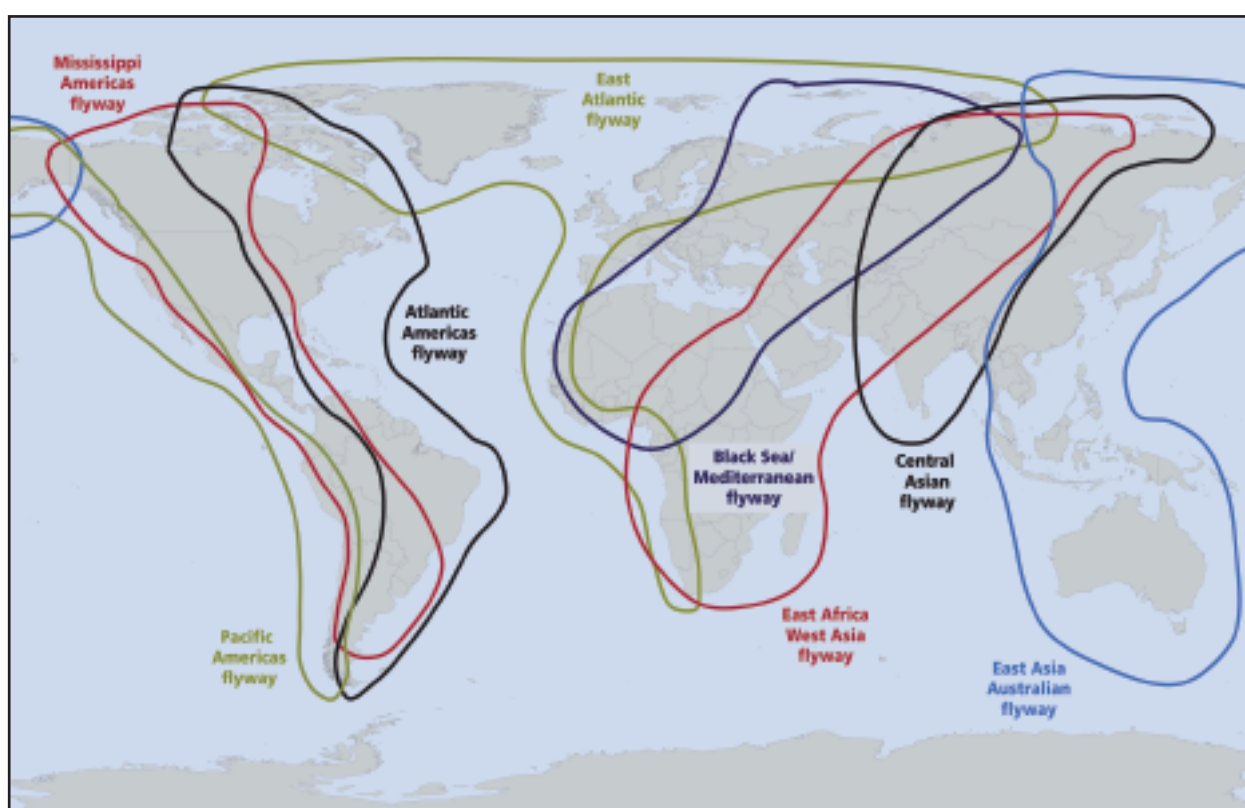
# AVIAN INFLUENZA

## A REVIEW OF IRELAND'S WATERBIRDS, WITH IMPLICATIONS FOR THE INTRODUCTION AND SPREAD OF H5N1 AVIAN INFLUENZA INTO IRELAND

*Olivia Crowe (Birdwatch Ireland), John Wilson (National Parks and Wildlife Service), Inma Aznar, Simon More (UCD CVERA)*

Featured in the 'Selected reports' section

Ireland is characterised by a wide variety and a large abundance of wetlands, making it attractive to waterbirds throughout the year. As such, Ireland has a diverse range of waterbirds, the majority of which are at least partially migratory. This paper presents an overview of Ireland's waterbirds, including ecological factors relevant to the potential introduction, maintenance, transmission and spread of infectious agents, including the H5N1 avian influenza virus, in Ireland. Particular emphasis is placed on five groups of wintering migrants (dabbling and sieving wildfowl, grazing wildfowl, diving wildfowl, waders and gulls), noting that the H5N1 avian influenza virus has mainly been isolated from this subset of waterbirds.



Global flyways. "Flyways: Wetlands International. Compiled by FAO AGAH, EMPRES programme. FAO 2005. All rights reserved"

## ASSESSING THE RISK OF INTRODUCTION AND SUBSEQUENT SPREAD OF H5N1 AVIAN INFLUENZA IN IRELAND BY MIGRATORY WATERBIRDS

*Inma Aznar, Simon More, Guy McGrath, Daniel Collins (UCD CVERA), Olivia Crowe (Birdwatch Ireland), John Wilson (National Parks and Wildlife Service)*

A qualitative risk assessment is being conducted to assess the risk of introduction and subsequent spread of H5N1 avian influenza in Ireland by migratory waterbirds. The work is being conducted in two parts:

- The risk of entry is being examined based on the probability that H5N1-infected migratory waterbirds will enter Ireland; and
- The risk of subsequent spread based on the probability of H5N1 being spread to the Irish commercial poultry industry, following entry of infected waterbirds.

# FOOT AND MOUTH DISEASE

## INTERNATIONAL MODELLING COLLABORATION (THE QUADS GROUP)

*Jarlath O'Connor (DAFF)*

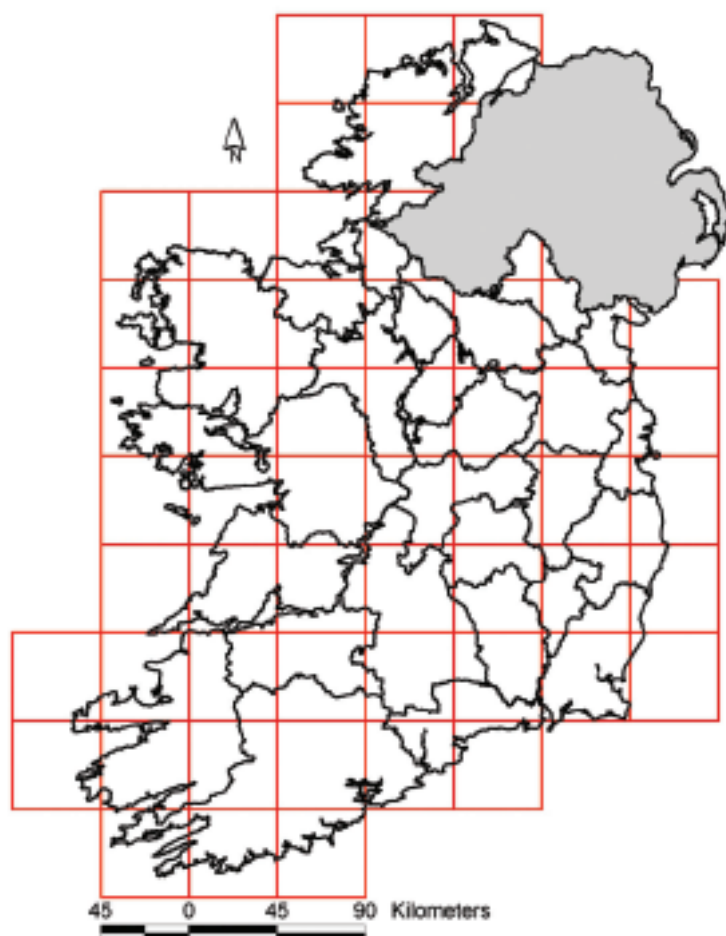
DAFF has become actively involved in disease modelling as a member of the Epiteam of the Quadrilateral (QUADS) countries (Australia, Canada, New Zealand, United States), plus Ireland and the United Kingdom. The primary focus of the current work programme is a comparison of the efficacy of a number of FMD models based on common scenarios. The practical implications of DAFF's involvement are to allow for development of expertise in modelling and to assist in international collaboration on disease outbreaks.

# BLUETONGUE

## ACTIVE SURVEILLANCE FOR BLUETONGUE IN IRELAND

*Guy McGrath, Tracy Clegg, Inma Aznar (UCD CVERA), Dónal Sammin (DAFF)*

Based on events in western Europe since August 2006, concern has been raised about the possible spread of bluetongue to Ireland. An active programme of bluetongue surveillance commenced in Ireland in early 2007. In line with European Union recommendations, a sampling grid is being used to guide sample collection.



The 45 x 45km sampling grid that is being used during the active bluetongue surveillance programme

## NATIONAL *CULICOIDES* SURVEY

Guy McGrath, Inma Aznar (UCD CVERA)

### Background

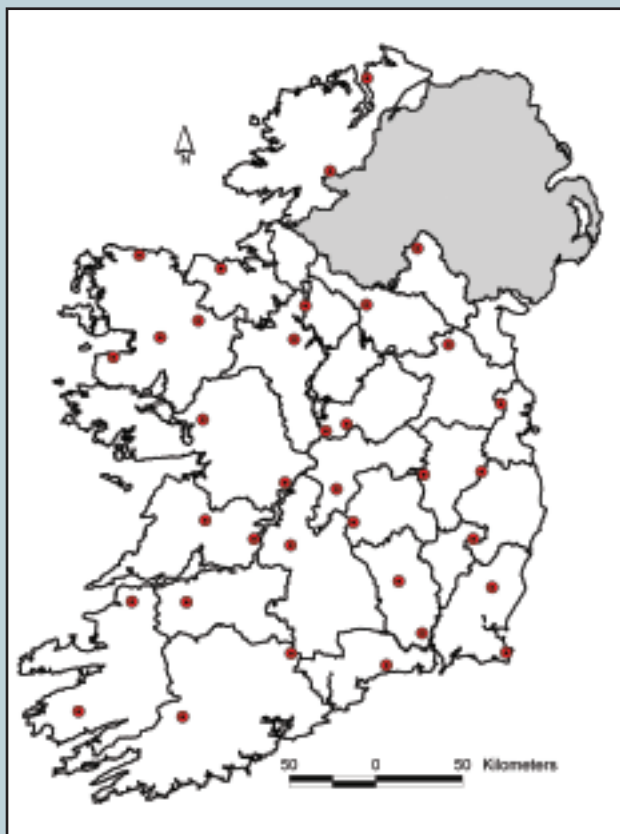
In recent years, there have been incursions of the bluetongue virus (BTV) into temperate countries of Europe. This was initially believed to be exclusively as a result of global warming and milder winters, enabling the vector *Culicoides imicola* to extend its viable range from North Africa and the Mediterranean into more temperate areas. However, it has become evident that BTV is being acquired and transmitted in these cooler regions through the *C. obsoletus* complex, a species of *Culicoides* not previously associated with the spread of BTV (Caracappa *et al.*, 2003, Savini *et al.*, 2005). The range of *C. obsoletus* extends over most of central and Northern Europe. The limiting factor for the spread of BTV is therefore no longer the range of the vector but the virus' ability to replicate and disseminate in cold conditions. This has resulted in larger scale outbreaks of greater severity and longevity than those associated with *C. imicola* incursions. In September 2007, the UK reported its first suspected case of BTV, in a Highland cow on a farm for rare cattle breeds near Ipswich, Suffolk. The virus subsequently spread from cattle to sheep. Little is known about the distances *C. obsoletus* can travel, but it is believed that in certain climatic conditions *Culicoides* could passively travel several hundred kilometres (Ducheyne *et al.*, 2007). In light of this, Ireland is at considerable risk of being exposed to BTV and subsequently harbouring an epidemic. Large numbers of *Culicoides* are present in Ireland but very little is known about the true population in terms of its abundance and seasonality. The aim of this study is to establish suitable sampling locations to assist in the modelling of the spatial and temporal patterns of *Culicoides* populations in Ireland.

### Methods

In order to build a robust predictive model for determining how habitat influences the population of *Culicoides*, the selection of sample points should be random. This excludes the introduction of bias by manually selecting sample sites based on observed habitat types. The only rule used in the selection process was that sample points must be on farmed land. This was decided to ensure access to sample site locations and to allow for corresponding BTV serology surveillance on the animals in the associated farms. 50 points were randomly assigned to the area of the Republic of Ireland using ArcGIS 9.1 (ESRI, Redlands, CA, USA). Of these 50 points, 35 were located on farms with livestock and were therefore considered suitable for this study. These 35 points represented a diverse range of habitats. Habitat variables defined in these sample site locations can be used to develop a multivariate predictive model. Sampling sites were established in these locations and count data of *Culicoides* caught in light traps were observed using established methodologies (Goffredo *et al.*, 2004). These data are still being acquired. Additional survey points will be selected manually to validate the preliminary estimates on contribution of different habitat variables to population numbers. These data will be published as a PhD thesis through the NUI, Galway, Ireland in 2009.

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Sampling points for the national *Culicoides* survey



# POPULATION STUDIES

## SURVIVAL AND DISPERSAL OF A DEFINED COHORT OF IRISH CATTLE

*Seán Ashe (DAFF), Simon More (UCD CVERA), James O'Keeffe, Paul White (DAFF), Guy McGrath, Inma Aznar (UCD CVERA)*

Proceedings of the 11th Symposium of the International Society for Veterinary Epidemiology and Economics (ISVEE), Cairns, Australia, p808.

An understanding of livestock movements is critical to effective disease prevention, control and prediction. However, livestock movement in the Republic of Ireland has not yet been quantified. This study has sought to define the survival and dispersal of a defined cohort of cattle, born in County Kerry during 2000. The cohort was observed for a maximum of four years, from 01 January 2000 to 31 December 2004. Beef and dairy animals moved on average 1.31 and 0.83 times, respectively. At study end, 18.8% of the beef animals remained alive on Irish farms, including 6.7% at the farm-of-birth, compared with 48.6% and 27.7% for dairy animals, respectively. Beef animals were dispersed to all Irish counties, but mainly to Cork, Limerick, Tipperary and Galway. Dairy animals mainly moved to Cork, Limerick, and Tipperary, with fewer animals going to Galway, Meath and Kilkenny. The 4-year survival probability was 0.07 (male beef animals), 0.25 (male dairy), 0.38 (female beef), and 0.72 (female dairy).

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***“An understanding of livestock movements is critical to effective disease prevention, control and prediction.”***

## MODELLING THE DEMOGRAPHICS OF THE IRISH CATTLE POPULATION

*Jarlath O'Connor, John Griffin (DAFF), Simon More (UCD CVERA)*

Featured in the 'Selected reports' section

There is little published information about the demography of cattle populations. Such information would aid in decision making with regard to animal health, animal welfare, resource allocation and planning. This study reports the development of, and outputs from, a demographic model of the Irish cattle population.

## TRENDS IN THE IRISH COW POPULATION AND THE RATE AT WHICH THEY WERE CULLED DURING 2003 TO 2006

*Peter Maher, Margaret Good (DAFF), Simon More (UCD CVERA)*

Featured in the 'Selected reports' section

Cows are the main economic production units of Ireland's cattle industry. Therefore, demographic information, including overall numbers and survival rates, are relevant to the Irish agricultural industry. This study seeks to determine the rate of cow culling from the national herd; to determine the rate of culling by type (dairy, beef), age, method of exit, date of exit and interval between last calving and exit; to calculate the national cow on-farm mortality rate; and to compare the Irish rates with published data from other countries.

## COMPANION ANIMAL EPIDEMIOLOGY

### AN EPIDEMIOLOGICAL STUDY OF THE IRISH PET POPULATION

*Martin Downes, Simon More (UCD CVERA)*

To date, there has been very little work on pet epidemiology in Ireland and no baseline data are available on the number of pet dogs or cats in the country. In this study, we aim to determine baseline data about the demographics of the Irish pet population, and to predict future population trends.

## FISH EPIDEMIOLOGY

### AN INTRODUCTION TO IMPORT RISK ANALYSIS FOR AQUATIC ANIMALS

*Chris Baldock (AusVet Animal Health Services, Australia; deceased), Simon More (UCD CVERA), Ed Peeler (Centre for Environment, Fisheries and Aquaculture Science, Weymouth, UK)*

Featured in the 'Selected reports' section

With increasing international trade, there are increasing risks to countries that unwanted aquatic animal pathogens will enter and spread. Import risk analyses provide an objective, transparent and defensible method of assessing disease risks associated with imports. This paper describes and illustrates the main elements of import risk analyses for aquatic animals and their products, including hazard identification, risk assessment, risk management and risk communication.



Fish farming off the west coast of Ireland

## HORSE WELFARE

### UCD REVIEW OF HORSE WELFARE IN IRELAND 2007-2009

*Joe Collins, Alison Hanlon (UCD Agriculture, Food Science and Veterinary Medicine), Simon More (UCD CVERA), Vivienne Duggan (UCD Agriculture, Food Science and Veterinary Medicine)*

In Ireland, horses are bred and trained for racing, equestrian sports and leisure activities. Each sector of the equine industry has traditionally been represented by entirely independent organisations, leading to a lack of cohesion on policies regarding issues such as the health and welfare of horses. This study aims to describe the welfare standards of horses in Ireland and how these link to industry structures; identify the most significant equine welfare issues as perceived by key stakeholders in the different industry sectors, and determine whether and how these might be addressed; and to document actual welfare issues.

## INTERNATIONAL COLLABORATION

### TUBERCULOSIS CONTROL IN CHILE

*Alejandro Rivera (SAG, Chile), Margaret Good (DAFF), Simon More (UCD CVERA)*

There has been a voluntary control programme for bovine tuberculosis in Chile for some time. With an increasing focus on the production of high-quality product for export, the Chilean government and industry are now developing a national bovine tuberculosis eradication programme. Lessons from Ireland may be helpful as this programme develops. Cooperative links have been developed with the Servicio Agrícola y Ganadero (SAG) within the Chilean Ministerio de Agricultura.



The dairy industry in Chile is mainly located in Regions 8 to 10 (pictured)

## A CRITICAL EVALUATION OF SURVEILLANCE AND CONTROL MEASURES WITHIN THE NATIONAL BRUCELLOSIS ERADICATION PROGRAMME IN THE REPUBLIC OF KOREA DURING 2000 TO 2006

Lee Byeong-yong (National Veterinary Research and Quarantine Service, Korea), Isabella Higgins, Simon More (UCD CVERA), Moon Oun-kyoung (National Veterinary Research and Quarantine Service, Korea), Tracy Clegg, Guy McGrath, Daniel Collins (UCD CVERA), Park Jee-yong, Yoon Hachung, Lee Sang-jin (National Veterinary Research and Quarantine Service, Korea)

Featured in the 'Selected reports' section

Bovine brucellosis has recently emerged as a major animal health problem in the Republic of Korea. This study seeks to critically evaluate the brucellosis control programme in Korea, focusing on the effectiveness of efforts to identify new cases and to control known cases of bovine brucellosis in cattle in Korea, during the period from 2000 to 2006.

## THE FMD OUTBREAK IN KOREA IN 2002

Wee Sung-hwan, Nam Hyang-mi, Yoon Hachung (National Veterinary Research and Quarantine Service, Korea), Simon More (UCD CVERA)

Korea experienced an FMD outbreak in 2002. In total, 16 farms were affected, including 15 farms (all but 'Farm 13') located in clusters surrounding the first two cases. This study reports the results of a detailed epidemiological investigation of the overall outbreak, and of the source of infection on Farm 13, given its relative geographic isolation from other known cases.

# MISCELLANEOUS

## A STUDY OF HELMINTH PARASITES IN CULLED COWS FROM IRELAND

Murphy, T.M., Fahy, K.N., McAuliffe, A., Forbes, A.B., Clegg, T.A., O'Brien, D.J.

Preventive Veterinary Medicine 76 (2006), 1-10.

The objective of this study was to determine the prevalence and intensity of gastrointestinal nematode, lungworm and liver fluke infection in culled cows in Ireland. Abomasa, colorectal contents and livers were collected from 30 to 68 culled beef and dairy cows during autumn 2002 and summer 2003, respectively. *Ostertagia ostertagi* were found in the abomasa of only three (10%) cows sampled in autumn and in 38 (57%) cows examined in summer. The majority of positive animals had low burdens of *O. ostertagi* but a few individuals in the group sampled during the summer had a moderate infection (5000-10,000 adult worms). A proportion of the cows in the summer group were also co-infected with small numbers of *Trichostrongylus axei*. *Cooperia oncophora* predominated in the recoveries from the larval cultures although *O. ostertagi* were also recovered. The overall prevalence of *Dictyocaulus viviparus* was 14%, based on larval identification in faecal samples. Liver fluke, or varying degrees of pathology attributable to *Fasciola hepatica*, were present in 65% of the livers. The results of this study extend those of previous workers, which were largely limited to dairy cows alone and which focussed on gastrointestinal nematodes and did not include simultaneous infections with lungworm and liver fluke. It was concluded, from the level of polyparasitism evident in this study, that adult cattle should be considered in preventive approaches to bovine helminthosis.

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**“Adult cattle should be considered in preventive approaches to bovine helminthosis.”**



## DECISION SUPPORT SYSTEM (PREDICTIVE MODEL) FOR FASCIOLOSIS IN IRELAND

Theo de Waal, Grace Mulcahy, John Kennedy, Valerie Relf (UCD Agriculture, Food Science and Veterinary Medicine), Tom Murphy (DAFF), Guy McGrath, Simon More (UCD CVERA)

Fasciolosis or liver fluke disease caused by *Fasciola hepatica* is one of the major impediments to economic production in ruminants in Ireland. Anecdotal evidence suggests an increase in the incidence of acute fasciolosis amongst sheep in mid-summer. This project aims to develop a more refined model to predict the likely incidence and severity of fasciolosis both regionally and locally. This information will assist with the design and implementation of improved control and intervention strategies.



Ideal habitat for *Lymnaea truncatula*, the intermediate host for liver fluke (*Fasciola hepatica*), in the west of Ireland



