

## Infections with motile protozoa in game birds in Scotland 1998 – 2004

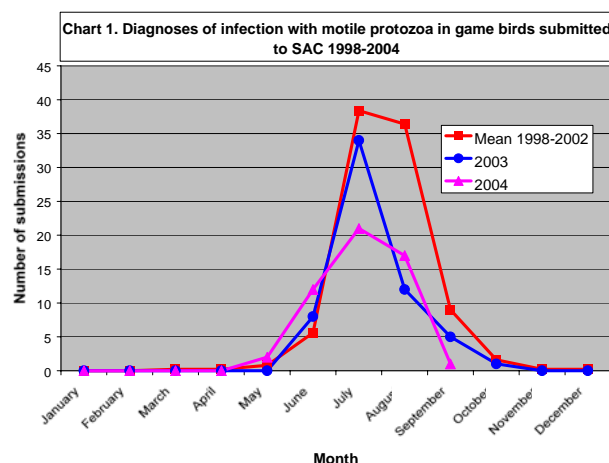
The game bird industry is an important part of Scotland's rural economy. Red grouse are managed extensively on heather moors, and many millions of pheasants and red-legged partridges are reared semi-intensively and released for sporting purposes.

Since 1991, infections of pheasants and partridges with the motile protozoa *Hexamita* (*Spironucleus*) *meleagridis* and *Trichomonas gallinae* have become significant causes of weight loss, diarrhoea and death in the summer months of June to September (Pennycott 1997). *Hexamita* inhabits the small intestine and its presence is associated with fluid intestinal contents, possibly caused by alterations in fluid balance. *Trichomonas* can be found in the caecum of both healthy and sick birds, but if present in large numbers may be significant.

The control of these motile protozoa relied on the inclusion of dimetridazole in the feed during rearing and for the first few weeks following release of the birds. The same drug was administered in the drinking water to treat outbreaks of the disease. Despite the availability and use of dimetridazole, disease caused by motile protozoa continued to be a problem in reared game birds. One small study (Pennycott 1999) suggested that treatment of hexamitiasis in pheasants with a combination of dimetridazole and the antibiotic oxytetracycline gave better results than using dimetridazole alone, and there is anecdotal evidence that this approach was adopted by some gamekeepers and their veterinary advisers.

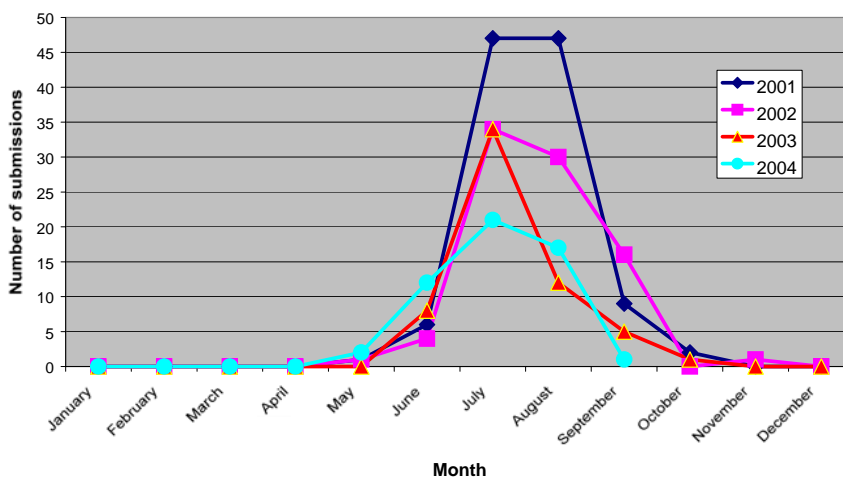
In July 2002 the manufacture and sale of all three licensed products containing dimetridazole (Emtryl Soluble for Game Birds, Emtryl Pure for Game Birds, Emtryl Premix for Game Birds) was suspended, and since then game birds in Scotland and the rest of Great Britain have been reared using less and less dimetridazole. Gamekeepers and their veterinary advisers responded in 2003 by taking measures to improve their hygiene and management, and to reduce stress factors by re-appraising group size, stocking density etc. Concern was however expressed that this reduction and eventual removal of dimetridazole would create welfare problems as a result of an escalation in outbreaks of disease caused by motile protozoa, in particular hexamitiasis.

This report examines the pattern of outbreaks of disease caused by motile protozoa (*Hexamita* and *Trichomonas*) in game birds submitted to SAC between 1998 and 2004. The analysis is based on the number of batches of game birds received by SAC in which the first recorded diagnosis was either hexamitiasis (VIDA code 309), trichomoniasis (VIDA code 316), or protozoal infection not otherwise specified (VIDA code 310). Over 95% of all recorded diagnoses of these conditions occur in the months June to September, and so figures to the end of September should accurately reflect the overall situation.



It can be seen from Chart 1 that in 2003, the first year in which there was a significant reduction in dimetridazole availability, there was a reduction in recorded diagnoses of infections with motile protozoa. 2003 was an unusually dry year, which could have explained the reduction in diagnosed cases. However the same chart shows that the downward trend continued the following year, in 2004, which was an exceptionally wet year. It would therefore be tempting to speculate that the reduction in cases was the result of the improved hygiene and management measures instigated in 2003 and 2004. However further examination of the data (Charts 2 and 3) shows that this downward trend also occurred in 2002, and if the number of diagnoses are expressed as a percentage of the number of batches of game birds examined in the summer months (Chart 4), it is apparent that there has been a reduction in the percentage of submissions with these diagnoses since 2000.

**Chart 2. Diagnoses of infection with motile protozoa in game birds submitted to SAC 2001-2004**



**Chart 3. Diagnoses of infection with motile protozoa in game birds submitted to SAC in June to September 1998-2004**

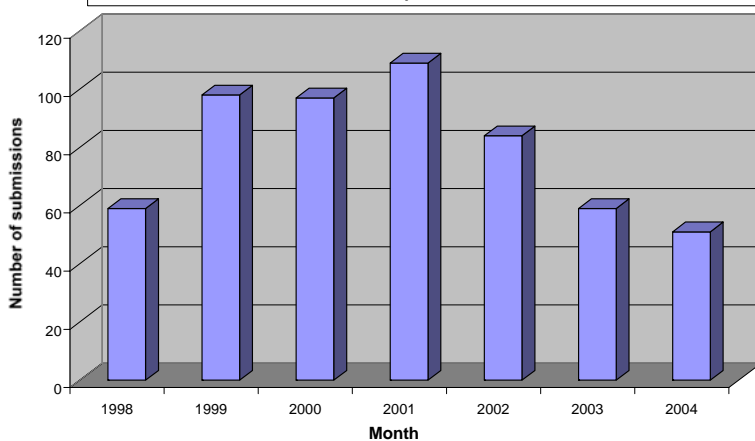
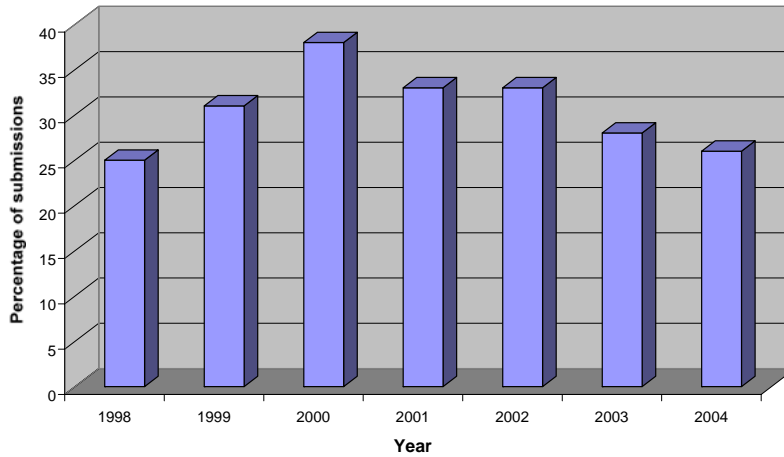


Chart 4. Diagnoses of infection with motile protozoa as a percentage of game birds submitted to SAC in June to September

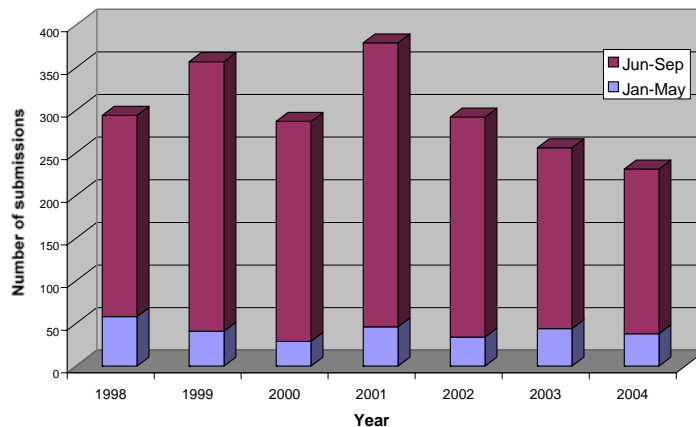


There are a number of possible explanations for these reductions:

- The reduction in incidents recorded by VIDA may reflect a real reduction in the number of incidents, due to factors such as improved hygiene, improved management, and greater use of in-feed tetracyclines as a preventative measure.
- The reduction in incidents recorded by VIDA may reflect a reduction in the severity of the cases, for the reasons suggested above, with initial diagnosis by the gamekeeper or vet on clinical grounds followed by a good response to treatment (tetracyclines in the water), obviating any need for back-up *post mortem* examinations.
- The reduction in incidents recorded by VIDA may reflect an increase in *post mortem* examinations carried out by the private veterinary surgeon instead of SAC.

Any or all of the above factors could explain the reduction in game bird submissions in June to September since 2001 (Chart 5), the reduction in the percentage of submissions in which infections with motile protozoa were recorded as the major diagnosis (Chart 4), and the reduction in the actual number of submissions in which infections with motile protozoa were recorded as the major diagnosis (Chart 3).

Chart 5. Submissions of batches of game bird carcasses to SAC in January to September 1998-2004



In conclusion, there is no evidence that the reduced availability of dimetridazole has adversely affected the welfare of reared game birds by increasing the incidence of the protozoal diseases hexamitiasis and trichomoniasis. On the contrary, the figures suggest that despite the reduction in the availability of dimetridazole, gamekeepers and their veterinary advisers have improved their techniques for controlling these diseases, with less need for *post mortem* back-up from SAC Veterinary Services.

Nevertheless, if this has been achieved by increased usage of tetracycline antibiotics, which are not licensed for use in the feed or water of game birds, alternative problems could arise related to the overuse of antimicrobials and observance of appropriate withdrawal times.

There would be merit in following up these results with a series of interviews or questionnaires directed at gamebird rearers, their veterinary advisers, and game feed suppliers. During all contacts with game bird rearers, their responsibility to record medicine usage and observe appropriate withdrawal times should be stressed, as required by law and as stipulated in the Game Farmers' Association Code of Practice 2003.

## **References**

Pennycott, T.W. (1997) Game bird diseases – the need for more research. *The Game Conservancy Trust Review*, **28**, 63-65

Pennycott, T.W. (1999) Studies on *Trichomonas*, *Hexamita* and *Blastocystis* in pheasants. *SAC Animal and Food Sciences Research Report 1998*, 18-20

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