House of Commons

Public Accounts Committee

The health of livestock and honeybees in England

Thirty–sixth Report of Session 2008–09

Report, together with formal minutes, oral and written evidence

Ordered by the House of Commons
to be printed 17 June 2009

HC 366
Published on 14 July 2009
by authority of the House of Commons
London: The Stationery Office Limited
£0.00

The Public Accounts Committee

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Committee staff

The current staff of the Committee is Mark Etherton (Clerk), Lorna Horton (Senior Committee Assistant), Pam Morris (Committee Assistant), Jane Lauder (Committee Assistant) and Alex Paterson (Media Officer).

Contacts

All correspondence should be addressed to the Clerk, Committee of Public Accounts, House of Commons, 7 Millbank, London SW1P 3JA. The telephone number for general enquiries is 020 7219 5708; the Committee's email address is pubaccom@parliament.uk.

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Summary

Animal disease can have a significant impact on the farming industry and the wider rural economy. The incidence of Bovine Tuberculosis and of honeybee losses continues to increase, and the actions by the Department for Environment, Food and Rural Affairs (the Department) to tackle these issues cost £80 million and £1.5 million respectively in 2007–08. Whilst cattle and honeybees are plainly very different, the challenges facing the Department in halting the rising number of cases of disease are similar.

Around 39 commercial crops grown in Great Britain, with an estimated value of some £200 million a year to the agricultural economy, rely on insect pollination. There are around 250,000 colonies of honeybees in England and Wales. Beekeepers are reporting an increasing frequency of losses, a trend also reflected in findings from the Department's inspections of hives. There are four notifiable bee diseases and pests in England and Wales, and cold, wet weather may also be a factor in colony death. Reports of a new threat of Colony Collapse Disorder may be the result of a combination of factors, such as changes to habitat or food supply.

Despite their importance to the agricultural economy the Department has given little priority to bee health. In 2007–08, research expenditure in this field was just £200,000. In 2009, the Department announced that this sum is to be supplemented by an extra £2.5 million over five years, but this additional work to support the Department's new Bee Health Strategy will be diluted by including research into other pollinator insects as well as honeybees.

Regular inspections of colonies enable the Department to monitor the health of colonies and the incidence of disease and parasites. Nearly 80% of cases of notifiable disease in England are identified through such inspections. The effectiveness of these inspections is hampered because around half of the estimated 37,000 active beekeepers in England have not joined the Department's voluntary register, BeeBase. In marked contrast to registered beekeepers, very few reports of notifiable disease are made by previously unregistered keepers. Scotland has little reported disease, with only three detected cases in the last ten years, compared with 8,071 in England and 463 in Wales.

Bovine Tuberculosis has a major foothold in England and Wales, particularly in the South West. Between 2002 and 2007, an average of 16,500 cattle were slaughtered each year as a result of the disease. The Department is not enforcing the cattle testing regime rigorously. The reservoir of disease in wild animal populations is thought to play a significant, although unquantifiable, role in disease incidence, but more rigorous bio-security measures might help to limit the impact. The Department has made little progress in setting out recognised standards for bio-security and in sharing the costs of tackling disease with those farmers who do not maintain proper farm bio-security or who fail to practise good animal husbandry. This is despite recommendations arising from our examination of the Department's handling of the Foot and Mouth Disease outbreak of 2001. Working more openly and effectively with farmers and local veterinarians, for example, by sharing farm level risk assessments, might help to limit incidence of notifiable disease.

On the basis of a report by the Comptroller and Auditor General,[1] we examined the Department on what measures it is taking to prevent, identify and control notifiable diseases affecting livestock and honeybees.

1 C&AG's Report, *The health of livestock and honeybees in England*, HC (2008–09) 288

Conclusions and recommendations

1. **Success in tackling disease incidence in honeybees and livestock will require the Department to work more collaboratively with farmers, beekeepers and leading academic researchers in these areas.** The Department should pilot local consultative arrangements in livestock disease hotspots involving farmers, veterinarians and local authorities to adopt a collaborative approach to risk assessment, preventative actions and enforcement. A similar approach between beekeepers and the Department's inspectors would help to involve the key stakeholders actively in minimising risks and enforcing good bee husbandry in local areas. Before allocating its new honeybee research funding, the Department should discuss priorities with beekeeping associations and leading academic researchers in this area.

2. **By widening the focus of the additional research funding to cover other pollinating insects as well as honeybees, work into the underlying causes of the decline in honeybee numbers might not be enough to reverse this trend.** The Department should specify which aspects of honeybee health it plans to research and what proportion of the additional funds are likely to be ring-fenced for this purpose.

3. **Adopting rigorous bio-security measures might limit disease impact and incidence, but the Department has made little progress in establishing minimum standards of bio-security with the farming industry to allow for effective farm risk assessment.** In consultation with the farming industry and veterinarians from farming practices, the Department and its Agency, Animal Health, should develop bio-security guidelines and standards appropriate to different livestock sectors sufficient to enable Animal Health Officers to assess the risk exposure on each farm.

4. **The Department has failed to implement a cost sharing compensation system for farmers which takes account of farmers' actions to prevent and minimise the risk of disease.** In our Ninth Report of Session 2005–06,[2] we recommended that the Department should make quick progress on consultation on a levy scheme which would transfer the cost of future disease outbreaks from the taxpayer to farmers, and provide incentives to improve farm bio-security by, for example, linking the levy contribution to bio-security standards on the farm. Three or more years later the Department's consultations are still ongoing. The Department should establish a firm timetable to bring implementation of such a scheme to an urgent conclusion.

5. **The Department should enforce rigorously the compulsory testing regimes and the timely testing of contiguous farms, to minimise the risk of disease spread and the impact for neighbouring farms where a farmer resists inspection.** Animal Health should work with local authorities to determine the level of enforcement actions available and to agree the circumstances which trigger enforcement action. The latter should take account of the wider risk of disease spread and the potential inconvenience for neighbouring farms which non-compliance causes.

2 Committee of Public Accounts, Ninth Report of Session 2005–06, *Foot and Mouth Disease: Applying the Lessons*, HC 564

6. **Only half of active beekeepers are registered with the Department and subject to the Department's inspection regime because, unlike in some other countries, registration is not compulsory.** In maintaining a voluntary approach to registration and inspection, the Department should develop a strategy to increase significantly the number of registered beekeepers. This would enable it to enhance its data on bee disease incidence and better target advice on good husbandry and its research programme.

7. **Reports of notifiable disease in honeybees are much lower in Scotland than in England and Wales, but the Department has no strategy for collaborating with the devolved administration in Scotland to manage the risks to honeybee colonies across the United Kingdom.** The Department should work with bee inspectors and bee keepers in Scotland to obtain a greater understanding of the incidence of disease and colony loss, and to establish a common system for registering beekeepers and for measuring and reporting disease.

8. **Farmers can be subject to numerous unco-ordinated inspections from central and local government bodies, alongside inspections arising from independent quality assurance schemes and food buyers such as the major supermarkets.** The Department should take the lead in co-ordinating routine inspection visits carried out by the public bodies it sponsors, and facilitate information sharing between them and local authorities to minimise disruption to farmers.

1 The health of honeybees in England

1. The estimated 250,000 colonies of honeybees in England and Wales play a valuable role in pollinating crops, wildflowers and garden plants. At least 39 commercial crops grown in Great Britain rely on insect pollination, most notably apples, runner beans and dwarf beans. The contribution of honeybees as pollinators of these crops is estimated to be worth some £200 million a year to the British agricultural economy. The Department for Environment, Food and Rural Affairs (the Department) is responsible for protecting the health of honeybees, and in 2007–08 it spent some £1.5 million on inspecting hives, providing advice and undertaking research.[3]

2. In recent years, beekeepers have reported unusually high colony losses. Inspectors from the Department's National Bee Unit found some 7–8% of colonies dead, and the percentage has been increasing over the last few years. Across Europe, America and the Antipodes losses range from 5–10% up to 40–50% in some areas. There are four notifiable diseases and pests in England and Wales which can weaken or kill honeybee colonies.[4] A further severe challenge is presented by Varroa, a parasitic mite which, having become endemic, ceased to be notifiable in England in 2006.

3. Researchers are attempting to establish a pattern for honeybee losses, but the reasons are not yet well understood. There is no evidence that losses of honeybee colonies are linked to mobile phones or phone masts. Weather may be a factor. Honeybees are adversely affected by cold and wet weather, and losses over winter may amount to up to 30% of colonies.[5] There are also reports that a new threat, Colony Collapse Disorder, is affecting honeybees in the United States of America. There is no evidence that the increased losses in the United Kingdom are due to Colony Collapse Disorder, which may involve a combination of factors including habitat, food supply and disease.[6]

4. The Department has not regarded honeybee health as a high priority. In 2007–08, the Department spent just £200,000 on research into honeybee health, and £130,000 for other research broadly relevant to honeybees. In 2008–09, the Department committed an additional £120,000 specifically to investigate why colony losses had increased. In January 2009, the Department announced an expanded research programme in support of its new Bee Health Strategy. The Department has committed £2.5 million additional funding for research over the next five years, having reduced expenditure on animal health and, in particular, on the control of Transmissible Spongiform Encephalopathies. Funding for the new research programme will be supplemented by monies from partners such as the Biotechnology and Biological Sciences Research Council. The Department has not yet outlined the precise focus of how the research money should be utilised, but the research is likely to focus on the role of all pollinators rather than just honeybees. The Biotechnology

3 Qq 13–16, 29; C&AG's Report, paras 3, 1.3

4 The two notifiable diseases and two notifiable pests affecting honeybees in England are: American Foulbrood; European Foulbrood; Asian Honeybee mite (Tropilaelaps); and Small Hive Beetle.

5 Qq 8, 68–69; C&AG's Report, paras 3, 1.7, 4.1, 4.11

6 Qq 8, 22–23, 26, 70–71

and Biological Sciences Research Council plans to invite applications for insect pollinator research in July 2009.[7]

5. The Department's National Bee Unit maintains a voluntary register of beekeepers called BeeBase, which contained some 17,000 active beekeepers in December 2008, managing 93,000 colonies. Registered beekeepers are estimated to represent only about half of all active beekeepers and are subject to the Department's programme of routine inspections. Nearly 80% of reported cases of notifiable disease in England and Wales are found during these inspections. The other 20% of cases are identified and notified to the Department by beekeepers. Very little notifiable disease is reported by unregistered beekeepers, with only 14 such cases or 3%, of all reported notifiable diseases in 2008.[8]

6. In some countries, such as France, Belgium and New Zealand, registration is compulsory. The Department is reluctant to adopt a regulated approach as the majority of beekeepers in England keep bees as a hobby. It aims instead to work in partnership with organisations such as the British Beekeepers' Association and local associations to encourage beekeepers to register voluntarily. In 2008, 2,686 new beekeepers were added to BeeBase. The Department has increased funding to the National Bee Unit by £1.1 million over the next two years, which will help pay for inspectors and communications to encourage more beekeepers to register. Despite the Department's stated aims, the British Beekeepers' Association has raised concerns that the Department has not yet engaged sufficiently with them to encourage registration. Having announced the expanded research programme into honeybee health, the Department had not met with the British Beekeepers' Association to discuss research priorities, despite requests and Ministerial support. Similarly, the University of Sussex raised concerns that the focus of the additional funding towards honeybee health research might not adequately take account of existing expertise available in the United Kingdom.[9]

7. The Department has 37 bee inspectors in England, who play an important role in identifying and treating honeybee diseases. Beekeepers are on the whole very satisfied with the diagnosis and treatment service the inspectors provide. On average there were 32 inspections per 100 registered beekeepers in England in 2008 (**Figure 1**) although the average number varies across the regions, with each inspector in the South East undertaking on average 39 inspections per 100 beekeepers and those in the Northern region 26 inspections. The Department is increasing the hours worked by part-time inspectors and recruiting additional inspectors.[10]

8. In Wales, the National Bee Unit relies on nine inspectors under a Memorandum of Understanding with the Welsh Assembly Government. The National Bee Unit produces leaflets on honeybee health in both English and Welsh, and beekeepers in Wales can also request a visit from a Welsh-speaking bee inspector. The National Bee Unit's website is not, however, bilingual. There are separate arrangements in Scotland, where bee inspectors are part of a general inspectorate rather than a specialist unit like the National Bee Unit.

7 Qq 2–3, 10, 15, 27, 82, 89; BBSRC Funding News (www.bbsrc.ac.uk/funding/news/index.html)

8 Qq 4, 37; C&AG's Report, paras 4.2, 4.10

9 Qq 3–6, 17–19, 28, 82; C&AG's Report, para 4; Ev 19

10 Q 6; C&AG's Report, para 4.9

Levels of reported disease in Scotland are significantly lower than in England and Wales. There were only three detected cases of notifiable disease reported in Scotland in the last ten years compared with 8,071 in England and 463 in Wales. The Department could not explain why the level of reported disease in Scotland was so much lower than in England, and whether there was a risk of disease which had not been identified.[11]

Figure 1: Inspections per 100 registered beekeepers in England, 2008

Region	Number of completed inspections	Number of currently registered beekeepers	Annual number of inspections per 100 registered beekeepers
Northern	375	1,418	26
North East	497	1,815	27
Southern	632	2,176	29
Western	619	1,986	31
Eastern	1,066	3,325	32
South West	750	2,259	33
South East	825	2,139	39
Total	**4,764**	**15,118**	**Average 32**

Note: The average was calculated by dividing the number of inspections by the number of beekeepers and multiplying by 100. The result was rounded to the nearest integer.

Source: C&AG's Report, Figure 15

11 Qq 58, 60, 62, 64–67, 116–117; C&AG's Report, paras 4, 4.18

2 The control of Bovine Tuberculosis

9. The 2001 Foot and Mouth Disease epidemic demonstrated the severe impact that animal disease can cause. The wider impact on the farming industry, tourism and the rural economy is estimated to have cost some £5 billion, and dealing with the epidemic is estimated to have cost the Government about £3 billion. The Department has overall government responsibility for implementing legislation protecting farm animals, and Animal Health is the Department's lead delivery body for putting policy on animal health and welfare into effect.[12]

10. There are 39 serious diseases that threaten farm animals, of which Bovine Tuberculosis is the main one with a foothold in England and Wales. Bovine Tuberculosis is a disease which affects farm animals, but can also infect badgers, goats, deer and other mammals. The disease can be transmitted to humans, but the risk is minimal if the public avoid unpasteurised milk from infected animals. The incidence of Bovine Tuberculosis continues to spread in hot spot areas in the South West of England. The number of cattle tests conducted each year for Bovine Tuberculosis in England has increased from two million in 2007 to over four million in 2007, and the percentage of cattle testing positive for the disease has increased from 0.21% to 0.43% in the same period. The number of cattle slaughtered as a consequence has risen from an average of 4,720 cases a year between 1998 and 2001, to an average of 16,500 cases between 2002 and 2007.[13]

11. Managing Bovine Tuberculosis costs taxpayers some £80 million a year (**Figure 2**). This cost includes expenditure on testing and surveillance, compensation paid to farmers for compulsorily slaughtered cattle, and research. The true cost may be higher as activities such as surveillance relate to livestock more generally. As they cannot be attributed to specific diseases, they are not included in the estimate. Existing spending on Bovine Tuberculosis comprises some 10% of the Department's total expenditure on managing animal diseases, and the Secretary of State announced recently a further £20 million spending to develop a vaccine.[14]

12. Incidence of Bovine Tuberculosis is associated with disease among wildlife, including the native badger population, but the Department is unable to confirm whether there is a causal link between the growth of the badger population and increased incidence of the disease in cattle. The Independent Scientific Advisory Group, informed by the earlier study led by Professor John Krebs, concluded that the reservoir of disease in wild animal populations plays a significant but unquantifiable role. Local factors such as animal movement, different landscapes or husbandry practices all play a part.[15]

12 C&AG's Report, paras 1.1, 1.4

13 Q 57; C&AG's Report, paras 3.2, 3.5, 3.14

14 Qq 99, 118, 130; C&AG's Report, para 3.6

15 Qq 95–98, 132–134; C&AG's Report, Appendix 3

Figure 2: The Department's expenditure on managing Bovine Tuberculosis

ACTIVITY	1998/99 (£m)	1999/00 (£m)	2000/01 (£m)	2001/02 (£m)	2002/03 (£m)	2003/04 (£m)	2004/05 (£m)	2005/06 (£m)	2006/07 (£m)	2007/08[1] (£m)
Cattle Testing	7.3	17.6	13.3	5.4	24.7	33.2	36.4	36.7	37.8	32.6
Compensation	2.3	4.8	5.6	6.2	24.7	24.3	24.1	30.1	14.5	16.8
Randomised Badger Culling Trial	2.9	4.6	6.6	6.0	6.6	7.3	7.2	6.2	1.63	0.03
Surveillance activity by the Veterinary Laboratories Agency	1.9	2.4	3.5	3.7	4.1	5.3	4.9	7.5	6.4	7.9
Other Research[2]	2.5	3.8	5.3	6.1	6.5	7.0	5.7	6.5	7.8	8.5
HQ/Overheads	6.7	4.5	0.9	0.1	0.7	1.0	1.3	1.8	1.7	1.2
TOTALS	**23.6**	**37.7**	**35.2**	**27.5**	**67.2**	**78.1**	**79.6**	**88.8**	**69.9**	**67.0**

[1] 2007/08 figures are provisional and subject to change

[2] Figure does not include research into culling methods or the badger population survey (£709.4k in 2005–06 and £834.7k in 2006–07)

Notes:
1. Cattle testing—the cost of carrying out the testing of cattle for TB by arranging, assessing and monitoring tests, conducting investigations of incident herds and diagnostic testing by Local Veterinary Inspectors on behalf of Defra. **NB:** These costs include Scotland and Wales (funded by Defra).
2. Compensation—includes payments for 'reactors' and 'contact animals' which are compulsorily slaughtered. **NB:** The figures provided are for England only; compensation costs in Scotland and Wales are funded by their respective Governments.
3. Surveillance activity by the VLA—includes all Defra funded work carried out by the Veterinary Laboratories Agency relating to TB in cattle and badgers including the supply of tuberculin.
4. HQ/overheads—includes staff costs for veterinary advice and administration of TB policy in England only.

Source: Ev 15

13. There are still no deterrents for farmers who fail to implement effective minimum standards of bio-security, despite a recommendation made in our report, *Foot and Mouth Disease: Applying the Lessons*, in November 2005. Currently farmers receive compensation for cattle slaughtered, but the amount paid does not take account of the farmer's actions to prevent or minimise disease risk and to implement good standards of bio-security and animal husbandry. There are no national bio-security standards against which to assess farms. The Department is looking to strengthen the financial incentives for the farming industry to take responsibility for managing disease risk, and to share the costs of outbreaks as well as surveillance and research. In 2003, the Committee of Public Accounts recommended that the Department pursue similar measures, but since then the Department has undertaken only two rounds of consultations on its proposals for responsibility and cost sharing.[16]

14. When an outbreak of Bovine Tuberculosis occurs, inspectors from the Animal Health Agency visit the farm to assess the potential source of the disease and the adequacy of preventive measures in place. Inspectors have an opportunity to discuss bio-security measures appropriate to their local circumstances with the farmer. The National Audit

16 Qq 38–40, 42, 44–48, 51, 54–55; C&AG's Report, paras 13, 5.6; Committee of Public Accounts, Fifth Report of Session 2002–03, *The 2001 Outbreak of Foot and Mouth Disease,* HC 487, recommendation (xi); *Foot and Mouth Disease: Applying the Lessons,* recommendation 6

Office found that for 20 farms sampled, records of assessments were not always complete. Only a third of the records showed evidence that inspectors had advised on reducing bio-security risks. Local veterinarians consulted by the National Audit Office also suggested that there is scope for farmers to adopt more rigorous bio-security measures, and for the sharing of farm level risk assessments between Animal Health, farmers and veterinarians.[17]

15. The Department has worked effectively with the farming industry to tackle some diseases, such as Bluetongue, but many farmers consider that there is no effective partnership with the Department on Bovine Tuberculosis. This weakness threatens to undermine other parts of the Bovine Tuberculosis testing and surveillance regime. Some farmers have been reluctant to co-operate with the testing regime because of concerns about whether the outcome will include compulsory culling of their animals, or other disruption to their business. In such cases the Department has placed the herd under movement restrictions. It then discusses with the farmer the reasons for the delay in testing but does not generally take action to enforce compliance. Its rationale for this approach is that the disease spreads relatively slowly and the risk to public health is low. To mitigate the risk of disease spreading, the Agency carries out a separate assessment of the risk to contiguous farms but there is no target time for carrying out tests on neighbouring farms. Where the veterinary assessment is that there is a high risk of the spread of disease, tests will be carried out as soon as possible, but in other cases neighbouring farms may not be tested for six or 12 months. The Department has no monitoring system in place to check that the required testing on contiguous farms has been completed.[18]

16. Inspections and visits to farms are poorly coordinated between government agencies. One farmer, for example, calculated that he had received some 98 visits in a year, or about two a week, from government agencies, supermarkets and others. Co ordination and information sharing between government agencies is hampered because the IT systems they use cannot communicate effectively. In Scotland, an account manager approach is being considered to better co-ordinate the different agencies which deal with land managers. There are no plans to develop a similar approach in England.[19]

17 Q 122; C&AG's Report, paras 5.6, 5.10–5.11

18 Qq 56–57, 100; C&AG's Report, paras 3.8–3.9

19 Q 128; C&AG's Report, para 5.14–5.15

Formal Minutes

Wednesday 17 June 2009

Members present:

Mr Edward Leigh, in the Chair

Mr Richard Bacon
Mr Ian Davidson
Rt Hon Keith Hill

Draft Report (*The health of livestock and honeybees in England*), proposed by the Chairman, brought up and read.

Ordered, That the draft Report be read a second time, paragraph by paragraph.

Paragraphs 1 to 16 read and agreed to.

Conclusions and recommendations read and agreed to.

Summary read and agreed to.

Resolved, That the Report be the Thirty-sixth Report of the Committee to the House.

Ordered, That the Chairman make the Report to the House.

[Adjourned till Wednesday 24 June at 3.30 pm

Witnesses

Wednesday 18 March 2009

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Oral evidence

Taken before the Committee of Public Accounts

on Wednesday 18 March 2009

Members present:

Mr Edward Leigh, in the Chair

Mr Richard Bacon	Geraldine Smith
Mr Ian Davidson	Mr Don Touhig
Nigel Griffiths	Mr Alan Williams

Mr Tim Burr, Comptroller and Auditor General, **Ms Wendy Kenway-Smith,** Assistant Auditor General, and **Mr Philip Gibby,** Director, National Audit Office, were in attendance.

Mr Marius Gallaher, Alternate Treasury Officer of Accounts, H M Treasury, was in attendance.

REPORT BY THE COMPTROLLER AND AUDITOR GENERAL THE HEALTH OF LIVESTOCK AND HONEYBEES IN ENGLAND (HC 288)

Witnesses: **Dame Helen Ghosh, DCB**, Permanent Secretary, **Ms Katrina Williams**, Director General Food and Farming, **Dr Stephen Hunter**, Deputy Director, Plant and Bee Health, DEFRA, and **Ms Catherine Brown**, Chief Executive, Animal Health, gave evidence.

Q1 Chairman: Good afternoon and welcome to the Public Accounts Committee, where today we are considering the Comptroller and Auditor General's Report on the health of livestock and honeybees in England. We welcome back to our Committee Dame Helen Ghosh, the Permanent Secretary of the Department for Environment, Food and Rural Affairs, Ms Catherine Brown, the Chief Executive of Animal Health, Mr Adrian Belton, who is the Chief Executive of the Central Science Laboratory and is responsible for the National Bee Unit and Nigel Gibbens, the Chief Veterinary Officer. I have the wrong text. I just read it out and do as I am told.
Dame Helen Ghosh: You have indeed Catherine and myself. Can I introduce Katrina Williams, who is the Director General for Food and Farming in Defra, and Stephen Hunter who is the Deputy Director for Plant & Bee Health in Defra, and who is our bee expert.

Q2 Chairman: You are all very welcome anyway. I am particularly interested in the health of bee population and I asked the National Audit Office to look at this and they have done a very good Report. It is part of something I think we should do more often in this Committee, which is to raise public consciousness of particular issues. I want to ask a question about these, if I may. If we look at paragraph 5.20 on page 40, we can see that the Department spent £200,000 on research into honeybee health. It seems very little to me. One of the reasons why I took an interest—and I am sure this is apocryphal—is that somebody told me if every bee died, the world would come to an end within three years, so bees are extremely important. Why are you only spending £200,000 on research? I was told also by a colleague who has just walked into this committee room that not even all of that £200,000 is spent on bees; some of it is spent on pollination generally.
Dame Helen Ghosh: We absolutely share your concern and interest in the health of the bee population, Chairman, both from the point of view as producers of honey but also from the point of view of their role as pollinators. I think one of the interesting things in the Report is the emphasis it gives to the role of the honeybee as a pollinator. You are quite right to quote the figures for our historic level of research on bees but since the Report was produced, as you may be aware, Hilary Benn and Jane Kennedy announced a Healthy Bees Plan, which is our plan for taking forward both the husbandry and disease control in the bee population but also research, and announced significant additional amounts of money for research, a total from the Defra side of £500,000 a year for the next five years, to be supplemented by contributions from partners. We will soon be able to announce the total figure in research over the next five years, and we will be doing work to put together a research programme that meets our needs. Stephen will be able to tell us a bit more about what kinds of things that will be looking at.

Q3 Chairman: We have had a letter from Sussex University: "At Sussex we are urging the Government to heed the NAO's recommendation that new investment must be directed into strategic research led by Higher Education institutions into honeybee health, such as the work underway at Sussex." Does it make sense to you?
Dame Helen Ghosh: I will ask Stephen to comment on the detail. The programme of research will probably be led and coordinated by the Biotechnology and Biological Sciences Research Council (BBSRC) which is obviously very well

plugged into higher education and research. We have yet to decide the precise parameters, precisely what it will be focusing on and who will be involved but, of course, any bid from the University of Sussex will be fed into the process.

Q4 Chairman: I am a bit worried about paragraph 4.2 on page 30. "There are around 37,000 beekeepers in England and Wales, although the figures are only approximate. It"—that is you—"has not made registration compulsory for beekeepers, although other countries such as Belgium, France and New Zealand have done so. There were 17,000 active beekeepers in England and Wales registered on the Department's database in December 2008, managing 93,000 colonies, which represents nearly half of the estimated total number of beekeepers." I am not asking you today to make it compulsory for all beekeepers to be registered but, clearly, you have to do a lot more to encourage them to register, do you not? It is quite worrying, is it not?
Dame Helen Ghosh: Indeed, and one element of the Bee Health Plan is to do precisely that. We share your doubts about whether a compulsory approach is the right one but we do believe strongly in working in partnership, particularly with organisations like the British Beekeepers' Association. The National Bee Unit has done some interesting pilots which are mentioned in the Report on how we can encourage more amateur beekeepers, which is the vast majority of the figures you quote, to register and benefit from the services that we can provide and that looks very successful. One of the things we are aiming to do with the money, alongside the additional research money, we are putting additional money into the National Bee Unit, £1.1 million over the next two years, and that will finance this programme to get people out, to get inspectors out and communications out to get more people registered on BeeBase.

Q5 Chairman: We are never going to control honeybee health unless we know where they all are. It is obvious. We have a huge problem at the moment.
Dame Helen Ghosh: That is exactly why one of the first phases of the plan is to get people registered and, I must say, the kind of coverage we got for the Bee Health Plan encouraging beekeepers to come forward and register was extremely useful from that point of view.

Q6 Chairman: This is all part of what I am trying to encourage as well. If we look at paragraph 4.7, I was surprised to see that the Department only has 37 bee inspectors. That is not a lot, is it? "On average, there were 32 inspections per 100 registered beekeepers in England in 2008". Again, that is not a lot, is it?
Dame Helen Ghosh: No, and that is why we are putting more money in. Stephen, would you like to say a bit more about how we will use that money to get more inspectors out and about.
Dr Hunter: The current workforce, as you indicate, is about 37. We are increasing the hours of all those people, who are part-time at the moment, and supplementing them with some more inspectors, and their aim is very much to seek out those beekeepers who are not currently registered with us so we can get a much more accurate idea of who is keeping bees and, perhaps more importantly, the state of health of their hives.

Q7 Chairman: There are other, more worrying things. If we look at paragraph 4.10 at the top of page 33, ". . . only around one in five cases are notified by beekeepers themselves. In particular, only 14 cases in 2008 (three per cent) were from beekeepers who had not until then registered with BeeBase." Given that we have this massive problem with disease, do you not find that as alarming as I do?
Dr Hunter: That is why we are putting a lot more effort into finding what the real position is out there and, yes, we do want to know exactly what the problems are out there because it is often anecdotal evidence at the moment, nothing very quantitative.

Q8 Chairman: We are obviously doing some good but, given the size of this problem and the importance of this issue, I was surprised that you were somewhat tardy in taking action on this.
Dame Helen Ghosh: As you will know, Chairman, from your previous debates with me and with other Permanent Secretaries, there is an issue about where you put money and, when times are tight, how you set your priorities. I think what has become clear to Ministers is that—again, it has been well publicised—clearly, there has been an increased loss of colonies. We are not sure exactly what the reason for that is. As you were saying, there clearly has been a spread of some diseases, such as Varroa, which has undermined health. Weather may be a factor, the kind of husbandry people do, and we really need to get to the bottom of why that is and what the factors are, which is why our Ministers have decided to put this significant extra boost into funding both on research and inspection.

Q9 Chairman: But Varroa has been around for some time. We can talk about Varroa. This is mentioned in paragraph 4.11. "The Department has no strategy to eradicate Varroa, which it does not believe is possible. Instead, it promotes Varroa control as a routine part of honeybee husbandry to keep the level of Varroa at manageable levels." Varroa is a kind of mite which settles on these bees. Apparently, as far as a bee is concerned, it is the size of a dinner plate, so it is pretty exhausting for the poor bee, especially when they are covered with these things. Beekeepers in my constituency have been telling me for years about Varroa. It is simply not good enough to say that you have no strategy to eradicate it. All diseases can be eradicated. I am told by the National Audit Office, by the way, that apparently the Asian bees are better at self-grooming than the British bees. Is that right? I am astonished you do not know the answer to these simple questions!
Dr Hunter: The Asian bee, which, of course, is a different species—and so it is not the same species of bee—is better at grooming and therefore there are

different levels of infection of the mite there. We know that nobody in the world has managed to eradicate Varroa, and where it has been introduced it becomes a management issue for beekeepers. There is no known way of eradicating it. When we took on Varroa as a problem in the early Nineties, we have advised and develop strategies for dealing with Varroa as a disease. What has happened is some of the chemicals that we advise use of the mites have now become resistant to. Mites develop resistance very rapidly in these sorts of areas and we are working at the moment with the industry and others to develop alternatives, both chemical and non-chemical methods of managing these problems—and it is a management problem; it is not about eradication.

Q10 Chairman: You see, I wonder, Dame Helen, whether you were complacent about this because if we look at paragraph 1.7 on page 12 you see, "The beekeepers we—that is the NAO—surveyed reported an average loss of 30% of their colonies." That is terrifying, is it not? Then lower down that paragraph it says, "In 2008 inspectors"—that is your inspectors—"found that 9.22% of inspected colonies in England were dead." I just wonder if you took your eye off the ball and believed your own inspectors. In fact, from the work the National Audit Office has done, this could be a much bigger problem than you thought.
Dame Helen Ghosh: As I said earlier, Chairman, in a sense, I am admitting that we were not necessarily giving this the high priority that we should have done but, now that the evidence is becoming clearer, partly from the work that our excellent team of bee inspectors were already doing but also through the information we were getting back from the various representative groups, we have taken the decision to put these significant extra resources in to both get to the root of what the problem actually is, to get people registered on BeeBase and get the kinds of very good information we have about good husbandry, which is absolutely key to this, out there among this group of beekeepers.

Q11 Chairman: You keep saying the same thing and I will keep hammering you to try and get more publicity for this. All right?
Dame Helen Ghosh: Yes.

Q12 Chairman: Paragraph 4.16. The National Bee Unit examined 63 consignments and found disease or pests present in 24." That is 38%. That is pretty worrying as well, is it not? What do you think about this?
Dame Helen Ghosh: This, of course, is an issue about how we inspect imports, which is the whole issue—and I suspect we may touch on this later in the hearing. One of our preventative tools is the effort we put into inspection and control at the borders. So this is an element of our preventative set of tools. I do not know whether Stephen would like to comment on whether we would regard these as representative figures.

Dr Hunter: I think the point to make about this is that these were the findings of disease and pests on these bees, most of which we already have, so they are not subject to control, which would be for those organisms we do not have or where we are controlling them. This is an indication that there is some level of disease amongst bees generally and they would not be things we would take regulatory action on.

Q13 Mr Touhig: Dame Helen, we are told that 39 commercial crops rely on insect pollination and it is estimated that honeybees are worth about £200 million a year to the British agricultural economy.
Dame Helen Ghosh: Yes.

Q14 Mr Touhig: Is any threat to the honeybee a threat to our food chain or our food supply?
Dame Helen Ghosh: The Report quite rightly brings out the important role that honeybees play in pollination and therefore in the food chain, and there is this excellent table on page 45 that highlights the point that actually, the most significant crop that they are a pollinator for is apples, with runner beans and dwarf beans as a runner-up. So those are particular areas where they are—

Q15 Mr Touhig: So cider and greens are at risk then?
Dame Helen Ghosh: However, they are one of many pollinators, and that is why, to return to a point that the Chairman made in his introductory remarks, when we are thinking about the health of the honeybee, we also put it very clearly, because of the role of pollinators in the ecosystems and in food supply, in this broader context. So the money we will be spending will also be looking at pollinators alongside honeybees.

Q16 Mr Touhig: So you do not think it is a threat to the food chain?
Dame Helen Ghosh: I do not believe it is a threat to the food chain.

Q17 Mr Touhig: You do not have a complete database of registered beekeepers. Why do you not have that?
Dame Helen Ghosh: As we were discussing earlier, given the nature of this activity, as you will have seen from the figures in the Report, it is very substantially an amateur activity. What we have done is operate in partnership with people like the British Beekeepers' Association and we have encouraged beekeepers, large and small, to register with us but what we will be able to do as a result of our Healthy Bees Plan is to get more of them out there and the kind of results we have had, I think it is in East Anglia, in using BeeBase, getting one beekeeper to tell us about the others in their area, and therefore drumming up interest in BeeBase, has been fantastically successful. That is the kind of approach we will take going forward and the kind of publicity that this Report will give and the media coverage of course is immensely helpful.

Q18 Mr Touhig: We recognise according to the Report that 39 commercial crops rely on insect pollination. You have pointed out that the honeybee is not a threat to the food supply. However, your approach seems to be the good old-fashioned British one of rubbing along. Why are you not more proactive in creating this database? Is it because it is amateurs?
Dame Helen Ghosh: No.

Q19 Mr Touhig: If it were a farm, you would give them millions of pounds of subsidy.
Dame Helen Ghosh: I think we would say that this is an area, I think—and again, we may come on to it later—where a partnership approach to an industry, or to a group of amateur beekeepers in this case, is the best approach. Heavy-handed regulation does not work but in a variety of fields, whether it is bio-security or our recent success in dealing with bluetongue, actually, partnership works. I am very encouraged by the kind of support we have had from the representative organisations and from a number of funding organisations who put forward money for our new research programme. We believe this works. We believe that this works because we have seen it work in other areas. The example of the poultry register is a good one. There is one element of the poultry register which is compulsory for anyone who keeps more than 50 birds but, increasingly, people are seeing the advantages of being on the poultry register and people with less than 50 birds are putting their hands up and coming forward and registering, which is incredibly valuable. That kind of partnership, voluntary approach is the way we want to go forward.

Q20 Mr Touhig: The Chairman made the point at the beginning when he said the whole of civilisation could be threatened if anything happens to bees.
Dame Helen Ghosh: Indeed.

Q21 Mr Touhig: You seem in your responses to be saying it is not quite that bad but they are an important contributor to our environment, to our food chain and so on and so forth. It seems to me you are rather laid-back about all of this..
Dame Helen Ghosh: I am not at all laid-back. I think the kinds of figures that we are quoting, the increase in spend that we are quoting here and the investment that we are quoting show that we are far from complacent.

Q22 Mr Touhig: What is Colony Collapse Disorder?
Dame Helen Ghosh: I think I will hand over to my specialist. The answer to your question is nobody actually knows.
Dr Hunter: Indeed, there may not be such a thing as Colony Collapse Disorder in terms of a particular issue. What seems to be the case is, in different places at different times, there is a complex of issues affecting beehives, affecting bee colonies, and that is often called Colony Collapse Disorder but the more it has been looked at, particularly in places like the United States, the more—

Q23 Mr Touhig: Do they appear to have a problem?
Dr Hunter: They have a problem, yes, but it seems to be as much about things like food supply and habitat as well as diseases. So it is a complex of issues.

Q24 Mr Touhig: Does it mean these colonies just disappear?
Dr Hunter: They die out, yes.

Q25 Mr Touhig: But you are not certain there is such a thing as Colony Collapse Disorder?
Dr Hunter: Not a specific thing that you could call colony collapse. It is a catch-all.

Q26 Mr Touhig: You are sure there is no such thing happening in the United Kingdom?
Dr Hunter: There are certainly increased losses in colonies, and that is quite clear, although the level of that depends on the figures that you use. There are losses of colonies but there seem to be, as I said, a complex of reasons behind that.

Q27 Mr Touhig: If a beekeeper loses a colony, do they report it to you? It is up to them, I suppose. What action do you take then?
Dr Hunter: If they report it to us, we will investigate as to why it has collapsed. We may be able to find a specific reason for it, or a specific number of reasons, but we will look into that. In fact, over the last year we have committed something like £120,000 of extra government funding specifically looking at colonies that have died out.

Q28 Mr Touhig: The Report points out, and the Chairman touched on it, that in other countries—France, Belgium, New Zealand—they have a compulsory register of beekeepers. Dame Helen, you thought that might not be the right way to go. Why?
Dame Helen Ghosh: I think for the reason I describe. The vast majority of people keeping bees are doing it on an amateur basis and we think that the kinds of partnership approach, using the representative organisations for that particular group of people with that particular kind of interest in keeping bees is much more likely to work than heavy-handed regulation.

Q29 Mr Touhig: We recognise that the bee population is an important part of our whole environment.
Dame Helen Ghosh: Indeed.

Q30 Mr Touhig: They have had these Colony Collapsed Disorders in America but we are not sure they exist but the collapse certainly happens. You have had some loss of colonies. Would it not be helpful to know where all our beekeepers are through a register? It would not be terribly difficult, would it? You seem to be laying stress on the heavy-handed regulation this would be. Could you not put an advert in a local paper saying "If you are beekeeper, you can register"?
Dame Helen Ghosh: Indeed. Effectively, that is what we are doing.

Q31 Mr Touhig: If you paid them a subsidy, I am sure that is what they would do.
Dame Helen Ghosh: I do not think we are offering subsidy. We are offering services that are extremely valuable and when our inspectors go, and indeed, when they do local seminars on bee health and husbandry, they get terrifically positive feedback, which again I think is somewhere in the Report. We hope that the carrot rather than the stick will work, because it has shown it has worked in East Anglia.

Q32 Mr Touhig: Do you keep asking the question "Should we have a compulsory register"? Do you keep asking this?
Dr Hunter: Yes, and we have actually talked to people like the New Zealanders about how well their register actually operates, and the problem is, even with New Zealand and places like France, where it is much more of a commercial operation than it is over here, where we are talking about primarily amateur beekeepers, they find that it is very difficult to keep such a register completely up to date, and then you have the issue of whether you are going to enforce people and, when you are dealing with amateurs, that is much more difficult than with commercial operations.

Q33 Mr Touhig: We see from the Report that the annual number of bee colony inspections varies across England from 26 per 100 beekeepers to 39 per 100 beekeepers. How do you know?
Dr Hunter: Of the beekeepers that we have registered and knowledge of—

Q34 Mr Touhig: But you do not have a register.
Dr Hunter: No, we have BeeBase, which is a voluntary register.

Q35 Mr Touhig: How do you know you are getting 26 or 39 per 100 beekeepers if you do not know how many there are?
Dr Hunter: Of the registered beekeepers, we have an estimate of what the total might be, although we have to say that it is an estimate and no more, but we have a rough idea.

Q36 Mr Touhig: So you do have a register of beekeepers?
Dr Hunter: We have a voluntary register of those people that are registered on that and the latest figures are something in the order of 17,500 people on that register.

Q37 Mr Touhig: Do you have any estimate of how many beekeepers are not registered?
Dr Hunter: Our best estimate is that it may be about half, but part of the work we are going to do over the next couple of years is trying to make sure we get the remainder on, if we can.

Q38 Mr Davidson: I want to ask about livestock. In paragraph 13 on page 7 there is mention of the last Report that we provided in 2005, where we were saying that the Department should introduce effective deterrents for those farmers who would otherwise fail to meet minimum standards of bio-security, but you have not done so. Why have you not done so?
Dame Helen Ghosh: This is the issue about incentives for bio-security?

Q39 Mr Davidson: Yes.
Dame Helen Ghosh: As you will be aware, we have been taking forward a major bit of policy on responsibility and cost-sharing with the industry, with the livestock industry, and inherent in that is the idea that, by sharing both responsibility for some decisions but also the costs, both of surveillance and research but of outbreaks, transferring some of that cost on to the industry, that is an incentive. That is a key incentive to bio-security. So in fact we are taking that forward but we are taking it forward as part of our responsibility and cost-sharing set of proposals.

Q40 Mr Davidson: So you are taking forward the question of incentives but you are not, according to this, taking forward the question of deterrents. Is that correct or is the Report wrong?
Dame Helen Ghosh: The Report is absolutely right. It is not the case that in any particular instance the bio-security status of the farm where the livestock is being kept is generally—there are some extreme circumstances where you could take it into account—taken into account in considering the statutory compensation schemes, but the principle at the heart of the responsibility and cost-sharing proposal is that, effectively, every farmer keeping livestock will have precisely that incentive to have good bio-security.

Q41 Mr Davidson: Yes, I understand what you are saying but that is not the point I am asking you. I am actually asking you a point specifically about deterrents and in paragraph 13 it does actually say that the Committee of Public Accounts recommended that you introduce effective deterrents and the Report says that you have not done so. Can you just clarify for me whether or not there are deterrents, as distinct from incentives, against bad behaviour?
Dame Helen Ghosh: There are no deterrents in the compensation scheme against bad behaviour.

Q42 Mr Davidson: You have no deterrents. We have got that clear. What I originally asked you was why have you not introduced deterrents when the Public Accounts Committee asked you to do so in 2005?
Dame Helen Ghosh: Because we took the view that an incentive approach through the responsibility and cost-sharing proposal was a better way to get the industry as a whole taking responsibility.

Q43 Mr Davidson: So you only provide incentives; you do not provide negative incentives such as deterrents. If we turn to paragraph 15, where it says at the bottom, "There are no explicit financial incentives, for example in compensation payments for removal of diseased animals, to reward high

standards of bio-security." So there are neither incentives nor deterrents in that context. Is that correct?
Dame Helen Ghosh: That is correct but, of course, that is talking about financial deterrents. There are all sorts of business disincentives against the disruption that is caused on a farm where there is an outbreak, or where there is a TB breakdown or whatever it may be.

Q44 Mr Davidson: Yes, if there is an outbreak and things go disastrously wrong, clearly, the farmer will suffer somewhat but the government suffers much more because we compensate the farmers in those circumstances. So it seems this is a one-way bet actually, is it not? If you behave badly, you do not suffer much and your argument is that we will give them money if they behave well. Does that seem balanced to you?
Dame Helen Ghosh: The origin of the idea of compensation for loss of an animal through disease is of course that that is an incentive on the livestock keeper to notify us and to therefore enable us to prevent the disease spreading further, but we absolutely recognise—and I am sorry to sound like a cracked record—that the current system where, as it were, the government is the insurer and, just in the sense of the compensation scheme, there is no financial incentive on the livestock keeper to practise good bio-security is not satisfactory in terms of the taxpayers' responsibility, and that is why we are trying to move to a situation where the industry takes part of the financial responsibility and therefore, in terms of peer group pressure, setting standards, giving advice, will have a real incentive to bio-security.

Q45 Mr Davidson: I understand that. We come then to page 9, paragraph 29(d), at the bottom, where it says that compensation for farmers "does not take into account the efforts farmers make to prevent disease and apply good standards of bio-security and husbandry." So it seems to be that, if you behave badly and something happens, you are compensated anyway. That does not seem to be the most sensible way of dealing with things, does it?
Dame Helen Ghosh: No, and that is why we are moving to our proposals on responsibility and cost-sharing.

Q46 Mr Davidson: Why have you not done it before now?
Dame Helen Ghosh: As you may recall, we have now done two rounds of consultation on the proposals, which are both around setting up a new organisation, some kind of arm's length body, to take the decisions, to take responsibility, to supervise research, surveillance and—

Q47 Mr Davidson: How long do these things take? It seems to me you are just dragging your feet?
Dame Helen Ghosh: The whole issue of how you move from the present situation, where the government is the insurer, and indeed the primary decision taker, to a situation where the industry is taking responsibility for sometimes difficult decisions and part of the cost, is actually both in cultural and behavioural terms pretty challenging.

Q48 Mr Davidson: In cultural and behavioural terms, farmers have been featherbedded for a long period of time. They have been used to having their mouths stuffed with gold by your Department at every opportunity. I do recognise that changing that culture of dependency is difficult but that is not a reason why the Department should not be pursuing it more vigorously, is it?
Dame Helen Ghosh: I would say, given the nature of the challenge to us, we are pursuing it vigorously. We have had two very full consultations. We have had lots of discussions around the country which Katrina led with the livestock industry, some of them very challenging, and we are going to come forward with a—

Q49 Mr Davidson: Challenging means that they do not like having to bear some of the burden and they do not like having the dependency culture challenged. I can understand that but that is what you are there for. You are there to challenge these people, are you not?
Dame Helen Ghosh: And I would say in this instance this is what we are doing. Katrina, what kind of feedback did you get at these events?
Ms Williams: The feedback was indeed, as Helen has said, extremely challenging. That has not stopped us from continuing down this route.

Q50 Mr Davidson: But you have not done it yet, have you?
Ms Williams: To change the framework for compensation will require a change of primary legislation but that is something that will figure in our next consultation on this topic.

Q51 Mr Davidson: Why do you need another consultation?
Ms Williams: In the meantime, we have done a number of things which have transferred costs to the industry, particularly where the industry directly benefits from the money that we spend, and, in tackling bluetongue virus, which is a disease that has principally economic effect, we have effectively worked with the industry so that they bear very directly the costs of tackling the disease.

Q52 Mr Davidson: You are going to have a bit more consultation. I understand that but if you look at paragraph 1.11, it does actually raise exactly this and say that "Similar proposals were previously recommended by the Committee of Public Accounts in their report following the 2001 Foot and Mouth Disease outbreak." That is 2001 and, as I understand it, you are still in the process of consultation. Is that correct?
Ms Williams: We are still in the process of consultation.

Q53 Mr Davidson: Do you think that is acceptable, that from 2001 to now you are still in the process of consultation?
Ms Williams: I think it is important that we have an understanding on the part of the farming industry that, rather than simply offloading costs, we are encouraging them to share the risks of dealing with this.

Q54 Mr Davidson: How long does it take to understand these things? If people do not want to understand things because it will cost them money, then of course they will be challenging, as you described, but does that mean that the Department just backs away, that any time anybody resists something and are challenging, you simply give up and let it drift? That is what it looks like to me.
Dame Helen Ghosh: The point that Katrina makes about bluetongue is actually a wonderful example of being very innovative and in some senses challenging in moving away from the old system. We could have bought the vaccine, we could have paid for the vaccine, we could have had a compulsory system of vaccination, all led from Defra, and we did not. We tried something very different, which worked, and now we have this model of how responsibility and cost-sharing in practice can work and—

Q55 Mr Davidson: How many decades has it taken you to do that?
Dame Helen Ghosh: Well, in terms of the bluetongue virus, it took us from 2006, when we started planning it, through 2007, when it arrived, to now.

Q56 Mr Davidson: You have managed it with bluetongue in three years but you have not managed it in some of these other things. Can I just turn to paragraph 3.8, where it says, "The difficulties in dealing with Bovine Tuberculosis have been compounded by an unwillingness amongst some livestock owners to comply fully with the compulsory testing regime." If there were any other situation in the United Kingdom where stakeholders were refusing to comply fully with a compulsory regime, some sort of action would be taken, would it not? Yet here you just seem to sit back and accept that there is nothing much you can do.
Dame Helen Ghosh: We absolutely do not sit back and think there is nothing we can do. What we do instantaneously is put restrictions on the movement of the animals, and we then move through Catherine's team at Animal Health to talk to the farmers concerned about getting the tests done as quickly as possible. I think a key understanding about TB is that it is not what you might call a wildfire disease that, once identified, if you do not scotch it instantaneously, say if it is something like avian influenza, will spread extremely quickly. In that sense, it is not absolutely time critical. So we have zero tolerance on restricting the herd and we move in as rapidly as possible to discuss with the farmer the reasons—there might be some good reasons—for delays in the test in terms of the availability of animals and I think our success rate is actually, again, since the Report was published, improving.

Q57 Mr Davidson: Just looking at part of paragraph 3.9, where it says that the reluctance of some farmers to cooperate with the testing regime is due to the fact that they might lose money. Further down it says that "Animal Health considers that it is better to deal sensitively with farmers who do not comply with the test regime." Effectively, you are giving people the opportunity to veto participating in such a scheme when it would clearly be to the public benefit. We would not do that with anybody else. We would not want to deal sensitively with burglars or speeding motorists or drunk drivers. Why is it that you are apparently in such fear of farmers that they can get away with this behaviour?
Dame Helen Ghosh: We are absolutely not in fear of farmers and I will ask Catherine to say a bit more about how we proceed in those circumstances. Of course, in every case we have to consider what the risk and benefit is. Clearly, with the exception, for example, of drinking unpasteurised milk, TB is not a threat to public health. That is why with animal diseases that are a threat to public health we act extremely swiftly and resolutely and would enforce. For two reasons, TB is not a threat to public health and, as I say, it is not a disease that spreads like wildfire. The risk is not so high that you would need to go for the very heavy-handed and indeed, as the Report says, lengthy legal approach but we have a variety of ways of getting—
Chairman: We have to stop it there because we are time-limited.

Q58 Nigel Griffiths: I want to focus on the devolved aspects of this, which is covered on page 36 in paragraph 4.18, and this is partly to Dr Hunter. What the NAO have found is that there are three reported cases in Scotland, which seems very much on the low side compared to the 463 in Wales and the 8,071 cases in England. To what do you attribute that?
Dr Hunter: There are of course many fewer beekeepers in Scotland. There are about 2,000. Bee health is a devolved responsibility in Scotland, although we do have very close coordination with them. It may well be that the nature of the disease up there is different in terms of its spread but I have no specific information as to why that particular level rather than the same as us.

Q59 Nigel Griffiths: Approximately how many staff does the National Bee Unit have?
Dr Hunter: The National Bee Unit has 37 inspectors approximately. Those are part-time and it does fluctuate a bit. I am in the process of recruiting some replacements at the moment. In addition to that, there are diagnostic and administrative staff in the unit. There is also a Chief Inspector and there are seven regional inspectors.

Q60 Nigel Griffiths: How many inspectors are there in Scotland? Do you have an idea?

Dr Hunter: They are part of a general inspectorate in Scotland. I am sorry, I could not tell you the exact number and what time they spend on bees specifically.

Q61 Nigel Griffiths: But what you have is a specialist unit, which is lacking in Scotland?
Dr Hunter: Yes. The Scots run it in a different way.

Q62 Nigel Griffiths: I should really put on the record and pay tribute to Peter Wright and Nick Groves-Raines, who live in my constituency, who have been very dedicated amateur beekeepers. I am concerned that there are far more cases in Scotland but we do not know about it. Is that a legitimate concern?
Dr Hunter: I think you would have to address that to the Scottish government inspectors.

Q63 Nigel Griffiths: So your cooperation is close but not close enough?
Dr Hunter: No, we discuss this with our Scottish colleagues. We have no evidence to show that they are missing any substantial amount of disease.

Q64 Chairman: I am just amazed. This is disease. This can spread. The fact that you could not answer Mr Griffiths' questions is, frankly, very alarming. Are you really asking us to believe that there were only three cases of notifiable disease in Scotland in the last ten years?
Dr Hunter: Those are the cases.

Q65 Chairman: You do not know. You have no idea. This so-called co-operation means nothing. We are talking about disease. Disease does not stop at the border between England and Scotland.
Dr Hunter: These notifiable diseases spread from sources. It is perfectly possible, because there are areas of the UK where there is a very low level of these diseases, that Scotland is like that.

Q66 Chairman: You are now just guessing, are you not?
Dr Hunter: No. I am relying on the evidence that my Scottish colleagues tell us each time we meet them.

Q67 Chairman: If there was co-operation, you would be able to answer the question Mr Griffiths put to you, and you could not.
Dr Hunter: What I am being asked is whether I know that there is disease out there that has not been found, and I am obviously not in a position to answer that in that respect.

Q68 Geraldine Smith: Going back to the honeybees, it may not be at the forefront of everyone's agenda at the moment, with the banking crisis and 2 million unemployed, but it is important, as has already been said. Can I ask, it says in the Report that there are 250,000 colonies and you have reports from beekeepers of high losses over recent years. What does that mean? What sort of numbers? Do you have any idea?
Dr Hunter: The numbers that my Inspectorate find being lost are of the order of 7-8% of that on average but it has been increasing in the last few years. There are suggestions that over-winter losses are substantially more than that, in fact maybe as much as 30%, but there is not a specific number that we can quote as to the total number of losses across the country, and that is one of the things we are trying to make sure we can get to in the next couple of years.

Q69 Geraldine Smith: What about internationally? What sort of research has been done?
Dr Hunter: Internationally, every country you go to has different levels of losses and different reasons, and there is a substantial amount of research, particularly in parts of Europe, which we are linked into, and the United States on this, the Antipodes in particular, but again, the losses are very variable. They can be an average of 5-10% or in some cases up to 40% or 50% in some areas.

Q70 Geraldine Smith: Are there any patterns as to where the losses are or any possible reasons?
Dr Hunter: There is a lot of work going on trying to establish a pattern. There are lots of emerging findings but there is not a pattern at the moment at all across the whole of the world.

Q71 Geraldine Smith: One of the stories I read somewhere was that there could be some link to mobile phones. I know mobile phones are blamed for a lot but have you heard anything like that?
Dr Hunter: We have no evidence at all that it is mobile phones, and in some parts of the world where there is a lot of beekeeping going on there are not many mobile phones or masts.

Q72 Geraldine Smith: Can I turn now to just general animal welfare issues. How well are you researching new, exotic diseases that could affect Britain? I think everyone was quite shocked by bluetongue last year. I know the farmers in my area were really concerned. There seem to be new threats appearing, especially as people move around so much more and can bring disease into countries so much more.
Dame Helen Ghosh: Indeed, in a sense, the link through to the issue about bee disease is climate change, and changes in climate can be significant. Just to take bluetongue as a very good example, clearly, we do surveillance in-country, through the work, for example, that the Veterinary Laboratories Agency does, a constant set of tests of livestock just to pick up things that we have not seen before. I am happy to talk about that if you would like to. Internationally, of course, also the Chief Vet and our specialist teams and Animal Health are absolutely plugged into the trends in international animal diseases. We knew, I think, in 2006 that bluetongue 8 was moving up through Europe, possibly because of increased temperatures. It arrived in the Netherlands in 2006. We then, having got that information, started our work with livestock partners, set up the core group and so on, and we were able to track, through the work of the Met Office, pretty accurately when the bluetongue

midges crossed the Channel from the Low Countries. So we knew that the bluetongue midges had come in summer 2007, almost what day they came on, and therefore we were ready to go with our plan in terms of the involvement of the industry, what we would do about vaccination and so on. It is a mixture of scientific surveillance and plugging into those international networks, which are extremely powerful. We are already doing some contingency planning for what are the next set of diseases that might come, for example, equine diseases, so we make sure we have a handle on the science but also know what our response will be if one of those diseases came. So I think we are well placed, though there is always the possibility that something extraordinary crops up, for example, strands of bluetongue virus cropped up somewhere in northern Europe, everybody was puzzled, but it may well have been something to do with someone illegally importing a live vaccine. You can see these strange things happening but in terms of trends—and you can never, in a sense, legislate for individuals importing wrong animals or bringing in a live vaccine—in terms of trends our surveillance information is pretty good.

Q73 Geraldine Smith: I would expect that you get good cooperation from farmers because it is in their interests to keep their animals healthy.
Dame Helen Ghosh: Absolutely. Back to the issues about encouraging bio-security—they have a real incentive in letting us know, and that is one of the things that we encourage them very strongly to do. If their vet sees anything, if they are suspicious, tell us straight away and then we can pick things up, as well as our random surveillance, which is what we do all the time across livestock.

Q74 Geraldine Smith: Of course, it is important to get a balance between not being over-bureaucratic with farmers yet making sure that they comply with the necessary regulations to prevent disease.
Dame Helen Ghosh: Not least because actually, that is the key to, for example, being able to maintain our status for trade and exports. If you think of, for example, the ear tag regulations, they are very onerous, we have to enforce them very tightly but actually, that kind of traceability and making sure that the regulations were applied is the way we have got British beef back in Europe. So there is a real economic benefit to doing it too.

Q75 Mr Bacon: May I start with bees and then move on to other diseases. This may be for Dr Hunter or Dame Helen: could you say how many meetings have Defra officials had with the British Beekeepers' Association for the purpose of explaining and clarifying how the new money available for bee health will be allocated?
Dame Helen Ghosh: The new research funding?

Q76 Mr Bacon: The £4.3 million that was announced.
Dame Helen Ghosh: Yes, which is a mixture of the two things.

Q77 Mr Bacon: How many meetings have there been for the purpose of clarifying how that will be allocated?
Dame Helen Ghosh: Stephen, you will no doubt have been at those.
Dr Hunter: Yes. Jane Kennedy launched the new plan—

Q78 Mr Bacon: No, no. How many meetings with officials have there been?
Dr Hunter: Yes, we were there with Jane Kennedy as well. We have had a day of stakeholders on this in terms of—

Q79 Mr Bacon: I am sorry. You have had what?
Dr Hunter: A stakeholder day with beekeepers, with their associations and the different interests, which is not just about beekeepers but others as well, such as the NFU, who have an interest here. In terms of—

Q80 Mr Bacon: You mean the NFU represents beekeepers?
Dr Hunter: The NFU represents some beekeepers in terms of beehives, yes.

Q81 Mr Bacon: My question is about the British Beekeepers' Association.
Dr Hunter: If you are talking specifically about the British Beekeepers' Association, I could not give you an exact number but over the last year, as we have developed this plan, we have had a number of meetings.

Q82 Mr Bacon: Over the last year? No, no. I am talking about the new money, which was only announced in January. The reason I am asking the question is because the President of the British Beekeepers' Association, Tim Lovett, says in a letter of 13 March, which was just last week, the answer to my question is none. "We have probed Defra to establish what the new funds will be used for and how the priorities and allocations will be made. We are extremely concerned by Defra's failure at the official level to consult with us, as the major stakeholder in this regard. There have been no discussions or meetings with Defra officials despite our requests and the Minister's support to clarify the application of these funds. Poor consultation and relationships with stakeholders is highlighted by the NAO." Let me just finish one further paragraph. "From the foregoing you will judge that we thus have reservations about how the new National Bee Unit money will be applied and seek urgent involvement in the process of its allocation, which at the end of the day impacts our members substantially." Why are they writing letters like this if you are talking to them adequately?
Dame Helen Ghosh: As Stephen said, the whole process of the Healthy Bee Plan has been completely inclusive and beekeepers have been involved. We do not yet know what the total amount of the money that will be going into research is. Therefore, when we have the amount of money, we will be starting the process that the Chairman of the British Beekeepers' Association describes. We do not actually know

what the quantum is. When we have that, we will be involving the British Beekeepers' Association and others very closely in what we spend it on.

Q83 Mr Bacon: The announcement for bee health of the £4.3 million in January was a clear amount of money: £4.3 million.
Dame Helen Ghosh: The research money, which I think is what their particular concern is here, we said we would put £0.5 million on the table for the next five years, so that is £2.5 million. That is the research element of that from Defra but we are—may I use this dreadful word—leveraging, we are getting contributions from a wide range of other contributors which will probably multiply that by four or five in terms of the value of the research over the next five years. When we know what that pot is, which is very shortly, we will be doing exactly that. There is no failure to consult. There is just not a pot to consult on yet.

Q84 Mr Bacon: You have managed to make them fairly unhappy. They said earlier that they feel that essentially Defra has failed them in terms of the Varroa mite. To return to your point about research funding, "We were most encouraged by Mr Benn's initial announcement. However, through subsequent inquiry it has emerged that this already somewhat modest funding will not be directed at the honeybee health problems we have identified."
Dame Helen Ghosh: As you will know, because it has had a great deal of publicity, the British Beekeepers' Association produced some time ago a list of research projects that they would favour that amounted to about £8 million.

Q85 Mr Bacon: But you have not talked to them about it?
Dame Helen Ghosh: We have.

Q86 Mr Bacon: They have not had any meetings with Defra officials since January.
Dame Helen Ghosh: Because we did not have a pot of money. Many of their proposals will of course be considered as part of the—

Q87 Mr Bacon: Hang on. You have a pot of money. You are not clear exactly—
Dame Helen Ghosh: No.

Q88 Mr Bacon: Yes, you have. It was announced in January.
Dame Helen Ghosh: We have our pot of money.

Q89 Mr Bacon: The £4.3 million is your pot of money, is it not?
Dame Helen Ghosh: The £4.3 million consists of two things: the additional money, around £2.3 million over the next couple of years, we are putting into more bee inspectors and into the National Bee Unit for getting people on BeeBase and a commitment from us to put into a research pot £0.5 million a year for the next five years, that is, £2.5 million. That money is going to be supplemented, and we are in the final stages of agreement with some big funders, including BBSRC. That figure will be multiplied many times by the money other people will be putting in.

Q90 Mr Bacon: I do not see why you cannot have discussions with absolutely key stakeholders, as they obviously are. You do not have to have absolutely cast-iron knowledge of your exact research budget in order to have discussions. The chap at the back is nodding. Surely, it is perfectly possible—
Chairman: He was shaking his head earlier.

Q91 Mr Bacon: It is surely possible to have a discussion. You can find out what they think are the most important research projects. That is a statement, not a question. I must move on to cows and other matters.
Dame Helen Ghosh: Please do that. I think there should be a mirror behind your head, Chairman, so I can see the people behind me.

Q92 Mr Bacon: Catherine Brown, is there a causal link between the growth of the badger population and the increase in tuberculosis in cattle?
Ms Brown: I am neither a vet nor a scientist.

Q93 Mr Bacon: Well, you are the head of Animal Health, are you not?
Ms Brown: Yes, I am in charge of delivery.

Q94 Mr Bacon: I am expecting that the Chief Executive of an organisation called Animal Health would be able to answer that question. What is the answer?
Ms Brown: Could you ask it again?

Q95 Mr Bacon: Is there a causal link between the growth of the badger population and the increase in tuberculosis in cattle?
Ms Brown: I think it would be hard to know.

Q96 Mr Bacon: How much money have you spent on trying to find out over how many years? What did the Krebs Study cost? When I was talking to the National Audit Office several years ago about trying to get the NAO to look specifically at this, the number was £625 million. That was a long, long time ago. A lot of money has been spent on trying to find this out, has it not? Why do you not have an answer to the question yet?
Dame Helen Ghosh: If I may help my colleague, Animal Health is indeed—and I think this was one of the recommendations made by the Report, but we should clarify this even further—is a delivery organisation. It is not the organisation that has advised the Secretary of State on the science.

Q97 Mr Bacon: I have very limited time. I do not want an administrative lecture. I want an answer to my question. If you cannot answer my question, the answer is "I don't know."
Dame Helen Ghosh: I can answer your question. No, the answer is that the reservoir of TB in wildlife—and I am quoting the independent scientific advisory group, which was based on the Krebs trial—said

that a significant part but an unquantifiable part of the incidence of TB is something to do with the reservoir in wildlife but it will vary between place and place. There are a number of factors they found which determine the incidence of TB, so, for example, animal movement, local husbandry practices, and it will be very varied.

Q98 Mr Bacon: So there is a significant proportion that is due to badgers but an unquantifiable amount.
Dame Helen Ghosh: Indeed. That is the scientific finding from the ISG.

Q99 Mr Bacon: Can I go to paragraph 5.17, please, where it says that the funding total for research on bovine tuberculosis is £7.5 million. In paragraph 1.21 it says spending on tuberculosis was £77 million. So you are spending slightly under 10% on research of the total you spend on managing. Why is that such a small proportion of the total that you are spending?
Dame Helen Ghosh: Because, for the reasons you give, the Krebs trial, the randomised badger culling trial, over a number of years established many of the facts, although it is still a very complex area. What we have done and, as Hilary Benn in making his announcement on badger culling said, "We will continue to put significant amounts of money," as we will, "into tools that will genuinely be useful." For example, he announced an additional £20 million over the coming few years to deal with vaccination. So that is research money that we are putting in.

Q100 Mr Bacon: The timing of the tests. It says in paragraph 3.16—this is probably one for you, Ms Brown—that in order to mitigate the risk of disease spreading when a case of bovine TB is found on a farm one of the steps is to identify contiguous farms and on the basis of a risk assessment have a test but it goes on to say that the timing of the test is based on the vet's assessment and whether the test can be combined with the existing visits and that the agency does not monitor the time taken for the tests to be completed. So my question is, how do you manage the risk of tuberculosis spreading to neighbouring farms if you do not know when the tests are taking place?
Ms Brown: There are a number of risk factors that determine when you need to do the testing of contiguous farms. Sometimes you do not need to do it at all; if the beast has been brought in and has been housed since it has been brought in and isolated you do not need to test the contiguous farms. First of all, you need to decide if you are going to test them. Then, if you are going to test them, there are a number of things you might be trying to achieve when you test them because you think the disease might have spread, so you might on that basis test them fairly soon, or you might take a view as a vet that you think the disease will not have spread, in which case you might test them somewhat later to check that you were right. If they have been tested within the last 60 days, you cannot test them again because they still have vaccine and test residues in their system. So there are lots of variables which drive when the right time to test them is, and we generally test them either as soon as we can, given the 60-day rule, or at six months or at 12 months. So there is not a single target time that would be useful or appropriate. It is about the mix of risk.

Q101 Mr Bacon: Dame Helen, can I just ask you another question about bluetongue. We had an outbreak of blue tongue in my constituency. Defra contacted Members of Parliament to let us know and I received an email letting me know that a farm premises was confirmed with bluetongue. Can you just say for the record what was the purpose of contacting Members of Parliament?
Dame Helen Ghosh: I think it was transparency and information. Clearly, there had been concerns from MPs who have large numbers—or small numbers—of livestock keepers in their constituencies and the Secretary of State was very keen, since there was this interest, just to let them know when it had, as it were, arrived.

Q102 Mr Bacon: I received an email and it mentioned the farm premises and, naturally enough, I wanted to contact the farmer concerned. When I phoned Defra, I began to understand for the first time the descriptions that I get from farmers in my constituency of the kind of Kafkaesque nonsense that they have to put up with at the lower reaches of officialdom. When I contacted the person who had sent the email, I was told that I could not be given the name of the farmer. So I said, "Well, why have you sent me this information?" and there was no response. In the end, I gave up and I found out, because I had the address, by hook or by crook—and the easiest way obviously is with the name and the electoral roll—eventually I was able myself to track it down but it was despite, not because of Defra.
Dame Helen Ghosh: I do not know the circumstances. It may be something to do with data protection but I will check why that is the case and let you know.[1]

Q103 Mr Williams: I am not sure whether I misheard an answer earlier on because I was scribbling at the time. Did you say that you check imports of bees?
Dame Helen Ghosh: Yes, we do indeed check imports of bees.

Q104 Mr Williams: What do you check them for?
Dame Helen Ghosh: Diseases.

Q105 Mr Williams: How do you know they are coming?
Dr Hunter: Because they have to be notified to us.

Q106 Mr Williams: We had a hearing with Customs people a few weeks back and we ended up with a perception of absolute chaos—that was the impression the Committee got—of their awareness of what is coming in and going out of the country.

[1] Ev 15

How can you be sure you are notified? How would you know if you had not been notified? Is there any way you could possibly be alerted to it?
Dr Hunter: Inspectors are actually quite good when they are doing inspections at finding out about bees coming in, picking up where there have not been notifications.

Q107 Mr Williams: How do they find out? They are not down at the port all the time listening for a buzz, are they?
Dame Helen Ghosh: As I said earlier, one of our key prevention tools is at the border, so for all the regimes that we look after, whether its livestock, whether it is meat, whether it is plants, we have, I would say, pretty sophisticated systems for the traders, the well-known traders, the well-known sources, as Stephen said, having to let us know. We know when they are coming, we know when the consignments are, we have our inspectors waiting, we can track them coming across the Channel, they know they have to be inspected—we, for example, have large warehouses at Heathrow where we check plants, fruit, whatever it is, for mites. It is a system but as long as they are using the normal channels, we would pick it up. You could never pick it up if someone decided to get in a small boat on the other side of the Channel and sail across to Lulworth Cove but you can pick it up through the main ports, the main bits.
Dr Hunter: We do it slightly differently in terms of the BIPs (Border Inspection Posts) but we do check these things coming in. The numbers of these coming in come from a very small number of countries and they are mainly traded through very well-known routes and traders. Yes, we would not always pick up somebody who brought in one small package themselves but the normal trade is well monitored.

Q108 Mr Williams: They come in as a colony, I suppose. What are they worth?
Dr Hunter: They come in packages, which is a queen bee and a small number of workers.

Q109 Mr Williams: Packages of 250 or 500?
Dr Hunter: It is a queen bee with a small number of workers.

Q110 Chairman: It is a bit like this Committee really.
Dr Hunter: They tend to come in consignments which will have quite a lot of those together from the main sources. So you might have significant numbers in one consignment.

Q111 Mr Williams: In value terms, what are we talking about here?
Dr Hunter: Each of those small packages—it will depend where it comes from but we are talking in terms of tens of pounds per one of those packages.

Q112 Mr Williams: I am just interested. There is no duty on imports or anything like that, is there? It is absolutely free of tax and so on coming in?
Dr Hunter: As far as I am aware, yes.
Dame Helen Ghosh: You would have to ask Her Majesty's Revenue and Customs.

Q113 Mr Williams: I am delighted you are more sophisticated in your information than the Customs people were when they came to us a short while ago. The National Bee Unit, I gather, covers Wales as well.
Dame Helen Ghosh: Indeed.

Q114 Mr Williams: What sort of presence does it have in Wales?
Dr Hunter: There are nine seasonal bee inspectors, if I am right, and one regional bee inspector in Wales. Again, the seasonal bee inspectors are part-time. It does vary to a certain extent from year to year.

Q115 Mr Williams: How are they spread around the country? Seven is not very many.
Dr Hunter: They are all over. They are all home-based. Seasonal bee inspectors across England and Wales are home-based.

Q116 Mr Williams: For example, does the National Bee Unit have a website and so on?
Dr Hunter: Yes. It has a website which provides information and advice to beekeepers. It has of course the BeeBase, which is the register of beekeepers, which is voluntary, which people can enter data into as well. It also supplies leaflets on different diseases, both in English and in Welsh.

Q117 Mr Williams: I was going to ask that. What about the website? Is that bilingual?
Dr Hunter: I do not think the website is, no, but, as I say, there are Welsh speaking inspectors and if a beekeeper wishes to be spoken to in Welsh, we will provide that service for them.

Q118 Chairman: I have just one or two questions, Dame Helen, in order to cover the ground of other animal health issues. Paragraph 1.24. I was surprised to read that the Department does not routinely analyse its costs on a different objective basis, such as the cost of different diseases. Why do you not know the cost of managing different diseases? It is fairly basic, is it not?
Dame Helen Ghosh: As I think is clear in the Report and also from things like our departmental report, we do have a pretty good handle on the spend, the mainstream spend, on the main diseases. For example, as the Report says, we can track over time where spend has gone up on particular diseases, as it did when it peaked in TB and is now coming down a bit, and/or has declined altogether, so scrapie. . .
Ms Williams: Our spend on BSE as well.
Dame Helen Ghosh: That has gone down. So we can track, both in terms of research and response to outbreaks, the spend on individual diseases. Where it becomes difficult and where I would, I think, challenge the value of really driving down into the detail is when you get to things like surveillance, because the combination of Catherine's people out there in the field and what private vets do, a lot of

surveillance is of livestock generally, and you pick up the diseases that you pick up, and therefore you could not say we spent exactly that on finding that—actually, we can do with avian influenza—that particular virus or that particular virus. My belief is that the information we have is granular enough to enable us to take good decisions but obviously, in the light of the NAO Report, we will have a look at whether any greater granularity can help us make different spending choices. I am not sure that it would.

Q119 Chairman: Paragraph 2.5: "The Department manually enters key details of disease notifications on a spreadsheet, but the records of disease notifications kept by the Department are substantially paper-based." What happens if some new, exotic disease comes up and you have your paper base? How do you cope with it?
Dame Helen Ghosh: There are two different stages to this. The first stage is when one of Catherine's people is called to a premise and we suspect, for example, let us say, bird flu, and I think this is very well explained in the excellent timeline in the report. That is indeed paper-based. What happens is that the vet looks at the animal, decides what the level of risk is. . .
Ms Brown:. . . phones an expert in the central department, talks to them, they ask some extra follow-up questions like "Why don't you think about looking at this?" and they discuss and agree the next steps. That is a telephone-based transaction. Then we send the details in on a form, and at that point, when the disease is confirmed, it is entered into a database and then it becomes part of two databases, one of which is a disease control system, which enables us to manage the actual delivery of work around an outbreak, the other of which is Radar, which is our system for supporting epidemiological analysis, so that we can trace patterns of disease movement and so forth.

Q120 Chairman: So it is wrong when it says, "It is therefore difficult for the Department to track and analyse the distribution of suspect cases."
Dame Helen Ghosh: It is wrong in the sense that the paper bit is only right at the very beginning.

Q121 Chairman: You should not have signed up to it then, Dame Helen, should you?
Dame Helen Ghosh: No, perhaps we failed to spot that mistake.

Q122 Chairman: Let us carry on then. Ms Brown, paragraph 5.8 says that "the volume of statutory testing and investigation meant that there were insufficient resources to engage with farmers and livestock." This is your inspectors going around. I find this rather worrying. Surely, this is what the man from the Ministry should be doing. He turns up, he has worked his whole lifetime in the industry, he is there with his gumboots and his old Macintosh, and he chats to farmers. Is this not the trouble with so much of the inspectorate? You are so obsessed with all your various targets and things that you do not actually talk to anybody?
Ms Brown: I think this must be about our aspiration to do more, because we do in fact do a lot, both when our inspectors are out there, so, for example, when we have a new TB breakdown, we will talk through what we call the disease report form with the farmer, and that is all about—and I have sat through it and I have heard us talk through them and saying, "Where do you keep your feed? Do you know about any wildlife reservoirs in your area?" So we do do bio-security on the individual farm when we are there talking to the farmer.

Q123 Chairman: They seem to think otherwise.
Ms Brown: I think it is about the aspiration to do even more.

Q124 Chairman: I am not having a go at you personally, Ms Brown, because I am sure you are a very efficient and very nice person. You are Chief Executive of Animal Health but all your previous experience was in BUPA. How does running BUPA qualify one to know anything about animal health?
Ms Brown: Not all of my previous experience was in BUPA. Before that I was in industry and I was in the NHS.

Q125 Chairman: Nothing to do with animals.
Ms Brown: To do with food production. I was an auditor in Unilever for quite some time, and I have worked for the NHS.

Q126 Chairman: Would it not help if there was a vet running Animal Health?
Ms Brown: I think the argument is that strong general management to help make sure that we organise ourselves to deliver the things that we need to deliver, that we can work effectively with other people to work out what those things are, and particularly that you have a manager who can manage professional staff, is quite a strong case for general management but I do make sure that happens.

Q127 Chairman: You know all about animals, do you?
Ms Brown: I do not know all about animals, and I do not suppose anybody knows all about animals, but I know how to work with people who do.
Dame Helen Ghosh: I should say, of course, Catherine has a constant call on an excellent team of veterinary advice, led by the Chief Veterinary Officer, as well as her own team.
Chairman: I am sure she has.

Q128 Mr Bacon: Catherine Brown, I am afraid your admission—perhaps "admission" is a tendentious word; your acknowledgement or the statement that you used to be an auditor for Unilever means my question is to you. I was talking to a farmer recently who says he has to put up with 98 audits in a calendar year; about two a week. Some of them are from supermarkets and I am sure some of them are from manufacturers. In paragraph 5.14 it talks about how Animal Health has regular visits to test for disease, local authorities have inspections, the

Rural Payments Agency has different inspections and so on, and although there has been some improvement, for example, "Animal health informs the Rural Payments Agency of Bovine Tuberculosis tests so that joint visits can be made," there is still, on the ground, certainly of what I experience from my farmers in my constituency, an enormous problem of overkill. Are there plans to develop an account manager approach, where you have one person who is the contact point for pretty much everything and coordinates everything else so that you can minimise the number of visits?
Ms Brown: One of the places we are looking at that kind of approach is in Scotland. So there is someone going between all the different agencies that deal with land managers in Scotland to look at that. We are not planning at the moment to do that specifically but we are working to look at what things we can share. There is a limit to what farmers want to do at the same time. For example, they do not want to be doing a TB test at the same time as they are doing the RPA inspection of the boundaries work. But it is something that we are looking at, and the reason we started with the TB test is because that is the biggest set of visits we do so that is the biggest opportunity to harmonise and reduce the burden.

Q129 Mr Bacon: My next question—and it will probably be the subject of a note, if you would not mind—is about the expenditure on Bovine Tuberculosis. In paragraph 1.21 it says "In 2007-08 spending on bovine tuberculosis was £77 million or 34% of the Department's total spending" and in the previous paragraph, a few pages back, in paragraph 7 on page 5, it says that Animal Health's expenditure across the whole of Great Britain was £39.4 million or 39% of Animal Health's total expenditure. Are they separate sums, the £39 million and the £77 million?
Dame Helen Ghosh: It will be included in the same figure, but we are very happy; I have some very useful tables that set it out.

Q130 Mr Bacon: What I would like is if you could send a chart showing the expenditure of all public funds on Bovine Tuberculosis over the last, say, four years.
Dame Helen Ghosh: Here.

Q131 Mr Bacon: Great, also a breakdown between everything that is on research and all the different categories.
Dame Helen Ghosh: Indeed.

Q132 Mr Bacon: So we can see what is going on, because what amazes me is that, after several years, you are still not able to attribute the proportion of the problem. I remember visiting a dairy farmer in Herefordshire a few years ago, who pointed to a badger set where he said, "A few years ago I would have had six or seven badgers living there and now there are 48." It seems unlikely that there is not a connection between that and the increased prevalence of tuberculosis, and the fact that you are spending hundreds of millions of pounds over a period of years, and still cannot answer the question of how much is attributable, rather worries me.
Dame Helen Ghosh: I would be more than happy to do this. This breaks it down by testing, compensation, the randomised badger trials, surveillance activity, other research and our overheads. We will be able to give you that. I think the point about the science, and I think what was shown by the randomised badger culling trials and the work put together by John Bourne latterly is that it is an incredibly complex area of science, and therefore one of the challenges is to get an absolutely definitive scientific answer, given different kinds of landscape, different kinds of farm, different kinds of badgers who behave in different kinds of ways across and between countries.

Q133 Mr Bacon: Please do not say they were the wrong kind of badgers!
Dame Helen Ghosh: No, no but it is most interesting when you talk to a zoologist: badgers in Britain behave differently from badgers in other countries, because of whether it is density or scarcity or just the development of the local badger community.

Q134 Mr Bacon: Are British badgers better or worse than other badgers?
Dame Helen Ghosh: They are very familial, which is what produces the effect, as the ISG found, of perturbation, which is one of the key elements of the possible impact of a cull.

Q135 Chairman: One very last question. There is £2 million extra. Is that new money or is that from somewhere else in Defra?
Dame Helen Ghosh: All money is money from somewhere else in Defra.

Q136 Chairman: Where has it come from then?
Dame Helen Ghosh: It has come, as we were saying earlier, from the fact that our spend on other elements of animal health, particularly TSEs, has declined, so spending less money on TSEs, thanks to the successful activity we have done there, frees up money for bees.

Q137 Chairman: Thank you very much, Dame Helen. That concludes our inquiry. Clearly, we still have a problem with Bovine TB and Varroa in honeybees and we hope that our inquiry has shed some light on it.
Dame Helen Ghosh: Thank you very much, Chairman.
Chairman: Thank you very much for coming in.

Supplementary Memorandum from the Department for Environment, Food and Rural Affairs

QUESTIONS 129–130 (MR BACON): THE DEPARTMENT'S EXPENDITURE ON MANAGING BOVINE TUBERCULOSIS—PLEASE SEE FIGURE 2 IN REPORT AT PAGE 11

QUESTIONS 101-102 (MR BACON): NOTIFICATION OF BLUETONGUE OUTBREAK

In the event of notifiable disease being confirmed in England, we would issue a notice that an outbreak has been confirmed on premises near xxx in the county of yyy. In certain outbreaks (eg AI/FMD) we would also send a letter to premises in the Protection or Surveillance Zone, but this would simply mention that the recipient is located in a PZ/SZ and the rules to observe, and would not specifically name the infected premises or the owner.

We share such information with interested parties eg Local Authorities on a regular and confidential basis to make them aware from an operational point of view and to aid enforcement.

During the 2007 outbreak of bluetongue, where a case was confirmed we also wrote out to the local MP on a similar basis to help them keep up to date with a rapidly changing situation.

I have been informed that we cannot disclose details identifying farmers whose animals have bluetongue without their consent. In the case that you mentioned, when we received your request for the name of the farmer, we should have contacted him to seek his consent to disclose his identity to you. I apologise that that was not done in the case that you described during the meeting on 18 March.

12 June 2009

Memorandum from the British Beekeepers Association

NAO REPORT: DEFRA/THE HEALTH OF HONEY BEES AND LIVESTOCK IN THE UK

Thank you for your reply of 6 March in response to my letter and the enclosed copy of the BBKA paper *"Honey Bee Health Research Concepts"*. I am glad that you found it interesting; its publication is most timely in the light of developments concerning honey bees and bee health research funding.

I have read the NAO report thoroughly and was invited by Jane Kennedy to the recent launch of Defra's document *"Healthy Bees/Protecting and improving the health of honey bees in England and Wales"* which is intended to lay down a plan to secure the future of the honey bee over the next ten years. The BBKA made substantial input both oral and written, to these documents.

As you are no doubt aware the BBKA has mounted a vigorous campaign to persuade the Government to think again about their stated position (Lord Rooker Dec 2007), that no additional funds were to be made available for bee health research, notwithstanding their undisputed contribution to agriculture (£165+ million) and the mounting threats to their survival through disease and other problems. That the threat is real and present, is illustrated by our survey of winter losses last year, which revealed colony losses of 30.1% nationally, with worryingly higher figures in some areas.

We have received notable support from the public and presented a petition of 142,000 signatures to Downing Street last November. The media has been most sympathetic and of course we have gained excellent cross-party support at Westminster, through two EDMs (with +/- 100 signatures for each), a parliamentary briefing and adjournment debate. As a result of our campaign, including some helpful face to face meetings with Ministers, Hilary Benn announced £4.3 million for bee health in late January. In principle, the BBKA welcomes this change of heart, indeed we had argued strongly to the NAO that the case was for a recommendation for increased funding. Mr Benn's announcement somewhat pre-empted the NAO report, of course. The BBKA as you will see from our *"Research Concepts"* paper sets out the case for funding of the order of £8+ million. There is clearly a considerable gap to be bridged, particularly when one considers that of the new money, £2.3 million will go towards expanded activity of the NBU, leaving just £2 million over five years for research itself.

We have probed Defra to establish what the new funds will be used for and how priorities and allocations will be made. We are extremely concerned by Defra's failure at the 'official' level to consult with us as the major stake holder in this regard. There have been no discussions or meetings with Defra officials despite our requests and the Minister's support, to clarify the application of these funds. Poor consultation and relationships with stakeholders is highlighted by the NAO. *"Healthy Bees"* itself, was published on Friday 6 March giving no time for stakeholders to consult prior to the launch of the document on Monday 9 March. This was all the more vexing given that the document when last seen during the official consultation period which ended on 29 August, was some 45 pages long; it has been reduced to 14 pages as finally published/no small change! Clearly there must be progress here.

Much is made in the NAO report, no doubt on the basis of submissions by Defra/NBU, of the relatively low number of registrations on BeeBase. We believe that it is inappropriate to devote substantial expenditure to 'encourage' beekeepers to register. Simply having more beekeepers on BeeBase is unlikely to achieve much in bee health terms. The BBKA and other associations know where all their members are to be found,

probably some 17,000 or so. The unknown beekeepers, ie non members, not registered on BeeBase, are very hard to quantify and probably over-estimated due to the fact that BeeBase has not be cleansed for dead or those beekeepers who have given up. We are of the opinion that there are possibly no more than 5,000 active beekeepers not known to either the BBKA or registered on Beebase. It is unlikely in the current climate that registration on a Government data-base is likely to appeal to these "un-clubbable" individuals. Even compulsion has been a failure in other countries.

Notwithstanding the foregoing, we would argue that it is far more important to carry out the research needed which could then be disseminated through association web-sites and publications such as BBKA News, which goes to all our 13,000 members and BeeBase, of course.

Increasing the inspection force and effort makes some sense, but even greater financial effort should be directed towards the education, training and examination system operated by the BBKA, working with the inspectorate, which is the acknowledged expert source for disease recognition and management. The BBKA is the most effective route/structure to deliver an increase in skill level and competency. To illustrate the challenges we are facing on education, the BBKA is currently training over 2000 beekeepers on structured evening or weekend courses, the majority of which follow a BBKA syllabus to ensure quality and consistency of the content. The demands for new beekeeping courses significantly outstrip local associations' resources. If we are to meet the felicitous growing demand to join the craft, we need tangible support.

From the foregoing you will judge that we thus have reservations about how the new NBU money will be applied and seek urgent involvement in the process of its allocation, which at the end of the day impacts our membership substantially. We all depend on their cooperation and involvement.

There can be no doubt that Defra has failed beekeepers over the varroa mite. Since varroa was de-regulated, little has been done to confront this problem, which is the coronary artery disease of beekeeping. Only following my recent meeting with Hilary Benn has the imperative been applied to the VMD to be pro-active in filling the therapeutic gaps in varroa treatment, now that resistance to the key medications is widespread. The response to this by the VMD, and ongoing relations with the BBKA have been most positive.

Finally, returning to research funding, we were most encouraged by Mr Benn's initial announcement. However, through subsequent enquiry, it has emerged that this already somewhat modest funding will not be directed at the honey bee health problems we have identified, but will be stretched to cover research on "pollinators", which includes bumble-bees, hover flies etc. There is talk of augmenting the research fund through other funders' contributions, but as you may imagine, we are deeply concerned that we will have far less money for honey bees than was announced. We are also anxious that Defra really does listen to what the stakeholders say is needed. We have a body of experts of both high academic and practical qualification who in consultation with research groups have put together *"Research Concepts"*. It would be foolhardy and wrong to ignore this input.

I hope that the concerns that I have expressed in this letter are of help to you and the Committee in its examination next week. I and my colleagues are only too willing to give evidence to the Committee at some point if you felt that to be valuable. Thank you again for your interest.

13 March 2009

Memorandum from University of Sussex

National Audit Office Report on Honeybee Health

I am writing to you further to the publication of the NAO Report *"Defra: The Health of Livestock and Honeybees in England"* and the launch of Defra's new Strategy on Bee Health. I would like to express our concerns here at the University of Sussex that Defra has failed to give sufficient priority to University-led honeybee research which can deliver practical responses to the problems we face, and that immediate action to support new research is critical if we are to limit further losses to our honeybee population.

I very much welcome your interest in bee health and noted your comments featured in the Guardian last week. The NAO's report highlighted the importance of increased beekeeper registration and practical guidance to assist beekeepers in their work. It is certainly the case that better bee husbandry and more robust inspections are important in limiting the spread of pests and disease; but they are just one part of the solution. Investment in research is desperately needed to control Varroa mites/considered to be the biggest threat to UK honeybees. Most, if not all hives already have Varroa. Hive inspections, therefore, can do little to limit further spread. Without further research we do not know how best to control this pest under UK conditions.

The Government's recent announcement to allocate an additional £2 million funding towards bee health research is of course a welcome step forward. At Sussex we are urging the Government to heed the NAO's recommendation that new investment must be directed into strategic research led by Higher Education institutions into honeybee health, such as the work underway at Sussex to breed disease resistant "hygienic bees" and to determine which Varroa control methods work best under UK conditions.[1]

I am delighted that last year the University was fortunate enough to appoint the only Professor of Apiculture in the country, Professor Francis Ratnieks, to lead an expert team of researchers based at Sussex's unique Laboratory of Apiculture and Social Insects (LASI). Just £1 million could fund our 5-year "Sussex plan" which comprises 4 key research projects designed to help honeybee health and well being, and is already underway. Our funding requirements represent just 0.1 % of the value of honey bees to the UK agriculture.

Our main concern is that efforts to increase beekeeper registration and inspection could soak up the lion's share of new resources, when we need a greater focus on the root of the problem, tackling the diseases and pests that threaten honeybees' existence.

I hope that this important issue may warrant further investigation by your Committee. My colleagues at LASI and I would greatly appreciate the opportunity to meet with you at a time of your convenience to explore these issues.

Vice-Chancellor

11 March 2009

Further memorandum from the University of Sussex

Funding for Research into Bee Health

Further to my letter of 11 March, I wanted to write to thank for raising the University's concerns about the Government's bee health strategy during the recent meeting of your Committee on the health of livestock and honeybees.

As you know, last year the University recruited the UK's only Professor of Apiculture in the country, Professor Francis Ratnieks, to establish a new Laboratory of Apiculture and Social Insects (LASI). The Laboratory opens officially next week, but work is already well under way to deliver the "Sussex Plan", a unique programme of priority research areas to help give practical answers to the threats faced by honeybees now and in the future.

We are proud to have raised funds from a variety of sources to contribute to this important work. In view of this, we would like to be considered as a funder for the research programme.

Professor Ratnieks and his team have sought to engage with the Bee Health team at Defra and are currently asking for further clarity as to the process through which to apply for the new statutory research funds for bee health that were announced in February. We are keen to ensure that the Government heeds the recommendation made by the NAO to invest in the work of higher education institutions to help address the principal threats to honeybee health.

However, there is an ongoing concern/highlighted during the recent Committee session/that honeybees will not be treated with sufficient priority within a wider programme addressing "threats to pollinators". In particular we were concerned by the comments made by Dame Helen Ghosh that the decline in honeybees is not considered to be a threat to the food chain.

I annex a short response from LASI to address the points made during this session.

Vice-Chancellor

2 April 2009

Annex

The Laboratory of Apiculture and Social Insects responds Public Accounts Committee hearing on the Health of Livestock and Honeybees:

— If a decline in honey bees would not adversely affect the food chain, since other pollinators would do the job adequately, why are growers willing to pay beekeepers to move their colonies for pollination?

— The production of 84% of crop species cultivated in Europe depends directly on insect pollinators, especially bees (Williams, 1994).

— 87 crops, that is 70% of the 124 main crops directly used for human consumption in the world are dependant on pollinators (Klein *et al*, 2007).

— 85% of insect pollination is carried out by honey bees (Borneck and Bricout, 1984).

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[1] Defra: the Health of Livestock and Honeybees in England, National Audit Office, 4 March 2009, p 9, p 40

— The annual value of honey bee pollination to U.S. agriculture has been variously estimated at between $150 million and $18.9 billion (National Research Council, 2006).

— In the UK, the honey bee is the only managed pollinator available for field crops (Williams, 1994).

— Honey bees contribute £191.8m a year to the UK economy through crop pollination (NAO, 2009).

— Figures such as those estimated by NAO are based on "farm gate" prices. These do not take account of "added value" and indirect food-chain relationships. For example, in the USA, alfalfa seed, a bee-pollinated crop with an annual value of $109 million (direct effect), is used to produce hay for livestock forage that is valued at $4.6 billion per year (indirect effect) (Morse and Calderone, 2000).

— The majority (57%) of the 104 plant species identified by UK beekeepers as important nectar sources for their bees are indigenous, and a large proportion of endangered "Red Data Book" plant species probably depend on bees for their survival (Carreck & Williams, 1998)

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Further memorandum from the University of Sussex

University of Sussex Briefing on Honey Bee Research

Summary

The University of Sussex welcomes the Government's efforts to prioritise bee health, marked by the publication of Defra's "Healthy Bees" strategy and a new £10m research programme launched by some of the major UK research funders under the Living With Environmental Change (LWEC) partnership.

So that these precious new resources are spent wisely, we are urging the Government to ensure that honey bees are at the top of the LWEC's research agenda, and are treated as an absolute priority in the allocation of new funding. This is because honey bees are the UK's most important pollinating insect and we need urgent action to address the serious threats faced by honey bees now.

Sussex has embarked on a groundbreaking plan (The Sussex Plan for Honeybee Health and Well Being) led by the UK's only Professor of Apiculture. We have already begun work on one of the four Projects in the Sussex Plan, to breed disease resistant "hygienic bees". We have raised over £350,000 through donations but need an additional £1m to complete this 5 year Plan (see below for more details below). That is just 0.1% of the value of honeybees to UK agriculture.

Key Challenges

— The NAO recently highlighted that DEFRA has had difficulties controlling the spread of the Varroa mite/considered to be biggest threat to UK honeybees.

— The media reported that better bee husbandry and more hive inspections were needed to limit the spread of pests and disease, however, this will not address the nub of the problem.

— Most, if not all hives already have Varroa. Hive inspections, therefore, can do little to limit further spread. Without further research we do not know how best to control this pest under UK conditions.

— There is also an urgent need to monitor hives for other pathogens and causes of mortality (spore levels, virus levels, mite populations, brood infections).

— Furthermore, the changing British countryside has brought great changes to the habitat of the honey bee. We need better to understand what kind of environment honey bees need to survive through studying their foraging behaviour so that we can devise recommendations for land use that will secure the future of the honey bee.

Call to Action

Further to the Government's announcement that an additional £10m will be invested in bee health research, we are asking the Government to:

1. Ensure that honey bees are at the top of the LWEC's research agenda, and are treated as an absolute priority in the allocation of new funding. This is because honey bees are the UK's most important pollinating insect and we need urgent action to address the serious and unique threats faced by honey bees now.

2. Appoint an expert in beekeeping and honey bee health to the funding committee which will make decisions about the research specification for the LWEC initiative. We need to ensure that the research priorities for honey bees form part of the final criteria for the expressions of interest.

3. Clarify how much of the new research funding will be directed into the National Bee Unit, and how much will be made available to other institutions to conduct research into the honey bee. We ask that the Government take forward the NAO's recommendation to support the work of Higher Education Institutions in conducting strategic research into honey bee health as a priority.

4. Ensure that the University of Sussex's Plan of essential research, which is consistent with Defra's research priorities (contained within its ROAME statement, and the key outcomes of the Healthy Bee Strategy), is considered for the new funding streams. We hope that our urgent five-year plan, which is already underway, can be supported beyond year-one, to enable us to reach out to beekeepers with practical solutions as soon as possible.

The Debate over Pollinator Research

— Last year Britain's honeybees suffered major losses of up to one in five colonies reported dead, putting the pollination of fruits and vegetables at risk.

— 35% of our diet is directly dependent on pollination. The honeybee is the most important pollinating insect. If we lose them it would have a catastrophic effect on the wider ecosystem, leading to serious problems for insects, plants, animals and mankind.

— A proportion of the new DEFRA money is destined to "pollinator" research, and the National Audit Office has estimated that the UK's honeybee hives contribute around £200m to UK agriculture by pollinating many fruits and vegetables.[2]

— However, in recent years, conservationists interested in pollination have focused on bumblebees, which are more selective over the plants they visit.

— While bumblebees live in colonies of a few hundred, up to 50,000 honeybees may be found in a single hive and is a generalist pollinator. The ability to manage, manipulate and transport honey bees makes them the most valuable pollinator, and a worthy focus of the new research into pollinators.

The Sussex Plan

— The threats of the Varroa mite, colony collapse disorder and the loss of natural habitat need to be effectively tackled before it is too late.

— The UK's only Professor of Apiculture, Francis Ratnieks, heads the Laboratory of Apiculture and Social Insects (LASI) at the University of Sussex. Professor Ratnieks has 25 years experience doing research on honeybees worldwide and over the past 10 years his laboratory has been responsible for 40% of UK honeybee research publications. The Sussex team offers unparalleled expertise in bee biology and beekeeping in the UK, combined with the necessary facilities.

— Our campus location on the edge of the South Downs provides an ideal location for the study of honey bees. We are committed to an open culture of learning and sharing with other academics which produces greater return on investment.

— LASI is asking both statutory and private funders to support the Sussex Plan. The Sussex Plan comprises four Projects relevant to the current situation in the UK regarding bee health: 1) Breeding of disease resistant "hygienic" honey bees; 2) Determining how honey bees use the British countryside for collecting food, and how the countryside may better help bees; 3) Determining which combinations of methods can be used to control Varroa mites; 4) Determining which pathogens are present in British hives and which are causing colony deaths (more information below).

[2] DEFRA: the Health of Livestock and Honeybees in England, National Audit Office, 4 March 2009, p 5

— Funding for the Sussex Plan incorporates beekeeping development and training so that new research findings can be applied, and translated into practical support and training for Britain's beekeepers.

Annex

THE SUSSEX PLAN FOR HONEYBEE HEALTH AND WELLBEING

Project 1. Breeding disease-resistant hygienic honey bees & providing breeder queens to beekeepers

Main aim: To breed and test a stock of hygienic honey bees and to make this available to beekeepers.

Current status: 80% funded by donations from Mr. Michael Chowen and Rowse Honey Ltd. with additional support from Sussex University. Project initiated in October 2008. Norman Carreck will lead this project alongside Professor Ratnieks. Further technical help will be hired in 2009. A survey of 48 Sussex hives in October 2008 showed that 30% are hygienic. These will provide much of the breeding stock needed.

Project 2. How good is the British countryside for honey bees? Decoding dances to determine where worker honey bees are foraging

Main aim: By decoding the waggle dances of worker bees, to determine the habitats and distances from the hive that honey bees collect food, the plants that they visit, and to make recommendations for land use in both rural and urban areas that benefit honey bees and beekeepers.

Current status: 30% funded by the Nineveh Charitable Trust. Project initiated Spring 2009. Seeking additional funding.

Project 3. Learning from other countries. Testing and developing European and North American Varroa control methods under British conditions & extending knowledge and good practice to beekeepers

Main aim: To test methods for Varroa mite control under British conditions in order to determine which combinations effectively keep mite populations below damaging levels, and to train beekeepers in these methods.

Current status: Seeking funding. Intended start date is August 2009.

Project 4. What is killing British honey bee colonies? Monitoring hives for pathogens & other causes of mortality

Main aim: To monitor levels of diseases (spore levels, virus levels, mite populations, brood infections) in hives in relation to Varroa control methods (Project 3).

Current status: Seeking funding. Intended start date is autumn 2009/spring 2010, following on from Project 3.

Dr. Francis L. W. Ratnieks (Professor of Apiculture)
Laboratory of Apiculture & Social Insects (LASI),
Department of Biological & Environmental Science
University of Sussex

20 May 2009

Printed in the United Kingdom by The Stationery Office Limited
7/2009 430756 19585