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Bovine TB Eradication Programme
IAA Badger Vaccination Project
Year 2 Report

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IAA Vaccination Project - Year 2 Report

Contents

1 Executive Summary

1. This report covers the second year of the five-year badger vaccination project in the Intensive Action Area (IAA). The project began in 2012.

2. The IAA covers approximately 288km² and is primarily located in north Pembrokeshire. The badger vaccination project in the IAA is currently the largest of its kind within Great Britain.

3. The vaccination field operations for the second year were undertaken between April and November 2013.

4. Twelve teams, each consisting of a field operative and an assistant, vaccinated a total of 1,352 badgers. A welfare assessment of every badger was undertaken at the time of capture and none were found to be unfit and no badger showed any sign of adverse reaction to the vaccine.

5. All work was carried out by employees of the Welsh Government. The field operatives had successfully completed the Animal Health and Veterinary Laboratories Agency (AHVLA) course relating to the cage trapping and vaccination of badgers.

6. Participation in the project by landowners is voluntary and the Welsh Government is grateful for their cooperation. A total of 486 landowners allowed access onto their land. This amounted to approximately 258km² and contained 260 main badger setts.

7. The field operational phase for the second year of the project cost £926,784 which is slightly less when compared with year one, whilst covering a larger area. The cost remains in keeping with original estimates made in March 2012. Efficiencies and savings have been achieved by applying lessons learned from the first year and through best procurement practice to secure value for money.

8. Lessons learned from the first year have also been applied to improve validation techniques and resulting data quality.

2 Introduction

9. It was announced in March 2012 that the Welsh Government would embark on a five year badger vaccination project within the bovine TB Intensive Action Area (IAA) as part of efforts to eradicate bovine TB from cattle in Wales. The decision to vaccinate badgers was made following consideration of the Report of the Bovine TB Science Review Group (SF/JG/0333/12: Appendix 4).

10. This is the second annual report and provides details of the badger vaccination work undertaken during the second year of the project in 2013.

11. The IAA is approximately 288km² and is primarily located in north Pembrokeshire but includes small parts of Ceredigion and Carmarthenshire (Figure 1). There is a high incidence and prevalence bovine TB in cattle herds within the area.

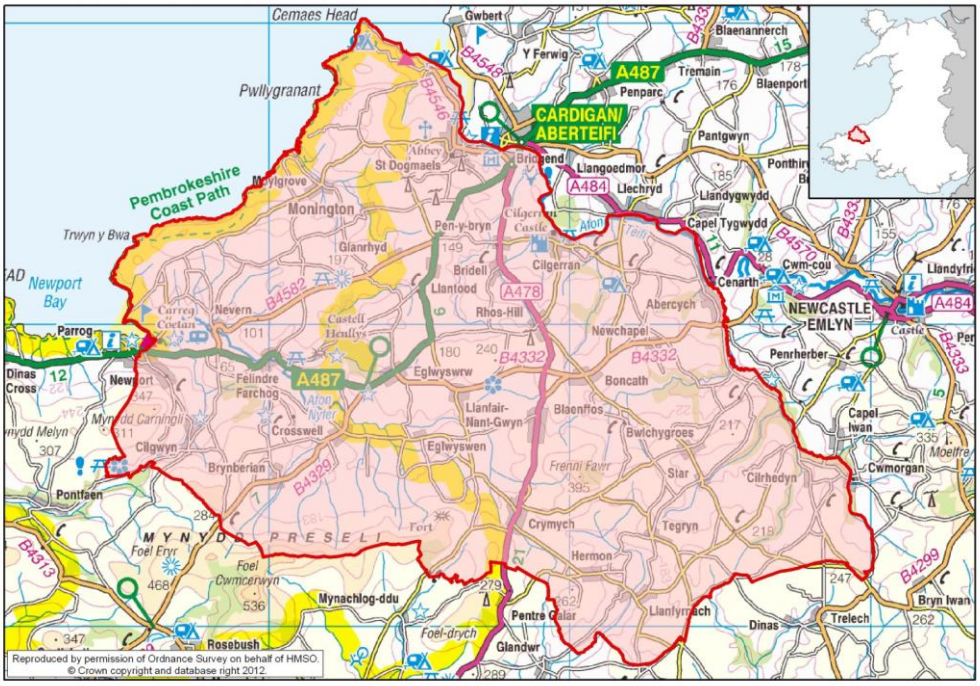

Figure 1: Map of the Intensive Action Area

12. The IAA was established in 2010 as an area where increased measures would be implemented to tackle all sources of bovine TB, in both domestic and wild animal species. The badger vaccination project began in May 2012 and is being carried out alongside the following measures:

- Additional cattle surveillance and controls
- Enhanced biosecurity measures
- Additional surveillance and controls for non bovines (goats and camelids)

3 Badger vaccination in the Intensive Action Area

13. The purpose of the project is to vaccinate as many badgers as possible within the IAA each year for five years. This is a field delivery project and while every opportunity is taken to gather data to contribute to the evidence base, it is not intended to be an experiment or trial. The project has not been designed to investigate or assess the effect of vaccination on badgers or measure the level of immunity or impact on badger social groups.

14. The impact and effect that combined measures may have on cattle herd breakdowns within the IAA will be assessed annually by the Animal Health and Veterinary Laboratories Agency (AHVLA). Cattle herd TB incidence levels and other TB disease parameters within the area will be compared with a "reference area" where the disease picture is comparable (Project OG0142). Any differences observed in terms the number of TB breakdowns in cattle herds (or other TB disease parameters) will need to be assessed against the suite of enhanced disease control measures in place in the IAA. Reports of these annual assessments are available on the Welsh Government website: www.wales.gov.uk/bovinetb

15. In parallel with the badger vaccination project a survey of badgers found dead within the IAA is also being undertaken. A report for examination for *Mycobacterium bovis* in badgers found between 18 June 2012 and 30 April 2013 is available on the Welsh Government website: www.wales.gov.uk/bovinetb

4 Scheduling vaccination rounds

16. Participation in the 5 year project by landowners is voluntary and it is crucial that we gain access from as many landowners as possible to maximise the area covered by the project. Every effort is made to be flexible and provide sufficient notice to landowners to minimise any disturbance or disruption.

17. Land ownership details along with the badger capture results from year one formed the basis for the creation of 96 rounds of work scheduled to be completed over eight cycles. Routinely, a cycle involved 12 teams working simultaneously and covering on average an area of 32km^2. A number of scheduled rounds were changed or amalgamated once the teams had assessed the level of badger activity on the ground. Whilst working in an allocated area, each team also looked to gain access to check for activity on any land that had not been surveyed in 2012.

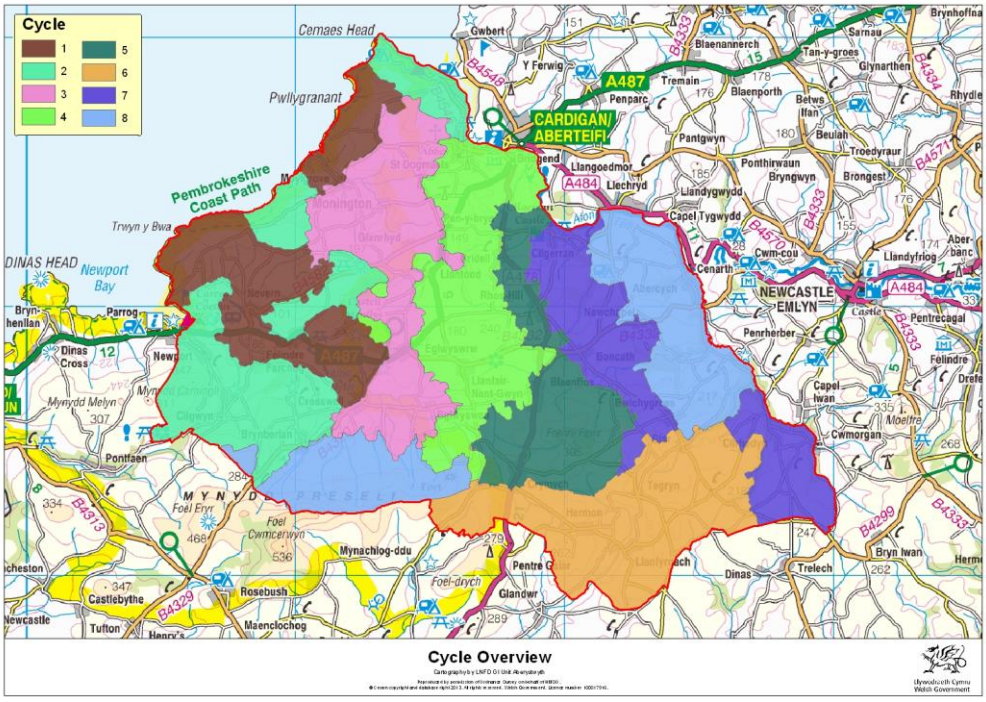

Figure 2: Map showing areas covered by each cycle of work in 2013.

18. Each cycle was completed over a three or four week period, depending on the size of the area covered and the level of badger activity identified. A cycle includes the period of time during which field operatives make initial contact with the landowners/occupiers; survey the land to identify badger activity; lay and pre-bait traps; set the traps to catch and vaccinate badgers, and finally; remove all traps.

5 Results

Area covered

19. The IAA is approximately 288km^2. A total of 486 landowners (472 in 2012) allowed access onto their land to survey for badger activity. This equated to approximately 258km², or 90% (84% in 2012), of the IAA. The remaining 30km² primarily comprises residential properties, roads and rivers. There are however some, mostly small, areas of land and woodland where it has not been possible to establish ownership.

20. In 2013 we were successful in obtaining permission to access some large areas of land where permission was not granted 2012. We were unable to access 2.77km² because the landowners either refused access, or we were unable to make contact with them. We will attempt to gain access to these areas to maximise coverage in 2014.

21. Being denied access to certain areas does not necessarily prevent the trapping and vaccination of badgers as they will often travel outside those areas to forage for food. Our field operatives set traps and capture badgers remotely, on the perimeters of those areas where we had not had permission to enter.

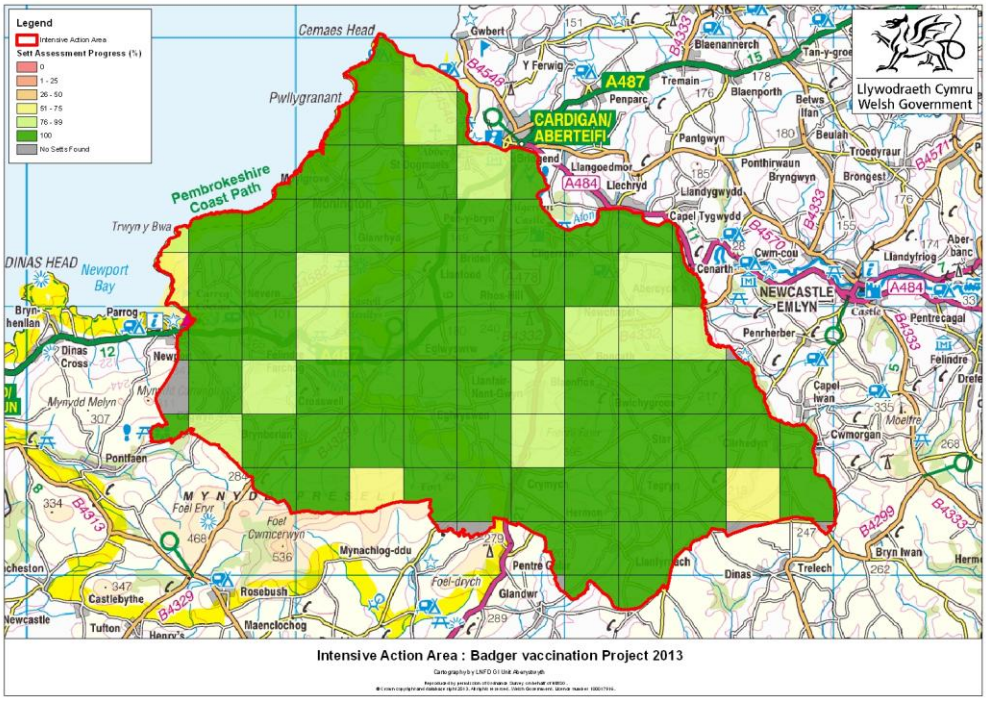

Figure 3: Map displaying the percentage of setts previously identified that were re-assessed in 2013.

22. The sett survey results indicated that 902 setts were active; 260 as main setts and 642 as annex or subsidiary setts.

23. There has been a reduction in the number of main setts identified in 2013 compared to the 313 reported in 2012. This reduction follows additional work undertaken which re-assessed sett classification results reported by field operatives. The classification of setts is subjective, and accurate assessments have improved as experience is gained during the project. The quality assurance of survey results will be undertaken on the completion of each cycle of work for the remaining years of the project

24. It is not possible to determine the precise number of badgers within the IAA. There are no current robust estimates of average numbers of badgers per social group in differing areas of the country. The most recent Information that is available combines the results of a number of surveys across the country and estimates that social groups typically contain between four and eight adult badgers (Roper 2010). Therefore, assuming each main sett has an associated social group with an average of six adult badgers, the 260 main setts identified within the 258km² surveyed area of the IAA, could maintain an estimated population of approximately 1,560.

Trapping results

25. Trapping and vaccinating began in May 2013 and was completed in November. Figure 4 details the trapping results by cycle.

Cycle	Date Range	Cycle Duration	Adult	Cub	Age Unknown	Total	Proportion of total (%)
1	29/04/13 to 24/05/13	4 wks	323	13	3	339	25.1%
2	27/05/13 to 14/06/13	3 wks	172	44	1	217	16.1%
3	17/06/13 to 05/07/13	3 wks	150	34	0	184	13.6%
4	08/07/13 to 02/08/13	4 wks	167	55	1	223	16.5%
5	05/08/13 to 23/08/13	3 wks	95	8	0	103	7.6%
6	25/08/13 to 20/09/13	4 wks	104	12	0	116	8.6%
7	23/09/13 to 18/10/13	4 wks	89	7	0	96	7.1%
8	21/10/13 to 15/11/13	4 wks	72	2	0	74	5.5%
Total			**1172**	**175**	**5**	**1352**	

Figure 4: Trapping results by cycle.

26. In total, 1,352 badgers were trapped and vaccinated in 2013. Part of the first round completed in May was also used to train newly recruited field operatives.

27. Work in 2013 began in the west of the IAA where high levels of badger activity were recorded the previous year. The earlier rounds provided the greater return in numbers of badgers caught and vaccinated. 1,172 of the badgers trapped were classified as adult, which is comparable with the numbers (1,193 adults) caught in 2012. Nearly 87% of all the badgers vaccinated in 2013 were adults. The majority of cubs were captured in rounds 2, 3 and 4 which collectively accounted for 76% of the total number of cubs caught during 2013. A similar pattern was seen in 2012, though overall, fewer cubs were caught and vaccinated in 2013 compared to those (220 cubs) in 2012.

28. It is not always easy to differentiate between well-grown cubs and adults therefore for a small proportion (<1%) of badgers, the age was recorded as unknown. Predictably, the proportion of cubs captured reduced during the summer as cubs born earlier in the year were classified as adults in later rounds.

29. As previously explained, field operatives have been successful at trapping badgers away from setts. In 2013 over 42% (571) of vaccinated badgers were trapped remotely.

30. It is not possible to determine the proportion of the population that was vaccinated with any certainty without knowing the precise population figure. Although a total of 1,352 badgers were vaccinated, the capture rate in line with Roper (2010) is solely based on the number of adult badgers captured and vaccinated. A total of 1,172 adult badgers were caught and vaccinated compared to an estimated population of 1,560 adults. This represents an approximate capture rate of 75%.

Welfare assessments

31. A welfare assessment of every badger was undertaken at the time of capture. Welsh Government veterinary surgeons were the first point of contact if field operatives had concerns over the welfare of badgers trapped or found in the IAA or if any suspected adverse reaction to vaccination occurred.

32. No badgers were found to in need of veterinary examination. There were 23 instances where minor injuries were recorded. The majority of the injuries reported were slight abrasions/scratches to the nose or face, with the remainder being older injuries or wounds. All of these individuals were considered to be fit and healthy for release following vaccination. No badger showed any sign of adverse reaction to the vaccine.

33. Normally, during any trapping operation a number of badgers will be captured more than once, and this was the case in the IAA where 500 individuals were recaptured. This is an increase on the number (320) of recaptures reported in 2012. There is no clear explanation for this increase. The recaptured individuals were identified by the temporary mark applied to all vaccinated badgers. Following a trap-side check to assess their welfare these badgers were released without any further action.

Non-target species

34. Experience from other badger trapping exercises indicates that the trapping of some non-target species is inevitable. A total of 34 animals of non-target species were trapped which is less than during 2012, when 51 were caught. Field operatives are provided with guidance and with increasing experience have been able to minimise the number of non-target species trapped.

35. It is a legal requirement that species listed under Schedule 9 of the Wildlife and Countryside Act 1981 must not be released. The majority of the non-target species animals caught were grey squirrels which were humanely killed. All other species, including 14 foxes and a crow were released unharmed following a welfare assessment.

6 Impact of weather

36. The operation to trap and vaccinate badgers is heavily dependent on weather conditions. During adverse weather conditions (such as extreme cold, heavy rain or snow), badgers held in cages are potentially at risk from exposure. If adverse weather was expected, some or all trapping was suspended. The IAA Management Team monitored the weather forecasts closely, especially during the nights and days when trapping was being carried out. We made extensive use of the local BBC on-line weather forecasts and a decision to proceed or not was made on a daily basis.

37. Overall we were fortunate to have dry conditions, or only localised light rain showers, on almost every night when the traps were set. On only one occasion during the final cycle in November did we have to suspend a scheduled trapping night due to heavy rain. Field operatives also took local weather conditions into account and were careful to ensure that traps were positioned to make maximum use of natural cover to minimise exposure to detrimental weather conditions. On four occasions individual teams did not set planned traps that would have been exposed to wind and rain.

7 Quality assurance

38. All the vaccinators have successfully completed the AHVLA Cage Trapping and Vaccination of Badgers Course and hold a Certificate of Competence. Their performance was monitored throughout the project. Three field supervisors were appointed and were responsible for monitoring four teams each. They closely supervised all aspects of delivery and monitored the field operatives to ensure that the Standard Operating Procedures (SOPs) were strictly adhered to. Special attention was given to the setting of traps, the vaccination process and the welfare of trapped animals.

39. Vaccination of wild badgers by lay vaccinators can only take place under the direction of a veterinary surgeon. Welsh Government field operatives who vaccinated badgers, worked under the direction of Welsh Government veterinary surgeons who regularly attended field operations to satisfy themselves that the field operatives undertook their duties competently.

40. As BadgerBCG is a Prescription Only Medicine – Veterinarian (POM-V) it can only be supplied by a veterinary surgeon. Welsh Government veterinary surgeons were responsible for prescribing and overseeing the distribution of the vaccine.

41. As part of the requirements of the Certificate of Competence, AHVLA undertook an audit of three vaccination teams on 16 October 2013. The purpose of the audit was to assess whether processes were fit for purpose and to ensure practices were in accordance with the SOPs. AHVLA reported that those field operatives that were audited appeared highly motivated, competent and committed to ensuring that

high standards were being met. The AHVLA audit report included some recommendations on improving processes which will be carried forward to future operations.

42. As the licensing authority, the Natural Environment and Agriculture Team (NEAT) of Welsh Government carried out inspections on 16th September, 14th October and 12th November 2013 to ensure that the field operatives were compliant with the conditions of the licenses to take and mark badgers (Protection of Badgers Act 1992) and to use cage traps to trap badgers (Wildlife and Countryside Act 1981). NEAT were content that licence conditions were being adhered to in full.

8 Expenditure and finance

43. The cost of delivering badger vaccination in the IAA, over 5 years, was estimated to be in the region of £5,760,000 (SF/JG/0333/12: Wales Bovine TB Eradication Programme – Decision on Culling Badgers in the Intensive Action Area, 2012 refers).

44. A breakdown of the costs directly incurred in the preparation and delivery of the field operational phase of the vaccination project in the IAA during 2013 is provided in Figure 5.

Staff	£574,025.24
Training & Personal Development	£39,769.00
Accommodation	£60,396.33
Equipment, PPE & Consumables	£65,562.31
Vehicles	£120,080.80
Badger BCG Vaccine	£22,989.39
Printing and publishing	£3,744.54
Total 2nd year costs	**£886,567.61**
Annualised Fixed Assets	£40,216.50
Total costs	**£926,784.11**

Figure 5: Expenditure in 2013.

45. There has been an overall saving in costs for the second year in comparison to the first (£945,000). The costs cover the delivery of the field operational phase between April and November 2013, and also include expenditure that was incurred prior to this, during the preparation stage such as the purchase of various items of equipment and consumables.

46. The staff costs cover both the field staff employed on a seasonal basis and the IAA management team, including their time dedicated to the preparation and set up of the project ahead of the field operational phase. There will have been some staff resources allocated to the project by the IAA management team at times during the closed season. The staff costs, which include salaries, contributions to national insurance and pensions, as well as travel and subsistence payments, accounted for the majority of expenditure. The accommodation costs cover a full twelve month period and include leasing costs, maintenance and utility charges. Equipment

costs include consumables, such as the peanuts used as bait, personal protective equipment, footwear and clothing. Vehicle costs include vehicle hire costs, fuel, maintenance, road tax and insurance.

47. In addition to the costs incurred in year two, a further annualised figure of £40,216.50 has been included to cover the value of capital assets and equipment such as cage traps, fridges and power washers, some vehicles and trailers already held by Welsh Government.

48. Based on these figures the projected cost of the five year project is in the region of £4.6m (based on the average annual cost of years 1 and 2). This estimation is without any adjustment for inflation or annual uplift.

9 Conclusions

49. We consider that the project continues to be successful in meeting the objective to trap and vaccinate as many badgers as possible within the IAA. The confirmed number of badgers caught and vaccinated in 2013 (1,352) is slightly less than in 2012 (1,424), although the total number caught, including re-captures, increased to 1852 from 1744 in 2012.

50. Our ability to deliver this project remains wholly dependant on the co-operation of landowners/occupiers granting us access to survey, set traps and vaccinate on their land.

51. During 2013 the project increased the area covered. In total, access was gained to approximately 258km². This equates to 90% of the IAA compared to 84% (241km²) in 2012.

52. The final cycle provided the least return in numbers of badgers caught and vaccinated. The lower trapping rate is likely to be due to the poorer weather conditions experienced during November and a reduction in badger activity. Going forward we will endeavour to complete the field operations earlier in the year to make the best use of preferable weather conditions.

53. The variance in capture rates across rounds may be due to several contributing factors, including varying badger density, time of year and size of area trapped. The earlier cycles of 2013 provided the greater return in numbers of badgers with over 25% of the total being caught and vaccinated in the first cycle. For the second year higher levels of badger activity were found in the west of the IAA.

54. The lessons and experience gained from the first year has enabled the IAA management team to make financial savings. This was achieved by seeking greater value for money through best procurement practice and competition between suppliers.

55. Lessons learned from the first year have been applied and data quality is improving with greater experience and validation techniques.

The quality assurance of survey results will be undertaken on the completion of each cycle of work for the remaining years of the project.

56. It is difficult to make inferences based on the comparison between the first and second years. As the project progresses there should be increased scope to interrogate the dataset and reach more meaningful conclusions.

10 Acknowledgements

57. The Welsh Government is grateful to all landowners/occupiers who granted permission to access their land to trap and vaccinate badgers.

58. The IAA Management Team would like to thank colleagues in other departments of the Welsh Government, the Animal Health and Veterinary Laboratory Agency (AHVLA), and Natural Resources Wales for their cooperation and assistance with the delivery of this project.

11 References

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