The Moorland Association

THE MURGATOYD ET AL. PAPER – PUBLISHED 19th MARCH 2019

COMMENTARY

FULLY REVISED – SEPTEMBER 2026

WITHIN THIS COMMENTARY THE FOLLOWING SHOULD BE NOTED:

- **The Murgatroyd et al. paper of 2019 is referred to as – 'The Paper' – or – 'The Study' – or – 'Murgatroyd' – herein.**
- **Any reference to the individual authors will use their full names rather than abbreviations.**
- **The – 'Original 60' – refers to the original listing of 60 birds selected by Natural England ('N.E.') for Murgatroyd – however, as two transmitters were judged to be malfunctioning at an early stage (no further detail available), the study continued with 58 birds.**
- **The – 'October 58' – refers to the residual group and the number which were studied at the cut-off date of 5th October 2017.**
- **The terms – 'Last Known Fix' ('L.K.F.') – and 'Final Transmission Location' ('F.T.L.') – are interchangeable – however the Moorland Association ('M.A.') use the acronym F.T.L. exclusively.**
- **When a tag ceases transmission, it is frequently referred to as 'stopped no malfunction' ('S.N.M.').**
- **At which juncture, the bird is frequently referred to as 'missing fate unknown' ('M.F.U.').**
- **The 'Natural England April 2025 Hen Harrier Tracking Update' is referred to as the – 'N. E. April 2025 Update' – a full revision of all results has now been completed following the N. E. August 2026 Update, albeit the overall position has seen very little, if any, change.**
- **The – 'first 160' – refers to all hen harriers which were tagged by N.E. and any of their partner organisations from the start of the programme during June 2002 to the end of July 2017 (the end of tagging for the 2017 season). This group contains 99 radio tagged birds and 61 satellite tagged birds, with the latter being the group from which Murgatroyd birds were selected (61 less 3 = 58 net).**

IMPORTANT NOTE

It is acknowledged that Murgatroyd is a peer reviewed paper which is in the public domain – for further detail see page 6.

This commentary has been produced following a careful reading of The Paper.

The notes which follow carry numerous inferences and opinions, air concerns, catalogue doubts and raise numerous questions, all as a result of that reading.

It must also be understood that, as an organisation towards which serious allegations and trenchant criticisms are directed within The Paper, the M.A. considers it has both a duty and every right to question the contents thereof in detail.

Finally, it should be made perfectly clear that the M.A. stands ready and willing to engage with the authors to clarify and understand any points of contention herein, should they wish to make contact.

PREAMBLE:

The purpose of this document is to consider carefully the claims made within Murgatroyd and to highlight any particular points which it is felt are confusing, inconsistent or misleading.

Much of The Study appears to rely on the results of sophisticated mathematical modelling, all completed from afar. We have not sought to challenge this aspect; there is more than enough under other headings to suffice.

The commentary which follows weaves its way through both the process of the commissioning of the work and the resulting report itself.

Most regrettably, on three occasions out of five attempts, we have been rebutted by N.E. when we have sought access to the correspondence and data used for / by Murgatroyd. The applications are listed below with brief resumes attached:

- **EIR 2024/07985 – Submitted 7th August 2024 – Request for the final transmission data used – DECLINED**
- **IR 2024/09371 – Submitted 11th September 2024 – Appeal concerning the above – DECLINED**
- **EIR 2024/11494 – Submitted 15th November 2024 – Request for the satellite tag (#) numbers used – ALLOWED**
- **EIR 2024/12228 – Submitted 12th December 2024 – Request for the commissioning documentation used – ALLOWED**
- **EIR 2025/00740 – Submitted 21st January 2025 – Request for accompanying correspondence / e-mails – DECLINED**

It is wholly unsatisfactory for us to be denied access to the detail surrounding such a controversial and pivotal study. Indeed, the very frequent quotation of the study by opponents of driven grouse shooting makes the denial of access all the more sinister. It is particularly worrying to learn (see EIR 2025/00740) that routine correspondence / e-mails *'are not usually retained for long periods after the completion of a project'* which is appalling. If a project is worth undertaking, then surely the correspondence files pertaining thereto must be worthy of retention.

This matter is to be pursued further; the entire farrago is disturbing, and in our opinion is very close to deliberate obstruction.

COMMENTARY:

PART ONE – COMMISSIONING OF THE REPORT – *the negotiations to set up the study and the requirements contained in the commissioning agreement.*

1. **The Study was initiated by N.E. during 2017 – a Memorandum of Agreement ('M. o. A.') between Natural England (1) – and Aberdeen University (2) – and the University of Cape Town (3) via their FitzPatrick Institute of African Ornithology – was agreed and exchanged.**

2. **The selection of a partner located far away in South Africa does seem a strange choice, albeit Prof. Arun Amar must have been well known to N.E. personnel (and perhaps favoured) due to his work for the Royal Society for the Protection of Birds ('R.S.P.B.'). He is certainly well known to the M.A. as being, in our opinion, unsympathetic.**

3. **There was no pecuniary arrangement – each party contributed in-kind against the value of the ability to publish / use the resulting study.**

4. **In the case of N. E. their provision of the satellite tagging equipment in conjunction with the associated monitoring and data gathering represented their contribution.**

5. **The M.o.A. called for:**

   - **Two papers to be drafted (M.o.A. – see clause 6.1 – page 5 – and – clause 8.1 pages 6 and 7), one with data analysis ('Hen Harrier Survival'), with the second ('Demographic Rates and Population Model') investigating population potentials.**

   - **The priorities were stated (M.o.A. – see clause 7.1 – page 5) as being – *'both papers must consider potential mechanisms that result in hen harrier mortality'* – and – *'any objective analysis of hen harrier tracking data must consider potential causes of mortality in locations used by hen harriers.'***

   - **The two papers (inter alia) were to examine (M.o.A – see clause 8.1 – pages 6 and 7) *'their (hen harrier) survival and habitat use and seek to identify causes of mortality'* – and – *'the paper(s) will help guide future management planning for this species and…….interventions such as brood management'***

6. **The study principal was Dr. Megan Murgatroyd B.Sc. Ph.D. – a B.Sc. in Conservation Biology from the University of the West of England – thence a Ph.D. from the University of Cape Town – now Associate Director of African and Asian programmes – Hawk Watch International – working from a base in the Republic of South Africa – assisted by:**

   - **Stephen M. Redpath – School of Biological Science, University of Aberdeen – NO FURTHER DETAILS**
   - **Stephen G. Murphy – N. E.– Hen Harrier Project – NO FURTHER DETAILS**
   - **David J. T. Douglas – R.S.P.B. – Centre for Conservation and Science – NO FURTHER DETAILS**
   - **Richard Saunders – N. E. – Chief Ornithologist – NO FURTHER DETAILS**
   - **Professor Arjun Amar B.Sc. Ph.D. – a B.Sc. HONS in Zoology from Newcastle University – thence a Ph.D. from Aberdeen University – thence senior conservation scientist for the R.S.P.B. – thence the FitzPatrick Institute of African Ornithology.**

7. **Murgatroyd was published in 'Nature Communications' – https://doi.org/10.1038/s41467-019-09044-w – it was received 1st November 2018 – being accepted 7th February 2019 – and published 19th March 2019.**

8. **The Paper is entitled…….*'Patterns of satellite tagged hen harrier disappearances suggest widespread illegal killing on British grouse moors'* – and continues within the resume / subtitle to state…….*'Identifying patterns of wildlife crime is a major wildlife challenge…….we conclude that hen harriers in England suffer elevated levels of mortality on grouse moors, which is most likely the result of illegal killing'***

9. **The work was carried out using data from 60 birds (21 males and 39 females – total 60) fitted with platform transmitting terminals ('P.T.T.s' – 'satellite tags' – 'tags') between 2007 and 2017 – all were Microwave Telemetry Inc. (U.S.A.) – 9.5gram Argos models – using C.L.S. ARGOS (France) as satellite provider – no terrestrial radio devices were used in the study.**

10. **It is interesting to note that terrestrial radio tracking device results were not used. Referring to the M.A.'s 'Comprehensive Satellite Tagging Register' (available on the M.A. website) it is noticeable how many very early and very local M.F.U. results are seen. There is no categoric proof, however one might reasonably infer that the radio devices were less than efficient, which resulted in their removal by N.E. from the data set available to Murgatroyd. Accordingly, the early radio tagging results (see the Comprehensive Satellite Tagging Register) along with the unfavourable conclusions made therefrom should be viewed with considerable scepticism.**

11. **The M.o.A. also required that (M.o.A. – see clause 7.1 page 5) *'Necessarily, both papers must consider potential mechanisms that result in hen harrier mortality, high levels of which appear to be limiting population recovery. Any objective analysis of hen harrier tracking data must consider potential causes of mortality in locations used by tagged harriers'.* All of which suggests there was a strong desire for the study to arrive at an acceptable conclusion.**

12. **The conclusion (The Paper – sub-title / resume – page 1) that there is *'widespread……. etc'*. is subjective – widespread is not accorded a value or quantified. No serious attempt to assess individual fates is made anywhere within the study, which rather relies upon the studying of disappearances using S.N.M. satellite tag data in relation to the locations upon which the subject birds were tending to frequent.**

13. **Furthermore, The Study references earlier works on illegal killing, and one can but infer that justification of those earlier opinions / results was a significant reason for the commission.**

14. **The M.o.A. required areas of investigation (M.o.A. – see clause 8 – pages 6 and 7) which were not followed through – no predator investigation – no habitat assessment – no work assessing prey abundance – no interviews of interested / knowledgeable parties – simply tag data – and is thus merely a desk-top exercise carried out between Cape Town and Aberdeen – with no attempt to study the ground in person as far as we can tell.**

PART TWO – DATA CHOICE – *the selection of data supplied by N.E. for the study and the anomalies contained therein.*

15. **The areas of origin of the birds involved (using the 'October 58' because the details of the 2 further birds are not known) is imbalanced and suspect:**

- **From Bowland = 16 (ex 58 = 27%)**
- **From Langholm = 17 (ex 58 = 29%)**
- **From the Isle of Man = 4 (ex 58 = 7%)**
- **Total = 37 (ex 58 = 63%)**
- **With 63% from – Bowland – Langholm – Isle of Man – (37 ex 58 = 63%) – there were only 36% of the 58 (21 ex 58 = 36%) sourced from the entire remaining potential northern territory within the U.K (Peak District – Pennines – Lakes – Cheviots – North Yorks' Moors).**

16. **Of the 'Original 60' selected there were 21 males (35%) and 39 females (65%) – an immediate anomaly as the ratio of male to female is atypical – noting that the sex ratio of tagged harriers to date has been:**

- **The Murgatroyd birds have a ratio of 21 males (35%) and 39 females (65%) – total 60**
- **The 'first 160' harriers listed by N.E. (June 2002 to July 2017) have a ratio of 63 male (39.37%) and 97 female (60.62%) – total 160**
- **Whereas the M.A. brood management birds (which tagged full broods with no favouring of either sex) is much more closely related to natural conditions having a ratio of 22 male (54%) and 19 female (46%) – total 41**

17. **Therefore, as The Study comprises 21 males (35% = underweight) and 39 females (65% = overweight) it is suspect. Especially as males are more inclined to disperse more widely, thus cease transmitting across a greater geographical span. As a result, females cause disproportionately more negative results within the home range. Accordingly, the study is biased towards females which are more likely to remain close to their natal areas. Why build in that anomaly from the start? If, of the two sexes, were females to be the subject of more losses, then the imbalance would magnify that result – and provide for a misleading report.**

18. A possible explanation is that N.E. deliberately chose to favour the tagging of females as they judged the data from females to be of more value than males; thus a preferable choice in respect of their limited satellite tag purchasing budget. It is regrettable that this anomaly was neither identified nor addressed – we view it as a significant flaw.

19. As noted above, the 'October 58' data set was actually used as early tag failures occurred in 2 cases (The Paper – page 2 – left hand column) there is no further detail available on the nature or timing of the failures. Why should the data from 2 failures be withheld? This might have been to avoid a higher tag failure rate which would have totalled 6 not 4 (6 ex 60 = 10%). Noting Murgatroyd suggests a tag failure rate of 7% (The Paper – page 5 – left hand column) as being within normal expectations. This is simply wrong; the figures were 'smoothed' by the exclusion of the 2 early failures as explained herein – yes – 4 ex 58 = 6.89% – but 6 ex 60 = 10% – and that is the actual / correct figure.

20. No birds fitted with terrestrial radio transmitters (marked 'R') were used, which is discussed at 10. above, and certainly brings into focus the very poor early (2002 to 2007) results prior to the adoption and deployment of satellite tags exclusively. It could be inferred that N.E. had little or no confidence in the performance of the radio transmitter equipment. The data in respect of the original 60 birds was supplied by N. E. (M.o.A. – see clause 6.1 page 5) from a total of 160 being the total number tagged by N.E. from 2002 to 2017 (inclusive) – why not choose more? – why were the 60 chosen? – does that indicate that the radio tagged data was of little or no use? If that is the case, why have N.E. never highlighted the early radio transmitter problems? This may very well suggest that the expenditure on the 99 radio transmitters was largely wasted.

PART THREE – MORTALITY CONSIDERATIONS – *the discussion concerning mortality and potential causes thereof is rather confusing and is not investigated in real depth which is disappointing.*

21. **The Study further noted (The Paper – 'Results' – page 2 – right hand column) that there appeared to be a 17% first year survival rate with *'most of the deaths during the first year (within 365 days of tagging) occurred during the late summer and autumn period'.***

22. **That is the most vulnerable time for unskilled juveniles, immediately following their fledging and into the first winter period at a juncture when they are newly independent and must survive using their own skills. It is accepted as being the heaviest period for mortality, however the 17% survival rate (that is 1.7 individuals from a staring cohort of 10 within the first 365 days) requires far more investigation. A simple S.N.M. / M.F.U. is not good enough – as the mortality rate is used as direct evidence against grouse moor management, whilst careful analysis of the numerous potential causes is absent.**

23. **Mortality is cited using Orkney as an area *'where there is no managed grouse moor'* (The Paper – 'Discussion' – page 5 – left hand column) suggesting that their increased survival is entirely due to the lack of illegal killing – whilst omitting to note that Orkney has no badgers, no foxes, no weasels and, until the recent past, did not have stoats (albeit with the latter now being subject to an intense eradication campaign). This is all noted in the Orkney Nature Wildlife Project website – www.orkneynaturewildlifeproject.org.uk – and failing to mention these factors is a baffling omission. Indeed, we understand that it was Prof. Amar who carried out much of the Orkney hen harrier work, and he must surely have been aware of the reduced presence of predators.**

24. **There is no further attempt to assess natural mortality rates despite the M.o.A requirements (M.o.A. – clause 8 .1 – pages 6 and 7) and quite why this appears to have been largely ignored as a topic is a mystery – especially as the heavy first year mortality is clearly a limiting factor which the M.o.A. specifically required to be investigated.**

25. **Similarly (The Paper – 'Discussion' – page 5 – left hand column) any assessment of predation in general (and do note the truly ridiculous eagle and fox comment – second paragraph) has also been forgotten. Interestingly there are also sweeping assertions concerning prey abundance; with no attempt to track the actual abundance / paucity during the study period against the results. The entire issue being waved aside with the assertion that all was satisfactory; accordingly rule the matter out as a factor!**

26. **As for our proximity to woodland and intraguild predation questions, they are not even addressed – were they actually considered?**

PART FOUR – PROXIMITY OF WOODLAND – *our mapping of the F.T.L.s (using the N.E. April 2025 Update) reveals a most interesting correlation.*

27. The proximity to woodland issue does not appear to have been considered – considering the 'October 58' and using the N.E. April 2025 Update (less the 8 'WITHHELD' which do not have an O.S. location and the 1 'TRANSMITTING' which gives 58 – 9 = 49) it should be noted that from those 49 remaining;

- **There are 29 F.T.L.s (59%) within 3 kms. (1.8 miles)**
- **And 7 F.T.L.s (14%) within 5 kms. (3 miles)**
- **Of a 'significant block of woodland'**
- **Therefore, a total of 36 F.T.L.s out of 49 (73%)**
- **A 'significant block of woodland' is defined as being either a contiguous or a closely associated woodland expanse of at least 1 square kilometre (100 hectares /247 acres) or more.**

28. This factor similarly appears in the M. A.'s Comprehensive Satellite Tagging Register as a significant question with similar results.

29. It also dovetails into the Orkney predation question, an island with virtually no woodland – omitting to highlight that fact casts further doubt on the reliability within Murgatroyd of the mortality comparisons quoted in PART THREE above.

30. Interestingly, N.E. fully recognise the dangers to harriers from goshawks / woodland; so much so that within the brood management licences (for example the final licence – 2024-69540-SCI-SCI – see note number 12) receptor (release pen) sites were not permissible near a known goshawk territory. Yet in Murgatroyd no mention is made – did the authors know? Perhaps not if they were at a desk in Cape Town!

PART FIVE – SUNDRY FINAL LOCATIONS – *within Murgatroyd little is said concerning the wide variety of F.T.L.s.*

31. Of the 49 F.T.L.s from the 'October 58' and using the N.E. April 2025 Update (8 WITHHELD plus 1 TRANSMITTING – 58 – 8 – 1 = 49) it is interesting to note some of the final locations:

- ***First, general areas – U.K. mainland and beyond:***
- **Acton Burrell, Shropshire = 1**
- **Cleatlam, County Durham = 1**
- **Brittany / Normandy, France = 3**
- **Hutton Roof, Lancashire = 1**
- **Isle of Man = 4**
- **Louth, Lincolnshire = 1**
- **Milton Abbas, Dorset = 1**
- **Shap, Cumbria = 1**
- **South Shields, Tyne and Wear = 1 – giving a sub total of 14**
- ***Second, within the M74 Langholm to Kielder 'forestry belt':***
- **Kielder = 3**
- **Gretna =1**
- **Dun Law = 1**
- **Langholm = 1**
- **Moffat = 1**
- **Lockerbie = 1 – giving a sub total of 8**
- **GRAND TOTAL = 22**

32. From the above we see that no fewer than 22 (45%) out of 49 are beyond driven grouse moor areas – yet they still ceased transmitting. What does The Paper about that? Nothing! There is no attempt to understand that nearly half of the 'problem' S.N.M. / M.F.U. birds were nowhere near a grouse moor when communications stopped. This is a something of an omission – especially when added to the fact that a certain proportion of birds with an F.T.L. on a driven grouse moor must be subject to loss by disease / predation / starvation – even Murgatroyd cannot suggest 100% are illegally killed – surely not.

PART SIX – MAPPING – *a subject which requires further investigation; presently the Murgatroyd method is, to say the least, something of a broad-brush approach.*

33. Work is continuing on the analysis of the distribution map (The Paper – Figure 3 – page 4) which considers the use of the areas shown for grouse shooting and relates them to F.T.L.s.

34. There are 189 squares included – each being of 20 kilometres by 20 kilometres – with each square covering 400 square kilometres which is 40,000 hectares (154 square miles / 98,800 acres)

35. Of the 189 squares there are approximately 60 lying in Scotland – 7 cover the Isle of Man leaving approximately 122 in England.

36. Grouse moors are identified (it is assumed via 'Google Earth') as being areas which display evidence of heather / grass burning in estimated percentages contained within 1 square kilometre samples (the basic O.S. grid square) each square covering 100 hectares (0.38 square miles / 247 acres) and which are then arranged in classifications of:

- **Less than < 5 % grouse moor cover within the 1 square kilometre grids**
- **Between 5% to 15% grouse moor cover within the 1 square kilometre grids**
- **More than > 23% grouse moor cover within the 1 square kilometre grids**
- **Immediately this is speculative – ignoring moorland areas which are routinely burned by other occupiers such as shepherds and includes areas owned by charities / government / public bodies / etc. which may have no grouse shooting interests whatsoever; Fylingdales, on the North Yorkshire Moors, being one such moor and a very good example. Certain squares covering the Lake District are also misallocated to driven grouse moor, a clumsy mistake. Furthermore, evidence of burning identified 8 years ago (2017) could have reflected burns from as far distant as the year 2002 with ease. Requesting accurate data from those in a position to know would have been a better plan, though one that would have required a collaboration with the M.A. thus, doubtless, viewed as anathema.**
- **In addition, the association between the actual areas used for driven grouse shooting and the F.T.L.s is tenuous – even in the > 23% squares that can potentially leave up to 77% of a square as a zone in which there was an F.T.L. but without the location being on a driven grouse moor.**

- **Considering a full 20 kilometre square extends to 400 square kilometres which is 40,000 hectares (98,800 acres) – with 23% being 9,200 hectares (22,724 acres) – it potentially leaves a remaining balance of no less than 77% being 30,800 hectares (76,076 acres) with no driven grouse moor coverage – an accuracy which can hardly be described as anything other than highly approximate.**

- **This method can be demonstrated as suspect; a good example is its application to the 12 squares which (loosely) cover the North Yorks' Moors. Murgatroyd states that 7 of those 12 squares had *'a high proportion of terminal fixes'* within their boundaries. When an inspection of each of the 49 F.T.L. entries (from the October 58) is made it reveals only 1 entry – Murg' 15 – # 90691 – F.T.L. on Pockley Moor – 16th February 2010 – within the 12 squares covering the North Yorks' Moors – baffling. Notwithstanding, Murgatroyd, somewhat confusingly, claims that 5 squares = 'dark red status' – 1 square = 'mid red status' – 1 square = 'pink status' – 5 squares = 'grey status' = a total of 12 squares – thereby suggesting a high level of disappearances. Where are they? We could find only one!**

- **Similarly, taking the 13 squares which cover the Lake District, the first point of note is that Murgatroyd claims that 3 squares are grouse moor of 5% to 15 % – 'pale red status' – and 1 square is grouse moor less than < 5% – 'pink status' – with the remaining 9 squares as no grouse moor – 'grey status' – (total 13). Which results in the contention that (and ignoring the 1 < 5% 'pink status' square) there is between – 5% of 3 squares (6,000 hectares /14,820 acres) to 15% of 3 squares (18,000 hectares / 44,460 acres) – of active, managed, driven grouse moor within the 3 squares which cover a total 120,000 hectares / 296,400 acres – this is not the case as far as we can calculate – it bears no relation to reality on the ground – and is so woeful it must surely bring the entire Murgatroyd mapping system into question.**

- **Furthermore, of the 13 squares there are 10 squares with 'no terminal fixes' and 2 squares with 'a low proportion of terminal fixes' and 1 square with 'a high proportion of terminal fixes'. This is totally confusing as the latter square is centred upon the Windermere, Coniston and Grizedale Forest area which has no connection – whatsoever – to driven grouse shooting. In addition, we have searched the N. E. April 2025 Update for F.T.L.s and found none in that area – the closest being – Murg' 42 – # 137372 – 'Joanne' – F.T.L. at Winter Tarn east of Shap and the M6 – recovered 14th August 2024 – and noted as being death from natural causes.**

37. **Why did Murgatroyd not simply track each individual, and then map each individual, as we have done? It is hard to understand such an error of omission, unless an 'individual result' system would not have produced a 'broad enough brush' result and would have identified numerous awkward F.T.L.s. which would contradict the narrative – such as those we demonstrate within PART FIVE above.**

38. **The confusion continues; there is also no attempt to identify land within the quasi-public sector (Kielder for example). Such areas appear to be accorded driven grouse shooting status simply because they are rural, perhaps with some burnt ground in the general**

vicinity, all noted following a quick 'whizz over' the area on Google Earth! There may be as many as 20 squares falling within this region which spans the English / Scottish border lands – and as we have seen in PART FIVE above there are 8 (36 %) from the 22 non-grouse moor F.T.L.s within this locality – noting that a figure of 8 from the entire 'October 58' represents 14% of all losses!

39. **It should also be noted that Langholm was not used as a driven grouse moor for most, if not all, of the study period; and neither is it surrounded by driven grouse moors. However, once again, The Study treats disappearances in that area as suspicious, which is highly speculative and, it would appear, misinformed.**

40. **Interestingly the M. A. Comprehensive Satellite Tagging Register also notes this phenomenon very clearly – no fewer than 27 (12.4%) from the net total of 217 entries – which is 10.38% of the entire 260 entries (December 2025 edition) – sent an F.T.L. from the M74 to Kielder zone – a fact which has never been highlighted by our detractors.**

PART SEVEN – RESULTS – *The results shown below are for Murgatroyd – at the 5th October 2017 cut-off date – (see The Study – page 2 – Results – page 3 – Table 1).*

41. It should be clearly noted that the following results differ from the N. E. April 2025 Update (as explained below) as these results are from 8 years prior – the cut-off date for Murgatroyd – they show the following:

- **Birds transmitting = 7 = 12%**
- **Birds with early tag malfunction = 2 = 3%**
- **Birds with tag malfunction but observed thereafter = 4 = 7%**
- **Birds recovered with death judged as by natural causes = 5 = 8%**
- **Birds recovered with death judged as by illegal killing = 4 = 7%**
- **Birds for which transmissions stopped with no remains recovered = 38 = 63%**
- **TOTAL = 60 = 100%**
- **Noting Murgatroyd commenced with 60 sets of tag data – the 'Original 60' – see 9. above**
- **Therefore – having originally commenced with 60 birds – at the cut-off date – 5th October 2017:**
- **2 were early tag failures – thus 58 remained**
- **7 continued to transmit – thus 51 remained**
- **4 were subsequent tag failures – thus 47 remained**
- **5 were recovered – natural causes – and 42 remained**

- **4 were recovered – illegal killing – and 38 remained**

- **Therefore, the balance of – 38 – are to scrutinise.**

42. And to do so we requested the F.T.L. data from N.E. (see PREAMBLE above) however, and most unsatisfactorily, both our original request (EIR 2024/07955 submitted 7th August 2024) and our appeal (IR 2024/09371 submitted 11th September 2024) were declined.

43. Accordingly, our results are based upon the N.E. April 2025 Update which shows the status of all the October 58 Murgatroyd birds then deducting the 8 which are WITHHELD and the 1 which was still TRANSMITTING (leaving a net total of 49) some 8 years later during April 2025 – which is perhaps a more definitive list in the event.

44. First – from the net total of 49 – it should be noted:

- **There are 4 (8.16% of the 49) are said to have been confirmed as illegally killed;**

- **Whereas 5 (10.20% of the 49) are said to have been confirmed as dying from natural causes;**

- **Thus 40 (81.63% of the 49) are unexplained – however – of those 40 birds;**

- **There are 22 (44.89% of the 49 – and – 55% of the 40) which sent an F.T.L. away from / well away from any driven grouse moor;**

- **Which actually results in only 18 (36.73% of the 49 – and – 45% of the 40) which have disappeared on driven grouse moors without leaving evidence of their fate – thus any combination of illegal killing – tag failure – and various natural causes such as – starvation – predation – disease – is feasible;**

- **All of which is somewhat at odds with the title of The Study, suggesting the conclusions therein are considerably exaggerated.**

45. It should also be noted that (The Paper – Discussion – page 4 – left / right hand column) that – *'despite the lack of physical evidence, this strongly suggests destruction of the tag and removal of the carcass. We conclude that illegal killing is the most parsimonious explanation for the fate of these birds.'* Yet continues (The Paper – Discussion – page 5 – left hand column) to bemoan the fact that the tags are not as reliable as could be wished for and Murgatroyd concedes that the Doppler transmissions are not pinpoint, conceding

that finding birds is thus hindered! Be aware that the failure of the Manx Birdlife Team to locate the Isle of Man birds, despite being on a small island with no driven grouse shooting interests, provides an excellent example of the recovery dilemma, casting the 'suspicious disappearance / buried tag' theory in a rather different light.

46. As such it is far too easy simply to claim, as does Murgatroyd, that there is no other reasonable conclusion to be drawn other than losses due to illegal killing:

- **Murgatroyd makes no comment concerning the 22 birds shown in the N.E. April 2025 Update to have an F.T.L. well away from any driven grouse moor.**

- **The very strange conclusions that the North Yorkshire Moors have 'a high proportion of terminal fixes' when they have but one F.T.L. – see 36. above – is baffling.**

- **As are the statements concerning the 'high proportion of terminal fixes' within the Lake District squares said to have between 5% to 15 % use as driven grouse moor – see 36. above – yet there are no F.T.L.s. recorded in the area and no driven grouse moors operating.**

- **And should a bird die for whatever reason, unless the carcass comes to rest with the tag uppermost, pointing south, all in open ground rather than deep vegetation, the tag will never transmit thus cannot be located – N.E. state this point clearly on the hen harrier tracking update notes. Stated bluntly, loss of transmission cannot be automatically taken as a certainty of illegal disappearance / killing – there are several potential reasons – but Murgatroyd appears to ignore this fact – despite it being confirmed by Microwave Telemetry Inc. and N.E. separately – it is clearly a major factor in the production of unreliable figures.**

47. Continuing (The Paper – Discussion – page 5 left hand column) it is stated – *'predators such as golden eagles and red foxes are scarce'* – and continues – *'we would expect to recover tags from naturally predated harriers'* – and continues – *'collision with wind turbines are relatively rare* – and continues – *'harrier prey abundance and prey capture rates have been found to be higher……this suggest starvation is an unlikely source of mortality'* – and continues – *'even if mortality was caused by something other than illegal killing, we would expect to find at least some of the tags from the birds that disappeared as was the case for natural mortalities…….our inference that illegal killing is responsible for these losses matches previous studies that have highlighted illegal killing of hen harriers and other raptors on grouse moors.'*

48. Some remains from natural deaths were recovered and some instances of tag failures were recorded. Murgatroyd appears to ignore the fact that a tag will not charge and transmit unless it is directed at the sunlight (see 46 above) whilst, in addition, failing to explain that tags can be damaged by abrasion, that transmissions can be disrupted by proximity to large objects such as a cliff face or a built structure, due to an antenna touching the ground or being damaged, because of dirt on the solar panels, or as a result of other transmitters within the locality interfering with the signal. All of which was confirmed by the Executive President of Microwave Telemetry Inc. via correspondence during May 2024. The unswerving reliance (despite Murgatroyd's own contradictions!) upon the unstoppable performance of satellite tags is simply wrong – and it is understandably so when one considers the conditions and environments in which they are operating.

49. For reasons which are not clear, no mention is made of the total failure of the 4 Isle of Man birds all lost on the island (plus the 1 bird not included in the study – tag number # 33324 – entry number 94 on the Comprehensive Satellite Tagging Register – shown as tagged 7th July 2007 – further data withheld – and which was reported as lost within the vicinity of the nest) – and most questionably – why were they not recovered and a post-mortem carried out? There is no suggestion of illegal killing, according to Murgatroyd they should have been most easily recovered as there was no attempt to conceal – but they were not!

50. The tracking analysis relies on the locations reported during the final seven days of transmissions paying little heed to the actual final position. The study once again uses 20 kilometre squares – these cover 400 square kilometres = 40,000 hectares = 154 square miles = 98,800 acres – with an hypotenuse of 28.28 kilometres = 17.56 miles – totally inaccurate for anything other than an approximate district classifications when deciding if an area is used for driven grouse shooting – see PART SIX above.

PART EIGHT – CONCLUSIONS:

51. There is no assurance of independence (perhaps via a neutral third party) which would have greatly enhanced confidence in The Paper.

52. The scale of The Study is small – commencing with 60 – quickly reduced to 58 – with a significant number on the Isle of Man (4) – and in France (3) – plus those spread across the M74 to Kielder forest belt (8) – along with a further 7 spread across England – totalling 22 – all of which results in only 36 remaining within the study area – that is a woefully small data set upon which to base such striking conclusions.

53. An F.O.I. to N.E. for all the Murgatroyd post-mortem reports is needed. Perhaps due to 'WITHHELD' entries complicating the position, the reporting by N.E. is not comprehensive and efficient on this score – postmortem findings should be publicly available.

54. It would have been far preferable were Murgatroyd to have included 58 individual reports with full details to back up the mathematical findings. Currently The Study is somewhat opaque – at best – and one might be tempted to infer it is purposely so.

55. It is painfully obvious that Murgatroyd is very much a desktop / mathematical / theoretical / statistical paper – not a practical investigation which would have benefitted greatly from field-work; which brings into question the wisdom of employing persons in Aberdeen, Scotland, let alone Cape Town, South Africa.

56. The near total reliance on the infallibility of tag data is problematic – Murgatroyd admits to a 6 ex 60 (10%) tag failure rate – how can they be sure it is not more? Noting that within The Study problems with tags are admitted, but then it would appear ignored.

Accordingly, one can but be drawn to the final verdict, that, in our opinion, Murgatroyd is:

- **Somewhat confusing – potentially misleading – too small in scale – and;**
- **The fact that has been stated many times but continues to await a cogent response – *'if they live on the moors, they will die on the moors'* – cannot be stressed too highly – and is consistently ignored, doubtless because our detractors have no proper answers.**

THE RESULTS FROM THE – N.E. APRIL 2025 UPDATE – USING THE FINAL TRANSMISSION LOCATION MAPS WHICH FOLLOW:

AGAINST THE FINAL TRANSMISSION LOCATIONS AT APRIL 2025;

FROM 58 (NOT 60) WITH 7 LOCATIONS BEING WITHHELD – AND 1 TRANSMITTING – THE M.A. SYSTEM INDICATES:

RED = 23 = 39.6% – and – GREEN = 27 = 46.5% – and – ORANGE = 7 = 12% – and – BLUE = 1 = 1.7% (TOTAL = 58)

If the ORANGE (7) are distributed 50 / 50 (3.5 / 3.5) between RED and GREEN – and if BLUE (1) goes to GREEN – then:

RED = 26.5 = 45.68% – and – GREEN = 31.5 = 54.31% (TOTAL = 58)

AND FOR COMPARISON

SEE THE RESULTS FROM THE – N.E. APRIL 2025 UPDATE – OF ALL 260 BIRDS WHICH HAD SATELLITE TAGS FITTED – JUNE 2002 – DECEMBER 2024

RED = 100 = 38.4% – and – GREEN = 110 = 42.3% – and – ORANGE = 43 = 16.5% – and – BLUE = 7 = 2.7%

If the ORANGE (43) are distributed 50 / 50 (21.5 / 21.5) between RED and GREEN – and if BLUE (7) goes to GREEN – then:

RED = 121.5 = 46.73% – and – GREEN = 138.5 = 53.26% (TOTAL = 260)

THE INDIVIDUAL LISTINGS:

FIRST – TAG OWNERSHIP:

ALL TAGS USED IN MURGATROYD WERE / ARE OWNED BY NATURAL ENGLAND UNLESS PROVIDED BY OTHER CONTRIBUTORS AS INDICATED BY USE OF THE CODES SHOWN BELOW:

- **(M.A.) = Moorland Association = 0**
- **(L. M.) = Langholm Moor Demonstration Project = 4**
- **(M.B.) = Manx Birdlife / Isle of Man Government = 4**
- **(P.D.) = Funded by public donation = 2**
- **(H.O.T.) = Hawk & Owl Trust = 4**

SUB TOTAL = 14

THEREFORE – N.E. = 44

GRAND TOTAL 58 (PLUS 2 FURTHER WHICH ARE IDENTIFIED / LISTED = THE 'ORIGINAL 60')

SECOND – CLASSIFICATIONS:

1. **These results are taken from the N.E. April 2025 Update.**
2. **The entire cohort of birds tagged within the year groups are listed – with Murgatroyd birds in BLUE – this is to provide context.**
3. **The numbers to the extreme left are the index numbers within the – COMPREHESIVE TAGGING REGISTER – for ease of cross reference.**
4. **The numbers to the far right (MURG 1 etc.) are the Murgatroyd study birds ranked within year and thence by serial # number.**
5. **Status codes:**
   A. **GREEN 1 = Final transmission – on land un-associated with any driven grouse moor**
   B. **GREEN 2 = Recovered – proven death was due to natural causes**
   C. **RED 1 = Final transmission – on land used for driven grouse shooting**
   D. **RED 2 = Recovered – confirmed death was due to illegal killing (check source in each case) on land used for driven grouse shooting**
   E. **0RANGE 1 = Inconclusive**
   F. **ORANGE 2 = Inconclusive – as bird was observed after date upon which the tag ceased to transmit**
   G. **BLUE 1 = Transmitting during April 2025**
6. **There are 58 listed as the 2 rejected (see above) have not been identified – as yet – and would confuse the schedule.**
7. **The year group reports which follow have been revised using the N.E. updates which have followed from the April 2025 data – there are certain very minor variations in classifications as a result.**

YEAR GROUP 2007:

82. R – #414 – F – 3 – 15th June 2007 – Bowland – 29th August 2007 – Lancashire – SD 460820 – 2007/1

83. R – #455 – M – 4 – 18th June 2007 – Bowland – 3rd November 2007 – Yorkshire Dales – SD 883629 – 2007/2

84. R – #327 – M – 10 – 19th June 2007 – Bowland – 3rd November 2007 – Bowland – SD 763606 – 2007/3

85. S – #73590 – F – 11 – 19th June 2007 – Bowland – 30th October 2007 – Sheffield – WITHHELD – NO O.S. – 2007/4 – MURG 1
STATUS – NO INFORMATION ON FATE IS PUBLISHED – THEREFORE – ORANGE 1

86. S – #73587 – F – 6 – 22nd June 2007 – Bowland – 28th July 2008 – Bowland – WTHHELD – NO O.S. – 2007/5 – MURG 2
STATUS – OBSERVED AFTER FINAL TRANSMISSION – BRED DURING 2008 / 2010 / 2011 – THEREFORE – ORANGE 2

87. R – #435 – F – 62 – 22nd June 2007 – Cumbria – 23rd August 2007 – Cumbria – NY 336333 – 2007/6

88. S – #73586 – F – 64 – 26th June 2007 – Cumbria – 5th October 2007 – Ireby, Ingleton – SD 655754 – 2007/7 – MURG 3
STATUS – NO FINAL INFORMATION – LOCATION GREEN – THEREFORE – GREEN 1

89. S – #73589 – F – 12 – 29th June 2007 – Bowland – 9th September 2007 – Angram, Swaledale – SD 886998 – 2007/8 – MURG 4
STATUS – NO FINAL INFORMATION – LOCATION RED – THEREFORE – RED 1

90. S – #33325 (M.B.) – M – N/A – 4th July 2007 – Isle of Man – 27th June 2008 – Isle of Man – SC265746 – 2007/9 – MURG 5
STATUS – NO FINAL INFORMATION – LOCATION GREEN – THEREFORE – GREEN 1

91. S – #33328 (M.B.) – M – N/A – 4th July 2007 – Isle of Man – 14th July 2007 – Isle of Man – SC 398827 – 2007/10 – MURG 6
STATUS – NO FINAL INFORMATION – LOCATION GREEN – THEREFORE – GREEN 1

92. S – #33334 (M.B.) – F – N/A – 4th July 2007 – Isle of Man – 23rd July 2009 – Isle of Man – SC 381966 – 2007/11 – MURG 7
STATUS – NO FINAL INFORMATION – LOCATION GREEN – THEREFORE – GREEN 1

93. S – #33324 (M.B.) – F – N/A – 5th July 2007 – Isle of Man – NO FINAL DATE – Isle of Man – WITHHELD – NO O.S. – 2007/13

94. S – #33335 (M.B.) – F – N/A – 5th July 2007 – Isle of Man – 5th August 2008 – Isle of Man – NX 405027 – 2007/12 – MURG 8
STATUS – NO FINAL INFORMATION – LOCATION GREEN – THEREFORE – GREEN 1

YEAR GROUP 2007 CONTINUED:

95. S – #73582 – M – N/A – 7th July 2007 – Bowland – 23rd October 2007 – Cleatlam, near Barnard Castle – NZ 119188 – 2007/14 – MURG 9 STATUS – NO FINAL INFORMATION – LOCATION GREEN – THEREFORE – GREEN 1

96. R – #426 – M – 20 – 7th July 2007 – Bowland – 20th August 2007 – Yorkshire Dales – WITHHELD – NO O.S. – 2007/15

97. R – #446 – M – 66 – 7th July 2007 – Northumberland – 11th October 2007 – Cheviots – NT 830140 – 2007/16

98. S – #73583 – F – 67 – 7th July 2007 – Northumberland – 30th July 2007 – NO DATA – NO O.S. – 2007/17

99. R – #662 – M – N/A – 10th July 2007 – Yorkshire Dales – 30th July 2007 – Yorkshire Dales – SE 664326 – 2007/18

100. R – #217 – M – 23 – 13th July 2007 – Bowland – 2nd August 2007 – Bowland – WITHHELD – NO O.S. – 2007/19

101. R – #285 – F – 25 – 13th July 2007 – Bowland – 15th October 2007 – Humberside – SE 761081 – 2007/20

102. R – #207 – M – 71 – 16th July 2007 – Cheviot – 10th October 2007 – Northumberland – NY 496808 – 2007/21

103. R – #308 – F – 72 – 16th July 2007 – Cheviots – NO DATE – Cheviots – NT 938234 – 2007/22

RESULTS – 9 'MURG' BIRDS – ORANGE = 2 – RED = 1 – GREEN = 6 – TOTAL 9

END OF YEAR GROUP 2007

YEAR GROUP 2008:

104. **R – #238 – F – N/A – 16th June 2008 – Northumberland – 6th September 2008 – Northumberland – NY 738958 – 2008/1**

105. **R – #246 – F – N/A – 16th June 2008 – Northumberland – 12th October 2008 – Northumberland – NY 637751 – 2008/2**

106. **R – #256 – M – N/A – 17th June 2008 – Bowland – 17th October 2008 – Yorkshire Dales – SD 815967 – 2008/3**

107. **S – #73584 – M – N/A – 17th June 2008 – Bowland – 16th May 2009 – Burn Moor, Cold Stone Plain – SD 714612 – 2008/4 – MURG 10**
STATUS – NO FINAL INFORMATION – LOCATION RED – THEREFORE – RED 1

108. **R – #875 – F – N/A – 21st June 2008 – Bowland – 22nd September 2008 – Solway Firth – NY 320640 – 2008/5**

109. **R – #946 – F – N/A. – 21st June 2008 – Bowland – 24th September 2008 – Yorkshire Dales – SE 030730 – 2008/6**

110. **S – #73591 – F – N/A – 21st June 2008 – Bowland – 22nd September 2008 – Pockstones Moor, Nidderdale – SE 090625 – 2008/7 – MURG 11**
STATUS – NO FINAL INFORMATION – LOCATION RED – THEREFORE – RED 1

111. **R – #858 – M – N/A – 23rd June 2008 – Bowland – 3rd February 2009 – Bowland – SD 733609 – 2008/8**

112. **R – #870 – M – N/A – 1st July 2008 – Bowland – 14th February 2009 – Bowland – WITHHELD – NO O.S. – 2008/9**

113. **S – #73588 – F – N/A – 7th July 2008 – Bowland – 7th July 2008 – Heathfield Moor, Nidderdale – SE 119675 – 2008/10 – MURG 12**
STATUS – NO FINAL INFORMATION – LOCATION RED – THEREFORE – RED 1

RESULTS – 3 'MURG' BIRDS – ORANGE = 0 – RED = 3 – GREEN = 0 – TOTAL 3

END OF YEAR GROUP 2008

YEAR GROUP 2009:

114. S – #90688 – M – N/A – 16th June 2009 – Cumbria – 1st September 2009 – Brignall, Barningham – NZ 065113 – 2009/1 – MURG 13
STATUS – NO FINAL INFORMATION – LOCATION GREEN – THEREFORE – **GREEN 1**

115. S – #90689 – F – N/A – 16th June 2009 – Cumbria – 27th September 2009 – Grimwith, Nidderdale – SE 076649 – 2009/2 – MURG 14
STATUS – NO FINAL INFORMATION – LOCATION RED – THEREFORE – **RED 1**

116. S – #90691 – F – N/A – 22nd June 2009 – Bowland – 16th February 2010 – Pockley Moor, Helmsley – SE 612944 – 2009/3 – MURG 15
STATUS – NO FINAL INFORMATION – LOCATION RED – THEREFORE – **RED 1**

117. S – #94590 – M – N/A – 22nd June 2009 – Bowland – 25th June 2009 – Bowland – WITHHELD – NO O.S. – 2009/4 – MURG 16
STATUS – NO INFORMATION ON FATE IS PUBLISHED – THEREFORE – **ORANGE 1**

118. S – #94589 – M – N/A – 29th June 2009 – Bowland – 17th August 2009 – Abbotside, Simonstone – SD 912922 – 2009/5 – MURG 17
STATUS – NO FINAL INFORMATION – LOCATION RED – THEREFORE – **RED 1**

RESULTS – 5 'MURG' BIRDS – ORANGE = 1 – RED = 3 – GREEN = 1 – TOTAL 5

END OF YEAR GROUP 2009

YEAR GROUP 2010:

119. S – #90687 – M – N/A – 18th June 2010 – Bowland – 25th October 2010 – Binbrook, Lincolnshire – TF 257942 – 2010/1 – MURG 18
STATUS – NO FINAL INFORMATION – LOCATION GREEN – THEREFORE – **GREEN 1**

120. S – #94588 – M – N/A – 19th June 2010 – Bowland – 15th February 2011 – Milton Abbas, Dorset – ST 815014 – 2010/2 – MURG 19
STATUS– CARCASS RECOVERED – IN AN EMACIATED STATE – POST-MORTEM RESULTS? – NATURAL CAUSES – THEREFORE – **GREEN 2**

121. S – #90690 – F – N/A – 22nd June 2010 – Bowland – 26th July 2010 – Bowland – WITHHELD – NO O.S. – 2010/3 – MURG 20
STATUS – NO INFORMATION ON FATE IS PUBLISHED – THEREFORE – **ORANGE 1**

122. S – #94591 – F – N/A – 23rd June 2010 – Bowland – 18th August 2010 – Mallowdale, Bowland – SD 596621 – 2010/4 – MURG 21
STATUS – NO FINAL INFORMATION – LOCATION RED – THEREFORE – **RED 1**

123. S – #58867 (L.M.) – F – N/A – 25th June 2010 – Langholm – 20th October 2010 – Berclees, Gretna – NY 292762 – 2010/5 – MURG 22
STATUS – NO FINAL INFORMATION – LOCATION GREEN – THEREFORE – **GREEN 1**

124. S – #58946 (L.M.) – F – N/A – 25th June 2010 – Langholm – 1st August 2010 – Hog Fell, Langholm – NY 393891 – 2010/6 – MURG 23
STATUS – NO FINAL INFORMATION – LOCATION GREEN – THEREFORE – **GREEN 1**

125. S – #58872 (L.M.) – M – Mc Pedro – 25th June 2010 – Langholm – 29th November 2011 – Kerriou, Brittany, France – 2010/7 – MURG 24
STATUS – NO FINAL INFORMATION – LOCATION GREEN – THEREFORE – **GREEN 2**

126. S – #94592 – F – N/A – 29th June 2010 – Cumbria – 21st December 2010 – Forest of Ae, Thornhill – NX 940938 – 2010/8 – MURG 25
STATUS – NO FINAL INFORMATION – LOCATION GREEN – THEREFORE – **GREEN 2**

127. S – #58945 – F – N/A – 29th June 2010 – Cumbria – 25th November 2010 – Hutton Roof, Kirkby Lonsdale – SD 567780 – 2010/9 – MURG 26
STATUS – NO FINAL INFORMATION – LOCATION GREEN – THEREFORE – **GREEN 1**

128. S – #58870 – F – N/A – 12th July 2010 – Bowland – 21st August 2010 – Whitray Fell, Bowland – SD 673604 – 2010/10 – MURG 27
STATUS – NO FINAL INFORMATION – LOCATION RED – THEREFORE – **RED 1**

YEAR GROUP 2010 CONTINUED:

RESULTS – 10 'MURG' BIRDS – ORANGE = 1 – RED = 2 – GREEN = 7 – TOTAL 10

END OF YEAR GROUP 2010

YEAR GROUP 2011:

129. S – #58941 (L.M.) – M – N/A – 21st June 2011 – Langholm – 3rd November 2011 – Carentan, Normandy, France – NO O.S. – 2011/1 – MURG 28
STATUS – NO FINAL INFORMATION – LOCATION GREEN – THEREFORE – GREEN 2

130. S – #58943 – F – N/A – 21st June 2011 – Langholm – 23rd August 2011 – Renwick, Lazonby – NY 590440 – 2011/2 – MURG 29
STATUS – NO FINAL INFORMATION – LOCATION RED – THEREFORE – RED 1

131. S – #74843 – F – BOWLAND BETH – 22nd June 2011 – Bowland – 5th July 2012 – Melmerby Moor, Coverdale – SE 042844 – 2011/3 – MURG 30
STATUS – CARCASS RECOVERED – POST-MORTEM RESULTS? – REPORTED AS ILLEGALLY KILLED – THEREFORE – RED 2

132. S – #74842 – M – N/A – 28th June 2011 – Bowland – 13th November 2011 – Saint Guen, Brittany, France – 2011/4 – MURG 31
STATUS – NO FINAL INFORMATION – LOCATION GREEN – THEREFORE – GREEN 2

133. S – #95133 – N/A – 19th July 2011 – Langholm – 17th October 2011 – Moorfoot Hills – NT 370498 – 2011/5

RESULTS – 4 'MURG' BIRDS – ORANGE = 0 – RED = 2 – GREEN = 2 – TOTAL 4

END OF YEAR GROUP 2011

YEAR GROUP 2012:

134. S – #74832 – F – KRISTINA – 25th June 2012 – Cumbria – 9th October 2012 – Middlesmoor, Nidderdale – SE 096758 – 2012/1 – MURG 32
STATUS – NO FINAL IMFORMATION – LOCATION RED – THEREFORE – **RED 1**

135. S – #74931 – M – THOMAS – 26th June 2012 – Cumbria – 4th September 2012 – Abbotside, Simonstone – SD 876944 – 2012/2 – MURG 33
STATUS – NO FINAL INFORMATION – RED LOCATION – THEREFORE – **RED 1**

136. S – #74926 – F – BLAE – 6th August 2012 – Langholm – 11th September 2012 – Dun Law Wind Farm – NT 467584 – 2012/3 – MURG 34
STATUS – CARCASS RECOVERED – POST -MORTEM RESULTS? – NATURAL CAUSES – THEREFORE – **GREEN 2**

137. S – #94588a – M – BARRY – 6th August 2012 – Langholm – 4th October 2012 – Woodland Fell, Raby – NZ 038260 – 2012/4 – MURG 35
STATUS – NO FINAL INFORMATION – RED LOCATION – THEREFORE – **RED 1**

RESULTS – 4 'MURG' BIRDS – ORANGE = 0 – RED = 3 – GREEN = 1 – TOTAL 4

END OF YEAR GROUP 2012

YEAR GROUP 2013:

138. S – #117313 – F – GRAINNE – 5th July 2013 – Langholm – 14th August 2018 – Buttery Haugh, Kielder – NY 646926 – 2013/1 – MURG 36
STATUS – BRED IN 2014 TO 2018 – TRANSMISSIONS CEASED DUE TO BATTERY EXPIRY – LOCATION GREEN – THEREFORE – ORANGE 2

139. S – #117315 – F – MIRANDA – 5th July 2013 – Langholm – 14th July 2014 – Northern Ireland – NO DATA – NO O.S. – 2013/2 – MURG 37
STATUS – BRED IN LANGHOLM 2017 – TAG FAILURE – THEREFORE – ORANGE 2

140. S – #117314 – F – HATTIE – 18th July 2013 – Langholm – 2nd December 2017 – The Watch, Langholm – NY 376888 – 2013/3 – MURG 38
STATUS – NO FINAL INFORMATION – BRED 2014 TO 2017 – LOCATION GREEN – THEREFORE – ORANGE 2

141. S – #117316 – M – BLUE – 18th July 2013 – Langholm – 14th October 2013 – Frodesley, Shrewsbury – SJ 510023 – 2013/4 – MURG 39
STATUS – NO FINAL INFORMATION – LOCATION GREEN – THEREFORE – GREEN 1

RESULTS – 4 'MURG' BIRDS – ORANGE = 3 – RED = 0 – GREEN = 1 – TOTAL 4

END OF YEAR GROUP 2013

YEAR GROUP 2014:

142. S – #58946a – F – ANNIE – 19th June 2014 – Langholm – 27th April 2015 – Lamb Hill, west of Moffat / A74M – NS 967034 – 2014/1 – MURG 40
STATUS – CARCASS RECOVERED – POST-MORTEM RESULTS? – REPORTED AS ILLEGALLY KILLED – THEREFORE – **RED 2**

143. S – #137859 – M – SID – 19th June 2014 – Langholm – 21st September 2014 – Oughtershaw, Cam Fell – SD 852811 – 2014/2 – MURG 41
STATUS – NO FINAL INFORMATION – LOCATION GREEN – THEREFORE – **GREEN 1**

144. S – #137372 – F – JOANNE – 26th June 2014 – Cumbria – 14th August 2014 – Winter Tarn, Shap – NY 579170 – 2014/3 – MURG 42
STATUS – CARCASS RECOVERED – POST-MORTEM RESULTS? – REPORTED AS NATURAL CAUSES – **GREEN 2**

145. S – #137369 – F – IMOGEN – 26th June 2014 – Cumbria – 1st September 2014 – Grimwith, Nidderdale – SE 070675 – 2014/4 – MURG 43
STATUS – NO FINAL INFORMATION – RED LOCATION – THEREFORE – **RED 1**

146. S – #137372a – F – NATALIE – 19th August 2014 – Peak District – 3rd September 2014 – Derwent Vale– SK 184940 – 2014/5 – MURG 44
STATUS – CARCASS RECOVERED – POST-MORTEM RESULTS? – REPORTED AS NATURAL CAUSES – THEREFORE – **GREEN 2**

RESULTS – 5 'MURG' BIRDS – ORANGE = 0 – RED = 2 – GREEN = 3 – TOTAL 5

END OF YEAR GROUP 2014

YEAR GROUP 2015:

147. S – #147108 (P.D.) – M – CYAN – 19th June 2015 – Langholm – 16th March 2016 – Balgrayhill, Lockerbie – NY 171865 – 2015/1 – MURG 45
STATUS – CARCASS RECOVERED – POST-MORTEM RESULTS? – REPORTED AS SUSPECTED FOX PREDATION – THEREFORE – GREEN 2

148. S – #147109 – F – SUE – 27th June 2015 – Cumbria – 9th September 2015 – Kirkby Malzeard Moor – SE 166750 – 2015/2 – MURG 46
STATUS – NO FINAL INFORMATION – LOCATION RED – THEREFORE – RED 1

149. S – #137372b – F – JOANNE 2 – 9th July 2015 – Cumbria – 29th October 2015 – Longside, Nidderdale – SE 144724 – 2015/3 – MURG 47
STATUS – NO FINAL INFORMATION – LOCATION RED – THEREFORE – RED 1

150. S – #73585 – F – JENNY – 15th July 2015 – Northumberland – 16th October 2015 – Carlton, Coverdale – SE 071848 – 2015/4 – MURG 48
STATUS – NO FINAL INFORMATION – LOCATION RED – THEREFORE – RED 1

151. S – #74843a – M – JAKE – 26th July 2015 – Cumbria – 9th September 2015 – Whitehall Moss, Muggleswick – NZ 072472 – 2015/5 – MURG 49
STATUS –NO FINAL INFORMATION – LOCATION RED – THEREFORE – RED 1

152. S – #147107 – F – MO – 26th July 2015 – Cumbria – 22nd August 2015 – Cleadon, Tyne and Wear – NZ 391629 – 2015/6 – MURG 50
STATUS – NO FINAL INFORMATION – LOCATION GREEN – THEREFORE – GREEN 1

RESULTS – 6 'MURG' BIRDS – ORANGE = 0 – RED = 4 – GREEN = 2 – TOTAL 6

END OF YEAR GROUP 2015

YEAR GROUP 2016:

153. S – #161962 – M – JOHN – 8th July 2016 – Northumberland – 1st October 2017 – Linton Moor, Wharfedale – SD 970625 – 2016/1 – MURG 51
STATUS – NO FINAL INFORMATION – LOCATION GREEN – THEREFORE – **GREEN 1**

154. S – #162149 (H.O.T.) – F – ROWAN –13th July 2016 – Langholm – 22nd October 2016 – Crossbank, Raven'dale – NY 738024 – 2016/2 – MURG 52
STATUS – CARCASS RECOVERED – POST-MORTEM RESULTS? – REPORTED AS ILLEGALLY KILLED – THEREFORE – **RED 2**

155. S – #162148 (H.O.T.) – F – SORREL – 13th July 2016 – Langholm – NO DATE – WITHHELD – NO O.S. – 2016/3 – MURG 53
STATUS – **TRANSMITTING AS OF 5th APRIL 2025 – THEREFORE – BLUE**

156. S – #161147 – M – MICK – 19th July 2016 – Northumberland – 21st December 2016 – Thwaite Beck, Swaledale – SD 871982 – 2016/4 – MURG 54
STATUS – NO FINAL INFORMATION – RED LOCATION – THEREFORE – **RED 1**

157. S – #161961 – F – TARRAS – 22nd July 2016 – Langholm – 23rd October 2016 – Withens Moor, near Woodhead – SE 115023 – 2016/5 – MURG 55
STATUS – NO FINAL INFORMATION – RED LOCATION – THEREFORE – **RED 1**

RESULTS – 5 'MURG' BIRDS – BLUE = 1 – RED = 3 – GREEN = 1 – TOTAL 5

END OF YEAR GROUP 2016

YEAR GROUP 2017:

158. S – #162149a (H.O.T.) – F – MORAG – June 2017 (EXACT DATE?) – WHERE? – NO O.S. – 2017/1 – MURG 56
STATUS – ORANGE 1

159. S – #162150 (H.O.T.) – M – LACHLAN – June 2017 (EXACT DATE?) – WHERE? – NO O.S. – 2017/2 – MURG 57
STATUS – ORANGE 1

160. S – #161143 (P.D.) – F – DRU – 7th July 2017 – Northumberland – 13th June 2022 – WITHHELD – NO O.S. – 2017/3 – MURG 58
STATUS – REPORTED AS PREDATED ON NEST DEFENDING BROOD – THEREFORE – GREEN 2

RESULTS – 3 'MURG' BIRDS – ORANGE = 2 – RED = 0 – GREEN = 1 – TOTAL 3

END OF YEAR GROUP 2017