R.A.P.T.O.R.

Recording and Addressing Persecution and Threats to Our Raptors

2019

Department of Agriculture, Food and the Marine
An Roinn Talmhaíochta, Bia agus Mara

An Roinn Cultúir, Oidhreachta agus Gaeltachta
Department of Culture, Heritage and the Gaeltacht

An Roinn Caiteachais Phoiblí agus Athchóirithe
Department of Public Expenditure and Reform

REPORT PREPARED BY

NATIONAL PARKS & WILDLIFE SERVICE
DEPARTMENT OF CULTURE, HERITAGE AND THE GAELTACHT

UTILISING ANALYSIS AND RESULTS FROM

REGIONAL VETERINARY LABORATORIES,
DEPARTMENT OF AGRICULTURE, FOOD AND THE MARINE

AND

THE STATE LABORATORY
DEPARTMENT OF PUBLIC EXPENDITURE AND REFORM

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SUMMARY

This is the ninth annual report from the RAPTOR scheme detailing incidents (other than habitat related threats and pressures) that have led to the death or injury of birds of prey in Ireland annually. A key objective of the RAPTOR scheme is to provide a platform for informed, targeted and effective approaches in addressing these threats and pressures.

Poisoning (whether intentional or not) and persecution (always illegal) are of particular concern. Poisoning of any wildlife (other than rats or mice) is recorded, because raptors could have ingested the same poison, or fed on prey that had itself been poisoned.

In 2019, a total of 39 incidents were confirmed in Ireland, with 36 individual birds of prey having died, reflecting the highest number of cases for any year since the RAPTOR protocol began formally in 2011. The cases were comprised of 22 raptor poisoning incidents (involving 23 birds), 3 poisoned bait incidents, 4 road casualties, 3 incidents where birds of prey were shot, 2 deaths due to wind turbine strikes, 2 deaths caused by trauma and one death caused by entanglement in netting. For clarity, some cases involved more than one incident or more than one casualty. A number of suspected and unconfirmed incidents were also recorded. Such incidents are held on the NPWS RAPTOR database. Such cases are as informative and important as confirmed cases in providing data on threats to our raptors. Other cases were submitted under the RAPTOR protocol but found to be negative, inconclusive or involving birds of prey that died from natural causes.

Of the raptors species confirmed to have died as a result of direct human impact in 2019, the most frequent casualty was Common Buzzard (10), followed by Hen Harrier (8), Red Kite (7), Peregrine Falcon (4), Sparrowhawk (2), Kestrel (2), Long-eared Owl (1) and Barn Owl (1).

1. INTRODUCTION

This is the ninth annual report derived from a national scheme to monitor human related injury and mortality in Irish birds of prey, as well as any incidents of poisoned bait or poisoning of any wildlife. The scheme is known as the RAPTOR (Recording and Addressing Persecution and Threats to Our Raptors) scheme.

In 2011, a protocol for dealing with threats and disturbance to birds of prey was agreed between the National Parks & Wildlife Service (Department of Culture, Heritage & the Gaeltacht), the Veterinary Laboratory Service (Department of Agriculture, Food and Marine) and The State Laboratory (Department of Public Expenditure & Reform). The full text of the protocol as updated in 2013 is presented in Appendix 4. The majority of records produced in this report have been derived from work under this protocol. The NPWS RAPTOR Database was also set up in 2011.

The national scheme to monitor human, non-habitat related disturbance to Irish birds of prey and other wildlife species has eight key aims:

1. Collection of evidence to support prosecutions for illegal poisoning.
2. Monitoring of the impact of poisoning on Irish raptor populations.
3. Monitoring the incidence of poisoning and impact of illegal poisoning on other vulnerable species (e.g. Raven).
4. Monitoring the incidence of poisoning in species vulnerable to secondary poisoning by rodenticides (in particular Common Buzzard, Barn Owl, Kestrel, Red Kite and Long-eared Owl).
5. Monitoring the impact of other types of persecution on Irish raptors and maintaining a database of such incidents.
6. Providing evidence of the causes of death of other wildlife species where poison is strongly suspected.
7. Quantifying the use of specific poisons.
8. Discerning other direct human related causes of raptor injury or mortality.

The incident recording database maintained by the National Parks & Wildlife Service contains all records relating to the RAPTOR protocol, including poisoning and persecution incidents, other human related incidents of raptor injury or deaths (apart from habitat change) as well as cases that were examined but found to be without any determined cause of injury/death.

The primary aim of this report is to catalogue all records of human non-habitat related disturbance and threats to birds of prey. Doing so will add to the datasets of previous years and build a clear and robust picture of poison and persecution incidents, with data including poison and persecution methods, peaks months for incidents, associated land-use types, black spot areas and much more. The recording, analysis and reporting of such data allows a more informed approach to dealing with these issues by means of education, enforcement and/or forward planning. The addition of information on other types of mortality and injury gives a more complete picture of the threats to wildlife.

2. CONFIRMED RAPTOR CASES AND INCIDENTS 2019

An 'incident' under the RAPTOR protocol, is classed as the occurrence of a non-habitat related anthropogenic impact on a bird of prey or the use of poisoned bait (which could possibly lead to raptor injury or death). A single case may involve more than one incident (e.g. a bird that was shot, but which also had poison in its system). Table 1 lists all RAPTOR incidents that were confirmed and recorded in 2019, while Figure 2 displays the geographical location of these incidents. In total in 2019, 39 incidents involving 36 raptor deaths were confirmed and recorded in 2019.

Table 1. Confirmed RAPTOR cases and incidents 2019

No.	10km	County	Month	Bait	Receiving Species	Issue	Comments
1	H11	Leitrim	Jan	-	Common Buzzard	Poison	Brodifacoum, Flocoumafen
2	S61	Kilkenny	Jan	-	Peregrine Falcon	Poison	Alphachloralose
3	R21	Cork	Feb	-	Kestrel	Wind Turbine Strike	Found at base of wind turbine with both wings broken
4	N01	Offaly	Feb	-	Kestrel	Poison	Flocumafen
5	T19	Wicklow	Feb	-	Red Kite	Poison	Bromadiolone
6	O20	Wicklow	Feb	-	Common Buzzard	Poison	Brodifacoum
7	T11	Wexford	Feb	-	Common Buzzard	Shot	

8	T14	Wexford	Feb	-	Hen Harrier	Poison	Flocoumafen
9	T15	Wexford	Feb	-	Common Buzzard	Poison	Alphachloralose, Betahloralose, Brodifacoum, Carbofuran
10	M91	Galway	Mar	-	Hen Harrier	Tangled in netting	Netting had been erected to protect a crop from crows
11	S72	Wexford	Mar	Pigeon	Peregrine Falcon (X2)	Poison	Carbofuran
12	N14	Westmeath	Mar	Baited raw meat, bird carcasses & cooked food	-	Poisoned Bait	Alphachloralose, Betahloralose
13	G53	Sligo	Mar	-	Red Fox	Poison	Nitroxynil
14	T27	Wicklow	Mar	-	Red Kite	Poison	Brodifacoum, Difenacoum
15	M96	Roscommon	Apr	-	Common Buzzard	Poison	Alphachloralose, Betahloralose, Difenacoum
16	T16	Wicklow	Apr	-	Red Kite	Poison	Brodifacoum, Bromadialone
17	T00	Wexford	Apr	-	Common Buzzard	Poison	Brodifacoum, Difenacoum
18	T19	Wicklow	Apr	-	Red Kite	Poison	Alphachloralose, Betahloralose, Brodifacoum, Carbofuran. Related to Case 19 (female of pair, about to lay)
19	T19	Wicklow	Apr	-	Red Kite	Poison	Alphachloralose, Betahloralose, Brodifacoum. Related to Case 18 (male of pair, about

20	R10	Kerry	Apr	-	Hen Harrier	Wind Turbine Strike	
21	C64	Donegal	Apr	-	Common Buzzard	Poison	Carbofuran. Related to Case 21.
22	C64	Donegal	Apr	Pigeon (X2)	-	Poisoned Bait	2 pigeons laced with Methiocarb pellets. Related to Case 20.
23	N52	Offaly	May	-	Peregrine Falcon	Poison	Brodifacoum
24	S96	Wicklow	May	-	Common Buzzard	Poison	Brodifacoum, Flocumafen
25	R11	Cork	Jun	-	Hen Harrier	Trauma – broken rib cage	
26	W37	Cork	Jul	-	Hen Harrier	Trauma – broken leg and rib cage	
27	W56	Cork	Jul	-	Sparrowhawk	Road Casualty	
28	R85	Tipperary	Jul	-	Hen Harrier	Road Casualty	
29	T05	Wexford	Jul	-	Red Kite	Poison	Alphachloralose, Betahloralose, Brodifacoum. Hooded Crow possibly used as poisoned bait
30	M35	Galway	Aug	-	Sparrowhawk	Road Casualty	

31	N11	Offaly	Aug	-	Long-eared Owl	Road Casualty and Poisoned	Difenacoum, Flocoumafen
32	T28	Wicklow	Sep	-	Hen Harrier	Road Casualty	
33	T27	Wicklow	Sep	-	Red Kite	Poison	Carbofuran
34	C13	Donegal	Oct	-	Common Buzzard	Shot and Mutilated	Mutilated by decapitation and leg cut off
35	R03	Kerry	Oct	-	Barn Owl	Poison	Brodifacoum, Bromadiolone
36	Q72	Kerry	Nov	-	Common Buzzard	Shot	Euthanized due to injuries
37	N88	Meath	Nov	Woodpigeon	-	Poisoned Bait	Carbofuran. Related to Case 37.
38	N88	Meath	Nov	-	Hen Harrier	Poison	Carbofuran. Related to Case 36.
39	G75	Sligo	Nov	-	Peregrine Falcon	Poison	Carbofuran

Figure 1 compares the amount and type of poison and persecution incidents recorded in between 2011 and 2019.

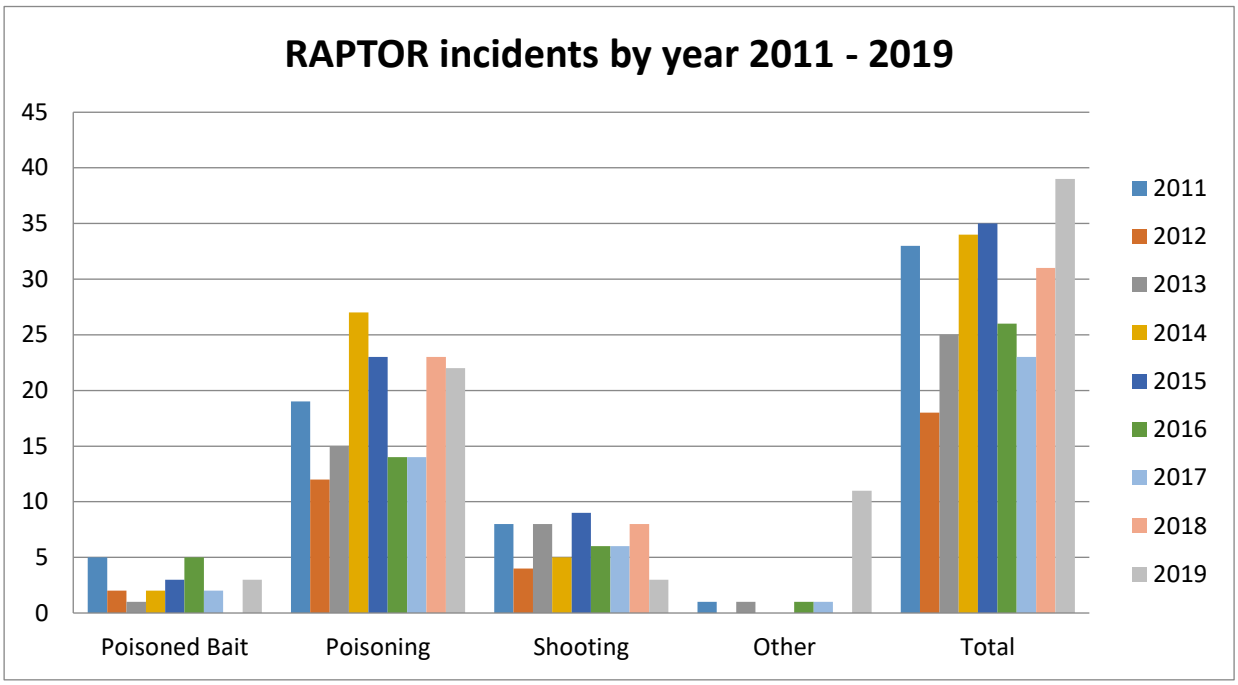

Figure 1. Annual RAPTOR incidents 2011 to 2019.

Figure 2 shows the distribution of RAPTOR incidents in 2019, according to the 10k square in which they were located.

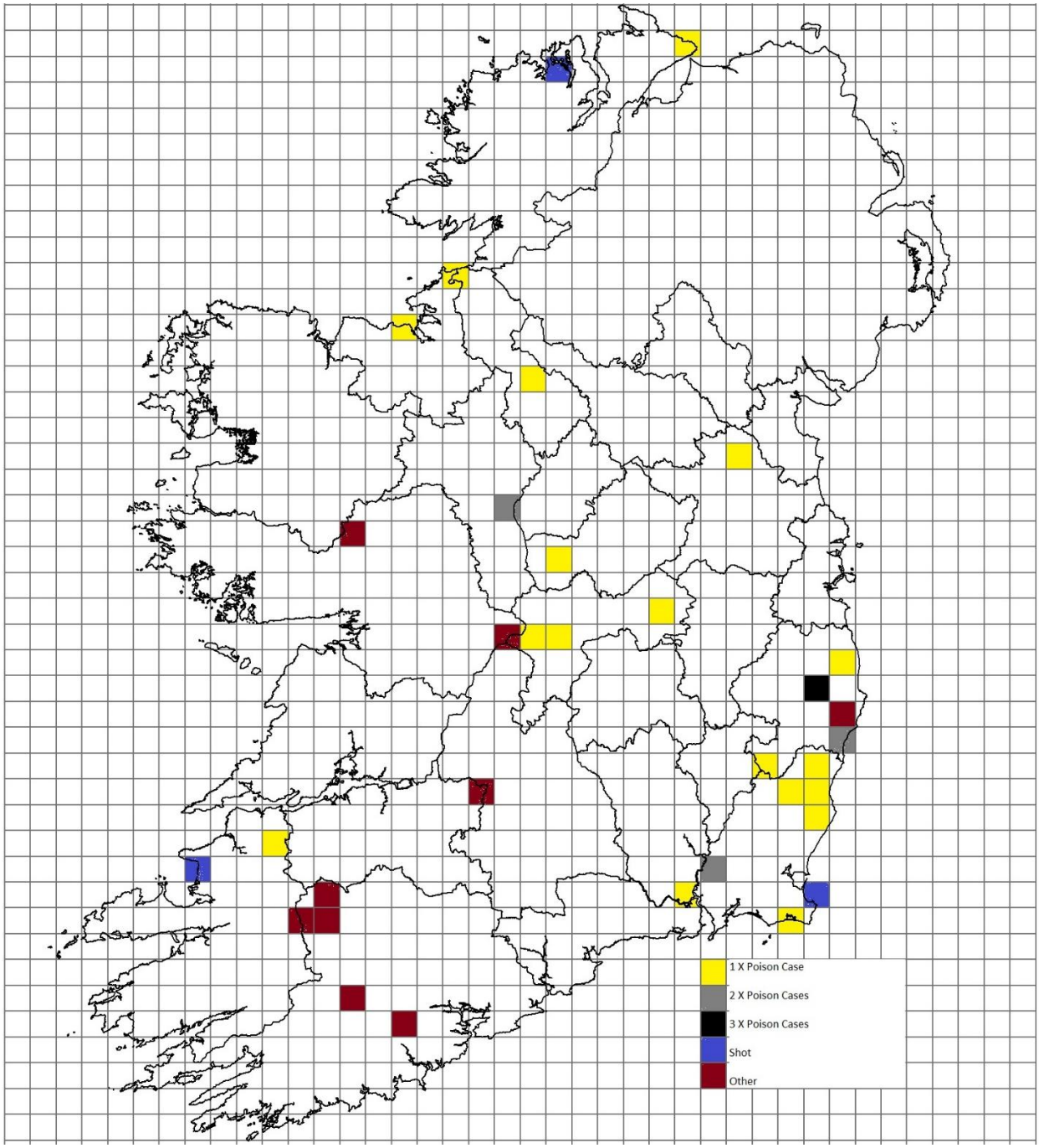

Figure 2. Map of Confirmed RAPTOR Incidents in Ireland 2019, per 10k square.

Figure 3 summarises the number of illegal incidents on a monthly basis in 2019, whereby use of illegal poison, poison meat bait or shooting was confirmed (i.e. rodenticide poisoning and collisions are excluded).

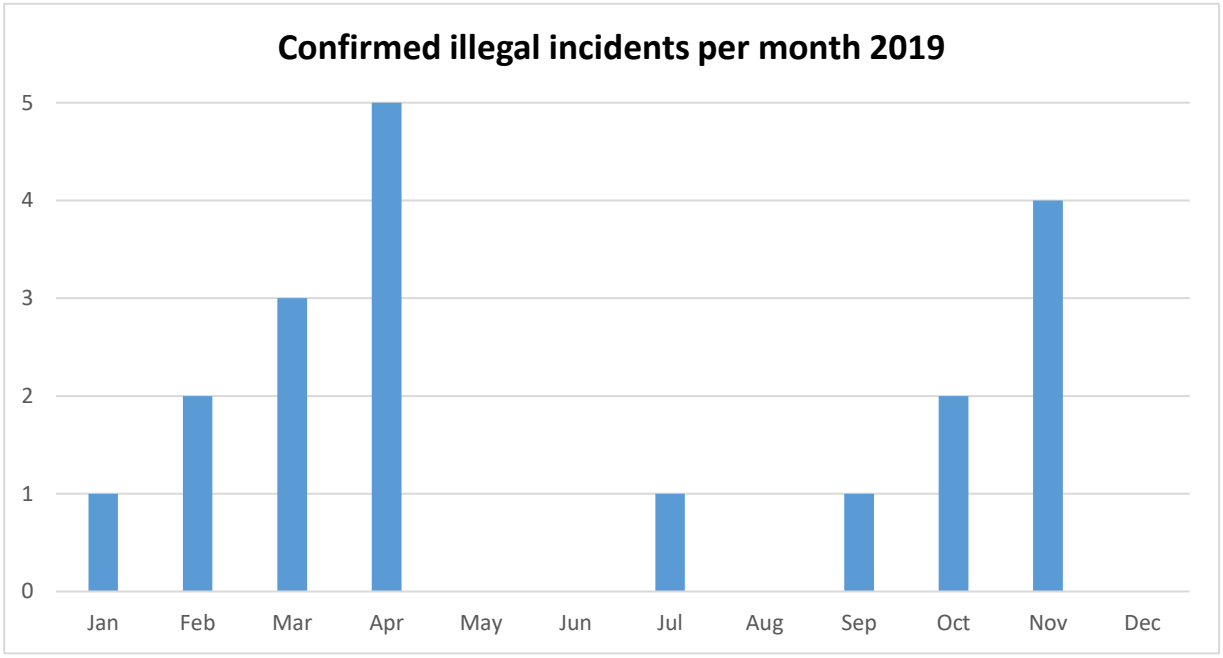

Figure 3. Confirmed illegal incidents per month in 2019.

3. DISCUSSION OF RESULTS

An above average number incidents were recorded in 2019, in fact the highest number of incidents and raptor casualties to date was recorded in 2019. As referenced in previous reports, the number recorded is likely to be only a fraction of the number of incidents that occurred in total. The monitoring scheme has expanded in terms of data and intelligence gathering, giving a more complete picture of anthropogenic threats to our native birds of prey and trends of poisoning and persecution. This data is has been published annually and is available in greater detail to inform the relevant authorities of where best to target actions to prevent such incidents re-occurring and act as a measure of success with regard to actions taken. At this stage, thanks to the protocol, there are pointers as to the main threats, the main victims, timings, methods and reasons for poisoning and persecution incidents.

As noted in 2018, there were a number of cases that occurred in tandem or in close proximity. Looking back on the locations where incidents were found since 2011, there is clear evidence to suggest that there are particular blank spots geographically, that deserve immediate attention.

The principal poisons that were implicated in RAPTOR incidents in 2019 were Alphachloralose & Betachloralose (in 13 cases), Brodifacoum (12), Carbofuran (8), Flocoumafen (5), Difenacoum (4), Bromadiolone (3), Methiocarb (1) and Nitroxynil (1). Carbofuran despite being banned since 2008, continues to be one of the primary poisons detected annually. This frequency with which this lethal poison is used and its widespread use across Ireland in wildlife crime, is of significant concern.

Table 2 summarises the recorded instances of persecution since 2007, according to species affected. It should be borne in mind that the RAPTOR protocol including a more robust approach to detecting and confirming incidents came into being in 2011, but a certain number of incidents between 2007 and 2010 were previously recorded (see Appendix 1).

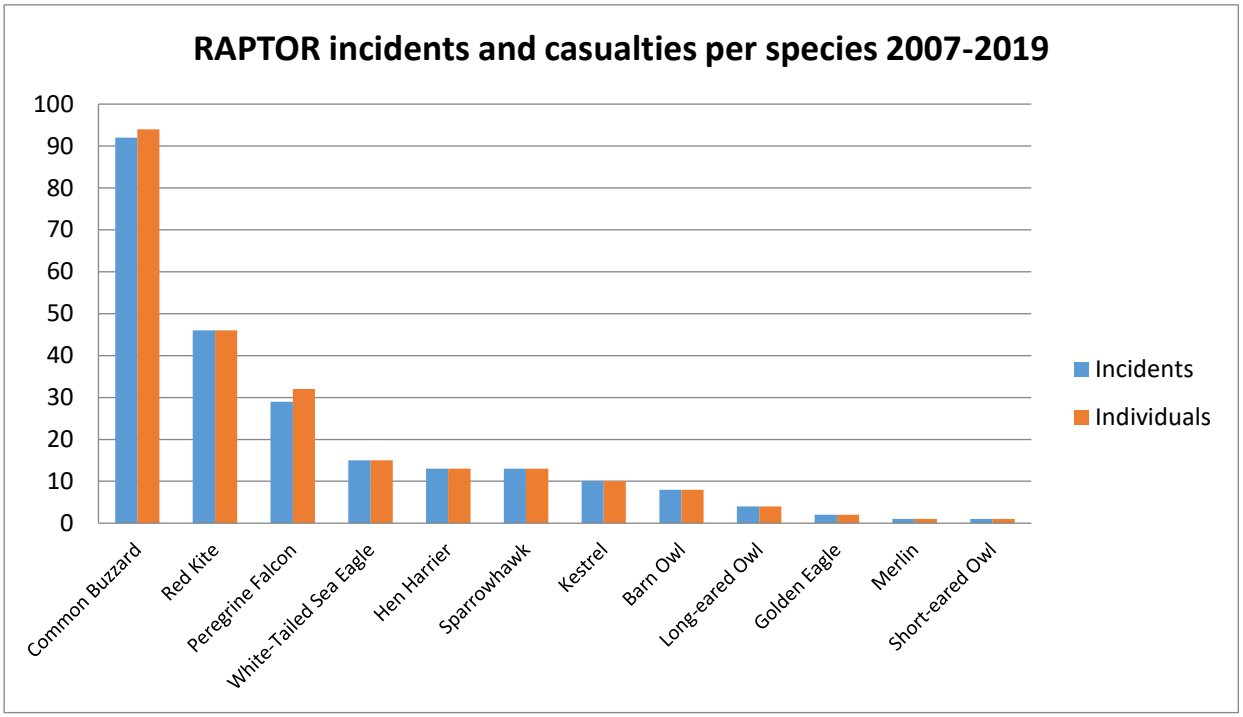

Figure 4. Number of incidents and casualties per species 2007-2019.

Common Buzzard and Red Kite are the two most highly recorded victims. In the majority of cases, these incidents have been found to originate with Second Generation Anti-coagulant Rodenticides (SGARs) and the poisoning is believed to have been bio-accumulated from the ingestion of rodents and thus is taken to be secondary and unintentional. Barn Owls are also known to suffer a high incidence of poisoning from SGARs, with over 85% of Irish Barn Owls having detectable residues in their systems (J. Lusby pers. comm.), but the number of incidents recorded by the RAPTOR protocol is relatively low. Peregrine Falcon and Hen Harrier are clearly targeted for persecution and the number of individuals lost in this was is all the more concerning given their population sizes, particularly Hen Harrier, with just 108 breeding pairs confirmed in the most recent (2015) national survey, and a continuing decline of population mainly due to habitat loss and degradation. White-tailed Sea Eagle also features prominently, despite their low population. Considering the small population and the fact the majority would have been fitted with tracking devices highlights the extent to which other species may be lost to poisoning or persecution, yet never found. In addition, Kestrel, Sparrowhawk, Merlin, Long-

eared Owl and Short-eared Owl are among those confirmed to have been lost to. Effectively, every regular breeding bird of prey species in Ireland has been confirmed as having suffered from poisoning, persecution, collision or direct disturbance.

Standard toxicology examinations came into being with the RAPTOR protocol in 2011. Figure 5 summarises both the frequency occurrence of particular poisons between 2011 and 2019. Poisons are regularly found acting in tandem and so this chart shows how many times each poison was confirmed in cases submitted for toxicology under the RAPTOR protocol.

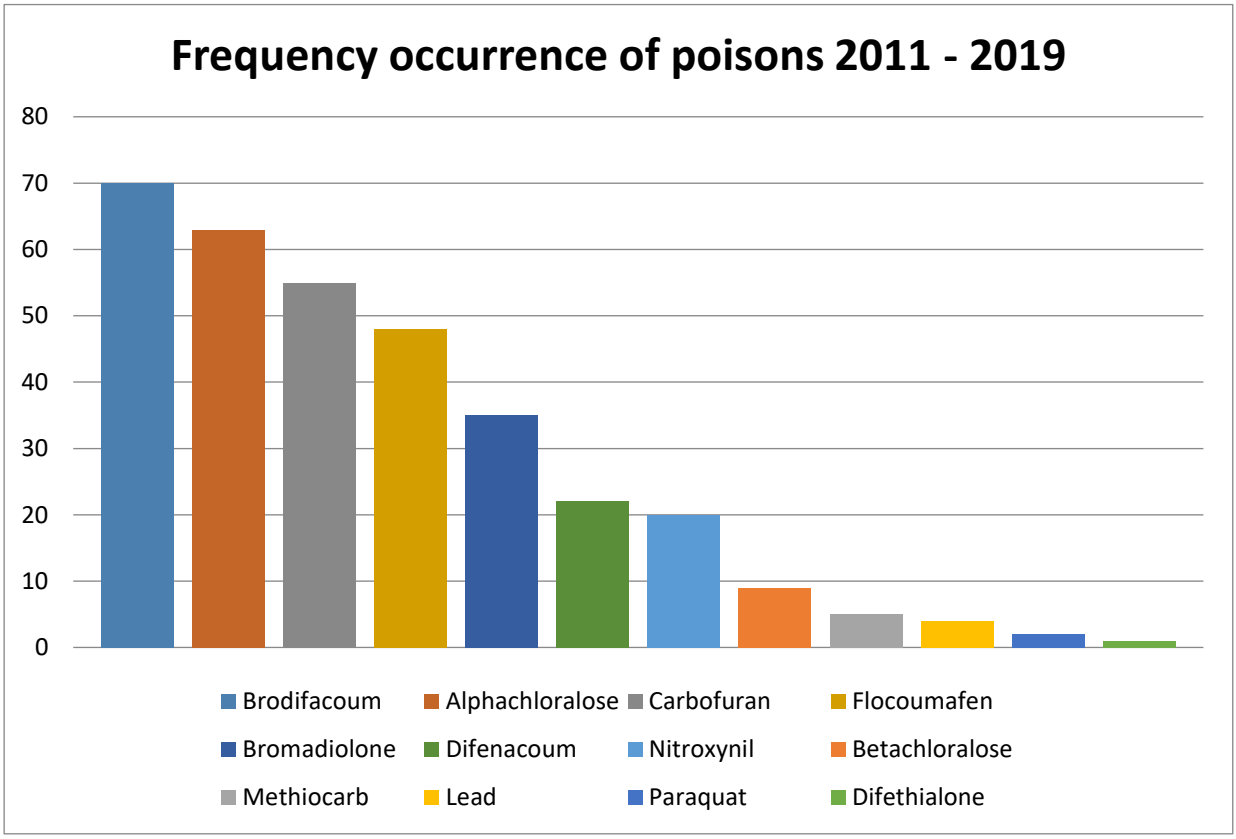

Figure 5. Poisoning Cases 2011 – 2019.

Brodifacoum was the most prevalent poison found in birds of prey. This is an active ingredient in rodenticides. It is particularly striking to note the prevalence of both Alphachloralose and Carbofuran as the second and third most prevalent poisons, given both are illegal to use. The rodenticides types of Flocoumafen, Bromadiolone, Difenacoum and Difethialone were also recorded in raptor casualties, as well as Nitroxynil, Betachloralose, Methiocarb, Paraquat and Lead. The incidents involving lead were accidental or through environmental bioaccumulation. Nitroxynil, Betachloralose, Methiocarb, Paraquat are all believed to have been used with the intent of targeting wildlife.

Figure 6 provides a breakdown of prevalence between rodenticide type poisons and other poisons.

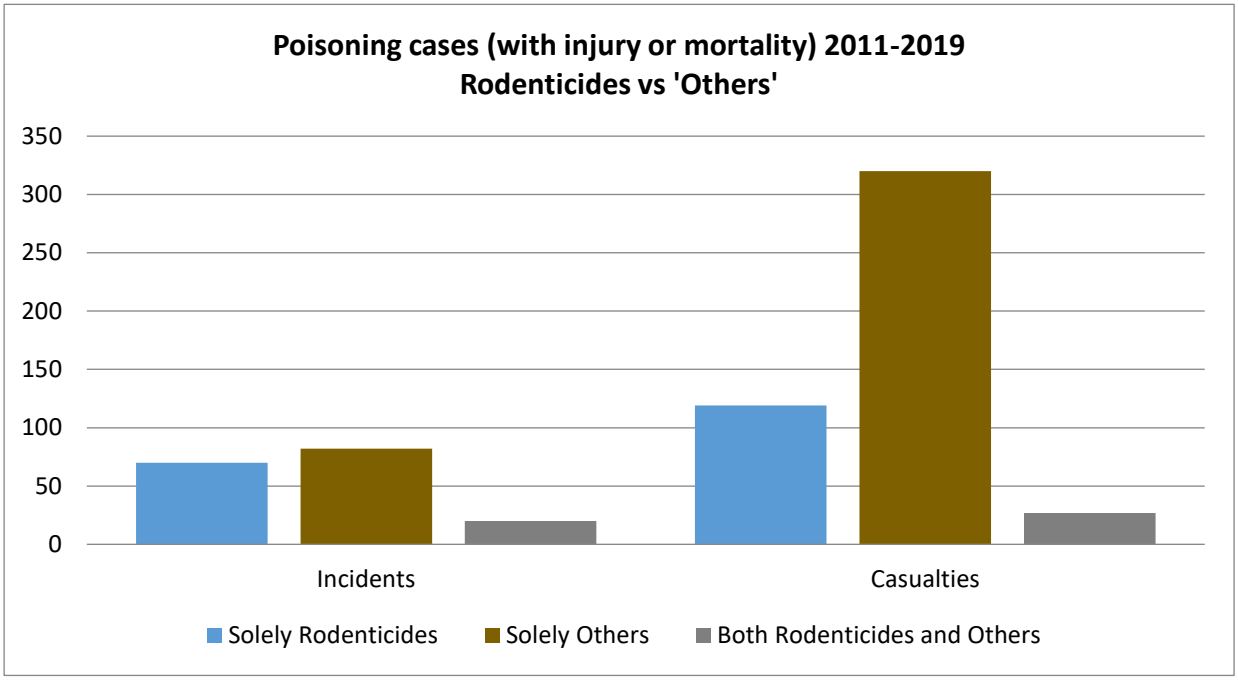

Figure 6. Poisoning Cases (with injury or mortality) 2011 – 2019: Rodenticide vs 'Others'*

* includes Alphachloralose

Rodenticides have been recorded in 60% of all incidents recorded and confirmed during the period of the RAPTOR protocol to date. As per Figure 5, Flocoumafen, Brodifacoum and

Bromadiolone have been the main rodenticide compounds found, followed by Difenacoum and Difethialone. Their presence and impact is taken to be secondary and unintentional. Nonetheless, they can have lethal and sub-lethal effects and their presence in protected wildlife is unwelcome. The Campaign for Responsible Rodenticide Use has been established with key objectives that involve reducing the prevalence of rodenticides in protected wildlife (Appendix 5). The number of wildlife casualties caused by 'other' poisons i.e. non-rodenticide poisons is much higher than that relating to rodenticides. The multiplier (coefficient) of rodenticides was found to be 1.7 for every incident involving rodenticides, 1.7 wildlife individuals were injured or died), whereas for 'other' poisons, the multiplier was 3.9. In particular, Alphachloralose stands out as the poison that has been attributed to the highest number of casualities since 2011 (a total of 293 wildlife individuals across 63 incidents, a multiplier of 4.6).

4. OTHER DATA RECORDED AND ANALYSED

The RAPTOR database has recorded the land-use type with which incidents have been associated, elevation and recent human/land-use activity. Other data recorded include the age and sex of the birds/animals affected, whether they were breeding at the time of the incident and whether a case for court prosecution has been made. These data will be analysed as part of an overall review of the RAPTOR records confirmed to date.

5. PROSECUTIONS

At the time of publication, investigations are ongoing in relation to some RAPTOR incidents recorded in 2019.

6. INDIVIDUAL LIFE STORIES

Reading a report such as this, which deals primarily in facts and figures, can remove the reader somewhat from the real damage caused to our environment and wildlife by the irresponsible or deliberate actions of certain individuals. Every individual bird or animal that was lost in 2019 and indeed in previous years has their own individual life story.
One of the cases recorded in 2019 involved a male and female Peregrine Falcon. Peregrine Falcons are the fastest animals in the world, capable of speeds in excess of 300km/h. They are one of the most spectacular sights in the Irish landscape. They nest on high cliffs, quarries or indeed buildings including church steeples. The population has recovered to over 400 pairs, after significant declines from the 1960s due to the use of organochlorine pesticides.

Peregrines tend to have a partner for life. So every year, Peregrines return to their favoured nesting site and re-establish their bond through a complex set of ritualistic courtship behaviors. The male makes bold aerobatic flights that might include loops, tight turns, and swooping dives, trying to impress the female with his speed and agility. Gifts may be exchanged in the form of food. By bringing food, the male demonstrates his hunting prowess, assuring the female that he'll be a good provider for the family. If she accepts the food, the falcons will meet in the nest for another ritual. This time, the birds face each other and take turns bowing. While they're bowing Peregrines vocalize with a series of calls.

At the outset of the breeding season in 2019, a male and female Peregrine were found dead at a site in County Wexford. So too were two pigeon carcasses that had been laced with the lethal Carbofuran poison. Toxicological tests on the Peregrines confirmed that they had died by ingesting the Carbofuran by eating the poison-laden pigeons that had been deliberately placed near the nest site.

7. CONCLUSION

It is clear that human, non-habitat related threats to Irish raptors are widespread and indeed prevalent. Poisoning and persecution incidents have now been recorded in every county in Ireland. There are blackspots throughout the country, and particular periods during which the risk of particular incidents may be higher. It would be naive to think that any more than a fraction of raptor poisoning and persecution can be formally recorded. The chances of finding a bird carcass, considering a varied landscape and terrain, tall vegetation and scavengers can be considered as slim. It is considered even more difficult to discover birds that have been shot illegally, as the perpetrator will often remove or conceal the carcass to reduce the chance of being apprehended.

Intelligence gathering, training, surveillance and forensic analysis of wildlife crime scenes are all necessary to tackle wildlife crime. Much more damage will likely be caused in the absence of such action.

The RAPTOR protocol (providing the NPWS database and annual reports) provides a clear picture of poisoning and persecution in Ireland and just how serious an issue it is. We now know the species affected, the modus operandi, timing and hotspots of such incidents. Continuing to record confirmed and possible events in a systematic fashion will build on the database and provide stronger background information to target illegal activity through enforcement and education and in turn combat human-related raptor mortality. Likewise, the information garnered from recording and analysing incidents of road, turbine or fence collisions can help inform forward planning on such matters.

Recording information

Members of the public are asked to contact their local National Parks & Wildlife Service office (see www.npws.ie/contactus) or An Garda Síochána with any information regarding poisoning or persecution incidents. These matters will be treated confidentially. If the incident occurs out of normal office hours, please take a photograph of the carcass/poison and record its precise location. There is a dedicated RAPTOR email address

(RAPTOR@chg.gov.ie). As well as NPWS personnel, An Garda Síochána are also Authorised Officers under the Wildlife Act and are authorised to investigate and tackle wildlife crime.

Local wildlife rehabilitators are usually the best placed to treat injured wildlife (see www.irishwildlifematters.ie).

Wildlife rehabilitators are asked to submit annual returns of injuries and deaths of birds of prey to NPWS, using a standard reporting form. Where foul play is suspected, NPWS or An Garda Síochána should be contacted immediately upon receiving the animal or hearing about the incident. For live birds where poisoning is suspected, the first faecal droppings to be passed should be collected and sent via NPWS for testing at the RVLs or State Lab. Carcasses should not be frozen, but can be refrigerated if necessary.

Combating Poisoning and Persecution

The RAPTOR protocol agreed between the relevant State Agencies is reviewed on an annual basis or as necessary. With regard to enforcement of legislation, the responsible authorities will continue in concerted efforts to combat illegal poisoning and persecution and the misuse of drugs and biocides. Education is seen as an important tool in this campaign also. The continued reporting and recording of relevant incidents will ensure a targeted and more effective approach.

ACKNOWLEDGEMENTS

Members of the public for reporting incidents and providing intelligence.

Staff of NPWS for finding, collecting and submitting samples and reporting incidents.

Staff of the Regional Veterinary Laboratories for their professionalism and diligence.

The State Laboratory for expert analysis of toxin levels.

Private veterinary practices for providing x-ray services.

The media for reporting on poisoning and persecution and bringing these serious issues to the public.

Appendix 1: RAPTOR poison and persecution cases confirmed between 2007 and 2019

(note: in certain cases, there was more than one casualty, while intentional and unintentional poisoning and poisoned baits are included as 'poison' incidents).

No.	10km sq	Species	Incident	County	Month	Year
1	G13	Red Kite	Poison	Leitrim	Oct	2007
2	V98	White-Tailed Sea Eagle	Poison	Kerry	Nov	2007
3	N77	Rook	Poison	Meath	Nov	2007
4	V77	White-Tailed Sea Eagle	Poison	Kerry	Feb	2008
5	V78	White-Tailed Sea Eagle	Poison	Kerry	Feb	2008
6	V77	White-Tailed Sea Eagle	Poison	Kerry	May	2008
7	S69	Hen Harrier	Shot	Kildare	Sep	2008
9	B81	Golden Eagle	Poison	Donegal	Feb	2009
10	N42	Rook	Poison	Offaly	Mar	2009
11	T29	Red Kite	Poison	Wicklow	Mar	2009
12	V99	White-Tailed Sea Eagle	Poison	Kerry	Mar	2009
13	X09	Sparrowhawk	Shot	Waterford	Jan	2010
14	G74	Golden Eagle	Poison	Leitrim	Feb	2010
15	T39	Red Kite	Poison	Wicklow	Feb	2010
16	T18	Red Kite	Poison	Wicklow	Feb	2010
17	N70	Red Kite	Poison	Kildare	Mar	2010
18	T27	Peregrine Falcon	Poison	Wicklow	Mar	2010
19	X09	Common Buzzard	Poison	Waterford	Mar	2010
20	W87	Common Buzzard	Poison	Cork	Mar	2010
21	V89	White-Tailed Sea Eagle	Poison	Kerry	Apr	2010
22	V89	White-Tailed Sea Eagle	Poison	Kerry	Apr	2010
23	T08	Red Kite	Poison	Wicklow	Apr	2010
24	B83	Common Buzzard	Poison	Donegal	Apr	2010
25	N55	Common Buzzard	Poison	Westmeath	Apr	2010
26	T27	Peregrine Falcon	Poison	Wicklow	Apr	2010
27	V89	White-Tailed Sea Eagle	Poison	Kerry	May	2010
28	V44	-	Poison	Cork	Mar	2011

29	F71	Hooded Crow	Poison	Mayo	Apr	2011
30	R00	Hooded Crow	Poison	Kerry	Apr	2011
31	S19	-	Poison	Offaly	Jul	2011
32	S19	Common Buzzard	Poison	Offaly	Jul	2011
33	S19	Common Buzzard	Poison	Offaly	Jul	2011
34	T18	-	Poison	Wicklow	Jul	2011
35	T18	Peregrine Falcon	Poison	Wicklow	Jul	2011
36	O26	Red Kite	Poison	Dublin	Jul	2011
37	S19	Sparrowhawk	Poison	Offaly	Jul	2011
38	Q96	Peregrine Falcon	Shot	Clare	Jul	2011
39	Q96	Kestrel	Shot	Clare	Jul	2011
40	Q96	Sparrowhawk	Shot	Clare	Jul	2011
41	N74	Common Buzzard	Shot	Meath	Aug	2011
42	N93	Gull, Corvid, Pigeon	Poison	Kildare	Aug	2011
43	T27	Common Buzzard	Poison	Wicklow	Aug	2011
44	T27	Red Kite	Poison	Wicklow	Sep	2011
45	H40	Common Buzzard	Shot	Cavan	Sep	2011
46	N80	Common Buzzard	Shot	Kildare	Oct	2011
47	B92	-	Poison	Donegal	Nov	2011
48	B61	-	Poison	Donegal	Nov	2011
49	C20	Rook	Poison	Donegal	Nov	2011
50	O25	Red Kite	Poison	Dublin	Nov	2011
51	O26	Red Kite	Poison	Dublin	Nov	2011
52	T28	Red Kite	Poison	Wicklow	Nov	2011
53	O25	Red Kite	Poison	Dublin	Nov	2011
54	O25	Red Kite	Poison	Dublin	Nov	2011
55	T38	Red Kite	Poison	Wicklow	Dec	2011
56	O25	Red Kite	Poison	Dublin	Dec	2011
57	O25	Red Kite	Poison	Dublin	Dec	2011

58	S77	Common Buzzard	Shot	Carlow	Dec	2011
59	R55	Peregrine Falcon	Shot	Clare	Unknown	2011
60	R44	Peregrine Falcon	Traumatic Death	Limerick	Unknown	2011
61	N10	Corvid	Poison	Offaly	Jan	2012
62	O25	Common Buzzard	Poison	Dublin	Feb	2012
63	N50	Common Buzzard	Poison	Laois	Feb	2012
64	T17	Raven	Poison	Wexford	Mar	2012
65	T00	Corvid, Pheasant	Poison	Wexford	Apr	2012
66	V78	-	Poison	Kerry	May	2012
67	M09	White-tailed Sea Eagle	Shot	Mayo	Apr	2012
68	G99	White-tailed Sea Eagle	Poison	Donegal	Apr	2012
69	S88	Otter	Poison	Wicklow	May	2012
70	N06	Muscovy Duck	Poison	Longford	May	2012
71	T17	Red Kite	Poison	Wicklow	Sep	2012
72	T29	Red Kite	Poison	Wicklow	Oct	2012
73	T18	Red Kite	Poison	Wicklow	Nov	2012
74	S54	Common Buzzard	Poison	Kilkenny	Nov	2012
75	T02	Hen Harrier	Shot	Wexford	Nov	2012
76	O07	Common Buzzard	Shot	Meath	Dec	2012
77	Q93	Short-eared Owl	Shot	Kerry	Dec	2012
78	V95	White-tailed Sea Eagle	Poison	Cork	Jan	2013
79	T39	Red Kite	Poison	Wicklow	Jan	2013
80	N32	Common Buzzard	Shot	Offaly	Feb	2013
81	N93	Common Buzzard	Poison	Kildare	Feb	2013
82	S38	Common Buzzard	Shot	Laois	Mar	2013
83	S87	Common Buzzard, Gull	Poison	Carlow	Mar	2013
84	W05	-	Poison	Cork	Apr	2013
85	T17	Red Kite	Poison	Wicklow	Apr	2013
86	T18	Red Kite	Poison	Wicklow	Apr	2013

87	G10	Rook	Poison	Mayo	May	2013
88	R37	Pigeon	Poison	Clare	May	2013
89	O20	Common Buzzard	Poison	Wicklow	Jun	2013
90	S01	Peregrine Falcon	Shot	Tipperary	Jun	2013
91	S22	Peregrine Falcon	Shot	Tipperary	Jun	2013
92	G12	Rook	Poison	Mayo	Jul	2013
93	O07	Gull, Corvid	Poison	Meath	Jul	2013
94	S22	Peregrine Falcon	Shot	Tipperary	Jul	2013
95	N09	Sparrowhawk	Trapped	Leitrim	Aug	2013
96	N87	Sparrowhawk	Shot	Meath	Sep	2013
97	O15	Red Kite	Poison	Dublin	Sep	2013
98	T26	Red Kite	Poison	Wicklow	Sep	2013
99	O20	Red Kite	Poison	Wicklow	Sep	2013
100	O08	Peregrine Falcon	Shot	Louth	Sep	2013
101	T27	Red Kite	Poison	Wicklow	Nov	2013
102	R73	Peregrine Falcon	Shot	Limerick	Dec	2013
103	R89	White-tailed Sea Eagle	Shot	Tipperary	Jan	2014
104	S15	Peregrine Falcon	Poison	Limerick	Jan	2014
105	C01	Common Buzzard	Poison	Donegal	Jan	2014
106	H61	Common Buzzard	Poison	Monaghan	Jan	2014
107	H52	Common Buzzard	Poison	Monaghan	Jan	2014
108	N99	Common Buzzard	Poison	Louth	Feb	2014
109	S97	Raven	Poison	Wicklow	Mar	2014
110	T39	Red Kite	Poison	Wicklow	Mar	2014
111	R44	Common Buzzard	Poison	Limerick	Mar	2014
112	M32	Sparrowhawk	Poison	Galway	Mar	2014
113	X19	Sparrowhawk	Poison	Waterford	Mar	2014
114	S40	Peregrine Falcon	Poison	Waterford	Mar	2014
115	S40	Peregrine Falcon	Poison	Waterford	Mar	2014

116	S40	Peregrine Falcon	Poison	Waterford	Mar	2014
117	X19	Sparrowhawk	Poison	Waterford	Apr	2014
118	X19	Peregrine Falcon	Poison	Waterford	Apr	2014
119	S15	Peregrine Falcon	Poison	Tipperary	May	2014
120	N81	Common Buzzard	Poison	Kildare	May	2014
121	C32	-	Poison	Donegal	May	2014
122	X29	Common Buzzard	Shot	Waterford	Jun	2014
123	O22	-	Poison	Dublin	Jun	2014
124	B81	Kestrel	Poison	Donegal	Jun	2014
125	N50	Common Buzzard	Shot	Laois	Jul	2014
126	O25	Barn Owl	Poison	Dublin	Aug	2014
127	V57	White-tailed Sea Eagle	Poison	Kerry	Sep	2014
128	T39	Common Buzzard	Poison	Wicklow	Oct	2014
129	O25	Common Buzzard	Poison	Dublin	Oct	2014
130	R65	Kestrel	Poison	Limerick	Nov	2014
131	S95	Common Buzzard	Shot	Wexford	Nov	2014
132	T05	Common Buzzard	Shot	Wexford	Nov	2014
133	O14	Common Buzzard	Poison	Dublin	Nov	2014
134	O13	Common Buzzard	Poison	Dublin	Dec	2014
135	O25	Common Buzzard	Poison	Dublin	Dec	2014
136	W87	Common Buzzard	Poison	Cork	Dec	2014
137	V46	Hen Harrier	Shot	Kerry	Jan	2015
138	W87	Common Buzzard	Poison	Cork	Jan	2015
139	C31	Common Buzzard	Poison	Donegal	Jan	2015
140	T29	Red Kite	Poison	Wicklow	Jan	2015
141	T16	Red Kite	Poison	Wexford	Jan	2015
142	N91	Common Buzzard	Shot	Wicklow	Jan	2015
143	T27	Common Buzzard	Poison	Wicklow	Jan	2015
144	N93	Common Buzzard	Shot	Kildare	Feb	2015

145	O14	Common Buzzard	Poison	Dublin	Feb	2015
146	T29	Red Kite	Poison	Wicklow	Feb	2015
147	N94	Rook, Jackdaw, Hooded Crow	Poison	Meath	Mar	2015
148	M41	Common Buzzard	Poison	Galway	Mar	2015
149	M72	-	Poison	Galway	Mar	2015
150	R72	Sparrowhawk	Shot	Limerick	Mar	2015
151	O03	Barn Owl	Poison	Meath	Apr	2015
152	L74	White-tailed Sea Eagle	Poison	Galway	Apr	2015
153	O01	Long-eared Owl	Poison	Wicklow	May	2015
154	M71	Peregrine Falcon	Poison	Galway	May	2015
155	M73	Barn Owl	Poison	Galway	May	2015
156	M65	Barn Owl	Poison	Galway	May	2015
157	T38	Red Kite	Poison	Wicklow	Jun	2015
158	S91	Common Buzzard	Poison	Wexford	Jun	2015
159	S91	Common Buzzard	Poison	Wexford	Jun	2015
160	T28	Red Kite	Poison	Wicklow	Jul	2015
161	N91	Common Buzzard	Poison	Wicklow	Jul	2015
162	S03	Common Buzzard	Shot	Tipperary	Jul	2015
163	S95	Common Buzzard	Shot	Wexford	Jul	2015
164	S83	Common Buzzard	Shot	Wexford	Jul	2015
165	O25	Kestrel	Poison	Dublin	Sep	2015
166	J00	Hooded Crow, Dog	Poison	Louth	Sep	2015
167	R54	Peregrine Falcon	Shot	Limerick	Sep	2015
168	M22	Starling	Poison	Galway	Sep	2015
169	T27	Common Buzzard	Poison	Wexford	Oct	2015
170	N41	Common Buzzard	Shot	Offaly	Oct	2015
171	N50	Kestrel	Poison	Offaly	Dec	2015
172	S86	Common Buzzard	Shot	Wicklow	Jan	2016
173	L75	(Dog)	Poison	Galway	Feb	2016

174	T07	Sparrowhawk	Poison	Wicklow	Mar	2016
175	T18	Red Kite	Poison	Wicklow	Mar	2016
176	F73	Peregrine Falcon	Poison	Mayo	Mar	2016
177	O10	-	Poison	Wicklow	Apr	2016
178	O16	Common Buzzard	Poison	Dublin	Apr	2016
179	W65	Peregrine Falcon	Poison	Cork	May	2016
180	N46	Peregrine Falcon	Shot	Westmeath	Jul	2016
181	S17	Common Buzzard	Shot	Tipperary	Aug	2016
182	N50	Common Buzzard	Poison	Laois	Aug	2016
183	N50	Common Buzzard	Poison	Laois	Aug	2016
184	N50	Common Buzzard	Poison	Laois	Aug	2016
185	N50	-	Poison	Laois	Aug	2016
186	N00	Common Buzzard	Shot	Tipperary	Aug	2016
187	S96	Common Buzzard	Shot	Wexford	Oct	2016
188	M80	Barn Owl	Poison	Tipperary	Oct	2016
189	O30	Common Buzzard	Poison	Wicklow	Oct	2016
190	S55	Common Buzzard	Poison	Kilkenny	Oct	2016
191	N36	Common Buzzard	Shot	Westmeath	Nov	2016
192	H22	Kestrel	Poison	Cavan	Nov	2016
193	B81	(Dog)	Poison	Donegal	Dec	2016
194	O14	Common Buzzard	Poison	Dublin	Dec	2016
195	N23	Common Buzzard	Shot	Offaly	Jan	2017
196	W16	Common Buzzard	Shot	Cork	Jan	2017
197	O03	Common Buzzard	Poison	Dublin	Jan	2017
198	N30	Common Buzzard	Shot	Wicklow	Jan	2017
199	N29	Common Buzzard	Shot	Wicklow	Jan	2017
200	O13	Pigeon	Poison	Dublin	Jan	2017
201	T07	Red Kite	Poison	Wicklow	Mar	2017
202	T07	Red Kite	Poison	Wicklow	Mar	2017

203	N70	Common Buzzard	Poison	Kildare	Mar	2017
204	N51	Common Buzzard	Shot	Offaly	Mar	2017
205	L75	-	Poison	Galway	Apr	2017
206	R99	Common Buzzard	Poison	Tipperary	Apr	2017
207	R55	Common Buzzard	Poison	Limerick	May	2017
208	N50	-	Poison	Laois	Jul	2017
209	N50	-	Poison	Laois	Jul	2017
210	O17	Starling	Poison	Dublin	Jul	2017
211	N50	Common Buzzard	Shot	Laois	Oct	2017
212	T17	Common Buzzard	Poison	Wicklow	Oct	2017
213	R89	White-tailed Sea Eagle	Poison	Clare	Oct	2017
214	T29	Red Kite	Poison	Wicklow	Dec	2017
215	W16	Kestrel	Shot	Cork	Jan	2018
216	C21	Common Buzzard	Poison	Donegal	Jan	2018
217	O16	Common Buzzard	Poison	Dublin	Jan	2018
218	L92	Merlin	Poison	Galway	Feb	2018
219	W44	Common Buzzard	Poison	Cork	Mar	2018
220	T19	Red Kite	Poison	Wicklow	Mar	2018
221	S43	Peregrine Falcon	Poison	Kilkenny	Apr	2018
222	T19	Red Kite	Poison	Wicklow	May	2018
223	R01	Hen Harrier	Shot	Kerry	Jun	2018
224	R01	Hen Harrier	Shot	Kerry	Jun	2018
225	J11	Peregrine Falcon	Shot	Louth	Jun	2018
226	T19	Red Kite	Poison	Wicklow	Jun	2018
227	R67	Starling, Corvid	Poison	Clare	Aug	2018
228	O25	Common Buzzard	Poison	Dublin	Sep	2018
229	S11	Long-eared Owl	Shot	Waterford	Sep	2018
230	O30	Long-eared Owl	Shot	Tipperary	Sep	2018
231	O02	Pigeon	Poison	Dublin	Sep	2018

232	S72	Peregrine Falcon	Poison	Wexford	Sep	2018
233	W43	Common Buzzard	Poison	Cork	Oct	2018
234	W43	Common Buzzard	Poison	Cork	Oct	2018
235	W43	Common Buzzard	Poison	Cork	Oct	2018
236	N42	Sparrowhawk	Poison	Offaly	Nov	2018
237	O17	Barn Owl	Poison	Louth	Nov	2018
238	Q83	Barn Owl	Poison	Kerry	Nov	2018
239	N37	Common Buzzard	Shot	Westmeath	Nov	2018
240	H11	Common Buzzard	Poison	Leitrim	Jan	2019
241	S61	Peregrine Falcon	Poison	Kilkenny	Jan	2019
242	N01	Kestrel	Poison	Offaly	Feb	2019
243	T19	Red Kite	Poison	Wicklow	Feb	2019
244	O20	Common Buzzard	Poison	Wicklow	Feb	2019
245	T11	Common Buzzard	Shot	Wexford	Feb	2019
246	T14	Hen Harrier	Poison	Wexford	Feb	2019
247	T15	Common Buzzard	Poison	Wexford	Feb	2019
248	M91	Hen Harrier	Traumatic Death	Galway	Mar	2019
249	S72	Peregrine Falcon	Poison	Wexford	Mar	2019
250	N14	-	Poison	Westmeath	Mar	2019
251	G53	Red Fox	Poison	Sligo	Mar	2019
252	T27	Red Kite	Poison	Wicklow	Mar	2019
253	M96	Common Buzzard	Poison	Roscommon	Apr	2019
254	T16	Red Kite	Poison	Wicklow	Apr	2019
255	T00	Common Buzzard	Poison	Wexford	Apr	2019
256	T19	Red Kite	Poison	Wicklow	Apr	2019
257	T19	Red Kite	Poison	Wicklow	Apr	2019
258	C64	Common Buzzard	Poison	Donegal	Apr	2019
259	C64	Pigeon	Poison	Donegal	Apr	2019
260	N52	Peregrine Falcon	Poison	Offaly	May	2019

261	S96	Common Buzzard	Poison	Wicklow	May	2019
262	R11	Hen Harrier	Traumatic Death	Cork	Jun	2019
263	W37	Hen Harrier	Traumatic Death	Cork	Jul	2019
264	T05	Red Kite	Poison	Wexford	Jul	2019
265	T27	Red Kite	Poison	Wicklow	Sep	2019
266	C13	Common Buzzard	Shot	Donegal	Oct	2019
267	R03	Barn Owl	Poison	Kerry	Oct	2019
268	Q72	Common Buzzard	Shot	Kerry	Nov	2019
269	N88	-	Poison	Meath	Nov	2019
270	N88	Hen Harrier	Poison	Meath	Nov	2019
271	G75	Peregrine Falcon	Poison	Sligo	Nov	2019

Appendix 2: 'Other' RAPTOR cases confirmed between 2007 and 2019 (note: in certain cases, there was more than one casualty).

No.	10km sq	Species	Incident	County	Month	Year
1	W17	White-Tailed Sea Eagle	Wind Turbine Strike	Kerry	Mar	2011
2	W07	White-Tailed Sea Eagle	Wind Turbine Strike	Kerry	Jun	2011
3	R44	Peregrine Falcon	Traumatic Death	Limerick	Jun	2011
4	C53	Long-eared Owl	Road Casualty	Donegal	Jan	2012
5	W77	Barn Owl	Road Casualty	Cork	Jan	2012
6	S26	Barn Owl	Road Casualty	Tipperary	Jan	2012
7	R76	Barn Owl	Road Casualty	Tipperary	Feb	2012
9	S04	Barn Owl	Road Casualty	Tipperary	Feb	2012
10	N11	Barn Owl	Road Casualty	Offaly	Feb	2012
11	R83	Barn Owl	Road Casualty	Tipperary	Feb	2012
12	W08	Barn Owl	Road Casualty	Kerry	Mar	2012
13	S08	Barn Owl	Road Casualty	Tipperary	Mar	2012
14	S04	Barn Owl	Road Casualty	Tipperary	Mar	2012
15	S02	Long-eared Owl	Road Casualty	Tipperary	May	2012
16	S23	Long-eared Owl	Road Casualty	Tipperary	May	2012
17	W07	White-Tailed Sea Eagle	Wind Turbine Strike	Kerry	Jun	2012
18	S49	Long-eared Owl	Road Casualty	Laois	Jul	2012
19	C53	Sparrowhawk	Road Casualty	Donegal	Aug	2012
20	C53	Sparrowhawk	Road Casualty	Donegal	Aug	2012
21	R54	Barn Owl	Road Casualty	Limerick	Sep	2012
22	N11	Peregrine Falcon	Power line Collision	Offaly	Oct	2012
23	R80	Barn Owl	Road Casualty	Cork	Oct	2012
24	R81	Barn Owl	Road Casualty	Cork	Oct	2012
25	O17	Barn Owl	Road Casualty	Meath	Oct	2012
26	S54	Common Buzzard	Road Casualty	Kilkenny	Nov	2012
27	Q81	Barn Owl	Road Casualty	Kerry	Dec	2012
28	R80	Barn Owl	Road Casualty	Cork	Dec	2012

29	W57	Barn Owl	Road Casualty	Cork	Jan	2013
30	S03	Barn Owl	Road Casualty	Tipperary	Feb	2013
31	S03	Barn Owl	Road Casualty	Tipperary	Feb	2013
32	S04	Barn Owl	Road Casualty	Tipperary	Feb	2013
33	S04	Barn Owl	Road Casualty	Tipperary	Feb	2013
34	R81	Barn Owl	Road Casualty	Tipperary	Mar	2013
35	O15	Barn Owl	Road Casualty	Dublin	Mar	2013
36	S04	Barn Owl	Road Casualty	Tipperary	Mar	2013
37	S15	Barn Owl	Road Casualty	Tipperary	Apr	2013
38	Q90	Barn Owl	Road Casualty	Kerry	Apr	2013
39	S04	Barn Owl	Road Casualty	Tipperary	Jun	2013
40	G73	Peregrine Falcon	Road Casualty	Sligo	Jul	2013
41	Q91	Hen Harrier	Research Disturbance	Kerry	Jul	2013
42	Q91	Hen Harrier	Research Disturbance	Kerry	Jul	2013
43	T15	Peregrine Falcon	Road Casualty	Wexford	Jul	2013
44	N00	Kestrel	Road Casualty	Offaly	Aug	2013
45	R46	Barn Owl	Road Casualty	Clare	Aug	2013
46	S31	Barn Owl	Road Casualty	Tipperary	Aug	2013
47	M95	Sparrowhawk	Road Casualty	Roscommon	Sep	2013
48	S32	Barn Owl	Road Casualty	Tipperary	Sep	2013
49	M95	Peregrine Falcon	Road Casualty	Roscommon	Sep	2013
50	O03	Common Buzzard	Fence Collision	Dublin	Sep	2013
51	N46	Common Buzzard	Road Casualty	Westmeath	Oct	2013
52	N97	Common Buzzard	Road Casualty	Dublin	Oct	2013
53	Q81	Barn Owl	Road Casualty	Kerry	Oct	2013
54	J00	Barn Owl	Road Casualty	Louth	Nov	2013
55	Q71	Barn Owl	Road Casualty	Kerry	Nov	2013
56	M29	Barn Owl	Road Casualty	Monaghan	Nov	2013
57	R87	Barn Owl	Road Casualty	Tipperary	Nov	2013

58	S02	Barn Owl	Road Casualty	Tipperary	Nov	2013
59	V87	Barn Owl	Road Casualty	Kerry	Nov	2013
60	O16	Common Buzzard	Fence Collision	Meath	Dec	2013
61	S02	Barn Owl	Road Casualty	Tipperary	Dec	2013
62	N01	Common Buzzard	Road Casualty	Offaly	Dec	2013
63	R13	Kestrel	Wind Turbine Strike	Limerick	Aug	2017
64	R21	Kestrel	Wind Turbine Strike	Cork	Feb	2019
65	M91	Hen Harrier	Traumatic Death	Galway	Mar	2019
66	R10	Hen Harrier	Wind Turbine Strike	Kerry	Apr	2019
67	R11	Hen Harrier	Traumatic Death	Cork	Jun	2019
68	W37	Hen Harrier	Traumatic Death	Cork	Jul	2019
69	W56	Sparrowhawk	Road Casualty	Cork	Jul	2019
70	R85	Hen Harrier	Road Casualty	Tipperary	Jul	2019
71	M35	Sparrowhawk	Road Casualty	Galway	Aug	2019
72	N11	Long-eared Owl	Road Casualty	Offaly	Aug	2019

Appendix 3: Distribution of all poison and persecution incidents between 2007 and 2019.

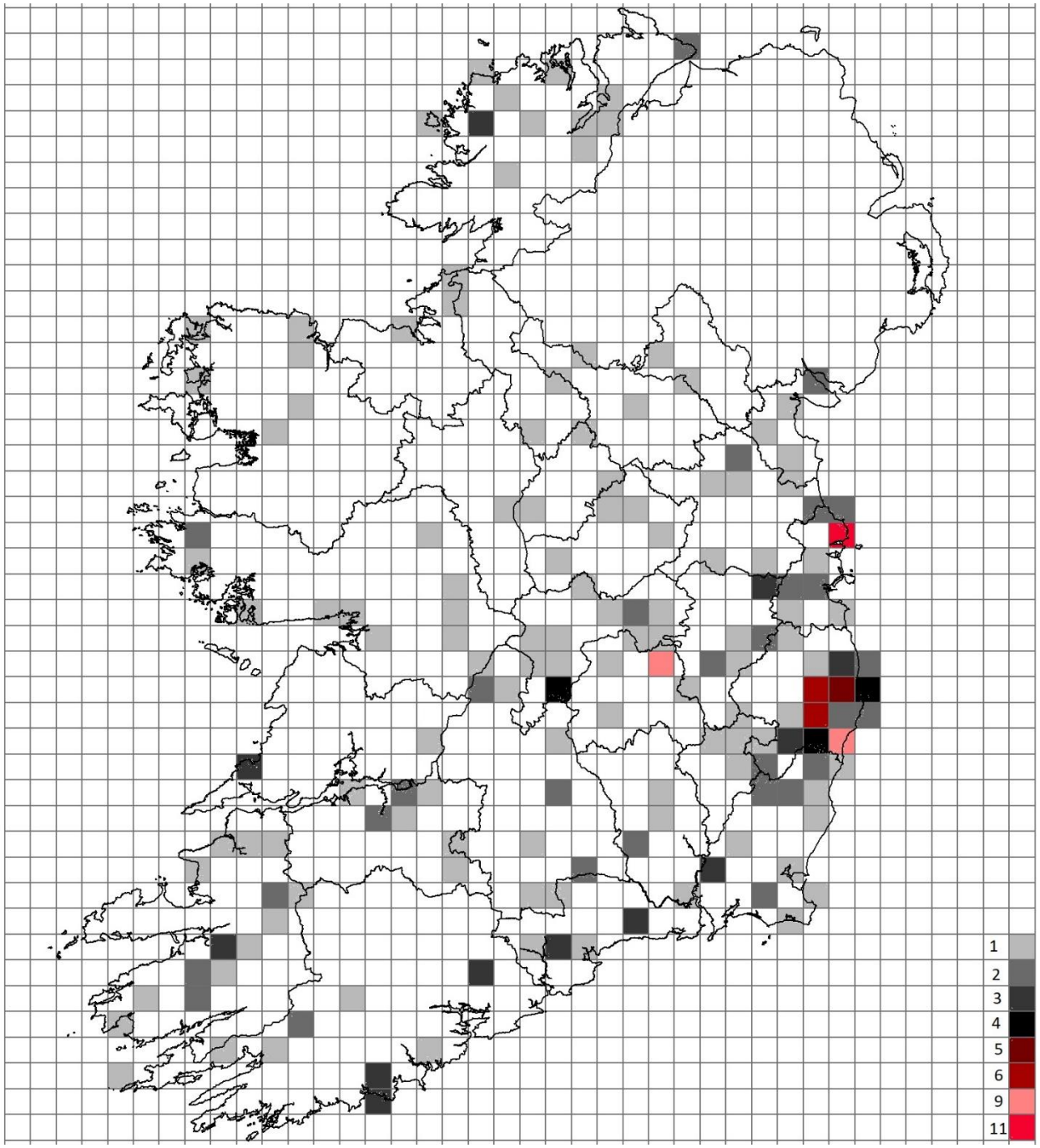

Figure 8. All poison and persecution incidents recorded between 2007 and 2019. The legend for the number of incidents confirmed in each square is provided at the bottom right of the graphic.

Appendix 4: Key Legislation

There are a number of key Irish statutes that deal with the poisoning and persecution of wildlife. The Wildlife acts 1976, 2000 and 2010 are the primary Acts concerning the protection of wildlife in Ireland. Under the Wildlife Acts, in line with the EU Birds Directive (2009/147/EC), all birds in Ireland are protected. Article 9 of the Birds Directive allows Member States to make derogations from its protective measures in the interests of public health and safety, air safety, to protect flora and fauna and to prevent serious damage to crops, livestock, forests, fisheries and fauna. The European Communities (Wildlife Act, 1976) (Amendment) Regulations, 1986 – (S.I. No. 254 of 1986) allow specific derogations to be implemented by way of Ministerial Declarations, which are renewed every four months. The species included in the Irish Ministerial Declarations are grey crows, magpies, rooks, jackdaws and some members of the pigeon family. Until the beginning of 2008, poisoned or anesthetic bait was allowed for control of grey crows, magpies and pigeons. From 1 January 2008, the Ministerial Declarations allowed the use of non-meat baits only when laying poison for the control of grey crows, magpies and pigeons. The change was made due to concerns that the use of meat baits could lead to the accidental poisoning of birds of prey such as the reintroduced species. Ministerial Declarations with effect from September 2010 have prohibited the use of any poisoned or anaesthetic bait for the control of grey crows and magpies. Thereafter, grey crows and magpies could only be controlled by shooting or the use of legal cage traps. The provision in the Ministerial Declarations on the use of non-meat-based poisoned or anaesthetic bait to control certain species of pigeon was retained on the basis of a licensing regime by National Parks & Wildlife Service.

There are various directives and regulations concerning the use of biocides and poisons in the EU and Ireland (e.g. Poisons Regulations 2008; Use and Control of Biocidal Products) Regulations, 2001) and it is illegal to sell or use any pesticides/biocides in a manner which is not registered or approved. Since 2008 there has been no pesticide/biocide registered for use in the control of birds or any mammal other than rabbits, rats or mice**.** Proper use is ensured through inspections at wholesale, retail and farm level and through the testing of food commodities on the Irish market for the presence of pesticides residues. The State took prosecutions in 2009 and 2010 which led to convictions and fines against landowners

using Alphachloralose to kill rooks. The Restrictions on Use of Poison Bait Regulations (SI No. 481 of 2010) underpin the legalities relating to poison bait. The Animal Health and Welfare Act (2013) outlines an offence where a person lays "poison by a method or in a manner that a protected animal has or would have access to the poison."

The conservation of biodiversity in Ireland has been strengthened and expanded by EU law, most notably by the EU Birds Directive and EU Habitats Directive (92/43/EEC) and also by the EIA Directive (85/337/EEC). The European Communities (Birds and Natural Habitats) Regulations 2011 consolidate the European Communities (Natural Habitats) Regulations 1997 to 2005 and the European Communities (Birds and Natural Habitats)(Control of Recreational Activities) Regulations 2010. Many of our native raptors (including Peregrine Falcon, Merlin, Hen Harrier, Golden Eagle, White-tailed Sea Eagle and Red Kite) are listed on Annex I of the EU Birds Directive (Directive 2009/147/EC). Special Protection Areas (SPAs) may be designated to protect the habitats and ranges of these species. Article 4(4) of the same directive requires that even outside of SPAs, Member States shall strive to avoid pollution or deterioration of habitats of these birds.

For farmers, poisoning of bird species is a breach under cross-compliance (Statutory Management Requirement 2 - Conservation of Wild Birds and Statutory Management Requirement 10 – Plant Protection Products (Pesticides)).

Where to find relevant legislation:

Wildlife Acts
www.irishstatutebook.ie

EU Birds Directive Derogations
http://www.npws.ie/legislationandconventions/irishlaw/eubirdsdirectivederogations/

SI No. 481 of 2010. Restrictions on Use of Poison Bait Regulations 2010
www.irishstatutebook.ie

Directive 98/8/EC of the European Parliament and of the Council of 16 February 1998 concerning the placing of biocidal products on the market as amended by Council Regulation 1882/2003/EC) and Commission Directives 2006/50/EC, 2006/140/EC and 2007/20/EC
http://eur-lex.europa.eu

S.I. No. 625 of 2001. European Communities (Authorization, Placing on the market, Use and Control of Biocidal Products) Regulations 2001
www.irishstatutebook.ie

S.I. No. 511 of 2008. Poisons Regulations 2008.
www.irishstatutebook.ie

Regulation (EU) No. 528/2012 of the European Parliament and of the Council of 22 May 2012 concerning the making available on the market and use of biocidal products.
http://eur-lex.europa.eu

Animal Health and Welfare Act 2013
www.irishstatutebook.ie

Protocol for investigation of deaths of Birds of Prey and other wildlife

Veterinary Laboratory Service (Department of Agriculture, Fisheries and the Marine),
The State Laboratory (Dept. of Public Expenditure & Reform)
and
National Parks and Wildlife Service (Department of Culture, Heritage and the Gaeltacht)

May 2013

Further to a series of meetings between representatives of the Veterinary Laboratory Service of the Department of Agriculture, Fisheries and the Marine, the State Laboratory, and the National Parks and Wildlife Service (NPWS), the following protocol is agreed.

Scope:

This is a national scheme to monitor mortality in Irish birds of prey and other wildlife species with seven key aims:

1. Collection of evidence to support prosecutions for illegal poisoning.
2. Monitoring of the impact of poisoning on Irish raptor populations.
3. Monitoring the incidence of poisoning and impact of illegal poisoning on other vulnerable species (e.g. Raven)
4. Monitoring the incidence of poisoning in species vulnerable to secondary poisoning by rodenticides (in particular Barn Owl, Kestrel, Common Buzzard, Red Kite and Long-eared Owl).
5. Monitoring the impact of other types of persecution on Irish raptors and maintaining a database of such incidents.
6. Providing evidence of the causes of death of other wildlife species where poison is strongly suspected
7. Quantifying the use of specific poisons.

Scale of Work:

It is expected that the scale of the work is unlikely to exceed 50 specimens per annum The State Laboratory has the capacity to deal with 5 of these specimens as urgent and treat them accordingly. Cases will be deemed urgent by a designated Wildlife Inspector with National Parks & Wildlife Service. Any urgent cases in excess of this would be dealt with on a case by case basis but urgent processing of these could not be guaranteed due to the extra resources required.

Stakeholders:

Government Departments and Agencies:
Department of the Arts, Heritage and the Gaeltacht (National Parks and Wildlife Service)
Department of Agriculture (Veterinary Laboratory Service)
The State Laboratory
Environmental Protection Agency

NGOs:

Farm organisations
Golden Eagle Trust Ltd
BirdWatch Ireland
NARGC

1. **Publicising awareness of the scheme**

A national awareness campaign will be carried out, targeting NARGC Gun Clubs, Farming representative bodies, Raptor Study Group members, Bird Watch Ireland branches, Gardaí, veterinary practices, wildlife rehabilitation centres, falconers and taxidermists, giving details of scheme, and contact details for members of the public finding carcasses of wild birds of prey.
Information will also be provided on the NPWS website.

2. **Day-to day operation of Scheme:**

Routine Submissions:

Specimens for testing (i.e. dead birds or faecal samples from suspected poisoned but living birds) will normally be submitted by NPWS rangers to Regional Veterinary Laboratories (RVLs), or by certain other nominated individuals only. Members of the public and NGOs are asked to contact NPWS in the first instance to arrange delivery of specimens to RVLs where possible. Protocols on collection, assessment, investigation and chain of evidence will be followed. [RVL may decide to accept specimens from other sources.]

In the following cases, specimens will be held for post-mortem and toxicology analysis in monthly batches to allow for cost-effectiveness:

- Any bird of prey or Raven, or other bird species where a number of specimens are involved, found dead in circumstances suggesting poisoning but where prosecution is not considered appropriate/possible [Note: where multiple birds/samples arise from the same event, they will share a common submission form, reference number etc.]
- Any barn owl, long-eared owl or kestrel
- Suspected bait items where poisoning is suspected but where a prosecution is not considered possible
- Suspected poisons or other chemicals recovered during an investigation or search
- Faecal samples from birds suspected to have been poisoned but still living (these samples should be taken at the very earliest stages of discovering the bird).

Urgent Submissions:

In the following cases, and where NPWS requests through Wildlife Inspector Dr. Barry O'Donoghue, post-mortem and toxicology analysis will be fast-tracked (subject to the note on capacity in the State laboratory under "Scale of Work" on p1):

- Any Golden Eagle, White-tailed Eagle or Red Kite
- Any other bird of prey found dead in circumstances suggesting poisoning and where a prosecution following investigation is considered possible
- Any bird species where a number of specimens are found dead suggesting poisoning and where a prosecution following investigation is considered possible

- Any suspected bait items where poisoning is suspected and a successful prosecution is considered likely

Sample Reception:

Cases will be booked in advance, by an NPWS conservation ranger, who will specify that this is a Raptor Poisoning case. The ranger & RVL will agree a suitable time to deliver it to the RVL. The NPWS Ranger will be given the name of a person to hand it to, who will complete the 'chain of custody' section of the submission form (see below).

RVL Addresses, directions, and contact times are attached in Appendix 1

On arrival at the RVL, the NPWS ranger will present

- carcass/suspect bait as defined in NPWS section of protocol
- specimen will be in a leak-proof container (e.g. Ziploc bag, plastic box), sealed and clearly labelled with species, site, contact number (ranger's mobile)
- completed submission form – this will show chain of custody, and this should be maintained in the RVL. This form (with copy retained in RVL is sent to the State Lab with the samples
- hard copy of x-rays (if digital X-Ray system has been used, a set of digital images e-mailed in advance to Research Officer on duty will substitute) [RVLs do not undertake x-rays. X-rays should be undertaken at designated veterinary practices]

Chain of custody:

Each person taking custody of the samples will complete the "chain of custody section' of the form and will take responsibility for securely handling, storing, testing or dispatching samples as required.

Post mortem examination, sampling and sample dispatch by the RVL:

Post Mortem Examination:

1. Keep a printed copy of the attached PM summary in the post mortem area where it can be referred to by the duty pathologist, and the most recent version of this protocol in the front office where it can be referred to by reception staff
2. Record details of each Raptor Protocol submission on LIMS as per submission form *(attached)* using the Raptor Protocol Workflow *(currently in development & testing)*
3. Weigh the bird, record the weight
4. Photograph the carcass before the PM, and photograph any significant lesions, ensuring that the case number and scale are visible in the photos
5. Record carcass condition in respect of fat, muscle, degree of crop fill
6. Record plumage condition, any evidence of chemical staining or burns
7. Perform full post mortem where carcass is intact and fresh, with bacteriology, virology, histology as judged appropriate by the duty pathologist, and keeping a contemporaneous record of as a hard copy. Perform a post mortem directed primarily at sampling where carcass is decomposed and or scavenged, recording reasons for this.
8. Test a sample of fresh kidney for lead content

Sampling:

Regardless of condition of carcass, sample as many as possible of the following into rigid screw-top containers or twist-seal sterile sampling bags:

- Crop contents
- Stomach contents
- Intestinal contents
- Cloacal contents
- Liver
- Kidney
- Skeletal Muscle
- Blood
- Samples of suspected poison

Create a separate aliquot for each sample collected above, store each aliquot in a sealed container (universal type, or larger).
Label each tube with sample ID and state which matrix it contains (e.g. blood, faeces)
The aim of sampling is to recover a sample for testing and a sample for archiving, so up to 10g/10ml of each of the above to be sampled if available.

Dispatch of samples to State Lab:

1. Notify State Lab contact point (Ed Malone and John McBride) in advance of the arrival of Raptor Protocol samples by email to edward.malone@statelab.ie and john.mcbride@statelab.ie, and only dispatch samples when it is confirmed that somebody will be available to receive them

2. Dispatch all samples to Ed Malone, State Laboratory, Backweston Laboratory Campus, Young's Cross, Celbridge, Co. Kildare by registered post, clearly marked as "Raptor Protocol Samples" by the end of the working day after receipt.

3. Include the original submission form, keeping a photocopy on file at the RVL

4. Inform State Lab of any specific reasons to suspect toxicity, and any circumstantial evidence seen at PM e.g. yellow staining of Nitroxynil

5. Put all samples into individual sealed evidence bags, labelled and identified on the included form

Testing by the State Lab:

1. The State Lab proposes to carry out all testing by LC-MS/MS and using confirmatory criteria commonly applied in others areas of similar testing,

2. These tests will not be accredited by the State Lab but validation work will be carried out to determine the fitness for purpose of the tests. The tests will be

deemed confirmatory and stand up to some scrutiny because mass spectrometry is used as the primary detection technique.

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3. Where a prosecution is in train, the State Lab will send reference samples to another laboratory in the UK for confirmatory testing if this is deemed necessary.

4. The State Lab currently tests for:

		Reporting Level (µg/kg)
a.	Strychnine	2000
b.	Nitroxynil	50
c.	Paraquat	5000
d.	Alpha Chloralose	500
e.	Carbofuran	50
f.	Methaldehyde	2500
g.	Warfarin	50
h.	Brodifacoum	1000
i.	Dicumarol	50
j.	Difenacoum	50
k.	Flocoumafen	500
l.	Flunixin	250

5. The State Lab will report results as
    a. Present at greater than the reporting level
    b. A response was noted at the retention time of “analyte” but is less than the reporting level.
    c. Not Detected
    d. Not tested

6. The number of matrices tested will depend on whether the sample is routine or urgent

a. On urgent samples liver and crop contents will be tested, with other matrices examined only if SL believes that this may provide more information.

7. On routine samples, only crop contents and liver tissue will be tested routinely.

8. The State Lab will hold an archive of the tissues submitted. Tissues will be released for subsequent testing on
    a. A case-by-case basis, by agreement between representatives of the State Lab (I. Kinahan) Veterinary Lab Service (M. Casey) and NPWS (B. O'Donoghue)
    b. Or on the basis of a further protocol on sample sharing

Testing by the Agri-food Biosciences Institute, Northern Ireland:

Although not a party to this protocol, AFBI were consulted during its preparation and indicated that they may be in a position to support this scheme from time to time by:

- Botulism testing
- Confirmatory testing
- Testing urgent samples (which could be directed to State Lab/AFBI, depending on which one had a batch of routine samples 'ready to run')

Reporting arrangements

Routine cases:

A preliminary report will be issued by the receiving RVL within one week, giving PM findings and test results received to date. The State Lab will typically report toxicology results from routine cases in 28 days to the RVL

A final report on routine cases will typically issue from the RVL within one week of all tests being completed and results received at RVL

Urgent cases, where prosecution is likely:

Where sample has been flagged as urgent (by NPWS Wildlife Inspector Barry O'Donoghue), the preliminary findings of the PM will be issued by phone/email within two working days. Test results from the RVL on urgent cases will ordinarily be completed and reported within one week of the carcass's submission.

The State Lab will typically report toxicology results from urgent cases in 7 days to the RVL. A final report on urgent cases will typically issue within two working days of the last test result being received in the RVL

Publication of aggregated results:

3. Outputs

For all recording and reporting purposes, the RVLs shall send post mortem reports (preferably by email) to NPWS Wildlife Inspector Dr. Barry O'Donoghue and include in the same correspondence, NPWS staff member(s) relevant to the particular case. Correspondence should include a full post mortem report and a copy of the completed submission form (showing reference number, chain of custody etc.). Where cases are referred to the State laboratory, the results will be sent back to the RVL, with NPWS contact point Dr. Barry O'Donoghue included in the same correspondence.

NPWS staff seeking updates shall contact Dr. Barry O'Donoghue only.

The NPWS will provide an annual report of the poison use surveillance data, with mapping of incidents associated with specific poisons, published in first quarter of each year.

Copies of the report will be sent to the Minister for Agriculture, Fisheries and the Marine, the Minister for Arts, Heritage and the Gaeltacht, , the Pesticide Registration & Control Division (Pesticides Registration Authority), the EPA and interested NGOs.

Peer-reviewed scientific publication of the aggregated results of this testing shall be by agreement of representatives of the State Lab (E. Malone) Veterinary Lab Service (M. Casey) and NPWS (B. O'Donoghue).

All three partner organisations will be able to use aggregated results in non-peer-reviewed publications e.g. annual reports, which can be published on official websites where agreed.

Enforcement of Legislation

Depending on the situation, follow-up investigation or enforcement will be carried out by the authority/authorities responsible for the relevant legislation.

Legislation that may be invoked includes

Legislation	**Responsible Authority**
The Wildlife Acts	NPWS, An Garda Síochána
SI No. 481 of 2010. Restrictions on Use of Poison Bait Regulations 2010	NPWS, An Garda Síochána
S.I. No. 625 of 2001. European Communities (Authorization, Placing on the market, Use and Control of Biocidal Products) Regulations 2001	
S.I. No. 511 of 2008. Poisons Regulations 2008.	

Review of Protocol

This protocol will be reviewed annually or as necessary, so that changes can be agreed if required ahead of the following calendar year, and a full uniform set of data acquired for the following using the revised Protocol.

Mícheál Casey,	Barry O'Donoghue	Ed Malone
On behalf of RVLs	On behalf of NPWS	On behalf of State Lab.

Appendix 6: Campaign for Responsible Rodenticide Use

The demands of consumers for high quality and safe food means that there is an ever-increasing need for higher standards in all stages of the food chain. This has led to much stricter quality assurance requirements from buyers, such as supermarkets and food processing companies.

Among these requirements is the need for more effective control of pests, such as rodents, which contaminate and destroy food while still in farm stores. At the same time, there is a

greater recognition of the need to protect and enhance wildlife in rural areas.

The Campaign for Responsible Rodenticide Use (CRRU) aims to protect wildlife while promoting and providing effective rodent control through the responsible use of rodenticides. In a bid to ensure that any negative impact on wildlife caused by poor pest control practice is eliminated, CRRU is actively promoting the responsible use of rodenticides and has launched a code under the banner 'Think Wildlife'. These essential guidelines promote best practice in rodent control.

From advising those using rodenticides to have a planned approach and always using enough baiting points, to warning them never to leave bait around at the end of treatment, the code will help rural users to get the best results from their rodent control programmes, yet reduce the potential harmful effects on wildlife.

To learn more on this initiative, launched in Ireland in September 2013, or how to minimise risk to wildlife, go to www.thinkwildlife.org

Appendix 7: What to do if you find an injured/dead bird of prey

HOW YOU CAN HELP THE R.A.P.T.O.R. PROTOCOL

The RAPTOR Protocol is a Government Initiative to address non-habitat related threats and pressures that face Ireland's birds of prey. If you find an injured or dead bird of prey, or encounter any suspicious activity, here are some tips to help:

DO

- Immediately contact NPWS (01-8883255 or RAPTOR@ahg.gov.ie). If NPWS not available, contact nearest Garda Station.
- Record the time and date. Record any correspondence with landowners/officials/others.
- Record details of the scene. Record the species and any relevant details (e.g. condition/age of bird/tags). Take photographs showing context of scene and a close up of bird/ring/tags/bait, etc.
- Record the exact location (e.g. Grid Reference, Google Maps screen shot or dropped pin) including specific directions to the scene (consider marking with a stick/plastic bag, etc. but not so obviously as to alert perpetrators)
- Follow instruction from NPWS/Gardai.
- In the case of injured/sick wildlife, check www.irishwildlifematters.ie for your nearest wildlife rehabilitator/vet.
- Look beyond the obvious – there could be other birds, bait, etc. beyond that which you have initially encountered.

DON'T

- Don't remove or interfere with what may be evidence of a wildlife crime, unless otherwise instructed by officials or appropriate.
- Don't handle birds or poisons (unless in specific circumstances with appropriate knowledge and protective gloves, etc.).
- Don't approach the landowner unless appropriate.
- Don't jump to conclusions. The authorities will investigate in the appropriate manner, with Post Mortem examinations and toxicology tests available if required.
- Don't deliver dead birds to RVL: Only Authorised Officers from NPWS or An Garda Siochána can send carcasses or bait samples for testing.
- Don't ignore anything suspicious (e.g. pigeons unable to fly, any type of meat, decoy birds, raptor feathers, pole traps, overheard conversations/anecdotal information).
- Don't ignore any dead, sick or injured bird of prey or multiple bird casualties.

Appendix 8: Central Contact Details of Project Partners

Central Contact Details of Key Stakeholders	
Stakeholder	**Contact Details**
National Parks & Wildlife Service, Department of Culture, Heritage & the Gaeltacht	90. North King Street, Dublin 7 +353 1 888 3255 www.npws.ie RAPTOR@chg.gov.ie
Regional Veterinary Laboratories Department of Agriculture, Food & Marine	Agriculture House, Kildare St. Dublin 2 +353 1 607 2000 www.agriculture.gov.ie info@agriculture.gov.ie
The State Laboratory Department of Public Expenditure & Reform	Backweston Laboratory Campus Celbridge Co. Kildare +353 1 5057000 www.statelab.ie info@statelab.ie