

YELLOW RIVER WIND FARM DEVELOPMENT



RHODE, COUNTY OFFALY

Bat survey and assessment

Report prepared for

Biosphere Environmental Services

by

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Executive Summary

This report details a site survey and assessment of the existing bat fauna at the proposed Yellow River Wind Farm development area at Rhode, County Offaly.

The survey, undertaken in September and October 2012, determined that at least six bat species actively forage on or over the site and other species are known from the local area and may occur on-site occasionally.

All but one of the bat species confirmed or expected on-site are low fliers and, as a result, are considered to be at a low risk from the proposed development but Leisler's bat is of concern as it is a high flier and hence may come into conflict with turbines. Although there is currently no evidence of Leisler's bat mortality due to wind turbines in Ireland, the risk to the species has to be acknowledged as its average foraging height is approximately 40m above the ground though it can hunt at heights in excess of 70m.

To date, there are no published results of bat/turbine interactions at Irish wind turbine sites and those undertaken abroad are mainly of wind farms sited along known bat migration routes which are currently unknown in Ireland.

Mitigation measures are given within the report to reduce the potential risks to bats posed by the planned wind turbines. The adjudged worst case scenario is that, during operation, the turbine development may possibly cause injury or death to a few individual specimens of Leisler's bat or other bat species but the overall impact of the proposed development on local bat populations, following implementation of recommended mitigation measures to safeguard these protected animals, is considered to be negligible to minor negative with the favourable conservation status (FCS) of bat species being unaffected and all species confirmed or expected on or near the study area are expected to persist.

As no research currently exists on bats and wind turbines in Ireland, the planned development could provide an opportunity to gain baseline data on bat/turbine interaction.

Statement of Competence

The author of this report, Mr. Conor Kelleher, has specialised in the study of bats since the mid-1980s and is licensed to catch these animals for educational and scientific purposes. He is a past Bat Warden for *English Nature* (now *Natural England*), the Statutory Nature Conservation Organisation in England, from 1989 to 1999. He has published many articles and papers on these animals and presented papers on bat ecology at international conferences and symposia. He is a part-time lecturer on bat ecology at University College Cork.

The author has also undertaken research on bats including radio-telemetry and detector studies, distribution surveys and tutors courses on field study techniques.

Since 2001, he has been self-employed as an Ecological Consultant undertaking terrestrial mammal surveys, specialising in bats, for Environmental Impact Assessments, pre-construction surveys etc. To date, he has been involved in over 400 ecological surveys for developments such as roads, quarries, landfills, wind turbine and residential and commercial projects.

The author was Secretary and Trustee of the UK *Bat Conservation Trust* from 1998-2003 and is the current Chairman of *Bat Conservation Ireland*. He also recently retired as Chairman of the *Irish Wildlife Trust*. He has attended oral hearings as an Expert Witness on bat issues and has undertaken research-based projects on bats for the *National Parks and Wildlife Service* and the *Vincent Wildlife Trust*.

He recently co-published the interactive DVD: '*Knowing, Studying and Conserving the Bats of Ireland – an Interactive Guide on How to Identify, Study, Appreciate and Care for Irish Bats*' and, as Chairman, co-ordinates the activities of the *Cork County Bat Group*.



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1. Introduction

A wind turbine development consisting of 27 turbines is proposed to be constructed over a wide area between the towns of Rochfortbridge and Rhode County Offaly. The planned Yellow River Wind Farm is a large site located across several townlands including Bunsallagh, Derryrarkin, Derrygreenagh, Derryiron, Coolcor, Coolville, Ballyburly, Greenhills, Wood, Killowen, Stonehouse and Carrick (Ordnance Survey Discovery Series map nos.: 48 and 49) and is accessible from minor roads off the R400 and R441 routes.

As all Irish bat species are protected under current European and National legislation (see Appendix 3), *Aardwolf Wildlife Surveys* was requested by *Biosphere Environmental Services*, on behalf of their client *Green Wind Energy Ltd.*, to assess impacts, if any, to local bat populations as a result of the planned turbine development.

2. Baseline environment

This report presents the results of a desk study into previous records of bat species (from *Bat Conservation Ireland's* National Bat Distribution Database) in the area of the proposed development and that of site visits on the 30th September and 1st October 2012 during which the on-site habitats (the nature of which are indicative of the bat species likely to be present) were assessed during daylight hours for their favourability for bats. Also, a bat activity survey was carried out at dusk and through the night using heterodyne/frequency division detectors – Bat Box Duet and Pettersson D100. The assessment was undertaken by Conor Kelleher.

Although the site surveys were undertaken in the autumn season, bats were still active due to mild weather with temperatures of 14°C in daylight hours and 12°C after dark. Winds were light and there was no rainfall.

The study area, on low ground varying from 70m to 90m, consists of intact (PB1) and cut-over (PB4) (Plate 8) raised bog with areas of improved (GA1) and wet grasslands (GS4) (Plates 1 – 5, 10 & 13), coniferous forestry (WD4) and treelines (WL2) (Plate 2) which include sycamore *Acer pseudoplatanus*, ash *Fraxinus excelsior*, elder *Sambucus nigra* and alder *Alnus glutinosa*. Areas of willow *Salix* spp., birch *Betula* spp. and gorse *Ulex* spp. scrub (WS1) also occur. Watercourses in the area include drainage channels (FW4) and the on- and off-site rivers (FW2); Yellow (Plate 7), Mongagh and Castlejordan. Large pools and standing water (Plate 6) are also present within the bog habitats at the southwest. At the southeast, wet woodland occurs at Coolville which includes deciduous tree species such as oak *Quercus* spp., ash, willow, birch and alder (Plates 11 & 12). Man-made structures and roads (BL3) are present throughout the area with peat-extraction rail lines (Plate 9) in the southwest. Field boundaries at the east and north are mainly of hedgerows (WL1) (Plates 10 & 13) and treelines of hawthorn *Crataegus monogyna* with ash, sycamore and elder. Earth banks (BL2) and wire fencing are also found around improved grassland and tillage (BC3) (Plate 14). Active quarries (ED4) are also present within the area (habitat classifications based on Fossit 2000).

3. Desk study results

Of the ten recorded bat species in Ireland, seven have been recorded within a 10km radius of the study site including; common *Pipistrellus pipistrellus*, soprano *P. pygmaeus* and Nathusius' *P. nathusii* pipistrelle, brown long-eared *Plecotus auritus*, Leisler's *Nyctalus leisleri*, Daubenton's *Myotis daubentonii* and Natterer's *M. nattereri* bats and other bat species may be expected to occur occasionally. Roosts of some of these species (soprano pipistrelle, brown long-eared and Daubenton's bats) are also known locally but these are outside of the study area as shown in Table 1 below.

Table 1: Known bat roosts within 10km of the study area

Common name	Scientific name	No. of roosts	Distance from study area	Source
Soprano pipistrelle	<i>Pipistrellus pygmaeus</i>	2	2km E and 10km NW	BCIreland
Brown long-eared bat	<i>Plecotus auritus</i>	2	3km NE and 10km NW	BCIreland
Daubenton's bat	<i>Myotis daubentonii</i>	1	10km NW	BCIreland



4. Field survey results

Sunset on the evening of the surveys was at 19:13 and 19:10 respectively and, on both occasions within twenty minutes of sunset, the soprano pipistrelle was the first bat species observed on the wing. In total, six bat species were subsequently detected on-site with the most common being the soprano pipistrelle although the common pipistrelle was also widespread throughout the area. Both pipistrelle species foraged in the shelter of hedgerows, treelines, tree-lined minor roads, woodland and scrub areas as well as vegetated areas of the Yellow River.

Leisler's bat was detected actively foraging over and commuting across the area on both nights. Several specimens of the species were present as more than one were visibly observed flying at height and at the same time over Derryarvin on the first night and over Killowen on the second night before full darkness prevented visual observation. During the hours of darkness each night, the species was frequently detected hunting throughout the area.

Brown long-eared and Natterer's bats, two species that are difficult to detect due to their quiet echolocation calls, were both encountered hunting along the woodland and well-treed lanes at Coolville/Ballyburly. Both species were also present along the well-vegetated lanes at Carrick at the north of the study area.

Daubenton's bat was detected hunting over the Yellow River at Garr Bridge and this species is expected to occur on all the larger watercourses in the area.

Although not recorded during the surveys, the whiskered bat *M. mystacinus* is certain to occur in wooded areas such as those at Coolville/Ballyburly, a preferred habitat of the species, as it is widespread in the Irish countryside. Brandt's bat *M. brandtii*, a sibling of the whiskered bat, may also occur on-site but it is a very rare animal that has only been recorded a few times to date in Ireland. Nathusius' pipistrelle, another rare species, has been detected locally and the species may occur on-site occasionally but it was not recorded on this occasion.

The lesser horseshoe bat *Rhinolophus hipposideros* is confined to the west of Ireland and is not known to occur in County Offaly.

No bat roosting sites were found on-site during the present surveys but bat roosts are certain to be present within such a large area. Roosts of three species are known nearby.

Table 2 below outlines the adjudged local status of each bat species and its presence within the study site. Further information on the Irish bat fauna is given in Appendix 1 and 2.

Table 2: Adjudged local status of Irish bat species

Common name	Scientific name	Occurrence on-site	Known roosts	Source
Common pipistrelle	<i>P. pipistrellus</i>	Present	No	BCIreland/ Pers. Obs.
Soprano pipistrelle	<i>P. pygmaeus</i>	Present	Yes	BCIreland/ Pers. Obs.
Nathusius' pipistrelle	<i>P. nathusii</i>	Potential – local records	No	BCIreland
Leisler's bat	<i>N. leisleri</i>	Present	No	BCIreland/ Pers. Obs.
Brown long-eared bat	<i>P. auritus</i>	Present	Yes	BCIreland/ Pers. Obs.
Lesser horseshoe bat	<i>R. hipposideros</i>	Absent	No	BCIreland
Daubenton's bat	<i>M. daubentonii</i>	Present	Yes	BCIreland/ Pers. Obs.
Natterer's bat	<i>M. nattereri</i>	Present	No	BCIreland/ Pers. Obs.
Whiskered bat	<i>M. mystacinus</i>	Certain	No	
Brandt's bat	<i>M. brandtii</i>	Potential – rare	No	

5. Assessment of proposed development

The most favourable bat habitats on-site are the deciduous woodlands, larger watercourses and their riparian vegetation, scrub areas and tree-lined minor roads, all of which offer shelter for swarming insects on which bats feed. The areas of bog, intact, degraded and recolonising, are windswept, open landscapes that are poor for these animals although sheltered areas of scrub within the bogs may be reached by bats by following drainage channels or nearby hedgerows. Though the present surveys are a brief snapshot of bat activity within the study area, they have confirmed the presence of six bat species on-site and others may be expected to occur on occasion. Apart from one, each of the bat species confirmed or expected on-site are normally low fliers e.g. <10m above ground level and as such are considered to be at a low risk from turbine impacts. The exception is Leisler's bat which is a high-flying species and as such is of most concern.



Leisler's bat is classified as a *high risk* species in relation to wind turbines as it is a high flier (Carlin and Mitchell-Jones 2009) which travels considerable distances (up to 13.4km has been recorded in Ireland, Shiel *et al.* 1999) between roosts and foraging areas. The species has evolved for fast flight in excess of 40km/h (Dietz *et al.* 2007) and is less manoeuvrable as a consequence. It therefore avoids cluttered environments by keeping above the tree canopy normally flying between 10m and 70m above the ground (Russ 1999) but which has been known to reach heights of 500m (Bruderer and Popa-Lisseanu 2005). Flying at such heights brings it into direct conflict with wind turbines.

Wind turbines are a known risk to bats (Arnett *et al.* 2008, Baerwald *et al.* 2008, Betts 2006, Cryan and Brown 2007, Johnson *et al.* 2003, Johnson and Strickland 2004, Zagmajster *et al.* 2007) and the *EUROBATS Secretariat* has recently published guidelines on bats and wind farm projects (Rodrigues *et al.* 2008) to ensure bats are considered as part of development proposals. Currently, these are the only applicable guidelines for bats and wind farms/turbines for Irish wind farm and turbine developments as the Irish Government has yet to produce national guidelines as has been done in the UK and Northern Ireland.

Although further worldwide research on bat/turbine interactions needs to be undertaken, studies to date in Europe and the U.S.A. (Kunz *et al.* 2007, Arnett *et al.* 2008, Horn *et al.* 2008, Rydell *et al.* 2010), have shown that bat mortality due to wind turbines is a serious issue. To add to the dangers to bats of collision with a rotating turbine, a recent study (Baerwald *et al.* 2008) has shown that bats do not have to make contact with the turbine to be killed as the change in atmospheric pressure resulting from the rotating rotor causes bats' lungs to haemorrhage leading to the animal's death. However, the findings of this study were questioned earlier this year (Rollins *et al.* 2012). While such foreign findings cannot be ignored, to date, there is no published research or survey evidence that the same scenarios apply in Ireland and there is no evidence of Leisler's bat mortality due to wind turbines in this country as, of yet, no studies have been undertaken.

At time of writing, *Bat Conservation Ireland* has drafted initial bat survey and mitigation guidelines for wind turbine developments for comment and is liaising with interested parties (*Irish Wind Energy Association, Bord Gáis Energy, Forestry Service, BirdWatch Ireland* etc.) on finalising the document.

6. Adjudged likely impact of the proposed development on bats

The planned turbine development is to be sited within an area of raised bog and agricultural grasslands currently over-flown by Leisler's bat and whose woodland, scrub, hedgerow, treeline and watercourse habitats are currently in use by at least six bat species. Although, to date, there are no published results of a study of bat mortality from Irish wind turbines, considering recent research from mainland Europe and North America, there is an increasing amount of detailed published evidence that wind turbines cause bat fatalities. However, many of these overseas turbine/bat mortality studies are at wind farms, with significantly large numbers of turbines, sited along known bat migration routes where many hundreds or even thousands of bats commute seasonally resulting in numerous deaths and injuries. There is currently no evidence that mortality of bats on the same scale occurs here. Also, although it is known that *Nathusius' pipistrelle* migrates from Scandinavia to Scotland and to the north of Ireland and back again (Russ *et al.* 2001), apart from this species, there is currently no evidence that internal or external bat migration routes of other bat species exist elsewhere in Ireland as no research has been undertaken. Nevertheless, risks to bats from wind turbines have to be acknowledged and it is possible that some bat mortality may occur due to the planned development therefore mitigation measures are recommended to reduce the likelihood of such fatalities.

7. Mitigation measures

Standard mitigation measures, as would apply to any large-scale development, shall be adopted in the site clearance and construction of the turbines. These shall include limiting season of disturbance to trees and other vegetation so as to reduce impacts on breeding bird species and to implement measures to avoid and/or control pollution and sedimentation into watercourses. The following specific measures will be required to protect bats on-site.

Retention of trees

Any trees and treelines along approach roads and planned site access tracks should be retained where possible. Retained trees shall be protected from root damage by machinery by an exclusion zone of at least 7 metres or equivalent to canopy height. Such protected trees shall be fenced off by adequate temporary fencing prior to other works commencing.



Removal of trees

Trees may be impacted due to local roads being used by wide loads for haulage of construction materials. Mature deciduous trees, which are to be removed, shall first be inspected for potential bat roosts. Trees shall ideally be felled in the period late August to late October, or early November, in order to avoid disturbance of any roosting bats as per *National Roads Authority* guidelines (NRA 2006a and 2006b). Tree felling shall be completed by Mid-November at the latest as bats roosting in trees are very vulnerable to disturbance during their hibernation period (November – April). Felling at this time also avoids the bird breeding seasons. Trees with ivy *Hedera helix* cover, once felled, shall be left intact on-site for 24 hours prior to disposal to allow any bats beneath the foliage to escape overnight.

Lighting restrictions

In general, artificial light creates a barrier to bats so lighting shall be avoided where possible. Where lighting is required, directional lighting (i.e. lighting which only shines on work areas and not nearby countryside) shall be used to prevent overspill. This shall be achieved by the design of the luminaire and by using accessories such as hoods, cowls, louvers and shields to direct the light to the intended area only.

Bridges

Any local bridge proposed for strengthening works prior to use for haulage of construction materials for this development, shall be surveyed for bat presence prior to any upgrading or maintenance works. Bats, especially Daubenton's, regularly use bridges for roosting and are vulnerable within such structures due to infilling of crevices during which they may be entombed. If bats are found within a bridge then some crevices beneath it shall be retained for their continued use according to best practice bat mitigation measures for bridge works (see *Billington and Norman 1997, Highways Agency 2001, Joint Nature Conservation Committee 2004, National Roads Authority 2006a/2006b* and *Shiel 1999*). Any re-pointing or pressure grouting of bridges shall only proceed after an inspection of the structure for bats and, should bats be found, an application for a derogation licence to legally allow works on or near a bat roost, which is a notifiable action under current legislation (see Appendix 4), shall be made to the *National Parks and Wildlife Service*.

Vegetation-free buffer zone

Bats commuting and foraging along on-site linear features such as hedgerows, treelines and woodland edge boundaries shall be safeguarded by providing a 50m *minimum* buffer zone between the rotors of planned turbines and the nearest vegetation to reduce the risk of collision and/or barotrauma. N.B. this distance should be measured from the vegetation to *the tip of the rotor blades, not to the base of the turbine*. This is in line with current UK (Carlin and Mitchell-Jones 2012) and Northern Ireland guidelines on vegetation-free buffer zones on wind development sites and should prevent impacts to bats that mainly fly low along linear features e.g. the pipistrelles, although it should be noted that the EUROBATS guidelines for wind development projects specify that this vegetation-free buffer zone should be a minimum of 200m. Buffer zones can be provided by either siting a turbine so that its rotors are a minimum of 50m away from existing vegetation or, if this is not possible, by felling any tree within 50m of rotors but any such tree loss should be offset by compensatory planting elsewhere. Such cleared vegetation should be managed and maintained during the operational life of the development.

The proposed locations of turbines 13 and 14 at Coolville are immediately adjacent to the most favourable bat habitat on-site therefore these two turbines especially should be sited as far away as possible (50m upwards) from the nearest treelines/woodland. Likewise, Turbine 11, at Derryiron, which is proposed to be sited in regenerating woodland should be moved as close to the woodland edge as practicable and a 50m vegetation-free buffer zone should be cleared and maintained around it.

8. Conclusion

Much of the planned Yellow River Wind Farm development is to be located within open bog and agricultural grassland and tillage areas but the proposed locations of two turbines (13 and 14) are adjacent to mature deciduous woodlands while that of another (11) is within regenerating woodland. These locations, being woodland habitats, are much favoured and so frequented by a range of bat species. To reduce the risk to these animals at the former site at Coolville, it is recommended that the turbines should be sited as far from the surrounding woodland as is feasible while, at the latter site at Derryiron, the turbine should be repositioned to the edge of the existing scrub woodland and the vegetation within a 50m radius of its blade tips should be cleared.

The adjudged worst case scenario is that, during operation, the wind energy development may possibly cause injury or death to a few individual bats especially Leisler's as it is a high flying species (10m to 70m+). However, the amount of time spent hunting at the upper height limit cannot be assessed accurately due to the maximum distance (60m to 80m) of detection of this species by ultrasound detectors (Rodrigues *et al.* 2008) but most activity and time can be expected to occur in the mid-region of the species hunting altitude i.e. 40m, therefore the Favourable Conservation Status (FCS) of the species should not be affected.



Given implementation of the recommended mitigation measures, the impact on local bat populations from the planned development is considered to be negligible to minor negative and all species confirmed or expected on or near the study site are expected to persist.

Although, due to time constraints, no evidence of on-site bat roosts was found, roosts in trees and buildings are certain to be present on-site as the area is such a large one and the diversity of bat species within it is high. However, none of the proposed turbine locations are in close proximity to man-made structures and, if the turbines are sited at distances of 50m or greater from any existing mature trees, any risks to potential on-site bat roosts should be minimised.

As no research currently exists on bats and wind farms in Ireland, the planned development could provide an opportunity to gain baseline data on bat/turbine interaction and it is recommended that the site be monitored as part of a wind turbine bat mortality study. Such a study is currently being undertaken by a PhD student at University College Dublin. This research, which began in 2012, is a three-year study.



9. References and bibliography

- Anon. 2009** *Bats and Single Large Wind Turbines: Joint Agencies Interim Guidance (1st Edition - 18th September)*, Technical Information Note TIN059. Countryside Council for Wales, Scottish Natural Heritage and Natural England, UK
- Arnett, E.B., Brown, W.K., Erickson, W.P., Fiedler, J.K., Hamilton, B.L., Henry, T.H., Jain, A., Johnson, G.D., Kerns, J., Koford, R.R., Nicholson, C.P., O'Connell, T.J., Piorkowski, M.D. and Tankersley, Jr., R.D. 2008** Patterns of bat fatalities at wind energy facilities in North America. *Journal of Wildlife Management* **72** (1): 61 - 78
- Baerwald, E.F., D'Amours, G.H., Klug, J.B. and Barclay, R.M.R. 2008** Barotrauma is a significant cause of bat fatalities at wind turbines. *Current Biology* **18**: No. 16, 695 - 696
- Barratt, E.M., Deauville, R., Burland, T.M., Bruford, M.W., Jones, G., Racey, P.A. and Wayne, R.K. 1997** DNA answers the call of pipistrelle bat species. *Nature* **387**: 138 – 139
- Betts, S. 2006** Are British bats at risk from wind farms? *British Wildlife* **17**: 339-345
- Billington, G.E. and Norman, G.M. 1997** *The Conservation of Bats in Bridges Project: a Report on the Survey and Conservation of Bat Roosts in Bridges in Cumbria*. English Nature, UK
- Boyd, I. and Stebbings, R.E. 1989** Population changes in brown long-eared bats (*Plecotus auritus*) in bat boxes at Thetford Forest, *Journal of Applied Ecology* **26**: 101 - 112
- Bruderer, B. and Popa-Lisseanu, A.G. 2005** Radar data on wing-beat frequencies and flight speeds of two bat species. *Acta Chiropterologica* **7** (1): 73 - 82
- Carlin, C. and Mitchell-Jones, T. 2009** *Bats and Onshore Wind Turbines – Interim Guidance (1st Edition – 11th February)*, Technical Information Note TIN051. Natural England, Peterborough, UK
- Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) 1982**
- Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention) 1979**
- Cryan, P.M. and Brown, A.C. 2007** Migration of bats past a remote island offers clues toward the problem of bat fatalities at wind turbines. *Biological Conservation* **139**: 1-11
- Dietz, C., Helversen, O. von and Nill, D. 2007** *Handbuch der Fledermäuse Europas und Nordwestafrikas: Biologie, Kennzeichen, Gefährdung*. Franckh-Kosmos Verlags GmbH & Co., Stuttgart, Germany
- EC Directive on the Conservation of Natural habitats and of Wild Fauna and Flora (Habitats Directive) 1992**
- European Communities (Birds and Natural Habitats) Regulations 2011** Government of Ireland, Dublin
- Fossitt, J. 2000** *A Guide to Habitats in Ireland*. The Heritage Council, Kilkenny
- Highways Agency 2001** *Design Manual for Roads and Bridges Vol. 10: Environmental Design and Management; Section 4; Nature Conservation; Part 3; Nature Conservation Advice in Relation to Bats*; HA 80/99
- Horn, J.W., Arnett, E.B. and Kunz, T.H. 2008** Behavioural responses of bats to operating wind turbines. *Journal of Wildlife Management* **72** (1): 123 - 132
- Jefferies, D. J. 1972** Organochlorine insecticide residues in British bats and their significance, *Journal of Zoology, London* **166**: 245 - 263
- Johnson, G.D. et al 2003** Mortality of bats at a large-scale wind power development at Buffalo Ridge, Minnesota. *American Naturalist* **150**: 332 - 342
- Johnson, G.D. and Strickland, M.D. 2004** *An Assessment of Potential Collision Mortality of Migrating Indiana Bats (Corynorhinus townsendii virginianus) Traversing between Caves*. Technical report prepared for NedPower Mount Storm by West, Inc.



Joint Nature Conservation Committee 2004 (3rd Edition) *Bat Workers' Manual: Chapter 11, Section 11.3: Bats in Bridges*. Available as a pdf download at: www.jncc.gov.uk

Kelleher, C. 2004 Thirty years, six counties, one species – an update on the lesser horseshoe bat *Rhinolophus hipposideros* (Bechstein) in Ireland. *Irish Naturalists' Journal* **27**: No. 10, 387 - 392

Kelleher, C. 2005 *International Bat Fieldcraft Workshop, Killarney, Co. Kerry*, National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government, Dublin

Kelleher, C. 2006a Nathusius' pipistrelle *Pipistrellus nathusii* and Brandt's bat *Myotis brandtii* - new bat species to Co. Kerry. *Irish Naturalists' Journal* **28**: 258

Kelleher, C. 2006b Brandt's bat *Myotis brandtii*, new bat species to Co. Tipperary. *Irish Naturalists' Journal* **28**: 345

Kunz, T.H. (Editor) 1982 *The Ecology of Bats*, Plenum Publications, New York, New York, U.S.A.

Kunz, T.H., Arnett, E.B., Cooper, B.M., Erickson, W.P., Larkin, R.P., Mabee, T., Morrison, M.L., Strickland, M.D. and Szewczak, J.M. 2007 Assessing impacts of wind-energy development on nocturnally active birds and bats: a guidance document. *Journal of Wildlife Management* **71** (8): 2449 - 2486

Marnell, F., Kingston, N. and Looney, D. 2009 *Ireland Red List No. 3: Terrestrial Mammals*. National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government, Dublin

Mullen, E. 2007 Brandt's bat *Myotis brandtii* in Co. Wicklow, *Irish Naturalists' Journal* **28**: 343

National Roads Authority 2006a *Best Practice Guidelines for the Conservation of Bats in the Planning of National Road Schemes*, NRA, Dublin

National Roads Authority 2006b *Guidelines for the Treatment of Bats during the Construction of National Road Schemes*, NRA, Dublin

Racey, P.A. and Swift, S.M. 1986 The residual effects of remedial timber treatments on bats. *Biological Conservation* **35**: 205 - 214

Rodrigues, L., Bach, L., Dubourg-Savage, M.-J., Goodwin, J. and Harbusch, C. 2008 *Guidelines for Consideration of Bats in Wind Farm Projects*: EUROBATS Publication Series No. 3. UNEP/EUROBATS Secretariat, Bonn, Germany

Rollins, K.E., Meyerholz, D.K., Johnson, G.D., Capperella, A.P. and Loew, S.S. 2012 A forensic investigation into the etiology of bat mortality at a wind farm: barotrauma or traumatic injury? *Veterinary Pathology* **49** (2): 362 - 371

Russ, J. 1999 *The Bats of Britain and Ireland: Echolocation Calls, Sound Analysis and Species Identification*. Alana Books, Powys, Wales

Russ, J. M., Hutson, A.M., Montgomery, W.I., Racey, P.A. and Speakman, J.R. 2001 The status of Nathusius' Pipistrelle (*Pipistrellus nathusii* Keyserling and Blasius, 1839) in the British Isles, *Journal of Zoology* **254**: 91 - 100

Rydell, J., Bach, L. Dubourg-Savage, M.-J., Green, M., Rodrigues, L. and Hedenström, A. 2010 Bat mortality at wind turbines in northwestern Europe. *Acta Chiropterologica* **12** (2): 261 – 274

Shiel, C. 1999 *Bridge Usage by Bats in County Leitrim and County Sligo*. The Heritage Council, Kilkenny

Shiel, C.B., Shiel, R.E. and Fairley, J.S. 1999 Seasonal changes in the foraging behaviour of Leisler's Bat *Nyctalus leisleri* in Ireland as revealed by radio-telemetry. *Journal of Zoology*, London **249**: 347 - 358

Whilde, T. 1993 *Threatened Mammals, Birds, Amphibians and Fish in Ireland: Irish Red Data Book 2: vertebrates*. HMSO, Belfast

Wildlife Act 1976 and Wildlife [Amendment] Act 2000 Government of Ireland, Dublin

Zagmajster, M., Jancar, T. and Mlakar, J. 2007 First records of dead bats (Chiroptera) from wind farms in Croatia, *Nyctalus* (N.F.) **12** (2/3): 234 - 237



10. APPENDICES

Appendix 1: Bat ecology

Introduction

The bat is the only mammal that is capable of true flight using modified hands and arms which are covered by a supple membrane of skin. This ability has allowed bats to exploit aerial insect prey and avoid predation. As the largest mammalian group after the rodents (to which they are not related), bats are very successful and have diversified into over 1,200 species worldwide, representing almost a quarter of all mammal species. Within such diversification, they have evolved a range of hunting strategies, means of reproduction, roosting behaviours and social interactions (Kunz 1982). They are found throughout the world and in every continent apart from Antarctica.

Bats are classified within the Order Chiroptera (meaning 'Hand-wing') and this is further divided into two Superfamilies: the Megachiroptera and Microchiroptera. The former are mainly fruit-eaters while the latter are predominantly insectivorous. Of these, 49 bat species are currently known in Europe.

Irish bat species

In Ireland, ten species of bat are currently known to be resident. These are classified into two Families: the Rhinolophidae (Horseshoe bats) and the Vespertilionidae (Common bats). The lesser horseshoe bat *Rhinolophus hipposideros* is the only representative of the former Family in Ireland. All the other Irish bat species are of the latter Family and these include three pipistrelle species: common *Pipistrellus pipistrellus*, soprano *P. pygmaeus* and Nathusius' *P. nathusii*, four *Myotis*: Natterer's *Myotis nattereri*, Daubenton's *M. daubentonii*, whiskered *M. mystacinus*, Brandt's *M. brandtii*, the brown long-eared *Plecotus auritus* and Leisler's *Nyctalus leisleri* bats.

Individual species accounts with distribution maps of bats recorded or expected to occur on-site are given in Appendix 2 below.

Hunting with sound

The microbats are unique as they use a type of sonar, called echolocation, by which they hunt their prey. This is a stream of sound produced at high frequencies which allows the animal to build-up a complete 'sound picture' of their surroundings. These sounds are produced well beyond the range of human hearing. Using these sounds, the bats are able to detect the clutter of nearby leaves, hear an insect, know how fast it is travelling, how fast its wings are beating, whether it is hard or soft bodied etc. before closing in for the catch. Although bats use this method to find their way around, they also use their eyes to see in low light levels.

All the European bat species feed exclusively on insects and/or spiders and a pipistrelle, weighing only 4 to 8 grams, will eat up to 3,500 insects every night. This allows the bat to increase its body weight by 50% each night but this is immediately burned off through calorie consumption while flying. Such feeding ensures a build up of fat in the form of brown adipose tissue between the shoulder blades of the bat which acts as a winter fuel store to keep the animal alive while in hibernation.

Roosting behaviour

Bats naturally roost in caves and trees but some species have recently adapted to using man-made structures for roosting. Being social animals, these roosts can reach substantial numbers in the peak period of bat activity in mid-summer and especially if the roost has been selected as a maternity site. These nursery roosts are mainly composed of breeding females but often they include some non-breeding females and males that may be the previous season's young still with their mother. Males are more solitary and form smaller roosts apart from the females.

For summer roosts, bats seek warm temperatures but, for hibernation in winter, they require constant temperatures of only 5° or 6°C and humid surroundings to keep from dehydrating. In mild winters, bats will emerge from such sites to hunt should insects be on the wing.

Breeding and longevity

In autumn, male bats attract females by song flights and form harems with up to 20 females being defended by a male. After mating, the males take no further part in the rearing of the young.

Irish bats can produce one young per year but, more usually, only one young is born in spring every two years (Boyd and Stebbings 1989). There is no fixed pregnancy period and gestation is governed by ambient temperature. The slow rate of reproduction by bats inhibits repopulation in areas of rapid decline. Although bats have been known to live for twenty or more years, this is rare as most die in their first and the average lifespan, in



the wild, is four years. The survival of the young is closely linked to climate and poor weather in spring and summer can result in high infant mortality.

Threats

All bat species are in decline as they face many threats to their highly developed and specialised lifestyles. Many bats succumb to poisons used as woodworm treatments within their roosting sites (Racey and Swift 1986). Agricultural intensification, with the loss of hedgerows, treelines, woodlands and species-rich grasslands have impacted bat species also. Habitual roosting or hibernation sites in caves, mines, trees and disused buildings are also often lost to development. Summer roosts are prone to disturbance from vandals. Agricultural pesticides accumulate in their prey, reaching lethal doses (Jefferies 1972). Chemical treatments in cattle production sterilise dung thus ensuring that no insects can breed within it to be fed upon by bats. Likewise, river pollution, from agricultural runoff, reduces the abundance of aquatic insects. Road building, with the resultant loss of foraging and roosting sites is a significant cause in the reduction of bat populations across Europe.

Extinction

As recently as 1992, the greater mouse-eared bat *Myotis myotis* became the first mammal to become extinct in Britain since the wolf in the 18th century.

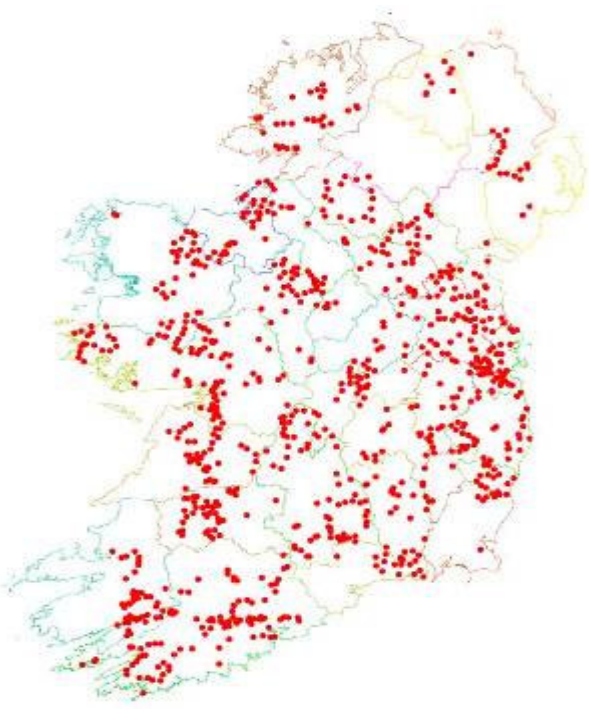
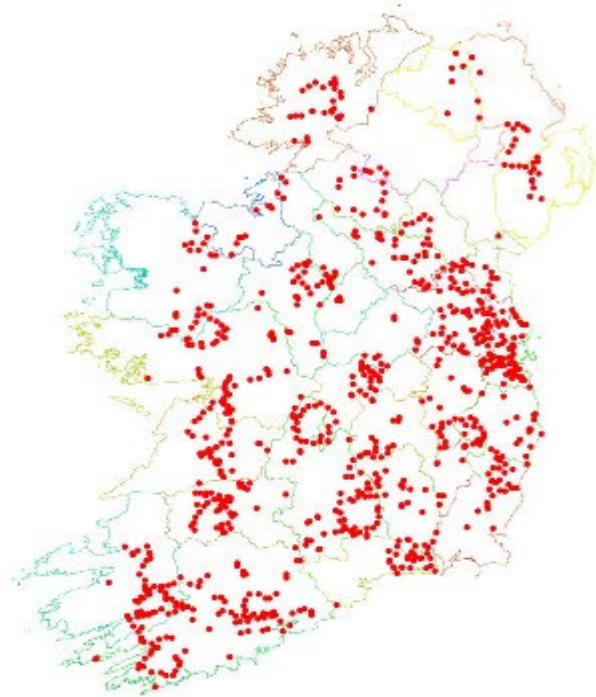


Appendix 2: Description of the Irish bat species

Brief species accounts and current known distribution (maps from *Bat Conservation Ireland*)

Common pipistrelle *Pipistrellus pipistrellus*

This species was only recently separated from its sibling, the soprano or brown pipistrelle *Pipistrellus pygmaeus*, which is detailed below (Barratt *et al.* 1997). The common pipistrelle's echolocation calls peak at 45 kHz. The species forages along linear landscape features such as hedgerows and treelines as well as within woodland.



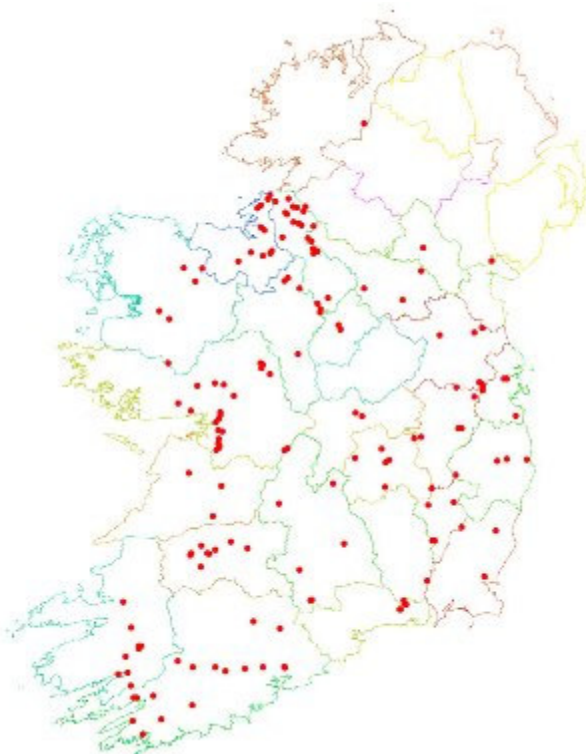
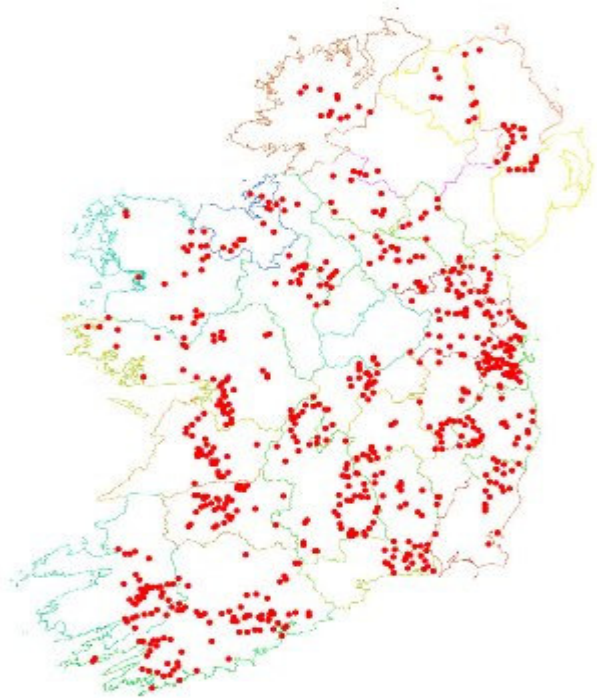
Soprano pipistrelle *Pipistrellus pygmaeus*

The soprano pipistrelle's echolocation calls peak at 55 kHz, which distinguishes it readily from the common pipistrelle. The pipistrelles are the smallest and most often seen of our bats, flying at head height and taking small prey such as midges and small moths. Summer roost sites are usually in buildings but tree holes and heavy ivy are also used. Roost numbers can exceed 1500 animals in mid-summer.



Leisler's bat *Nyctalus leisleri*

This species is Ireland's largest bat, with a wingspan of up to 320mm; it is also the third most common bat, preferring to roost in buildings, although it is sometimes found in trees and bat boxes. It is the earliest bat to emerge in the evening, flying fast and high with occasional steep dives to ground level, feeding on moths, caddis-flies, and beetles. The echolocation calls are sometimes audible to the human ear being around 15 kHz at their lowest. The audible chatter from their roost on hot summer days is sometimes an aid to location. This species is uncommon in Europe and Ireland holds the largest national population. The species is considered as *Internationally Important*.



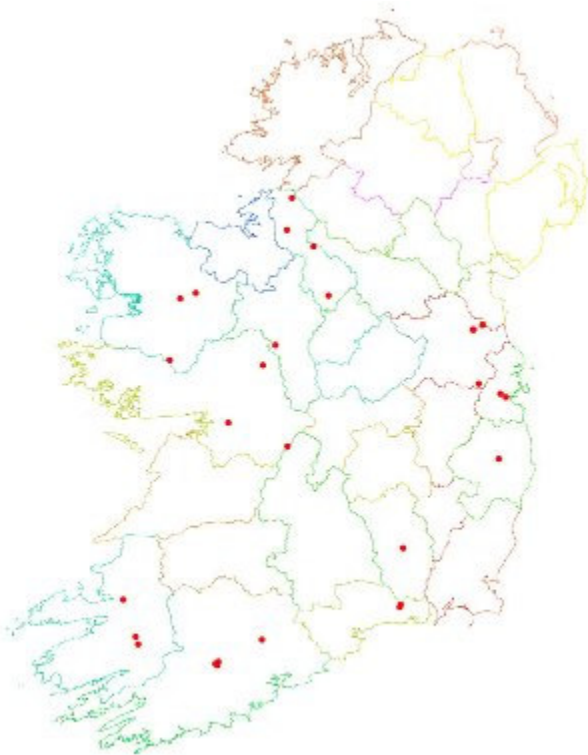
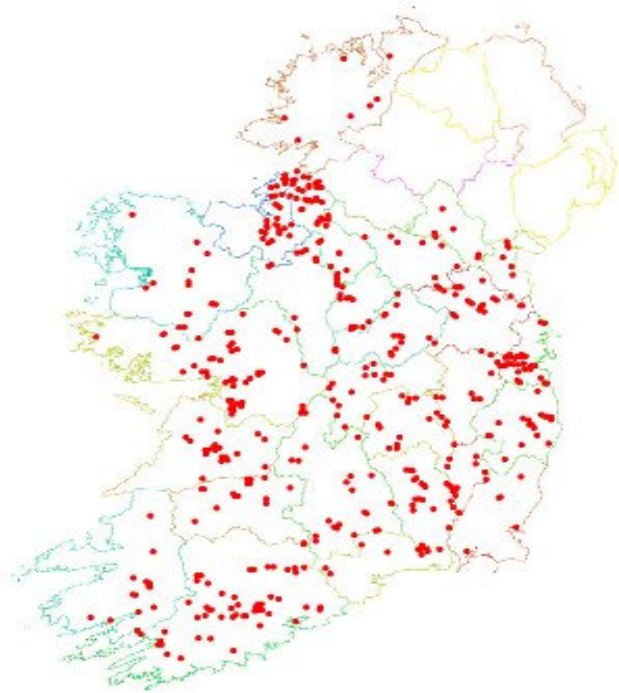
Natterer's bat *Myotis nattereri*

This species has a slow to medium flight, usually over trees but sometimes over water. They follow hedges and treelines to their feeding sites, consuming flies, moths and caddis-flies. Natterer's bats are frequently recorded in hibernation sites in winter but there are few records of summer roosts. Those that are known are usually in old stone buildings but they have been found in trees and bat boxes. The status of the Natterer's bat has not been determined but it is classed as *Threatened* and is listed in the *Irish Red Data Book* (Whilde 1993).



Daubenton's bat *Myotis daubentonii*

This bat species feeds close to the surface of water, either over rivers, canals, ponds, lakes or reservoirs, but can also be found foraging in woodlands. Flying at 15 kilometres per hour, it gaffs insects with its oversized feet as they emerge from the surface of the water - feeding on caddis flies, moths, mosquitoes, midges etc. It is often found roosting beneath bridges or in tunnels and also makes use of hollows in trees.



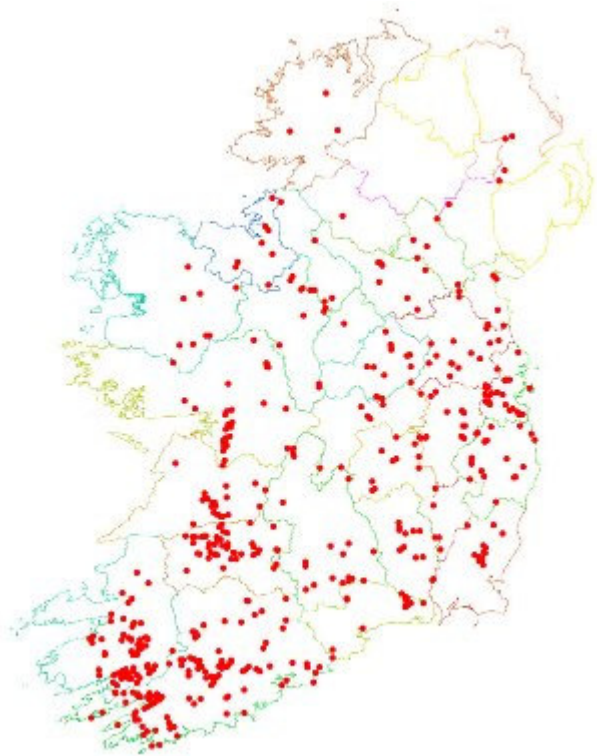
Whiskered bat *Myotis mystacinus*

This species, although widely distributed, has been rarely recorded in Ireland. It is often found in woodland, frequently near water. Flying high, near the canopy, it maintains a steady beat and sometimes glides as it hunts. It also gleans spiders from the foliage of trees. Whiskered bats prefer to roost in buildings, under slates, lead flashing or exposed beneath the ridge beam within attics. However, they also use cracks and holes in trees and sometimes bat boxes. The status of the species has not been determined but it is classed as *Threatened* and is listed in the *Irish Red Data Book* (Whilde 1993).



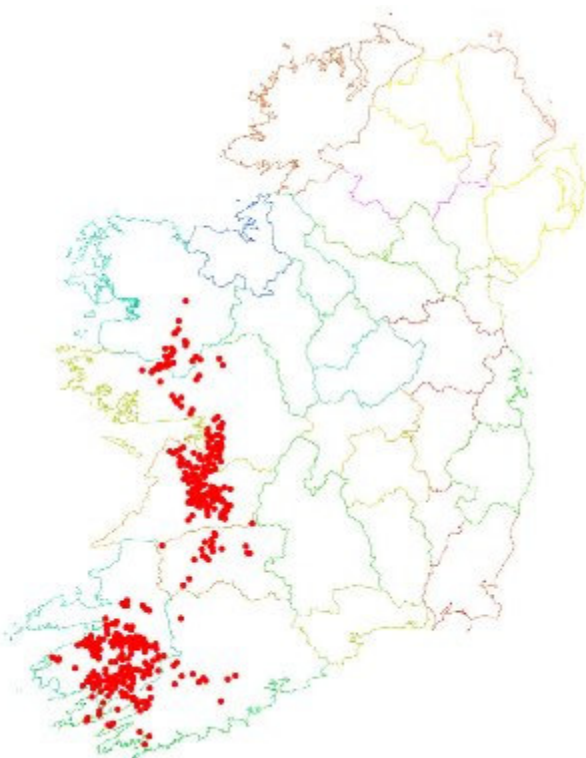
Brown long-eared bat *Plecotus auritus*

This species of bat is a 'gleaner', hunting amongst the foliage of trees and shrubs, and hovering briefly to pick a moth or spider off a leaf, which it then takes to a sheltered perch to consume. They often land on the ground to capture their prey. Using its nose to emit its echolocation, the long-eared bat 'whispers' its calls so that the insects, upon which it preys, cannot hear its approach (and hence, it needs oversize ears to hear the returning echoes). As this is a whispering species, it is extremely difficult to monitor in the field as it is seldom heard on a bat detector. Furthermore, keeping within the foliage, as it does, it is easily overlooked.



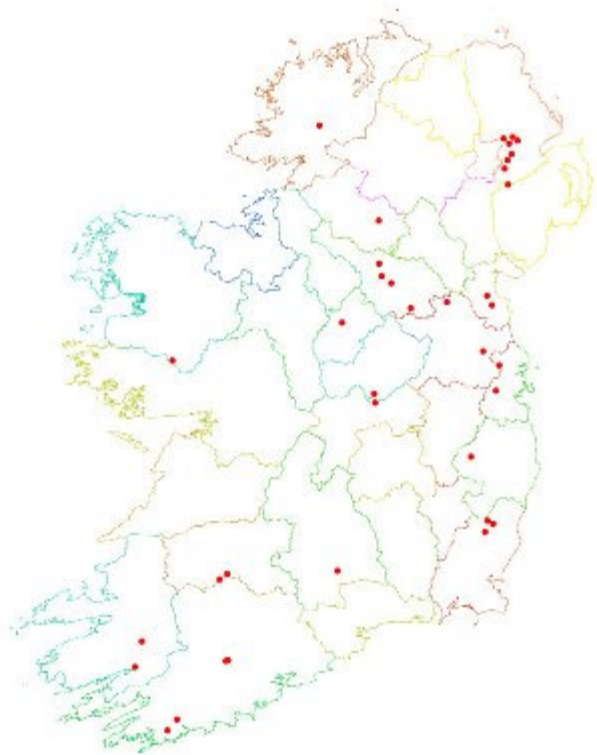
Lesser horseshoe bat *Rhinolophus hipposideros*

This species is the only representative of the Rhinolophidae family in Ireland. It differs from our other species in both habits and looks, having a unique nose leaf with which it projects its echolocation calls. It is also quite small and, at rest, wraps its wings around its body. Lesser horseshoe bats feed close to the ground, gleaning their prey from branches and stones. They often carry their prey to a perch to consume, leaving the remains beneath as an indication of their presence. The echolocation call of this species is of constant frequency and, on a bat detector, sounds like a melodious warble. Its distribution is restricted to the western Atlantic seaboard counties of Mayo, Galway, Clare, Limerick, Kerry and Cork (Kelleher 2004). However, single specimens have recently been discovered in Lough Key, near Boyle, Co. Roscommon in 2004 (B. Keeley, pers. comm.) and in Tubbercurry, Co. Sligo in 2008 (Kelleher, pers. obs.), two counties where their low numbers may have caused their presence to be overlooked in the past. This species is considered as *Internationally Important* and it is an Annex II species under the *EC Habitats Directive 1992*.



Nathusius' pipistrelle *Pipistrellus nathusii*

Nathusius' pipistrelle is a recent addition to the Irish fauna and, so far, has mainly been recorded from the north of the island in Cos. Antrim, Down and Longford but is assumed to be spreading as single specimens have been recorded in Kerry and Cork (Kelleher 2006a) and elsewhere and the known resident population is enhanced in the autumn months by an influx of animals from Scandinavian countries. There is a likelihood, therefore, that this species may occur in the area as a vagrant especially in the autumn months. The status of the species has not been determined.



Brandt's bat *Myotis brandtii* (No map)

This sibling species to the whiskered bat is known from four specimens found to date in Cos. Wicklow (Mullen 2007), Cavan, Clare (B. Keeley, pers. comm.) and Tipperary (Kelleher 2006b). A fifth specimen was identified in Killarney National Park, Co. Kerry in August 2005 (Kelleher 2005 and 2006a). Its status is unknown.



Appendix 3: Legislation relating to bats

All Irish bat species are protected under the Wildlife Act (1976) and Wildlife Amendment Act (2000). Also, the EC Directive on The Conservation of Natural habitats and of Wild Fauna and Flora (Habitats Directive 1992), seeks to protect rare species, including bats, and their habitats and requires that appropriate monitoring of populations be undertaken. All Irish bats are listed in Annex IV of the Habitats Directive and the lesser horseshoe bat *Rhinolophus hipposideros* is further listed under Annex II. Across Europe, they are further protected under the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention 1982), which, in relation to bats, exists to conserve all species and their habitats. The Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention 1979, enacted 1983) was instigated to protect migrant species across all European boundaries. The Irish government has ratified both these conventions.

All Irish bats are listed in Annex IV of the Habitats Directive and the lesser horseshoe bat is further listed under Annex II.

Also, under existing legislation, the destruction, alteration or evacuation of a known bat roost is a notifiable action and a derogation licence has to be obtained from the *National Parks and Wildlife Service* before works can commence.

The current status and legal protection of the known bat species occurring in Ireland is given in the table below.

Common and scientific name	Wildlife Act 1976 & Wildlife (Amendment) Act 2000	Irish Red List status	Habitats Directive	Bern & Bonn Conventions
Common pipistrelle <i>Pipistrellus pipistrellus</i>	Yes	Least Concern	Annex IV	Appendix II
Soprano pipistrelle <i>P. pygmaeus</i>	Yes	Least Concern	Annex IV	Appendix II
Nathusius pipistrelle <i>P. nathusii</i>	Yes	Not referenced	Annex IV	Appendix II
Leisler's bat <i>Nyctalus leisleri</i>	Yes	Near Threatened	Annex IV	Appendix II
Brown long-eared bat <i>Plecotus auritus</i>	Yes	Least Concern	Annex IV	Appendix II
Lesser horseshoe bat <i>Rhinolophus hipposideros</i>	Yes	Least Concern	Annex II Annex IV	Appendix II
Daubenton's bat <i>Myotis daubentonii</i>	Yes	Least Concern	Annex IV	Appendix II
Natterer's bat <i>M. nattereri</i>	Yes	Least Concern	Annex IV	Appendix II
Whiskered bat <i>M. mystacinus</i>	Yes	Least Concern	Annex IV	Appendix II
Brandt's bat <i>M. brandtii</i>	Yes	Data Deficient	Annex IV	Appendix II


It should also be noted that any works interfering with bats and especially their roosts, including for instance, the installation of lighting in the vicinity of the latter, may only be carried out under a licence to derogate from Regulation 23 of the Habitats Regulations 1997, (which transposed the EU Habitats Directive into Irish law) issued by NPWS. The details with regards to appropriate assessments, the strict parameters within which derogation licences may be issued and the procedures by which and the order in relation to the planning and development regulations such licences should be obtained, are set out in Circular Letter NPWS 2/07 "Guidance on Compliance with Regulation 23 of the Habitats Regulations 1997 - strict protection of certain species/applications for derogation licences" issued on behalf of the Minister of the Environment, Heritage and Local Government on the 16th of May 2007 – reproduced in Appendix 4.

Furthermore, on 21st September 2011, the Irish Government published the European Communities (Birds and Natural Habitats) Regulations 2011 which include the protection of the Irish bat fauna and further outline derogation licensing requirements re: European Protected Species.



Appendix 4: NPWS Circular Letter 2/07

AN ROINN COMHSHAOIL,
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AN ROINN COMHSHAOIL, OIDHREACHTA AGUS RIALTAIS ÁITIÚIL
DEPARTMENT OF THE ENVIRONMENT, HERITAGE
AND LOCAL GOVERNMENT

Circular Letter NPWS 2/07

16 May, 2007

**Guidance on Compliance with Regulation 23
of the Habitats Regulations 1997
– strict protection of certain species/ applications for derogation licences.**

A chara,

I am directed by the Minister for the Environment, Heritage and Local Government to refer to the EU Habitats Directive, to the Habitats Regulations 1997-2005 which transpose that directive into Irish law,¹ and to Ireland's obligations under that Directive.

The Directive, and the implementing Regulations, require that certain species listed in Annex IV of the Habitats Directive are strictly protected. A list of these species is appended.


These species are not necessarily associated with areas subject to a specific nature designation: in the case of bat species and others they may be found anywhere throughout the country.

Under Regulation 23 of the Habitats Regulations 1997, any person who, in regard to the animal species listed in Annex IV of the Habitats Directive-

*“(a) deliberately captures or kills any specimen of these species in the wild,
(b) deliberately disturbs these species particularly during the period of breeding, rearing, hibernation and migration,
(c) deliberately takes or destroys the eggs from the wild, or
(d) damages or destroys a breeding site or resting place of such an animal,
shall be guilty of an offence.”*

¹ Council Directive 92/43/EEC of 21 May 1992, on the conservation of natural habitats and of wild flora and fauna, the European Communities (Natural Habitats) Regulations, 1997 (S.I. No. 94 of 1997), the European Communities (Natural Habitats) (Amendment) Regulations, 1998, (S.I. No. 233 of 1998), and the European Communities (Natural Habitats) (Amendment) Regulations, 2005, (S.I. No. 378 of 2005),

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Regulation 21 provides corresponding protection for Annex IV plant species.

The carrying out of any work that has the potential to disturb these species, and for which a derogation licence has not been granted, may constitute an offence under Regulation 21 or 23 of the Habitats Regulations.

It should be noted that in the case of Regulation 23 (d), it is not necessary that the action should be deliberate for an offence to occur. This places an onus of due diligence on anyone proposing to carry out an action or project that might result in such damage or destruction.

A particular concern arises regarding works carried out by or on behalf of local authorities themselves, including works of maintenance or repair.

Examples of cases that are likely to require assessment are the removal of trees and other habitat during the construction of roads or other infrastructure, the modification of the courses of rivers, drainage and discharge of water, and even the re-pointing or replacement of masonry in bridges, walls and other structures where bats are likely to roost, etc.

Procedure to be followed

Local authorities must ensure that they, their staff and their agents comply fully with the requirements of the Directive and the Regulations as follows:

1. In advance of any works, an appropriate initial assessment should be carried out by a person competent to identify where a risk of damage or disturbance to an Annex IV species may exist (e.g. by an appropriately qualified ecologist). The fact that such an assessment has been carried out should be recorded and kept with the papers associated with the project.
2. Projects where a risk is identified should be subject to an appropriate scientific assessment. It will be necessary to identify alternatives or modifications that will avoid that risk.
3. Where it is not possible to identify a means of avoiding the risk completely, the question of seeking a derogation licence from the Minister under Regulation 23 of the Habitats Regulations should be considered if it is desired, notwithstanding, to proceed with the action or project.
4. The Minister is empowered, within strict parameters, to grant a license for derogation from complying with the requirements of the provisions of section 21 of the Wildlife Act 1976 and Regulations 23 and 24 of the Habitats Regulations. The scope of the Minister's powers to grant derogation licences is set out in Regulation 23, as follows:

Where there is no satisfactory alternative and the derogation is not detrimental to the maintenance of the populations of the species to which the Habitats Directive relates at a favourable conservation status in their natural range, the Minister may, in respect of those species, grant a licence to one or more persons permitting a



derogation from complying with the requirements of the provisions of section 21 of the Principal Act and Regulations 23 and 24 where it is—

(a) in the interests of protecting wild fauna and flora and conserving natural habitats, or

(b) to prevent serious damage, in particular to crops, livestock, forests, fisheries and water and other types of property, or

(c) in the interests of public health and public safety, or for other imperative reasons of overriding public interest, including those of a social or economic nature and beneficial consequences of primary importance for the environment, or

(d) for the purpose of research and education, of repopulating and re-introducing these species and for the breeding operations necessary for these purposes, including the artificial propagation of plants,

(e) to allow, under strictly supervised conditions, on a selective basis and to a limited extent, the taking or keeping of certain specimens of the species to the extent (if any) specified therein, which are set out in the First Schedule.

6. Any application for a derogation licence (to be submitted to Mr Jamie Mulleady of this Department at: Species and Regulations Unit, National Parks and Wildlife Service, 7 Ely Place, Dublin 2 email: Jamie.mulleady@environ.ie) should address the criteria referred to in the above paragraph as well as proposed scientifically-based mitigation measures to address any potential impact on the identified Annex IV species. A decision on an application will be made on the basis of the information and proposals submitted and best scientific knowledge.

7. An application for such a derogation licence should be made in advance of seeking approval under Part 8 or 10 of the Planning and Development Regulations, 2001, as amended, or seeking planning permission for works. This will ensure that full consideration can be given to the impacts of the proposed project on the species and to avoid the possibility of delay to the proposed project or of a refusal of a derogation licence which would prevent the works being carried out as planned.

8. The obligation to obtain a derogation licence is additional to the requirement to notify the Minister of a proposed development which may have an impact on nature conservation to the Minister under article 82(3)(n) and others of the Planning and Development Regulations, 2001 (as amended). Local authorities should notify the Minister (Development Applications Unit) in any case where it appears that a proposed development may pose a risk to Annex IV species.

9. Should a problem be identified regarding Annex IV species in the course of works, this should be reported immediately to the National Parks and Wildlife Service. No further work that might impact on such species should take place unless a derogation licence has been obtained.



Applications for planning permission

Issues concerning damage or disturbance to Annex IV species also arise in the context of applications for planning permission for proposed development, e.g. proposals to renovate older houses. The responsibility of avoiding disturbance or damage to Annex IV species, or of obtaining an appropriate derogation licence, rests with the developer.

However, planning authorities should note that in any case where it appears that a proposal may pose a risk to Annex IV species, the planning application should be referred to the Minister under article 27(1)(n) of the Planning and Development Regulations 2001 (as amended). This referral should be done in the appropriate manner for applications having impacts on nature conservation sites. Planning authorities could also take the opportunity afforded by any pre-application discussions to alert prospective applicants to the requirements in relation to Annex IV species.

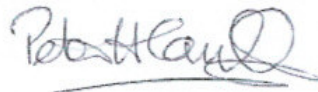
Further information

Species Action Plans, which set out specific measures for the monitoring and protection of these species, have been or are being prepared. They are published on www.npsw.ie or can be obtained from Species Unit (Tel: 01 888 3212). Guidelines in regard to bats are available at www.npsw.ie.

General questions in relation to the protection of Annex IV species or require any further information on an application for a derogation licence should be referred to Species Unit (01 8883214). Specific queries regarding a proposed project, location or species should be referred to the appropriate National Parks and Wildlife Service Divisional Ecologist or to the Regional Manager (contact details http://www.npws.ie/media/Media_4976.en.pdf).

If you have any questions in relation to the referral of a planning application, please contact Development Applications Unit (Tel: 01 8883181)

Is mise le meas,



Peter Carvill,
Assistant Principal Officer.

To: all County and City Managers, Directors of Services for Planning, Town Clerks



Appendix 5: Photographic record



Plate 1: Agricultural grassland at Derryarkin, proposed sites of turbines 1 and 3



Plate 2: Pond and coniferous treeline at proposed site of Turbine 2





Plate 3: Well-grazed semi-improved and wet grassland at proposed Turbine 5 site at Derryarkin



Plate 4: Cattle grazing at the proposed site of Turbine 6





Plate 5: Scrubby hedgerows and grassland at the proposed site of Turbine 7



Plate 6: Flooded areas are present within the Derrygreenagh, Derryiron and Coolcor bog lands





Plate 7: The Yellow River at Derryiron



Plate 8: View across an active turbary area at Derryiron towards the proposed sites of turbines 8 and 11





Plate 9: The industrial rail line at Derryiron along which turbines 8, 9 and 10 are proposed to be erected



Plate 10: The site of Turbine 13 at Coolville





Plate 11: Deciduous woodland along a minor road between the townlands of Coolville and Ballyburly



Plate 12: Mature trees and bat-favourable habitat in the townlands of Coolville and Ballyburly





Plate 13: Improved agricultural grassland at the proposed site of Turbine 15 at Ballyburly



Plate 14: Cereal fields at Wood, Killowen and Stonehouse, the proposed sites of Turbines 16 – 21 and 27

