



CURRICULUM VITAE

PHILIP M. PERRIN

B.Sc. (Hons.), M.Sc., Ph.D., MCIEEM, CEnv

EDUCATION

- 1999 – 2002 University of Dublin, Trinity College Dublin
Ph.D. thesis “The ecology of yew (*Taxus baccata*) in Ireland”
- 1997 – 1998 University of Nottingham
M.Sc. Environmental Management (Distinction)
- 1994 – 1997 University of Nottingham
B.Sc. Biology (1st Class Honours)

CAREER HISTORY

Director of Ecology, BEC Consultants	Dec 2016 – present (full-time)
Principal Ecologist, BEC Consultants	Oct 2009 – Dec 2016 (full-time)
Senior Ecologist, BEC Consultants.	Jun 2004 – Oct 2009 (full-time)
Ecologist, BEC Consultants	Apr – Sep 2003 (part-time)

I have been working with BEC Consultants for over 20 years and I am an experienced botanist and bryologist with my main areas of particular expertise being woodlands, saltmarsh and upland landscape ecology. I specialise in the analysis of large datasets of ecological data using univariate and multivariate analysis. I have considerable experience of analysing ecological communities using contemporary techniques including fuzzy analysis, non-metric multidimensional scaling, hierarchical cluster analysis and indicator species analysis. I am experienced in the use of a wide range of computer applications including Microsoft Word, Excel, Access and PowerPoint, QGIS and QField, ArcMap and ArcPad, R, PC-Ord and TurboVeg. As a Director of Ecology at BEC, I am on the Senior Management Team and am involved in company development and team management. A selection of my projects is listed below by type:

EPA research projects

- *Habitat mapping, monitoring and assessment using high-resolution imagery (iHabiMap) (2019-2023)*. Ecologist. This project researched methods for habitat mapping and assessment using data collected using UAVs. My main roles were helping to devise the methodology, field surveying upland sites, saltmarshes and duneland, and reviewing manuscripts.
- *Coastal Lagoons: Ecology & Restoration (CLEAR) (2019-2023)*. Data Analyst. This project researched the eutrophication of Lady’s Island Lake in Co. Wexford. My main role was analysing biochemical data collected from this site and from lagoons around the country.
- *PeAT Lakes (2023)*. Consultant for Atlantic Technological University. This project researched fundamental knowledge gaps concerning the characterization of two Annex I categories: oligotrophic isoetid (3110) and acid oligotrophic (3160) lake habitats. My role was analysing data on macrophytes, water chemistry, Coleoptera, Odonata, other invertebrates and phytoplankton to test an *a priori* classification of sampling sites. Work was conducted in R and delivered as an R Notebook.
- *Saltmarsh Function and Human Impacts Related to Ecological Status (SAMFHIREs) (2016-2019)*. Project Co-ordinator. I wrote the funding proposal for this project which was a collaboration with Trinity College Dublin and which researched various aspects of saltmarsh ecology. In addition to co-ordinating the project and compiling the reports, my main roles were conducting field experiments on the impacts of livestock grazing on vegetation, assisting with fieldwork that

investigated the effects of eutrophication, studying the role of the habitat in flood defence, assessing selected saltmarshes for the purposes of the Water Framework Directive and recording vegetation data from rare saltmarsh communities.

- *Quantification of Blanket Bog Ecosystem Services to Water (QUBBES) (2016-2019)*. Consultant for Queen's University Belfast. This project researched hydrological processes on blanket bogs and their relationships with plant communities. My main role was to provide ecological advice on surveying and mapping of blanket bog communities and I assisted with fieldwork at two of the survey sites.
- *Saltmarsh Angiosperm Assessment Tool for Ireland (SMAATIE) (2013-2014)*. Project Co-ordinator. I wrote the funding proposal for this project. In addition to co-ordinating the project and compiling the reports, my main roles were collating and analysing relevé data to produce a national saltmarsh classification and supervising the development of a saltmarsh assessment tool to fulfil national obligations under the Water Framework Directive. Tool development involved modelling LiDaR data within GIS and researching similar tools developed by other EU Member States.

National Parks and Wildlife Service projects

- *Survey of NPWS woodland properties in the South Western region (SWOOP) (2022-2024)*. Project Manager. This project involved the field survey and assessment of wooded habitats at six properties in the South Western NPWS region: Killarney National Park, Glengarriff Woods Nature Reserve, Derrynafulla, Uragh Wood Nature Reserve, Knockomagh Wood Nature Reserve and St Gobnet's Wood. In addition to managing the project, my main roles included devising the methodology, preparing digital recording forms, conducting fieldwork, identifying bryophyte samples, analysing data, producing maps and writing the report.
- *Woodland Monitoring Survey (2022-2024)*. Project Manager. This current project is monitoring 123 stands of Annex I woodland habitat distributed across the country. In addition to managing the project, my main roles are conducting fieldwork, analysing data and writing the report.
- *National Fen Survey (2021-2024)*. Ecologist. This current project involves the field survey and assessment of fen and mire sites distributed across the country. My main roles have been conducting fieldwork, developing the survey methodology, preparing digital recording forms, assisting with training events and preparing templates for site reports.
- *Rockforest Wood Management Plan (2020-2024)*. Project Manager. This current project involves writing an adaptive management plan for Rockforest Wood, an area within the Burren National Park that hosts a population of potentially native Scots Pine. In addition to managing the project, my main roles are liaising with regional staff, conducting habitat mapping, surveying natural pine regeneration, aging selected trees using increment cores, researching legal protection options, assessing pollen immigration risks and writing the management plan.
- *Woodland Reassessment Survey (2021-2023)*. Ecologist and GIS Technician. This project involved the field survey and assessment of 13 undesignated woodland sites and preparation of documents recommending their designation as Natural Heritage Areas. My main roles were conducting fieldwork, developing the assessment protocol, analysing data, producing maps and writing the report.
- *National Survey of Upland Habitats Phase 5 (2020-2022)*. Ecologist. This project involved the survey and assessment of habitats across 4 upland/blanket bog sites in the west of the country. My main roles were conducting field surveys in the Ballyhoura Mountains, reviewing assessment criteria and developing a methodology for mapping bog restoration potential.
- *Saltmarsh Exclosure Resurvey (2021)*. Project Manager. This project involved a resurvey of cattle exclosures that I had constructed and monitored with my colleagues as part of the SAMFHIRE project (see above). In addition to managing the project, my roles were conducting the fieldwork and subsequent analysis and writing the report.
- *Scoping Study and Pilot Survey of Fens (2019-2021)*. Project Manager. This project sought to prepare for a national survey of fens and mires by reviewing extant information, developing and

travelling survey and assessment methodologies and making a preliminary selection of target sites. In addition to managing the project, my main roles were developing the methodology and both writing and editing the report.

- *Rare Vascular Plant Survey (2019-2020)*. Project Manager. This project involved the field survey of 85 rare plant populations across Ireland. In addition to managing the project, I assisted with fieldwork for several of the upland populations and compiled the report.
- *Population survey of Pinus sylvestris and Taxus baccata at Rockforest Wood, Co. Clare (2019)*. Project Manager. This project involved a survey of the potential native Scots Pine population in the Burren. In addition to managing the project, I conducted fieldwork, produced maps and wrote the report.
- *Rare Plants Monitoring Project (2016-2017)*. Field Ecologist. This project involved the survey of plant species listed in Annex II and V of the EU Habitats Directive for the purposes of Article 17 reporting. My main role was surveying upland bog and heath sites in Wicklow and Kerry for clubmosses.
- *Upland Site-Specific Conservation Objectives (2014-2016)*. Project Manager/Ecologist. This project consisted of three phases of work and involved developing Site-Specific Conservation Objectives for a range of upland Annex I habitats. These were applied to a selection of sites including those surveyed during the National Survey of Upland Habitats. I helped with this development in addition to managing early phases of the project.
- *Scientific Assistant for Blanket Bogs (2014-2015)*. Ecologist/GIS Technician. This project sought to provide a scientific basis for the formulation of management plans for areas of turf-cutting on blanket bogs in SACs. My main roles were creating digital forms for recording in the field, conducting field surveys of bog habitats and recording peat depths, and conducting hydrological analysis of LiDAR data.
- *National Survey of Upland Habitats Phases 1-4 (2009-2014)*. Lead Ecologist. This project involved the survey and assessment of habitats across 16 uplands sites. My main roles in the field were training fieldworkers in the mapping methodology and the use of handheld computers, allocating daily survey areas to fieldwork teams, mapping vegetation communities, recording relevés and conservation assessments and updating a provisional uplands classification. My main roles in the office included production of TurboVeg databases, developing an upland habitat classification, identification of bryophyte samples and writing of site reports. One phase of this project also involved the writing the National Conservation Assessments for multiple Annex I upland habitats. My roles in this regard including collating data sources, processing GIS data, populating databases and writing the text for the report.
- *Irish Semi-natural Grasslands Survey (2007-2013)*. Ecologist/Data Analyst. This project involved the survey and assessment of grassland sites across the country. My main roles were field surveying sites in Cos. Cork, Waterford, Cavan, Monaghan and Longford, and analysing relevé data to produce a national vegetation classification.
- *Woodland Monitoring Project (2011-2012)*. Ecologist. This project involved monitoring stands of Annex I woodland habitat distributed across the country. My main roles were developing the monitoring criteria and conducting fieldwork at three woodland sites.
- *Killarney National Park Habitat Map (2007-2011)*. Ecologist. This project involved the production of a habitat map for the Killarney National Park using both the Fossitt and EU Habitats Directive categories. My main roles were participating in fieldwork and reviewed and editing the report.
- *National Survey and Assessment of Irish Sea-cliffs (2011)*. Data Analyst. This project involved the survey and assessment of sea cliffs around the country. My role was the production of a classification of sea-cliff vegetation based on the data gathered by the field teams.
- *County Cork Inventory of Ancient and Long-established Woodland (2010)*. Project Manager. This project was a follow-up to the *Provisional Inventory of Ancient and Long-established Woodland in Ireland* and focussed specifically on County Cork.

- *Provisional Inventory of Ancient and Long-established Woodland in Ireland (2009-2010)*. Project Manager. The project involved researching potential ancient woodland through field surveys and by using historical maps and documents. In addition to managing the project, my main roles were identifying information sources, conducting statistical analysis of ancient woodlands indicators and co-writing the report.
- *National Survey of Native Woodlands (2003-2008)*. Lead Ecologist. This project involved the survey of over 1000 woodland sites distributed across the country. My main roles were personally surveying over 250 native woodlands, conducting statistical analysis, preparing soil samples for analysis, producing a national classification for native woodlands, identifying bryophyte samples and writing the final report.

Other projects

- *Irish Vegetation Classification (2015-2024)*, Client: National Biodiversity Data Centre. Project Manager/Data Analyst. This project involved the production of a national-scale vegetation classification by analysing data held in the National Vegetation Database and other sources using multivariate techniques such as noise clustering. I was responsible for all aspects of this project, including identifying data sources, data preparation and analysis, writing community synopses, collating of photographs, producing distribution maps, developing software (the ERICA and ERICOID applications), preparing material for the website, writing manuals, reports and a handbook, and leading training events to introduce ecologists to the system.
- *Howth Heathland Study (2019-2024)*, Client: Fingal County Council. Ecologist. This multiphase project has involved mapping and assessing heathland habitats on Howth Head, Co. Dublin, formulating Site-Specific Conservation Objectives, conducting cutting trials and monitoring the effects of goat grazing trials. My main roles have been planning and conducting fieldwork, writing the report for the first phase of the project and giving presentations on the project to the local community and the Howth SAAO steering committee.
- *Scottish Grasslands Analysis (2022-2023)*, Client: Open University, UK. Data Analyst. This project was researching wet grassland communities in Scotland, particularly those associated with machair, with an eye to revising the British NVC to better accommodate such assemblages. My role was using multivariate analysis to comparing the Scottish data to the communities of the Irish Vegetation Classification.
- *Uncommon Grassland Survey (2022-2023)*, Client: Nimbosa Ecology. Field Ecologist/GIS Technician. This NPWS-funded project involved mapping, recording and assessing, four uncommon Annex I habitats in Ireland, habitats 6410, 6150, 6170 and the upland version of 6430. My main roles were assisting with uplands fieldwork and producing maps for the report.
- *Dublin Mountains Makeover Long-term Monitoring (2021)*, Client: Coillte Nature. Project Manager. This project involved establishing a network of monitoring plots within forested and unforested habitats within Coillte lands in the Dublin Mountains where biodiversity improvement works had been scheduled. In addition to managing the project, my main roles were devising the methodology, sourcing equipment, planning and conducting fieldwork, analysing data and writing the report.
- *Fiddandarry Bog Restoration Project (2018-2021)*, Client: BirdWatch Ireland. Ecologist. This project was a collaboration with RPS and was concerned with blanket bog restoration efforts in the northwest of the country. My main roles were recording assessment plots, surveying drains and assisting with report writing.
- *Northern Ireland Fen Survey (2020)*, Client: CEDaR. Project Manager. This small project involved a review of the distribution of fens and fen types within Northern Ireland, the selection of sites for a Northern Ireland Fen Survey and a review of the methodological differences there would be between the approach taken for the proposed National Fen Survey in the Republic and that which would be required in Northern Ireland. My roles were managing the project and writing the report.

- *EU Action Plan on European Dry Heaths (2019)*, Client: *Atecma*. Advisor. I represented Ireland at an international workshop on producing an action plan for the Annex I habitat 4030 European dry heaths.
- *Resurvey of Millenium Forests (2019)*, Client: *Coillte*. Ecologist. This project involved resurveying long-term monitoring transects at four Coillte sites that I had established in 2003 and previously monitored in 2009. My main role was conducting fieldwork at Cullentra Wood, Co. Sligo.
- *EU Red List Habitats (2015)*, Client: *Alterra*. Territorial Expert. I provided data for this European initiative on a range of habitats including scrub, heath, bog, cliff, scree, flush, fen and mire habitats.
- *Galway City Transport Plan (2013-2014)*, Client: *ScottCawley*. Surveyor/Analyst. This project involved a large-scale habitat survey in the area around Galway City. I conducted mapping and assessment in the field of a range of habitats including limestone pavement, heath, scrub, woodland, fen, blanket bog, transition mire and calcareous grassland. I also helped produce reports and maps, compiled relevé data and processed bryophyte identifications.
- *Limerick Tunnel Translocation Project (2005-2014)*, Client: *DirectRoute*. Ecologist. This project in Co. Limerick, involved the translocation and monitoring of three species, *Schoenoplectus triquetter*, *Hordeum secalinum* and *Groenlandia densa*, that were on the Flora Protection Order, 1999. The purpose of the translocation was to facilitate the construction of the Limerick Tunnel and parts of the Limerick Southern Ring Road. My main roles were participating in project planning, translocating plants, monitoring receptor sites and extant populations, and report editing.
- *Aughinish Alumina Translocation Project (2007-2012)*, Client: *Aughinish Alumina*. Ecologist. This project in Co. Limerick, involved the translocation of two species, *Hordeum secalinum* and *Sanguisorba officinalis*, that were on the Flora Protection Order, 1999. The purpose of the translocation was to facilitate a new bauxite residue disposal area. My main roles were assisting with the actual translocation of plants and monitoring populations at the receptor sites
- *People's Millennium Forest Transects (2009)*, Client: *The Heritage Council*. Project Manager/Lead Ecologist. This project involved resurveying long-term monitoring transects at four Coillte sites that I had established in 2003. In addition to managing the project, my main roles were surveying, bryophyte identification, data analysis and report writing.
- *Management Plan for Ballyseedy Wood SAC (2008)*, Client: *Kerry County Council*. Joint project manager. This project involved writing a conservation management plan for Ballyseedy Wood in Co. Kerry. In addition to managing the project, my main roles were meeting with stakeholders, surveying the site, conducting analysis and writing the plan.
- *Management Plan for Balrath Wood (2007)*, Client: *Meath County Council*. Joint project manager. This project involved writing a conservation management plan for Balrath Wood in Co. Meath. In addition to managing the project, my main roles were meeting with stakeholders, surveying the site, and writing the plan.
- *Pitcairn Island Environment Management Plan (2006-2007)*, Client: *Pitcairn Government and UK Foreign and Commonwealth Office*. Editor. This project involved writing a management plan for Pitcairn Island in the South Pacifici. My role was to review the plan objectives and edit the plan.

External Examiner, Institute of Technology, Tralee

Dec 2015 – Dec 2020 (part-time)

I was an external examiner for the Wildlife Biology courses and reviewed exam questions, exam manuscripts and coursework twice annually, providing feedback and reports to faculty staff.

Post-doctoral Researcher, Trinity College Dublin.

Mar 2003 – May 2004 (part-time)

I secured funding to establish long-term monitoring transects at the People's Millennium Forests. I organised fieldwork at four sites across country, liaised with Coillte staff, conducted surveying, bryophyte identification, carabid beetle identification, soil analysis and data analysis and wrote the report.

Estate Assistant, Nottinghamshire Wildlife Trust.

1995 – 1999 (part-time)

I conducted practical woodland management as part of voluntary work predominantly based in ancient and secondary woodland of the Sherwood Forest area.

Lecturer, Brackenhurst Agricultural College, Nottinghamshire. Mar – May 1998 (part-time)

I was responsible for writing of ecology lectures and teaching students on NVQ Countryside Management courses.

ADDITIONAL INFORMATION

Membership of Professional Organisations

- Full membership of Chartered Institute of Ecology and Environmental Management
- Chartered Environmentalist through the Society for the Environment
- Member of the British Bryological Society and Regional Recorder for Cos. Carlow and Laois.

Conference Presentations

- British Ecological Society Winter Meeting, 1999, Leeds University
- Irish Botanists' Meeting, 2002, National University of Ireland, Maynooth
- European Vegetation Conference, 2006, National University of Ireland, Galway
- British Ecological Society Annual Meeting, 2008, Imperial College London
- 25th Irish Environmental Researchers Colloquium (Environ), 2012, University College Dublin
- CIEEM Irish Section Conference, 2013, Red Cow Hotel, Dublin
- CIEEM Irish Section Conference, 2014, Holiday Inn, Belfast
- NPWS Annual Conference, 2014, Radisson Blu Hotel, Athlone
- Irish Uplands Forum Workshop, 2015, Trinity College, Dublin.
- CIEEM Irish Section Conference, 2016, Glenview Hotel, Delgany, Wicklow
- Peatlands Gathering 2021, Online.

Peer-reviewer

- Nature
- Scientific Reports
- Plant Ecology (formerly Vegetatio)
- Journal for Nature Conservation
- Forest Ecology & Management
- Ecological Indicators
- Science of the Total Environment
- Biology and Environment: Proceedings of the Royal Irish Academy
- Dendrobiology
- Journal of Mountain Science
- Forest Systems (formerly Investigación Agraria: Sistemas y Recursos Forestales)

Online profiles

Google Scholar profile: <http://scholar.google.com/citations?user=hDVAjYYAAAAJ&hl=en>

Researchgate profile: https://www.researchgate.net/profile/Philip_Perrin/?ev=hdr_xprf

Web of Science: <https://www.webofscience.com/wos/author/record/1333428>

ORCID: <https://orcid.org/0000-0002-8597-8432>

Awards

Chartered Institute of Ecology and Environmental Management Members' Award 2017 (Winner)

SELECTED PUBLICATIONS & REPORTS

Peer-reviewed journal publications

- Cruz, C., O'Connell, J., McGuinness, K., Martin, J.R., **Perrin, P.M.** & Connolly, J. (2023) Assessing the effectiveness of UAV data for accurate coastal dune habitat mapping. *European Journal of Remote Sensing* **56**: 2191870. <https://doi.org/10.1080/22797254.2023.2191870>
- Cruz, C., McGuinness, K., **Perrin, P.M.**, O'Connell, J., Martin, J.R. & Connolly, J. (2023) Improving the mapping of coastal invasive species using UAV imagery and deep learning. *International Journal of Remote Sensing* **44**: 5713–5735. <https://doi.org/10.1080/01431161.2023.2251186>
- Lynch, K.E., Penk, M.R., **Perrin, P.M.** & Piggott, J.J. (2022) Cattle grazing of a Celtic Sea saltmarsh affects invertebrate community composition and biomass, but not diversity. *Wetlands* **42**: 125. <https://doi.org/10.1007/s13157-022-01643-6>
- Penk, M.R. & **Perrin, P.M.** (2022) Variability of plant and surface soil carbon concentration among saltmarsh habitats in Ireland. *Estuaries and Coasts* **45**: 1631-1645. <https://doi.org/10.1007/s12237-021-01042-w>
- Penk, M.R., **Perrin, P.M.**, Kelly, R., O'Neill, F. & Waldren, S. (2020) Plant diversity and community composition in temperate northeast Atlantic salt marshes are linked to nutrient concentrations. *Applied Vegetation Science* **23**: 3–13. <https://doi.org/10.1111/avsc.12459>
- Penk, M.R., **Perrin, P.M.** & Waldren, S., (2020) Above- to belowground vegetation biomass ratio in temperate north-east Atlantic saltmarshes increases strongly with soil nitrogen gradient. *Ecosystems* **23**: 648–661. <https://doi.org/10.1007/s10021-019-00428-z>
- Perrin, P.M.** & Waldren, S. (2020) Vegetation richness and rarity in habitats of European conservation value in Ireland. *Ecological Indicators* **117**: 106387. <https://doi.org/10.1016/j.ecolind.2020.106387>
- Penk, M.R., Wilkes, R., **Perrin, P.M.** & Waldren, S. (2019) Nutrients in saltmarsh soils are weakly related to those in adjacent coastal waters. *Estuaries and Coasts* **42**: 675–687. <https://doi.org/10.1007/s12237-018-00486-x>
- Rodríguez-Rojo, M. P., Jiménez-Alfaro, B., Jandt, U., Bruelheide, H., Rodwell, J. S., Schaminée, J. H. J., **Perrin, P. M.**, Kaçki, Z., Willner, W., Fernández-González, F. & Chytrý, M. (2017) Diversity of lowland hay meadows and pastures in Western and Central Europe. *Applied Vegetation Science* **20**: 702–719. <https://doi.org/10.1111/avsc.12326>
- Perrin, P.M.** & Mitchell, F.J.G. (2013) Effect of shade on growth, biomass allocation and leaf morphology in European yew (*Taxus baccata* L.). *European Journal of Forest Research* **132(2)**: 211-218. <https://doi.org/10.1007/s10342-012-0668-8>
- Roche, J.R. & **Perrin, P.M.** (2011) A new county record for alpine clubmoss (*Diphasiastrum alpinum*) from the Comeragh Mountains, Co. Waterford (H6). *Irish Naturalists' Journal* **31**: 149-150. <https://www.jstor.org/stable/41419137>
- Perrin, P. M.**, Mitchell, F. J. G. & Kelly, D. L. (2011) Long-term deer exclusion in yew-wood and oakwood habitats in southwest Ireland: Changes in ground flora and species diversity. *Forest Ecology and Management* **262**: 2328-2337. <https://doi.org/10.1016/j.foreco.2011.08.028>
- Perrin P. M.**, Kelly D.L. & Mitchell F.J.G (2006) Long-term deer exclusion in yew-wood and oakwood habitats in southwest Ireland: Natural regeneration and stand dynamics. *Forest Ecology and Management* **236**: 356–367. <https://doi.org/10.1016/j.foreco.2006.09.025>
- Perrin P. M.**, Martin J.R., Barron S.J. & Roche J.R. (2006) A cluster analysis approach to classifying Irish native woodlands. *Biology and the Environment: Proceedings of the Royal Irish Academy* **106B**: 261-275. <https://www.jstor.org/stable/20728599>
- Perrin, P.M.** (2000) Activity of pipistrelle bats (*Pipistrellus pipistrellus*) and Natterer's bats (*Myotis nattereri*) over lowland heathland. *Journal of Practical Ecology and Conservation* **4**: 27-36.

Other publications and reports

- Roche, J.R., **Perrin, P.M.** & O'Neill, F.H. (2023) *Taxus baccata* woods in Ireland: ecology, conservation status and necessary conservation measures, in: Ramil-Rego, P., Rodríguez Guitián, M.A. Ferreiro da Costa, J. & Gómez-Orellana, L. (Eds.) (2023). Conservación y restauración de los bosques de tejo en Europa. Monografías do IBADER. Serie Biodiversidade. IBADER. Universidade de Santiago de Compostela. Lugo, pp. 353-371.
- O'Neill, F.H., **Perrin, P.M.**, Denyer, J., Martin, J.R., Brophy, J.T. & Daly, O.H. (2023). Scoping study and pilot survey of fens. *Irish Wildlife Manuals*, No. 143. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage, Ireland.

- Perrin, P.M.**, Waldren, S., Penk, M.R. & O'Neill, F.H. (2020) Saltmarsh Function and Human Impacts in Relation to Ecological Status (SAMFHIREs) (2015-W-MS-19), *EPA Research Reports*, No. 313. Environment Protection Agency, Wexford, Ireland.
- Brophy, J.T., **Perrin, P.M.**, Penk, M.R., Devaney, F.M. & Leyden, K.J. (2019) Saltmarsh Monitoring Project 2017-2018. *Irish Wildlife Manuals*, No. 108. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht, Ireland.
- Perrin, P.M., FitzPatrick, Ú. & Lynn, D. (2018) The Irish Vegetation Classification – an overview of concepts, structure and tools. *Bulletin of the Chartered Institute of Ecology and Environmental Management – In Practice* **102**, 14–19.
- Devaney, F.M., **Perrin, P.M.** (2015) Saltmarsh Angiosperm Assessment Tool for Ireland (SMAATIE) (2013-W-DS-10) Practitioner's Manual, *EPA Research Reports*, No. 163. Environment Protection Agency, Wexford, Ireland.
- O'Neill, F.H., Martin, J.R., Devaney, F.M. & **Perrin, P.M.** (2013) The Irish semi-natural grasslands survey 2007-2012. *Irish Wildlife Manuals*, No. 78. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Ireland.
- Barron, S.J., Delaney, A., **Perrin, P.M.**, Martin, J.R. & O'Neill, F.H. (2011). National survey and assessment of the conservation status of Irish sea cliffs. *Irish Wildlife Manuals*, No. 53. National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government, Dublin, Ireland.
- Perrin, P.M.** & Daly, O. (2010) A provisional inventory of ancient and long-established woodland in Ireland. *Irish Wildlife Manuals*, No. 46. National Parks and Wildlife Service, Department of Environment, Heritage and Local Government, Dublin, Ireland.
- Perrin, P.M.**, Barron, S.J., Roche, J.R. & O'Hanrahan, B. (2014) Guidelines for a national survey and conservation assessment of upland vegetation and habitats in Ireland. Version 2.0. *Irish Wildlife Manuals*, No. 79. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Dublin, Ireland.
- Perrin, P.M.**, Barron, S.J., Roche, J.R. & O'Hanrahan, B. (2010) Guidelines for a national survey and conservation assessment of upland vegetation and habitats in Ireland. Version 1.0. *Irish Wildlife Manuals*, No. 48. National Parks and Wildlife Service, Department of Environment, Heritage and Local Government, Dublin, Ireland.
- Cross, J.R., Little, D., **Perrin, P.M.** (2010) The classification of native woodlands in Ireland and its application to native woodland management (Native Woodland Information Note No. 6). Woodlands of Ireland, Ireland.
- Perrin, P.M.**, Martin, J.R., Barron, S.J., O'Neill, F.H., McNutt, K.E. & Delaney, A.M. (2008) National Survey of Native Woodlands 2003-2008: Volumes I and II. Report submitted to National Parks & Wildlife Service, Dublin, Ireland.