EcIA Bulletin

Ecological Impact Assessment for the Renewables Sector Issue 2 2008

Welcome...

to the second edition of EcIA Bulletin. In this issue we provide a round up of some of CSL's latest environmental impact assessment work in the renewable energy sector. CSL is at the forefront of providing impartial scientific information and advice to policymakers, statutory bodies and commercial organisations alike. This enables CSL to offer a comprehensive and tailored EcIA package to developers and organisations throughout the renewable energy industry.

If you would like to discuss any of the topics covered in more detail, please call Ian Simms on 01904 462733 or email birdmanagement@csl.gov.uk.

Humber study underway

The Humber estuary Special Protection Area (SPA) is world-renowned as a stopover and wintering site for almost 200,000 waterfowl and waders. CSL is engaged in a long-term study to assess the potential impact of a proposed windfarm development on the north shore of the estuary on breeding, passage and over-wintering bird populations.

Summer monitoring of breeding bird species, including specific surveys for marsh harrier, has been completed. The autumn work is now underway, with CSL ornithologists conducting flight surveys of passage species. These will look in particular for harrier species and other birds of prey, as well as significant wader species, such as golden plover and curlew.

Post-construction pioneers

An extensive study of pink-footed geese over flying newly constructed turbines just off the Lincolnshire coast will provide the UK's first scientific information on the behaviour of waterfowl in response to built turbines. It establishes CSL's position in post-construction monitoring.

The results of the new study will be compared with a baseline study CSL conducted in 2007, which gathered data on 200 flocks of migrating geese tracked over a distance of 22km as they traversed the area on their way from the Arctic to wintering grounds in Norfolk.

"The results of this new survey will be fascinating," says Richard Budgey, Senior Data Analyst at CSL. "For the first time we will be able to see what effect turbines have on migrating geese flying in their vicinity. To date we only have limited evidence from other parts of the world and nothing for the UK. When comparing the results to the baseline data, we will be able to see if flight behaviour has been significantly altered, what proportion of skeins change their trajectory and if fewer geese traverse the area than last year."

This 2008 study is just the first phase of a period of continuous post-construction monitoring, which was stipulated as a condition of the planning consent for this major offshore development.

This issue...

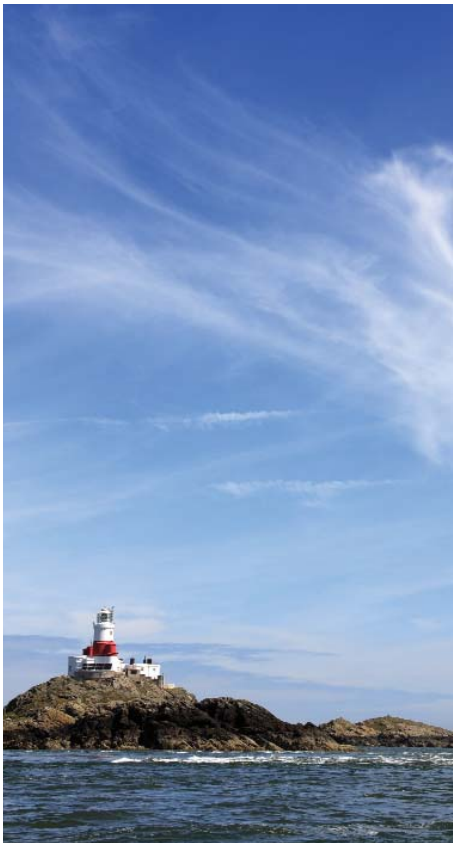
Of terns and turbines

A new 10.5MW tidal energy farm has been proposed by SeaGen Wales Ltd just off the coast of Anglesey. To assess the effect of the development on nearby populations of terns, CSL has been commissioned to conduct a detailed study of the potential impacts of the underwater turbines.

SeaGen Wales Ltd is a joint venture between npower and Marine Current Turbines (MCT). The underwater twin turbine technology was developed by MCT and has been successfully installed at Strangford Lough, Northern Ireland. Seven turbine structures are planned, each of which will stand approximately nine metres above sea level.

The CSL study will ascertain whether or not these structures and the rotating underwater blades will have a detrimental affect on breeding tern species and other seabirds from the neighbouring Special Protection Areas (SPAs). It will report on any likely impacts during the construction, operation and decommissioning of the turbines.

Photo courtesy David Norton (rspb-images.com)



Initial desk-based studies will collate current information on tern feeding behaviour and spatial distribution, the distribution of important prey species, such as sand eels, and any data on how terns react to structures in the water. This will be followed by fieldwork studies in summer 2009. CSL ornithologists will conduct visual observations, looking at aggregations of birds feeding in the proposed development area, as well as the number and frequency of birds flying across the site.

John Allan, Head of CSL's Bird Management Unit, says: "This new study builds on our expertise in non-wind renewable energy generation projects in the marine environment. With tidal energy generation proving to be an efficient, reliable and cost-effective source of power generation, we need to make sure that new infrastructure developments do not detrimentally impact on breeding seabird populations."

Off shore monitoring under review

A review of remote techniques used to monitor bird behaviour around offshore windfarm sites has been commissioned by COWRIE. The outcome will be a best-practice guide for developers on how different methods should be deployed to gather accurate and comprehensive information about bird movements around proposed offshore windfarms.

COWRIE – a charity set up by the Crown Estate to investigate the environmental impacts of offshore windfarm development in UK waters – has appointed a consortium of leading remote-monitoring specialists, including CSL, to conduct the review.

CSL will take responsibility for assessing radar as a remote bird-monitoring tool in the offshore environment. The team will examine how radar has been used in both onshore and offshore situations in the UK in recent years, as well as consulting developers, planners and other relevant bodies for their insights.

The project will report on the capabilities and limitations of using radar as a monitoring tool, providing recommendations on the length and timing of surveying operations, the number of radar heads required and the positioning of antennae for best results. The review will also look at methods for deploying the radar at sea, including jack-up barges, turbine platforms and meteorological stations, reporting on the feasibility and costs of each.

The revised guidance will be delivered in early 2009.

Wintering bird watch

Every winter more than 200,000 waders and waterfowl spend the winter in and around the Severn Estuary. During that time they move between the estuary area and the Somerset Levels and Moors, but little is known about the routes they use. Natural England is eager to learn more about these mass movements of birds so that it can formulate appropriate policies to protect the major flight paths.

Following the success of previous radar-based monitoring projects with Natural England, CSL has been commissioned to carry out an initial trial study during the winter of 2008/09.

The Severn Estuary and Somerset Levels are both Special Protection Areas (SPAs) and Ramsar Sites (Wetlands of International Importance), which between them comprise 14 Sites of Special Scientific Interest (SSSIs).

"Preserving the free movement of wintering birds across this area is a priority for Natural England as it is potentially a prime site for windfarm development," says Ian Simms, EcIA Manager at CSL. "The radar monitoring project will enable us to track bird movements day and night to identify key flight corridors across the area. Crucially, our results will show where these flight routes are, how often they are used and which species are using them."

The information gathered will help Natural England to provide effective guidance to any windfarm developments planned for the area.

Photo courtesy Bob Glover (rspb-images.com)

Getting the most from your data

Statistical and analytical expertise is essential for any EcIA work. Raw data collected during bird surveys needs to be accurately and impartially interpreted and the likely impacts of wind turbines on important species expertly quantified and assessed.

CSL's statisticians and data analysts have the experience to work with and analyse existing survey data gathered by third parties to produce collision risk assessments to predict the proportion of birds that would be at risk from turbines. A population viability analysis can then be constructed to better inform planners if any populations of endangered species are at risk.

Radar reveals bat behaviour

Not much is known about the flight activity of bats at altitude, but that's about to change with a CSL research project using radar to monitor bat behaviour.

It follows a successful two-week trial of bat monitoring by radar in August 2007, with Natural England bat specialists working alongside the CSL radar team. The new project aims to meet the recommendations of the Eurobats Agreement (Convention on Migratory Species) to fill gaps in current knowledge about bat movements and flight patterns.

The research programme will investigate key aspects of bat ecology, including flight height distribution – particularly high-altitude flight activity – the effects of weather and temperature on flight activity and the influences of different habitats. The results will be used by Natural England to develop guidelines for the development of new windfarms and other infrastructure projects that are potentially hazardous to bats.

Fieldwork for phase one of the study was completed during summer 2008, with the radar deployed at four bat-rich locations around the UK. Radar monitoring was backed up with ground truthing using traditional bat-detection equipment and image-intensifying hardware.

Colin Ormston, Terrestrial Ecologist at CSL says: "The radar offers a unique new method for monitoring bat activity. Traditional bat monitoring techniques

are limited to a range of around 25 metres, whereas the radar has an active detection range of up to 1.4km for bat detection. It enables us, for the first time, to investigate the movements of bats at greater altitude. There have so far been no UK studies on the nocturnal flight activity of bats, so the results of this new study are eagerly anticipated."

Protection for Golden Plovers

Protecting bird species in and around Special Protection Areas (SPAs) is a key priority for the UK's statutory nature conservation bodies. SPAs are designated by the EU for the protection of rare and vulnerable resident and migratory bird species, so any proposed developments in the vicinity of these sites are subject to intensive environmental impact assessments before planning permission can be granted.

At the site of a proposed windfarm in northern Scotland, Scottish Natural Heritage was concerned about the effects of the development on Golden Plovers from nearby SPAs, so CSL was called in by the developer to monitor the birds' movements across the site.

CSL deployed its radar and skilled ornithologists on four five-day visits during the summer breeding season to establish the Golden Plovers' movement patterns. Pawel Plonczkier, Radar Ornithologist at CSL, says: "The project aimed in particular to understand key movements at dawn and dusk between breeding areas within the SPAs and nearby fields." The ornithologists observed the characteristics of Golden Plover flight, such as flight speed, enabling the species to be accurately identified on radar readings. Analysis of the results of this survey will indicate if the development is likely to have any impact on this important species.

Photo courtesy David Kjaer (rspb-images.com)

Surveys for all seasons

Accurately surveying bird populations across a large area demands a range of monitoring techniques, carried out by skilled and experienced ornithologists in all seasons.

During the summer breeding season, territory mapping is used to plot the individual territories of bird species within an area. This involves using Common Bird Census (CBC) surveying methods, with ornithologists walking across the site recording the species of bird seen, where they are and what they are doing. From this, territory maps are created for each species. This work is supported by vantage point studies, which involve recording all bird species observed over a set time period within 2.5km of a chosen vantage point in a 180° arc.

Vantage point surveys are also important for wintering bird surveys, when daytime monitoring is supplemented by dawn and dusk observations. Winter studies also involve walkover surveys in which ornithologists record the distribution of wintering birds within an area.

While a number of organisations offer these services, very few employ their own full-time ornithologists to carry them out. "By using only our own highly trained and experienced staff, we can guarantee a uniform approach and consistently high standards of service. We can also draw on the vast ornithological expertise available within CSL," says Ian Simms, EcIA Manager.

CSL's full range of ornithological survey techniques was put into practice during a two-year winter and summer study at a proposed windfarm site at Todburn, Northumberland. The monitoring teams surveyed all appropriate habitats within 2km of the site, looking for species of conservation concern, particularly birds of prey. In addition, CSL carried out bat surveys using traditional bat-detection techniques.

The study found that concerns about the impact of the windfarm on wintering and migrating wildfowl were unfounded. Vantage point surveys recorded very few flights across the site involving species of conservation concern, making a collision risk assessment unnecessary.

Newsletter Contact

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