

# TECHNICAL DATA SHEET

## BirdMap™

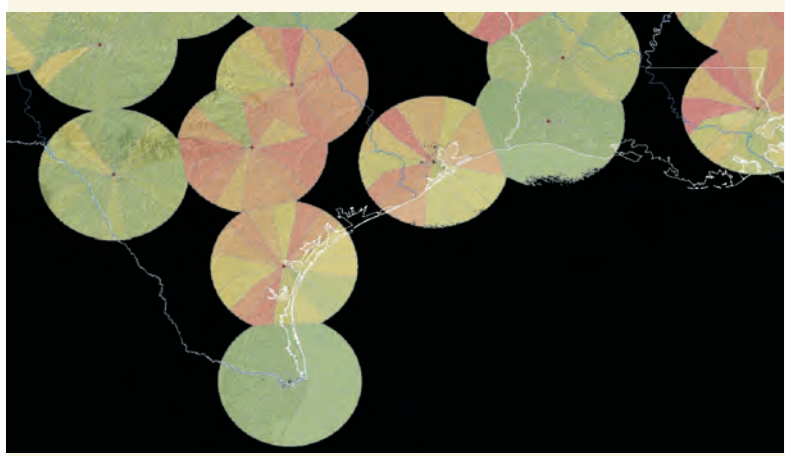
### Wind Farm Avian Screening Assessment



DeTect staff in 1998 designed and developed the US national avian radar system (the Avian Hazard Advisory System or AHAS) for the US Air Force using data from the National Weather Service network of NEXt generation RADars weather radars (WSR-88D or NEXRAD). AHAS is the world's first operable network for detection and tracking of bird movements in near-real time and currently covers the US, Alaska, Hawaii and Guam. DeTect currently hosts, continues to develop and operates the AHAS computer network which is the most comprehensive wide area bird and bat detection and tracking radar system available. The system is on-line with risk data provided to users through the AHAS public website [www.usahas.com](http://www.usahas.com).

BirdMap™ is a GIS-based system based on AHAS that uses the historical processed NEXRAD radar data to provide current and historical avian activity density and seasonality data on virtually any site in the continental US, Alaska and Hawaii, including most coastal and offshore resource areas. BirdMap additionally incorporates public and proprietary bird and bat databases on habitat, threatened and endangered species, roost sites, hibernacula, bird and bat distribution species maps, and refuges along with relevant correlation issues such as wetlands, weather and visibility to develop preliminary evaluation of a proposed windfarm site.

DeTect maintains the largest database in the world on bird and bat activity that includes over five years of bird density and migratory data for the continental United States with six minute updates- for both terrestrial and most offshore areas. DeTect's BirdMap provides a unique resource for conducting a low cost "screening" assessment of proposed wind energy, airport, landfill and mine sites to assist in site selection prior to investment in long term planning studies, radar studies and design.



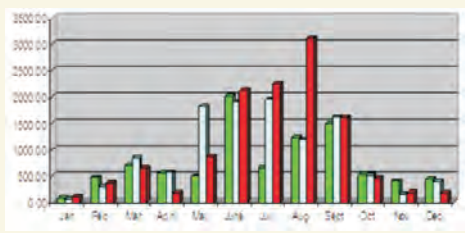
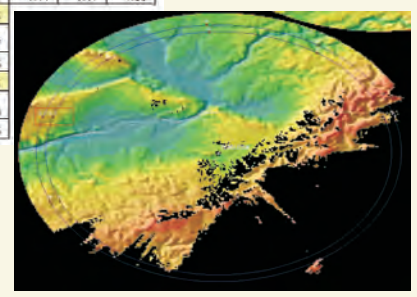
TOP: Analysis plot of normalized bird density periodic activity for coastal and inland Texas and Louisiana NEXRAD stations.

BOTTOM: Examples of BirdMap data products typically produced in an assessment. The BirdMap assessment typically analyzes a minimum of five years of data for each site with density data based on six minute radar updates.

Site	CRP1	CRP2	CRP3	CRP4	CRP5	CRP6	CRP7	CRP8
Total Density	32439	35757	38916	16232	33061	27670	29073	27058
Density/Hour	1.30	1.44	1.48	0.65	1.33	1.11	1.17	1.06
Site	BRO1	BRO2	BRO3	BRO4	BRO5			
Total Density	10452	27824	3931	15873	11127			
Density/Hour	0.42	1.11	0.16	0.64	0.45			
Site	HGX1	HGX2	HGX3	HGX4	HGX5			
Total Density	85555	118830	136498	32540	71053			
Density/Hour	3.44	4.77	5.48	1.31	2.85			

Site density hourly comparison table.

Site coverage and radar blockage analysis.



Above: Monthly activity chart. Right: Normalized site activity ranking.



For a BirdMap assessment quotation, email site lat/long bounding data to [birdmap@detect-inc.com](mailto:birdmap@detect-inc.com)



DeTect provides advanced radar technologies and expert support to wind energy developers, owners and consultants for bird and bat survey, mortality risk assessment, monitoring and risk mitigation for projects worldwide that includes:

- NEXRAD pre-screening site assessment
- Bird & bat radar systems – terrestrial and offshore
- Data processing, analysis & reporting
- Bird & bat mortality risk analysis
- Risk mitigation radar systems
- Public meeting support & technology consulting

### Bird & Bat Radar Technologies from DeTect:

DeTect is the developer and manufacturer of the most advanced and proven radar systems available for wind energy project bird and bat survey, risk assessment, monitoring and real-time risk mitigation with over 50 systems operating worldwide. The technology was originally developed for the US Air Force and NASA and is highly automated providing unattended 24-7 collection of high quality data on bird and bat activity at proposed windfarm sites that can be used to develop detailed pre-construction risk projections and mitigate risk at operating wind farms.

DeTect provides full operational and technical support to wind farm owners and consultants that includes system deployment, operation, user training, and data processing, analysis, reporting and QA/QC. Staff specialists include highly experienced radar ornithologists, avian biologists and statisticians that comprises the most experienced team of experts in remote sensing of birds and bats in the world - with specific expertise in design, construction and operation of bird/wildlife detection systems for real-time risk management.

### BirdMap™ NEXRAD Pre-screening Risk Assessment:

BirdMap™ is a GIS-based system that uses processed radar data from the US NEXRAD weather radar network to provide current and historical avian population density and seasonality data for the continental US, Alaska and Hawaii, including most coastal and offshore resource areas. BirdMap incorporates public and proprietary databases on habitat, threatened and



endangered species, roost sites, hibernacula, bird and bat distribution, and refuges along with relevant correlation issues such as wetlands, weather and visibility to provide preliminary evaluation of a proposed windfarm site. DeTect maintains the largest

database in the world on bird and bat activity that includes over five years of bird density and migratory data for the U.S. BirdMap provides a unique resource for conducting a low cost “screening” assessment of proposed wind energy development sites to assist in site selection prior to investment in long term planning studies, radar and field studies and design.

### MERLIN Avian Radar System:

MERLIN surveys provide the most cost-effective, scientifically sound, and conclusive method for collection of high-quality, statistically superior data on bird and bat movements at proposed wind turbine project locations - for both on-shore and off-shore wind turbine installations. DeTect has extensive expertise and experience that includes the only staff with experience in conducting major multi-year, continuous avian radar studies for land-based and offshore windfarms. MERLIN uses state-of-the-art radar and computer techniques

developed specifically for detecting and tracking the unique behavioral characteristics of birds and bats to collect data continuously and automatically generating highly accurate, detailed datasets for quantitative analysis. MERLIN is fully remotely viewable and controllable and operates 24-7 unattended. Data is also archived providing a permanent record for each project. MERLIN's Analyzer program generates detailed data in both tabular and graphical formats quantifying the numbers of birds passing through the rotor swept area allowing precise calculation and determination of bird and bat mortality risk.



### MERLIN SCADA Mortality Risk Mitigation System:

For operating windfarms, the MERLIN SCADA functionality allows the MERLIN system to operate as a monitoring and risk mitigation system providing advance "early" warning to windfarm operators of approaching migratory or resident birds and bats under mortality risk conditions. MERLIN SCADA can operate autonomously, automatically idling turbines when risk conditions are detected by the system, restarting the turbines when the risk has abated. The MERLIN SCADA operating software is fully compatible with most wind farm SCADA (Supervisory Control and Data Acquisition) systems and can be configured to mitigate raptor mortality risk providing continuous monitoring of the airspace above turbines, automatically stopping the rotors when raptor activity consistent with mortality risk is detected.

*For detailed information on the systems,  
email DeTect at [info@detect-inc.com](mailto:info@detect-inc.com)*