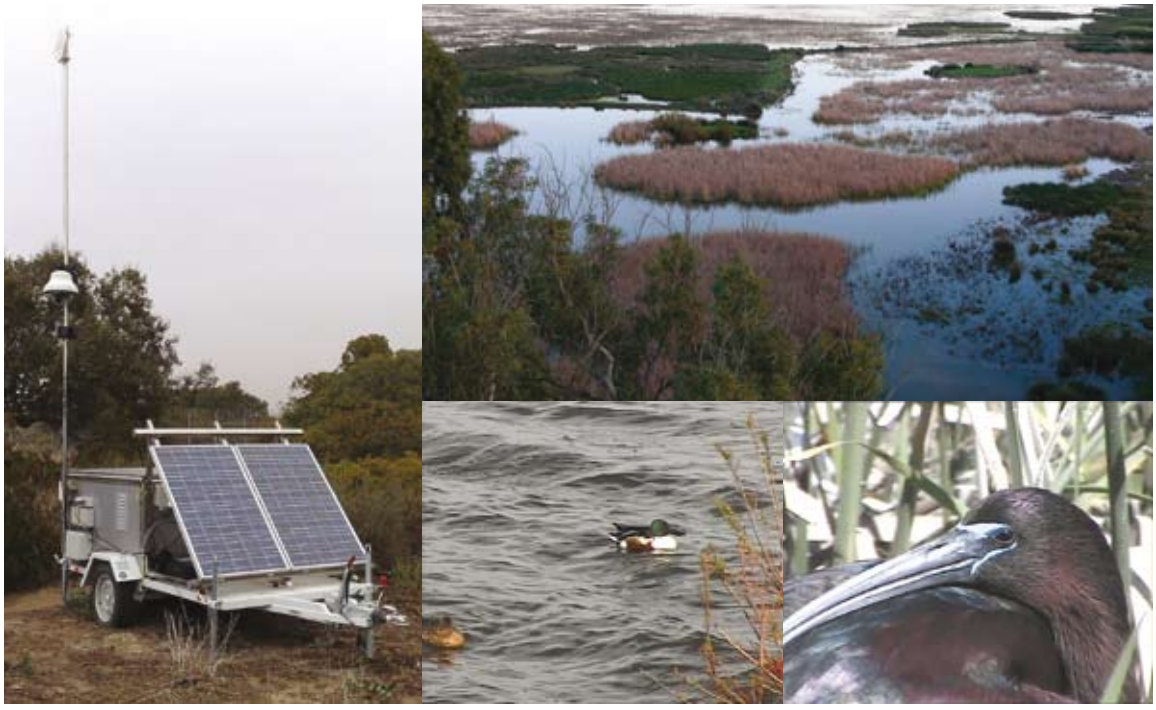
Doñana Biological Station.

Video surveillance in the Department of Biological Research and Environmental Care.



Organization:
Doñana Biological Station, CSIC

Location:
Doñana National Park, Huelva, Spain

Industry segment:
Government

Application:
Biological and environmental investigation

Axis partner:
SATEC, Sistemas Avanzados de Tecnología, S.A.

Mission

The Doñana National Park is a mosaic of ecosystems that is home to a biodiversity that cannot be found anywhere else in Europe. It covers an area of 54,252 hectares and was declared a World Heritage Site in 1994. The park, which provides shelter to species of high ecological value, such as the imperial eagle and the Iberian lynx, is considered by experts to be the perfect biological laboratory.

In 1964, at the encouragement of the Supreme Council for Scientific Investigations (CSIC) of the Spanish Government, the Doñana Biological Station (EBD) project was launched. This is a Research Institute dedicated to the ongoing study of the park's environment and the conservation and observation of its flora and fauna. The flora of the park is very diverse (more than 900 plant species) due to the presence of different ecosystems which are both aquatic and terrestrial. Each ecosystem possesses its own differentiated fauna. There are 20 species of freshwater fish, 11 amphibians, 21 reptiles, 37 land mammals and 360 birds, 127 of which habitually breed inside the park. The starting point of this project was the incorporation of a series of network cameras into the existing WiMAX network, with the aim of studying and analyzing the behavior of wild animals, some of which are at risk of becoming extinct, without disrupting their environment.

Solution

With the financial support of the state project INGENIO 2010, the Institute's team of professionals, in collaboration with the engineering company SATEC, completed an initial installation of a broadband WiMAX network covering an area of 17 km^2. With the proper use of this network, the researchers can utilize Internet access, e-mail and VoIP services within its range of coverage. It is complemented by another wireless network connecting the park to the University of Seville, which permits real-time access to the park's information and sharing this information with other research centers worldwide.

AXIS COMMUNICATIONS

33549/EN/R1/0812

"The use of cameras was an idea that I proposed myself. The AXIS 233D Network Camera was selected for its reliability, robustness, excellent price/quality ratio and the fact that it was perfectly suited to the project requirements."

Gustavo Sánchez, Technology Director, SATEC.

As a result of the installation of the WiMAX network, people began looking at the possibility of implementing new applications that would permit the recording and transmission of data over the network concerning changes in the fauna. On the one hand, a series of measuring sensors were installed to collect meteorological, atmospheric, soil and biological activity data, which supply scientific information on different aspects of the environment and transmit it to the database of the biological station. On the other hand, habitual actions were developed to research land and water animals, such as bird tagging or the fitting of transmitter collars on mammals and aquatic species.

In addition, geopositioning devices were installed and, as a complement, twelve AXIS 233D Network Cameras were included, 8 of which are fixed and 4 are mobile and can be placed temporarily in zones of interest. The Axis network cameras, the majority of which are powered by solar panels, are primarily intended to perform visual tracking of protected species, although they also provide more general functions, such as surveillance of the surroundings and the prevention of fires.

Thanks to this complex technological framework, it is possible to observe and analyze many aspects of animal life, such as migration, longevity, mortality, reproduction, population studies, feeding behavior, etc. Primarily installed on posts and in strategic locations, the AXIS 233D Network Cameras allow the information obtained from the sensors to be complemented by images. In some cases, the cameras are equipped with infrared illuminators that also permit the habits of nocturnal animals to be studied. Since these cameras offer bi-directional audio capabilities, the investigators can record sound and identify species, or communicate with other investigators via these devices.

The AXIS 233D cameras are highly versatile, permit remote-control functions and provide an optical zoom of up to 35x plus a 12x digital zoom. They even allow the use of certain internally developed programs for the periodic control of animal activities. The information collected by the cameras (up to 30 frames per second, with a resolution of 704x576 pixels) is transmitted simultaneously over the network in standard formats (Motion JPEG and MPEG-4) and is made available to all investigators.

Result

This is a project under permanent development, to which new technological devices will continue to be added as investments become available. Nevertheless, the current evaluation is very positive, since the work of the park's researchers has been made dramatically easier; this has been accomplished not only as far as convenience and availability are concerned, but the quantity and quality of the information have also improved. As a result of the installation of the cameras, it is not necessary to disturb the environment in order to feel part of it, and especially to facilitate the research and study of the park's plant and animal life.

About SATEC

For 20 years, SATEC, Sistemas Avanzados de Tecnología, S.A., has focused its activities on the deployment and development of infrastructure and services for information systems and telecommunications by offering integrated solutions combining supplies and services in these areas. SATEC offers its customers the best solutions available in the telecommunications marketplace. It has developed major strategic alliances and collaboration agreements with leading companies in the sector, and its human capital is characterized by a high level of specialization and certification.