

CASE STUDIES: Q&A on inspiring stories from Europe's quarries

A key priority for the European cement industry is to protect and preserve the ecosystems living in and around our quarries. Whilst these sites are the source of our products, nature conservation is at the heart of our activities.



Two years after launching our [2030 Biodiversity Roadmap](#) we are tracking our progress through inspiring case studies.

In this document, we present each case in-detail through questions and answers.

For more information on our progress please visit our [brochure](#).

The roadmap outlines key actions and objectives for the industry until 2030, which are grouped into four focus areas:



**Ecosystem
rehabilitation
& Ecosystem
services**



**EU Pollinators
Initiative**



**Invasive Species
(focus on plants)**



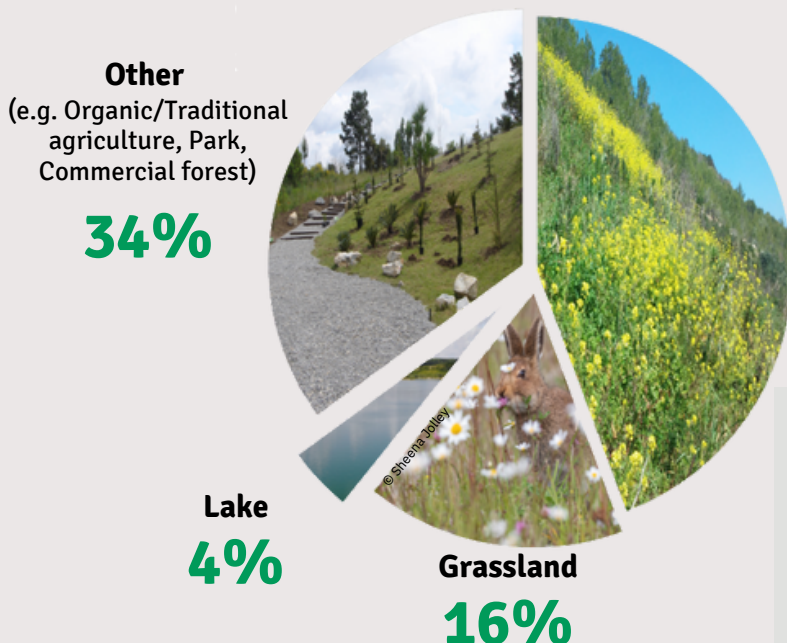
**Protected
Species**

Explore the inspiring case studies of CEMBUREAU members!

Focus Area 1: Ecosystem rehabilitation & Ecosystem services

Quarry rehabilitation can create opportunities for ecosystem restoration, enhanced biodiversity, and the increased provision of ecosystem services.

TYPE OF AREA RESTORED IN 2021



Natural forest
46%

For 2021:

656 ha were restored &
1807 ha were allocated to temporary habitats

Case study 1:

What are the Zlatna Panega Quarry and the expansion Zlatna Panega?

They are limestone and marl extraction sites owned by Zlatna Panega Cement, part of the **Titan group**, covering approximately 108 hectares and situated adjacent to the Natura 2000 site Karlukovo Karst, in **Bulgaria**.

What assessment did the Zlatna Panega Quarry undergo?

It underwent a **Net Impact Assessment of Biodiversity** (NIA Study) in collaboration with Bulgarian specialists. The assessment aimed to evaluate the baseline, current, and future states of the quarry, assess rehabilitation efforts, and recommend actions to enhance biodiversity post-operation.

What were the findings of the assessment?

The assessment found that various reclamation scenarios yield significant differences in future area conditions. Overall, open pit mining negatively impacts biodiversity due to landscape disturbance and habitat loss. Targeted, long-term rehabilitation activities, including afforestation expansion and diversification, and maintenance of local grass formations, were recommended to mitigate habitat loss. An evaluation of ecosystem services from rehabilitation scenarios indicated that the most beneficial scenario for biodiversity also provides the highest value ecosystem services. Recommendations from the NIA will inform the updating of rehabilitation plans and the Biodiversity Management Plan for both quarries.



The success of an area's rehabilitation is also measured through the establishment of ecological processes that guarantee the autonomy of regeneration, as well as the development of habitats. Pollination is one of these processes, promoted, in most cases, by insects that increase the quality of fruit production and the capacity for seed germination, contributing to spontaneous restoration.

Case study 2:

The contribution of fauna to pollination

What was the objective of the case study, from Secil, Portugal?

The objective was to compare the composition and function of the pollinating insect community between quarries undergoing active and passive rehabilitation to determine which strategy better converges with the reference (natural) site.

What were the main findings of the study regarding pollination?

The study found that European honeybees, bumblebees, and solitary wild bee species were the main pollinators, responsible for carrying 86% of the pollen. Despite different pollinator communities in the sampled areas, all maintained functional pollination activity, with occasional differences in interaction intensity between species. The study found that both **active and passive rehabilitation** strategies are effective in restoring pollinator communities. However, areas undergoing active rehabilitation showed a greater role for wild solitary bees, contributing to greater pollinator diversity.

What implication does this have for quarry rehabilitation strategies?

The findings suggest that actively rehabilitated areas followed more closely the pollination patterns of natural areas, than passively restored areas. Active rehabilitation actions may contribute to accelerate the process of recovery of pollination processes as compared to natural reference areas.

Lear more about this study [here](#).



© Ana Sampaio

Case study 3:

Seed dispersal

What is seed dispersal, and why is it important in ecological restoration?

Seed dispersal is a process where seeds are spread away from the parent plant, facilitating the colonisation and expansion of plant species in ecological restoration efforts. It relies on external agents such as birds, which expel intact, viable seeds after feeding on fruits, aiding in spontaneous restoration processes.



What was the aim of the study, in Secil, Portugal?

The aim of the study was to determine the role of **birds as seed dispersers** in ecological restoration, identifying the most effective bird species in seed dispersal and the plant species favoured by this ecological service. Species such as warblers (*Sylvia atricapilla* and *S. melanocephala*), robins (*Erithacus rubecula*), and thrushes (*Turdus merula* and *T. philomelos*) were identified as the most important birds for seed dispersal.

Is seed dispersal by birds promoting spontaneous restoration in rehabilitated areas ?

A: No, the study found that the abundance of these bird species in rehabilitated areas was lower than in neighbouring natural and semi-natural habitats. This was likely due to the vegetation structure in rehabilitated areas not providing adequate habitat conditions for their needs. Improvements in habitat management such as densification of the shrub cover were suggested to promote the settlement of bird species and enhance seed dispersal in rehabilitated areas.

Lear more about this study [here](#).

Case study 4:

Native seeds collection

What is the main objective of the project?

The main objective of the project is to establish a supply chain of **native herbaceous seeds** with high biodiversity in **Piedmont, Italy**. These seeds, known as 'seeds for preservation' or 'native seeds of local origin,' are intended for creating grass cover with anti-erosive, productive, and environmental purposes. The project aligns with Directive 2010/60/EU, Legislative Decree no. 20/2021.

How does the project aim to make native seeds economically competitive?

The project seeks to minimize the number of intermediaries in the supply chain to reduce costs and make native seeds comparable in price to commercial seeds currently in use. This economic competitiveness is essential for ensuring the sustainability of the supply chain beyond the project duration.

What are the key actions included in the project?

The project includes the creation of a website cataloguing certified donor sites, such as natural and semi-natural prairies, from which seeds can be collected. This website serves as a tool for client companies, including ski resorts, forestry companies, and quarries, to directly connect with the companies managing the donor sites, facilitating access to native seeds. The project involves defining the regions of origin and donor sites, testing prototypes for flower harvesting, developing protocols for characterizing meadows, and analyzing collected seeds. Additionally, it includes the creation of an informative video and the development of a project website. The Department of Agricultural, Forestry and Food Sciences (DISAFA) at the University of Turin coordinates the project, with contributions from various institutional and private partners, including **Buzzi Unicem srl**.

Lear more about this project [here](#).



FEASR - Fondo europeo agricolo per lo sviluppo rurale
l'Europa investe nelle zone rurali

Programma di sviluppo rurale 2014-2020

Misura 16 Cooperazione

Sottomisura 16.1 Sostegno per la costituzione e la gestione dei gruppi operativi del PEI in materia di produttività e sostenibilità dell'agricoltura

Operazione 16.1.1 Costituzione, gestione e operatività dei gruppi operativi del PEI

PRÀ DA SMENS - Realizzazione di filiere corte piemontesi per la raccolta di sementi autoctone in praterie permanenti e loro impiego diretto per la rivegetazione

Il progetto si propone di valorizzare i prati e pascoli permanenti idonei per la raccolta di sementi autoctone di origine locale, favorendo il contatto diretto tra le aziende agricole che gestiscono le praterie e gli utilizzatori finali delle sementi

Costo complessivo: € 474.967,88
Contributo pubblico concesso: € 470.478,47
di cui quota FEASR: € 202.870,32

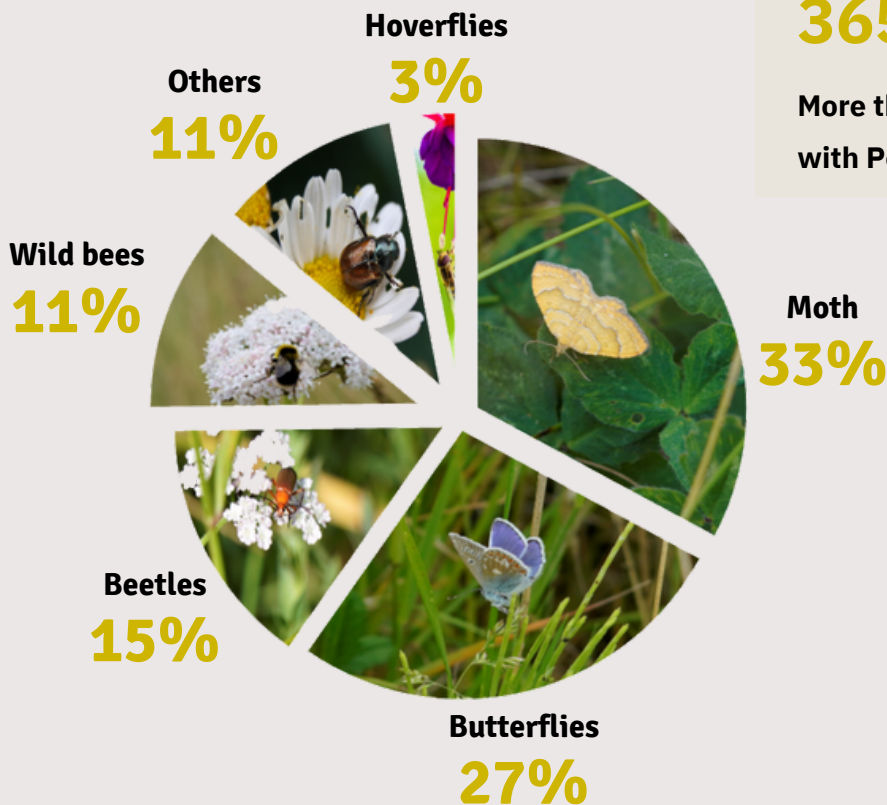


www.regione.piemonte.it/svilupporurale

Focus Area 2: EU Pollinators Initiative

Evidence increasingly shows the value of quarries, both active and rehabilitated, as rich pollen and nectar sources, while the bare substrates and slopes/cliffs provide abundant nesting opportunities, in particular for mining bees.

POLLINATORS GROUPS 2021



365 pollinator species were reported.

More than **5,900** people have been reached with Pollinator related communication materials.

- **Moths** are an extremely diverse group of insects. From the large (macro) to the small (micro), brightly coloured to very camouflaged, from night flying to day flying, moths belong to the same taxonomic order as butterflies.
- **Butterflies** are day-flying winged insects, characterized by four wings that exhibit diverse colours and patterns and fold together when at rest. Most conspicuous for their fluttering flight behaviour, these insects are very sensitive indicators of the health of the environment.
- **Beetles** are insects that form the order Coleoptera, of which a sub-set play an important role in pollination. Their front pair of wings are hardened into wing-cases, elytra, distinguishing them from most other insects.
- **Wild bees** are defined as any bee that is not domesticated (for example the honeybee) and include the well-known bumblebees along with mason and mining bees.
- **Hoverflies** make up the insect family Syrphidae. They are often seen hovering or nectaring at flowers; the adults of many species feed mainly on nectar and pollen, while the larvae (maggots) eat a wide range of foods.

Some **examples of the type of activities** which were performed:

Creation of:

- shallow-edged ponds with emergent vegetation
- insect nests in the plant
- calcareous grasslands
- biotope building blocks (e.g. deadwood)
- conservatory orchards
- planting of nectar-rich wild shrubs

Engagement with stakeholders

Aligned with the Roadmap's targets, in September 2023, CEMBUREAU hosted a webinar "[What's buzzing in our quarries? The European cement sector gives pollinators a helping hand](#)", attracting around 100 participants.

This online event welcomed key stakeholders from the European Commission, academia, and the cement industry, and focused on the vital role of quarries as habitats for pollinators.



Case study 5:

What is the Great Banded Furrow-Bee (*Halictus scabiosae*)?

It is one of the 1000 different species of wild bees known in **France**, recognized by its brown and yellowish stripes on the female's abdomen. It is typically associated with sandy soils supporting spear thistle, Hogweed, wild carrot, burdock, and the late-flowering protected plant in France, the Grey Scabious (*Scabiosa canescens*).



© Denis Palanque France

What action did Vicat take regarding the Grey Scabious plant?

In 2017, **Vicat cement collected seeds** from a set of 15 grey scabious plants before removing them from the quarrying site.

These seeds were sent to the French Botanical Conservatory for cultivation before transplanting into two restored areas of the quarry. In 2019, around 500 2-year-old plants, cultivated from the seeds by the Botanical Conservatory, were reintroduced into the quarry as a mitigation measure.

What impact has this mitigation measure had on pollinators?

By clearing and maintaining the site, the reintroduction of grey scabious has developed into a significant habitat for pollinators, including the Great Banded Furrow-Bee. The question that could be asked is: Is the presence of Great Banded Furrow-Bees due to the cultivation of grey scabious, or did the reintroduction of grey scabious succeed due to the presence of Great Banded Furrow-Bees?

Case study 6:

What evidence-based pollinator actions did Irish Cement Ltd. (Limerick Works, CRH) take during 2023?

As part of our 'business supporter' status to the All-Ireland Pollinator Plan, we conducted two specific actions in 2023. The first was to **enhance an area of existing grassland** near the entrance to our site with native Irish wildflowers and installed an educational sign to further promote pollinators and spread the message. The second was to change the mowing regime in certain areas, reducing the frequency to promote the growth and blooming of flowering plants across the season for the benefit of pollinators.



What actions has Irish Cement Ltd taken to increase communication around pollinators/biodiversity within the business?

A toolbox talk was held with all staff members during Biodiversity Week to communicate the biodiversity we have on site and what we are doing to protect and promote it.

What are your proposed pollinator actions for 2024?

Expanding on the work of 2023, an additional wildflower meadow will be created and the mowing frequency of certain areas of the site will be further reduced. In addition, a native hedgerow will be planted and subsequently managed for the benefit of pollinators and wider biodiversity.



Focus Area 3: Invasive Species (focus on plants)

CEMBUREAU's vision is to contribute in reducing the number of native species threatened by invasive alien plant species, to facilitate the sharing of experiences within the sector and to provide the knowledge and tools to enable companies to manage invasive plant species in quarries.

Combating the Spread of Giant Hogweed in Quarries:

Giant hogweed, (*Heracleum mantegazzianum*), while native to Caucasus has been introduced and subsequently spread across Western Europe, and North America. Originally seen as an ornamental, this plant has become not only invasive but also poses a health and safety risk to humans causing the skin to become very sensitive to sunlight resulting in blisters and scars. As with many invasive plant species bare ground and low competition with other plants makes quarries a prime place for giant hogweed to flourish, as has been observed in a number of quarries at **CRH** cement plants in Europe, including our Opterra cement works in **Germany**. Given the safety concerns and negative biodiversity impacts related to this plant, **removal actions** are undertaken periodically.

Case study 7:

What happens in quarries concerning invasive alien plant species?

In quarries, invasive alien plant species can quickly colonize disturbed areas and bare substrates. It is important to control invasive alien plant species in quarries because they can spread into the wider landscape, or they can be distributed further by the transportation of aggregates. Globally, invasive species have been identified as one of the key drivers of biodiversity loss.

How does Heidelberg Materials support its quarry staff in managing invasive plant species?

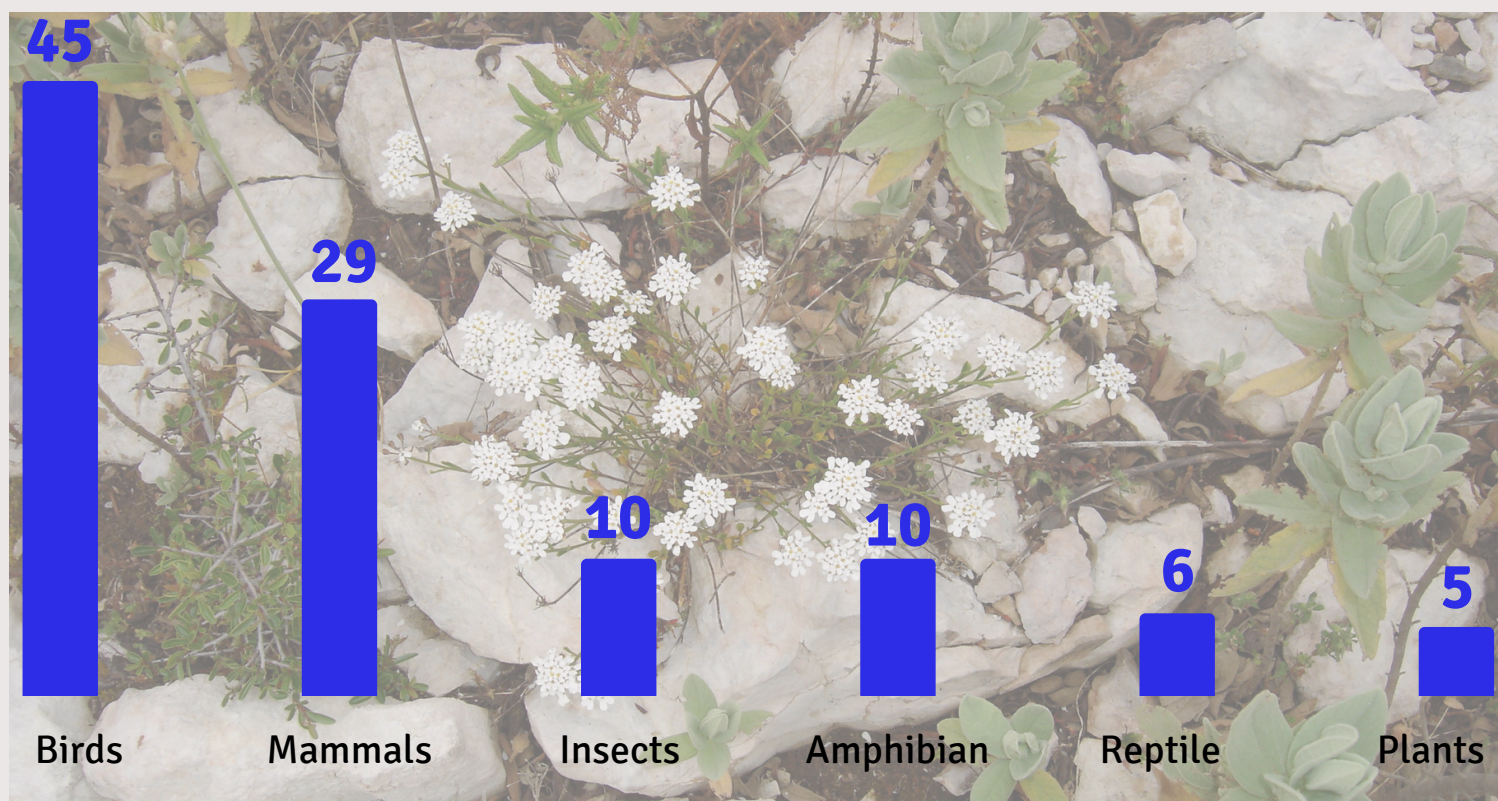
Heidelberg Materials, in collaboration with conservation NGOs, provides its quarry staff with **regional guidelines** that identify the worst plant invaders most likely to occur within their sites. These guidelines form part of the company's invasive alien species training and offer management options for each of the listed species.



Focus Area 4: Protected Species

The rehabilitation schemes at quarries have offered researchers and local communities the chance to study and engage in projects directly related to protecting species, including plants, pollinators, invertebrates, amphibians, reptiles, mammals, and birds.

PROTECTED SPECIES TYPES 2021



105 protected species under the EU Birds & Habitats Directive were reported.

José Oliveira, Quarry Manager: “The **SECIL-Outão** quarries in southwest **Portugal**, located in a Natura 2000 site, have been undergoing progressive rehabilitation since 1980. With 46% of the area restored, my role as Quarry Manager involves the implementation of **integrated Rehabilitation and Biodiversity Management Plans** as well as the engagement with multidisciplinary teams. This results to addressing the challenges associated with restoration, and ultimately enabling species to thrive in this unique environment.”

Case study 8:

What initiatives is Compagnie des Ciments Belges (CCB) undertaking to enhance biodiversity?

CCB, part of **Cementir Holding**, operates in the Wallonia region of **Belgium** and continuously works on initiatives to enhance biodiversity. One initiative worth mentioning specifically focuses on the natterjack toad (*Epidalea calamita*), a species designated as protected under European Protected Species and listed in the IUCN Red List with categories of Least Concern (LC) and Vulnerable (VU) at the regional level.



How is CCB attracting the natterjack toad to its quarry sites?

Within the perimeters of its currently inactive quarry in Gaurain, the active quarry in Clypot, and the future quarry in Barry, CCB endeavours to attract the natterjack toad to thrive in sustainable populations at the site. This goal is being achieved by preparing **specifically designed temporary and permanent ponds** and adopting dynamic management of these habitats.

What progress has CCB made in creating habitats for the natterjack toad?

Currently, CCB has created and actively manages 24 temporary ponds in the Gaurain quarry and 24 ponds in the Clypot quarry. From March to October, natterjack toads migrate to these sites and reproduce in significant numbers. Additionally, the permanent ponds created in the same quarries support many other species of plants, amphibians, and insects, further enhancing biodiversity at the quarries.

Case study 9:



What is the Quarry Life Award?

The **Quarry Life Award (QLA)** is a scientific and educational competition conducted nationally and internationally on a three-year cycle, welcoming participants from diverse backgrounds and age groups. The competition aims to deepen understanding of the biodiversity within different quarries and to develop innovative methods for enhancing habitats and species populations. Additionally, it serves to engage the wider public in discussions about the significance of biodiversity.

Heidelberg Materials, as the host of the competition, leverages the award-winning projects to develop best practices for quarry management.



© Kristýna Sebková, Czech Republic

What insights have been gained from Quarry Life Award projects?

Since its establishment in 2011, Quarry Life Award projects have provided insights into a wide range of species and habitats.

Amphibians, which are one of the most threatened groups, has been on the decline in Europe due to habitat reduction and fragmentation. The process of mineral extraction can often result in floodable depressions which can be designed in such a way as to become amphibian-friendly habitats and thus potentially assist in reducing their decline. In Aridos Sanz gravel pit, Spain a project team sought to evaluate the potential of quarry waterbodies to increase landscape connectivity for amphibians. From the species research and habitat indexing, the team was able to define habitat suitability and landscape connectivity for a list of key species like the natterjack toad (*Epidalea calamita*).

Invertebrates, in particular arthropods are often overlooked yet comprise a number of threatened species that provide important functions within the natural ecosystem. A research team from three academic institutions collaborated with the staff at Heidelberg Materials Planá nad Lužnicí quarry (Czech Republic, South Bohemia Region) evaluated different terrestrial and aquatic habitats created within the quarry to determine of which are the most suitable as potential habitats for arthropods. Along with habitat enhancement recommendations, a total of 465 species of arthropods including a number of IUCN Red listed species were found during the research highlighting the importance quarry habitats provide in species conservation.

Learn more about the QLA and its projects [here](#).

Case study 10:



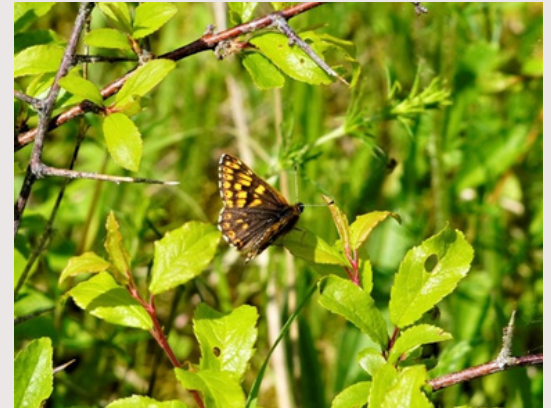
What is Kensworth, and what is its purpose in the United Kingdom?

Kensworth is a chalk pit located in the United Kingdom, and it serves as a supplier of raw materials to the **Rugby Cement works**. Initially, the restoration plan for Kensworth involved creating habitats such as woodland, scrub, and grassland, which was intended for grazing livestock.

What partnership does Cemex have in the UK, and how does it contribute to Kensworth's restoration?

Cemex has a long-term **partnership with the Royal Society for the Protection of Birds (RSPB)** in the UK.

Through this partnership, a Biodiversity Plan was developed for Kensworth, and subsequent visits were made to monitor habitats and species, leading to a decision to review the restoration plan to create more nature-friendly habitat. The new restoration plan for Kensworth focuses on **creating chalk grassland**, a rare habitat in the UK that has become increasingly scarce due to intensive agricultural practices. Chalk grassland naturally develops on bare chalk surfaces left after quarrying.



How are wildflower species being introduced to Kensworth, and what is their significance?

The RSPB, in collaboration with another NGO called the Wildlife Trust, developed plans to introduce wildflower species to Kensworth to attract rare invertebrates which are a conservation priority in the UK. This helps enhance biodiversity in the restored areas. To maintain habitat quality and prevent scrub growth, a grazing regime has been introduced using Herdwick sheep, a breed suited to chalk grassland. This helps control vegetation and supports the habitat requirements of various species, including the nationally rare **Duke of Burgundy Butterfly**.



Published by CEMBUREAU - The European Cement Association
Rue d'Arlon 55 – BE-1040 Brussels
Tel.: + 32 2 234 10 11
secretariat@cembureau.eu
www.cembureau.eu



CEMBUREAU



@CEMBUREAU



Cementing Europe's Future



@CEMBUREAU