
WORLD HERITAGE NOMINATION – IUCN TECHNICAL EVALUATION

DORSET AND EAST DEVON COAST (UNITED KINGDOM)

1. DOCUMENTATION

- i) **WCMC Data sheet:** (19 references)
- ii) **Additional literature consulted:** Goudie, A. and Brunsdon, D. 1997. **Classic Landforms of the East Dorset Coast.** The Geographical Association, Sheffield; and Ellis, N.V et al. (Eds.). 1996. **An Introduction to the Geological Conservation Review.** Joint Nature Conservation Committee, Peterborough.
- iii) **Consultations:** 2 external reviewers contacted; relevant officials from government, protected area agencies, and public institutions; private estate owners; geological associations; tourist operators; and other interest groups.
- iv) **Field visit:** February-March, 2001. Paul Dingwall,

2. SUMMARY OF NATURAL VALUES

Located on the south coast of Britain, the nominated property comprises eight sections along 155km of largely undeveloped coast and countryside between Orcombe Rocks, near Exmouth in east Devon in the west, and Studland Bay, Dorset, in the east. The total area of the site is 2,550ha, 80% of which is cliffed coastline. The property has a combination of internationally renowned geological features considered by both palaeontologists and geomorphologists to be one of the most significant research sites for their respective fields of study in the world. The nominated site includes a near-continuous sequence of Triassic, Jurassic and Cretaceous rock exposures, representing almost the entire Mesozoic Era (between 251 and 66 million years ago), or approximately 185 million years of Earth history. The Triassic succession of mudstones and sandstones is over 1,100m thick, representing 50 million years of deposition. The sequence of Jurassic strata exposed between Lyme Regis and Swanage is among the best sections of marine Jurassic-age rocks to be found anywhere in the world. All stages of the Cretaceous are represented with the exception of the very youngest.

The nominated site contains a range of internationally important Mesozoic fossil localities, including Lyme Regis, Kimmeridge Bay, the Isles of Portland and Purbeck, Durlston Bay, High Peak, Otter Point, Furzy Cliff (Weymouth), Charmouth and Axmouth. Great numbers of vertebrate, invertebrate and plant fossils have been discovered, along with fossil dinosaur footprints in quarries near Swanage. Examples of significant palaeontological discoveries not known from elsewhere include *Dimorphodon macronyx*, one of the earliest flying reptiles, and *Scelidosaurus harrisoni*, the “Charmouth dinosaur”. Important among the marine reptiles are *Temnodontosaurus*, ichthyosaurs, and *Metriacanthosaurus parkeri*. The area has yielded a rich source of ammonites such as *Asteroceras obtusum*, *Parkinsonia parkinsoni* and *Titanites anguiformis*, which have been used to zone the Jurassic. Well preserved remains of a late Jurassic fossil forest, estimated to be more than 140 million years old, are exposed on the Isle of Portland and the Purbeck coast: many trees are preserved *in situ* with their associated soils and pollen, a boon for palaeoecologists.

In terms of the site’s geomorphological significance, a great variety of landslides have formed, some of which, such as those at Bindon, Black Ven, Hooken, East Weares and Kings Pier, are scientifically important throughout Europe. The long history of scientific study of these mass-movement systems is such that these formations have become, literally and figuratively, ‘textbook’ examples. The site is also renowned for the study of beach formation and evolution on a retreating coastline. Chesil Beach, stretching from West Bay to Portland, is one of the best-studied beaches in the world. The beach is famous for the volume, type and grading of pebbles. The 480ha Fleet Lagoon, enclosed by Chesil Beach, is one of the most important saline lagoons in Europe, its sediments providing evidence of late Holocene beach evolution, and changes in sea level, climate and vegetation. Chesil Beach and the Fleet is an outstanding example of a barrier beach and lagoon system, protected by several national and European designations. The Isle of Purbeck is notable for its well developed

coastal landforms, including cave-bay sequences and textbook examples of bays, stacks, and rock arches at Lulworth Cove, Durdle Door and Old Harry Rocks.

In addition to the site's palaeontological and geomorphological significance, important coastal vegetation habitats occur in the nominated area, such as the landslipped cliffs and cliff-top grasslands of W. Dorset, that support several rare plant species of national and European importance and parts of the nominated coast are protected under international designation. The Exe Estuary Special Protection Area (SPA), a Ramsar wetland, supports over 20,000 migratory wildfowl, including internationally important populations of avocet, dark-bellied brent goose and slavonian grebe. The Sidmouth to Beer Coast SSSI (Site of Special Scientific Interest) protects the westernmost example of species-rich grassland in England, with a very diverse invertebrate fauna. The Lyme Bay reefs provide one of the most easterly locations for several Mediterranean-Atlantic plants species, such as the pink seafan *Eunicella verrucos*, and has rich epifauna, especially sponges.

3. COMPARISON WITH OTHER GEOLOGICAL SITES

The site is significant in terms of geological history, palaeontology, geomorphology and the history of geological and related sciences.

In terms of geology, the Dorset and East Devon Coast is one of Britain's most significant areas, and one of two mainland sites nominated for its geology on the U.K. World Heritage tentative list. The area includes 67 nationally and internationally recognised localities in the statutory Geological Conservation Review. While sites representing the same geological time period are found throughout the world, there is no better example anywhere of a complete succession through the Mesozoic Era, a period of 185 million years. Among prominent geological World Heritage sites, Istchigualasto-Talampaya in Argentina and Canada's Dinosaur Provincial Park represent the Triassic and late Cretaceous respectively, but no site currently on the World Heritage list contains the complete Mesozoic succession. The nominated site also represents an exceptionally well-documented sedimentary basin, now one of the best-known and oft-studied of its type in the world. Only Australia's Sydney and Gippsland Basins, and the western flank of the Basin and Range Province in North America, are similar, but none is extensively protected.

In terms of palaeontology, the nomination document includes a comprehensive comparative analysis in which 12 selected fossil sites or interests are rated against the IUCN criteria for establishing the outstanding universal value of fossil sites (pp. 36-37). The results clearly demonstrate the global significance of the Dorset and East Devon sites in all rated categories, particularly in terms of the long geological time period represented; the diversity of fossil assemblages; the international significance of sites (all 12 are assessed as internationally important); and the quality of preservation of specimens, with some complete and well-articulated skeletons, three-dimensional and soft-part preservation and the presence of finely detailed plants and wood structures. The Lyme Regis (Lower Jurassic) and Purbeck Group formations (Lower Cretaceous) are the most significant fossil sites; specimens from them are found throughout the world's museums.

In terms of geomorphology, the landslides here are internationally recognized, comparable with those of the Black Sea Coast and New Zealand, which are also internationally renowned. The Bindon landslide complex, protected in the Lyme Regis to Axmouth Undercliffs National Nature Reserve, was the first to be fully described in a scientific memoir. Black Ven is the largest mudslide complex in Europe. No beach in the world is known to have been as intensively studied as Chesil Beach, and there are few that exhibit the exceptional degree of grading of the size of its sediments along the shore. The juxtaposition of concordant and discordant coastlines (i.e. those aligned with and against the grain of the geological structure) within the same geological strata, as found on this coast, is rare on a global scale.

The nominated area also has an internationally unique status in the history of geological science. Regarded for more than 200 years as among the best available research sites anywhere for geological inquiry, the resulting prodigious output of research, published in thousands of scientific papers, has fundamentally shaped the development of geological thinking. Its role in this respect continues today.

4. INTEGRITY

4.1. Site integrity

The nominated site contains all the key, interdependent elements of geological succession exposed on the coastline. It has an almost complete representation of Triassic, Jurassic and Cretaceous rocks, all within a single sedimentary basin. Regional tilting of the structures to the east means that a walk from west to east along the coast is an almost unbroken “journey” through 185 million years of geological time. The stratigraphy represents a wide range of both marine and terrestrial depositional environments and a full range of sedimentary rock types. The array of fossil faunas and floras show interrelated elements of the prehistoric record of life and environments. The site includes a series of coastal landforms whose processes and evolutionary conditions are little impacted by human activity. The boundary of the site is defined by natural phenomena: on the seaward side the site extends to the mean low water mark and on the landward side to the cliff top or back of the beach. This is also in general consistent with the boundaries of the nationally designated areas that protect the site.

The high rate of erosion and mass movement in the area creates a very dynamic coastline; the boundaries of the site, therefore, may need periodic monitoring to ensure that significant changes to the shoreline are reflected in revised boundaries.

4.2. Management integrity

The nominated site lies almost entirely within two areas designated under national conservation legislation as Areas of Outstanding Natural Beauty (IUCN Category V Protected Landscape/Seascape). Also protected under national law are thirteen SSSIs, and a large National Nature Reserve (IUCN Category IV). The site also contains areas designated as being of international importance for wildlife, either as a Special Conservation Area or SPA under European Community Directories. Chesil Beach/the Fleet and Exe Estuary are designated as a Ramsar Wetland of International Importance.

An estimated 95km of the 155km of coastline in the nominated site are owned by public bodies, conservation agencies or large private estates. While most of the site is in private ownership, mainly within four large estates, the National Trust, a major U.K. conservation charity, owns about 35km of coastline. Smaller areas are owned by County and District Councils and by the Ministry of Defence, which uses 5km of coast as the Lulworth Gunnery Ranges: the Ministry’s management of this area is subject to conservation policies set out in a management plan. Privately owned SSSIs have management oversight from the English Nature agency. The bed of the Fleet lagoon and part of Chesil Beach are owned by the Ilchester Estates and managed as a local nature reserve. There are two commercially owned landholdings on the Isle of Portland.

The nominated property is currently extensively protected by a variety of designations and a range of land use and protected area management plans. A single management plan has been prepared for the nominated site, coordinated by the Dorset and Devon County Councils. The plan, which has undergone public consultation, has six prime objectives relating to the protection of the geology and landforms, conservation and enhancement of landscapes and seascapes, and visitor management and education. Significantly, emphasis is given to integrating World Heritage management with wider sustainable development objectives in the counties. Management plans for existing areas inside the nominated property: they include county development plans, local district plans, mineral and waste management plans, shoreline management plans and Environment Agency river catchment plans. The National Trust maintains plans for management of wildlife, landscape, and visitor use of its properties; all its sites are inalienably conserved for the benefit of the public. Wildlife Trust reserves, National Nature Reserve, and military lands all have management plans.

Many people are employed by landowners and agencies to undertake management operations in sites within the nominated area. More than 40 wardens and rangers are employed by the two county councils, the E. Devon and Purbeck District Councils, English Nature, the National Trust, Ilchester and Lulworth Estates and the Dorset Wildlife Trust. Two new positions - geological coordinator and tourism officer - are envisaged if World Heritage status is achieved. Management of the area is well funded on a partnership basis with more than £500,000 provided annually for staff budgets of current employees, excluding professional staff such as local government planners and tourism officers. There are many well developed and professionally managed information centres, museums, accommodation and transport facilities, and other services available to visitors. Public access to the beaches and cliff tops is available via public rights of way and permissive paths. The South-West Coastal path, one of 13 nationally designated trails, extends through part of the site. Excellent marine search and rescue facilities are located at several sites in the area. The research capacity underpinning protected area management, provided from regional and national scientific institutions, is substantial.

Only about ten people live permanently in the nominated site, though there are some seasonally occupied beach huts and holiday chalets. The population in gateway towns is estimated at less than 200,000. The area has been

a popular tourist destination since the 18th Century, and about 14 million people, mostly day-trippers, visit the nominated site and adjacent coastal areas annually. There are currently few significant threats to the site. A vigilant regime of active management will address important issues such as path erosion, and vegetation and wildlife disturbance. A voluntary code of conduct has been developed to help manage the collection of fossils by amateur and professional collectors. Two sites lie within areas where there are permissions for mineral extraction, but the local authorities believe neither will be reactivated. Coastal defence works are required in places but they are not overly intrusive on site values.

In summary, IUCN believes this nominated site has strong legal protection and is managed effectively for long-term preservation of its natural geological values. It thus meets the conditions of management integrity.

5. ADDITIONAL COMMENTS

None.

6. APPLICATION OF CRITERIA/STATEMENT OF SIGNIFICANCE

Dorset and East Devon Coast is nominated in accordance with World Heritage natural criteria (i) and (iii).

Criterion (i): Earth's history and geological features

In relation to this criterion, the site's claim to outstanding universal value is based on the following significant values:

- The coastal exposures within the site provide an almost continuous sequence of Triassic, Jurassic and Cretaceous rock formations spanning the Mesozoic Era and document approximately 185 million years of Earth history;
- The site includes a range of internationally important fossil localities – both vertebrate and invertebrate, marine and terrestrial - which have produced well preserved and diverse evidence of life during Mesozoic times;
- The site contains a range of textbook exemplars of coastal geomorphological features, landforms and processes;
- The site is renowned for its contribution to earth science investigations for over 300 years, and has helped foster major contributions to many aspects of geology, palaeontology and geomorphology; and
- The site has continuing significance for many aspects of earth science research and is a high quality teaching and training resource for the earth sciences.

Critical examination of these elements, complemented by field inspection, discussions with protected area managers and scientists, and consideration of the views of independent reviewers and prominent scientists who have written in support of the nomination, lead to the conclusion that these claims can be fully substantiated. The site is also unlike any other geological site currently accorded World Heritage status, and it has both a scientific and conservation significance ranking it among these existing sites. IUCN considers that the nominated site meets this criterion.

Criterion (iii): Superlative natural phenomena or natural beauty and aesthetic importance

The nominated property is a substantially natural coastline in a setting of attractive rural landscapes and associated seascapes. Most of the site is designated as nationally significant in terms of its scenic qualities (e.g., as Areas of Outstanding Natural Beauty and Heritage Coasts). The attractiveness of the site derives in particular from the classically developed landforms, whose scenic qualities are enhanced by the close association of a great diversity of landforms in a relatively confined area. Component materials of the landforms also have aesthetic appeal: stone quarried from Purbeck, Portland and Beer has been used in the construction of many great buildings in Britain, some of which (e.g., the Tower of London) are themselves World Heritage cultural sites.

Moreover, the landscapes have inspired a number of authors, poets and artists of international renown, adding to the rich legacy of cultural associations with the site.

However, when compared to existing World Heritage sites fulfilling the criterion, IUCN considers that Dorset and East Devon Coast is of national importance rather than of outstanding universal value. IUCN considers that the nominated site does not meet this criterion.

7. RECOMMENDATION

The Bureau recommended to the Committee that the Dorset and East Devon Coast site be **inscribed** on the World Heritage List under natural criterion (i).