PUBLICATIONS ABOUT THE ISLE OF WIGHT THAT HAVE RECENTLY APPEARED

ABSTRACTS:

Wildlife conservation in a fragmented landscape: the Eurasian red squirrel on the Isle of Wight
Hardouin, E. A., , Butler, H, *et al* 2021. *Conservation Genetics*, **22**: 571–583.

Abstract:

Island populations may have a higher extinction risk due to reduced genetic diversity and need to be managed effectively in order to reduce the risk of biodiversity loss. The Eurasian red squirrels (*Sciurus vulgaris*) in the south of England only survive on three islands (the Isle of Wight, Brownsea and Furzey islands), with the Isle of Wight harbouring the largest population in the region. Fourteen microsatellites were used to determine the genetic structure of red squirrel populations on the Isle of Wight, as well as their relatedness to other populations of the species.

Our results demonstrated that squirrels on these islands were less genetically diverse than those in Continental mainland populations, as would be expected. It also confirmed previous results from mitochondrial DNA which indicated that the squirrels on the Isle of Wight were relatively closely related to Brownsea island squirrels in the south of England. Importantly, our findings showed that genetic mixing between squirrels in the east and west of the Isle of Wight was very limited. Given the potential deleterious effects of small population size on genetic health, landscape management to encourage dispersal of squirrels between these populations should be a priority.

Population status and ecology of *Philonotis marchica* (Hedw.) Brid. in Britain.
Callaghan, D. A. 2021. *Journal of Bryology* **43**(3): 242-250.

The moss *Philonotis marchica* (Hedw.) Brid. is rare in Europe and threatened with extinction. In this study, its status and ecology in Britain were investigated. *Philonotis marchica* appears to have become extinct in Yorkshire and has undergone a historical decline at Shanklin Chine, Isle of Wight. The population at Lake Cliffs, Isle of Wight, appears to be secure and deserves statutory protection given its key importance for the future survival of *P. marchica* in Britain.

The role of the seagrass *Zostera noltii* on sand transport across an intertidal sand flat in Ryde, Isle of Wight.
Annuar, M. A. 2021. University of Southampton, Doctoral Thesis.

Abstract:

Seagrass meadows are known to buffer wave energy, reduce current velocities and hence can provide stability to the coasts. The presence of seagrass on the seabed modifies the dynamics of the benthic boundary layer and thus the sediment transport.

The overall aim of this project is to address the limited knowledge on the interactions between seagrass, seabed and the counteracting sedimentary processes by investigating interactions between the intertidal seagrass *Zostera noltii* and the surrounding sediments. Specifically, I am investigating how this species affects the mean flow, the turbulence in the canopy, and the resulting sediment mobilisation.

Zostera noltii shows a strong seasonality, therefore the intertidal area of Ryde, Isle of Wight was monitored monthly over two annual cycles to assess the effect of seasonal changes on sediment characteristics and bed morphology. Grain size trend analysis was carried out in order to investigate the sand transport pathways on the intertidal flat in the region of seagrass. Sediment transport patterns were defined using Grain Trend Analysis. The Ryde intertidal flat is composed mainly of fine, well sorted and positively skewed sand. The transport vectors suggest a westward transport on the west side of Ryde Pier and an on-offshore transport on the east side of Ryde Pier. Gradients in sediment texture and composition were related to the season and influenced by meadow distribution and density. This was attributed to the mechanical trapping of particles and enhanced deposition due to dampening of current and wave action in the meadows.

Locations inhabited by seagrass showed less change in bed morphology compared to bare sand areas. The tidal flat was found to be stable or exhibited minor bed accretion (cms) along vegetated profiles. Laboratory experiments carried out in a recirculating and annular flume on *Zostera noltii* showed that turbulence and mean flow were reduced within the canopy indicating low sediment transport in the region of the seagrass.

Seagrass increases deposition in summer by modifying the boundary layer through its above-ground biomass and resists erosion in winter by increasing cohesiveness of the bed through its below-ground biomass (roots and rhizomes). Despite the reduction in seagrass canopy influence on the hydrodynamic forcing, the persistent presence of below-ground biomass all year round reduces sediment transport hence providing stability to the bed.

Conservation status of the rare endemic *Centaurium tenuiflorum* subsp. *anglicum*, English Centaury (Gentianaceae).
Downey. E. L., Pearman, D. A. & Rich, T. C. G. 2021. *British & Irish Botany* **3**(2):161-167.

The status of the rare English endemic *Centaurium tenuiflorum* subsp. *anglicum*, English Centaury, has been assessed from field surveys in 2020 and compared against previous population counts. In Dorset, 16 populations with c.25,800 plants occurred and there was no evidence of overall decline. No populations are currently known in the Isle of Wight. The IUCN threat status is 'Least Concern'

The stratigraphy of the upper Campanian Chalk of the southern English coast (Isle of Wight, Dorset), United Kingdom
Gale, A. S. 2021. *Cretaceous Research,* **124**:

The litho- and biostratigraphy of the coastal exposures of upper Campanian chalk on the southern English coast, in east Dorset and on the Isle of Wight are described, correlated within the region and with the succession eastern England (Norfolk) and northern Germany using

macrofossils. A succession of flint layers and thin marl beds is can be traced in detail along the English coastal outcrop over a distance of 60 km; important new markers are the Needles Flint and its distinctive associated suite of marls, and the Alum Bay Marls in the uppermost Portsdown Chalk Formation. The successions exposed at the eastern and western ends of the Isle of Wight are similar in both bed development and thickness, but the succession at Studland in Dorset is considerably expanded in comparison. The upper Campanian succession at Studland is a thrust slice, emplaced from south of the Purbeck Fault during Paleogene inversion and subsequently tilted. The Studland succession is both expanded and contains redeposited chalk, both evidence that the Purbeck Fault was actively extensional during the Campanian. The Mucronata Transgression of Germany possibly correlates with an interval in the lower Portsdown Chalk characterised by abundant microcrinoid and bryozoan debris. A new microcrinoid zonation for the upper Campanian is developed on the Isle of Wight, and zones CaR11-CaR15 are defined. New microcrinoid taxa described are *Hessicrinus vectensis* sp. nov., *Sagittacrinus rotundacutus* sp. nov., *Costatocrinus fragilis* sp. nov. and *Douglasicrinus alumensis* gen. et sp. nov.

First record of intact equisetalean strobili from the Wealden (Lower Cretaceous) of the Isle of Wight, southern England
Pott, C. 2021. *Fossil Imprint,* **77**: 43-52.

Two excellently preserved small strobili were obtained from a Wealden plant debris bed in the Lower Cretaceous (Barremian) Wessex Formation, south-east of Chilton Chine, on the Isle of Wight, southern England. The strobili are preserved as compressions and show the characteristic morphology of sporangiophore heads of Equisetales. Based on the morphology of the strobili, attribution to a certain species is not warranted. Therefore, the strobili have been left unassigned in the fossil-genus Equisetostachys which is commonly used for isolated strobili of fossil sphenophytes. From their size, shape and constitution, the strobili are interpreted as immature; the absence of preserved sporangia and spores is consequently not unexpected. Affiliation with *Equisetum burchardtii* might be an option. The strobili represent the first record of any equisetalean or sphenophyte remains from the Wessex Sub-basin of the English Wealden and are thus of considerable importance. The find is especially significant because previously known specimens from the Weald Sub-basin and the German Wealden are confined to subterranean rhizomes, adventitious roots, tubers and bases of aerial shoots, commonly preserved *in situ*, together with only fragmentary remains of sporangiophore heads from disarticulated strobili. These strobili finds are thus the first intact equisetalean reproductive structures from the Wealden of either England or Germany.

PUBLISHERS' PROMOTIONS

Isle of Wight: Landscape and Geology
Downes, J. 2021 Ramsbury, Wiltshire: The Crowood Press.

The Isle of Wight is a geological gem with its 110km (68 mile) long coastline displaying a range of rocks dating from Lower Cretaceous to Oligocene age. Many of the sands and clays yield fossil bivalves and gastropods, and its famous dinosaur footprints attract much attention from geologists and tourists alike. Yet the scenic beauty of the island is the product of its differing strata, former earth movements and the erosive power of the sea and the rivers. The monoclinal fold that crosses the island forms the chalk downland ridge that ends in the splendid cliffs of Culver in the east and The Needles in the west. By contrast, the softer rocks produce low, slumped cliffs often cut by steep-sided chines or alternatively, on the north coast, branching estuaries and salt marsh creeks. With over 120 colour illustrations this book discusses the geological processes that created the island's distinctive landscape; it provides a field guide to the identification of rocks and fossils and includes details of nineteen itineraries to discover the geological examples and fossils discussed.

The Wrecks of HM Frigates Assurance (1753) and Pomone (1811) : Including the fascinating naval career of Rear-Admiral Sir Robert Barrie, KCB, KCH (1774-1841).
Bingeman, J., Simpson, P. & Tomalin, D. 2021. Oxford: Oxbow Books.

With the thought of treasure, Isle of Wight islander, Derek Williams researched ancient local wreck records. Top of his extensive wreck list was the 40-gun frigate Assurance lost in 1753 while returning from Jamaica with Governor Trelawny on board, whose story possibly inspired Robert Louis Stevenson to write Treasure Island. Derek's first dive at the western point of the Isle of Wight called "The Needles" put him on top of cannons, various wreckage and Spanish-American "Pieces of Eight", all scattered at the foot of the rock face.

He reported this astonishing discovery to the authorities which resulted in the site being designated the 6th British historic protected wreck site. When the authorities decided that further professional help was needed, author and diver John Bingeman supplied his Portsmouth Royal Naval diving team, and together with David Tomalin, County Archaeologist, developed the full potential of this important site.

Over the next nine years John Bingeman's team conducted annual visits to excavate the site; they successfully recovered 3,471 artefacts including cannon weighing 1½ tons. Some of these cannon post-dated the Assurance, leading to the identification of a second 38-gun frigate, the Pomone, lost in 1811. Her Captain, Robert Barrie's extensive correspondence was discovered by Paul Simpson to have been archived by Duke University, North Carolina. It features Pomone's continuous actions during the French Napoleonic wars, followed by his appointment to the 74-gun Dragon when he saw action in Chesapeake Bay during the 1812-15 war with the USA.

Returning to North America as Senior Naval Officer Canada, Commodore Barrie made quite a name for himself improving the political relationship between the USA and Canada; he is remembered by the Canadian City named Barrie. Previously un-researched archaeological finds are featured, including the development of rigging blocks, gunlocks, military buttons and ship's chain pumps, all superbly illustrated, as well as the results of research into numerous other artefacts of the period.

Appendices contain the transcripts of the two ship's court martials and make fascinating reading. Captains seem to be blameless while their navigating officers are held responsible even going to prison. Perhaps not surprising when tried by fellow Captains!