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ISLE OF WIGHT COASTAL AND MARINE BIOLOGICAL REPORT 2009-2022 – A REVIEW

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Introduction

Since the publication of the previous Isle of Wight Marine Biological Report, for 2007-8 (Herbert, 2009), there have been several important developments and ongoing impacts that will continue to have a significant influence on the coast, shores, and seas around the Isle of Wight. We have experienced extreme weather conditions, witnessed the designation of the first marine conservation zones, observed the collapse of the Solent oyster fishery, seen the departure of the UK from the European Union and have suffered a global pandemic. The recording and reporting of marine life has been transformed by social media and the advent of digital recording schemes. There is also an increasing requirement for ecological consultancies to upload records to the National Biodiversity Network (NBN, 2023), the quality of which has improved greatly. It is the purpose of this brief review to summarise important changes in habitats and to comment on significant new records that have appeared over recent years. Species nomenclature used is according to the World Register of Marine Species (WORMS, 2023).

Climate

That we are within an era of climatic instability, caused by the rise in greenhouse gases creating global warming, is no longer hypothetical. As an island, we are experiencing an increased frequency of extreme weather events. In a detailed study of coastal flooding events on the south-coast of England from 1703-present (SCOPAC, 2020), notwithstanding more recent data, the winter 2013-14 saw the most extreme events of any season in the whole time-series. During the '*St Valentine's Day Storm*' of February 14th, 2014, the most powerful waves were recorded since measurements commenced in 2003, and the storm is considered to have been the most extreme event in terms of physical loading upon coastal defences and flooding. On the Island, the storm resulted in widespread structural damage and the evacuation of properties along the Undercliff Drive. From Thursday 18th February 2022, *Storm Eunice*, caused widespread damage and loss of power to thousands of properties in southern England and south Wales, and set a new English wind gust record of 122 mph (196 kph) off The Needles. This was another of the most powerful storms to impact the region since the Great Storm of 1987.

Yet despite the severity of these events, short-term impacts of these storms on the regions marine ecology have not been widely reported. There has been a considerable amount of debris and seaweed thrown up on our beaches, amongst which there have been plenty of goose-barnacles (*Lepas* spp.). Along the Dorset coast, several Columbus crabs (*Planes clypeatus)* and tropical shells have been washed up (S. Trewhela *pers comm*, 18/1/2016). In January 2023, an investigation of plastic debris at Binnel Bay on the Island's Undercliff coastline revealed a colony of the hard-coral *Astrangia* sp. (TV). In the North Atlantic, this genus is distributed in the west, from Cape Cod to the Gulf of Mexico and Caribbean, suggesting this debris originated in North America.

Sea level rise in the English Channel is accelerating. The most recent analysis from measurements at Newlyn, Cornwall, indicate a mean rise of 1.86 mm/ year between 1915-2019 and 3.8mm/year between 1990-2019 (SCOPAC, 2020).

Sustained battering and flooding of our coast has and will continue to change the shape and nature of the coastline, and we can expect a higher frequency of landslips (Fig. 1), erosion and significant movements of beach material. The possibility of undeveloped areas being flooded for longer periods may result in the establishment of new brackish lagoons and areas of saltmarsh. The timing of these big storms, so far occurring mostly in winter, is unlikely to have the same impact as events during the main summer and spring growing season, when mature seagrass beds and kelp

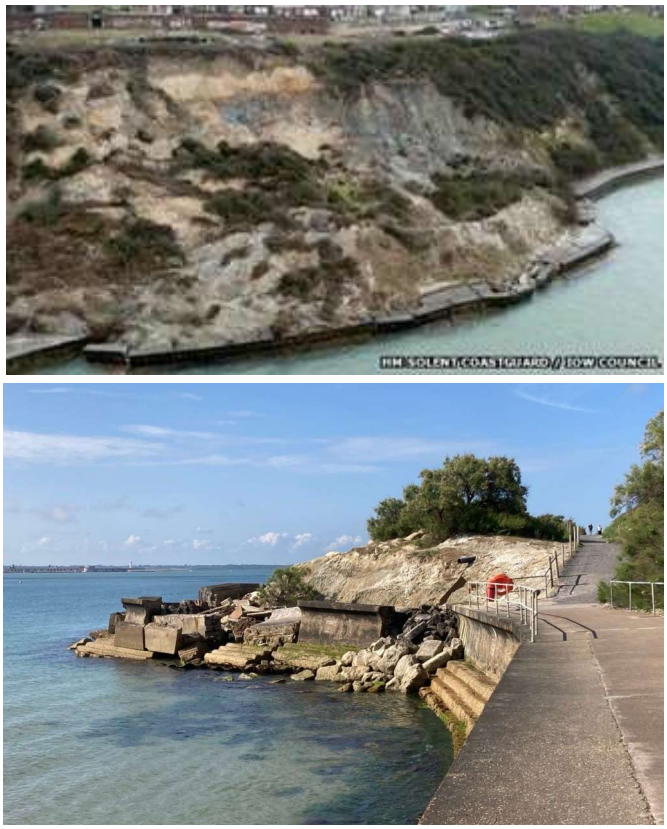

Fig. 1: Major landslide at Totland in December 2012. Following heavy rain, a 120m section of sea wall had been pushed forward 20m. A new coast path was opened on 10/12/2015. Photos: Top, HM Solent Coastguard /Isle of Wight Council. Bottom, Roger Herbert.

forests may be damaged.

The past decade has also been characterised by significantly milder and wetter winters. Locally, data collected at Shanklin (Cooper, 2022) show that the mean 1991-2020 annual maximum and minimum air temperatures are almost 1°C higher than the means from 1961-1990, with all months showing greater values. Rainfall has been consistently higher in the months October to March, and a 10% mean increase annually. The winters 2012, 2013 and 2014 were particularly wet; 2014 was the warmest year in the 32 -year time series at Shanklin with 11 months above average. The mean number of days of air frost has reduced by 37% over the two recording periods. Across the 364-year time series, the Met. Office confirmed that 2022 had been the warmest year on record in the UK.

Climate indicators

The Isle of Wight coast has long been a strategic area for monitoring changes in the geographical range of a suite of intertidal climate indicator species that can be found on rocky shores around the British Isles (Crisp & Southward, 1958; Hawkins *et al*. 2009). These include a broad range of taxa, but those that have been monitored particularly closely and which appear to be most sensitive to changes in water temperature include native barnacle and mollusc species. There follows a brief summary of observations from the past decade:

Invertebrates

Toothed topshell (*Phorcus lineatus)*

In the summer of 2020, the warm-adapted Toothed topshell was recorded at several shores on the north and south coast of the Island, with Freshwater Bay having the highest densities to date. In recorded history, this species has not previously been so widely established on Isle of Wight shores.

Although common in Devon and Cornwall, since 2000 the species has steadily increased in abundance and expanded its distribution east along the Dorset coast, where populations were lost in the severe winter of 1962-63 (Crisp (ed.), 1964; Hawthorne, 1965). A single live specimen was recorded by Prof. Stephen Hawkins on the shore at Freshwater Bay in 2004 and the following year a specimen was found at Freshwater Bay (RH), possibly the same individual, and small numbers have been observed here most years since.

Purple topshell (*Steromphala umbilicalis* formerly *Gibbula umbilicalis*)

Since the turn of the millennium, significant increases in the density of the warm-adapted Purple topshell have been observed on all our rocky shores. At a IWNHAS field meeting at Freshwater Bay in September 1987, only eleven individuals were found on the shore in a 20-minute search (Herbert, 1988), whereas now there are over 100 individuals per m^2 on the west side of the bay, with high annual recruitment. In the late 1980s, there were signs that the species may be retreating from the Island (Light & Killeen, 1989), yet it can now be one of the most abundant intertidal gastropods around our coast, favouring intertidal rock but also found on mixed cobble and concrete structures.

Now that sea temperatures, particularly the milder winters, appear favourable in the region for both topshell species, it is suspected that range expansion has been facilitated by their short pelagic larval phase of just a few days. This has enabled them to make short jumps along the coast, thus avoiding being swept far offshore. Both species can also take advantage of sub-optimal habitat such as areas of stable cobbles and artificial structures.

Small periwinkle (*Melarhaphe neritoides*)

Up to 4 individuals of this species per 100 cm^2 have been found at Extreme High Water Spring Tide mark on St Helens old church sea wall, though none were seen on the shore immediately south of the church. As there is a relatively long time-series of this high-shore periwinkle species in the Channel, its continued presence is worth noting. The species is vulnerable to modification of coastal defences.

Montagu's stellate barnacle

(*Chthamalus montagui*)

There has been no significant change in distribution or abundance. Four small individuals were seen on a groyne at Yaverland in November 2019, indicating recent recruitment. A specimen was also found on the upper ledge below Warners at Bembridge in 2019. The Eastern Channel limits continue to be Bembridge and Southsea (2019).

Poli's stellate barnacle (*Chthamalus stellatus*)

The Eastern Channel limits of this species continue to be Bembridge and Southsea (2019).

Algae

Sugar kelp (*Saccharina latissima*).

Abundant at Low Water Springs either side of causeway to St Helens Fort on 31st August 2013. Being a northern, cold-adapted species, the local distribution is important to monitor as there is a risk of its retreat in warming conditions.

Non-native species

The Solent and Isle of Wight region is a notable 'hot spot' for marine non-native species, largely due to the presence of major ports. Warming conditions can favour the survival and establishment of many species that might arrive from other warm-temperate regions across the globe. Measures to reduce larvae and other propagules of marine invasive species released within ballast water discharges came into force through the Ballast Water Exchange Regulations in 2017, preventing discharges within 200 nautical miles of the land and in water less than 200m deep. The EU Invasive Alien Species Regulation came into force in 2015, which through a variety of measures seeks to prevent, minimise, and mitigate the threat to biodiversity posed by invasive non-native species. Yet, around the Island's coast we have seen an increasing number and geographical extent of those species deemed to be invasive – that is, species that have the potential to cause ecological and/or negative socio-economic impact (Table 1).

Table 1. Status of some of the more notable and recently established non-native species recorded around the Isle of Wight 2009-22. *Denotes invasive species listed in Harrower *et al*. (2022).

Phylum	Species	Date of first Island record	Location and Notes
Rhodophyta (Red algae)	**Gracilariopsis vermiculophylla*	March 2018	Wootton Mill Pond. Extensive growth across whole pond. Has occurred in most years since 2018, though not yet located elsewhere on the Island. Common in River Hamble, Christchurch Harbour and parts of Poole Harbour (RH).
Ochrophyta (Brown algae)	**Sargassum muticum*	17/2/1973	Continues to be widespread in rockpools and shallow eulittoral lagoons. Bembridge was the first locality in Britain where attached *Sargassum* was recorded (Farnham *et al*. 1973).
Ochrophyta (Brown algae)	*Wakame (*Undaria pinnatifida*)	Mid 2000's	This kelp continues to increase in abundance with large growths seen in Cowes marinas and on pontoons. Naturalised on rocky shore below Royal Yacht Squadron, Cowes (29/08/2011).
Mollusca (Snails)	*Asian Date Mussel (*Arcuatula senhousia*)	2021	A single valve recorded from Ryde. Population has established in Southampton Water (K. Dey pers. comm).
Mollusca (Snails)	*Pacific oyster (*Magallana gigas,* formerly *Crassostrea gigas*)	7/4/2008	East Cowes (Shrape) breakwater (Herbert, 2009). The population of wild oysters on the breakwater continues to grow rapidly and the species is now common on sea walls in Cowes Harbour. Naturalised populations on shores have been observed at several locations on the Island's Solent coast, with the largest to date at Thorness Bay.
Mollusca (Snails)	Manila clam (*Ruditapes philippinarum*)	2008	Now established in the Medina estuary at Dodnor. (Herbert, 2009; Humphreys *et al*. 2015); Outer Newtown Harbour; Yarmouth, Alum Bay (NBN, 2023). Also Burnt Wood 1/5/2014.
Pycnogonida (Sea spiders)	*Amothea hilgendorfi*	2012	Off Binstead and Osborne, West Cowes, Bouldnor (NBN, 2023).
Tunicata (Sea Squirts)	**Corella eumyota*	2009	Yaverland; Cowes; Bouldnor.
Tunicata (Sea Squirts)	**Botrylloides violaceus*	2007	Now frequent on Ryde Pier, Yarmouth Harbour, Folly Pontoon.
Bryozoa (Sea mats)	**Watersipora subatra*	2019	Bembridge, south of Lifeboat Station. Becoming common on undersides of rocks in pools and beneath overhangs, on Bembridge marls. Growths up to 60mm diameter 1/11/2020.

Habitat Changes

The completion of the detached breakwater at the entrance to Cowes Harbour in October 2015 has created the largest 'offshore development' in the Solent for some years. At low tide, there is now a considerable area of intertidal rocky rubble and boulders that have become colonised by a variety of algae, notably wracks (*Fucus* spp.). Tidal currents in proximity to the breakwater on the east side of the main Channel have increased, and there are warnings for small vessels to take particular care. A new eastern navigation channel has also been created between the breakwater and the East Cowes Shrape. These changes in water flow will undoubtedly affect fish and mammal movements in and out of the harbour.

Smothering of estuary mudflats by mats of green algae (*Ulva* spp.) have become particularly noticeable over the past decade. Their formation is indicative of the high nutrient status of our coastal waters, caused by a cocktail of domestic sewage pollution and a run-off of agricultural effluents and fertilisers. April 2014 was particularly bad for algal mats in the Medina estuary (Fig. 3) and Bembridge Harbour and the persistence of the mat covering into September and the autumn months could physically impact on the feeding behaviour of migratory waterfowl (Thornton *et al*. 2019). The quality of food beneath algal mats is also known to be poorer, often consisting of smaller annelid worms. There is increasing pressure on water companies to improve their infrastructure to minimise discharges, which increase during storm conditions when existing sewers cannot cope. Thankfully, although the disruption caused by the failure of the Appley sewer in 2021 was substantial, there was no discharge of sewage over Appley sands. However, the incident served to remind us of the vulnerability of our sewerage and water treatment system.

With research indicating the considerable value of seagrass beds for the sequestration of carbon

Fig. 2a: Peacock's tail *Padina pavonica* at Steel Bay, Bonchurch Photo Theo Vickers
Fig. 2b: Toothed topshell *Phorcus lineatus* at Freshwater Bay. Photo Roger Herbert
Fig. 2c: Manila clam *Ruditapes philipinarum* from the Medina estuary. Photo Roger Herbert

Fig. 3: Persistent green algal mats on the Medina estuary at Dodnor, 8/10/2022. Photo Roger Herbert

Fig. 4: Seagrass *Zostera marina* visible at a low spring tide at Cowes Red Jet terminal 31/3/2022.
Photo: Roger Herbert.

(Duarte *et al.* 2013), there is much interest in the mapping of existing beds and their conservation and restoration. The Isle of Wight coast has some of the largest known seagrass beds in the British Isles (DEFRA, 2022), with extensive areas of *Zostera marina* at Bembridge, Ryde, Osborne Bay, and the coast between Burnt Wood and Yarmouth being particularly well known. What has been interesting is to observe subtle, fine-scale changes in the distribution of seagrass not normally identified in broad-brush surveys and through remote sensing. Of particular note has been recent extensive growths of *Z. marina* on the west side of Cowes Harbour between the Red Funnel pontoon and the Island Sailing Club. (Fig. 4) The bed is very visible at low water spring tides and extends to an unknown depth sub-tidally. It is a mystery why and how this bed has formed considering multiple disturbances at the location. One school of thought is that it is linked, at least in part, to the creation of the offshore breakwater which has affected the wave climate in the harbour.

Of immense regional significance was the closure of the Solent native oyster fishery in 2013. This had been Europe's largest self-sustaining fishery for the species (*Ostrea edulis*) which is now protected. It remains unclear why the fishery collapsed; however there had been decades of decline, with recent operations confined to the central and eastern Solent. Currently, there are attempts to increase the local breeding stock through various restoration measures. These include the deployment of cage-like nurseries designed to hold oysters above the seabed, in the hope that they will survive and continue to breed and disperse their larvae throughout the Solent (Blue Marine Foundation, 2023).

During the COVID19 pandemic lockdown in the spring of 2020, usual maritime business and transport in the Solent was almost brought to a standstill. There was an eeriness about the seascape, and for several weeks the fine calm weather and minimal disturbance created exceptional underwater visibility in our harbours and inshore waters. Sandown Bay became a busy anchoring area for empty cruise ships while ports were prioritised for freight vessels. At times, about a dozen vessels were at anchor in an area extending from Culver to Luccombe, including the *Marella Explorer III*, *Marella Discovery* and *Queen Mary 2*. Apart from noise disturbance, other local environmental impacts of this unusual anchorage still remain unknown. Yet off the Dorset coast, there were visible scars on the rocky seabed caused by dragging anchor chains (Dorset Wildlife Trust, 2021).

Notable Species records

There follows a list of some of the more notable species recorded around our coast since 2009.

Algae

Chondrocanthus acicularis (Red alga)

This warm-adapted species is now abundant at Mean Low Water on the chalk platform on the west side of Freshwater Bay 28/8/2021. Patches are now also appearing on the ledges at Bembridge.

Peacock's tail (*Padina pavonica*)

The status of this species was reviewed by Herbert *et al*. (2018) which reported a hitherto unknown population on Yellow Ledge at Shanklin. Interestingly, during the summer months of 2016 – 2022, the species has also been observed to occur in the shallow sub-tidal lagoons at Steel Bay near Bonchurch (TV, Fig. 2a). This is currently the most southerly location for the species on the Island, although there are records from Ventnor, St. Lawrence and Bonchurch from the 19th Century (Price *et al*. 1979).

Invertebrates

Cnidara

Red-speckled pimplet (*Anthopleura balli*)

There are two recent records of this rarely recorded south-western species of sea anemone: in a rockpool at Steel Bay near Bonchurch 17/1/2020 and two specimens on the shore at Bembridge 23/8/2021. This species seems to be particularly abundant in the lagoons at Bembridge Ledges.

Blue jellyfish (*Cyanea lamarckii*)

There have been several reports of this species which has not previously been recorded around the Island's coast. One seen while paddleboarding on 30/7/2015; washed up at Forelands, Bembridge 13/7/2020 and Colwell, 16/7/2020. Three specimens were observed in June 2022 in Freshwater Bay in association with a bloom of moon jellyfish (*Aurelia aurita*) (TV).

Barrel jellyfish (*Rhizostoma pulmo*)

Very commonly found stranded in 2014 and 2015; between 200 to 300 were seen in Monk's Bay on 21/11/2015 (AB). Like many species their abundance is sporadic. The previous 'good years' were in 2002 and 2003.

Records of stalked jellyfish are important as some are now 'features' of conservation importance' within Marine Conservation Zones.

Stalked jellyfish (*Calvadosia campanulata*)

West Princess-Culver 27/7/2018 (NBN, 2023); Beneath Tennyson Down 11/7/2020 (NBN, 2023); Steel Bay 16/7/2021 (TV); Castle Cove 14/4/2021 (TV); Bembridge lifeboat station 8/9/2021, 29/6/2021, 24/1/2021 (TV); Seaview 15/7/2022 (TV).

Goblet stalked jellyfish (*Craterolophus convolvulus*)

Bembridge Ledges 6/12/2022 (TV). Previously recorded at Ventnor 14/5/1999.

Stalked jellyfish (*Haliclystus auriculata*)

Specimens seen attached to *Zostera marina* at Bembridge, north of lifeboat station 14/7/2018 (RH).

By-the-wind sailor (*Velella velella*)

Between 30 and 40 were washed up in Monk's Bay, Bonchurch on 6/12/ 2015. Also seen at Shanklin.

Platyhelminthes

Candy-striped flatworm (*Prostheceraeus vittatus*)

Three specimens of this spectacular but rarely recorded species were found at Bembridge by C. Goswell in July 2020 (Fig. 5b). Theo Vickers photographed a specimen in July 2022 in the *Zostera marina* meadows at Bembridge Ledges.

Annelida

Sea mouse (*Aphrodita aculeata*)

A single specimen was found on the strandline at Appley beach in April 2016 and a live specimen seen at Bembridge in May of the same year. Records in the Solent prior to the past two decades have been very sparse.

Crustacea

Fishermen currently report very low inshore populations of brown crab (*Cancer pagurus*) and lobster (*Hommarus gammarus* Fig. 5c). The cause of decline is unknown; however there have been concerns about the offshore dumping of contaminated silt following the dredging of Portsmouth Harbour. Young brown crabs have been recorded beneath small rocks in pools at Bembridge .

Fig. 5a: Stalked jellyfish on Seagrass *Zostera marina* at Bembridge. Photo: Theo Vickers

Fig. 5b: Candy-striped flatworm *Prostheceraeus vittatus* at Bembridge Photo: C. Goswell.

Fig 5c: Lobster *Hommarus gammarus* at Bembridge. Photo Theo Vickers

Fig. 5d: Spider crab *Maja brachydactyla* at Bembridge. Photo: Theo Vickers

Fig. 5e: Montagu's crab *Xantho hydrophilus* at Woody Bay. Photo Theo Vickers

Angular crab (*Goneplax rhomboides*)
Specimen caught in fishing nets by Geoff Blake at Sandown, 23/3/09. Previous records this millennium have been at Yarmouth (2000) and Bouldnor (2000 and 2007).

An Isopod (*Stenosoma lancifer*)
A specimen was found at Bembridge 6/5/2016 by students from Wimbledon High School for Girls. This spectacular, southern species has only previously been recorded at Hanover Point and at Horse Ledge Shanklin in 1992.

Spider crab (*Maja brachydactyla*)
Four very large crabs were released from washed-up lobster pot at Bouldnor 17/9/2020. Spider crabs have generally become more frequent in the region, which is likely to be linked to changes in water temperature. From May to July 2021 large numbers of spider crabs were present in the inshore waters of the Undercliff, from Binnel Bay to Ventnor Bay (TV). Fishermen were observed collecting 'peeler' spider crabs at Bembridge 9/7/2022.

Montagu's crab (*Xantho hydrophilus*)
Observed and filmed by Theo Vickers while rock pooling at Woody Bay near St. Catherine's Point. 6/12/2020 (Fig 5e). This is the first record of the warm-temperate species for the Isle of Wight. According to the NBN (2023) there are no confirmed records of the species further east of the Isle of Wight on the south coast of England, although there is one possible observation from Sussex in 2019.

Mollusca

A Chiton (*Acanthochitona fascicularis*)
Several sizable specimens of Britain largest chiton were found at Bembridge, beneath boulders, 10/11/2021 (Fig. 6).There have been few records from the Island's coast and none since the early 1990s.

A Sea slug (*Aeolidiella alderi*)
Found abundantly on St Helens beach on 24/12/2015 (R. Pontin pers. comm). Twenty-three specimens were spawning on the underside of boulder (approx. 50 x 40 cm) in rock pool at Bembridge on 15/11/2021. This species is now frequent at Bembridge. (Fig. 7a). It was first recorded on the Island in October 1988 in the Medina estuary, feeding sub-tidally on the anemone *Cereus pedunculatus,* which is also now abundant at Bembridge.

Sea hare (*Aplysia punctata*)
Large numbers were washed up dead at Seaview 17/2/2017 and 19/2/2019. A live specimen at

Fig. 6: Under-boulder community at extreme low water mark at Bembridge, 10/11/2021. In view are the large chiton *Acanthochitona fascicularis,* long-clawed porcelain crab *Pisidia longicornis*, grey topshells *Steromphala cineraria*, purple topshell *S. umbilicalis,* spiral tube worms, Spirobidae sp., white keel worm *Spirobranchus lamarkii*, wart barnacle *Verruca stroemia***.** and white sea-squirt Didemnidae sp. Photo: R. Herbert

Fig. 7a: Sea slug *Aeolidiella alderi* at Bembridge. Photo: Theo Vickers

Fig. 7b: The nudibranch *Trapania tartanella* at Steephill Cove. Photo Theo Vickers.

Fig. 7c: Cuttlefish *Sepia elegans* at Bembridge. Photo: Theo Vickers.

Fig. 7d:Brittlestars *Ophiura ophiura* washed up at Sandown. Photo: Jackie Jones

Bembridge, south of lifeboat station, was found in May 2019. Although there have been occasional records from Southampton Water, prior to this past decade there have been few confirmed records on shores around the Isle of Wight. Previously recorded from Brook (Morey, 1909), Newtown and Freshwater Bay in 1970 (O. Frazer pers. comm) and sub-tidally in the Solent in 1986 (Dixon & Moore, 1987).

A Nudibranch sea slug (*Trapania tartanella*)

A specimen was found by Theo Vickers at Steephill Cove on 28/06/2022. This a southern species that was first recorded in Britain in 2007 in Cornwall (Sea Slug forum, 2023) and it has not previously been found on the Isle of Wight (Fig. 7b).

Painted topshell (*Calliostoma ziziphymun*)

Three were found at Extreme Low Water Spring tide mark at Bembridge 15/11/2021 plus one white, var. *lyonsi* 28/11/2020; 27/9/2022. Previously the species has not been regularly seen intertidally or in the shallow eulittoral lagoons, although frequent off the shore.

Lesser octopus (*Eledone cirrhosa*)

One specimen was stranded at Shanklin 13/11/2015. Previously found off St Helens Fort in May 1991. Not commonly recorded in the central south coast of England.

Elegant cuttlefish (*Sepia elegans*)

This is one of the two rarer cuttlefish species that occur in British seas, alongside the abundant Common Cuttlefish (*S. officinalis*). A live specimen was observed, photographed and filmed at night off Bembridge Ledges on 15/08/2022 (TV Fig. 7c). The only previous Island records are from washed up 'cuttlebones' from Brook (Morey, 1909).

Echindoderms

Historically the Solent and Isle of Wight coast has had a relatively low abundance and diversity of echinoderms, so it important to review this group periodically.

Common starfish (*Asterius rubens*)

There were exceptional numbers in the Solent and south of the Isle of Wight in 2017. Juveniles were found at Bembridge.

Brittlestars (*Ophiura* spp.)

In 2016 and 2017, there were frequent strandings of

the 'Serpent star' *Ophiura ophiura* in Sandown Bay, and at least one other individual was found washed up at Yaverland in March 2018 (Fig. 7d). Live specimens were observed in 2018 off Yaverland by Seasearch divers. Prior to the past decade the only other record is from Morey (1909), who reported (as *O. texturata*) that it is 'very occasionally washed up at Shanklin'. Sandown Bay offers good habitat so it is not surprising it should be found again in the locality. However, beyond Sandown Bay there have also been recent subtidal records from Bembridge, Thorness Bay, Totland Bay and Freshwater Bay (NBN, 2023). This suggests that the regional population may be having a resurgence, or that these populations had previously been overlooked as the species is generally widespread around Britain.

Single specimens of the 'Serpent's table brittlestar' *Ophiura albida* were found off east Wight in October 2009 and in the western Yar estuary in June 2013 (NBN, 2023). These are the first records from our local waters, although the species is widespread to the east and west of the Island.

Green sea urchin (*Psammechinus miliaris*)

Several young spat were found at Bembridge on 5/8/2017, 17/08/2017 and under the pier at Ryde on 3/9/2017. The species is generally frequent in the Solent region but not always common, so spatfalls are worth reporting.

Fish

Grey triggerfish (*Balistes capriscus*)

A specimen was caught off Sandown Pier. September 2011. (Isle of Wight County Press 9/9/2011). Anglers reported that it was many years since trigger fish had been caught.

Red band fish (*Cepola macrophthalma*)

A specimen found within a gutted Cod caught off Wheelers Bay on 7/7/2013 (AB). There are just a few previous records; all of the specimens were washed up, the previous record being in 2006 at Atherfield.

Atlantic herring (*Clupea harengus*)

This northern species was caught with roe in February 2010. This once-common fish is now not regularly reported.

Conger eel (*Conger conger*)

Large numbers of juveniles have been recently reported by anglers and divers.

Lumpsucker (*Cyclopterus lumpus*)

One was seen at Luccombe on 28/1/2018; frequently found in the Solent and on the south of the Island.

Sting ray (*Dasyatis prastinaca*)

A new Isle of Wight rod record was set off the shore at Gurnard in July 2009 with a specimen weighing 47lb 11oz. The previous record of 46 lbs was set in 2000.

European seabass (*Dicentrarchus labrax*)

Bass were caught all through the colder winter of 2010, and numbers have increased very significantly over the past decade; large shoals have been reported in the Channel in both spring and autumn. In 2020, a large shoal estimated between half-a-mile long and a third-of -a-mile wide was seen off Chale, with fishermen reporting juveniles and undersized fish nearer the surface and larger adult fish below (AB). A white-tailed eagle was observed taking advantage of this spectacle! It is possible that measures introduced in 2015, reducing the minimum length size limits has helped population recovery. However, the warmer waters are also beneficial to the survival of a variety of juvenile fish upon which bass prey. Many bass observed beneath Yarmouth Pier in 2018 and 2019 (Herbert *et al*. 2021).

Two-spotted clingfish (*Diplecogaster bimaculata bimaculata*)

This species was seen in a rock pool at Bonchurch, July 2010 and is often seen at Freshwater Bay.

Cod (*Gadus morhua*)

Fishermen have reported very low numbers. This is a cold-adapted species which is predicted to decline in the English Channel due to warmer temperatures.

Seahorses (*Hippocampus* spp.)

Since 2018, there have been eight reports of the short-snouted seahorse *H. hippocampus* and one report of the long snouted species *H. guttulatus* (iRecord, 2023). All records reported by 'iWatchWildlife' have been of deceased specimens, except for a single *H. hippocampus* at Binstead which was stranded before being returned to sea. Unusually, during the past decade there have been large numbers of live seahorses reported in Southampton Water.

Scad or **Horse mackerel** (*Trachurus trachurus*)

Geoff Blake has reported large shoals offshore in the Channel, some 2 miles long, providing plenty of food for predators such as bass and dolphins. One was caught off Yarmouth Pier 29/9/ 2019.

Atlantic sunfish (*Mola mola*)

This species was seen from an angling boat off Ventnor in 2012 (AB). One was also seen at Freshwater Bay in 2016 and off Yarmouth 25/6/2020.

Plaice (*Pleuronectes platessa*)

The large number of plaice which used to be found off Ventnor have gone (AB). Severe gales may have destroyed the mussel beds, although they could also have been predated by the larger populations of starfish which have been recorded over the past decade.

Undulate ray (*Raja undulata*)

Many of these fish were about in Sandown Bay and the Solent during 2010. The recent landing ban may have helped.

Sea trout (*Salmo trutta*)

Many were caught at Sandown 20/7/2010. Once they were much more frequent, particularly in vicinity of estuaries.

Atlantic mackerel (*Scomber scombrus*)

This species was very sparse in 2012, and there have been few very good years since. Storms are thought to have affected migration routes and huge quantities are harvested by super-trawlers in the Atlantic.

Marine Reptiles

Leatherback turtle (*Dermochelys coriacea*)

There have been four sightings in the Solent and around the Isle of Wight since 2010:

Lee-on-Solent 26/7/2010, specimen 1-2m in length seen 10-20m off the shore; Reeth Bay, 7/8/2011, '3 feet across' seen from boat 500m off the shore; Southampton Water entrance, 25/5/2014; three miles southwest off St. Catherine's lighthouse, 27/8/2019, 'around 6 feet across'.

In the past 100 years, there have been only four earlier local sightings recorded on the Britain and Ireland database, so this is a particularly high frequency and bucks the national trend of a reduction in the number of marine turtle sightings, the cause of which is unknown (Botterell *et al.* 2020).

Mammals

Information on stranded animals is from the UK Cetacean Strandings Investigation Programme (CSIP) ,except where mentioned separately. Between January 2009 and December 2022, there were 63 strandings on Isle of Wight shores reported to CSIP, 10 of which were on the Solent coast. Of 14 animals where identification was not fully determined, 12 were dolphin species.

Grey seal (*Halichoerus grypus*)

The numbers observed around the Island's coast have steadily increased over the past decade, and Grey Seals are observed at all times of year. A juvenile closely followed kayakers at Newtown on 25/6/2015, nudging the boat a few times, and there have been reports of seals boarding paddleboards and small dinghies!

Common or **Harbour seal** (*Phoca vitulina*)

This species is now seen more frequently in the Solent. Several individuals may now be observed at Newtown in the summer. The nearest breeding colony called a 'rookery' is in Chichester Harbour.

Walrus (*Odobenus rosmarus*)

First seen by fishermen on Calshot beach, at the mouth of Southampton Water, early on 11/12/2022. It is an extremely rare vagrant to the British Isles from the Arctic; there are no other records of the species for the Solent. It was thought to be the same individual seen in previous months in the Netherlands and in Dieppe, France, and nicknamed '*Thor* '. Spending just a few hours at Calshot, it left the Solent and was subsequently seen in the North Sea, at Scarborough on 31/12/2022 and at Blyth on the Northumberland coast on 2/1/2023, where it stayed until 7am on 3/1/2023.

Common dolphin (*Delphinus delphis*)

Eighteen strandings reported to CSIP. Additionally, a stranding at Chilton Chine on 8/10/2017.

Risso's dolphin (*Grampus griseus*)

A specimen was found stranded on Ventnor beach 8/12/2012. The species is very infrequent in the Channel and usually favours deeper water offshore.

White-beaked dolphin (*Lagenorhynchus albirostris*)

A pod of this rarely observed species was seen 10 miles south of the Needles, 29/5/2015. There were two strandings reported to CSIP.

Harbour porpoise (*Phocoena phocoena*)

Harbour porpoise have been regularly observed year-round off Dunnose Point and Bonchurch from 2015-2023 (TV). The species is associated with the

Fig. 8: Seals at Newtown estuary April 2022
Above: Grey seals *Halichoerus grypus*
Below: Common or Harbour seal *Phoca vitulina*
Photos: Keith Marston

Fig. 9: Bottlenose dolphins at the Needles, August 2021. Photo G Berry

tidal overfalls that develop offshore of this headland, consistent with the usage of high-energy habitat observed in Harbour porpoise elsewhere. There were 19 strandings reported to CSIP.

Striped dolphin (*Stenella coeruleoalba*)

An adult male was seen in Compton Bay, 1/1/2016. This is a rarely recorded species of our coast. Two indeterminate Common/striped strandings reported to CSIP.

Bottlenose dolphin (*Tursiops truncates*)

There have been a good number of sightings of this species, with photos frequently uploaded on social media (Fig. 9). A group of about 20 were seen inshore off the cliff below Afton Down on 7/2/ 2015, and later in the year, a pod that included adults and juveniles was seen in Ventnor Bay on 20/10/2015. A pod which included a pup was seen off the Nab Tower, 17/1/2017.

An individual delighted onlookers in Cowes Harbour 19/6/2017, temporarily disrupting the chain ferry service! A pair seen off Ventnor on 14/8/2021 (AB) could have been part of the same pod seen in the Solent, 20/08/2021. According to 'British Divers Marine Life Rescue', the group that ranges from Cornwall to Kent is currently the only recognised resident population of this species in England. Two strandings reported to CSIP.

Long-finned pilot whale (*Globicephala melas*)

Two strandings reported to CSIP.

Baleen whale (Mysticeti sp.)

One stranding at Seaview 6/11/2011 reported to CSIP.

Changes in the marine environmental regulatory framework

One of the most significant developments which could potentially affect marine habitat protection was the passing of the Marine and Coastal Access Act (2009). In summary, this legislation introduced a new marine planning system around the English coast, by establishing the Marine Management Organisation (MMO). This new independent body discharges several functions on behalf of HM Government, including the design and development of regional marine plans, environmental licencing, the management of harbour regimes, the management and enforcement of fisheries and nature conservation legislation. Subsequently, in 2011, the Southern Sea Fisheries District Committee was replaced by the Southern Inshore Fisheries and Conservation Authority (SIFCA) https://www.southern-ifca.gov.uk/ which has a much broader marine resource management role within the region. The Southern Marine Plan, which includes the Solent and Isle of Wight, was published in 2016 and updated in 2018 https://www.gov.uk/government/collections/south-marine-plans. To fulfil the UK Government's commitment to the Convention for the Protection of the Marine Environment of the Northeast Atlantic (OSPAR), Part 5 of the Marine and Coastal Access Act paved a way for the designation of a network of Marine Conservation Zones (MCZ) around the English coast. There followed a tense period of consultation and representation which was administered by four regional stakeholder groups (RSG), set up by Natural England. The Isle of Wight and Solent were included, along with other south-eastern coastal counties within the group named '*Balanced Seas*'.

Meetings, held in village halls, yacht clubs and similar venues were usually lively and heated, particularly in the early stages! While nature conservation groups were very supportive of MCZ, commercial fishermen were understandably concerned that some of the 'rumoured' management measures could put their livelihood at risk. Yachtsman were similarly worried that they would not be able to anchor as freely as they had previously, or that they would have to move long-established moorings because of important habitats on the seabed. The process was frustrated by a lack of information and detail about what management measures might be included, and importantly, where they were to be deployed!

There was also much confusion and debate about the value of 'historical' biological records, defined as being obtained pre-2000, and whether these could provide evidence of extant species and habitat distribution. It also became apparent that parts of some of the proposed MCZs had been poorly surveyed, if at all! Nevertheless, there were positive outcomes, summed up well by Mark Russell of British Marine Aggregate Producers Association (BMAPA):

"An interesting social experiment… But also a rewarding one, in that it has broken down barriers between the sectors and interests that have participated, and I think that everyone has a far better understanding of other interests hopes and fears. This more than anything else is the legacy of the process – getting people from different backgrounds and interest groups to engage and work constructively with one another in response to a common challenge."

Mark Russell, Regional Stakeholder Group Member, aggregates sector, British Marine Aggregate Producers Association (BMAPA) (http://publications.naturalengland.org.uk/publication/1463173)

After two years, the *Balanced Seas* RSG recommended the designation of 31 MCZ in the region, of which six were off the Isle of Wight: Needles, Yarmouth-Cowes, Norris-Ryde, Bembridge, Wight-Barfleur Extension (to the south of the Isle of Wight traversing the median Channel line) and Utopia (east of Bembridge). The fact that nearly 20% of the proposed sites should be off the Isle of Wight is sure acknowledgement of the importance and value placed on the diverse and relatively undisturbed habitats off our coast. There followed a long period of further consultation and whittling down of the short-list. Finally, in January 2016, within the 2nd Tranche of designated sites, the Needles MCZ was designated, mainly for its subtidal chalk reefs, subtidal coarse gravels, seagrass beds in Totland and Colwell Bay, and what are referred to as 'species features' - the Peacock's Tail seaweed *Padina pavonica* on How Ledge and stalked jellyfish *Calvadosia campanulata* for which there are only a handful of records at most.

See https://www.gov.uk/government/publications/marine-conservation-zones-the-needles

Yarmouth to Cowes, Bembridge, Utopia and West of Wight-Barfleur were designated as MCZ in the third tranche in May 2019. The Bembridge MCZ, which includes Sandown Bay and Shanklin and extends westwards to Seaview, is designated for subtidal coarse sand and muds and mixed sediments, seagrass beds, the maerl beds off Culver Cliff, *Padina pavonica*, native oyster *Ostrea edulis*, and stalked jellyfish *Haliclystus* spp. and *Calvadosia campanulata*. It is puzzling why the rocky reefs, so characteristic and important in the region, were not included as designated habitat features, particularly as the alga *Padina pavonica* that survives on the intertidal rockpool habitat is specifically listed! The answer given is that these reef features are included within the South Wight Maritime Special Area of Conservation, protected under the EU Habitats Directive.

The Future

How our coast and seas are used and valued, whether for food, recreation or for sequestering and storing "blue" carbon from the atmosphere and oceans will increasingly influence its protection. Nature-based-solutions that aim to manage and restore natural habitats to mitigate the effects of climate change and other activities will become more important. Attempts at a monetary valuation of Solent habitats (Watson *et al*., 2020) are already having an impact in prioritising habitat restoration projects, such as for saltmarsh, seagrass and oyster beds.

The need to act and adapt to the current climate and biodiversity crisis has prompted local research into the ecological enhancement of concrete sea defences and coastal infrastructure (Hall *et al*. 2019). Concrete sea walls are typically poor habitat for marine life, as they lack structural complexity and generally have smooth surfaces. The EU Marineff project (http://marineff-project.eu/en/), which aimed to investigate new techniques for the ecological enhancement of coastal infrastructure has worked with local company *Artecology* to design and retrofit artificial rockpools on the sea wall at Bouldnor.

Our local marine environment continues to be a source of fascination and enjoyment by residents and visitors alike. Recreational use of the coast increased dramatically in 2020-2022, as foreign travel was reduced due to the pandemic. Access to hitherto quiet creeks, now via paddleboards and sit-on kayaks, create new management challenges. For example, at Newtown, paddleboarders are now able to cross the main marsh at high tide; though, being mainly a summer activity, this does not usually conflict with migratory waterfowl.

Reporting local marine life through social media has widened participation and has increased local engagement in marine biology and conservation. Though very welcome, it can be a challenge to capture, verify and validate this information and keep a track of what has been found! Reference to the NBN database and mapping tools, digital recording schemes such as iRecord and specialist websites and blogs will become more informative. Shore forays including the *Under the Pier* event at Ryde and the *Shoresearch* project have proven very popular, and together with *Seasearch* have yielded many important records, which we hope will continue going forwards.

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