31 December 2020

Seagrass-Watch's electronic news service, providing marine and coastal news of international and national interest. Abbreviated/edited articles are presented with links to their source. Seagrass-Watch HQ recommends that readers exercise their own skill and care with respect to their use of the information in this bulletin and that readers carefully evaluate the accuracy, currency, completeness and relevance of the material in the bulletin for their purposes. You are free to distribute it amongst your own networks.

IN THIS BULLETIN

Please note: links to sources were active on date of publication. Some sources remove links periodically.

NEWS

Employee takes care of baby dugong at Alobi Wildlife Rescue Center in Indonesia (Indonesia)

24 December 2020, Xinhua

An employee feeds a bottle of milk to a baby dugong (*Dugong dugon*) in a pool at the Alobi Wildlife Rescue Center in Sungailiat district, Bangka Belitung, Indonesia, Dec. 23, 2020. The baby dugong, once stranded, was saved by fishermen in Muntok Bangka Sea and shipped to Alobi Wildlife Rescue Center. (Photo by Ananta Kala/Xinhua)

An employee feeds a bottle of milk to a baby dugong (Dugong dugon) in a pool at the Alobi Wildlife Rescue Center in Sungailiat district, Bangka Belitung, Indonesia, Dec. 23, 2020. The baby dugong, once stranded, was saved by fishermen in Muntok Bangka Sea and shipped to Alobi Wildlife Rescue Center. (Photo by Ananta Kala/Xinhua)
more…….http://www.xinhuanet.com/english/2020-12/24/c_139616067.htm

WA coastline facing marine heatwave in early 2021, CSIRO predicts (WA, Australia)

24 December 2020, by Graham Readfearn, The Guardian

Western Australia's coastline is set for a marine heatwave in the early months of 2021, with temperatures rising to their highest level for a decade, according to a newly developed forecast from CSIRO. Ocean temperatures from Ningaloo to Perth will peak at about 1C above average in April, according to the forecast produced using climate models, observations and machine learning. The forecast covers the part of the state's coastline that includes the world heritage-listed sites of Ningaloo Coast and Shark Bay – both threatened by warming ocean temperatures.

A major marine heatwave off WA in 2011 had widespread impacts on ecosystems and fisheries and some areas have still not recovered. Corals from Ningaloo to Shark Bay bleached, there were mass fish deaths, vast seagrass meadows were damaged and kelp forests died. The Bureau of Meteorology is also forecasting sea surface temperatures up to 1C higher than normal in February and March. Dr Alistair Hobday, a CSIRO marine scientist leading the new forecasting project, said: "It's not going to be as warm as the 2011 event, but it's warmer than we have seen in the last decade." He said the current La Niña climate phenomenon, a natural event, also tended to deliver warmer waters off WA, strengthening the dominant north-to-south Leeuwin current.

CSIRO has sent the forecast to the WA government to allow fisheries managers and others to prepare. Hobday said: "We expect to see more extreme event like this under climate change. This is living the prediction. This is a chance to be prepared." Dr Thomas Wernberg, of the University of Western Australia's Oceans Institute, said "Shark Bay's ecology is completely dependent on extensive seagrass beds that sustain dolphins, dugongs and sharks, and that makes this ecosystem unique." He said major fisheries that support the western rock lobster and abalone also relied on healthy seagrass beds. "We saw extensive impacts on fisheries from the previous marine heatwave. Multiple fisheries were affected and livelihoods were affected. Biodiversity was massively affected across 1,000km of coastline. "There's no question that we are seeing a degradation of the environment with impacts from these events that are becoming more frequent, with less time for species to recover."
more…….https://www.theguardian.com/environment/2020/dec/24/wa-coastline-facing-marine-heatwave-in-early-2021-csiro-predicts

Gardens of Great Britain (England, UK)

22 December 2020, by Mark Parry, Oceanographic Magazine

There is an assumption of British waters that there is not much down there, but nothing could be further from the truth – our coastal waters are some of the most productive fisheries on the planet. This year, we planted the first seeds in the Ocean Conservation Trust (OCT) seagrass cultivation laboratory at the National Marine Aquarium as part of a major £2.5 million habitat restoration project funded by EU LIFE and led by Natural England. The laboratory has now been filled with the test batch of approximately 60,000 seeds – all of which we collected by hand – marking an important milestone in the three-year LIFE Recreation ReMEDIES habitat restoration project. As part of this project, we will be cultivating up to 360,000 plants a year in the new laboratory, to help restore up to eight hectares of lost seagrass meadows in the UK.

In the seven years that I've been working on seagrasses, I've seen the landscape of these meadows alter detrimentally through human action. Where seagrass exists with little human influence they can thrive, and there are some great examples of very healthy seagrass beds around Britain. But where we see increased activity around these habitats, we also see a degradation of the habitat. I believe that due to a lack of understanding, people don't always realise that they're damaging these vital habitats. Whilst I've witnessed the degradation of some of these locations, I've also seen their significance become more widely understood. After an estimated 90% loss of seagrass meadows over the past 100 years, I've seen a change in attitudes – an understanding that it's time to restore what's left.

The long-term aim of the reforestation of the UKs seagrass meadows is to demonstrate an effective and efficient way of restoring subtidal seagrass habitat. With considerable loss there are large areas around the UK that have the potential for restoration. With habitat restoration, we restore the ecosystem services that our coastal systems have lost. Communities gain the financial benefits of having these highly productive habitats, our coastal waters are regulated through the presence of these vegetative habitats and contribute towards locking away carbon for millennia, providing these habitats remain in place. The projected impacts are that we recover what we lost, and we hand an ocean environment over to the next generation that is able to provide for them, so that they are also able to appreciate the benefits of healthy ocean systems.
more……https://www.oceanographicmagazine.com/features/uk-seagrasses/

Coastal ecosystems 'bright spots' (QLD, Australia)

21 December 2020, EurekAlert

CSIRO, Australia's national science agency, has identified coastal 'bright spots' to repair marine ecosystems globally, paving the way to boost biodiversity, local economies and human wellbeing. Doctor Megan Saunders, CSIRO Oceans and Atmosphere Senior Research Scientist, said successful coastal restoration efforts could be achieved over large areas, deliver positive impacts for decades, expand restored areas by up to 10-times in size, and generate jobs. "Coastal ecosystems across the globe including saltmarshes, mangroves, seagrasses, oyster reefs, kelp beds and coral reefs have declined by up to 85 per cent over decades," Dr Saunders said. "Identifying bright spots that have delivered successful coastal and marine restoration in the past enables us to apply this knowledge to help save marine areas that are struggling to recover from degradation.

The research published today in the journal Current Biology outlined successful restoration examples from across the world that could be learned from and implemented into similar marine environments. "A range of techniques have resulted in significant restoration of saltmarshes, coral reefs and seagrass meadows over extended periods of time," Dr Saunders said. Coastal ecosystems help to remove carbon dioxide from the atmosphere and protect and stabilise shorelines. Coastal marine restoration is an important nature-based answer to the impacts of global climate change.
more……https://www.eurekalert.org/pub_releases/2020-12/ca-ce122020.php

Related articles
Scientists shine light on 'bright spots' to restore coastal ecosystems (22 December 2020, Mirage News)
https://www.miragenews.com/scientists-shine-light-on-bright-spots-to-restore-coastal-ecosystems/

GICIA construction of Mercabo is now complete (FL, USA)

18 December 2020, Boca Beacon

The Gasparilla Island Conservation and Improvement Association is pleased to announce that the construction phase of the Mercabo Cove restoration project has been completed. The GICIA was able to acquire additional fill for the Cove through a donation by the City of Punta Gorda, as they recently completed a dredge project. The additional fill allowed the overall depth of the Cove to be shallowed to -4 Mean Low Water. To improve water circulation at the far east end of the Cove a 100’ x 30’ flushing channel was excavated between east end of the Cove and the open bay waters of Charlotte Harbor. Once the channel was completed a bridge was constructed to allow continued access to the peninsula can be accessed for maintenance.

It is exciting to already see signs of improvement to water quality and the GICIA is confident they will be able to begin seagrass planting phase in February or March. The GICIA has contracted with Sea and Shoreline to plant 3,600 units of seagrass in the Cove basin. They will also monitor and maintain the plantings for 12 months to ensure a success.

This innovative project was estimated to cost $2 million, and the GICIA is pleased that to see the project completed without going over budget. This unique project will provide enhanced habitat for juvenile snook and tarpon, the critically endangered smalltooth sawfish, and dolphin and manatee.
more……https://bocabeacon.com/wordpress/news/gicia-construction-of-mercabo-is-now-complete/

Bodega Marine Laboratory Seminar Highlights Eelgrass Resilience to Ocean Warming (CA, USA)

18 December 2020, by Jolene Darensbourg, The People’s Vanguard of Davis

The Bodega Marine Laboratory finished their UC Davis fall seminar series on Wednesday with speaker Katie Dubois, who explained her studies on how the mechanisms of eelgrass are resilient to ocean warming by discussing the phenotypic diversity across space and time. The increasing number of marine heatwave days are positively correlated with more coral bleaching, loss of seagrass density and a decline in kelp biomass. This problem led DuBois to come up with a question – what factors would determine species’ resilience to ocean warming?

One way to think about resilience and species is to refer to phenotypic variation within species. Broken down into less scientific terms, a phenotype is an observable characteristic where an individual’s characteristics, such as the plant traits, respond to the heat warming. Some prefer intermediate temperatures while others prefer warmer temperatures, and the diverse population gets a portfolio effect where productivity is maintained across all

temperature environments that can enhance ecosystem functions and diversity. The individuals can also then demonstrate phenotypic plasticity, which is the ability of the individual to change their phenotype as the environment changes.

DuBois's work in Tomales Bay explores how phenotypic diversity can promote resilience in eelgrass in response to ocean warming across populations, within populations and at an individual level. To start her experiments, DuBois and her team planted a three-way reciprocal transplant experiment that had 40 individuals from each population planted at each site that was to be grown in the field for one year, with monitoring every three months. The researchers measured growth measurements between hot and cold temperatures and noticed that the hot treatments had shifted from a hot, bright environment to a warm, dark environment and the cool treatments shifted from warm and bright to cold and dark. DuBois's research on eelgrass and its resilience in ocean warming gave viewers more understanding of how phenotypes can be mixed into different populations, based on temperature. Her research even demonstrated how the phenotypic plasticity can change when reflected by the environment.
more…….https://www.davisvanguard.org/2020/12/bodega-marine-laboratory-seminar-highlights-eelgrass-resilience-to-ocean-warming/

Big blue rescue: Scientists' call to save our seabed (Scotland, UK)

13 December 2020, by Krissy Storrar, The Sunday Post

Campaigners are calling for a "Blue Recovery" to save Scotland's vital seabeds. The beds beneath our seas plays a vital role in Scotland's marine ecosystem and provides vital habitats for young fish and can soak up carbon from the atmosphere. Flame shell reefs, seagrass meadows, mud and maerl beds – a seaweed which grows at a rate of just a millimetre a year – all have key roles in the biodiversity of coastal waters. But the seabed is fragile and has been left badly damaged by decades of bottom trawling since a century of restrictions were lifted in 1984.

The Scottish Government has introduced Marine Protected Areas – or MPAs – which are designated for 37% of Scotland's seas. But marine groups and scientists believe more could be done to protect the seabed to help boost environmental and economic sustainability. They want to see a Blue Recovery where marine habitats are protected so they can form the building blocks for healthier seas.

When the Marine (Scotland) Act came into force in 2010, it was heralded as a new dawn for the protection and enhancement of Scottish seas. Ten years later, Scotland's marine environment is in crisis. Since 2016, the SNP has committed in parliament more than two dozen new Marine Protected Areas (MPAs) – but ambition has not matched reality. The impact of this failure is laid bare in the leaked government report, titled "Scottish Overall Assessment 2020" compiled by NatureScot in 2019. Its findings show vital habitats have shrunk, in some areas virtually disappearing. These include flame shells, mussel beds, and seagrass". The next decade must put an end to our seas' declining health, with investment in marine conservation and robust action in the face of climate and nature emergencies.
more…….https://www.sundaypost.com/fp/big-blue-rescue-scientists-call-to-save-our-seabed/

11th Hour Racing awards twelve grants totaling $781,500 (Puerto Rico)

15 December 2020, 11th Hour Racing

11th Hour Racing awarded $781,500 in grants, funded by The Schmidt Family Foundation, to projects in the Dominican Republic, Puerto Rico, and the U.S., bringing the total of 2020 grants to $2.2 million. One of the organizations awarded a grants was the Ocean Foundation will serve as the lead technical consultant in developing the restoration plan for up to 47-acres of mangroves and 1-acre of seagrass in Vieques, Puerto Rico.

The Ocean Foundation (TOF) is partnering with Vieques Conservation and Historical Trust (VCHT) to rapidly restore mangroves and seagrasses in key areas around Puerto Mosquito Bioluminescent Bay on the island of Vieques, Puerto Rico. This bay is one of only a few bioluminescent bays in the world and naturally glows in the dark as a result of bioluminescent plankton. However, in 2017, Hurricane Maria caused major damages to the Bioluminescent Bay, threatening its biodiversity and bioluminescence. The goal is to quickly restore critical areas to achieve sufficient maturity and coverage before the next major hurricane hits the region so as to prevent further erosion. Puerto Mosquito is a unique ecological feature, which serves as a key environmental, economic, and cultural resource for the island-municipality.

Through this joint restoration project, TOF and VCHT intend to increase the Bay's resilience to weather and impacts of climate change such as worsening storms and wave surges that may compromise the Bay's biodiversity. The project will take place within the boundaries of the Vieques Bioluminescent Bay Natural Reserve, a 1,140 acre protected area located in the island-municipality of Vieques and is the main driver of ecotourism for the island. TOF will serve as the lead technical consultant to VCHT developing the large-scale mangrove and seagrass restoration plan building on the initial 1.5-acre critical mangrove habitat restoration at the mouth of the Bay to include up to 47 acres of mangroves and one acre of seagrass.
more…….https://whatsupnewp.com/2020/12/11th-hour-racing-awards-twelve-grants-totaling-781500/

'Adopt organic farming' (Fiji)

16 December 2020, by Atelaite Raciva, The Fiji Times

Fiji is like a teabag. Whatever you do on land, will eventually seep down and end up in the ocean. These were Dive Centre (Fiji) Pte Ltd operations manager Captain Johnathan Smith's sentiments while speaking at the Organic Pathways for A Sustainable Fiji event recently. Captain Smith said he had seen first-hand the devastating effects of agricultural practices on land on marine ecosystems.

"Farmers need to realise that Fiji is a pretty small landmass area so anything that you spray on land ends up in the oceans," he said. "Fertiliser and pesticide runoffs cause algae blooms which suffocate the reefs. "Before, our elders could go out and fish right off the beach. There was seagrass and corals close to the shore and fish was abundant." For reefs to thrive it was imperative to practise organic farming, he said. "Stop the use of pesticides, insecticides and fertilisers.

Some may argue that manmade fertilisers increase crop production but at what cost? It's not safe for human consumption and not safe for the environment. It's doing more harm than good." He also stressed the importance of education. "Farmers need to be educated on the effects of the chemicals they use on their farms on our oceans. "We need to adopt organic farming on land and let our oceans repair itself."

more……https://www.fijitimes.com/adopt-organic-farming/

Reel Time: Threatened seagrass has trickle-down effect (FL, USA)

14 December 2020, by Rusty Chinnis, The Anna Maria Island Sun Newspaper

The seagrass beds that carpet Sarasota Bay harbor a tremendous array of living creatures. This critical and diverse ecosystem is generally out of sight except at extreme low tides. Three main species are found on Florida's southwest coast. They include turtle grass (*Thalassia testudinum*), shoal grass (*Halodule wrightii*) and manatee grass (*Syringodium filiforme*). Tampa Bay has lost 81% of its historical seagrasses, Sarasota Bay 35% and Charlotte Harbor 29%. Poor watershed management (stormwater runoff and sewage disposal) dredge and fill operations and scarring from boat propellers have taken a heavy toll on Florida's seagrasses.

Through the elimination of small, poorly-maintained regional sewage systems and the work of organizations like the Sarasota Bay Estuary Program, Tampa Bay Estuary Program, and Tampa Bay Watch, programs were instituted that began to turn the tide on water quality. In recent years, seagrass rebounded in Sarasota Bay. Unfortunately, that trend reversed after the red tide of 2018, and now there have been reports by local fishing guides including Captain Justin Moore and Captain Todd Romine that acres of once-lush seagrasses have been reduced to sand flats. It is vital that decisions are made that will accommodate unavoidable development while protecting the quality of our most valuable local resources. Enlightened citizens, anglers and their interest groups must take part in this decision-making process.

Groups like Suncoast Waterkeeper and Tampa Bay Waterkeeper, with the Sarasota Bay Estuary Program, alarmed at the prospect of a potential collapse of the bay (like the one that has plagued the Indian River Lagoon) have sprung into action to alert the public through education, effective policy and in the case of the Waterkeeper Groups, hold governments accountable under the rules of the Clean Water Act of 1972. It is imperative that citizens let leaders know they will hold them responsible to protect the resources that form the basis of our quality of life as well as the local economy.

more……https://www.amisun.com/2020/12/14/reel-time-threatened-seagrass-has-trickle-down-effect/

How grasses conquered the sea (Germany)

14 December 2020, by Kiel University

Lukas Pfeifer, a PhD student in the Pharmaceutical Biology Department at Kiel University, investigated how the composition of the plant cell wall in seagrasses is involved in adaptation to marine life. A research team led by Professor Birgit Classen from the Department of Pharmaceutical Biology at the Pharmaceutical Institute of Kiel University has now presented new findings on the mechanisms by which seagrasses have adapted to their marine habitat during evolution.

To this end, the researchers, who are involved in Kiel University's priority research area Kiel Life Science (KLS), focused on the composition of the plant cell wall, which, as a shield against the environment, plays a central role in adapting to life under high saline conditions. Using the example of the native seagrass *Zostera marina*, they were able to demonstrate for the first time that so-called arabinogalactan proteins (AGPs) are present in the cell wall of seagrasses. In flowering land plants, these AGPs play important roles in various processes, including their adaptation to unfavorable living conditions. Analytical methods have now been used to characterize important building blocks of AGPs, including the structure of their sugar chains. It was shown that these carbohydrate structures of the AGPs of seagrasses differ significantly from those of land plants. Despite a similar basic structure, very strong charges are found in the sugar chains of seagrass AGPs. The Kiel researchers recently published their results together with Australian colleagues from La Trobe University in Melbourne in the journal Scientific Reports.

In order to study the evolutionary adaptation of seagrasses in comparison with today's terrestrial plants, the Kiel research team concentrated on specific building blocks of AGPs: "In the structural analysis of the AGP molecules, we focused primarily on the highly charged sugar fractions," explains Lukas Pfeifer, Ph.D. student in Pharmaceutical Biology. A strong charge of carbohydrate components can be observed in many marine organisms. This is usually caused by sulfate groups or certain sugar acids, the so-called uronic acids. These uronic acids found in high amounts in *Zostera* AGPs enable a strong binding of calcium ions. The Kiel research team was able to prove in the laboratory that this binding actually takes place in seagrass AGPs using various methods. A high concentration of calcium near the plasma membrane offers direct protection against the penetration of sodium ions from the surrounding salt water into the cell. The analytical results were supplemented by cooperation with the researchers in Melbourne, who carried out the bioinformatic classification of the protein components of the AGPs and the identification of the enzymes responsible for biosynthesis. The research work provides important new insights into the evolutionary adaptation mechanisms to the marine habitat. The latter is also significant in terms of man-made climate change, since the adaptation of plants to salt or drought stress is a significant challenge in our changing world.
more…….https://phys.org/news/2020-12-grasses-conquered-sea.html

Paris Agreement: Five years on, it's time to fix carbon trading

10 December 2020, by Mark Huxham and Imi Melissa Dencer-Brown, Down To Earth Magazine

Progress on the Paris Agreement since 2015 has been painfully slow. With the broad aspirations of the Paris Agreement confirmed, attention must now focus on rapid implementation. An immediate issue is clarifying article six — the most contentious part of the agreement. It deals with how countries can cooperate through carbon markets, emissions trading and support for less developed nations at international, national and local levels. It will shape how the world supports nature-based solutions to climate change, which protect and expand natural carbon sinks such as forests. Take blue carbon habitats for example — mangroves, salt marshes and seagrass meadows. Some 151 countries contain at least one of these natural carbon stores. Stopping their destruction would save half a gigatonne of CO2 per year — more than the UK's entire annual emissions.

Conserving these ecosystems will depend on empowering local communities to lead the effort. Kenya exemplifies the opportunities and challenges. The country has 61,271 hectares of mangroves and 31,700 hectares of seagrass, which together store at least 77 million tonnes of carbon, more than 11 times the country's annual CO2 emissions. By nurturing the species that local fishers catch, these beautiful habitats provide livelihoods for thousands along the coast and attract visitors from around the world. Fortunately, Kenya hosts world-leading examples of how carbon trading can support natural solutions to climate change. People and organisations can choose to offset their carbon pollution using a voluntary market, which operates independently of international agreements like Paris.

Nature-based solutions, with all their added benefits for wildlife and local wellbeing, should feature prominently. And all parties to the Paris Agreement must commit to and demonstrate immediate reductions in emissions rather than look to offsetting as an excuse for inaction.
more…….https://www.downtoearth.org.in/blog/climate-change/paris-agreement-five-years-on-it-s-time-to-fix-carbon-trading-74616

A Massive Seagrass Project Is Restoring a Lost Food Web for Wintering Geese (VA, USA)

10 December 2020, by Kevin Johnson, Audubon Magazine

When the Chesapeake Bay's eelgrass disappeared, Atlantic Brant lost a major food source. Decades of work have helped reverse those losses. In an October study published in Science Advances, Robert Orth and a team of researchers from the Virginia Institute of Marine Science detail the world's largest eelgrass restoration effort, situated in the southern Chesapeake Bay off the coast of Virginia. Their decades-long project has restored nearly 9,000 acres of eelgrass in a region where it was nearly extirpated while bringing back a once-lost food web to a wintering habitat for Atlantic Brant and other species.

Once found in abundance in coastal bays across the east coast, eelgrass coverage plummeted after a devastating plant disease and hurricanes in the 1930s decimated about 90 percent of the vegetation in the Atlantic. When Orth and others initially sought ways to restore eelgrass in the bay, marine scientists had low expectations. Knowing the value of that former ecosystem, Orth, with the help of employees, volunteers, and funding from conservation groups in the region, found a few errant patches of eelgrass remaining and began to harvest and spread seeds in the late 1990s, testing how the eelgrass would grow. Over 20 years, the test regions expanded as the team collected and spread more than 70 million seeds. As the bays took on more eelgrass, the tides started helping to spread seeds as well, a sign of sustainable growth. "We tried out this idea, and ended up recovering a lot of eelgrass thanks in large part to what nature does best," Orth says. "It was that simple."

The resurgence of eelgrass in the Chesapeake, so far seen in four bays along the Eastern Shore of Virginia, could increase the area's viability as a major Brant wintering habitat—the more food available, the more stable a wintering location becomes.
more…….https://www.audubon.org/news/a-massive-seagrass-project-restoring-lost-food-web-wintering-geese

Related articles

Eelgrass Restoration Brings Long-Lost Goose Species Back to Va.'s Eastern Shore (15 December 2020, Chesapeake Bay Magazine)

https://chesapeakebaymagazine.com/eelgrass-restoration-brings-long-lost-goose-species-back-to-va-s-eastern-shore/

Ocean Conservation Trust receives £250,000 seagrass grant (England, UK)

11 December 2020, by Mark Evans, Scuba Diver Magazine

The Ocean Conservation Trust has received a grant of £250,000 from the government's Green Recovery Challenge Fund, enabling large-scale seagrass restoration supporting fisheries while sequestering carbon. The Ocean Conservation Trust is one of the first environmental projects awarded a grant from the government's £80 million Green Recovery Challenge Fund.

Mark Parry, Development Officer at the Ocean Conservation Trust said: "It is hugely exciting to be awarded this funding from the Green Recovery Challenge Fund for restoration of subtidal seagrass beds. The project looks to take an innovative and fresh approach to seagrass restoration and will demonstrate large scale restoration techniques in South Devon with the aim recovering the benefits to fisheries and adding to carbon sequestration."

The government's forthcoming Environment Bill puts the environment at the centre of policy making to ensure that we have a cleaner, greener and more resilient country for the next generation. The fund is supporting a range of nature conservation and recovery and nature-based solutions projects, which will contribute towards government's wider 25 Year Environment Plan commitments.

more……https://www.scubadivermag.com/ocean-conservation-trust-receives-250000-seagrass-grant/

Living resources face death by climate change (Caribbean)

10 December 2020, Jamaica Gleaner

The Caribbean's living resources – from coral reefs to seagrass, mangroves, fish and shellfish, all of which contribute to the region's multibillion-dollar blue economy – face an uphill battle for survival in the changing climate. This is detailed in the October 2020 book The Caribbean Blue Economy, under the chapter titled 'Implications of climate change for Blue Economies in the Wider Caribbean'.

Authored by researchers Professor Michael Taylor, Professor Mona Webber, Dr Tannecia Stephenson and Felicia Whyte, the chapter notes that the "Caribbean has already changed in significant ways and is projected to continue changing through the end of the current century due to further global warming".

The negative implications for the region's living resources are real. For example, intense rainfall periods with increased sedimentation and nutrient inputs blanket reefs in sediments, which reduces light for photosynthesis, while there is reduced light penetration, leading to lower productivity, shoot biomass and density for seagrass. Sea level rise drowns seagrass by a reduction in optimal depth and effective light intensity, while mangroves face coastal 'squeeze', or lack of space for upland migration. Increased storminess associated with more extreme weather events topple mangrove trees, while uprooting and eroding seagrass beds, leading to a reduction in the structural complexity of reefs.

"The effect of climate change will be most critical for the major coastal ecosystems (coral reefs, seagrasses and mangroves) as well as their associated organisms (fish and shellfish)," write the authors. These living resources, meanwhile, contribute significantly to the blue economy of the Caribbean, helping to sustain livelihoods in sectors such as tourism, agriculture and fisheries that have been high performers in their contribution to the region's economy. The researchers have, therefore, recommended a number of interventions to halt the loss of life from among the Caribbean's living resources. They include giving "urgent attention" to identifying and protecting locations where organisms may be more robust, or less exposed, to climate change.

more……http://jamaica-gleaner.com/article/news/20201210/earth-today-living-resources-face-death-climate-change

Related articles

Mapping of carbon capture resources (24 December 2020, Jamaica Gleaner)
http://jamaica-gleaner.com/article/news/20201224/earth-today-wanted-mapping-carbon-capture-resources

Indian River Lagoon report: Water quality steady or improving while seagrass continues to decline (FL, USA)

08 December 2020, by James Sparvero, WKMG News 6 & ClickOrlando

Seagrass is disappearing from the Indian River Lagoon causing hungry manatees to have to migrate to find their food. It's one of the concerning conclusions from Tuesday's virtual presentation of the third annual lagoon report card. The Marine Resources Council did report some positive news, too. Scoring the latest data available from 2019, the Indian River from north Brevard County to Melbourne got a decent score for its water quality - a 75 out of 100. That score was before the river suffering new fish kills like Thanksgiving at State Road 520 in Merritt Island.

After the 2016 fish kills, Brevard County voters approved paying hundreds of millions of dollars over 10 years for cleanup efforts. Supporters said that after decades of decline, it would be a long recovery for the lagoon. And despite some of her reporting Tuesday, Dr. Leesa Souto still spoke positively about restoring one of the most biodiverse

estuaries in the Northern Hemisphere. Dr. Souto said doing your part includes disconnecting your lawn from chemicals and volunteering to clean up.
more…….https://www.clickorlando.com/news/local/2020/12/08/indian-river-lagoon-report-water-quality-steady-or-improving-while-seagrass-continues-to-decline/

Related articles
Cooler weather halts fish kill, lagoon still at risk (11 December 2020, Hometown News)
https://www.hometownnewsbrevard.com/news/cooler-weather-halts-fish-kill-lagoon-still-at-risk/article_4a4105d0-3a31-11eb-b24f-d3c6bbb8f2ec.html
Signs warn of potentially toxic blue-green algae in the Indian River Lagoon (10 December 2020, Florida Today)
https://www.floridatoday.com/story/news/local/environment/lagoon/2020/12/11/signs-warn-potentially-toxic-blue-green-algae-indian-river-lagoon/3894152001/

Research reveals full extent of seagrass beds in Looe Bay (England, UK)

08 December 2020, Mirage News

Students from the University of Plymouth have led new research showing that seagrass beds in Looe Bay, on the South Cornwall coast, are among the largest such habitats in the whole of Devon and Cornwall. Looe's large seagrass bed – which the research shows is up to 10 times larger than those in Plymouth, Falmouth and Torbay – performs an important role in the fight against climate change and, as such, requires continual monitoring to allow us to understand changes in the bed's size and health.

Developing that understanding has been the key aim of a partnership between the Looe Marine Conservation Group (Looe MCG), Cornwall Wildlife Trust and the University. The partnership's research has revealed that the seagrass beds of Looe Bay cover approximately 1.1 km² of seabed, stretching from Hannafore in the West to Millendreath in the East, and offering shelter to a diverse range of ecologically important marine animals and plants.

The project has combined historic and new data, in the form of underwater video footage, to build a habitat map of Looe's seagrass beds. Despite more than 20 years of previous surveys, the Looe seagrass beds have not been mapped to completion, with a gap in data between the East and West Looe sites. In the future, LMCG Chairperson Amelia Bridges and Rebekah, who is continuing to volunteer with the group, are keen to fill this data gap by running more surveys in 2021. They are hopeful that the seagrass beds extend around the coast, making this one of the largest seagrass beds in the country, and therefore an area of conservation importance.
more…….https://www.miragenews.com/research-reveals-full-extent-of-seagrass-beds-in-looe-bay/

Related article
Research reveals full extent of seagrass beds in Looe Bay (09 December 2020, Phys.Org)
https://phys.org/news/2020-12-reveals-full-extent-seagrass-beds.html

Seagrass transplant project declared a success in Port Stephens (NSW, Australia)

06 December 2020, by Ben Millington, ABC Newcastle

Marine ecologists say an experimental project to repair underwater seagrass meadows using shoots that wash up on the beach has been a huge success. For the past two and a half years University of New South Wales researchers have asked locals in Port Stephens, north of Newcastle, to collect seagrass shoots as they walk along the beach. "We're getting really good survival rates of the transplants, somewhere between 50 and 70 percent, that's kind of the gold standard," researcher Adriana Verges said. "We've shown that, with the help of citizen scientists, we can collect enough shoots and restore them effectively and get good survival.

"It's fair to say that in the past the focus has really been on preserving what seagrass we have, but that's changed," Dr Verges said. "It's still a priority, but we're now in an era where we've done so much environmental damage that we've had to start to focusing on restoring and reversing that damage." *Posidonia*, which Dr Verges's team is working to save, is now endangered in six estuaries in NSW. At the current rate of destruction it could become locally extinct within decades.

In Port Stephens the team is rehabilitating what are known as mooring scars — large patches of bare seabed caused by block and chain boat moorings that rip the seagrass out of the seafloor. Environmentally friendly moorings, designed to prevent dragging, are available, but Andrew Lamb from Port Stephens Moorings says they are typically more expensive and only account for about 2 percent of his business. Mr Lamb said the technology and design of environmentally friendly moorings have significantly improved in recent years and he would like to see government play an increased role in mandating their use.
more…….https://www.abc.net.au/news/2020-12-06/seagrass-rehabilitation-project-a-success-in-port-stephens/12955002

Studland Bay wildlife protection orders may lead to complete boating ban in the bay (England, UK)

03 December 2020, by Robert Melotti, Practical Boat Owner Magazine

One of the South Coast's most popular boating areas, Studland Bay, just outside the entrance to Poole Harbour, is likely to be the subject of further restrictions in order to protect delicate natural environments and sea creatures. At issue are three related marine wildlife types: Sub-tidal sand, seagrass and rare seahorses. A draft assessment has been published that indicates all three are affected by mooring and anchoring. The assessment also concludes that the seagrass beds and long-snout seahorses are affected, additionally, by sailing and powerboating with an engine. And finally, that seahorses are affected by any boating activity, including sailing without an engine, kayaking, windsurfing, kitesurfing and more.

Studland Bay was designated a Marine Conservation Zone (MCZ) in 2019. At the time, the Government said that anchoring and mooring would need to be managed to protect the seagrass beds. Now the Marine Management Organisation (MMO) is looking at how to manage the site, and sailors have until the 15 December to respond.
more…….https://www.pbo.co.uk/news/studland-bay-wildlife-protection-orders-may-lead-to-complete-boating-ban-66124

Bendera Bay on St John's Island to be opened to public via scheduled programmes (Singapore)

13 December 2020, by Calvin Yang, The Straits Times

A lagoon on St John's Island will soon be opened to the public for research, education and conservation activities. The 3.9ha Bendera Bay, which was previously inaccessible to the public, consists of a lagoon with a variety of mangrove, coral, seagrass, sandy shore and rocky shore habitats. Access to the fenced up area will be allowed via scheduled programmes only, as part of efforts to safeguard it. These planned programmes will be carried out from early next year, subject to Covid-19 restrictions.

Bendera Bay was launched by National Development Minister Desmond Lee, together with Speaker of Parliament Tan Chuan-Jin and Ang Mo Kio GRC MP Nadia Ahmad Samdin, on Sunday morning (Dec 13). Its name was inspired by Pulau Sekijang Bendera, the indigenous Malay name for St John's Island. The Friends of Marine Park community, which comprises stakeholders and volunteers such as divers, anglers, boat owners, academics and government agencies, will schedule programmes that will take place there. The activities, supported by the National Parks Board (NParks), are centred around four themes: research, recreation, heritage, and education. For instance, researchers from the St John's Island National Marine Laboratory are conducting research on seagrasses. Other research opportunities in the works involve the connected mangrove, seagrass and coral areas at Bendera Bay.

At the opening of Bendera Bay, the community held some activities as a trial for future events to come, including an intertidal walk to showcase the seagrass and marine biodiversity there. Participants will be providing feedback to refine the activities before they are opened to the public.
more…….https://www.straitstimes.com/singapore/bendera-bay-nestled-within-st-johns-island-to-be-opened-to-public-via-scheduled-programmes

FIU to Use Computer Modeling to Track Biscayne Bay Pollution (FL, USA)

02 December 2020, by Adriana Brasileiro, The Miami Herald

It's no mystery what has triggered the algae blooms, fish kills and seagrass die-offs that have troubled Biscayne Bay over the last few years. It's pollution. But what pollution, how much and where is it coming from? Those are murky questions that may soon be cleared up with the help of a super high-tech computer modeling system run by Florida International University.

The modeling technology, which can generate simulations in just a few minutes as opposed to days, promises to help scientists and government agencies understand how pollutants like phosphorus and nitrogen are transported through canals into the bay, and the harmful effects they create. FIU's Biscayne Bay Operational Hydrodynamic, Sediment Transport and Water Quality Model, called BBOM, offers something like a high-resolution photo of the water in the bay, with detailed information about what's in the water and how it's moving around. The idea is to use hypothetical data to simulate scenarios, or to use real data to reproduce an event like the fish kill or coral bleaching, to find out what caused it.

The model may also help scientists answer a big-picture question: is Biscayne Bay past the point of no return? The bay's steady decline over the decades led to an alarming conclusion last year: the bay was in danger of a regime shift, as its life-giving seagrass beds are gradually being smothered by thick algae that are being fed by rising nutrient levels in the water. The study by the National Oceanic and Atmospheric Administration (NOAA) looked at 20 years worth of data on chlorophyll and phosphorus, and concluded that the bay may be changing from a seagrass-dominated ecosystem to an algae one. "After the bay goes over that tipping point, the ecosystem goes into a different

state, which is very difficult to recover from," he said. "But we cannot explain exactly what's going on because we don't have the data."
more……..https://www.govtech.com/education/higher-ed/FIU-to-Use-Computer-Modeling-to-Track-Biscayne-Bay-Pollution.html

CONFERENCES

The 14th International Seagrass Biology Workshop (ISBW14) (Annapolis, Maryland, USA Summer 2022)

Theme: " Signs of Success "

The International Seagrass Biology Workshop (ISBW) is the only international meeting specifically tailored to seagrass scientists, professionals and students. The International Seagrass Biology Workshop (ISBW) provides an excellent opportunity for the scientists working on various aspects of seagrass ecosystems to come together and discuss their latest findings.

The ISBW14 Chesapeake Bay will be held in Summer 2021 at the Graduate Annapolis Hotel, Annapolis, Maryland. This will be the first time ISBW has been hosted in the U.S.A. and the iconic Chesapeake Bay is the logical setting. Chesapeake Bay is an iconic estuary with a strong scientific and management history. The resurgence of seagrasses (including brackish water submersed aquatic vegetation) in the bay is the largest documented in the world, and clearly a "sign of success" to inspire seagrass scientists globally.

More information:
To get important updates, visit: https://isbw14.org/
Follow on
Facebook @ISBW14, twitter @ISBW14 , Instagram @isbw14 #isbw14

14th International Coral Reef Symposium (ICRS 2020) (Bremen, Northern Germany, 2021).

Theme: Tackling the Challenging Future of Coral Reefs

The ICRS is the leading global conference on coral reef science, management and conservation, sanctioned every 4 years by the International Coral Reef Society (ICRS). For the first time in its history, an ICRS will be held in Europe. ICRS 2020 will be the key event to develop science-based solutions addressing the present and future challenges of coral reefs, which are globally exposed to unprecedented anthropogenic pressures. The five-day program will present the latest scientific findings and ideas, provide a platform to build the essential bridges between coral reef science, conservation, politics, management and the public, and will promote public and political outreach.

Key Themes which include seagrass ecosystems:
- Theme 3: Ecosystem functions and services
- Theme 6: Unexplored and unexpected reefs
- Theme 9: Global and local impacts
- Theme 10: Organismal physiology, adaptation and acclimation

More information:
To get important updates, visit: https://www.icrs2020.de/

SEAGRASS-WATCH on YouTube

Seagrass: Pastures of the sea *http://www.youtube.com/watch?v=66Y5vgswj20* or *http://www.seagrasswatch.org/seagrass.html*

Presentation on what seagrasses are and why they are important (over 52,004 views to date)

Global distribution of seagrass meadows *https://www.youtube.com/watch?v=OPbmam_sitk*

Presentation on new scientific paper examining the global distribution of seagrass meadows by McKenzie, Nordlund, Jones, Cullen-Unsworth, Roelfsema and Unsworth *https://doi.org/10.1088/1748-9326/ab7d06*

Seagrass & other matters

World Seagrass Day http://wsa.seagrassonline.org/world-seagrass-day/

A global campaign for World Seagrass Day: Raising public awareness on the importance of seagrass meadows is central to efforts in the protection and conservation of seagrass meadows worldwide. The international seagrass research and conservation community, together with the undersigned, call on the United Nations to declare a World Seagrass Day to recognize the importance of seagrass meadows to the health and well-being of the planet, as well as the people, communities, flora, and fauna that rely on them. Show your support by signing the petition.

SeagrassSpotter https://seagrassspotter.org/

SeagrassSpotter seeks to expand the number of people studying seagrass from a handful of scientists to hundreds and potentially thousands of 'citizen scientists.'. As part of efforts to build a sustainable monitoring network, and by leveraging the enthusiasm of everyone from fishers to SCUBA divers to people on vacations at the beach, we'll create a more comprehensive picture of seagrass meadows around the globe. This in turn will inspire new scientific research and practical conservation measures that can help protect ocean habitats. Working together with citizen scientists all over the world, we'll accomplish big things for seagrass and other vulnerable marine species, but only with your help.

World Seagrass Association http://wsa.seagrassonline.org

Keep up to date on what's happening with the around the world from the WSA. The World Seagrass Association is a global network of scientists and coastal managers committed to research, protection and management of the world's seagrasses. WSA members come from many countries and include leading scientists in marine and seagrass biology. The association supports training and information exchange and raises global awareness of seagrass science and environmental management issues.

World Seagrass Association on Twitter @Seagrass_WSA

Everything seagrass related. World Seagrass Association official account. Follow to stay up-to-date with global seagrass info. Moderator: LM Nordlund

Dugong & Seagrass Research Toolkit http://www.conservation.tools/

Dugongs and seagrass are under threat from human activities. By using this Toolkit you should be able to gather information to:

understand better the status of dugongs, seagrass and communities at your research site;
understand threats to dugongs and seagrasses and help find solutions to those threats;
understand the communities that value or may affect dugongs and seagrasses.

The toolkit will guide you to the techniques and tools most suitable to your team capacity, budget and timeline. By using the toolkit, you will also be helping to standardise data sets and methods across different countries and sites, allowing for better comparison of global dugong and seagrass conservation status. The Toolkit is designed for use by marine natural resource managers and decision-makers (government and non-government) and for dugong and seagrass researchers. The Toolkit will assist organisations to assess funding proposals by describing the scope of work, choice of techniques and tools, and budget.

FROM HQ

Past E-bulletins *https://www.seagrasswatch.org/ebulletin/*
Frequently Asked Questions *https://www.seagrasswatch.org/faq/*
Magazine *https://www.seagrasswatch.org/magazine/*
Virtual Herbarium *https://www.seagrasswatch.org/herbarium/*
Future sampling dates *https://www.seagrasswatch.org/upcomingevents/*

****

Seagrass-Watch E- Bulletin is compiled by Len McKenzie & Rudi Yoshida.